Gavin Newsom
Governor

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Kate Gordon
Director

Memorandum

Date: April 2, 2020

To: All Reviewing Agencies

From: Scott Morgan, Director

Re: SCH # **2018082022**
Lake Shastina Community Services District Wastewater Improvement Project

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The State Clearinghouse is forwarding the attached material from the Lead Agency regarding some ***additional*** information for the above-mentioned document. All other project information remains the same.

cc: Robert Moser
Lake Shastina Community Services District
16320 Everhart Drive
Weed, CA 96094

Preliminary Engineering Report

A

Draft Wastewater Facilities Preliminary Engineering Report

Lake Shastina Community Services District
16320 Everhart Drive
Weed, California

Prepared for:

Lake Shastina Community Services District

Engineers & Geologists

May 2018

517027.200

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CONSULTING ENGINEERS & GEOLOGISTS, INC.
803 Main St., Ste. 401 •Klamath Falls, OR 97601 • Phone/Fax 541-827-7855 • shninfo@shn-engr.com

Reference: 517027

May 25, 2018

Mr. Michael Wilson, General Manager
Lake Shastina Community Services District
16309 Everhart Drive
Weed, CA 96094

Subject: Draft Preliminary Engineering Report for Wastewater Collection System and Treatment Facility

Dear Mr. Wilson:

Please find enclosed the Draft Preliminary Engineering Report for the Wastewater Collection System and Treatment Facility which incorporates the comments we received from your staff. Please submit to the SWRCB DFA office for their review.

If you have any questions, please let us know.

Respectfully submitted,

SHN Engineers & Geologists

Anders Rasmussen

Anders H. Rasmussen, PE
Senior Civil Engineer

AHR:ahr

Enclosures: Draft Preliminary Engineering Report, Wastewater Collection System and Treatment Facility

c. w/Encl.: Robert Moser, LSCSD

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Reference: 517027.200

Draft Preliminary Engineering Report

Lake Shastina Community Services District Wastewater Collection System and Treatment Facility

Prepared for:
Lake Shastina Community Services District

REGISTERED PROFESSIONAL ENGINEER
ANDERS H. RASMUSSEN
No. 58184
CIVIL
STATE OF CALIFORNIA

Anders H. Rasmussen
Signed 5/30/2018

Prepared by:

Engineers & Geologists
803 Main Street, Suite 401
Klamath Falls, OR 97601
541-827-7855

May 2018

QA/QC: MSC

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Table of Contents

Appendices

List of Illustrations

Figures **Follows Page**

Tables **Page**

Abbreviations and Acronyms

CSD	Community Services District
gpm	Gallons Per Minute
HDPE	High Density Polyethylene
hp	Horsepower
KVA	Kilovolt-amps
KW	Kilowatts
LED	Light Emitting Diodes
LSCSD	Lake Shastina Community Services District
MHz	Megahertz
MTS	Manual Transfer Switch
NEMA	National Electrical Manufacturers Association
SCADA	Supervisory Control and Data Acquisition
SHN	SHN Engineers & Geologists
SSO	Sanitary Sewer Overflow
V	Volts
VFD	Variable Frequency Drive
WDR	Waste Discharge Requirements
WWTF	Wastewater Treatment Facility

EXECUTIVE SUMMARY

SHN Engineers and Geologists (SHN) performed a review of the Lake Shastina Community Services District (LSCSD) wastewater collection and treatment system and made recommendations for improvements in the following major areas:

- Pump Station wet well and electrical upgrades;
- Bypass of wastewater flow from Pump Station B-111 around B-110 and B-109 along Lake Shore Drive;
- Diversion of wastewater flow from Tony Lema Drive to Pump Station B-120 instead of the current Pump Station B-100;
- Various upgrades at the Wastewater Treatment Facility, including a new primary solids tank, sludge drying bed, and lining for Pond 5.

All of the proposed improvements total to an estimated cost of $4,707,765. Project cost estimates for individual projects are shown in Table ES-1. Detailed project descriptions and costs are provided in Section 7.

Table ES-1 Summary of Opinion of Probable Project Costs by Project Lake Shastina CSD

Project	Project Cost Estimate[1]
Pump Station B-100	$145,389
Pump Station B-101	$186,428
Pump Station B-102	$192,651
Pump Station B-103	$63,601
Pump Station B-104	$186,173
Pump Station B-105	$79,819
Pump Station B-106	$169,702
Pump Station B-107	$186,519
Pump Station B-108	$187,461
Pump Station B-109	$192,588
Pump Station B-110	$182,745
Pump Station B-111	$172,541
Pump Station B-112	$172,541
Pump Station B-113	$59,697
Pump Station B-114	$66,699
Pump Station B-115	$165,928
Pump Station B-116	$70,985
Pump Station B-117	$171,812
Pump Station B-118	$194,341
Pump Station B-120	$49,597
Portable Generators	$83,000
Lake Shore Drive Bypass	$642,248
Tony Lema Drive Diversion	$313,847
Wastewater Treatment Facility Improvements	$771,453
Sum of All Improvements	***$4,707,765***

1. See Section 7 for detailed costs estimates.

1.0 INTRODUCTION

1.1 Purpose

The purpose of this report is to evaluate the existing Lake Shastina Community Services District (LSCSD) wastewater system and provide recommendations for needed upgrades. The existing system includes a collection system consisting of 20 pump stations and a wastewater treatment facility (as described further in Section 3.3). The LSCSD wastewater treatment facility (WWTF) is regulated under Waste Discharge Requirements (WDR) Order No. R1-2012-0029 (Appendix 1).

Funding has been provided in full or in part through an agreement with the State Water Resources Control Board using funds from Proposition 1. The contents of this document do not necessarily reflect the views and policies of the foregoing, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

1.2 Scope

The scope of this report was to review the existing system and determine alternatives and recommendations for the needs previously identified by the LSCSD, including:

- Aging pump stations;
- Lack of backup power and telemetry at pump stations;
- Modifications to the collection system in key areas to avoid the potential of sanitary sewer overflows (SSOs);
- Addition of a second primary solids removal tank;
- Lack of a sludge drying facility; and
- Need for lining of Pond 5.

2.0 Project Planning

2.1 Location

Lake Shastina Community Services District (LSCSD) is located in Siskiyou County, California, just north of the City of Weed (Figure 2-1).

2.2 Environmental Resources Present

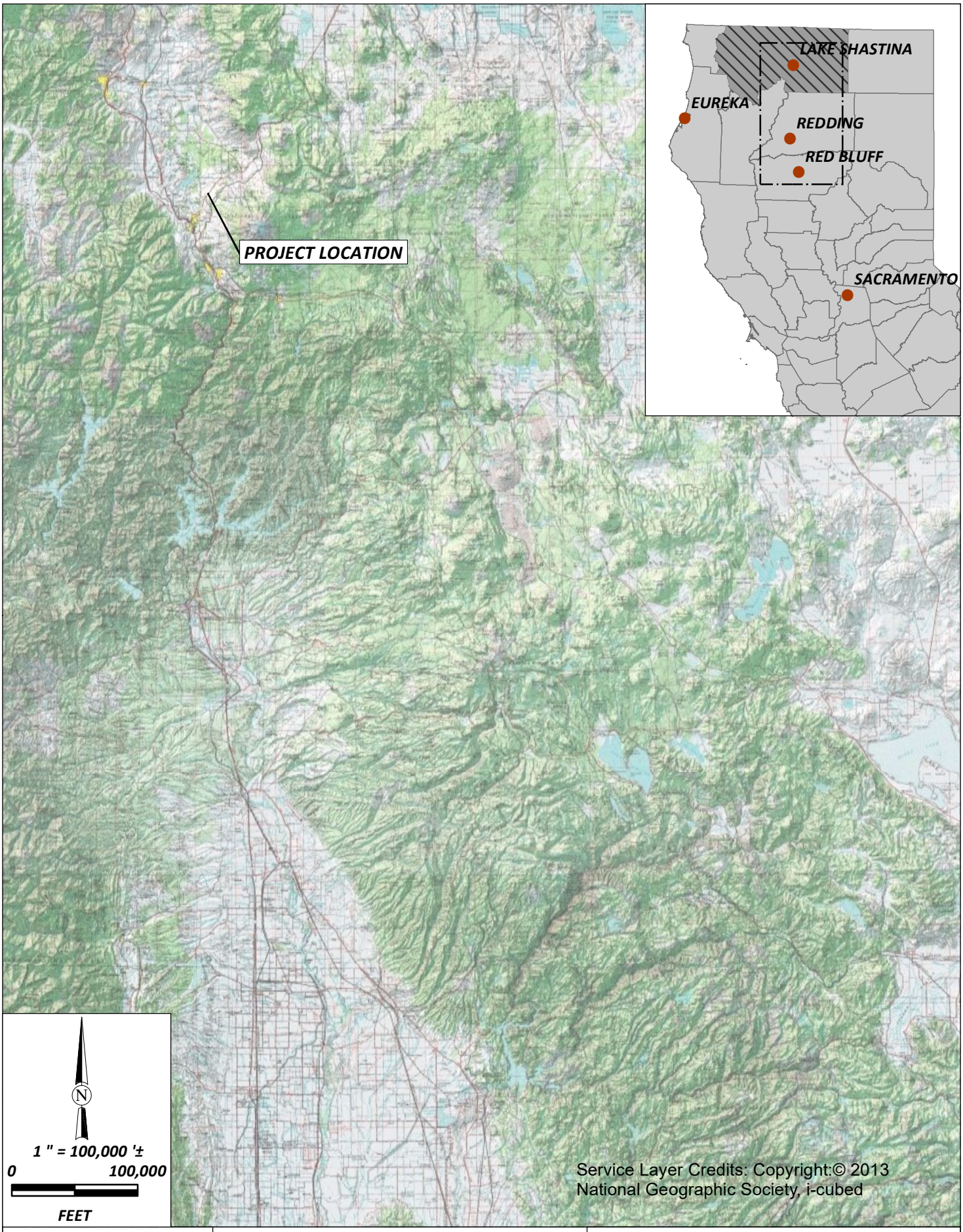
The Lake Shastina community is located around Lake Shastina, which is a reservoir that supplies irrigation water to agricultural lands to the north. Lake Shastina is also used for recreation. The topography is hilly with significant tree cover throughout the service area. Wildlife present includes various birds, deer, and other animals commonly found in the area. There are no wetlands or cultural resources in the proposed project areas. Additional information can be found in the Initial Study Mitigated Negative Declaration (IS-MND) being prepared by SHN simultaneous to this report.

2.3 Population Trends

The population of Lake Shastina has remained mostly stable since the 1980s, with a small growth rate prior to that. The most significant recent growth in population occurred in 2014 due to the Boles Fire. The fire destroyed over one hundred homes and structures in nearby Weed, California. Some of these displaced residents moved permanently to Lake Shastina. The current population of Lake Shastina is approximately 2,800. Current growth levels in the last couple of years have been low.

2.4 Community Engagements

The District holds regular meetings of the Board of Directors, Budget/Finance Committee, Fire Department Advisory committee, Environmental Control Committee, Lake Shastina Community Foundation Inc, the Greater Lake Shastina Fire Safe Council, and others. The District maintains 24 hour on-call service for maintenance issues. The service area for the LSCSD includes areas governed by four different property owners associations, of which the Lake Shastina Property Owners Association is the largest.



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SHN Consulting Engineers & Geologists, Inc.	Wastewater System Improvements Preliminary Engineering Report Lake Shastina, California	Project Location SHN 517027
	March 2018 / Location_Map_2	Figure 2-1

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3.0 Existing Facilities

3.1 Location Map

Project location is shown in Figure 2-1.

3.2 History

The Lake Shastina reservoir was formed with the construction of Dwinnell Dam, beginning in 1926, to serve the agricultural community that had settled the region. The Community began as a second home recreation area in 1968, evolving into a community of families and retirees. Lake Shastina Community Services District was formed in 1978 by the Siskiyou County Board of Supervisors after successful petitioning by the voters of the District. The Community was primarily agricultural, but now includes residents who commute to other cities for employment.

3.3 System Description Summary

The LSCSD service area currently has 1,252 active residential connections and 12 active commercial connections. There are an additional 2,586 unimproved residential lots that pay a standby sewer fee.

The LSCSD wastewater system consists of the following elements:

- Gravity collection system;
- Twenty pump stations and associated force mains;
- Wastewater treatment facility with primary solids removal, aerated lagoons, mechanical evaporators, and temporary sludge drying facility.

Locations of the pump stations and the treatment facility are shown on Figure 3-1. The system requires the 20 pump stations due to the hilly terrain. Most wastewater is pumped through at least two pump stations in series, as indicated by the flow directions shown in Figure 3-1.

3.4 Condition of Existing Facilities

3.4.1 Collection System

3.4.1.1 Pump Stations

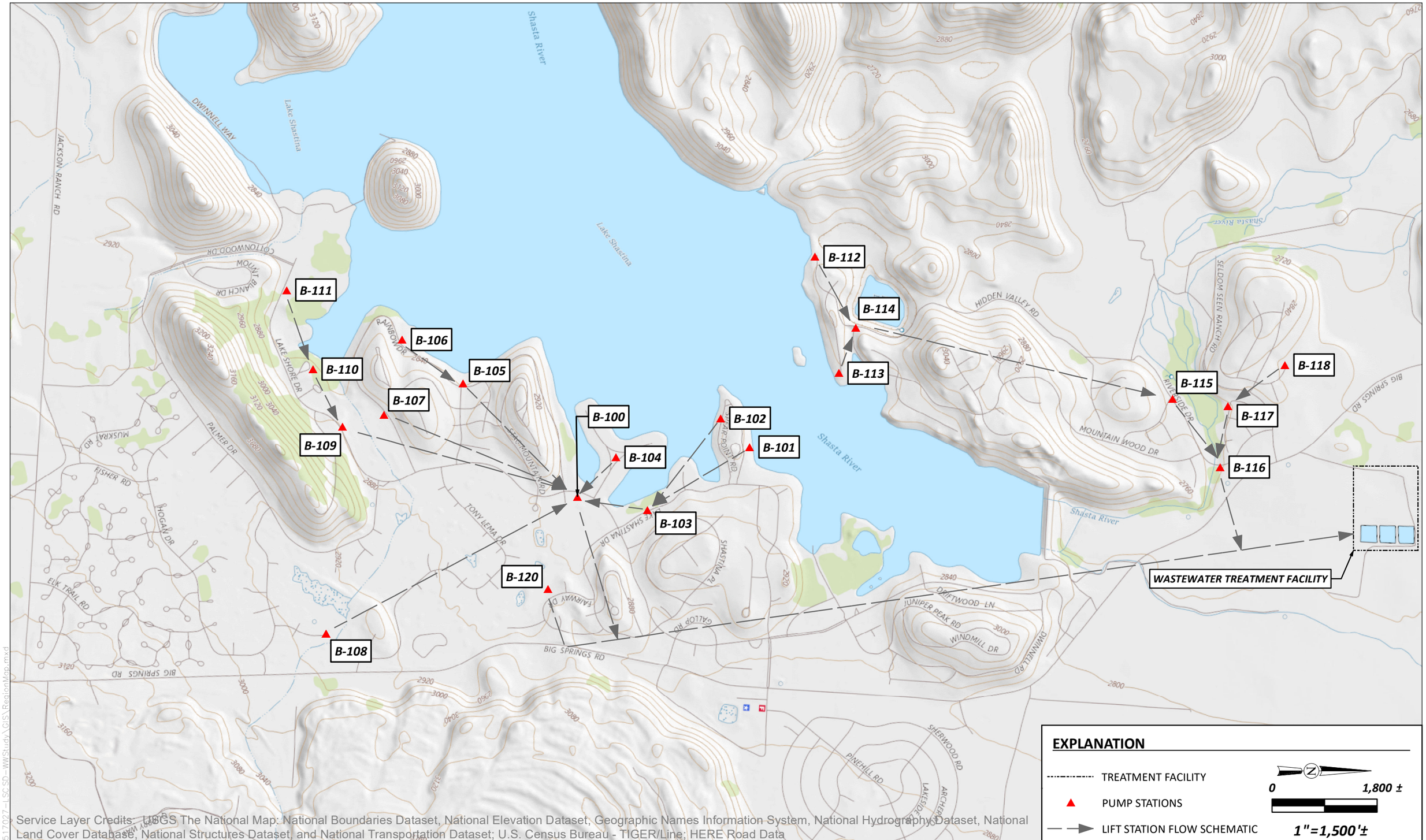
The LSCSD has 20 pump stations due to the hilly terrain within the service area (Figure 3-1). Most were constructed at the time of the original development in the 1970s. The pump stations can be divided into two main categories: Concrete wet well and steel wet well. Table 3-1 provides a list of all the pump stations along with a listing of the major features of each.

Table 3-1 List of Pump Stations and Major Features
Lake Shastina CSD

Pump Station	Wet Well Material[1]	Pump Type	Lined[2]	Variable Frequency Drive (VFD)
B-100	Concrete	Centrifugal (in drywell)		
B-101	Steel	Submersible		X
B-102	Steel	Submersible		X
B-103	Steel	Submersible	X	X
B-104	Steel	Vertical Turbine		
B-105	Steel	Submersible	X	
B-106	Concrete	Submersible		X
B-107	Steel	Vertical Turbine		
B-108	Steel	Vertical Turbine		
B-109	Steel	Submersible		
B-110	Concrete	Submersible		X
B-111	Concrete	Submersible		X
B-112	Concrete	Submersible		X
B-113	Concrete	Submersible	X	X
B-114	Steel	Submersible	X	X
B-115	Concrete	Submersible		X
B-116	Concrete	Submersible	X	
B-117	Concrete	Submersible		X
B-118	Concrete	Submersible		
B-120	Concrete	Submersible		X

1. Original material of wet well. All steel wet wells are co-located inside the building with the electrical and controls panels, with the exception of B-114; all concrete wet well are located outside the electrical building. All are circular in shape except B-100 and B-120, which are rectangular.
2. Wet well lining has been completed with fiberglass inserts.

There are eleven pump stations with concrete wet wells. Nine of these have six-foot-diameter precast concrete wet wells with submersible pumps, excepting B-100, which includes a concrete wet well and steel dry well with pumps. A concrete wet well representative photo of B-113 is shown in Figure 3-2. Two other pump stations, B-100 and B-120, have non-cylindrical shaped wet wells.



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SHN Consulting Engineers & Geologists, Inc.

Lake Shastina Community Services District
Wastewater System Improvements
Lake Shastina, California

Lake Shastina
System Map
SHN 517027

February 2018 | RegionMap | Figure 3-1

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Figure 3-2. Typical concrete wet well and cover (B-113).

B-100 (Figure 3-3) is the only pump station with a dry well, which is constructed of steel. The dry well is in good condition. The pumps and valves were recently replaced. The electrical system is outdated. Pump Station B-120 has a rectangular vault wet well with submersible pumps.

Figure 3-3. B-100 (left) and B-120 (right) are the only wet wells with non-cylindrical shapes.

Nine pump stations have steel wet wells, eight of which are co-located within a small building with electrical and controls panels. A representative photo is shown in Figure 3-4. At B-114, the wet well is located outside, but adjacent to, the building housing the electrical panels (Figure 3-4).

At all of the pump stations, except B-118 and B-120, a small building houses the electrical panels and, in some cases as discussed earlier, the wet well itself. Each building is a small wood framed structure with a pitched roof. Pump stations B-118 and B-120 have electrical and control panels located outside on stanchions.


Figure 3-4. Typical steel wet well located inside building, B-109 (left), and outside building, B-114 (right).

Due to the age of the pump stations, the electrical systems do not meet current electrical code requirements, as defined in the Nation Electric Code (NEC), in the following areas:

- Electrical equipment located inside buildings also containing station wet wells must be rated for Class 1, Division 2 environment in accordance with NEC Article 500.5(B)(2);
- Conduits containing pump power feeders and level float cables routed from the Class 1, Division 1 rated wet well to the pump control panel must contain an epoxy seal EYS conduit fitting in accordance with NEC Article 501.15(A);
- Access and working space in front of disconnect switches, panelboards, and pump control panels must be in conformance with NEC Article 110.26;
- Level float switches located in wet wells rated Class 1, Division 1 must be intrinsically protected by the use of intrinsic barrier relays in accordance with NEC Article 504; and
- Pump power feeder cables and Class 2 level float signal cabling must be routed in separate conduits and junction boxes in order to be in accordance with NEC Article 725.

Twelve of the 20 pump stations have been retrofitted with variable frequency drives. There is currently no backup power or ability to bring in portable power at any of the pump stations, which is frequently needed as local power outages are common. None of the pump stations have a telemetry system to alert operators when an alarm is triggered. An emergency light is located outside of the pump stations that alert passersby or maintenance staff of an issue.

3.4.1.4 Collection System Piping

The collection system piping consists of a combination of gravity lines and force mains. These pipes have not had significant failures and appear to be in overall good condition since their installation in the 1960s and 1970s.

3.4.1.3 Lake Shore Drive Collection Sub-System

The collection system along Lake Shore Drive starts with pump station B-111 (refer to Figure 3-1) which pumps to B-110, which in turn pumps to B-109, which finally pumps to B-100. From B-100, wastewater is

pumped directly to the WWTF. Pump station B-110 is located behind residences along the shore of Lake Shastina (Figure 3-1). It has a shallow wet well, approximately eight feet in depth, and there is concern for sanitary sewer overflows (SSO)s at B-110 during either equipment failures or power outages as development occurs upstream of B-111. LSCSD staff has reported that an SSO has occurred at B-110, which required cleanup in the adjacent golf course. According to staff reports, pump station B-109 is not adequately sized to handle the future flows from B-111. A bypass is proposed from B-111 along Lake Shore Drive which would bypass B-110 and B-109. This is discussed in more detail in Sections 4 and 5.

3.4.1.4 Tony Lema Drive Collection Sub-System

Sanitary flow along Tony Lema Drive and the side streets, between Sikes Court and the eastern end at the Lake Shastina Club House, flows by gravity to Rossburg Place. This flow was originally supposed to be sent to Pump Station B-120 across the golf course, but instead crosses the golf course to Rock Circle, where the wastewater flows to B-100. In order to alleviate flow loading on B-100, the LSCSD wishes to send the flow from Rossburg Place to B-120, as originally envisioned. Pump Station B-120 is currently underutilized and was designed to handle the additional flows. The proposed project is discussed further in more detail in Sections 4 and 5.

3.4.2 Wastewater Treatment Facility

3.4.2.1 Primary Tank

Flow enters the facility via a six-inch-diameter pipe and is measured by an electronic magnetic flowmeter (magmeter) located in a vault (Figure 3-5). The flowmeter is powered by a solar unit, as there is no electrical power supply at that location.

Figure 3-5. Flow meter vault (left) and primary tank (right) at WWTF.

Influent flow enters the primary tank and then exits to Pond 1 via an overflow baffle/weir structure (Figure 3-5). Solids are retained in the primary tank. The main deficiencies with the primary tank are (1) short circuiting of flow and (2) difficulty with solids removal with existing LSCSD equipment.

Short circuiting in the primary tank is caused by the proximity of the outlet to the inlet. The purpose of the primary tank is to allow for solids removal, both through settling and floating. The short circuiting reduces the residence time and has caused inadequate solids removal in the primary tank.

The primary tank, which is approximately 60 ft long by 45 ft wide by 6 ft deep, cannot be taken offline for cleaning, due to no bypass. Surface solids, which consist of a floating sludge blanket and trash, are removed using a backhoe, which is unable to reach all areas of the tank, which in turn leads to reduced solids removal in the primary tank prior to discharge to Pond 1.

3.4.2.2 Ponds

The existing five ponds (Figure 3-6) are in good condition. Aeration is provided in Ponds 1 and 2 with a single aerator in each pond (Figure 3-7). Ponds 2 and 3 each have an Apex Evaporator unit which enhances the effluent disposal using forced evaporation (Figure 3-7).

Figure 3-7. Pond 1 aerator (left) and pond 2 evaporator (right).

Pond 4 is a lined pond used to store and evaporate excess treated effluent from Pond 2 (Figure 3-8). Pond 5 is an unlined pond and is not currently used (Figure 3-8).

Figure 3-8. Pond 4 (left) is currently lined, whereas Pond 5 (right) is to be lined.

3.4.2.3 Sludge Drying Bed

The surface sludge blanket is periodically removed from the primary tank using a backhoe. The solids are placed in a dump truck and hauled a short distance to a temporary sludge drying bed. The sludge drying bed, which follows from a requirement of the WDR (Appendix 1) for proper solids disposal, consists of a plastic liner placed in a depression on the east side of Pond 1 (Figure 3-9). Water that drains from the sludge is collected in a French drain that sends the flow to a 100-gallon storage container (Figure 3-9), which is periodically pumped and discharged to either Pond 1 or 2 using a portable trash pump.

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SHN Consulting Engineers & Geologists, Inc.	Lake Shastina Community Services District Wastewater System Improvements Lake Shastina, California	Wastewater Treatment Facility Site Map SHN 517027
	April 2003 / WWTF_aerial	Figure 3-6

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The sludge drying bed has been made of temporary materials and is not expected to last more than two years.

Figure 3-9. Temporary sludge drying bed with trench drain and 100 gallon sump.

3.5 Financial Status of Existing Facilities

The only debt on existing facilities that the LSCSD has is on recent upgrades at the WWTF. All other recent upgrades and significant maintenance activities have been covered by the operating budget. Financial reports for the two most recent years are provided in Appendix 2.

3.6 Water/Energy/Waste Audits

As part of this work, SHN discussed energy usage with LSCSD Staff. The LSCSD periodically has reviewed electrical usage. Each pump station has an individual meter and can be reviewed for any inconsistencies. Based on review of recent electrical usage, the LSCSD found no unusual power usage at any of the pump stations except at B-114, which is undergoing an upgrade to correct various deficiencies, including improperly sized pumps which in turn led to poor electrical performance.

4.0 Need for Project

4.1 General

The LSCSD wastewater system is need of upgrades for a number of reasons: (1) to provide improved life expectancy to aging facilities, (2) to provide improved operational efficiency; (3) to provide for system resiliency and redundancy, especially during emergencies; (4) to improve the treatment process; (5) to provide for improved solids/sludge handling; (6) to bring facilities to current electrical code requirements; and (7) to provide for future growth. There are various independent sub-projects to this project (see Table 4-1). These reasons are discussed in further detail in the following sections.

Table 4-1. Descriptions of Independent Sub-Projects Lake Shastina CSD

Sub-Project Title	Description
Individual Pump Station Upgrades	Each pump station upgrade is its own individual project as described in Section 7. Pump station upgrades can be phased or combined based on funding.
Wastewater Treatment Facility (WWTF)	Consists of new primary tank, sludge drying beds, and Pond 5 liner. Project could be phased.
Lake Shore Drive Bypass[1]	New force main along Lake Shore Drive from pump station B-111 to the Palmer Drive bypassing pump stations B-110 and B-109. Note that upgrades to Pump Station B-111 must be done simultaneously.
Tony Lema Drive Diversion[1]	New gravity line sending sanitary flows from Tony Lema Drive to pump station B-120 instead of B-100 as currently done.
1. These two projects can be combined into single project.	

4.2 Health, Sanitation, and Security

4.2.1 Pump Stations

None of the existing pump stations have backup power, or even the ability to set a portable generator should there be a power outage. With a large number of pump stations in the LSCSD and limited staff, there is risk for SSOs in the event of a power outage. The LSCSD's existing portable generators are old and in need of replacement.

There is also no telemetry system to alert an operator that an alarm has been triggered. Currently, when an alarm is triggered, a red light on the exterior of the pump station building turns on, and the LSCSD relies on its staff to notice the alarm lights when making rounds or on residents to contact the LSCSD office. This can cause significant response time delays in the event of an emergency. A radio based and/or cell phone-based telemetry system is needed to allow for operators to be alerted of alarms when they occur.

4.2.2 Sludge Drying Bed

The current WDR (Appendix 1) requires the LSCSD to handle solids disposal according to regulations. A sludge drying bed allows for removal of excess liquid from the solids from the primary tank prior to sending the solids to a landfill disposal site. The LSCSD recently installed a temporary facility with a plastic liner as previously described. Prior to installation of this temporary sludge drying bed, solids were not removed from the primary tank, allowing significant levels of solids to pass into Pond 1, thereby increasing sludge buildup in the ponds and reducing their capacity. A more permanent sludge drying bed structure is needed.

4.2.3 Primary Tank

The primary tank currently experiences short circuiting and cannot be taken offline for cleaning, as described in Section 3. The LSCSD wants to construct a second smaller primary tank to eliminate the short circuiting and allow for the existing primary tank to be cleaned. Details are provided in Sections 5 and 7.

4.3 Aging Infrastructure

4.3.1 Pump Stations

The existing pump stations are aging and are showing evidence of corrosion of the wet well walls and discharge piping. The LSCSD has installed liners in four of the pump stations, often on an unplanned emergency basis, with a fifth scheduled for early 2018. With each liner, the existing discharge piping and submersible pumps have been replaced, and the check valves placed outside the wet well in a valve box.

While there have been some electrical upgrades at a number of the pump stations, including upgrades to variable frequency drives (VFDs), not all of the pump stations have VFDs, and much of the electrical system is not up to current electrical code requirements (see Section 3).

4.3.2 Lake Shore Drive Bypass

Pump Station B-111 receives more flow than was originally designed. This is because a portion of the southernmost area of Lake Shastina was converted from septic tanks to a collection system that sends wastewater flows to B-111. Flows are currently pumped from B-111 to B-110 then to B-109. Pump Station B-110 has a shallow wet well (approximately eight feet deep). In the event of equipment failure or power outage, the minimal storage available in the wet well means there is very limited response time before an SSO could occur. Per staff accounts, an overflow has previously occurred at B-110, causing raw sewage spill onto the adjacent golf course. According to LSCSD staff, the pumps in B-109 are not properly sized to handle the flows from B-111. For these reasons, a force main along Lake Shore Drive bypassing both B-110 and B-109 is desired.

4.3.3 Tony Lema Drive Diversion

Pump Station B-100 receives the vast majority of flow from the LSCSD service area. In order to reduce flows to B-100 and better utilize the capacity in B-120, as was originally intended, the LSCSD wishes to divert wastewater flows from the southern half of Tony Lema Drive along Rossburg Place and the golf course to pump station B-120. Future plans, outside of the scope of this study, include diverting flows from pump station B-108, which currently go to B-100, to B-120 via Tony Lema Drive.

4.4 Reasonable Growth

4.4.1 Pond 5 Liner

During recent years, the existing ponds 1-4 have at times neared capacity, especially during the wet weather season. With growth continuing at current rates, the LSCSD expects to need the storage capacity currently available in Pond 5 within the next five years. This pond is unlined but is otherwise available for use, having been designed and constructed for the purpose of future wastewater storage

5.0 Alternatives Considered

5.1 General

This section discusses the alternatives that were considered for each of the individual projects. In many cases, there was only one conceptual alternative that was evaluated for the reasons listed. For those projects for which more than one alternative were considered, often non-monetary factors determined which alternative would be recommended. The following sections summarize the evaluation process for each project. Details of the recommended alternatives are given in Section 7.

5.2 Pump Station Improvements

5.2.1 Description

5.2.1.1 Wet Well Rehabilitation

The LSCSD has in the past few years rehabilitated five wet wells (Pump stations B-103, B-105, B-113, B-114, and B-116), two concrete and two steel, due to significantly deteriorating conditions that required immediate attention. The entire wet well was gutted and cleaned. A new fiberglass liner, new submersible pumps, and new discharge piping were installed. When the check valves had originally been in the wet well, these were placed in new precast concrete vaults outside the wet well. Diagrams of these improvements for may be seen on the following pages. An indoor wet well schematic is shown in Figure 5-1, and outdoor schematic is shown in Figure 5-2.

The LSCSD would like to utilize the same type of rehabilitation at all of the pump stations. SHN evaluated the rehabilitated wet wells and we concur with the rehabilitation solution, so no other alternatives were evaluated except as noted in the following paragraph. A rehabilitated concrete wet well (Pump Station B-113), and a rehabilitated steel wet well (Pump Station B-103) are shown in Figure 5-3.

Figure 5-3. Rehabilitated concrete wet well, B-113 (left), and steel wet well, B-103 (right).

At pump stations B-101 and B-102, there is no access for a large crane to bring in a fiberglass liner to the pump station, so another type of liner is needed at these pump stations. Both of these pump stations are steel wet wells located within a wood frame structure. Due to the access issues at these pump stations, two options were considered: (1) A sprayed-on liner and (2) a flexible hanging liner. There are various sprayed on liner materials, such as calcium aluminates and urethane epoxy. A flexible hanging liner, manufactured

by Flexi-Liner (www.flexi-liner.com) is constructed of a modified vinyl-based polymer. A final decision will be made during final design. For the purposes of this study, a budgetary amount for the spray-on liner, which is expected to be more expensive than the hanging liner, is included for budgeting purposes.

Two of the pump stations, B-100 and B-120, are in good condition and are not in need of lining.

5.2.1.2 Standby Power

For standby power in the event of a power outage, two alternatives were considered: (1) Permanent standby generators at each pump station or (2) portable generators with hookups.

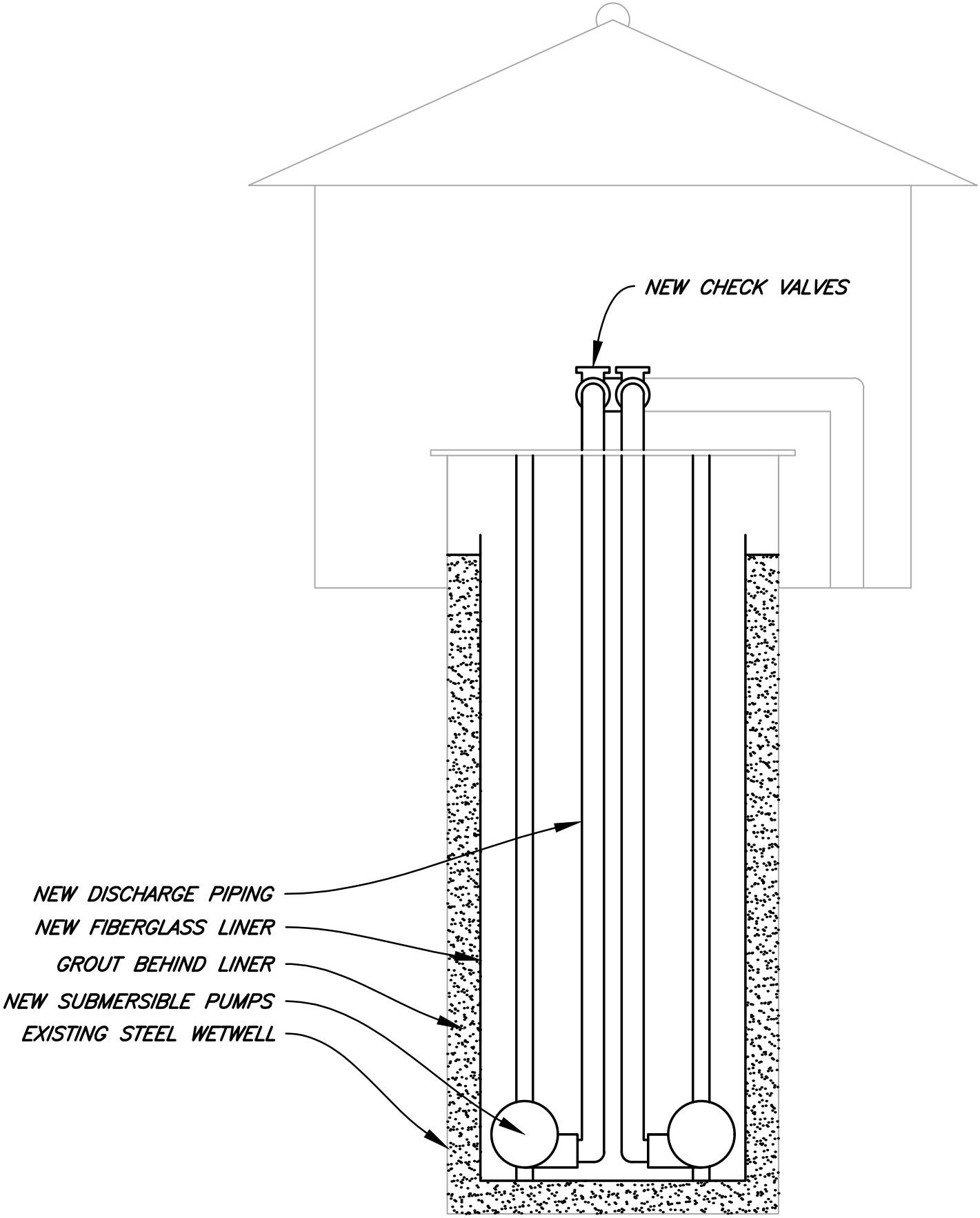
A permanent standby generator would be mounted on a concrete pad and have a self-contained fuel storage tank. An automatic transfer switch (ATS) would be located by the electrical panels and, in the event of a power outage, would automatically switch the power source from the power company to the generator, which would automatically be turned on at that time as well.

An alternative standby power solution is to bring a trailer-mounted portable generator to the needed pump station(s). The portable generator would be plugged into a receptacle that would supply power to the pump station. An operator would then manually switch the power source from the power company to the generator via a manual transfer switch (MTS). Even with the significant number of pump stations within the LSCSD service area, portable power was determined to be a feasible option because (1) power outages usually do not last long and (2) most of the pump stations have low enough flows and sufficient storage to allow for delayed response times.

Permanent standby generators were determined generally not to be feasible due to land availability issues, proximity to residential housing, initial cost and long-term maintenance costs. At most pump stations, the LSCSD owns only a small footprint of land around the pump station, leaving no room for additional features. In many cases, there is no physical room for a generator due to site constraints, even if additional land were acquired for the generator. For this reason, the permanent standby generator alternative was eliminated at all pump stations except for B-100, as discussed below.

One of the main concerns of the LSCSD with pump station B-100 has been response time in the event of a power outage, increasing the risk of an SSO. B-100 receives flow directly from six pump stations and indirectly from five additional pump stations. B-100 pumps directly to the WWTF. The pumps in B-100 have been recently replaced, and the pump station itself appears to have at least 10-20 years of service life left before significant improvements are needed. For these reasons, a permanent standby generator, which is the typical solution to address emergency power supply, was the only alternative evaluated, since a portable generator would not improve the response time.

Two possible locations for the permanent standby generator at B-100 were evaluated: (1) Inside the existing structure housing the control panels and (2) outside along the roadway next to the wet well. After evaluating the size of the required generator, it was determined that the existing wood frame building would need to be enlarged, requiring a new roof and additional concrete slab foundation. After discussion with LSCSD staff, modifying the existing building was not a favorable solution. Therefore, the recommended alternative is to place a stand-alone permanent generator outside between Lake Shore Drive and the existing building, next to the existing wet well. Additional details are provided in Section 7.



SHN Consulting Engineers & Geologists, Inc.	Lake Shastina Community Services District Wastewater PER Lake Shastina, California	Indoor Wetwell Recommended Wetwell Layout SHN 517027
	February 2018	517027-WETWELL-FIGS	Figure 5-1

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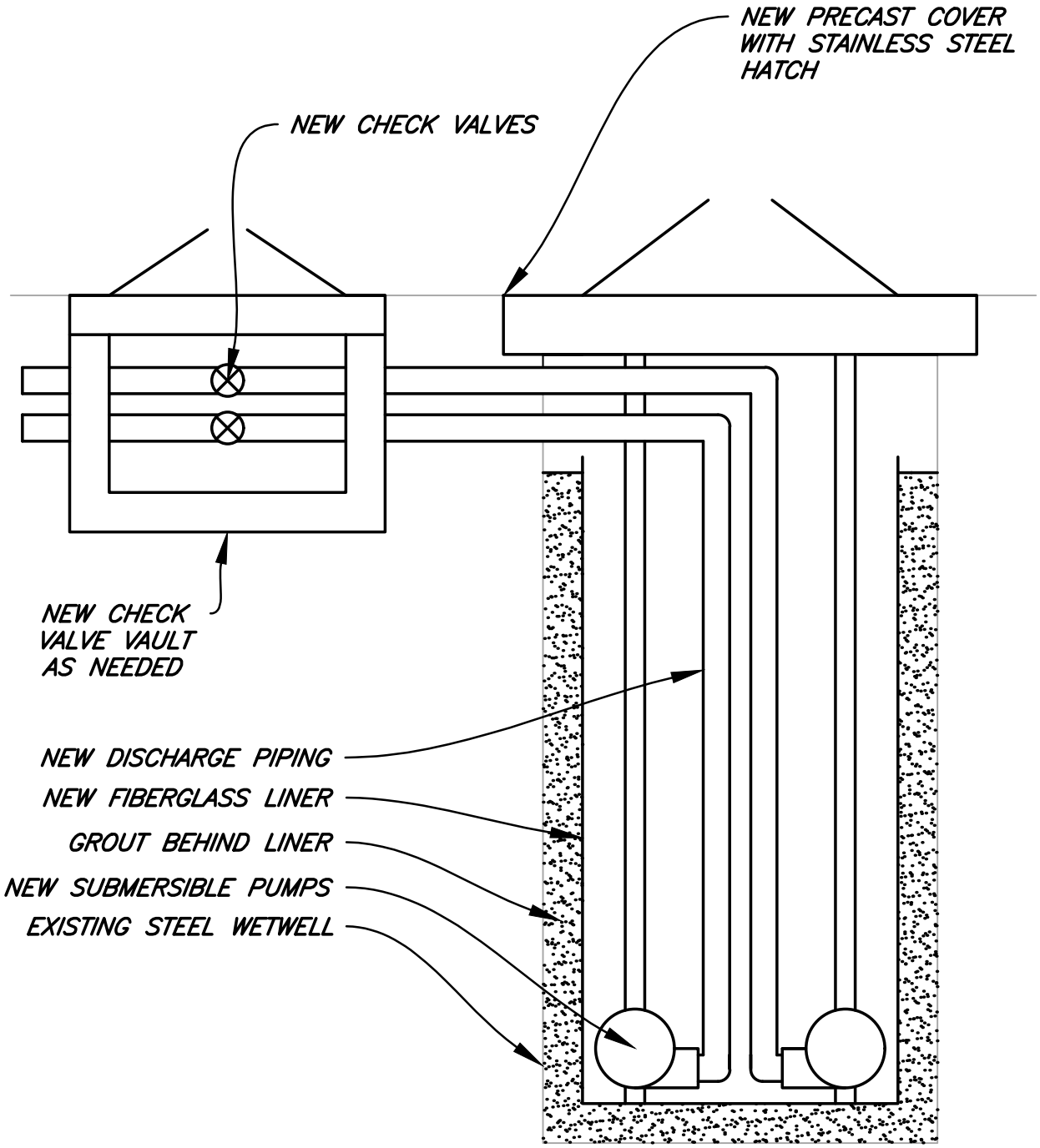

SHN Consulting Engineers & Geologists, Inc.	Lake Shastina Community Services District Wastewater PER Lake Shastina, California	Outdoor Wetwell Recommended Wetwell Layout SHN 517027
	February 2018 / 517027-WETWELL-FIGS	Figure 5-2

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5.2.1.3 Telemetry

None of the pump stations currently have any form of telemetry or supervisory control and data acquisition (SCADA) to alert an operator of alarms and operating status. Currently, if an alarm condition is met, such as high water in a wet well, an exterior-mounted red light turns on. Notification to the LSCSD occurs when local residents report the red light and/or LSCSD employees notice the red light during their daily rounds.

The LSCSD recently selected a telemetry system for their drinking water system and requested an evaluation for use with the wastewater system as part of this study. The selected system for the drinking water system is the XiO Cloud Based SCADA, created by XiO, Inc. (www.xiowatersystems.com). Integrating the same telemetry system from the same vendor for both the drinking water and wastewater systems has distinct operational advantages, including cost-effectiveness, ease of use, and integrated management. For this reason, telemetry systems by other vendors were not evaluated.

The evaluation of a SCADA System communication of Wastewater Lift Station and WWTP flowmeter status has been guided by a directive from the Owner to follow a system configuration presently being installed on the community water supply system facilities. The purpose of following the previous configuration is to allow the two systems to be configured through common headquarters equipment and allow programming, maintenance, spare parts associated with both systems to be identical where possible.

The system is to be based on packaged equipment manufactured, supplied and supported by XiO Scada Control Company located in San Anselmo, California.

The system is Web Cloud based using cell phone carrier configuration for uploading data from XiO Soft-I/O controllers located at each lift station or the WWTF.

The XiO Scada System provides unlimited historical data storage. XiO operated geographically distributed and redundant database servers keep the data safe from catastrophic events such as natural diasters or potential cyber attacks.

The use of XiO Cloud Control Center for system data storage will allow only authorized system operators with secure login credentials to access the data using smartphone, tablet or computer.

Individual lift stations will be provided with packaged pre-programmed controller equipment configured for either direct cell phone communication or with non-licensed low frequency (900 MHz) radio communication antenna and electronics (to be determined by evaluation performed by a XiO field specialist).

XiO will coordinate with various cellular carriers to determine cell phone signal strength based on carrier distribution transmission pole locations.

Costs included in this report cover the provision of controller equipment and startup support services by XiO Company. Ongoing monthly charges, estimated as $39 per cellular site connection, have not been included.

5.2.1.4 Controls

Controls at most of the pump stations have been updated with newer features including variable frequency drives and new control panels. The LSCSD requested a review of the recent upgrades to provide a complete

recommendation for upgrades of the controls panels and those pump stations that have not been upgraded as well as any touch-up work needed at those pump stations with the updated controls. There were no significant alternatives evaluated for inclusion in this section of the PER. Additional information and recommendations are provided in Section 7.

5.2.1.5 Wiring

At many of the pump stations, the electrical wiring between the electrical panels and the wet wells does not meet current electrical code requirements as described in Section 3. In general, when improvements are being made to an electrical/controls system, the entire system should be upgraded to meet current code requirements. The recommendations, presented in Section 7, assume that non-compliant features of the electrical system will be upgraded to meet code compliance when other electrical upgrades are being installed.

5.2.2 Design Criteria

The general design criteria are as follows:

- Provide for backup power to allow for continued operation during power outages and minimizing sanitary sewer overflows;
- Upgrade wet wells with liner, new pumps, and new discharge piping to extend useful life;
- Provide telemetry to be able to alert operators of alarms; and
- Upgrade controls with variable frequency drives.

5.2.3 Environmental Impacts

Pump station improvements occur within the limits of existing facilities and on areas dedicated for wastewater pump stations with previous site disturbances. Repair and upgrade activities are considered routine maintenance, repairs and operations on existing facilities and are not included as part of the environmental review of the Project as they are Existing Facilities that are Categorically Exempt (Article 19, Categorical Exemptions, Section 15301, Class 1). Environmental impacts have previously occurred at the pump station facilities and this project will not have an impact on the environment.

5.2.4 Land Requirements

No new land requirements will be needed.

5.2.5 Potential Construction Problems

Rocky soil conditions have been encountered in this area. The Lake Shore Drive Bypass and Tony Lema Drive Diversion projects could expect to encounter rocky soil along some locations of the pipeline alignments.

5.2.6 Cost Estimates

Cost estimates are provided in Section 7.5. In general, non-monetary factors determined the recommendations presented in Section 7.

5.3 WWTF Improvements

5.3.1 Description

5.3.1.1 Primary Tank

Two alternatives were considered to improve the treatment process and reduce short circuiting in the existing tank:

- Addition of a curtain in the existing primary tank; and
- Construction a second primary tank.

The curtain was determined to acceptable as it would not allow the existing primary tank to be taken offline for cleaning and maintenance.

With limited space available, the most feasible location for an additional primary solids removal tank is along the east side of the existing primary tank (refer to Figure 7-23). The tank would be similar to the existing tank in depth and construction. The size would be such that it would allow for better solids removal by a backhoe. Raw wastewater would enter the new primary tank then overflow to the existing primary solids removal tank. A bypass directly from the new primary tank to Pond 1 would be installed so that the existing primary tank can be taken offline for maintenance. Due to the configuration of the existing influent piping, this project would include a new flow meter. The existing inflow to the existing primary tank, including the flow meter, would remain in case the new tank needed to be taken offline.

5.3.1.2 Sludge Drying Beds

The proposed location for the permanent sludge drying bed is where the existing temporary sludge drying bed is located. Immediately to the north, there is a similar area for the second sludge drying bed. These two locations will provide sufficient storage of sludge removed from the primary tanks, alternating usage to allow sufficient time for the sludge in the other bed to dry prior to landfill disposal. Additional details are presented in Section 7.

5.3.1.3 Pond 5 Liner

Ponds 4 and 5 were constructed at the same time with Pond 4 being the only one lined. This project will line Pond 5 to allow for future wastewater effluent storage. Vegetation that has re-grown in Pond 5 since its construction would be removed, along with the top two to three inches of soil to facilitate placement of a 60-mil High Density Polyethelene (HDPE) liner. . Additional details are presented in Section 7.

5.3.2 Design Criteria

The general design criteria are as follows:

- Provide an additional primary solids setting tank to allow for better solids management and allow for taking each primary tank offline for maintenance.
- Provide two sludge drying beds to allow for maximum drying prior to disposal;
- Install a 60-mil HDPE plastic liner for pond 5 to accommodate future effluent storage 4;

5.3.3 Environmental Impacts

Environmental impacts are minor, with some scattered native and non-native vegetation being removed from existing Pond 5 and around the areas proposed for permanent sludge drying beds. Wastewater will continue to be managed at this facility and the installation of the improvements will ensure that there are

no inappropriate discharges due to wastewater storage capacity issues of from effluent draining from the sludge drying beds.

The WWTF site has historically been impacted by wastewater development activities that have installed the existing improvements, removed vegetation, graded roads and storage ponds, installed underground piping, located groundwater monitoring wells and other appurtenances for management of the Districts wastewater. This Project is not anticipated to have any significant negative impacts on the environment.

5.3.4 Land Requirements

No additional land requirements are needed for any of the proposed improvements at the WWTF.

5.3.5 Potential Construction Problems

No construction problems are anticipated.

5.3.6 Cost Estimates

Cost estimates are provided in Section 7.5. In general, non-monetary factors determined the recommendations presented in Section 7.

5.4 Lake Shore Drive Bypass

5.4.1 Description

The Lake Shore Drive Bypass line takes wastewater pumped from pump station B-111 and bypasses pump stations B-110 and B-109, discharging to the gravity line in Lake Shore Drive at Palmer Drive, where the force main from B-109 also discharges. The bypass line allows for operational efficiencies and reduction of potential future SSOs at B-110.

Another alternative considered was to upgrade both pump stations B-110 and B-109. However, based on constructability issues, it was determined that a complete bypass of B-110 and B-109 was the most reasonable and cost-effective approach to handle the flow from B-111. Pump stations B-110 and B-109 would still remain in operation, but take only the gravity flows from the residences located near the pump stations and exclude flow from B-111.

The bypass force main will be four inches in diameter and constructed of polyvinylchloride (PVC) pipe. The alignment is proposed to be within Lake Shore Drive, with the exact alignment determined during final design. Additional details are presented in Section 7.

5.4.2 Design Criteria

The general design criteria are as follows:

- Bypass pump stations B-110 and B-109; and
- Upgrade pump station B-111 as needed.

5.4.3 Environmental Impacts

The installation of new bypass sewer line within the paved roadway of Lake Shore Drive is seen as having no significant environmental impacts. Work at the pump station has previously impacted the pump station sites, and construction of Lake Shore Drive and existing underground utilities have also impacted the alignment along the proposed route. No vegetation or other impacts to biological resources are anticipated,

though there is always the potential for impacts to buried archaeological resources. Standard mitigation measures for the protection of unanticipated buried archaeological resources are expected to provide sufficient protection of these resources.

5.4.4 Land Requirements

A utility easement along Lake Shore Drive will be required.

5.4.5 Potential Construction Problems

Soils in the LSCSD service area can vary. During previous projects, rocky soil has been encountered. However, no significant construction challenges are anticipated along the proposed alignment.

5.4.6 Cost Estimates

Cost estimates are provided in Section 7.5. In general, non-monetary factors determined the recommendations presented in Section 7.

5.5 Tony Lema Drive Diversion

5.5.1 Description

Wastewater from most of Tony Lema Drive and associated side streets flows to Rossburg Court, then across the golf course to Rock Circle then to Lake Shore Drive and finally to pump station B-100. The Tony Lema Drive Diversion would divert wastewater from going to the overburdened B-100 pump station and send wastewater from Tony Lema Drive across the golf course to existing pump station B-120, which has significant capacity to accommodate this wastewater. Two slightly different alignments (Figure 5-4) that accomplish the same goal of diverting wastewater to pump station B-120 were reviewed with the LSCSD staff and direction was given to proceed with Alternative 1. No further analysis was conducted on Alignment 2.

Another alternative was to upgrade pump station B-100 but this was determined not to be a feasible alternative because the pumps at B-100 have recently been replaced and B-120 has underutilized capacity.

Additional detail about the recommended alternative is provided in Section 7.

5.5.2 Design Criteria

The general design criterion is as follows:

- Divert flow from Tony Lema Drive at Rossburg Court across the golf course to pump station B-120 as gravity flow.

5.5.3 Environmental Impacts

Environmental impacts to this project component are limited to surface vegetation on the golf course and unknown buried archaeological resources; the balance of the project component is located within existing paved streets of Tony Lema Drive. Impacts to surface vegetation are limited to non-native turf grass of the golf course and some minor native and non-native brush that lines the golf course. Significant historical disturbance has occurred on and along the margins of the golf course. No botanical species of special concern were identified as likely present along the alignment. Mitigation measures for protection of migratory birds is anticipated to provide adequate protection for nesting birds that may use the site prior to construction activities.

Excavation activities may encounter unknown archaeological resources, and the implementation of standard mitigation measures for the protection of these resources is expected to reduce any impacts to a less than significant level.

5.5.4 Land Requirements

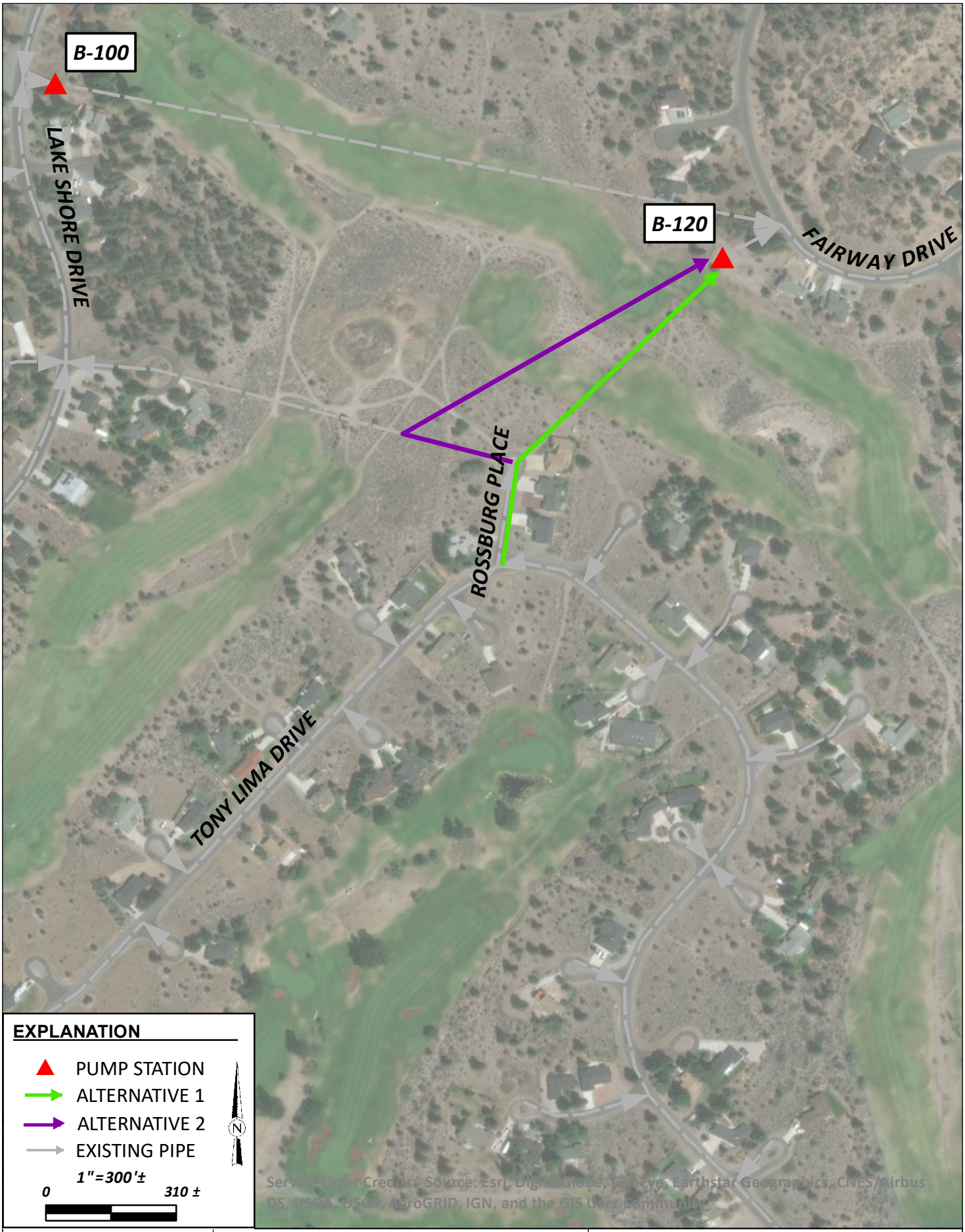
New easements along the pipeline alignment will be required.

5.5.5 Potential Construction Problems

No significant construction problems are anticipated.

5.5.6 Cost Estimates

Cost estimates are provided in Section 7.5. In general, non-monetary factors determined the recommendations presented in Section 7.



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SHN Consulting Engineers & Geologists, Inc.	Lake Shastina Community Services District Wastewater System Improvements Lake Shastina, California	Tony Lima Force Main Pipe Realignment SHN 517027
	February 2018 / TonyLima	Figure 5-4

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6.0 Selection of an Alternative

6.1 Life Cycle Cost Analysis

Life cycle costs analyses were not performed for the projects described in Section 5 for the following reasons:

- At the pump stations, the LSCSD wished to continue with the upgrades (wet well rehabilitation, electrical and controls upgrades, etc.) using the same materials, methods, and equipment as has already been used in order to have consistency among all of the pump stations.
- At the WWTF, only one planning-level alternative appeared feasible for each of the subprojects (primary tank, sludge drying beds, and Pond 5 liner).
- For the Lake Shore Drive Bypass and Tony Lema Drive Diversion projects, only one planning-level alternative appeared feasible.

6.2 Non-Monetary Factors

Non-monetary factors which influenced alternative selection included the following:

- Having consistency between the future pump station upgrades and those already upgraded in terms of materials and equipment improves operational efficiency.
- Space and operational constraints often reduced the available feasible alternatives to one.
- The LSCSD has already selected an equipment vendor for the telemetry system for their water system and would like to use the same vendor for the wastewater system.

7.0 Proposed Project (Recommended Alternative)

7.1 Preliminary Project Design

7.1.1 General

The following sections describe the individual projects. Projects are described separately by pump station, by pipeline, and combined at the WWTF.

The pump station upgrades are listed individually by pump station in order to facilitate performing upgrades in a phased approach based on funding and condition. Many of the upgrades are essentially the same at each pump station. Costs shown are based on performing upgrades at each pump station individually. A summary of the overall pump station improvements is presented in Table 7-1.

In addition two portable generators will be needed to provide the backup power at two pump stations. Details are provided after the descriptions for the individual pump stations.

Table 7-1 Summary of Pump Station Improvements
Lake Shastina CCSD

Pump Station	Wetwell Upgrades[1]	Electrical and Instrumentation / Controls Upgrades[2]
B-100		X
B-101	X	X
B-102	X	X
B-103		X
B-104	X	X
B-105		X
B-106	X	X
B-107	X	X
B-108	X	X
B-109	X	X
B-110	X	X
B-111	X	X
B-112	X	X
B-113		X
B-114		X
B-115	X	X
B-116		X
B-117	X	X
B-118	X	X
B-120		X

1. Upgrades generally include a new liner, new submersible pumps, and new discharge piping as described in detail for each pump station.
2. Upgrades generally include electrical system upgrades, controls upgrades, backup power, and telemetry as described in detail for each pump station.

7.1.2 Pump Station B-100

The proposed improvements at Pump Station B-100 generally include a new permanent backup generator, electrical upgrades, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 7-1 and 7-2. Detailed cost estimates are provided in Table 7-2 and Appendix 3.

1. Remove and discard all existing electrical from inside the building with the exception of the station supply and exhaust fans serving the drywell. Existing utility meter on the building exterior is to remain in service without modification.
2. Pumps located in the drywell and associated conduits and conductors routed underground to the existing building are to be disconnected from the existing Station Pump Control Panel and be connected to the new Custom Pump Control Panel.
3. Existing level float switches and associated splice handholes located adjacent to the wet well are to be removed.
4. Provide permanent onsite standby power equipment consisting of a 40-kilowatt (KW) diesel generator with integral fuel tank, residential rated exhaust silencer, sound attenuated skintight enclosure, an automatic transfer switch, and concrete equipment pad.
5. Provide a custom Pump Control Panel containing individual breaker and VFD controller for each pump, Mercoid programmed controller, intrinsic barrier relays for level float circuitry and interface with station telemetry equipment.
6. Provide 480-volt (V) to 120/240V dry type transformer and panel board to serve existing building and drywell 120V electrical equipment.
7. Provide cell phone transmitter and antenna, located at the building to be used for transmitting station status to headquarters via telemetry communications.
8. Provide upgrade modifications to existing 120V electrical located in the drywell.
9. Provide new level float switches in the wet well and associated new handhole with National Electrical Manufacturers Association (NEMA) 4 junction box and conduit seal fittings located adjacent to the wet well.

Table 7-2 Pump Station B-100 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

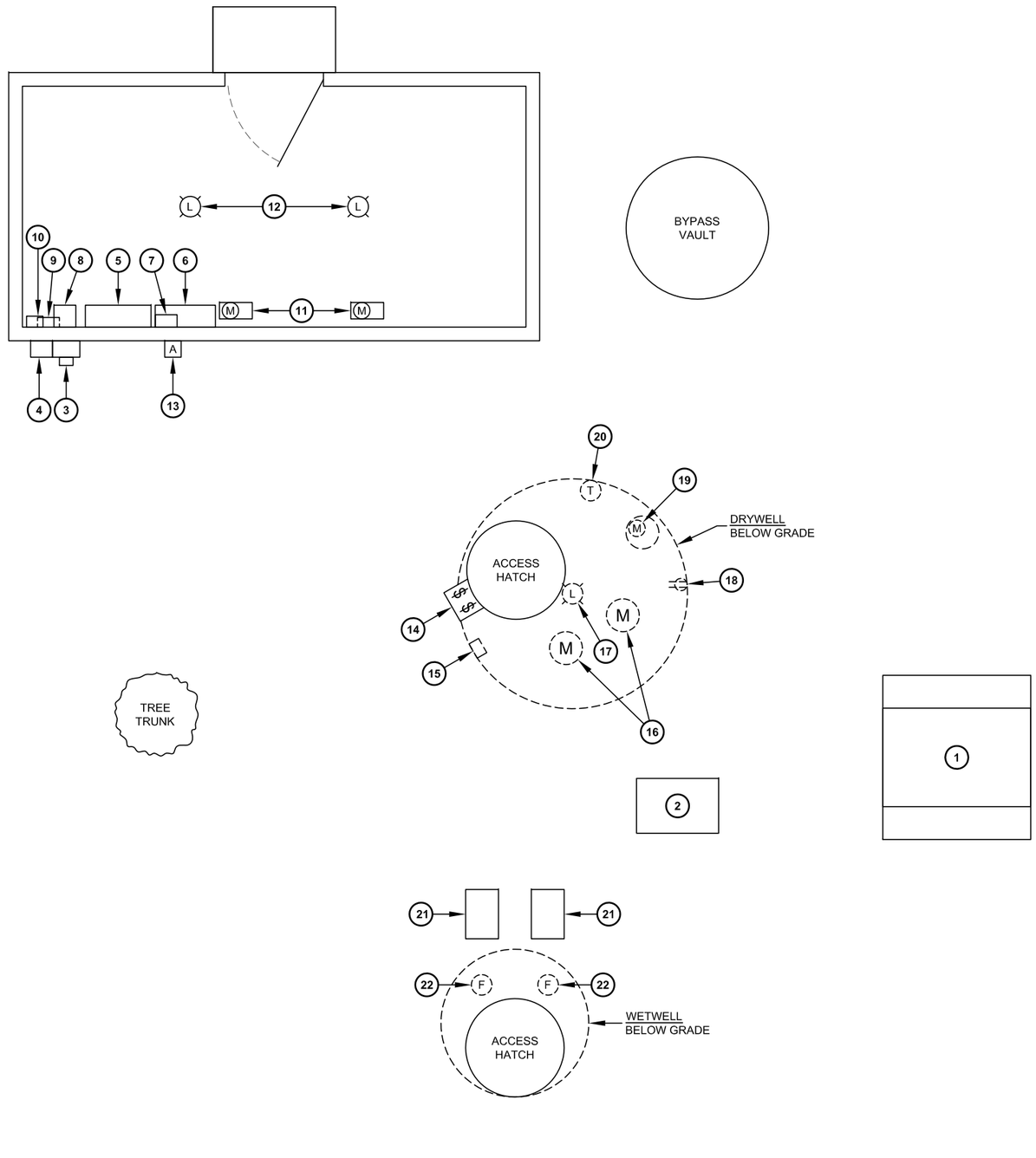
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$0
Electrical Upgrades[3]	$102,345
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$105,354
Construction Contingency (20%):	$21,071
Total Construction:	**$126,425**
Engineering, Administration (15%)	$18,964
Total Project:	**$145,389**

1. See Appendix 3 for additional detail.
2. Wet well rehabilitation is not needed for this pump station.
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.3 Pump Station B-101

The proposed improvements at Pump Station B-101 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-1 and 7-3. Detailed cost estimates are provided in Table 7-3 and Appendix 3.

1. Provide new wet well liner using either spray on material or a flexible hanging liner.
2. Relocate station power disconnect switch, breaker panel, station pump control panel and receptacle from inside the building to a new painted steel, 6 foot high, 6 foot wide, 18 inch deep Electrical Equipment Enclosure located outdoors on the West side of the building. The existing utility service meter will require relocation. A new 8 foot by 5 foot concrete pad will be required.
3. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the Electrical Equipment Enclosure and a post mounted receptacle located near the existing pad-mounted utility transformer. Provide trenching, backfill, conduit and wire routed within an existing utility right-of-way.
4. Provide cell phone transmitter and antenna, located at the Electrical Equipment Enclosure to be used for transmitting station status to headquarters via telemetry communications.
5. Provide new box with intrinsic barrier relays for float circuitry protection, and enclosure light with associated switch inside the Electrical Equipment Enclosure.
6. Replace electrical that is to remain inside the existing building consisting of pump power and float signal junction boxes and associated conduit and wire, with material and configuration rated Class 1, Division 1. Building interior lighting will consist of a new handheld light emitting diode (LED) spotlight cord connected to a receptacle inside the Electrical Equipment Enclosure.



PLAN - STATION 100 - EXISTING

NOT TO SCALE

EQUIPMENT LIST - STATION 100			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	PAD MOUNTED UTILITY TRANSFORMER	REMAIN	-
2	UTILITY SERVICE PRIMARY / SECONDARY HANDHOLE	REMAIN	-
3	UTILITY SERVICE METER	REMAIN	-
4	STATION POWER DISCONNECT SWITCH	REMAIN	-
5	PUMP MOTOR STARTER PANEL	REMOVE	D
6	CONTROL PANEL WITH MERCOID PUMP CONTROLLER	REMOVE	D
7	SECURITY ALARM PANEL	RELOCATE	F
8	480-120/240V TRANSFORMER	REMOVE	F
9	TRANSFORMER DISCONNECT SWITCH	REMOVE	F
10	BREAKER PANEL	REMOVE	F
11	DRY WELL SUPPLY AND EXHAUST AIR FANS	REMAIN	-
12	BUILDING INTERIOR LIGHTS	REMAIN	-
13	STATION ALARM ANNUNCIATOR	REMAIN	-
14	DRYWELL LIGHT AND FAN SWITCHES (AT GRADE)	REMOVE	F
15	PUMP CONTROL SWITCHES	REMOVE	D
16	PUMP MOTORS	REMAIN	-
17	DRYWELL LIGHT FIXTURE	REMAIN	-
18	DRYWELL RECEPTACLE	REMAIN	-
19	DRYWELL SUMP PUMP WITH FLOAT	REMOVE	F
20	DRYWELL THERMOSTAT (FOR EXHAUST FAN CONTROL)	REMAIN	-
21	SIGNAL HAND HOLE	REMOVE	D
22	WETWELL LEVEL FLOAT SWITCHES	REMOVE	D
23	BUILDING LIGHT SWITCH	NEW	F
24	SCADA CELL ANTENNA	NEW	B
25	SCADA TELEMETRY TRANSMITTER	NEW	B
26	BREAKER PANEL	NEW	F
27	480-120/240V TRANSFORMER	NEW	F
28	DUPLEX RECEPTACLE	NEW	F
29	STATION PUMP CONTROL PANEL (INCLUDING VFD'S)	NEW	D
30	AUTOMATIC TRANSFER SWITCH (ATS)	NEW	A
31	DIESEL GENERATOR WITH INTEGRAL FUEL TANK	NEW	A
32	DRYWELL LIGHT AND FAN SWITCHES (AT GRADE)	NEW	F
33	PUMP CONTROL SWITCHES	NEW	D
34	DRYWELL SUMP PUMP WITH FLOAT	NEW	F
35	SIGNAL HANDHOLE	NEW	D
36	LEVEL FLOAT CABLE SPLICE BOX	NEW	D
37	LEVEL FLOAT SWITCHES	NEW	D

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

SHN Consulting Engineers & Geologists, Inc.

RSE RICHARD SAMPLE ENGINEERING

Lake Shastina Community Services District
Wastewater PER
Lake Shastina, California

LIFT STATION B100
EXISTING PLAN, EQUIPMENT LIST
SHN 517027

April 2018 | RSE1708 ELECTRICAL FIGURES | Figure 7-1

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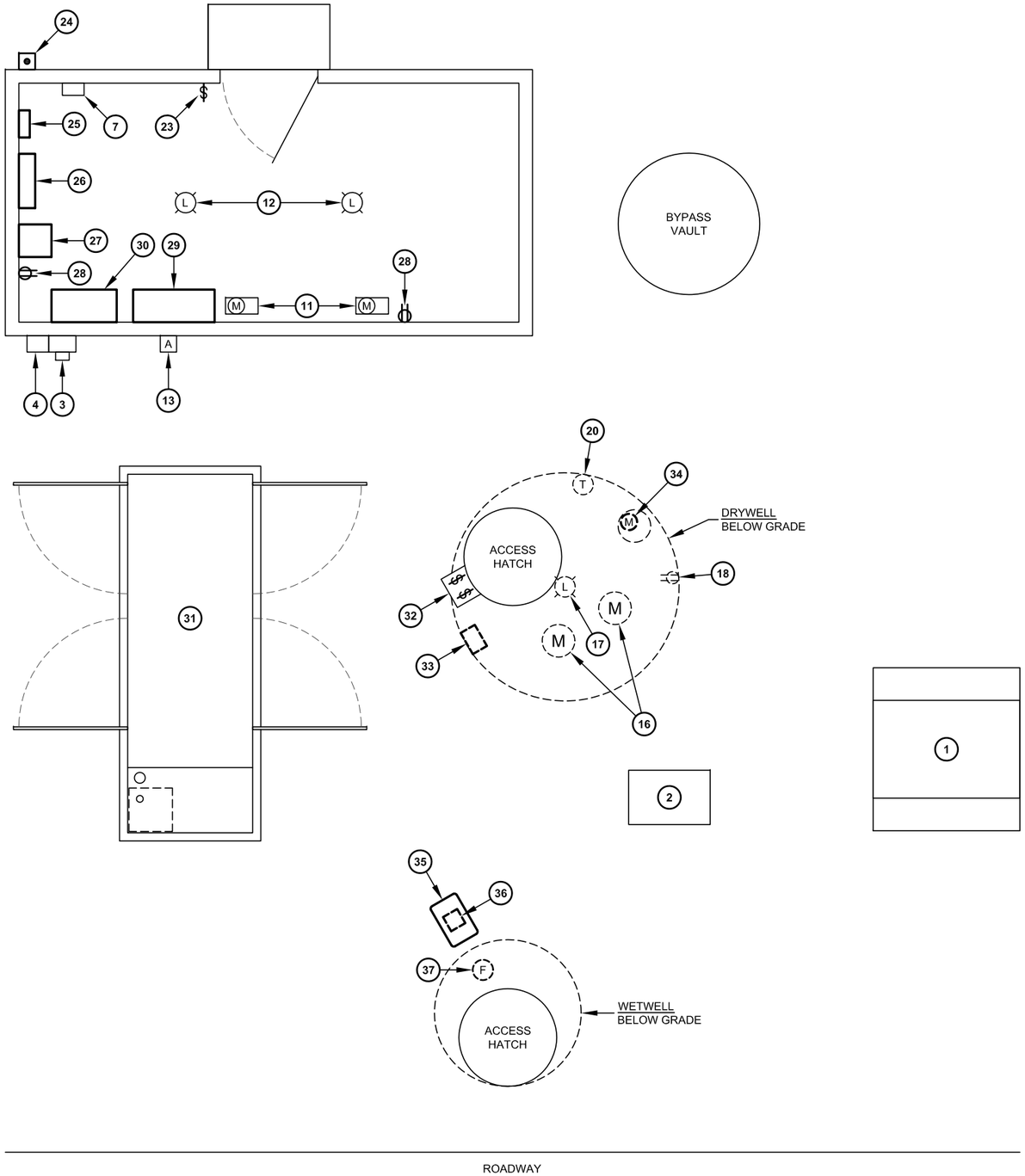

PLAN - STATION 100 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 100			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	PAD MOUNTED UTILITY TRANSFORMER	REMAIN	-
2	UTILITY SERVICE PRIMARY / SECONDARY HANDHOLE	REMAIN	-
3	UTILITY SERVICE METER	REMAIN	-
4	STATION POWER DISCONNECT SWITCH	REMAIN	-
5	PUMP MOTOR STARTER PANEL	REMOVE	D
6	CONTROL PANEL WITH MERCOID PUMP CONTROLLER	REMOVE	D
7	SECURITY ALARM PANEL	RELOCATE	F
8	480-120/240V TRANSFORMER	REMOVE	F
9	TRANSFORMER DISCONNECT SWITCH	REMOVE	F
10	BREAKER PANEL	REMOVE	F
11	DRY WELL SUPPLY AND EXHAUST AIR FANS	REMAIN	-
12	BUILDING INTERIOR LIGHTS	REMAIN	-
13	STATION ALARM ANNUNCIATOR	REMAIN	-
14	DRYWELL LIGHT AND FAN SWITCHES (AT GRADE)	REMOVE	F
15	PUMP CONTROL SWITCHES	REMOVE	D
16	PUMP MOTORS	REMAIN	-
17	DRYWELL LIGHT FIXTURE	REMAIN	-
18	DRYWELL RECEPTACLE	REMAIN	-
19	DRYWELL SUMP PUMP WITH FLOAT	REMOVE	F
20	DRYWELL THERMOSTAT (FOR EXHAUST FAN CONTROL)	REMAIN	-
21	SIGNAL HAND HOLE	REMOVE	D
22	WETWELL LEVEL FLOAT SWITCHES	REMOVE	D
23	BUILDING LIGHT SWITCH	NEW	F
24	SCADA CELL ANTENNA	NEW	B
25	SCADA TELEMETRY TRANSMITTER	NEW	B
26	BREAKER PANEL	NEW	F
27	480-120/240V TRANSFORMER	NEW	F
28	DUPLEX RECEPTACLE	NEW	F
29	STATION PUMP CONTROL PANEL (INCLUDING VFD'S)	NEW	D
30	AUTOMATIC TRANSFER SWITCH (ATS)	NEW	A
31	DIESEL GENERATOR WITH INTEGRAL FUEL TANK	NEW	A
32	DRYWELL LIGHT AND FAN SWITCHES (AT GRADE)	NEW	F
33	PUMP CONTROL SWITCHES	NEW	D
34	DRYWELL SUMP PUMP WITH FLOAT	NEW	F
35	SIGNAL HANDHOLE	NEW	D
36	LEVEL FLOAT CABLE SPLICE BOX	NEW	D
37	LEVEL FLOAT SWITCHES	NEW	D

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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Lake Shastina Community Services District
Wastewater PER
Lake Shastina, California

LIFT STATION B100
UPDATED PLAN, EQUIPMENT LIST
SHN 517027

April 2018 | RSE1708 ELECTRICAL FIGURES | Figure 7-2

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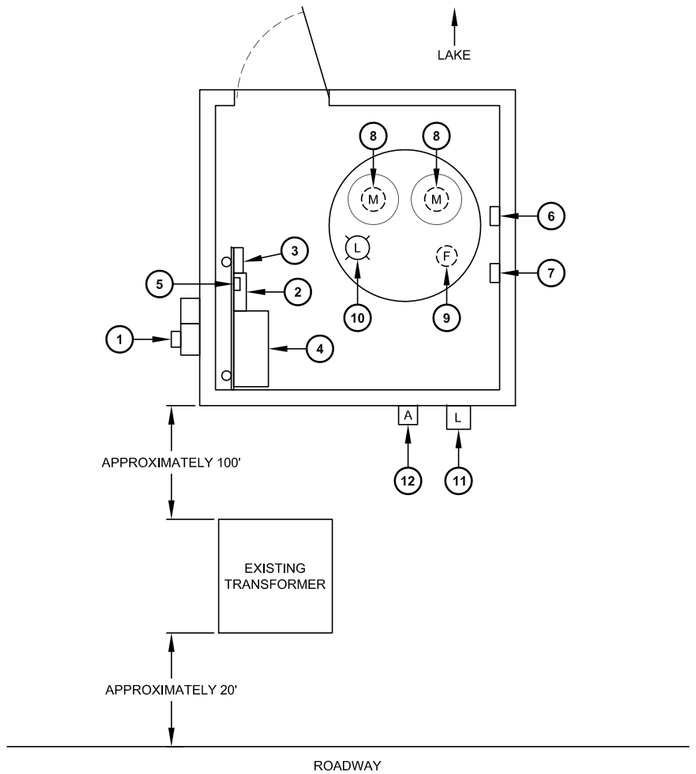
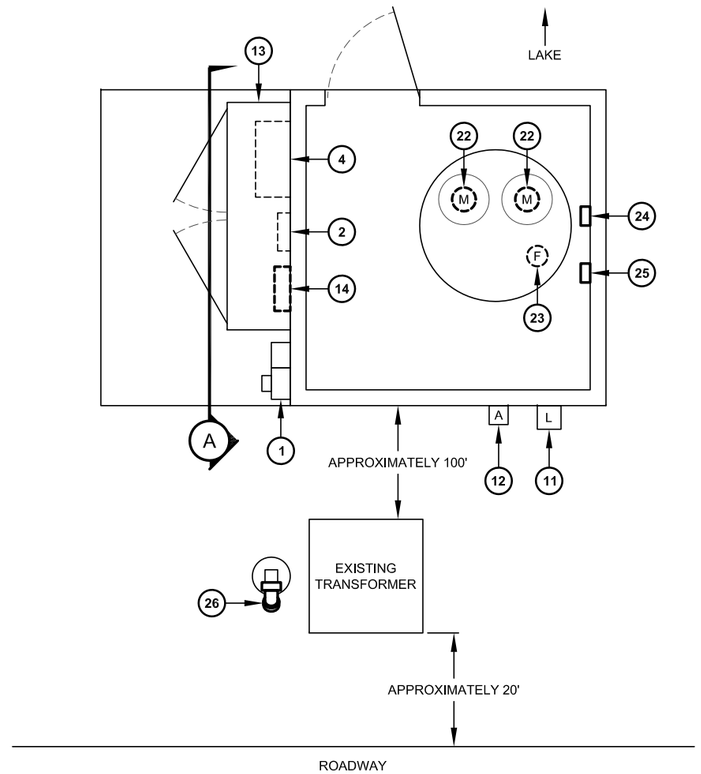


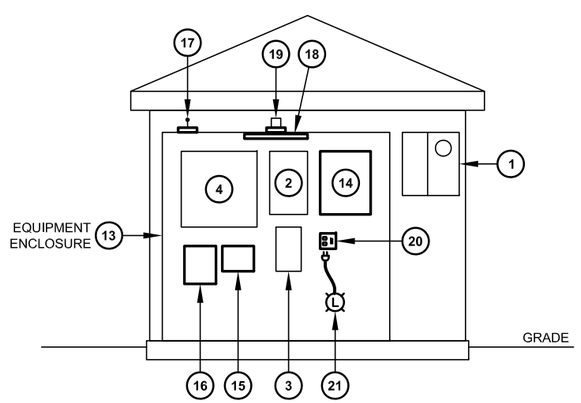
PLAN - STATION 101 - EXISTING

NOT TO SCALE



PLAN - STATION 101 - UPDATED

NOT TO SCALE



A **ELEVATION - ELECTRICAL EQUIPMENT**

NOT TO SCALE

EQUIPMENT LIST - STATION 101			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	C
2	STATION POWER DISCONNECT SWITCH	RELOCATE	C
3	BREAKER PANEL	RELOCATE	C
4	STATION PUMP CONTROL PANEL	RELOCATE	C
5	DUPLEX RECEPTACLE	REMOVE	C
6	PUMP POWER CABLE SPLICE BOX	REMOVE	C
7	LEVEL FLOAT CABLE SPLICE BOX	REMOVE	C
8	SUBMERSIBLE PUMP MOTORS	REMOVE	E
9	LEVEL FLOAT SWITCHES	REMOVE	C
10	LIGHT FIXTURE - BUILDING INTERIOR	REMOVE	C
11	LIGHT FIXTURE - BUILDING EXTERIOR	REUSE	C
12	STATION ALARM ANNUNCIATOR	REUSE	-
13	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	C
14	MANUAL TRANSFER SWITCH	NEW	A
15	INTRINSIC BARRIER RELAY BOX	NEW	C
16	SCADA TELEMETRY TRANSMITTER	NEW	B
17	SCADA CELL ANTENNA	NEW	B
18	ENCLOSURE LED LIGHT	NEW	C
19	STATION ALARM ANNUNCIATOR	NEW	C
20	ENCLOSURE LIGHT SWITCH / RECEPTACLE	NEW	C
21	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
22	SUBMERSIBLE PUMP MOTOR	NEW	E
23	LEVEL FLOAT SWITCHES	NEW	E
24	PUMP POWER CABLE SPLICE BOX	NEW	C
25	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
26	PORTABLE GENERATOR RECEPTACLE	NEW	A

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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7. Existing light fixture and alarm annunciator are to remain and be re-circuited to the electrical equipment enclosure due to the location of the building in relationship with the roadway.

Table 7-3. Pump Station B-101 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$85,000
Electrical Upgrades[3]	$47,092
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$135,092
Construction Contingency (20%):	$27,019
Total Construction:	**$162,111**
Engineering, Administration (15%)	$24,317
Total Project:	**$186,428**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.4 Pump Station B-102

The proposed improvements at Pump Station B-102 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-1 and 7-4. Detailed cost estimates are provided in Table 7-4 and Appendix 3.

1. Provide new wet well liner using either spray on material or a flexible hanging liner.
2. Relocate station pump control panel from inside the building to a new painted steel, 6 foot high, 6 foot wide, 18 inch deep Electrical Equipment Enclosure located outside on the West side of the building. The existing utility service meter will require relocation. A new 8 foot by 5 foot concrete pad and adjacent retaining wall will be required.
3. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the Electrical Equipment Enclosure and a post mounted receptacle located near the existing pad-mounted utility. Provide trenching, backfill, conduit and wire routed within an existing utility right-of-way.
4. Provide new breaker panel, box with intrinsic barrier relays for float circuitry protection, and enclosure light with associated switch / receptacle inside the Electrical Equipment Enclosure.
5. Provide cell phone transmitter and antenna, located at the Electrical Equipment Enclosure to be used for transmitting station status to headquarters via telemetry communications.
6. Replace electrical that is to remain inside the existing building, consisting of pump power and float signal junction boxes and associated conduit and wire, with material and configuration rated Class 1,

Division 1. Building interior lighting will consist of a new handheld LED spotlight cord connected to the receptacle inside the Electrical Equipment Enclosure.

7. Existing alarm annunciator is to remain and be re-circuited to the electrical equipment enclosure due to the location of the building in relationship with the roadway.

Table 7-4. Pump Station B-102 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

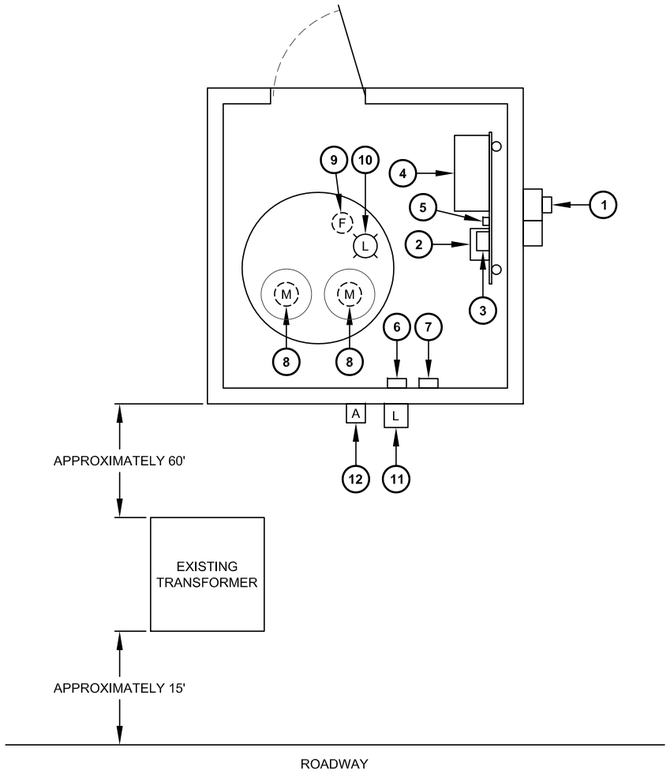
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$85,000
Electrical Upgrades[3]	$48,601
Miscellaneous Items[4]	$6,000
Construction Subtotal:	$139,601
Construction Contingency (20%):	$27,921
Total Construction:	**$167,522**
Engineering, Administration (15%)	$25,128
Total Project:	**$192,651**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.5 Pump Station B-103

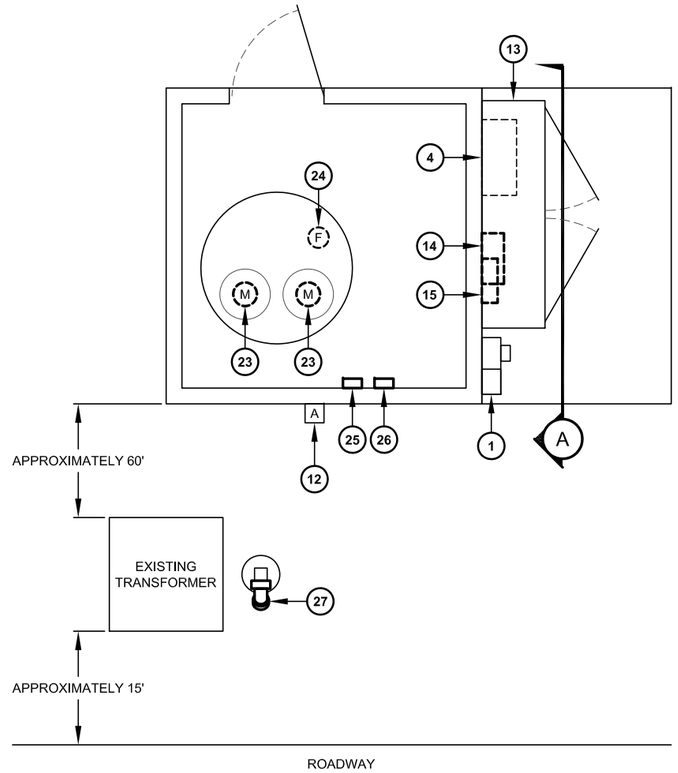
The proposed improvements at Pump Station B-103 generally include electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. The wet well has been upgraded with a liner, new pumps, and new discharge piping. Schematic layouts are shown in Figures 5-1 and 7-5. Detailed cost estimates are provided in Table 7-5 and Appendix 3.

1. Relocate station control panel, breaker panel and receptacle from inside the building to a new painted steel, 6 foot high, 6 foot wide, 18 inch deep Electrical Equipment Enclosure located outdoors on the South side of the building. The existing utility service meter will require relocation. A new 8 foot by 5 foot concrete pad will be required.
2. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the Electrical Equipment Enclosure and a receptacle mounted on the building exterior adjacent to the Electrical Equipment Enclosure.
3. Provide new box with intrinsic barrier relays for float circuitry protection and enclosure light with associated switch inside the Electrical Equipment Enclosure.
4. Provide cell phone transmitter and antenna, located at the Electrical Equipment Enclosure to be used for transmitting station status to headquarters via telemetry communications.



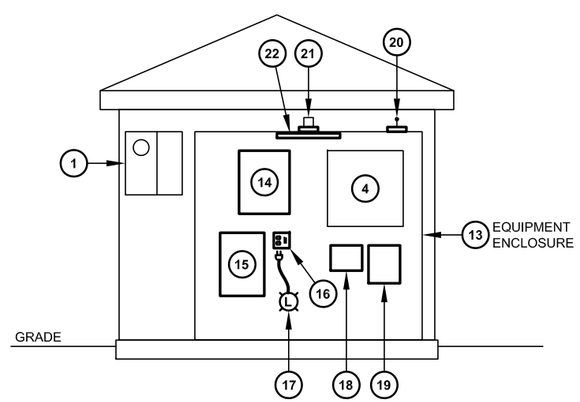
PLAN - STATION 102 - EXISTING

NOT TO SCALE



PLAN - STATION 102 - UPDATED

NOT TO SCALE



A **ELEVATION - ELECTRICAL EQUIPMENT**

NOT TO SCALE

EQUIPMENT LIST - STATION 102			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	C
2	STATION POWER DISCONNECT SWITCH	REMOVE	C
3	BREAKER PANEL	REMOVE	C
4	STATION PUMP CONTROL PANEL	RELOCATE	C
5	DUPLEX RECEPTACLE	REMOVE	C
6	PUMP POWER CABLE SPLICE BOX	REMOVE	C
7	LEVEL FLOAT CABLE SPLICE BOX	REMOVE	C
8	SUBMERSIBLE PUMP MOTORS	REMOVE	E
9	LEVEL FLOAT SWITCHES	REMOVE	C
10	LIGHT FIXTURE - BUILDING INTERIOR	REMOVE	C
11	LIGHT FIXTURE - BUILDING EXTERIOR	REMOVE	C
12	STATION ALARM ANNUNCIATOR	REUSE	-
13	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	C
14	MANUAL TRANSFER SWITCH	NEW	A
15	BREAKER PANEL WITH STATION MAIN BREAKER	NEW	C
16	ENCLOSURE LIGHT SWITCH / RECEPTACLE	NEW	C
17	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	C
18	INTRINSIC BARRIER RELAY BOX	NEW	C
19	SCADA TELEMETRY TRANSMITTER	NEW	B
20	SCADA CELL ANTENNA	NEW	B
21	STATION ALARM ANNUNCIATOR	NEW	C
22	ENCLOSURE LED LIGHT	NEW	C
23	SUBMERSIBLE PUMP MOTORS	NEW	E
24	LEVEL FLOAT SWITCHES	NEW	E
25	PUMP POWER CABLE SPLICE BOX	NEW	C
26	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
27	PORTABLE GENERATOR RECEPTACLE	NEW	A

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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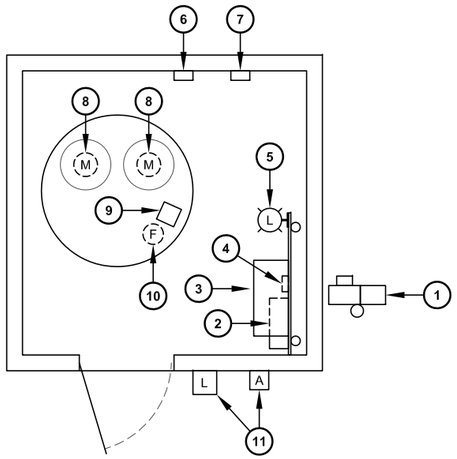
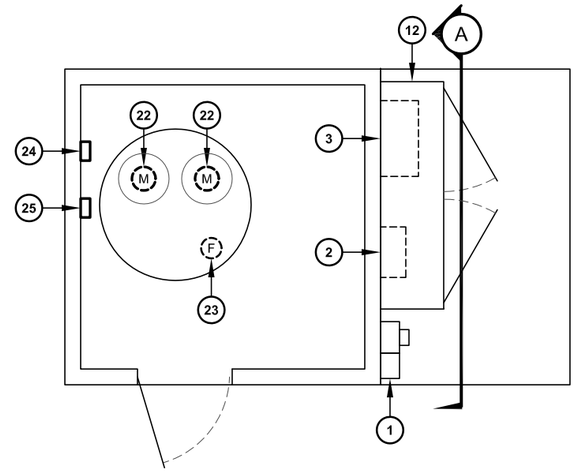


ROADWAY

PLAN - STATION 103 - EXISTING

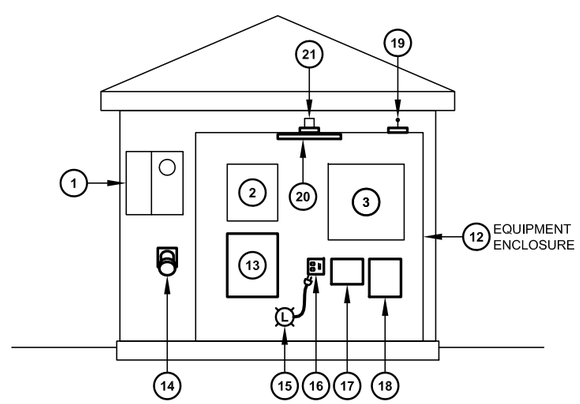
NOT TO SCALE



ROADWAY

PLAN - STATION 103 - UPDATED

NOT TO SCALE



A **ELEVATION - ELECTRICAL EQUIPMENT**

NOT TO SCALE

EQUIPMENT LIST - STATION 103			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	C
2	SERVICE PANEL BOARD WITH STATION DISC BREAKER	RELOCATE	C
3	STATION PUMP CONTROL PANEL	RELOCATE	C
4	DUPLEX RECEPTACLE	REMOVE	C
5	LIGHT FIXTURE	REMOVE	C
6	PUMP POWER CABLE SPLICE BOX	REMOVE	C
7	SIGNAL JUNCTION BOX	REMOVE	C
8	SUBMERSIBLE PUMP MOTORS	REMOVE	E
9	LEVEL FLOAT CABLE SPLICE BOX	REMOVE	C
10	LEVEL FLOAT SWITCHES	REMOVE	C
11	STATION ALARM ANNUNCIATOR & ORIGINAL LIGHT FRAMES	REMOVE	C
12	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	C
13	MANUAL TRANSFER SWITCH	NEW	A
14	PORTABLE GENERATOR RECEPTACLE	NEW	A
15	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	C
16	ENCLOSURE LIGHT SWITCH AND RECEPTACLE	NEW	C
17	INTRINSIC BARRIER RELAY BOX	NEW	C
18	SCADA TELEMETRY TRANSMITTER	NEW	B
19	SCADA CELL ANTENNA	NEW	B
20	ENCLOSURE LED LIGHT	NEW	C
21	STATION ALARM ANNUNCIATOR	NEW	C
22	SUBMERSIBLE PUMP MOTORS	NEW	C
23	LEVEL FLOAT SWITCHES	NEW	C
24	PUMP POWER CABLE SPLICE BOX	NEW	C
25	LEVEL FLOAT CABLE SPLICE BOX	NEW	C

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

SHN Consulting Engineers & Geologists, Inc.	RSE RICHARD SAMPLE ENGINEERING	Lake Shastina Community Services District Wastewater PER Lake Shastina, California	LIFT STATION B-103 PLANS, ELEVATION, EQUIPMENT LIST SHN 517027
		April 2018	RSE1708 ELECTRICAL FIGURES	Figure 7-5

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5. Replace electrical that is to remain inside the existing building, consisting of pump power and float signal junction boxes and associated conduit and wire, with material and configuration rated Class 1, Division 1. Building interior lighting will consist of a new handheld LED spotlight cord connected to a receptacle inside the Electrical Equipment Enclosure.

Table 7-5. Pump Station B-103 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$0
Electrical Upgrades[3]	$43,087
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$46,087
Construction Contingency (20%):	$9,218
Total Construction:	**$55,305**
Engineering, Administration (15%)	$8,296
Total Project:	**$63,601**

1. See Appendix 3 for additional detail.
2. This wet well is already lined.
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.6 Pump Station B-104

The proposed improvements at Pump Station B-104 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-1 and 7-6. Detailed cost estimates are provided in Table 7-6 and Appendix 3.

1. Provide new fiberglass wet well liner.
2. Replace vertical turbine pumps with submersible pumps and replace level floats.
3. Replace existing discharge piping.
4. Replace existing check valves.
5. Repair wet well vent pipe so that it properly vents.
6. Remove and discard all existing electrical from inside the building. Existing vertical turbine pumps and wet well level floats are to be removed.
7. Provide new painted steel, 6 foot high, 6 foot wide, 18 inch deep Electrical Equipment Enclosure located outdoors on the West side of the building. The existing utility service meter will require relocation. A new 8 foot by 5 foot concrete pad will be required.
8. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the Electrical Equipment Enclosure and a receptacle mounted on the building exterior adjacent to the Electrical Equipment Enclosure.

9. Provide new station electrical components inside the Electrical Equipment Enclosure consisting of a new station pump control panel with VFD controllers, box with intrinsic barrier relays for float circuitry protection, breaker panel with station power main breaker, enclosure light with associated switch and a duplex receptacle.
10. Provide cell phone transmitter and antenna, located at the Electrical Equipment Enclosure to be used for transmitting station status to headquarters via telemetry communications.
11. Provide new electrical inside the existing building rated for a Class 1, Division 1 environment consisting of new pump power and float signal junction boxes and associated conduit and wire. Building interior lighting will consist of a new handheld LED spotlight cord connected to the receptacle inside the Electrical Equipment Enclosure.
12. Existing alarm annunciator is to remain and be re-circuited to the electrical equipment enclosure due to the location of the building in relationship with the roadway.

Table 7-6. Pump Station B-104 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

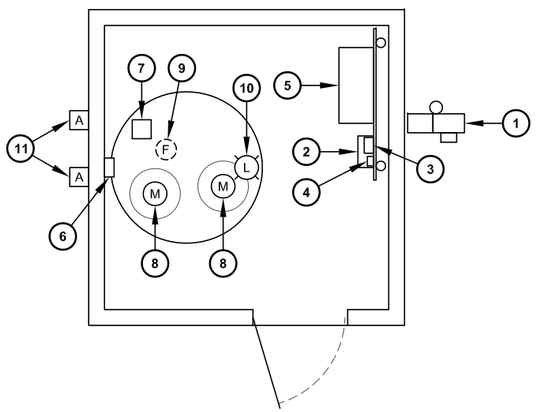
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$51,908
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$134,908
Construction Contingency (20%):	$26,982
Total Construction:	**$161,890**
Engineering, Administration (15%)	$24,283
Total Project:	**$186,173**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.7 Pump Station B-105

The proposed improvements at Pump Station B-105 generally include electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. The wet well has been upgraded with a liner, new pumps, and new discharge piping. Schematic layouts are shown in Figures 5-1 and 7-7. Detailed cost estimates are provided in Table 7-7 and Appendix 3.

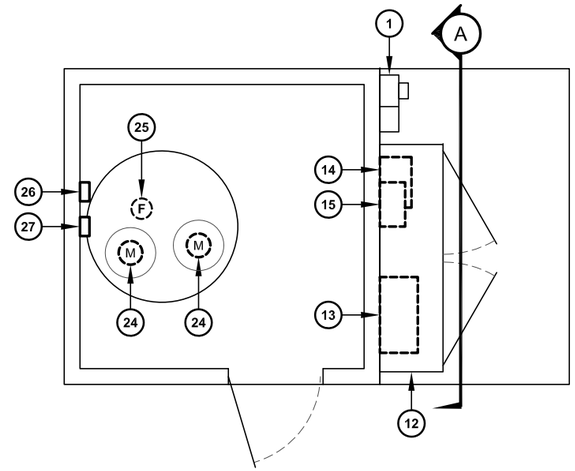
1. Relocate station pump control panel and breaker panel from inside the building to a new painted steel, 6 foot high, 6 foot wide, 18 inch deep Electrical Equipment Enclosure located outside on the South side of the building. The existing utility service meter will require relocation. A new 8 foot by 5 foot concrete pad and adjacent retaining wall with steps up to roadway will be required.



ROADWAY

PLAN - STATION 104 - EXISTING

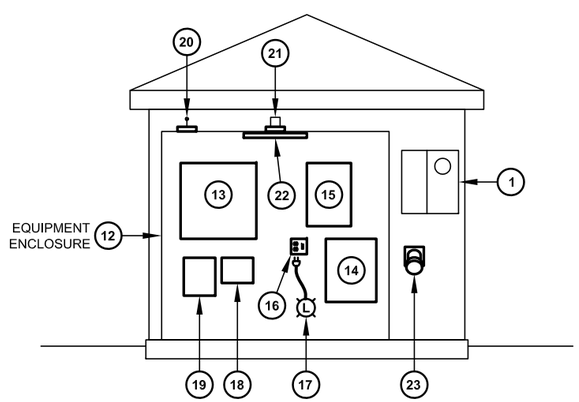
NOT TO SCALE



ROADWAY

PLAN - STATION 104 - UPDATED

NOT TO SCALE



A

ELEVATION - ELECTRICAL EQUIPMENT

NOT TO SCALE

EQUIPMENT LIST - STATION 104			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	C
2	STATION POWER DISCONNECT SWITCH	REMOVE	C
3	BREAKER PANEL	REMOVE	C
4	DUPLEX RECEPTACLE	REMOVE	C
5	STATION PUMP CONTROL PANEL	REMOVE	D
6	PUMP POWER CABLE SPLICE BOX	REMOVE	C
7	LEVEL FLOAT CABLE SPLICE BOX	REMOVE	C
8	VERTICAL TURBINE PUMP MOTORS	REMOVE	E
9	LEVEL FLOAT SWITCHES	REMOVE	E
10	LIGHT FIXTURE - BUILDING INTERIOR	REMOVE	C
11	STATION ALARM ANNUNCIATOR	REUSE	-
12	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	C
13	STATION PUMP CONTROL PANEL	NEW	D
14	MANUAL TRANSFER SWITCH	NEW	A
15	BREAKER PANEL WITH STATION MAIN BREAKER	NEW	C
16	ENCLOSURE LIGHT SWITCH / RECEPTACLE	NEW	C
17	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	C
18	INTRINSIC BARRIER RELAY BOX	NEW	C
19	SCADA TELEMETRY TRANSMITTER	NEW	B
20	SCADA CELL ANTENNA	NEW	B
21	STATION ALARM ANNUNCIATOR	NEW	C
22	ENCLOSURE LED LIGHT	NEW	C
23	PORTABLE GENERATOR RECEPTACLE	NEW	C
24	SUBMERSIBLE PUMP MOTORS	NEW	E
25	LEVEL FLOAT SWITCHES	NEW	E
26	PUMP POWER CABLE SPLICE BOX	NEW	C
27	LEVEL FLOAT CABLE SPLICE BOX	NEW	C

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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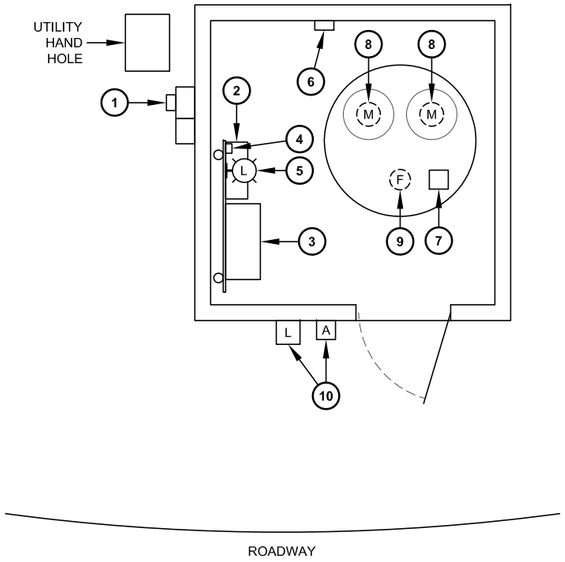
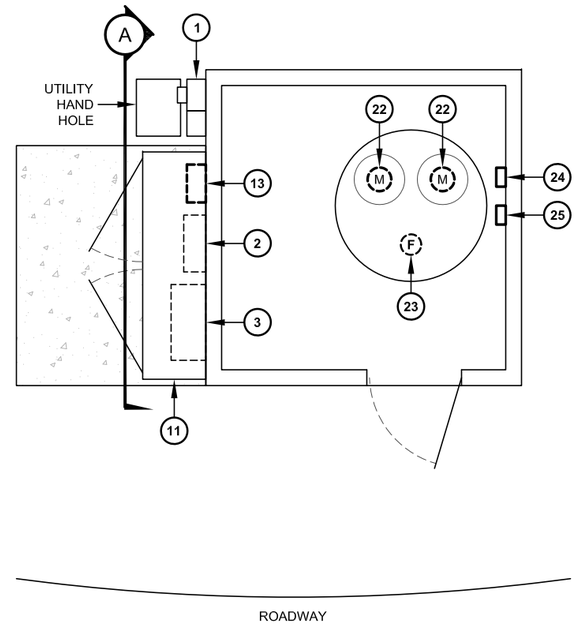


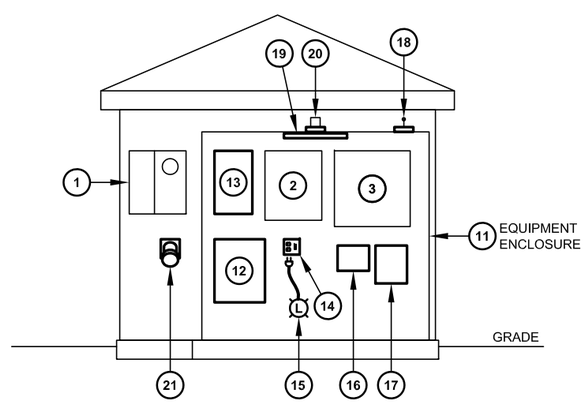
PLAN - STATION 105 - EXISTING

NOT TO SCALE



PLAN - STATION 105 - UPGRADED

NOT TO SCALE



A **ELEVATION - ELECTRICAL EQUIPMENT**

NOT TO SCALE

EQUIPMENT LIST - STATION 105			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	C
2	BREAKER PANEL	RELOCATE	C
3	STATION PUMP CONTROL PANEL (TO BE UPGRADED)	RELOCATE	D
4	DUPLEX RECEPTACLE	REMOVE	C
5	LIGHT FIXTURE - BUILDING INTERIOR	REMOVE	C
6	PUMP POWER CABLE SPLICE BOX	REMOVE	C
7	LEVEL FLOAT CABLE SPLICE BOX	REMOVE	C
8	SUBMERSIBLE PUMP MOTORS	REMOVE	E
9	LEVEL FLOAT SWITCHES	REMOVE	C
10	STATION ALARM ANNUNCIATOR & ORIGINAL LIGHT FRAMES	REMOVE	C
11	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	C
12	MANUAL TRANSFER SWITCH	NEW	A
13	STATION POWER MAIN BREAKER	NEW	A
14	ENCLOSURE LIGHT SWITCH / RECEPTACLE	NEW	C
15	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	C
16	INTRINSIC BARRIER RELAY BOX	NEW	C
17	SCADA TELEMETRY TRANSMITTER	NEW	C
18	SCADA CELL ANTENNA	NEW	B
19	ENCLOSURE LED LIGHT	NEW	B
20	STATION ALARM ANNUNCIATOR	NEW	C
21	PORTABLE GENERATOR RECEPTACLE	NEW	A
22	SUBMERSIBLE PUMP MOTORS	NEW	E
23	LEVEL FLOAT SWITCHES	NEW	C
24	PUMP POWER CABLE SPLICE BOX	NEW	C
25	LEVEL FLOAT CABLE SPLICE BOX	NEW	C

TASK LIST
A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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2. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the Electrical Equipment Enclosure and a receptacle mounted on the building exterior adjacent to the Electrical Equipment Enclosure.
3. Provide new enclosed breaker inside the Electrical Equipment Enclosure to serve as station power main disconnect.
4. Replace two (2) constant speed motor starters inside relocated station pump control panel with two (2) new VFD controllers.
5. Provide new box with intrinsic barrier relays for float circuitry protection and enclosure light with associated switch and a duplex receptacle inside the Electrical Equipment Enclosure.
6. Provide cell phone transmitter and antenna, located at the Electrical Equipment Enclosure to be used for transmitting station status to headquarters via telemetry communications.
7. Replace electrical that is to remain inside the existing building, consisting of pump power and float signal junction boxes and associated conduit and wire, with material and configuration rated Class 1, Division 1. Building interior lighting will consist of a new handheld LED spotlight cord connected to the receptacle inside the Electrical Equipment Enclosure.
8. Modify building door to swing out.

Table 7-7. Pump Station B-105 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$0
Electrical Upgrades[3]	$50,840
Miscellaneous Items[4]	$7,000
Construction Subtotal:	$57,840
Construction Contingency (20%):	$11,568
Total Construction:	**$69,408**
Engineering, Administration (15%)	$10,411
Total Project:	**$79,819**

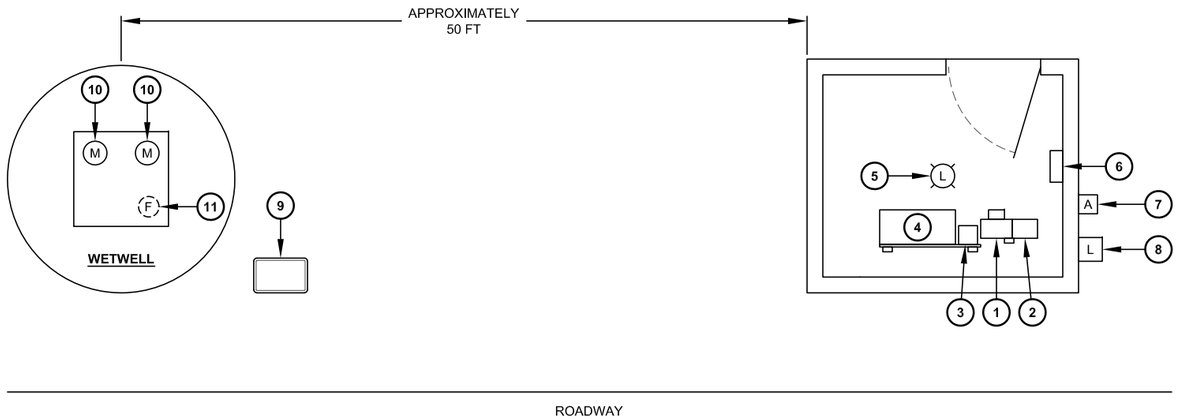
1. See Appendix 3 for additional detail.
2. This wet well is already lined.
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.8 Pump Station B-106

The proposed improvements at Pump Station B-106 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-2 and 7-8. Detailed cost estimates are provided in Table 7-8 and Appendix 3.

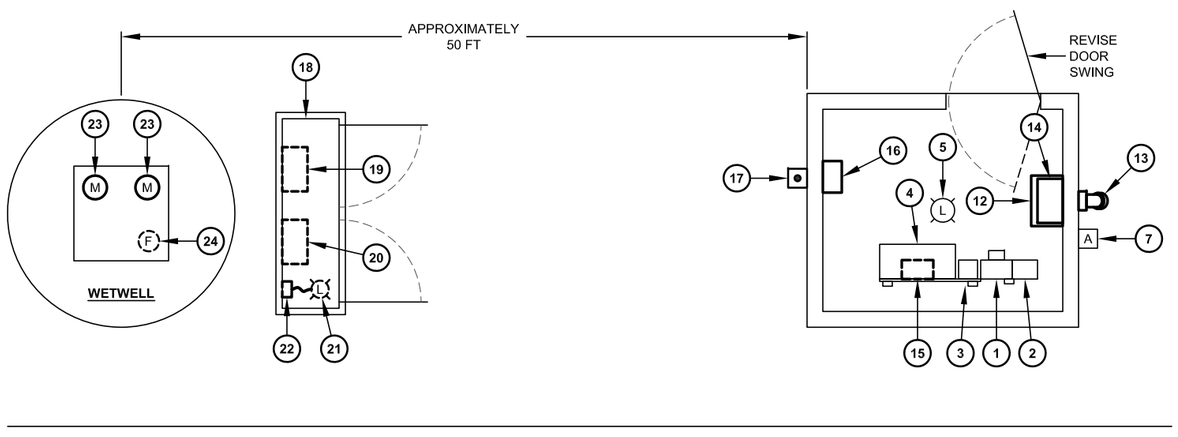
1. Provide new fiberglass wet well liner.

2. Replace submersible pumps and level floats.
3. Replace existing discharge piping.
4. Provide new precast concrete valve box.
5. Provide new check valves to be placed in valve box.
6. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building and a receptacle wall mounted on the East side of the building exterior.
7. Replace existing power and signal splice hand hole, located adjacent to the wet well approximately 50 feet West of the station building, with a pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure containing pump power and float splice boxes and wet well hand light receptacle. A new concrete pad under the pedestal will be required.
8. New conduits will be routed from the existing wet well to the pedestal with pump power cords and float switch cables.
9. New conduits with power wiring and signal wiring routed separately will be routed from the pedestal to the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.
10. Provision of a new panelboard with breakers to serve the existing station pump control panel, building lighting, building receptacle, telemetry equipment and wet well handlight.
11. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
12. Provide a box with intrinsic barrier relays for float circuitry protection.
13. Provide a conduit, wiring and weatherproof receptacle associated with wet well handlight.
14. Provide LED handlight to be stored in existing building.
15. Existing alarm annunciator is to remain and be re-circuited to the electrical equipment enclosure due to the location of the building in relationship with the roadway.



PLAN - STATION 106 - EXISTING

NOT TO SCALE



PLAN - STATION 106 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 106

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT SWITCH	REUSE	-
3	POWER WIREWAY	REUSE	-
4	STATION PUMP CONTROL PANEL	REUSE	-
5	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
6	BREAKER PANEL	REMOVE	C
7	STATION ALARM ANNUNCIATOR	REUSE	C
8	LIGHT FIXTURE - BUILDING EXTERIOR	REMOVE	F
9	PUMP POWER & LEVEL FLOAT CABLE SPLICE HAND HOLE	REMOVE	C
10	SUBMERSIBLE PUMP MOTORS	REMOVE	E
11	LEVEL FLOAT SWITCHES	REMOVE	C
12	MANUAL TRANSFER SWITCH	NEW	A
13	PORTABLE GENERATOR RECEPTACLE	NEW	A
14	STATION POWER BREAKER PANEL	NEW	C
15	INTRINSIC BARRIER RELAY BOX	NEW	C
16	SCADA TELEMETRY TRANSMITTER	NEW	B
17	SCADA CELL ANTENNA	NEW	B
18	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
19	PUMP POWER CABLE SPLICE BOX	NEW	C
20	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
21	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
22	DUPLEX RECEPTACLE	NEW	F
23	SUBMERSIBLE PUMP MOTORS	NEW	E
24	LEVEL FLOAT SWITCHES	NEW	E

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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Table 7-8. Pump Station B-106 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$39,972
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$122,972
Construction Contingency (20%):	$24,595
Total Construction:	**$147,567**
Engineering, Administration (15%)	$22,135
Total Project:	**$169,702**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.9 Pump Station B-107

The proposed improvements at Pump Station B-107 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-1 and 7-9. Detailed cost estimates are provided in Table 7-9 and Appendix 3.

1. Provide new fiberglass wet well liner.
2. Replace vertical turbine pumps with submersible pumps and replace level floats.
3. Replace existing discharge piping.
4. Replace existing check valves.
5. Remove and discard all existing electrical from inside the building with the exception of the station pump control panel which is to modified and reused.
6. Provide new painted steel, 6 foot high, 6 foot wide, 18 inch deep Electrical Equipment Enclosure located outdoors on the South side of the building (facing away from roadway). The existing utility service meter will require relocation. A new 6 foot by 5 foot concrete pad will be required. Existing water handhole and associated piping is to be relocated.
7. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the Electrical Equipment Enclosure and a receptacle mounted on the side of the building exterior facing toward the street.
8. Replace two (2) constant speed motor starters inside original station pump control panel with two (2) new VFD controllers.
9. Provide station electrical components inside the Electrical Equipment Enclosure consisting of the modified existing station pump control panel with VFD controllers, and new breaker panel, box with

intrinsic barrier relays for float circuitry protection, enclosure light and associated switch and a duplex receptacle.

10. Provide cell phone transmitter and antenna, located at the Electrical Equipment Enclosure to be used for transmitting station status to headquarters via telemetry communications.
11. Provide new electrical inside the existing building rated for a Class 1, Division 1 environment consisting of new submersible pumps and cables, new float switches and cables, new pump power and float signal junction boxes and associated conduit and wire. Building interior lighting will consist of a new handheld LED spotlight cord connected to the receptacle inside the Electrical Equipment Enclosure.
12. Existing alarm annunciator is to remain and be re-circuited to the electrical equipment enclosure due to the location of the building in relationship with the roadway.

Table 7-9. Pump Station B-107 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

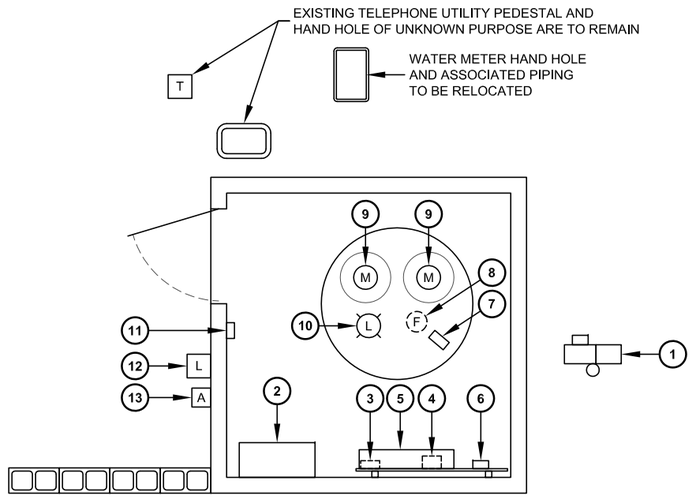
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$52,159
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$135,159
Construction Contingency (20%):	$27,032
Total Construction:	**$162,191**
Engineering, Administration (15%)	$24,329
Total Project:	**$186,519**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.10 Pump Station B-108

The proposed improvements at Pump Station B-108 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-1 and 7-10. Detailed cost estimates are provided in Table 7-10 and Appendix 3.

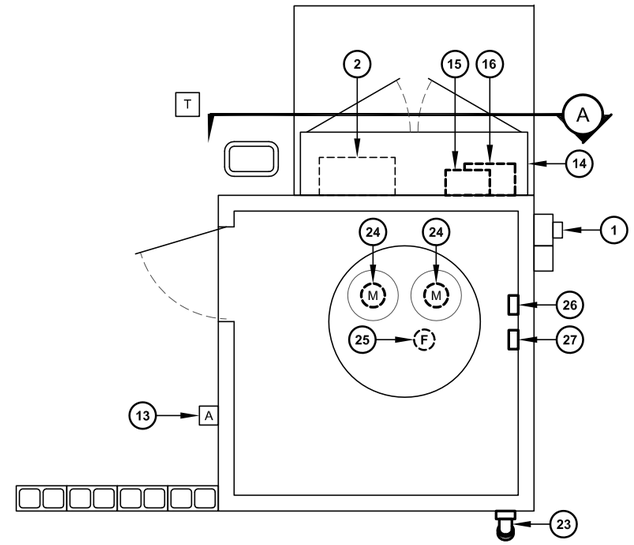
1. Provide new fiberglass wet well liner.
2. Replace vertical turbine pumps with submersible pumps and replace level floats.
3. Replace existing discharge piping.
4. Replace existing check valves.
5. Remove and discard all existing electrical from inside the building with the exception of the station pump control panel which is to modified and reused.



ROADWAY

PLAN - STATION 107 - EXISTING

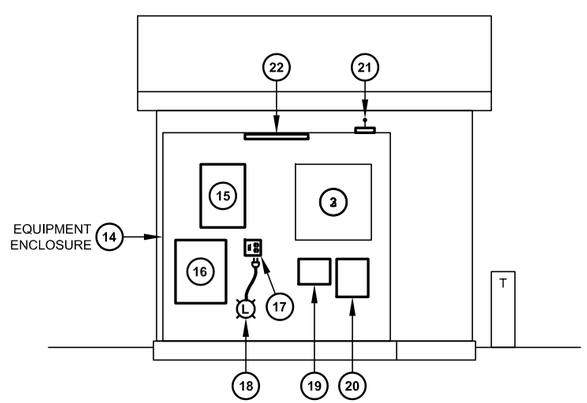
NOT TO SCALE



ROADWAY

PLAN - STATION 107 - UPDATED

NOT TO SCALE



A

ELEVATION - ELECTRICAL EQUIPMENT

NOT TO SCALE

EQUIPMENT LIST - STATION 107			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	C
2	STATION PUMP CONTROL PANEL (TO BE UPGRADED)	RELOCATE	D
3	BREAKER PANEL	REMOVE	C
4	SIGNAL JUNCTION BOX	REMOVE	C
5	WIREWAY	REMOVE	C
6	PUMP POWER JUNCTION BOX	REMOVE	C
7	LEVEL FLOAT CABLE SPLICE BOX	REMOVE	C
8	LEVEL FLOAT SWITCHES	REMOVE	E
9	VERTICAL TURBINE PUMP MOTORS	REMOVE	E
10	LIGHT FIXTURE - BUILDING INTERIOR	REMOVE	C
11	LIGHT SWITCH AND DUPLEX RECEPTACLE	REMOVE	C
12	LIGHT FIXTURE FRAME - BUILDING EXTERIOR	REMOVE	F
13	STATION ALARM ANNUNCIATOR	REMAIN	-
14	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	C
15	BREAKER PANEL WITH STATION MAIN BREAKER	NEW	C
16	MANUAL TRANSFER SWITCH	NEW	A
17	ENCLOSURE LIGHT SWITCH / RECEPTACLE	NEW	C
18	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	C
19	INTRINSIC BARRIER RELAY BOX	NEW	C
20	SCADA TELEMETRY TRANSMITTER	NEW	B
21	SCADA CELL ANTENNA	NEW	B
22	ENCLOSURE LED LIGHT	NEW	C
23	PORTABLE GENERATOR RECEPTACLE	NEW	A
24	SUBMERSIBLE PUMP MOTORS	NEW	E
25	LEVEL FLOAT SWITCHES	NEW	E
26	PUMP POWER CABLE SPLICE BOX	NEW	C
27	LEVEL FLOAT CABLE SPLICE BOX	NEW	C

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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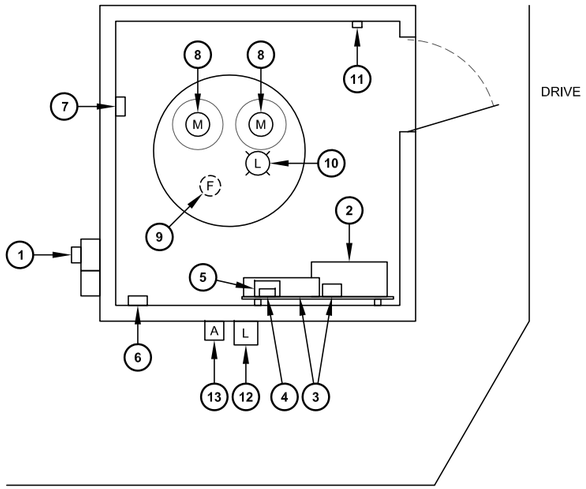
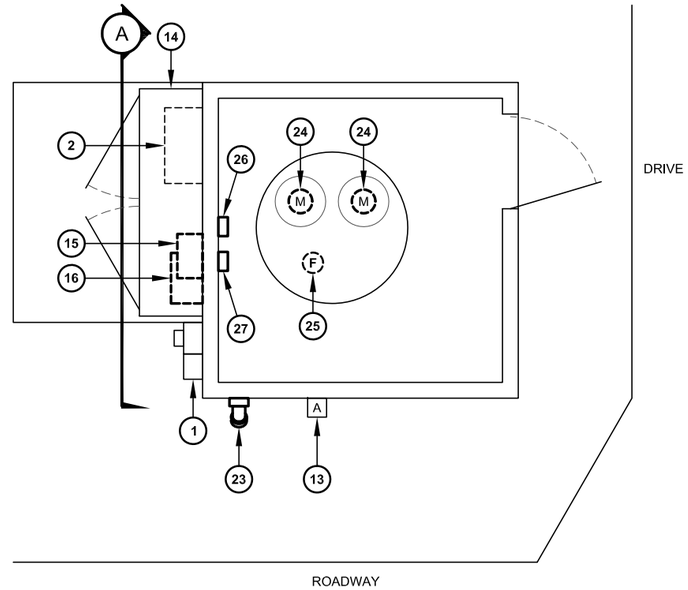


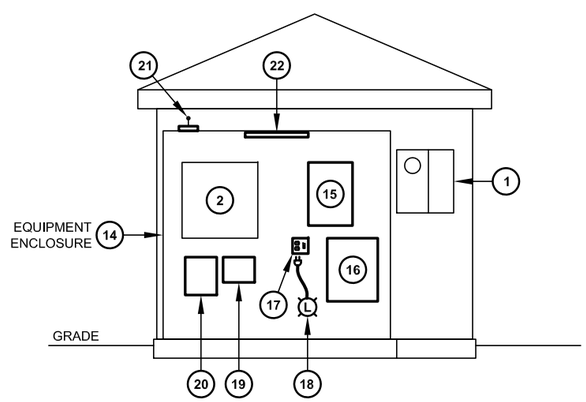
PLAN - STATION 108 - EXISTING

NOT TO SCALE



PLAN - STATION 108 - UPDATED

NOT TO SCALE



A ELEVATION - ELECTRICAL EQUIPMENT

NOT TO SCALE

EQUIPMENT LIST - STATION 108			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	C
2	STATION PUMP CONTROL PANEL (TO BE UPGRADED)	RELOCATE	D
3	WIREWAY	REMOVE	C
4	DUPLEX RECEPTACLE	REMOVE	C
5	BREAKER PANEL	REMOVE	C
6	LEVEL FLOAT CABLE SPLICE BOX	REMOVE	C
7	PUMP POWER JUNCTION BOX	REMOVE	C
8	VERTICAL TURBINE PUMP MOTORS	REMOVE	E
9	LEVEL FLOAT SWITCHES	REMOVE	E
10	LIGHT FIXTURE - BUILDING INTERIOR	REMOVE	C
11	LIGHT SWITCH	REMOVE	C
12	LIGHT FIXTURE - BUILDING EXTERIOR	REMOVE	F
13	STATION ALARM ANNUNCIATOR	REMAIN	-
14	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	C
15	BREAKER PANEL WITH STATION MAIN BREAKER	NEW	C
16	MANUAL TRANSFER SWITCH	NEW	A
17	ENCLOSURE LIGHT SWITCH / RECEPTACLE	NEW	C
18	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	C
19	INTRINSIC BARRIER RELAY BOX	NEW	C
20	SCADA TELEMETRY TRANSMITTER	NEW	B
21	SCADA CELL ANTENNA	NEW	B
22	ENCLOSURE LED LIGHT	NEW	C
23	PORTABLE GENERATOR RECEPTACLE	NEW	A
24	SUBMERSIBLE PUMP MOTORS	NEW	E
25	LEVEL FLOAT SWITCHES	NEW	E
26	PUMP POWER CABLE SPLICE BOX	NEW	C
27	LEVEL FLOAT CABLE SPLICE BOX	NEW	C

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

SHN Consulting Engineers & Geologists, Inc.

RSE RICHARD SAMPLE ENGINEERING

Lake Shastina Community Services District
Wastewater PER
Lake Shastina, California

LIFT STATION B-108
PLANS, ELEVATION, EQUIPMENT LIST
SHN 517027

April 2018 | RSE1708 ELECTRICAL FIGURES | Figure 7-10

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6. Provide new painted steel, 6 foot high, 6 foot wide, 18 inch deep Electrical Equipment Enclosure located outdoors on the South side of the building. The existing utility service meter will not require relocation. A new 6 foot by 2 foot concrete pad will be required under the Electrical Equipment Enclosure.
7. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the Electrical Equipment Enclosure and a receptacle mounted on the side of the building exterior facing the street.
8. Replace two (2) constant speed motor starters inside original station pump control panel with two (2) new VFD controllers.
9. Provide station electrical components inside the Electrical Equipment Enclosure consisting of the modified existing station pump control panel with VFD controllers, box with intrinsic barrier relays for float circuitry protection, new breaker panel, enclosure light with associated switch and a duplex receptacle.
10. Provide cell phone transmitter and antenna, located at the Electrical Equipment Enclosure to be used for transmitting station status to headquarters via telemetry communications.
11. Provide new electrical inside the existing building rated for a Class 1, Division 1 environment consisting of new submersible pumps and cables, new float switches and cables, new pump power and float signal junction boxes and associated conduit and wire. Building interior lighting will consist of a new handheld LED spotlight cord connected to the receptacle inside the Electrical Equipment Enclosure.
12. Existing alarm annunciator is to remain and be re-circuited to the electrical equipment enclosure due to the location of the building in relationship with the roadway.

Table 7-10. Pump Station B-108 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

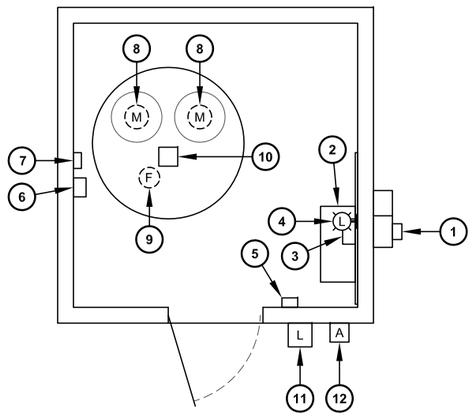
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$52,841
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$135,841
Construction Contingency (20%):	$27,169
Total Construction:	**$163,010**
Engineering, Administration (15%)	$24,451
Total Project:	**$187,461**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.11 Pump Station B-109

The proposed improvements at Pump Station B-109 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-1 and 7-11. Detailed cost estimates are provided in Table 7-11 and Appendix 3.

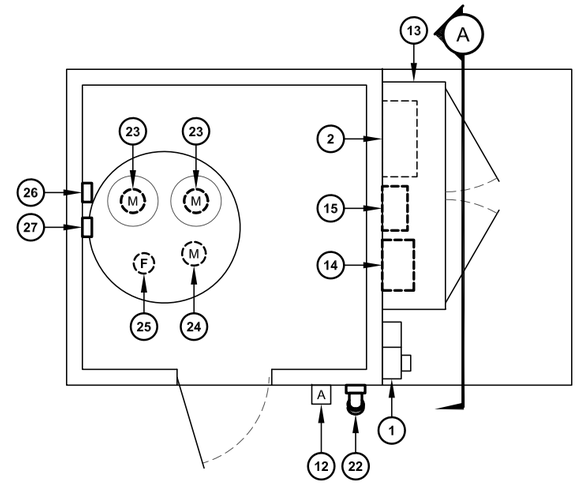
1. Provide new fiberglass wet well liner.
2. Replace submersible pumps and level floats.
3. Replace existing discharge piping.
4. Replace existing check valves.
5. Remove and discard all existing electrical from inside the building with the exception of the station pump control panel which is to modified and reused.
6. Provide new painted steel, 6 foot high, 6 foot wide, 18 inch deep Electrical Equipment Enclosure located outdoors on the East side of the building. The existing utility service meter will require relocation. A new 8 foot by 5 foot concrete pad and adjacent retaining wall will be required.
7. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the Electrical Equipment Enclosure and a receptacle mounted on the side of the building exterior facing the roadway.
8. Replace two (2) constant speed motor starters inside original station pump control panel with two (2) new VFD controllers.
9. Provide station electrical components inside the Electrical Equipment Enclosure consisting of the modified existing station pump control panel with VFD controllers, new breaker panel, combination motor starter for wet well aerator, box with intrinsic barrier relays for float circuitry protection, enclosure light and associated switch and a duplex receptacle.
10. Provide cell phone transmitter and antenna, located at the Electrical Equipment Enclosure to be used for transmitting station status to headquarters via telemetry communications.
11. Provide new electrical inside the existing building rated for a Class 1, Division 1 environment consisting of new submersible pumps and cables, new float switches and cables, new submersible aerator and cable, new pump & aerator power and float signal junction boxes and associated conduit and wire. Building interior lighting will consist of a new handheld LED spotlight cord connected to the receptacle inside the Electrical Equipment Enclosure.
12. Existing alarm annunciator is to remain and be re-circuited to the electrical equipment enclosure due to the location of the building in relationship with the roadway.



ROADWAY

PLAN - STATION 109 - EXISTING

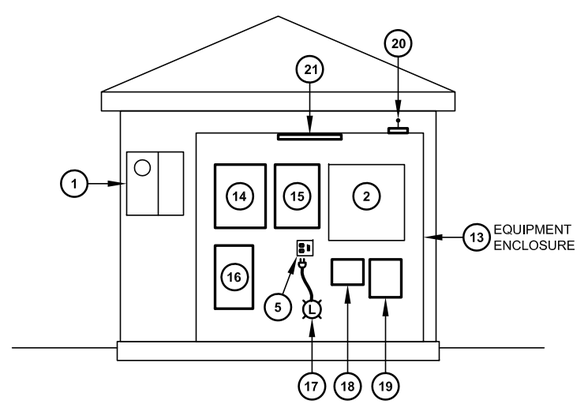
NOT TO SCALE



ROADWAY

PLAN - STATION 109 - UPDATED

NOT TO SCALE



A

ELEVATION - ELECTRICAL EQUIPMENT

NOT TO SCALE

EQUIPMENT LIST - STATION 109			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	C
2	STATION PUMP CONTROL PANEL (TO BE UPGRADED)	RELOCATE	D
3	BREAKER PANEL	REMOVE	C
4	LIGHT FIXTURE - BUILDING INTERIOR	REMOVE	C
5	LIGHT SWITCH / DUPLEX RECEPTACLE	RELOCATE	C
6	SIGNAL JUNCTION BOX	REMOVE	C
7	PUMP POWER JUNCTION BOX	REMOVE	C
8	SUBMERSIBLE PUMP MOTORS	REMOVE	E
9	LEVEL FLOAT SWITCHES	REMOVE	E
10	LEVEL FLOAT CABLE SPLICE BOX	REMOVE	E
11	LIGHT FIXTURE - BUILDING EXTERIOR	REMOVE	C
12	STATION ALARM ANNUNCIATOR	REUSE	-
13	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	C
14	MANUAL TRANSFER SWITCH	NEW	A
15	BREAKER PANEL WITH STATION MAIN BREAKER	NEW	C
16	COMBINATION MOTOR STARTER FOR AERATOR	NEW	F
17	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	C
18	INTRINSIC BARRIER RELAY BOX	NEW	C
19	SCADA TELEMETRY TRANSMITTER	NEW	B
20	SCADA CELL ANTENNA	NEW	B
21	ENCLOSURE LED LIGHT	NEW	C
22	PORTABLE GENERATOR RECEPTACLE	NEW	A
23	SUBMERSIBLE PUMP MOTORS	NEW	E
24	SUBMERSIBLE AERATOR	NEW	F
25	LEVEL FLOAT SWITCHES	NEW	E
26	PUMP AND AERATOR POWER CABLE SPLICE BOX	NEW	C
27	LEVEL FLOAT CABLE SPLICE BOX	NEW	C

TASK LIST
A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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Table 7-11. Pump Station B-109 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$53,556
Miscellaneous Items[4]	$6,000
Construction Subtotal:	$139,556
Construction Contingency (20%):	$27,912
Total Construction:	**$167,468**
Engineering, Administration (15%)	$25,120
Total Project:	**$192,588**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.12 Pump Station B-110

The proposed improvements at Pump Station B-110 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-2 and 7-12. Detailed cost estimates are provided in Table 7-12 and Appendix 3.

1. Provide new fiberglass wet well liner.
2. Replace submersible pumps and level floats.
3. Replace existing discharge piping.
4. Provide new precast concrete valve box.
5. Provide new check valves to be placed in valve box.
6. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building, a post mounted receptacle located near the existing pad-mounted utility and trenching, backfill conduit and wire routed within an existing utility right-of-way assumed to be within or along the driveway to the existing building.
7. Replace existing power and signal conduits with cables routed directly from the wet well to a power wireway and the station pump control panel with new conduits routed from the wet well to a new pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure located on the East side of the existing building containing pump power and float splice boxes. A new 5ft by 5ft concrete pad, adjacent retaining wall and steps to drive area will be required.
8. Provide new power and signal conduits routed from the pedestal to the existing station pump control panel located inside the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.

9. Replace existing breaker panel with new power panel with breakers to serve the existing station pump control panel, building lighting, building receptacle, telemetry equipment and existing golf course irrigation controller.
10. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
11. Provide a box with intrinsic barrier relays for float circuitry protection.
12. Provide LED hand spotlight for wet well lighting to be stored in existing building.
13. Existing light fixture and sprinkler system control panel located on building exterior are to remain.

Table 7-12. Pump Station B-110 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

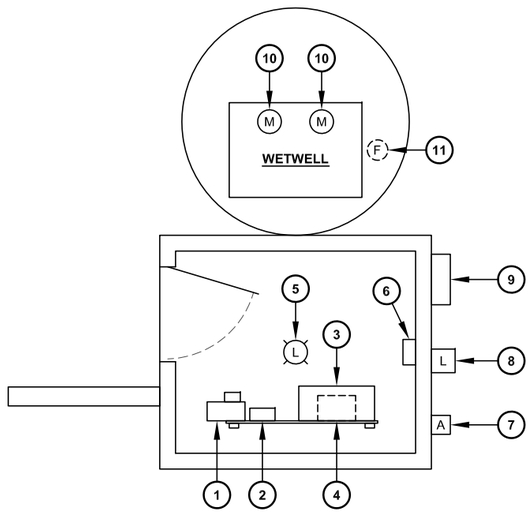
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$45,423
Miscellaneous Items[4]	$7,000
Construction Subtotal:	$132,423
Construction Contingency (20%):	$26,485
Total Construction:	**$158,908**
Engineering, Administration (15%)	$23,836
Total Project:	**$182,745**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.13 Pump Station B-111

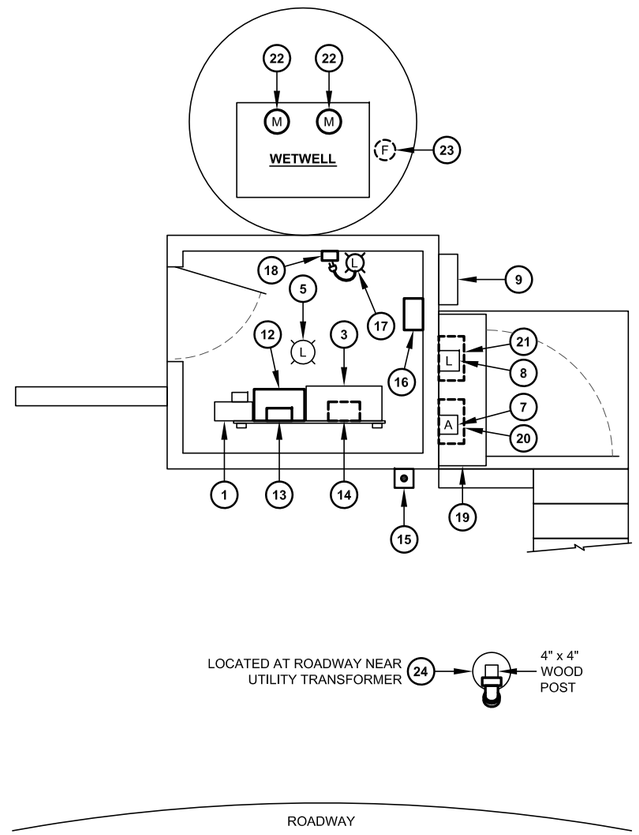
The proposed improvements at Pump Station B-111 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-2 and 7-13. Detailed cost estimates are provided in Table 7-13 and Appendix 3.

1. Provide new fiberglass wet well liner.
2. Replace existing 5 horsepower (HP) submersible pumps with pumps sized for the Lake Shore Drive Bypass force main. Preliminary calculations estimate the new pump will be a 7.5 HP pump with a design point of 75 gallons per minute (gpm) and 100 feet of Total Dynamic Head (TDH); replace level floats.
3. Replace existing discharge piping.
4. Provide new precast concrete valve box.
5. Provide new check valves to be placed in valve box.



PLAN - STATION 110 - EXISTING

NOT TO SCALE



PLAN - STATION 110 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 110

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER WITH MAIN DISCONNECT SWITCH	REUSE	-
2	POWER BREAKER PANEL	REMOVE	C
3	STATION PUMP CONTROL PANEL	REUSE	-
4	WIREWAY	REMOVE	C
5	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
6	ENCLOSED BREAKER (FOR LIGHT CONTROL)	REMOVE	C
7	STATION ALARM ANNUNCIATOR	REMAIN	-
8	LIGHT FIXTURE - BUILDING EXTERIOR	REMAIN	-
9	SPRINKLER SYSTEM CONTROLLER	REMAIN	-
10	SUBMERSIBLE PUMP MOTORS	REMOVE	E
11	LEVEL FLOAT SWITCHES	REMOVE	E
12	MANUAL TRANSFER SWITCH	NEW	A
13	STATION POWER BREAKER PANEL	NEW	C
14	INTRINSIC BARRIER RELAY BOX	NEW	C
15	SCADA CELL ANTENNA	NEW	B
16	SCADA TELEMETRY TRANSMITTER	NEW	B
17	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
18	DUPLEX RECEPTACLE	NEW	F
19	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
20	PUMP POWER CABLE SPLICE BOX	NEW	C
21	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
22	SUBMERSIBLE PUMP MOTORS	NEW	E
23	LEVEL FLOAT SWITCHES	NEW	E
24	PORTABLE GENERATOR RECEPTACLE	NEW	A

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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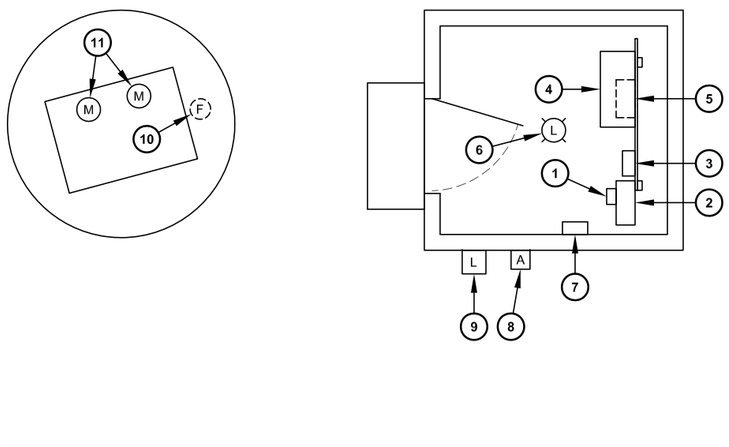
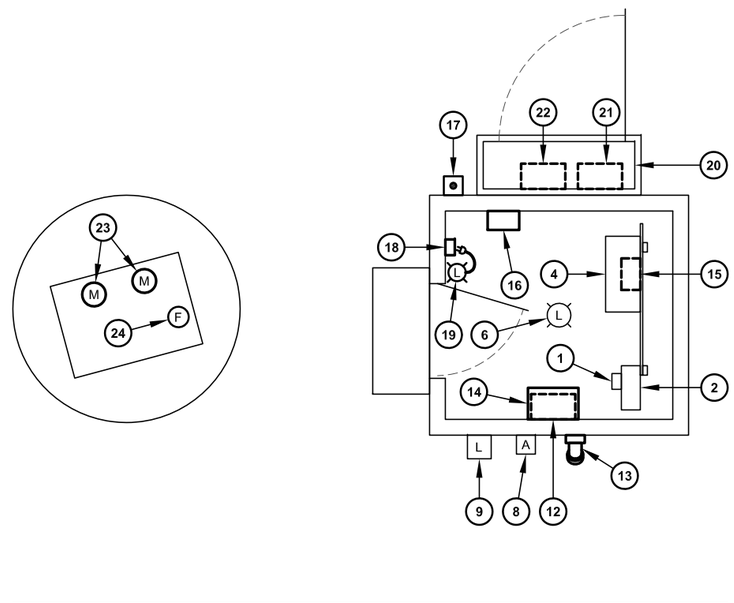


PLAN - STATION 111 - EXISTING

NOT TO SCALE



PLAN - STATION 111 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 111

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT SWITCH	REUSE	-
3	POWER WIREWAY	REMOVE	C
4	STATION PUMP CONTROL PANEL	REUSE	-
5	PUMP / FLOAT CABLE WIREWAY	REMOVE	C
6	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
7	LIGHTING BREAKER PANEL	REMOVE	C
8	STATION ALARM ANNUNCIATOR	REUSE	-
9	LIGHT FIXTURE - BUILDING EXTERIOR	REUSE	-
10	LEVEL FLOAT SWITCHES	REMOVE	C
11	SUBMERSIBLE PUMP MOTORS	REMOVE	E
12	MANUAL TRANSFER SWITCH	NEW	A
13	PORTABLE GENERATOR RECEPTACLE	NEW	A
14	STATION POWER BREAKER PANEL	NEW	C
15	INTRINSIC BARRIER RELAY BOX	NEW	C
16	SCADA TELEMETRY TRANSMITTER	NEW	B
17	SCADA CELL ANTENNA	NEW	B
18	DUPLEX RECEPTACLE	NEW	F
19	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
20	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
21	PUMP POWER CABLE SPLICE BOX	NEW	C
22	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
23	SUBMERSIBLE PUMP MOTORS	NEW	E
24	LEVEL FLOAT SWITCHES	NEW	E

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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6. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building and a receptacle wall mounted on the Southwest side of the building exterior.
7. Replace existing power and signal conduits containing cables routed directly from the wet well to a wireway and the station pump control panel with new conduits routed from the wet well to a new pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure located on the Southeast side of the existing building containing pump power and float splice boxes. A new concrete pad extended from the building foundation will be required.
8. Provide new power and signal conduits routed from the pedestal to the existing station pump control panel located inside the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.
9. Replace existing breaker panel with new power panel with breakers to serve the existing station pump control panel, building lighting, building receptacle, telemetry equipment.
10. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
11. Provide a box with intrinsic barrier relays for float circuitry protection.
12. Provide LED hand spotlight for wet well lighting to be stored in existing building.
13. Modify building door so that it swings out.

Table 7-13. Pump Station B-111 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$40,530
Miscellaneous Items[4]	$4,500
Construction Subtotal:	$125,030
Construction Contingency (20%):	$25,006
Total Construction:	**$150,036**
Engineering, Administration (15%)	$22,505
Total Project:	**$172,541**

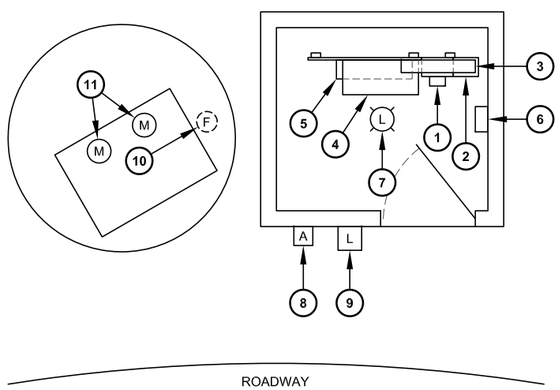
1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.14 Pump Station B-112

The proposed improvements at Pump Station B-112 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-2 and 7-14. Detailed cost estimates are provided in Table 7-14 and Appendix 3.

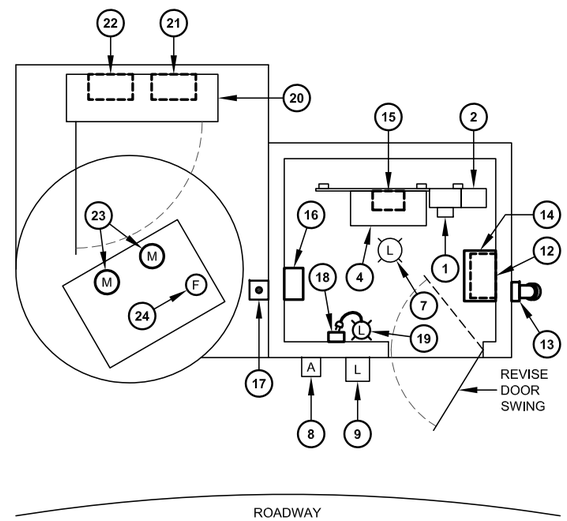
1. Provide new fiberglass wet well liner.
2. Replace submersible pumps and level floats.
3. Replace existing discharge piping.
4. Provide new precast concrete valve box.
5. Provide new check valves to be placed in valve box.
6. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building and a receptacle wall mounted on the North side of the building exterior.
7. Replace existing power and signal conduits containing cables routed directly from the wet well to a wireway and the station pump control panel with new conduits routed from the wet well to a new pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure located just Southwest of the existing building containing pump power and float splice boxes. A new concrete pad extended West from the existing wet well will be required.
8. Provide new power and signal conduits routed from the pedestal to the existing station pump control panel located inside the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.
9. Replace existing breaker panel with new power panel with breakers to serve the existing station pump control panel, building lighting, building receptacle, and telemetry equipment.
10. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
11. Provide a box with intrinsic barrier relays for float circuitry protection.
12. Provide LED hand spotlight for wet well lighting to be stored in existing building.
13. Modify building door so that it swings out.

There is minor erosion of the embankment along the back side of the building that could undermine the floor slab and cause damage to the structure. This should be monitored and corrected as needed to protect the building.



PLAN - STATION 112 - EXISTING

NOT TO SCALE



PLAN - STATION 112 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 112

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT SWITCH	REUSE	-
3	POWER WIREWAY	REMOVE	A
4	STATION PUMP CONTROL PANEL	REUSE	-
5	PUMP / FLOAT CABLE WIREWAY	REMOVE	C
6	BREAKER PANEL	REMOVE	C
7	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
8	STATION ALARM ANNUNCIATOR	REUSE	-
9	LIGHT FIXTURE - BUILDING EXTERIOR	REUSE	-
10	LEVEL FLOAT SWITCHES	REMOVE	C
11	SUBMERSIBLE PUMP MOTORS	REMOVE	E
12	MANUAL TRANSFER SWITCH	NEW	A
13	PORTABLE GENERATOR RECEPTACLE	NEW	A
14	STATION POWER BREAKER PANEL	NEW	C
15	INTRINSIC BARRIER RELAY BOX	NEW	C
16	SCADA TELEMETRY TRANSMITTER	NEW	B
17	SCADA CELL ANTENNA	NEW	B
18	DUPLEX RECEPTACLE	NEW	F
19	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
20	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
21	PUMP POWER CABLE SPLICE BOX	NEW	C
22	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
23	SUBMERSIBLE PUMP MOTORS	NEW	E
24	LEVEL FLOAT SWITCHES	NEW	E

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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Table 7-14. Pump Station B-112 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$40,530
Miscellaneous Items[4]	$4,500
Construction Subtotal:	$125,030
Construction Contingency (20%):	$25,006
Total Construction:	**$150,036**
Engineering, Administration (15%)	$22,505
Total Project:	**$172,541**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.15 Pump Station B-113

The proposed improvements at Pump Station B-113 generally include electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. The wet well has been upgraded with a liner, new pumps, and new discharge piping. Schematic layouts are shown in Figure 5-2. Proposed electrical upgrades are shown in Figure 7-15. Detailed cost estimates are provided in Table 7-15 and Appendix 3.

1. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building and a receptacle wall mounted on the Northwest side of the building exterior.
2. Replace existing power and signal conduits containing cables routed directly from the wet well to a wireway and the station pump control panel with new conduits routed from the wet well to a new pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure located on the Southwest side of the existing building containing pump power and float splice boxes. A new concrete pad extended from the building foundation will be required.
3. Provide new power and signal conduits routed from the pedestal to the existing station pump control panel located inside the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.
4. Replace existing breaker panel with new power panel with breakers to serve the existing station pump control panel, building lighting, building receptacle, telemetry equipment.
5. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
6. Provide a box with intrinsic barrier relays for float circuitry protection.
7. Provide LED hand spotlight for wet well lighting to be stored in existing building.

8. Building door will require modification so that it swings out.

Table 7-15. Pump Station B-113 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

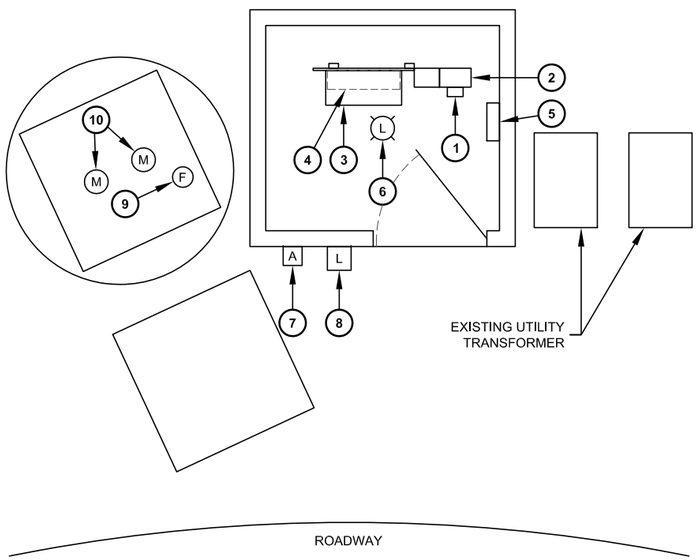
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$0
Electrical Upgrades[3]	$38,759
Miscellaneous Items[4]	$4,500
Construction Subtotal:	$43,259
Construction Contingency (20%):	$8,652
Total Construction:	**$51,911**
Engineering, Administration (15%)	$7,787
Total Project:	**$59,697**

1. See Appendix 3 for additional detail.
2. This wet well is already lined.
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.16 Pump Station B-114

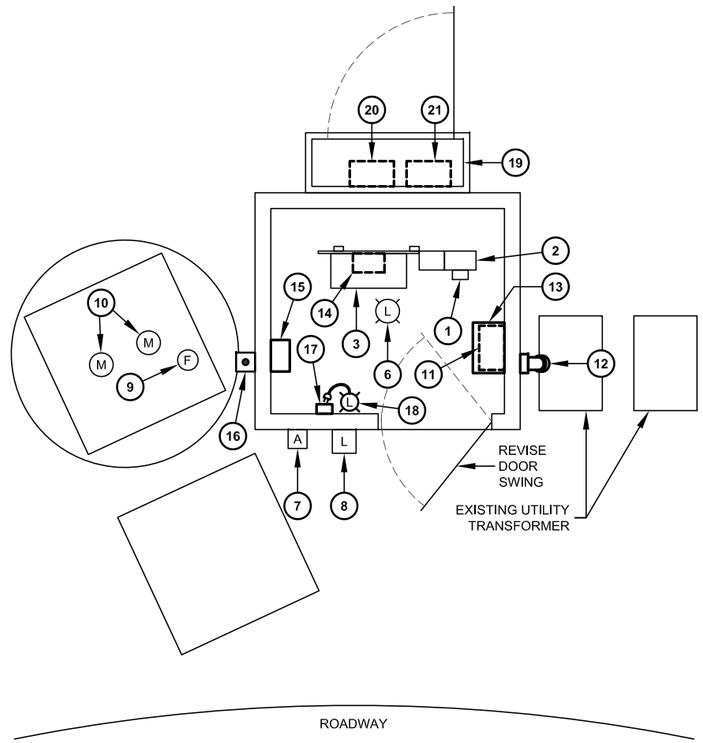
The proposed improvements at Pump Station B-114 generally include electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. The wet well has been upgraded with a liner, new pumps, and new discharge piping. Schematic layouts are shown in Figure 7-16. Detailed cost estimates are provided in Table 7-16 and Appendix 3.

1. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building and a receptacle wall mounted on the Northwest side of the building exterior.
2. Replace existing power and signal conduits containing cables routed directly from the wet well to a wireway with new conduits routed from the wet well to a new pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure located on the Northeast side of the existing building containing pump power and float splice boxes. A new concrete pad extended from the building foundation will be required.
3. Provide new power and signal conduits routed from the pedestal to the existing station pump control panel located inside the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.
4. Replace existing breaker panel with new power panel with breakers to serve the existing station pump control panel, VFD pump controllers, building lighting, building receptacle, telemetry equipment.
5. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
6. Provide a box with intrinsic barrier relays for float circuitry protection.



PLAN - STATION 113 - EXISTING

NOT TO SCALE



PLAN - STATION 113 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 113

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT SWITCH	REUSE	-
3	STATION PUMP CONTROL PANEL	REUSE	-
4	PUMP / FLOAT CABLE WIREWAY	REMOVE	C
5	BREAKER PANEL	REMOVE	C
6	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
7	STATION ALARM ANNUNCIATOR	REUSE	-
8	LIGHT FIXTURE - BUILDING EXTERIOR	REUSE	-
9	LEVEL FLOAT SWITCHES	REUSE	-
10	SUBMERSIBLE PUMP MOTORS	REUSE	-
11	MANUAL TRANSFER SWITCH	NEW	A
12	PORTABLE GENERATOR RECEPTACLE	NEW	A
13	STATION POWER BREAKER PANEL	NEW	C
14	INTRINSIC BARRIER RELAY BOX	NEW	C
15	SCADA TELEMETRY TRANSMITTER	NEW	B
16	SCADA CELL ANTENNA	NEW	B
17	DUPLEX RECEPTACLE	NEW	F
18	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
19	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
20	PUMP POWER CABLE SPLICE BOX	NEW	C
21	LEVEL FLOAT CABLE SPLICE BOX	NEW	C

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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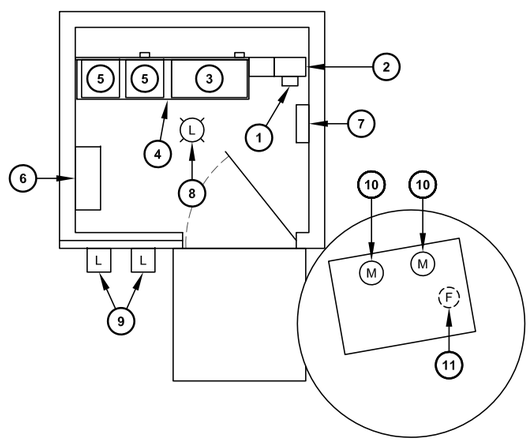
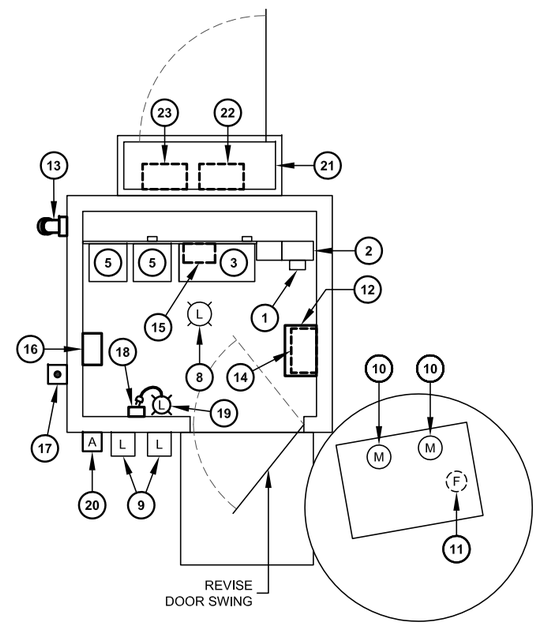


PLAN - STATION 114 - EXISTING

NOT TO SCALE



PLAN - STATION 114 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 114

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT SWITCH	REUSE	-
3	STATION PUMP CONTROL PANEL	REUSE	-
4	PUMP / FLOAT CABLE WIREWAY	REMOVE	C
5	VARIABLE FREQUENCY DRIVE (VFD)	REUSE	-
6	ABANDONED ORIGINAL CONTROL PANEL	REMOVE	F
7	BREAKER PANEL	REMOVE	C
8	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
9	LIGHT FIXTURE - BUILDING EXTERIOR	REUSE	-
10	SUBMERSIBLE PUMP MOTORS	REUSE	-
11	LEVEL FLOAT SWITCHES	REUSE	-
12	MANUAL TRANSFER SWITCH	NEW	A
13	PORTABLE GENERATOR RECEPTACLE	NEW	A
14	STATION POWER BREAKER PANEL	NEW	C
15	INTRINSIC BARRIER RELAY BOX	NEW	C
16	SCADA TELEMETRY TRANSMITTER	NEW	B
17	SCADA CELL ANTENNA	NEW	B
18	DUPLEX RECEPTACLE	NEW	F
19	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
20	STATION ALARM ANNUNCIATOR	NEW	F
21	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
22	PUMP POWER CABLE SPLICE BOX	NEW	C
23	LEVEL FLOAT CABLE SPLICE BOX	NEW	C

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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7. Provide LED hand spotlight for wet well lighting to be stored in existing building.
8. An existing abandoned station pump control panel is to be removed.
9. Modify building door so that it swings out.

Table 7-16. Pump Station B-114 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$0
Electrical Upgrades[3]	$43,832
Miscellaneous Items[4]	$4,500
Construction Subtotal:	$48,332
Construction Contingency (20%):	$9,667
Total Construction:	**$57,999**
Engineering, Administration (15%)	$8,700
Total Project:	**$66,699**

1. See Appendix 3 for additional detail.
2. This wet well is already lined.
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.17 Pump Station B-115

The proposed improvements at Pump Station B-115 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-2 and 7-17. Detailed cost estimates are provided in Table 7-17 and Appendix 3.

1. Provide new fiberglass wet well liner.
2. Replace submersible pumps and level floats.
3. Replace existing discharge piping.
4. Provide new precast concrete valve box.
5. Provide new check valves to be placed in valve box.
6. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building and a receptacle wall mounted on the West side of the building exterior.
7. Replace existing power and signal conduits containing cables routed directly from the wet well to a wireway with new conduits routed from the wet well to a new pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure located on the North side of the existing building containing pump power and float splice boxes. A new concrete pad extended from the building foundation will be required.

8. Provide new power and signal conduits routed from the pedestal to the existing station pump control panel located inside the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.
9. Reuse existing breaker panel with breakers to serve the existing station pump control panel, VFD pump controllers, building lighting / receptacle, and control equipment.
10. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
11. Provide a box with intrinsic barrier relays for float circuitry protection.
12. Provide LED hand spotlight for wet well lighting to be stored in existing building.

Table 7-17. Pump Station B-115 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

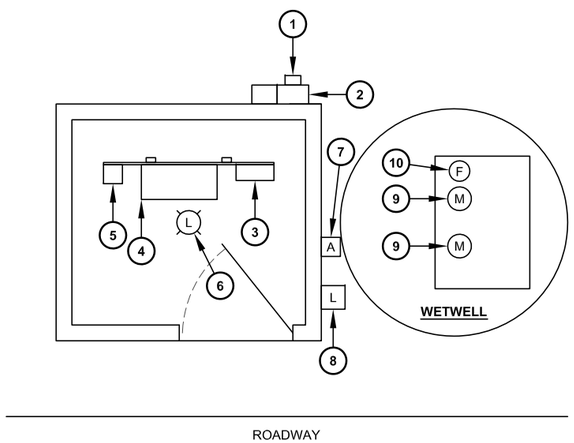
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$37,237
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$120,237
Construction Contingency (20%):	$24,048
Total Construction:	**$144,285**
Engineering, Administration (15%)	$21,643
Total Project:	**$165,928**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.18 Pump Station B-116

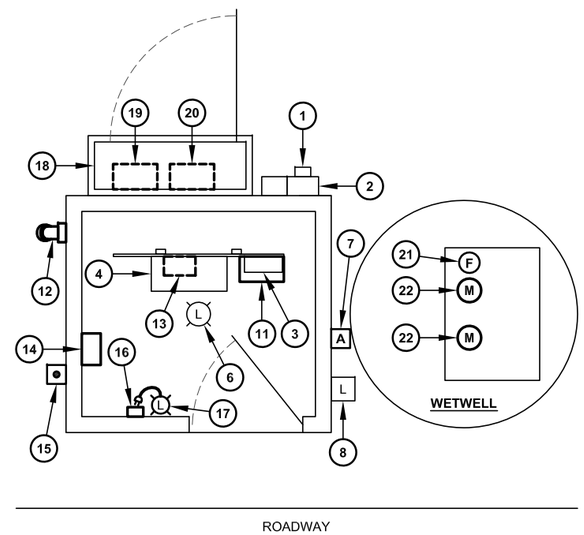
The proposed improvements at Pump Station B-116 generally include electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. The wet well has been upgraded with a liner, new pumps, and new discharge piping. Schematic layouts are shown in Figure 7-18. Detailed cost estimates are provided in Table 7-18 and Appendix 3.

1. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building and a receptacle wall mounted on the South side of the building exterior.
2. Replace existing power and signal conduits containing cables routed directly from the wet well to a wireway with new conduits routed from the wet well to a new pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure located on the East side of the existing building containing pump power and float splice boxes. A new concrete pad extended from the building foundation will be required.



PLAN - STATION 115 - EXISTING

NOT TO SCALE



PLAN - STATION 115 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 115

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT BREAKER	REUSE	-
3	BREAKER PANEL	REUSE	-
4	STATION PUMP CONTROL PANEL	REUSE	-
5	PUMP / FLOAT CABLE WIREWAY	REMOVE	C
6	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
7	STATION ALARM ANNUNCIATOR	REUSE	-
8	LIGHT FIXTURE - BUILDING EXTERIOR	REUSE	-
9	SUBMERSIBLE PUMP MOTORS	REMOVE	E
10	LEVEL FLOAT SWITCHES	REMOVE	E
11	MANUAL TRANSFER SWITCH	NEW	A
12	PORTABLE GENERATOR RECEPTACLE	NEW	A
13	INTRINSIC BARRIER RELAY BOX	NEW	C
14	SCADA TELEMETRY TRANSMITTER	NEW	B
15	SCADA CELL ANTENNA	NEW	B
16	DUPLEX RECEPTACLE	NEW	F
17	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
18	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
19	PUMP POWER CABLE SPLICE BOX	NEW	C
20	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
21	LEVEL FLOAT SWITCHES	NEW	E
22	SUBMERSIBLE PUMP MOTORS	NEW	E

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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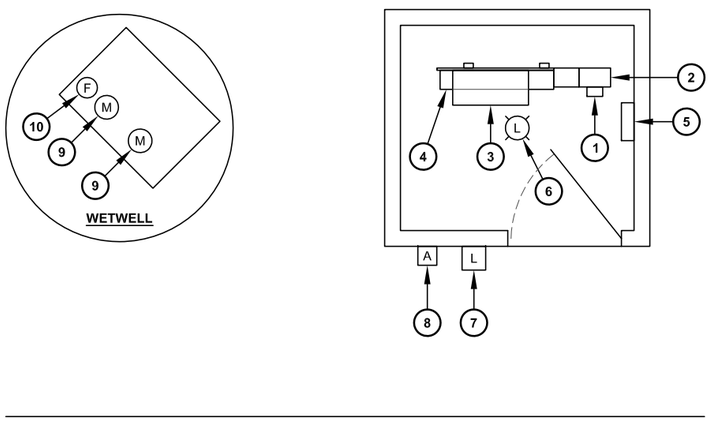
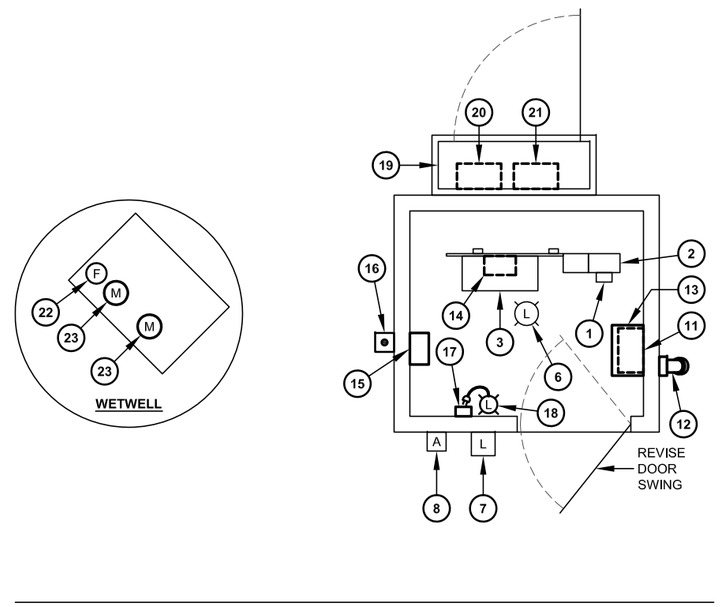


PLAN - STATION 116 - EXISTING

NOT TO SCALE



PLAN - STATION 116 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 116

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT SWITCH	REUSE	-
3	STATION PUMP CONTROL PANEL (TO BE UPGRADED)	REUSE	-
4	PUMP / FLOAT CABLE WIREWAY	REMOVE	C
5	BREAKER PANEL	REMOVE	C
6	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
7	LIGHT FIXTURE - BUILDING EXTERIOR	REUSE	-
8	STATION ALARM ANNUNCIATOR	REUSE	-
9	SUBMERSIBLE PUMP MOTORS	REMOVE	E
10	LEVEL FLOAT SWITCHES	REMOVE	E
11	MANUAL TRANSFER SWITCH	NEW	A
12	PORTABLE GENERATOR RECEPTACLE	NEW	A
13	STATION POWER BREAKER PANEL	NEW	C
14	INTRINSIC BARRIER RELAY BOX	NEW	C
15	SCADA TELEMETRY TRANSMITTER	NEW	B
16	SCADA CELL ANTENNA	NEW	B
17	DUPLEX RECEPTACLE	NEW	F
18	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
19	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
20	PUMP POWER CABLE SPLICE BOX	NEW	C
21	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
22	LEVEL FLOAT SWITCHES	NEW	E
23	SUBMERSIBLE PUMP MOTORS	NEW	E

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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3. Provide new power and signal conduits routed from the pedestal to the existing station pump control panel located inside the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.
4. Replace two (2) constant speed motor starters inside original station pump control panel with two (2) new VFD controllers.
5. Replace existing breaker panel with new power panel with breakers to serve the existing station pump control panel, building lighting, building receptacle, telemetry equipment.
6. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
7. Provide a box with intrinsic barrier relays for float circuitry protection.
8. Provide LED hand spotlight for wet well lighting to be stored in existing building.
9. Modify building door so that it swings out.

Table 7-18. Pump Station B-116 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$0
Electrical Upgrades[3]	$46,938
Miscellaneous Items[4]	$4,500
Construction Subtotal:	$51,438
Construction Contingency (20%):	$10,288
Total Construction:	**$61,726**
Engineering, Administration (15%)	$9,259
Total Project:	**$70,985**

1. See Appendix 3 for additional detail.
2. This wet well is already lined.
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.19 Pump Station B-117

The proposed improvements at Pump Station B-117 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-2 and 7-19. Detailed cost estimates are provided in Table 7-19 and Appendix 3.

1. Provide new fiberglass wet well liner.
2. Replace submersible pumps and level floats.
3. Replace existing discharge piping.
4. Provide new precast concrete valve box.
5. Provide new check valves to be placed in valve box.

6. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a service rated manual transfer switch mounted inside the existing building and a receptacle wall mounted on the West side of the building exterior.
7. Replace existing power and signal conduits containing cables routed directly from the wet well to a wireway with new conduits routed from the wet well to a new pad-mounted 4 foot wide, 3 foot high, 15 inch deep painted steel pedestal enclosure located on the South side of the existing building containing pump power and float splice boxes. A new concrete pad extended from the building foundation will be required.
8. Provide new power and signal conduits routed from the pedestal to the existing station pump control panel located inside the building. Conduits will contain epoxy sealed fittings at the pedestal end to keep hazardous gases from being passed to the electrical equipment in the building.
9. Replace existing breaker panel with new power panel with breakers to serve the existing station pump control panel, building lighting, building receptacle, telemetry equipment.
10. Provide cell phone transmitter and antenna, located at the existing building to be used for transmitting station status to headquarters via telemetry communications.
11. Provide a box with intrinsic barrier relays for float circuitry protection.
12. Provide LED hand spotlight for wet well lighting to be stored in existing building.
13. Modify building door so that it swings out.

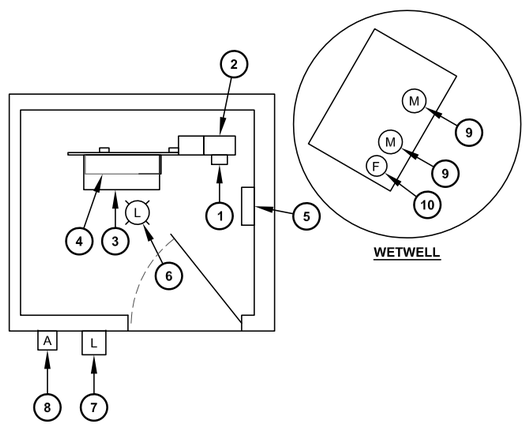
Table 7-19. Pump Station B-117 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$40,000
Miscellaneous Items[4]	$4,500
Construction Subtotal:	$124,500
Construction Contingency (20%):	$24,901
Total Construction:	**$149,401**
Engineering, Administration (15%)	$22,410
Total Project:	**$171,812**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside).
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.20 Pump Station B-118

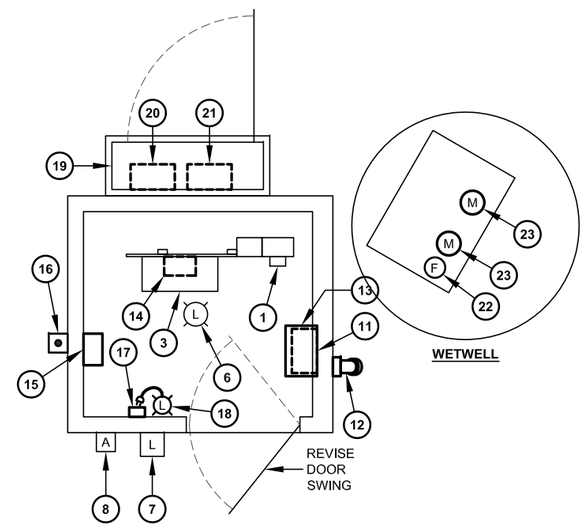
The proposed improvements at Pump Station B-118 generally include a new wet well liner, new submersible pumps, new discharge piping, electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. Schematic layouts are shown in Figures 5-2 and 7-20. Detailed cost estimates are provided in Table 7-20 and Appendix 3.



ROADWAY

PLAN - STATION 117 - EXISTING

NOT TO SCALE



ROADWAY

PLAN - STATION 117 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 117

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT SWITCH	REUSE	-
3	STATION PUMP CONTROL PANEL	REUSE	-
4	PUMP / FLOAT CABLE WIREWAY	REMOVE	C
5	BREAKER PANEL	REMOVE	C
6	LIGHT FIXTURE - BUILDING INTERIOR	REUSE	-
7	LIGHT FIXTURE - BUILDING EXTERIOR	REUSE	-
8	STATION ALARM ANNUNCIATOR	REUSE	-
9	SUBMERSIBLE PUMP MOTORS	REMOVE	E
10	LEVEL FLOAT SWITCHES	REMOVE	E
11	MANUAL TRANSFER SWITCH	NEW	A
12	PORTABLE GENERATOR RECEPTACLE	NEW	A
13	STATION POWER BREAKER PANEL	NEW	C
14	INTRINSIC BARRIER RELAY BOX	NEW	C
15	SCADA TELEMETRY TRANSMITTER	NEW	B
16	SCADA CELL ANTENNA	NEW	B
17	DUPLEX RECEPTACLE	NEW	F
18	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
19	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
20	PUMP POWER CABLE SPLICE BOX	NEW	C
21	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
22	LEVEL FLOAT SWITCHES	NEW	E
23	SUBMERSIBLE PUMP MOTORS	NEW	E

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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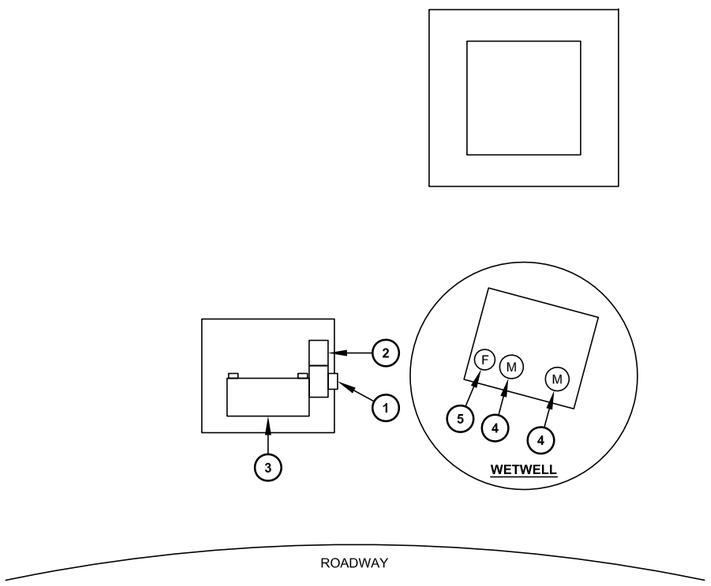
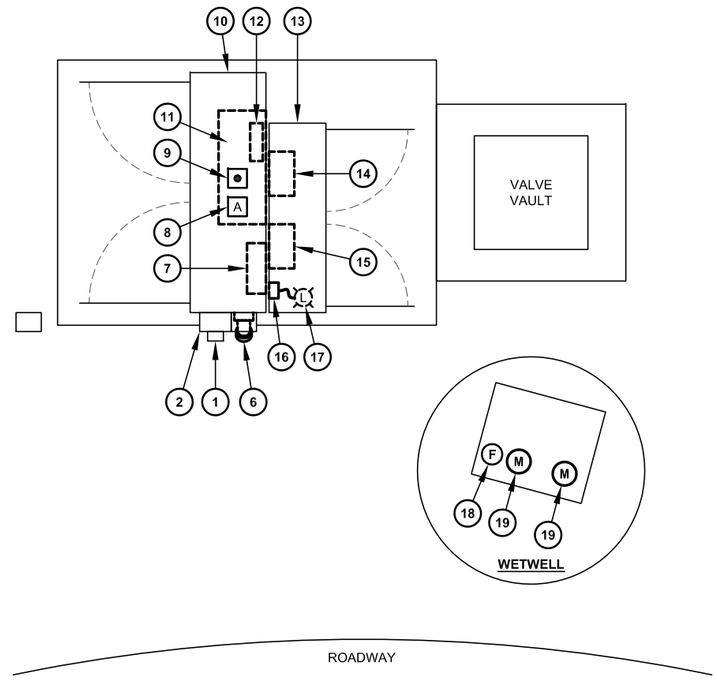


PLAN - STATION 118 - EXISTING

NOT TO SCALE



PLAN - STATION 118 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 118

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	RELOCATE	F
2	STATION POWER DISCONNECT SWITCH	RELOCATE	F
3	STATION PUMP CONTROL PANEL	REMOVE	D
4	SUBMERSIBLE PUMP MOTORS	REMOVE	E
5	LEVEL FLOAT SWITCHES	REMOVE	E
6	PORTABLE GENERATOR RECEPTACLE	NEW	A
7	MANUAL TRANSFER SWITCH	NEW	A
8	STATION ALARM ANNUNCIATOR	NEW	D
9	SCADA CELL ANTENNA	NEW	B
10	ELECTRICAL EQUIPMENT ENCLOSURE	NEW	F
11	STATION PUMP CONTROL PANEL	NEW	D
12	SCADA TELEMETRY TRANSMITTER	NEW	B
13	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
14	PUMP POWER CABLE SPLICE BOX	NEW	C
15	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
16	DUPLEX RECEPTACLE	NEW	F
17	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
18	LEVEL FLOAT SWITCHES	NEW	E
19	SUBMERSIBLE PUMP MOTORS	NEW	E

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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1. Provide new fiberglass wet well liner.
2. Replace submersible pumps and level floats.
3. Replace existing discharge piping.
4. Replace existing check valves located in the existing valve box.
5. Provide new two-door free-standing, 6 foot high, 6 foot wide, 18 inch deep painted steel enclosure for the purposes of containing new station pump control panel, telemetry transmitter and cell antenna, manual transfer switch, generator receptacle, and relocated utility meter.
6. Remove and discard existing station electrical and control panel with the exception of the utility service meter/disconnect which is to be relocated.
7. Provide new two-door free-standing 4 foot wide, 3 foot high, 15 inch deep painted steel enclosure containing new pump power and float signal junction boxes, and receptacle with hand-held LED spot light for lighting wet well. A new concrete pad is required around new enclosures.
8. Replace existing power and signal conduits containing cables routed directly from the wet well to the original station pump control panel with new conduits routed from the wet well to a new float splice boxes in the free-standing enclosure.
9. Provide new power and signal conduits routed from the cable splice boxes to the station pump control panel. Conduits will contain epoxy sealed fittings at the splice box end to keep hazardous gases from being passed to the electrical equipment.
10. Provide standby power components for connecting the pump station to a new trailer mounted generator consisting of a manual transfer switch and receptacle.
11. Provide a custom new station pump control panel including, pump feeder breakers, VFD controllers, Mercoid FPC-1200 duplex pump controller, float intrinsic barrier relays, branch feeder breakers for lighting and control power, relays for output status to telemetry.
12. Provide cell transmitter and antenna to be used for transmitting station status to headquarters via telemetry communications.

Table 7-20. Pump Station B-118 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

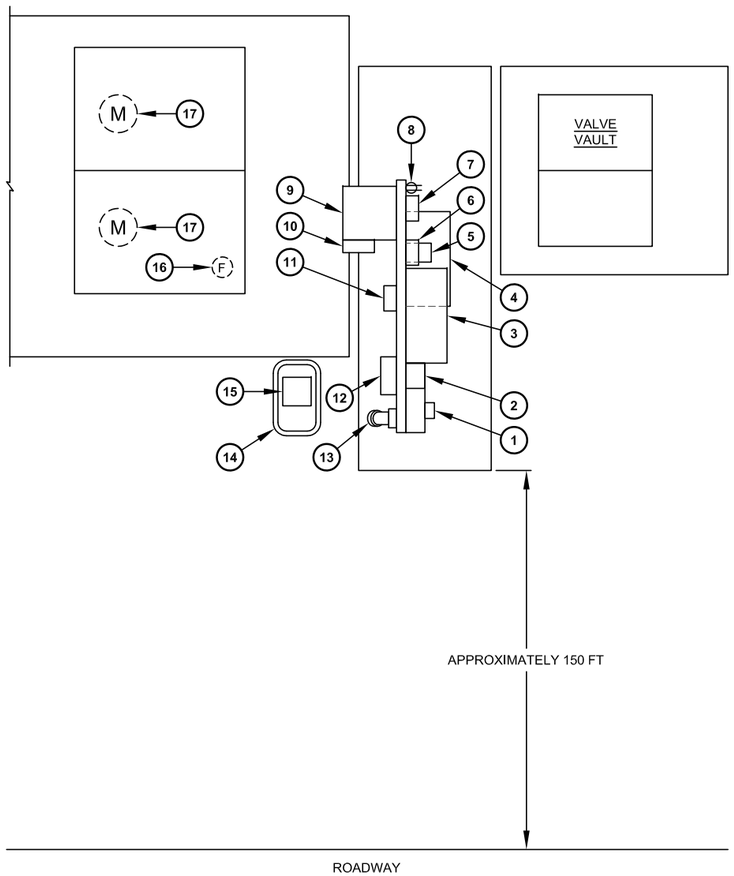
Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$80,000
Electrical Upgrades[3]	$57,826
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$140,826
Construction Contingency (20%):	$28,166
Total Construction:	**$168,992**
Engineering, Administration (15%)	$25,349
Total Project:	**$194,341**

1. See Appendix 3 for additional detail.
2. Generally includes new liner, new submersible pumps, new discharge piping, new check valves, and new precast valve box (if wet well is outside)
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.21 Pump Station B-120

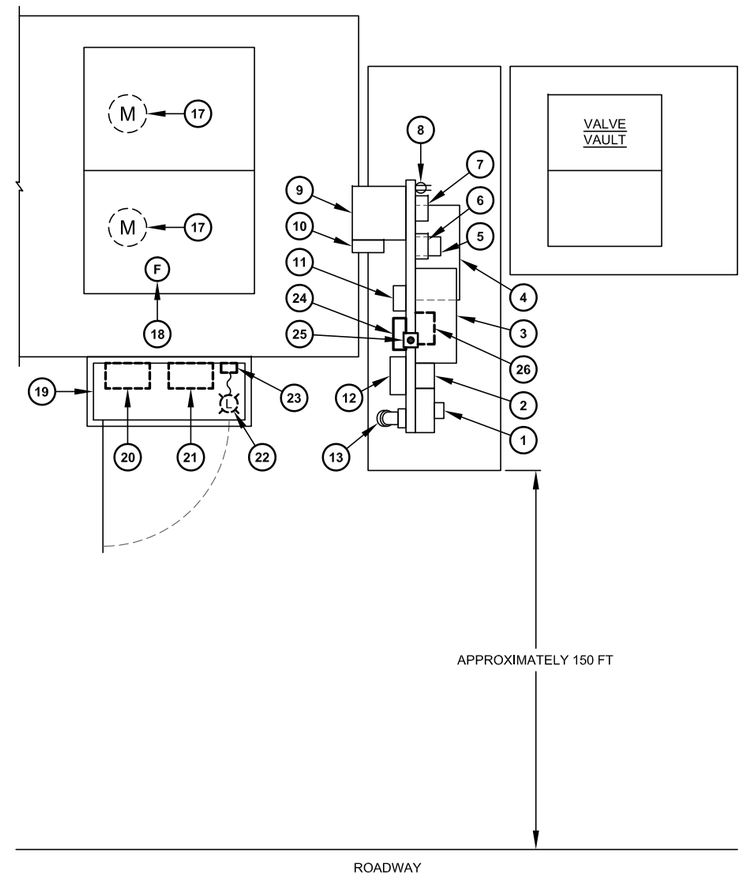
The proposed improvements at Pump Station B-120 generally include electrical upgrades with plug in for portable generator, controls upgrades, and telemetry as defined in detail below. A schematic layout is shown in Figure 7-21. Detailed cost estimates are provided in Table 1-20 and Appendix 3.

1. Provide new two-door free-standing 4 foot wide, 3 foot high, 15 inch deep painted steel enclosure containing new pump power and float signal junction boxes, and receptacle with hand-held LED spot light for lighting wet well. A new concrete pad will be required under the splice box enclosure.
2. Replace existing single conduit containing pump power cables and float signal cables routed between the wet well and a single junction box located in a handhole with (1) power conduit for pump cables and (1) conduit for float signal cables routed between the wet well and new junction boxes described in Item 1.
3. Replace existing level float switches.
4. Provide conduits with epoxy seal fittings with wiring to be routed between splice boxes identified in Item 1 and existing Station Pump Control Panel enclosure.
5. Remove and discard existing handhole and associated junction box. Remove associated conduits and wiring.
6. Provide cell transmitter and antenna to be used for transmitting station status to headquarters via telemetry communications.
7. Provide a box with intrinsic barrier relays for float circuitry protection.



PLAN - STATION 120 - EXISTING

NOT TO SCALE



PLAN - STATION 120 - UPDATED

NOT TO SCALE

EQUIPMENT LIST - STATION 120

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	UTILITY SERVICE METER	REUSE	-
2	STATION POWER DISCONNECT SWITCH	REUSE	-
3	STATION PUMP CONTROL PANEL	REUSE	-
4	ENCLOSURE WITH VFD EQUIPMENT	REUSE	-
5	TRANSFORMER PRIMARY DISCONNECT SWITCH	REUSE	-
6	STATION 120V POWER TRANSFORMER	REUSE	-
7	STATION 120V BREAKER PANEL	REUSE	-
8	DUPLEX RECEPTACLE	REUSE	-
9	120/230V, 3 PHASE TO 120/230V, 1 PHASE TRANSFORMER	REUSE	-
10	TRANSFORMER SECONDARY DISCONNECT SWITCH	REUSE	-
11	120/230V, 3 PHASE GENERATOR FEEDER BREAKER	REUSE	-
12	MANUAL TRANSFER SWITCH - 120/230V, 3 PHASE	REUSE	-
13	PORTABLE GENERATOR RECEPTACLE	REUSE	-
14	POWER & SIGNAL HANDHOLE	REMOVE	C
15	PUMP & FLOAT CABLE SPLICE JUNCTION BOX	REMOVE	C
16	LEVEL FLOAT SWITCHES	REMOVE	C
17	SUBMERSIBLE PUMP MOTORS	REUSE	-
18	LEVEL FLOAT SWITCHES	NEW	C
19	CABLE SPLICE BOX PEDESTAL ENCLOSURE	NEW	C
20	PUMP POWER CABLE SPLICE BOX	NEW	C
21	LEVEL FLOAT CABLE SPLICE BOX	NEW	C
22	HAND HELD LED SPOTLIGHT FOR WET WELL	NEW	F
23	DUPLEX RECEPTACLE	NEW	F
24	SCADA TELEMETRY TRANSMITTER	NEW	B
25	SCADA CELL ANTENNA	NEW	B
26	INTRINSIC BARRIER RELAY BOX (MOUNTED INSIDE ITEM 3)	NEW	C

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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Table 7-21. Pump Station B-120 Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Wet Well Rehabilitation[2]	$0
Electrical Upgrades[3]	$32,940
Miscellaneous Items[4]	$3,000
Construction Subtotal:	$35,940
Construction Contingency (20%):	$7,188
Total Construction:	**$43,128**
Engineering, Administration (15%)	$6,469
Total Project:	**$49,597**

1. See Appendix 3 for additional detail.
2. Wet well rehabilitation is not needed for this pump station.
3. Generally includes provision for backup power, upgraded electrical and controls, and upgrades required by code when other upgrades are installed.
4. Generally includes non-electrical items needed to accommodate electrical code compliance upgrades, such as concrete equipment pad, retaining walls, access steps, and door modification.

7.1.22 Portable Standby Generator

Two portable trailer mounted generators will be needed to provide the required power at pump stations in the event of a power outage. The provisions for generator hookup and manual transfer switch at each pump station were covered with the upgrades for each pump station as described previously. The two generators should each have the following features:

1. Diesel engine driven generator sized to include specific station loads as indicted below.
2. Weathertight enclosure with residential grade muffler.
3. Integral fuel tank with capacity to operate the generator under full load for 24 hours.
4. Output breaker with associated 30 foot cord and plug for 3-phase stations.
5. Output breaker with associated 30 foot cord and plug for 1-phase stations
6. Battery charger and engine jacket heater circuitry.
7. Run and alarm status communication via telemetry.
8. Heavy duty single axle trailer.

Generator No. 1: Rated 120/240V, Three phase, 45KW / 54KVA, serving Pump Station Nos. B105, B108, B113, B114, B116 and B120.

Generator No. 2: Rated 120/240V, Single phase, 35KW / 42KVA, serving Pump Station Nos. B101, B102, B103, B104, B106, B107, B109, B110, B111, B112, B115, B117 and B118.

These generators will be procured directly from a vendor. Estimated cost for Generator No. 1 is $43,000 and for Generator No. 2 is $40,000. Detailed cost estimates are provided in Appendix 3.

7.1.23 Lake Shore Drive Bypass

The proposed improvements for this project include a new 4-inch-diameter PVC force main along Lake Shore Drive starting from near the intersection of Zen Mountain and Lake Shore Drive and ending near the intersection Palmer Drive and Lake Shore Drive (Figure 7-22). At the upstream end, the new force main will connect to the existing 4-inch force main coming from Pump Station B-111. The new force main will terminate in a new manhole located just south of Palmer Drive.

The new manhole will replace an existing cleanout where the existing 4-inch force main from Pump Station B-109 empties into a 15-inch gravity sewer. Upgrades to the pumps at Pump Station B-111 will be needed due to greater head requirements than the existing pumps can provide. These pump upgrades were described previously under the upgrades to Pump Station B-111 and are not specifically part of this project.

Additional utility easements will be needed along Lake Shore Drive.

Detailed cost estimates are provided in Table 7-22 and Appendix 3.

Table 7-22. Lake Shore Drive Bypass Detailed Opinion of Probable Project Cost[1,2]
Lake Shastina CSD

Item Description	Estimate
Mobilization	$15,000
Erosion and Sediment Control	$5,000
Closeout Procedures	$2,500
Survey for as-built	$2,500
Sewer Main Piping and Appurtenances	$10,092
Trench Excavation and Backfill	$376,950
Pavement Grinding and Patching	$25,155
Manhole Connection	$1,600
Manhole Disconnections	$1,600
Traffic Control	$20,000
Third Party Testing	$5,000
Construction Subtotal:	$465,397
Construction Contingency (20%):	$93,079
Total Construction:	**$558,476**
Engineering, Administration (15%)	$83,771
Total Project:	**$642,248**

1. See Appendix 3 for additional detail.
2. Cost does not include any required easements.

7.1.24 Tony Lema Drive Diversion

The proposed improvements for this project consist of abandoning the existing gravity line between Rossburg Court and Rock Circle and installing a new 8-inch-diameter gravity sewer between Rossburg Court and Pump Station B-120 (Figure 5-4). The alignment will go through an undeveloped residential lot and the

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SHN Consulting Engineers & Geologists, Inc.

Lake Shastina Community Services District
Wastewater System Improvements
Lake Shastina, California

Lake Shastina
System Map
SHN 517027

February 2018 | B-111_to_B-109 | Figure 7-22

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existing golf course. A new utility through each property will be needed. Detailed cost estimates are provided in Table 7-23 and Appendix 3.

Table 7-23. Tony Lema Drive Diversion Detailed Opinion of Probable Project Cost[1,2]
Lake Shastina CSD

Item Description	Estimate
Mobilization	$15,000
Erosion and Sediment Control	$5,000
Closeout Procedures	$2,500
Survey for as-built	$2,500
Clearing and Grubbing	$2,000
Sewer Main Piping and Appurtenances	$32,000
Trench Excavation and Backfill	$160,000
Manhole Connection	$3,200
Pavement Grinding and Patching	$225
Golf Course Repair	$10,000
Third Party Testing	$5,000
Construction Subtotal:	$227,425
Construction Contingency (20%):	$45,485
Total Construction:	**$272,910**
Engineering, Administration (15%)	$40,937
Total Project:	**$313,847**

1. See Appendix 3 for additional detail.
2. Cost does not include any required easements.

7.1.25 Wastewater Treatment Facility Upgrades

The proposed improvements at the WWTF are lumped together as a single project, but could be broken out into separate projects as part of a phased improvement at the facility. The upgrades described in this section are (1) Pond 5 lining, (2) New primary solids settling tank, and (3) New sludge drying beds. The locations of these upgrades are shown in Figure 7-23.

The lining of Pond 5 will consist of the following:

1. Removal of existing vegetation along the inside banks and bottom of Pond 5. If necessary, remove top three to four inches and replace with appropriate clean fill back to the existing grades.
2. Compaction of side slopes and bottom.
3. Placement of 60-mil thick plastic liner, anchored into top of embankment.

The new primary solids settling tank will be approximately 14 feet wide by 31 feet long by six feet deep and located adjacent to the existing primary tank as shown in Figure 7-23. This project will consist of the following:

1. New concrete slab

2. Concrete masonry unit (CMU) block wall
3. New flow meter vault and magnetic resonance flow meter (magmeter)
4. New electrical service (extending from the existing service) and flow transmitter, including relocated flow transmitter for the existing flow meter as described here:
    a. Remove existing electrical associated with original flowmeter consisting of post mounted solar panel, solar power electronics, batteries and power connections to flowmeter.
    b. Remove transmitter associated with original flowmeter.
    c. Provide new single door free-standing stainless steel 6 foot high, 36 inch wide, 18 inch deep Electrical Equipment Enclosure located adjacent to the existing flowmeter vault. A new concrete pad will be required under new Electrical Equipment Enclosure.
    d. Provide new flowmeter transmitter located in Electrical Equipment Enclosure, new sensor in existing flowmeter vault and new power and signal cables furnished by flowmeter manufacturer for connection between components.
    e. Provide enclosure light and associated switch, duplex receptacle and power & signal junction boxes.
    f. Provide trenching and backfill, power and signal conduits and wiring routed between existing electrical equipment enclosure and rack and new Electrical Equipment Enclosure.

Figures 7-24 and 7-25 show the proposed electrical system improvements at the WWTF.

The new sludge drying beds will be located along the eastern area of the property on the east side of Ponds 1 and 2 as shown in Figure 7-23. The two beds will each be 45 feet wide by 100 feet long and consist of a sloped concrete slab with a trench drain at the bottom as shown in Figure 7-26. The trench drain will consist of a perforated plastic pipe placed in a rock layer covered by a top layer of sand. The sand will act as a barrier to keep sludge from entering the rock layer and causing fouling. Each time the sludge is removed, the top inch of sand should be removed and replaced with clean sand to allow for proper drainage of leachate for new sludge. The leachate will drain to a sump, with a sump pump that will operate on a float and pump excess liquid to Pond 2. Electrical service for the two sump pumps will be extended from the new service provided at the primary solids settling pond. The electrical service will be 120-volt power with weatherproof duplex receptacles at each basin sump.

Detailed cost estimates for the WWTF upgrades are provided in Table 7-24 and Appendix 3.

Path: K:\2017\517027-LSCSD-WWStudy\GIS\WWTF_SDB_aerial.mxd

SHN Consulting Engineers & Geologists, Inc.	Lake Shastina Community Services District Wastewater PER Lake Shastina, California	Wastewater Treatment Facility Civil Improvements SHN 517027
	April 2003 / WWTF_SDB_aerial	Figure 7-23

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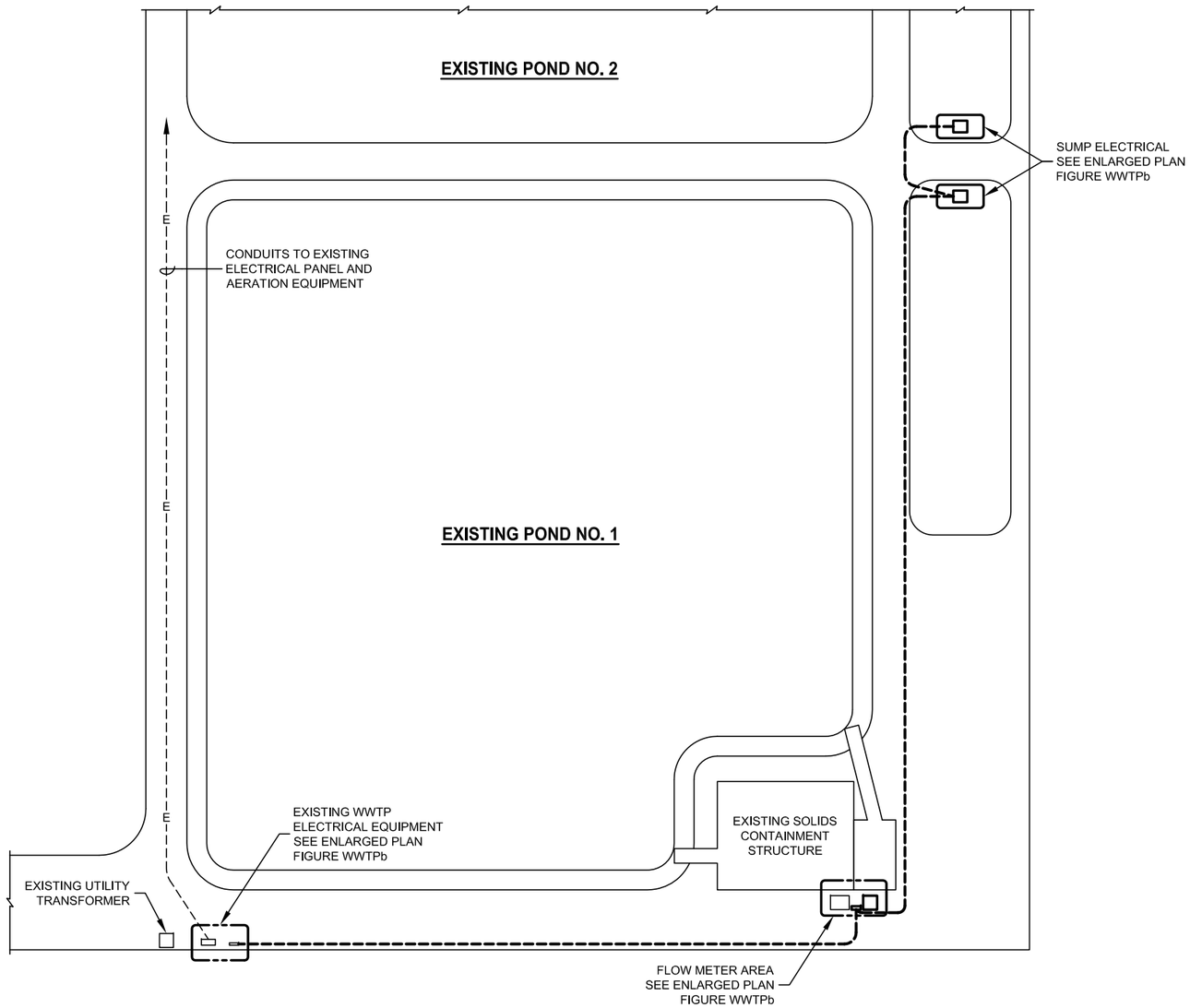

PLAN - SEWER POND PARTIAL ELECTRICAL

NOT TO SCALE

EQUIPMENT LIST - WWTP

NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	FREE-STANDING ELECTRICAL EQUIPMENT ENCLOSURE	REUSE	-
2	PLC CONTROLLER	REUSE	-
3	TRANSFORMER PRIMARY DISCONNECT SWITCH	REUSE	-
4	480V-120/240V TRANSFORMER	REUSE	-
5	120/240V POWER WIRING JUNCTION BOX	REUSE	-
6	120/240V BREAKER PANEL	REUSE	-
7	FLOWMETER WITH TRANSMITTER / INDICATOR	REMOVE	-
8	BATTERIES	REMOVE	-
9	SOLAR PANEL ELECTRONICS	REMOVE	-
10	POST MOUNTED SOLAR PANEL	REMOVE	-
11	FLOWMETER SENSOR HARDWARE (FE-101)	NEW	F
12	FLOWMETER SENSOR (FE-102)	NEW	F
13	FREE-STANDING ELECTRICAL EQUIPMENT ENCLOSURE	NEW	F
14	FLOWMETER TRANSMITTER / INDICATOR (FIT-101)	NEW	F
15	FLOWMETER TRANSMITTER / INDICATOR (FIT-102)	NEW	F
16	SIGNAL WIRING JUNCTION BOX	NEW	F
17	120V POWER WIRING JUNCTION BOX	NEW	F
18	ENCLOSURE LIGHT SWITCH	NEW	F
19	ENCLOSURE LED LIGHT	NEW	F
20	DUPLEX RECEPTACLE	NEW	F
21	DUPLEX RECEPTACLE WITH WEATHERPROOF COVER	NEW	F
22	120V SUMP PUMP WITH INTEGRAL FLOAT	NEW	F

TASK LIST

A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION

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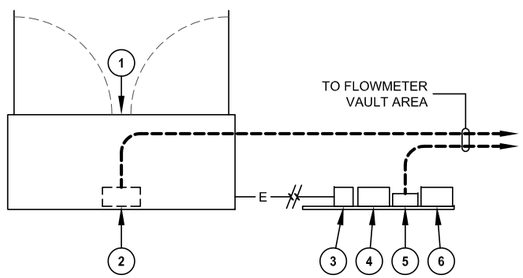
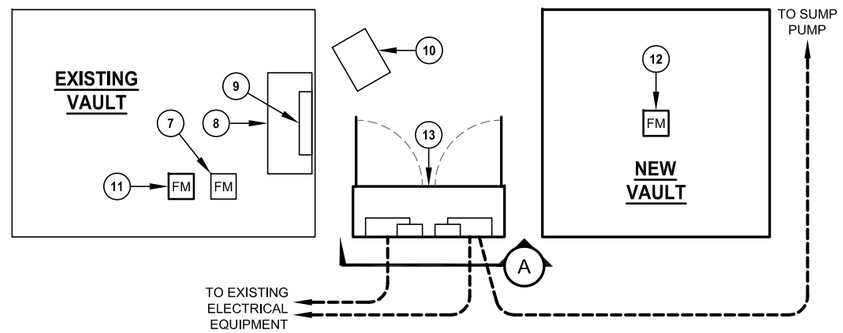


PLAN - EXISTING WWTP ELECTRICAL EQUIPMENT

NOT TO SCALE

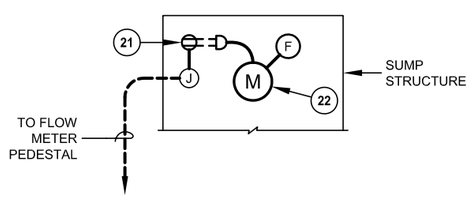


PLAN - FLOWMETER AREA ELECTRICAL

NOT TO SCALE

EQUIPMENT LIST - WWTP			
NO.	EQUIPMENT DESCRIPTION	STATUS	TASK
1	FREE-STANDING ELECTRICAL EQUIPMENT ENCLOSURE	REUSE	-
2	PLC CONTROLLER	REUSE	-
3	TRANSFORMER PRIMARY DISCONNECT SWITCH	REUSE	-
4	480V-120/240V TRANSFORMER	REUSE	-
5	120/240V POWER WIRING JUNCTION BOX	REUSE	-
6	120/240V BREAKER PANEL	REUSE	-
7	FLOWMETER WITH TRANSMITTER / INDICATOR	REMOVE	-
8	BATTERIES	REMOVE	-
9	SOLAR PANEL ELECTRONICS	REMOVE	-
10	POST MOUNTED SOLAR PANEL	REMOVE	-
11	FLOWMETER SENSOR HARDWARE (FE-101)	NEW	F
12	FLOWMETER SENSOR (FE-102)	NEW	F
13	FREE-STANDING ELECTRICAL EQUIPMENT ENCLOSURE	NEW	F
14	FLOWMETER TRANSMITTER / INDICATOR (FIT-101)	NEW	F
15	FLOWMETER TRANSMITTER / INDICATOR (FIT-102)	NEW	F
16	SIGNAL WIRING JUNCTION BOX	NEW	F
17	120V POWER WIRING JUNCTION BOX	NEW	F
18	ENCLOSURE LIGHT SWITCH	NEW	F
19	ENCLOSURE LED LIGHT	NEW	F
20	DUPLEX RECEPTACLE	NEW	F
21	DUPLEX RECEPTACLE WITH WEATHERPROOF COVER	NEW	F
22	120V SUMP PUMP WITH INTEGRAL FLOAT	NEW	F

TASK LIST
A - STANDBY POWER EQUIPMENT PROVIDED
B - SCADA TELEMETRY EQUIPMENT PROVIDED
C - NEC REQUIREMENTS ADDRESSED
D - PUMP CONTROL PANEL UPGRADE
E - PUMP RENOVATION
F - GENERAL RENOVATION



PLAN - TYPICAL BASIN SUMP PUMP ELECTRICAL

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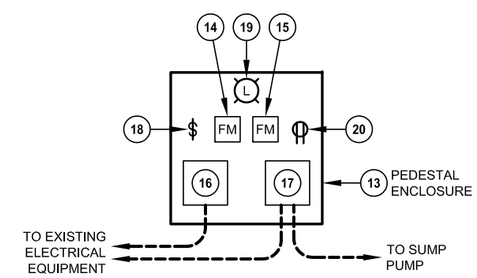

A ELEVATION - EQUIPMENT ENCLOSURE

NOT TO SCALE

Consulting Engineers & Geologists, Inc.

RICHARD SAMPLE ENGINEERING

Lake Shastina Community Services District
Wastewater PER
Lake Shastina, California

SEWER POND ENLARGED PLANS, ELEVATION, EQUIPMENT LIST
SHN 517027

April 2018 | RSE1708 ELECTRICAL FIGURES | Figure 7-25

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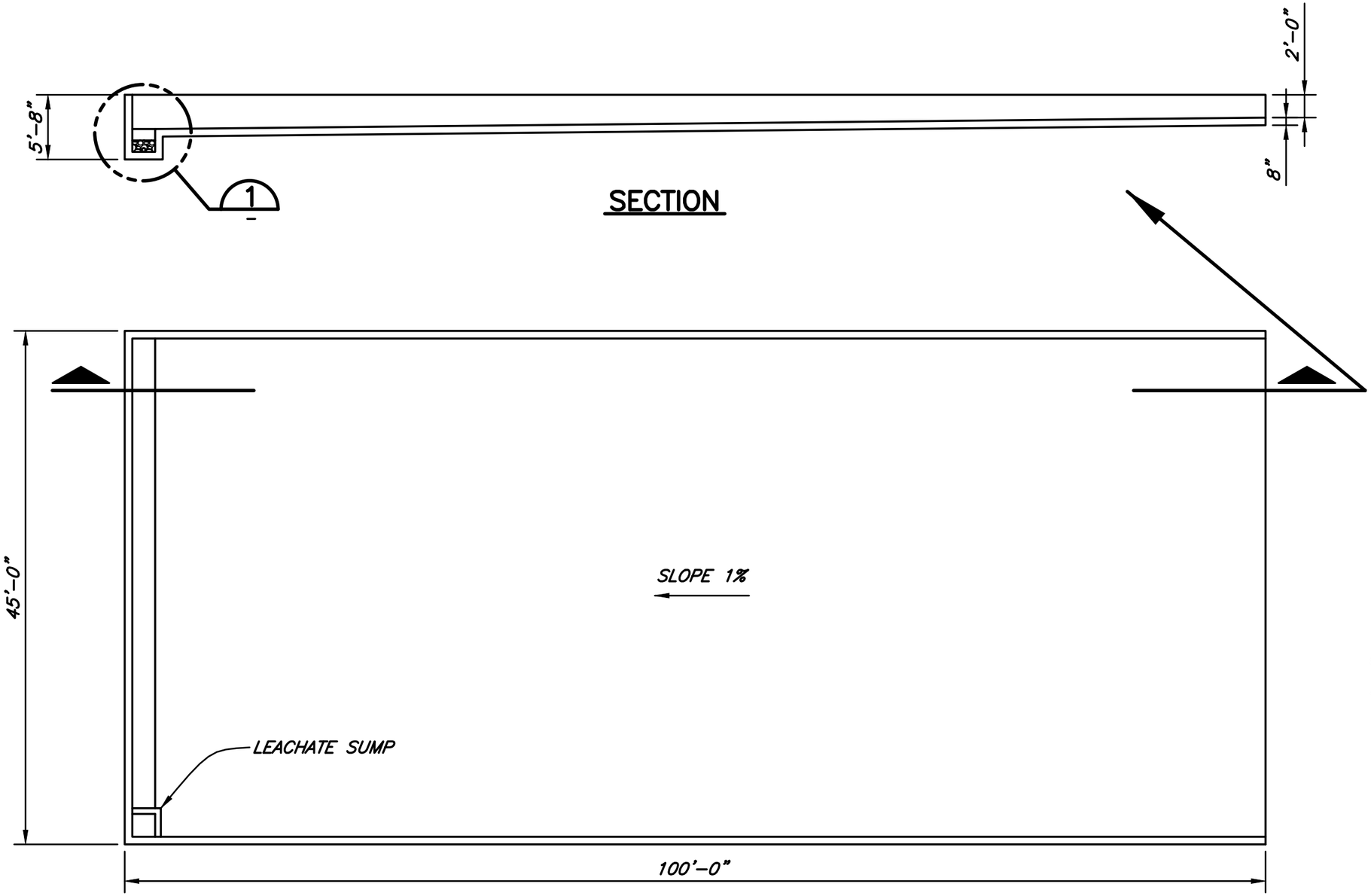

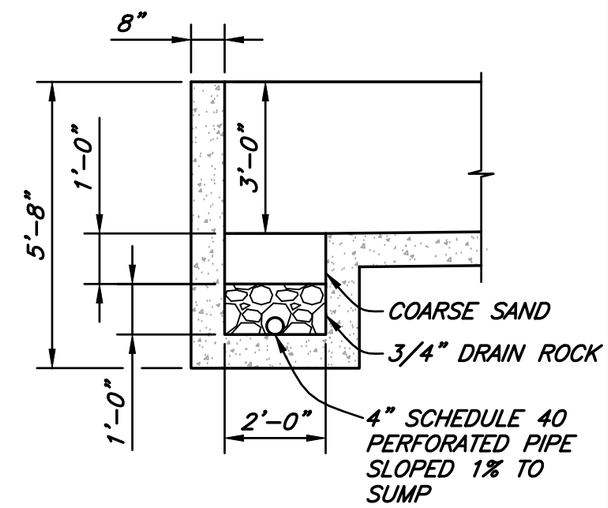

DETAIL 1
NTS

NOT TO SCALE

SHN Consulting Engineers & Geologists, Inc.	Lake Shastina Community Services District Preliminary Engineering Report Lake Shastina, California	Drying Bed Conceptual Design SHN 517027
	February 2018 / 517027-DRY-BED	Figure 7-26

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Table 7-24. WWTF Detailed Opinion of Probable Project Cost[1]
Lake Shastina CSD

Item Description	Lump Sum Estimate
Pond 5 liner	$198,000
Sludge Drying Bed	$198,132
New Primary Solids Settling Tank	$27,737
New Flowmeter and Vault	$24,494
Piping	$5,870
Bypass Outlet from New Tank	$7,374
Electrical Upgrades	$36,846
Mobilization (12%)	$60,000
Construction Subtotal:	$558,453
Construction Contingency (20%):	$112,000
Total Construction:	**$670,453**
Engineering, Administration (15%)	$101,000
Total Project:	**$771,453**

1. See Appendix 3 for additional detail.

7.2 Project Schedule

The individual projects will be phased based on a number of factors, including condition, funding availability, and need. Individual projects may be further phased, such as providing backup power capability at a pump station ahead of lining. Table 7-25 provides a general guideline for the recommended timeframe of the proposed improvements.

Table 7-25. Schedule of Proposed Upgrades[1]
Lake Shastina CSD

Project Phase	Recommended Timeframe
Pond 5 lining	Within the next five years depending on development activity
Sludge Drying Beds	Within the next two years
New Primary Tank	Within the next two years
Lake Shore Drive Bypass	Within the next five years
Tony Lema Drive Diversion	Within the next five years
Pump Station B-100	Within the next two years
Pump Station B-111	Within the next five years in conjunction with the Lake Shore Drive Bypass Force Main
All Other Pump Stations	Two pump stations per year over the next ten years starting with the unlined pump stations in an order to be determined by LSCSD staff. Certain portions, such as installation of the provision for portable standby power, could be performed earlier in a phased approach.

1. The scheduling of these projects can be accelerated if appropriate funding is available

7.3 Permit Requirements

Permit requirements for the projects are anticipated to be limited to the following:

- CEQA clearance (to be obtained during this study);
- Construction General Permit (SWRCB Order 2009-0009-DWQ), only for the projects at the WWTF, Lake Shore Drive Bypass, and Tony Lema Drive Diversion; and
- Local permits.

7.4 Sustainability Considerations

Wastewater operations, especially pump stations, are energy intensive. Considerations for energy efficiency were taken into account in the design recommendations. For example, the use of variable frequency drives reduces energy usage when pumps start.

Other implicit sustainability considerations include the durability and life cycle length of the various projects.

7.5 Total Project Cost Estimate (Engineer's Opinion of Probable Cost)

Detailed project cost estimates were provided in previous sections where the design was described. This section summarizes the project cost estimates for each project as described in Section 7.1, and these cost summaries are shown in Table 7-26. The total estimate for all projects combined is $4,707,765.

Table 7-26 Summary of Opinion of Probable Project Costs by Project Lake Shastina CSD

Project	Project Cost Estimate[1]
Pump Station B-100	$145,389
Pump Station B-101	$186,428
Pump Station B-102	$192,651
Pump Station B-103	$63,601
Pump Station B-104	$186,173
Pump Station B-105	$79,819
Pump Station B-106	$169,702
Pump Station B-107	$186,519
Pump Station B-108	$187,461
Pump Station B-109	$192,588
Pump Station B-110	$182,745
Pump Station B-111	$172,541
Pump Station B-112	$172,541
Pump Station B-113	$59,697
Pump Station B-114	$66,699
Pump Station B-115	$165,928
Pump Station B-116	$70,985
Pump Station B-117	$171,812
Pump Station B-118	$194,341
Pump Station B-120	$49,597
Portable Generators	$83,000
Lake Shore Drive Bypass	$642,248
Tony Lema Drive Diversion	$313,847
Wastewater Treatment Facility Improvements	$771,453
Sum of All Improvements	***$4,707,765***

2. From detailed costs estimates presented earlier.

7.6 Annual Operating Budget

The District has a 2017/2018 fiscal year operating budget of $1,282,298 for wastewater operations. A copy of the Fiscal Year 2017/2018 budget is provided in Appendix 2.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The Lake Shastina CSD wastewater infrastructure is in need of various upgrades due to health, sanitation, security, aging infrastructure, and reasonable growth as described in the previous sections. Project cost estimates were presented. We recommend proceeding with the recommended improvements according to the presented schedule.

Waste Discharge Requirements

1

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ORDER No. R1-2012-0029
WDID No. 1A790100SIS

WASTE DISCHARGE REQUIREMENTS

FOR

LAKE SHASTINA COMMUNITY SERVICES DISTRICT WASTEWATER TREATMENT FACILITY

SISKIYOU COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	Lake Shastina Community Services District
Name of Facility	Lake Shastina Community Services District Wastewater Treatment Facility
Facility Address	Assessor's Parcel Number 202-040-140 Section 24, T43N, Range 5W Latitude: 41° 33' 21.5994" Longitude: 122° 22' 35.3994" Nearest Cross Street: Big Springs Road

The discharge by the Lake Shastina Community Services District from the discharge point(s) identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
EFF-001A	Municipal Wastewater After Primary Treatment	41° 33' 20.8794"	-122° 22' 33.9594"	Groundwater
EFF-001B	Treated Municipal Wastewater	41° 33' 21.5994"	-122° 22' 35.3994"	Groundwater

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
EFF-002	Treated Municipal Wastewater	41° 33' 24.8394"	-122° 22' 35.3994"	Groundwater
EFF-003	Treated Municipal Wastewater	41° 33' 27.7194"	-122° 22' 35.7594"	Groundwater
EFF-004	Treated Municipal Wastewater	41° 33' 23.0394"	-122° 22' 39.72"	Groundwater

IT IS HEREBY ORDERED, that Order No. 97-91 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, Matthias St. John, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, North Coast Region, on June 7, 2012.

_____

Matthias St. John, Executive Officer

Table of Contents

List of Tables

List of Attachments

I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 3. Facility Information

Discharger	Lake Shastina Community Services District
Name of Facility	Lake Shastina Community Services District Wastewater Treatment Facility
Facility Address	Assessor's Parcel Number 202-040-140 Section 24, T43N, Range 5W Latitude: 41° 33' 21.5994" Longitude: 122° 22' 35.3994" Nearest Cross Street: Big Springs Road
	Weed, CA
	Siskiyou County
Facility Contact, Title, and Phone	John McCarthy, General Manager, (530) 938-3281
Mailing Address	16320 Everhart Dr., Weed, CA 90694
Type of Facility	Publicly Owned Treatment Works (POTW)
Facility Design Flow	0.132 million gallons per day (mgd) Annual Average Daily Flow (AADF)

II. FINDINGS

The California Regional Water Quality Control Board, North Coast Region (hereinafter Regional Water Board), finds:

A. Basis and Rationale for Requirements. The Regional Water Board developed the requirements in this Order based on information submitted as part of the Discharger's application for permit renewal, monitoring data submitted during the term of the Discharger's previous Order, and other available information. The Fact Sheet (Attachment D) contains facility information, legal authorities, and rationale for Order requirements. The Fact Sheet is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through C are also incorporated into this Order.

The Lake Shastina Community Services District (hereinafter Discharger) is currently discharging pursuant to Waste Discharge Requirements Order No. 97-91. The Discharger submitted a Report of Waste Discharge (ROWD), dated December 24, 2008, and applied for renewal of waste discharge requirements to discharge an AADF up to 0.132 mgd of treated wastewater from the Lake Shastina Community Services District Wastewater Treatment Facility (hereinafter Facility and WWTF). The Discharger submitted additional information to complete the ROWD on March 28, 2011, and the ROWD was deemed complete by Regional Water Board staff on October 7, 2011.

III. DISCHARGE PROHIBITIONS

A. The discharge of waste to the Shasta River or its tributaries is prohibited.

B. The discharge of any waste not disclosed by the Discharger or not within the reasonable contemplation of the Regional Water Board is prohibited.

C. Creation of pollution, contamination, or nuisance as defined by section 13050 of the Water Code is prohibited.

D. The discharge of sludge is prohibited.

E. The discharge of untreated or partially treated waste (receiving a lower level of treatment than described in Attachment D.I.A from anywhere within the collection, treatment, or disposal system is prohibited.

F. The discharge of waste at any point not described in Attachment D.I.A or authorized by a permit issued by the State Water Board or another Regional Water Board is prohibited.

G. The discharge of waste to land that is not owned by or under agreement to use by the Discharger is prohibited except for use for fire suppression as provided in title 22, sections 60307 (a) and (b) of the California Code of Regulations.

H. Discharges of waste that violate any narrative or numerical water quality objective that are not authorized by waste discharge requirements or other order or action by the Regional or State Water Board are prohibited.

IV. EFFLUENT LIMITATIONS

A. Discharge from solids containment basin to Pond No. 1

i. The Discharger shall maintain compliance with the following limitation at Discharge Point EFF-001A :

Table 4. Effluent Limitations for Solids Containment Basin – Discharge Point EFF-001A

Effluent Limitation		
Parameter	Units	Instantaneous Maximum
Settleable Solids	mL/L/hr	0.1

V. Discharge Specifications

A. Disinfection Process

Not applicable.

B. Objectionable Odor

Objectionable odor originating at the facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas.

C. Public Contact

Public contact with wastewater shall be precluded or controlled through such means as fences and signs, or other acceptable alternatives.

D. Pond Freeboard

Freeboard in the wastewater treatment or storage ponds shall never be less than 1.0 feet as measured vertically from the water surface to the lowest point of overflow.

E. Vector Control

The WWTF and effluent disposal areas shall be managed to prevent the breeding of mosquitoes.

F. Dissolved Oxygen

Waste ponded within the oxidation percolation ponds shall not have a dissolved oxygen content of less than 1.0 mg/L.

G. Flow

The annual average daily flow of waste through the treatment plant shall not exceed 0.132 mgd. Compliance with this prohibition shall be measured continuously at Monitoring Location INF-001, calculated daily and averaged over a calendar year.

VI. Solids Disposal

Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of at a legal point of disposal, and in accordance with the provisions of Title 27, of the California Code of Regulations or as waived pursuant to Section 13269 of the California Water Code.

VII. Receiving Water Limitations

A. Groundwater Limitations

1. The collection, storage, and use of wastewater shall not cause alterations in groundwater that result in contaminant concentrations that do any of the following:

   a. Cause nuisance,

   b. Adversely affect beneficial uses,

   c. Result in taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses, or

   d. Exceed constituent concentration limits specified in Cal. Code of Regulations, title 22 section Nos. 64431 and 64444, or any future revisions to the Basin Plan groundwater quality objectives.

VIII. General Provisions

Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities. The Discharger shall comply with the following provisions:

A. Availability

A copy of this Order and the associated Monitoring and Reporting Program shall be maintained at the WWTF and be available at all times to operating personnel.

B. Enforcement

The Discharger shall implement the project as described in this Order. Violation of any requirements contained in this Order subject the Discharger to enforcement action, including civil liability, under the Water Code.

C. Monitoring

The Discharger shall comply with the Monitoring and Reporting Program and any modifications to these documents as specified by the Regional Water Board Executive Officer. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Public Health and shall conform to State Department of Public

Health guidelines. The Discharger shall comply with the MRP in Attachment C of this Order, and future revisions thereto.

IX. Special Provisions

A. Special Projects, Technical Reports and Additional Monitoring Requirements

1. Sludge Disposal Project

a. Work Plan – The Discharger shall submit a work plan, for concurrence by the Regional Water Board Executive Officer, within **180 days of the effective date of this Order** to excavate biosolids from the unpermitted onsite disposal location and dispose of them in accordance with Finding VI of this Order.
b. Implementation – The Discharger shall commence implementation of the approved sludge disposal work plan within 60 days of concurrence with the work plan by the Executive Officer, or at a time otherwise agreed upon by the Executive Officer and Discharger in writing.
c. Report of Completion – The Discharger shall submit a report of investigative findings documenting the completion of the work plan in compliance with this Order within 60 days of completing the work set out in the plan.

2. Increased Treatment and Containment Plan

a. Work Plan – The Discharger shall submit a work plan, for concurrence by the Regional Water Board Executive Officer, within **180 days of the effective date of this Order** to increase containment of partially treated wastes and to increase treatment prior to discharge.
b. Implementation – The Discharger shall implement the approved work plan in accordance with the time schedule contained in the work plan and agreed to by the Regional Water Board Executive Officer.
c. Report of Completion – The Discharger shall submit a report of investigative findings documenting the completion of the work plan in compliance with this Order within 60 days of completing the work set out in the plan.

If, at any time, groundwater quality data indicates that the percolation discharges from the ponds are causing a violation of Receiving Water Limitation VII.A.1 of this Order, the Discharger shall, upon notification of the Regional Water Board Executive Officer, prepare and submit to the Regional Water Board Executive Officer for concurrence, a study to determine the best practicable treatment or control (BPTC) necessary to prevent any further degradation of groundwater quality. The BPTC study shall identify and

describe any modifications, maintenance, or improvements required to achieve BPTC for the discharge.

3. Groundwater Monitoring Assessment

As of the date of this Order, there is an insufficient monitoring well network in place and insufficient groundwater data collected to determine local groundwater gradients and the potential groundwater quality impacts from the wastewater pond percolation discharges. Consistent with the findings of this Order, to determine local groundwater gradient, to determine the appropriate locations to monitor discharges from the ponds and to determine compliance with limitations and other enforceable requirements of this Order, a Groundwater Monitoring Assessment Work Plan is required as follows:

a. Work Plan – The Discharger shall submit a work plan, for concurrence by the Regional Water Board Executive Officer, to determine the impacts on groundwater from the wastewater pond percolation discharges including groundwater gradient direction within **90 days of the effective date of this Order,** or at a time otherwise agreed upon by the Executive Officer and Discharger in writing. The work plan shall describe the steps the Discharger intends to follow to site, construct, develop, and sample monitoring wells for compliance with Attachment C, and should include, at a minimum the following items:

   i. Proposed location of an up-gradient groundwater monitoring well that is unaffected by the discharge from the WWTF, and which is in the same formation as the other down-gradient wells.

   ii. Proposed locations for groundwater monitoring wells down-gradient of the ponds.

   iii. Proposed well construction or rehabilitation techniques, including characterization of screened intervals.

   iv. Surveyed elevations and locations of existing and proposed wells to the nearest 0.01 foot and 0.1 foot, respectively.

b. Implementation – The Discharger shall commence implementation of the groundwater monitoring work plan within 60 days of concurrence with the work plan by the Executive Officer, or at a time otherwise agreed upon by the Executive Officer and Discharger in writing.

c. Report of Investigation – The Discharger shall submit a report of investigative findings within 60 days of completing the work set out in the plan. The report of investigative findings shall include monitoring well boring logs including records of lithology and stratigraphy; well

construction diagrams; well casing and water level elevations; water level contour maps including gradients; sampling and analysis data; and recommendations for any further investigative activities. The report shall also include a plan for disposal of wastes generated during implementation of the groundwater monitoring assessment work plan (e.g. during construction and development of monitoring wells). Pursuant to California Water Code 13260 and California Code of Regulations Title 27, which regulate land disposal activities, the Regional Water Board requires evidence that placing nonhazardous investigation-derived waste or inert materials (which may include discarded product or recycled materials) will not result in degradation of water quality, human health, or the environment.

B. Sanitary Sewer Overflows

On May 2, 2006, the State Water Board adopted State Water Board Order No. 2006-0003-DWQ, Statewide General WDRs for Sanitary Sewer Systems. Order No. 2006-0003-DWQ requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the General WDRs by November 2, 2006. On February 20, 2008, the State Water Board adopted Order No. WQ-2008-0002-EXEC Adopting Amended Monitoring and Reporting Requirements for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems. The Discharger shall maintain coverage under, and shall be subject to the requirements of Order Nos. 2006-0003-DWQ and WQ-2008-0002-EXEC and any future revisions thereto for operation of its wastewater collection system. In addition to compliance with Statewide General WDRs for Sanitary Sewer Systems, the Discharger shall comply with the following:

1. The Discharger shall take all feasible steps to stop spills and sanitary sewer overflows (SSOs) as soon as possible. All reasonable steps should be taken to collect spilled material and protect the public from contact with wastes or waste-contaminated soil or surfaces.

2. The Discharger shall report orally and in writing to the Regional Water Board staff all SSOs and unauthorized spills of waste. Spill notification and reporting shall be conducted in accordance with the Monitoring and Reporting Program.

C. Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with this Order. Proper

operation and maintenance includes adequate laboratory control and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order.

The Discharger shall maintain an updated Operation and Maintenance Manual (O&M Manual) for the facility. The Discharger shall update the O&M Manual, as necessary, to conform to changes in operation and maintenance of the WWTF. The O&M Manual shall be readily available to operating personnel on-site. The O&M Manual shall include the following:

1. A Description of the WWTF organizational structure showing the number of employees, duties and qualifications and plant attendance schedules (daily, weekends and holidays, part-time, etc.). The description should include documentation that the personnel are knowledgeable and qualified to operate the treatment facility so as to achieve the required level of treatment at all times.
2. A detailed description of safe and effective operation and maintenance of treatment processes, process control instrumentation, and equipment.
3. A description of laboratory and quality assurance procedures.
4. All process and equipment inspection and maintenance schedules.
5. Description of safeguards to assure that, should there be reduction, loss, or failure of electric power, the Discharger will be able to comply with requirements of this Order.
6. A Description of preventive (fail-safe) and contingency (response and cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. These plans shall identify the possible sources (such as loading and storage areas, power outage, waste treatment unit failure, process equipment failure, tank and piping failure) of accidental discharges, untreated or partially treated waste bypass, and polluted drainage.

D. Change in Discharge

The Discharger shall promptly report to the Regional Water Board any material change in the character, location, or volume of the discharge. New ponds associated with the treatment and or storage of wastewater or treated effluent shall be constructed in a manner that protects groundwater. The Discharger shall submit design proposals for new wastewater storage ponds to the Regional Water Board Executive Officer for review prior to construction and demonstrate that the pond complies with the Water Code. Pond design and operation plan must include features and best management practices (BMPs)

to protect groundwater and prevent exceedances of groundwater quality objectives.

E. Change in Ownership

In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of existence of this Order, and the status of the Dischargers' annual fee account; a copy of which shall be forwarded to the Regional Water Board.

F. Vested Rights

This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from liability under federal, state, or local laws, nor create a vested right for the Discharger to continue the waste discharge.

G. Records Retention

The Discharger shall maintain records of all monitoring information, including calibration and maintenance records and all strip charts recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer

H. Signatory Requirements

All Report of Waste Discharge applications submitted to the Regional Water Board shall be signed by a principal Executive Officer, ranking elected official, or responsible corporate officer.

1. For purposes of this provision, a responsible corporate officer means:

    a. A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or

    b. The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. Reports required by this Order and other information requested by the Regional Water Board may be signed by a duly authorized representative provided:

    a. The authorization is made in writing by a person described in paragraph (a) of this provision;

    b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the entity; and

    c. The written authorization is submitted to the Regional Water Board prior to or together with any reports, information, or applications signed by the authorized representative.

3. Any person signing a document under paragraph (a) or (b) of this provision shall make the following certification:

    "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Inspections

The Discharger shall permit authorized staff of the Regional Water Board the following:

1. Entrance to the premises in which treatment, collection or management of waste occurs, where an effluent source is located or in which any records required by this Order are kept;

2. Access to inspect and copy any monitoring equipment or records required for compliance with terms and conditions of this Order; and

3. Access to sample any discharge or monitoring location associated with the WWTF.

J. Noncompliance

In the event the Discharger is unable to comply with any of the conditions of this Order due to breakdown of waste treatment equipment, accidents caused by human error or negligence, or other causes such as acts of nature, the Discharger shall notify the Regional Water Board Executive Officer by telephone as soon as it or its agents have knowledge of the incident and confirm this notification in writing within five (5) business days of the telephone notification. The written notification shall include pertinent information explaining reasons for the noncompliance and shall indicate the steps taken to correct the problem and the dates thereof, and the steps being taken to prevent the problem from recurring.

K. Revisions of Requirements

The Regional Water Board will review this Order periodically and may revise requirements when necessary.

L. Operator Certification

Supervisors and operators of wastewater treatment plants shall possess a certificate of appropriate grade in accordance with title 23, California Code of Regulations, section 3680. The State Water Board may accept experience in lieu of qualification training. In lieu of a properly certified wastewater treatment plant operator, the State Water Board may approve use of a water treatment plant operator of appropriate grade certified by the State Department of Health Services where water reclamation is involved.

M. Adequate Capacity

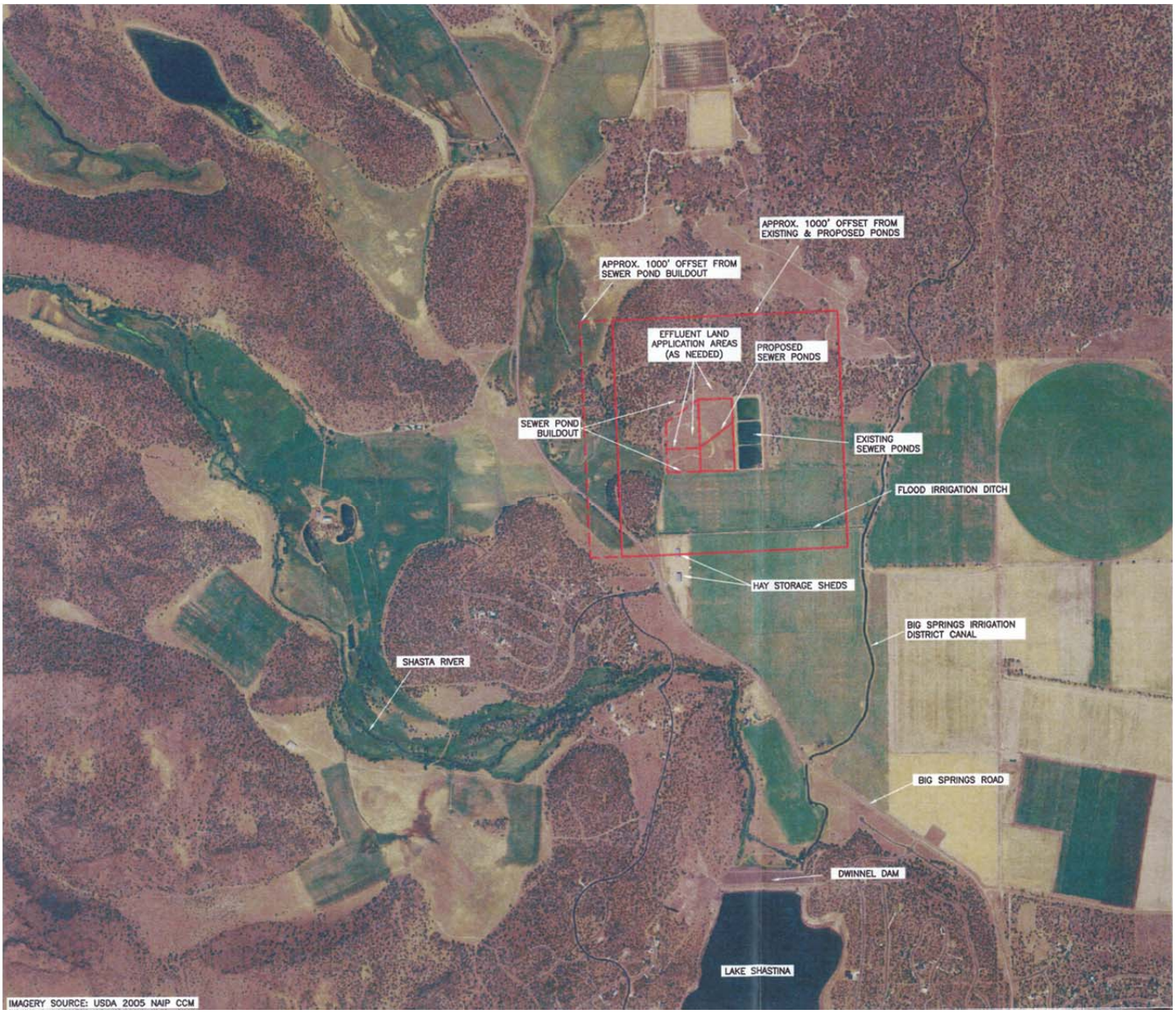
If the Discharger's wastewater treatment plant will reach capacity within 4 years, the Discharger shall notify the Regional Water Board. A copy of such notification shall be sent to appropriate local elected officials, local permitting agencies, and the press. Factors to be evaluated in assessing reserve capacity shall include, at a minimum: (1) comparison of the wet weather design flow with the highest daily flow, (2) comparison of the average dry weather design flow with the lowest 30-day flow, and (3) comparison of the annual average daily flow with the permitted flow. The Discharger shall demonstrate that adequate steps are being taken to address the capacity problem. The Discharger shall submit a technical report to the Regional Water Board showing how flow volumes will be prevented from exceeding capacity, or how capacity will be increased, within 120 days after providing notification to the Regional Water Board, or within 120 days after receipt of Regional Water Board notification, that the WWTF will reach capacity within 4 years. The time for filing the required technical report may be extended by the Regional Water Board. An extension of 30 days may be granted by the Executive Officer, and longer

extensions may be granted by the Regional Water Board itself (title 23, Cal. Code of Regs., section 2232).

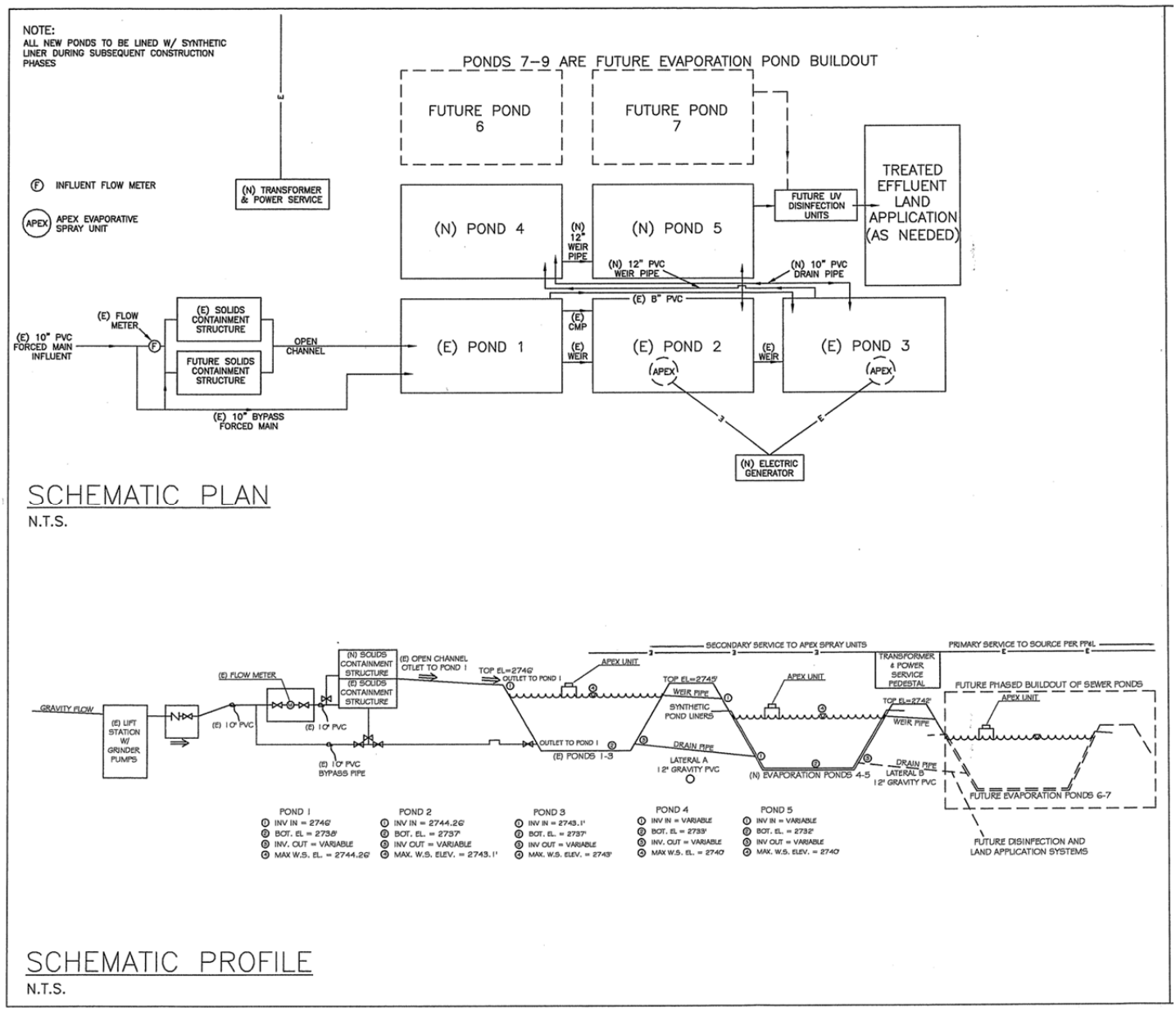
N. Severability

Provisions of these waste discharge requirements are severable. If any provision of these requirements is found invalid, the remainder of these requirements shall not be affected.

ATTACHMENT A – FACILITY LOCATION MAP



ATTACHMENT B – FLOW SCHEMATIC



ATTACHMENT C– MONITORING AND REPORTING PROGRAM

Table of Contents

List of Tables

ATTACHMENT C – MONITORING AND REPORTING PROGRAM (MRP)

California Water Code sections 13267 and 13383 authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement California regulations.

I. GENERAL MONITORING PROVISIONS

A. Composite samples may be taken by a proportional sampling device approved by the Executive Officer or by grab samples composited in proportion to flow. In compositing grab samples, the sampling interval shall not exceed 1 hour.

B. If the Discharger monitors any pollutant more frequently than required by this Order, using test procedures as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the monthly and annual self-monitoring reports.

C. Laboratories analyzing monitoring samples shall be certified by the California Department of Public Health (DPH; formerly the Department of Health Services), in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.

Compliance and reasonable potential monitoring analyses shall be conducted using commercially available and reasonably achievable detection limits that are lower than the applicable effluent limitation. If no minimum level (ML) value is below the effluent limitation, the lowest ML shall be selected as the reporting level (RL).

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table C-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	Influent monitoring location prior to solids removal.
EFF-001	INT-001A	Internal monitoring location of the discharge from the solids containment basin prior to discharge into Pond No. 1.
EFF-001	INT-001B	Internal monitoring location within Pond No. 1 to analyze potential groundwater impacts from Pond No. 1.
EFF-002	INT-002	Internal monitoring location within Pond No. 2 to analyze potential groundwater impacts from Pond No. 2.

Table C-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
EFF-003	INT-003	Internal monitoring location within Pond No. 3 to analyze potential groundwater impacts from Pond No. 3.
EFF-004	INT-004	Internal monitoring location within Pond No. 4 to analyze potential groundwater impacts from Pond No. 4.
--	MW-0	Existing historic monitoring well, located northwest of Pond No. 3 and within the northern berm of Pond No. 5.
--	MW-1	Monitoring well constructed in July, 2010, that is located west of the entrance road directly west of Pond No. 4.
--	MW-2	Monitoring well constructed in July, 2010, that is located just east of the solids containment structure on the southeastern corner of the Facility property.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

When there is wastewater flow in INF-001, the Discharger shall monitor the wastewater influent at INF-001 as follows:

Table C-2. Influent Monitoring – Monitoring Locations INF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	mgd	Meter	Continuously
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	Grab	Quarterly
Total Suspended Solids	mg/L	Grab	Quarterly

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INT-001A

The Discharger shall monitor wastewater at Monitoring Locations INT-001A, as follows:

Table C-3. Internal Monitoring – Monitoring Location INT-001A

Parameter	Units	Sample Type	Minimum Sampling Frequency
Settleable Solids	mL/L/hr	Grab	Quarterly

B. Monitoring Locations INT-001B, INT-002, INT-003, INT-004

The Discharger shall monitor wastewater at Monitoring Locations INT-001B, INT-002, INT-003, and INT-004 as follows:

Table C-4. Internal Monitoring – Monitoring Locations INT-001B, 002, 003, 004

Parameter	Units	Sample Type	Minimum Sampling Frequency
pH	std units	Grab	Semi annually
Total Coliform Organisms	MPN/100 mL	Grab	Semi annually
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	Grab	Semi annually
Total Suspended Solids	mg/L	Grab	Semi annually
Nitrogen, Total (as N)	mg/L	Grab	Semi annually
Nitrate (as N)	mg/L	Grab	Semi annually
Specific Conductivity	mg/L	Grab	Semi annually
Boron	mg/L	Grab	Semi annually
Hardness	mg/L	Grab	Semi annually
Title 22 Pollutants[1]	µg/L	Composite from Pond Nos. 1,2,3 and 4	Once Every 3 Years

V. RECEIVING WATER MONITORING REQUIREMENTS

A. Groundwater Monitoring

The Discharger shall monitor groundwater at all Monitoring Well locations as follows:

Table C-5. Groundwater Monitoring – All Monitoring Wells

Parameter	Units	Sample Type	Minimum Sampling Frequency
Depth to Groundwater	0.01 feet	Grab	Quarterly

[1] Title 22 Pollutants refers to those chemical constituents specified in Table 3-2 of the Basin Plan and/or constituents for which Maximum Contaminant Levels (MCLs) have been established in title 22, Division 4, Chapter 15, Articles 4 and 5.5 of the California Code of Regulations.

Table C-5. Groundwater Monitoring – All Monitoring Wells

Parameter	Units	Sample Type	Minimum Sampling Frequency
pH	std units	Grab	Quarterly
Total Coliform Organisms	MPN/100 mL	Grab	Quarterly
Nitrogen, Total (as N)	mg/L	Grab	Quarterly
Nitrate (as N)	mg/L	Grab	Quarterly
Specific Conductivity	mg/L	Grab	Quarterly
Boron	mg/L	Grab	Quarterly
Hardness	mg/L	Grab	Quarterly
Title 22 Pollutants[2]	µg/L	Grab	Once Every 3 Years

VI. OTHER MONITORING REQUIREMENTS

Not Applicable.

VII. REPORTING REQUIREMENTS

A. Self-Monitoring Reports (SMRs)

1. **Electronic SMRs.** At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs to the Regional Water Board. The CIWQS Web site will provide additional directions for SMR submittal in the event of a service interruption for electronic submittal.

2. **Additional Monitoring.** The Discharger shall submit monthly SMRs including the results for all monitoring specified in this MRP. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

[2] Title 22 Pollutants refers to those chemical constituents specified in Table 3-2 of the Basin Plan and/or constituents for which Maximum Contaminant Levels (MCLs) have been established in title 22, Division 4, Chapter 15, Articles 4 and 5.5 of the California Code of Regulations

3. **Laboratory Data Sheets.** All monitoring results shall include complete laboratory data sheets for each analysis and be submitted in conjunction with the monthly SMR on the first day of the second month following sample collection.

4. **Monitoring Periods and Reporting Schedule.** Annual summary reports shall be submitted by March 1st each year. Monitoring periods for all required monitoring shall be completed according to the following schedule:

Table C-6. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On	Monitoring Period
Continuous	June 7, 2012	All
Daily	June 7, 2012	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.
Monthly	June 7, 2012	1st day of calendar month through last day of calendar month
2x / Year	June 7, 2012	June and November
Quarterly	June 7, 2012	1st Quarter: January 1 through March 31 2nd Quarter: April 1 through June 30 3rd Quarter: July 1 through September 30 4th Quarter: October 1 through December 31
Annually	June 7, 2012	January 1 through December 31
Once Every 3 Years	June 7, 2012	January 1 through December 31

5. **Reporting Protocols.** The Discharger shall report with each sample result the applicable ML, the RL and the current MDL, as determined by the procedure in Standard Methods.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

   c. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality

for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

d. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

e. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

6. **Self-Monitoring Reports.** The Discharger shall submit self-monitoring reports (SMRs) in accordance with the following requirements:

a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the Facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify:

i. Facility name and address;

ii. WDID number;

iii. Applicable period of monitoring and reporting;

iv. Violations of the WDRs (identified violations must include a description of the requirement that was violated and a description of the violation);

v. Corrective actions taken or planned; and

vi. The proposed time schedule for corrective actions.

c. SMRs must be submitted to the Regional Water Board, signed and certified as required by the General Provisions, to the address listed below:

Regional Water Quality Control Board
North Coast Region
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

B. Other Reports

1. **Annual Report.** The Discharger shall submit an annual report to the Regional Water Board for each calendar year. The report shall be submitted by March 1st of the following year. The report shall, at a minimum, include the following:

   a. **Monitoring Data Summaries.** Both tabular and, where appropriate, graphical summaries of the monitoring data and disposal records from the previous year. If the Discharger monitors any pollutant more frequently than required by this Order, using test procedures approved under section Part 136 or as specified in this Order, the results of this monitoring shall be included in the calculation and report of the data submitted in the SMR.

   b. **Compliance Reporting.** A comprehensive discussion of the Facility's compliance (or lack thereof) with all effluent limitations and other WDRs, and the corrective actions taken or planned, which may be needed to bring the discharge into full compliance with the Order.

   c. **Sanitary Sewer System Reporting.** The Discharger shall submit, as part of its annual report to the Regional Water Board, a description of the Discharger's activities within the sanitary sewer system over the previous calendar year. The report shall contain:

      i. A description of any change in the local legal authorities enacted to implement the Sewer System Management Plan (SSMP).

      ii. A summary of the SSOs that occurred in the past year. The summary shall include the date, location of overflow point, affected receiving water (if any), estimated volume, and cause of the SSO, and the names and addresses of the responsible parties as well as the names and addresses of the property owner(s) affected by the SSO.

      iii. A summary of compliance and enforcement activities during the past year. The summary shall include fines, other penalties, or corrective actions taken as a result of the SSO. The summary shall also include a description of public participation activities to involve and inform the public.

      iv. Documentation that all feasible steps to stop and mitigate impacts of SSOs have been taken.

C. Spills and Overflows Notification

1. All spills, unauthorized discharges, and SSOs equal to or in excess of 1,000 gallons or any size spill or SSO that results in a discharge to a drainage channel or a surface water:

a. As soon as possible, **but not later than two (2) hours** after becoming aware of the discharge, the Discharger shall notify the California Emergency Management Agency (Cal EMA), the local health officer or directors of environmental health with jurisdiction over affected water bodies or land areas, and the Regional Water Board.[3]

   Information to be provided verbally to the Regional Water Board includes:

   i. Name and contact information of caller;
   ii. Date, time and location of spill occurrence;
   iii. Estimates of spill volume, rate of flow, and spill duration;
   iv. Surface water bodies impacted, if any;
   v. Cause of spill;
   vi. Cleanup actions taken or repairs made; and
   vii. Responding agencies.

b. As soon as possible, but **not later than twenty-four (24) hours** after becoming aware of a discharge, the Discharger shall submit to the Regional Water Board a certification that Cal EMA and the local health officer or directors of environmental health with jurisdiction over affected water bodies or land areas have been notified of the discharge. For the purpose of this requirement, "certification" means a Cal EMA certification number and, for the local health department, name of local health staff, department name, phone number and date and time contacted.

c. **Within five (5) business days**, the Discharger shall submit a written report to the Regional Water Board office. The report must include all available details related to the cause of the spill and corrective action taken or planned to be taken, as well as copies of reports submitted to other agencies.

   i. Information provided in the verbal notification;
   ii. Other agencies notified by telephone;
   iii. Detailed description of cleanup actions and repairs taken; and

[3] The contact number for spill reporting for Cal EMA is (800) 852-7550. The contact number of the Regional Water Board during normal business hours is (707) 576-2220. After normal business hours, spill reporting to OES will satisfy the 2 hour notification requirement for the Regional Water Board.

iv. Description of actions that will be taken to minimize or prevent future spills.

d. In the cover letter of the SMR, the Discharger shall include a brief written summary of the event and any additional details related to the cause or resolution of the event, including, but not limited to results of any water quality monitoring conducted.

2. All spills, unauthorized discharges, and SSOs less than 1,000 gallons that do not reach a drainage channel or a surface water:

a. As soon as possible, but **not later than twenty-four (24) hours** after becoming aware of the discharge, the Discharger shall notify the Regional Water Board and provide the applicable information in requirement 1.a of this section.

b. In the cover letter of the SMR, the Discharger shall include a written description of the spill event.

ATTACHMENT D – FACT SHEET

I. FACILITY INFORMATION

A. Background

Recent upgrades to the WWTF were completed in 2011 to regain disposal capacity that had been lost through sludge accumulation in the ponds. The upgrades include the addition of a new percolation and evaporation pond (Pond No. 4), which is lined with a 60-millimeter thick High Density Polyethylene (HDPE) liner, the construction of an unlined primary pond (Pond No. 5), which is not a permitted discharge location under this permit, and the addition of electrical supply to the ponds to power the APEX evaporator and any future electricity needs. Wastewater treatment is achieved through settling, aerobic and anaerobic bacterial actions, and other biogeochemical processes. The WWTF is designed to treat and dispose of an AADF up to 0.132 mgd.

The wastewater collection, treatment, and disposal facilities consist of a combined gravity and low pressure sewer that connects to grinder pumps in the headworks lift station whereupon it is pumped through an inline flow meter to the solids containment structure. The wastewater then overflows successively via weirs to Pond Nos. 1, 2, 3, and 4. Pond Nos. 1, 2, and 3 were originally designed with approximate depths of eight feet, but in November 2007, the berms and weirs were rehabilitated and built-up to allow for approximate pond depths of nine feet, although portions of each pond are shallower due to sludge buildup. Sludge deposition in Pond Nos. 1, 2, and 3 that occurred prior to construction of the solids containment structure and carryover from the solids containment structure have caused the accumulation of up to three feet of sludge in Pond No. 1, up to fourteen inches of sludge in Pond No. 2, and up to six inches of sludge in Pond No. 3. Pond No. 4 is designed for a maximum water depth of six feet.

The four ponds have approximately 17.3 million gallons (53.1 acre-feet) of storage and the design estimates that the addition of Pond No. 4 will provide enough capacity to evaporate 0.170 mgd and percolate approximately 0.0125 mgd of wastewater. Therefore, the design estimates that the four ponds will have enough disposal capacity to accommodate flows up to 0.1825 mgd. Nonetheless, this permit does not authorize discharge in excess of the previously permitted rate of 0.132 mgd because the California Environmental Quality Act (CEQA) document for the development of the new ponds included this flow limitation. Any future increases in flow above the permitted rate of 0.132 mgd will require a subsequent CEQA analysis to analyze potential environmental impacts of increased flows.

Currently, there are three groundwater monitoring wells on site. The oldest well was constructed prior to 1986, and is identified as MW-0 in this Order. There is no available information on the construction of MW-0, such as boring logs or screening intervals, and it is currently capped on the surface preventing any measurement of depth to groundwater. Accordingly, MW-0 is in need of rehabilitation and/or reconstruction prior to being considered viable. MW-1 and MW-2 were constructed and developed in July, 2010. Because it requires at least three water level measurement points to calculate gradient direction, the two operational wells do not provide sufficient data to establish the local groundwater gradient. A groundwater monitoring assessment plan is required by this Order to establish a monitoring network that establishes the local groundwater gradient and that determines the appropriate locations to monitor discharges from the ponds.

Attachment A provides a map of the area around the WWTF.

Attachment B provides a flow schematic of the WWTF.

II. FINDINGS

A. Legal Authorities. This Order serves as Waste Discharge Requirements (WDRs) for discharges to land issued pursuant to section 13263 of the California Water Code (Water Code). This Order also serves as Reclamation (Recycled Water) Requirements pursuant to section 13523 of the Water Code.

B. Basin Plan. As required by Water Code section 13263(a), these WDRs are crafted to implement the Water Quality Control Plan for the North Coast Region (Basin Plan), and in so doing, the Regional Water Board has taken into consideration the beneficial uses to be protected, the water quality objectives (both numeric and narrative) reasonably required for that purpose, other (including previous) waste discharges, the need to prevent nuisance, and the provisions of Water Code section 13241. The Basin Plan contains implementation plans and policies for protecting waters of the basin. The Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

Thus, beneficial uses applicable to area groundwater within the Shasta Valley Hydrologic Area to be protected are as follows:

a. Municipal and Domestic Supply (MUN)
b. Industrial Water Supply (IND)
c. Industrial Process Water Supply (PRO)
d. Agricultural Water Supply (AGR)

e. Aquaculture (AQUA)

f. Native American Culture (CUL)

C. California Water Code. The California Water Code (Water Code) establishes the authority for the Regional Water Board to establish water quality objectives, impose discharge prohibitions, and prescribe waste discharge and reclamation requirements. Water Code section 13241 requires each regional board to "establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance […]." The control of pollutants discharged is established through effluent limitations and other requirements in WDR permits. Water Code section 13243 provides that "A regional board, in a water quality control plan or in waste discharge requirements, may specify certain conditions or areas where the discharge of waste, or certain types of waste, will not be permitted. Water Code section 13260 et seq establishes regulations associated with the prescription of waste discharge requirements.

It is the Regional Water Board's intent that this Order shall ensure attainment of water quality standards, applicable water quality objectives, and protection of beneficial uses of receiving waters. This Order therefore requires the Discharger to comply with all prohibitions, effluent limitations, discharge specifications, receiving water limitations, standard provisions, special provisions, and monitoring and reporting requirements. The Order further prohibits discharges from causing violations of water quality objectives or causing conditions to occur that create a condition of nuisance or water quality impairment in receiving waters as a result of the discharge.

An Increased Treatment and Containment Plan, a Groundwater Monitoring Plan, and increased effluent and groundwater monitoring is required by this Order to ensure that this wastewater discharge complies with the Water Code, the Antidegradation Policy, and the Basin Plan.

D. California Code of Regulations (CCR). The discharge authorized herein and the treatment and storage facilities associated with the discharge are exempt from the requirements of title 27, CCR, section 20005 et seq. The exemption, pursuant to section 20090(a) of title 27, allows for the exemption of treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludges or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable State Water Board promulgated provisions of title 27, CCR.

E. California Environmental Quality Act (CEQA)

On April 18, 2009, the Discharger adopted a negative declaration (SCH No. 2005062051) for the project in order to comply with CEQA. The Regional Water Board has reviewed and considered the environmental document and any proposed changes incorporated into the project or required as a condition of approval to avoid significant effects to the environment. The Regional Water Board will file a Notice of Determination within five days from the issuance of this order.

F. Antidegradation Policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16, which requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, the State antidegradation policy. The permitted discharge is consistent with the provisions of State Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California.

The permitted flow of the existing WWTF limits the discharge to 0.132 mgd, which has not been increased by this permit. In 2008, although the WWTF was only receiving an AADF of 0.106 mgd, below the permitted flow rate, it was determined that the WWTF was at capacity in the existing system and in emergency need to dispose of wastewater stored in the ponds. From 2008 through 2011, the Discharger temporarily resolved the capacity issue by receiving an Emergency Waiver of WDRs for land application adjacent to the ponds. Construction of Pond No. 4 provides a permanent solution to this capacity situation and construction of Pond No. 5 could provide for future expansion. The construction of Pond No. 4 with an HDPE liner reduces the hydrologic connectivity between the wastewater and groundwater resulting in an overall benefit to water quality and a reduction of pollutant discharge from the existing condition.

This Order permits a discharge to a new location that may ultimately enter groundwater underlying the WWTF. Therefore, compliance with this Order will therefore, allow some degradation of groundwater quality in the vicinity of the WWTF. Additional monitoring wells are required to be constructed by this Order and Attachment C of this Order requires ongoing groundwater monitoring to further ensure that concentrations of these pollutants will not adversely impact beneficial uses.

This Order requires increased containment and monitoring of the discharge to ensure that compliance with this Order will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

This Order is consistent with the maximum benefit to the people of the state because the discharge: 1) provides treatment of wastewater from an existing source prior to the disposal of the wastewater; and 2) provides increased containment with a 60-mil HDPE liner in Pond No. 4; and 3) ameliorates an emergency capacity issue experienced by the Discharger since October, 2008 by eliminating the potential for uncontrolled pond overflow.

G. Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097). The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

H. Monitoring and Reporting. Water Code sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment C. The Executive Officer of the Regional Water Board is delegated the authority to modify the Monitoring and Reporting Program, as determined appropriate to protect water quality.

I. Notification of Interested Parties. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations.

J. Consideration of Public Comment. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge

III. DISCHARGE PROHIBITIONS

These discharge prohibitions are necessary to ensure that the discharges are consistent with the Report of Waste Discharge submitted as an application for this Order and to ensure compliance with the Basin Plan.

IV. EFFLUENT LIMITATIONS

A. Discharge from solids containment basin to Pond No. 1

The effluent limitation at EFF-001 monitored at INT-001A is necessary to ensure proper solids separation prior to discharge into Pond No. 1 and effective operation and maintenance of the solids containment structure. Historic solids carryover into Pond No. 1 has reduced the available volume in Pond No. 1, and has in part contributed to the District's recent need to construct Pond No. 4.

V. DISCHARGE SPECIFICATIONS

These discharge specifications are necessary to ensure compliance with the Basin Plan, and protect human health and the environment. Specifications D, F, and G have been carried over from the previous permit and Specifications A, B, C, and E are standard requirements for municipal wastewater treatment plants.

VI. SOLIDS DISPOSAL

Order requirement VI for solids disposal requires that solids disposal comply with Title 27 and the Water Code. This requirement was in the previous permit.

VII. RECEIVING WATER LIMITATIONS

Receiving Water Limitation VII.A.1 for groundwater implements the general water quality objectives for groundwaters from the Basin Plan or any future revisions thereto.

VIII. GENERAL PROVISIONS

All General Provisions, except Special Provision VIII.D, are standard Order requirements for all municipal treatment plants. Special Provision VIII.D requires a Sludge Disposal Project, an Increased Treatment and Containment Plan, and a Groundwater Monitoring Assessment.

The Sludge Disposal Project is required because historic practices of onsite solids disposal have not complied with previous order requirements and the residual wastes need to be disposed of in accordance with the solids disposal requirements contained in finding VI of this Order.

The Increased Treatment and Containment Plan is required in this Order pursuant to Water Code section 13263 to comply with Resolution No. 68-16 by ensuring that the District achieves the best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and that the highest water quality consistent with maximum benefit to the people of the State will be maintained. Constituents in municipal wastewater have a well-established potential to exceed groundwater quality objectives, which has been corroborated by the results of a site-specific model using site-specific data performed on behalf of the District. Furthermore, the requirement for an increased treatment and containment plan has been included in this Order based on the District's own proposal in its application for a new permit. As described in the District's ROWD received by the Regional Water Board on March 28, 2011,

"It is also proposed in the future that the existing ponds are taken off line sequentially, drained, cleaned, repaired and lined with the same liner material as the new ponds to ensure every pond at the WWTF would then be considered completely evaporative."

The treatment and containment work plan requirement is intended to give the District flexibility in how to address treatment and containment issues. The scope of this work plan includes enough detail to guide the District in improving treatment and containment, while still allowing the District to choose the method and manner of compliance. Nonetheless, it is important that the wastewater be sufficiently contained and treated prior to discharge to protect groundwater quality.

A report by the District's consultant dated March 16, 2011, modeled the expected nutrient concentrations in groundwater from the pond discharges suggesting that the discharge would exceed the drinking water MCLs for nitrates. The District later suggested that its empirical data shows no impact on groundwater. These existing data are limited and groundwater wells may not be appropriately sited to detect the impacts from the ponds in the heterogeneous fractured bedrock geologic setting. A robust groundwater monitoring program would be necessary to adequately detect and characterize the discharges from the ponds. While this may be possible, this approach could be cost prohibitive relative to increased treatment and containment, and does not provide adequate water quality protection in the interim. Staff provided the District flexibility in determining the best solution by developing a treatment and containment plan while concurrently conducting groundwater monitoring.

LSCSD Budgets 2

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LAKE SHASTINA COMMUNITY SERVICES DISTRICT
2017-2018

ORIGINAL BUDGET APPROVED: 6/21/2017 BUDGET AMENDED: 3/21/2018	GENERAL	SEWER	WATER	POLICE	COPS GRANT	FIRE	TOTAL All Funds
REVENUES							
4001.1 - Assmt/Revenue. - Residential		473,198	332,912	136,070		49,480	991,660
4001.2 - Assmt/Revenue - Standby		66,060	103,920	285,560		64,900	520,440
4001.3 - Assmt/Revenue - Commercial		4,939	14,293	3,410		1,060	23,702
4003.0 - Late Payment Revenue		2,800	9,000	5,700		2,500	20,000
4055.0 - Misc. Operational Income	500						500
4056.0 - Misc. Non-Op. Income				3,200			3,200
4070.0 - Antenna Lease Revenue	22,655						22,655
4075.0 - Water Capacity Expansion Fee			960				960
4076.0 - Fire Suppression Expansion Fee						316	316
5004.0 - Sewer Hook Up Fee		21,746					21,746
5005.0 - Sewer Payment Contracts		252					252
5006.0 - Water Hookup Fee			795				795
5040.0 - Gain on Sale of Equipment				3,500		10,000	13,500
5050.0 - Transfer Fees	3,000						3,000
5054.0 - Animal Control Fee - Other				300			300
5055.0 - Animal License Fee				4,200			4,200
5056.0 - Warrant				1,500		5,000	6,500
5062.0 - Donations				500		5,000	5,500
5075.0 - Grant Revenue				1,275	139,416	17,500	158,191
5080.0 - Interest earned - Ops	200						200
5081.0 - Interest Earned - Rsv (Savings)	750	2,800	8,925	625		400	13,500
Dept. 22 - Medical Clinic - General Fund Sub Dept.							-
4053.0 - Medical Clinic Revenue	60,264						60,264
4054.0 - Loan Principle Revenue			39,825				39,825
5081.0 - Interest Earned - Rsv (Savings)			4,175				4,175
Dept. 23 - Green Waste Site - Sewer Fund Sub Dept.							-
4055.0 - Misc. Operational Income		3,000					3,000
Dept. 36 - Plannig Grants - Sewer Fund Sub Dept.							-
5075.0 - Grant Revenue		500,000					500,000
Dept. 45 - Mutual Aid Strike Team - Fire Sub Dept.							-
4080.0 - Strike Team Revenues						204,675	204,675
TOTAL INCOME 2017-2018 projected	**87,369**	**1,074,795**	**514,805**	**445,840**	**139,416**	**360,831**	**2,623,057**
EXPENSES							
7001.0 - Accounting Audit		4,375	4,125	3,125		875	12,500
7002.0 - Admin Overhead Allocation	(360,286)	151,320	151,320	28,823		28,823	-
7005.0 - Depreciation							-
7010.0 - Capital Improvement/Reserve Exp.	19,000	232,000	288,800	38,800		3,000	581,600
7026.0 - Contract Services	42,500	20,000	16,100	8,000		2,000	88,600
7032.0 - Filing Fees	250						250
7033.0 - Licenses, Permits & Fees	3,000	8,000	6,000	2,500		350	19,850
7034.0 - Dues & Subscriptions	6,100	500	1,300	2,800		925	11,625
7035.0 - Advertising	2,000			500			2,500
7040.0 - Insurance (property & liability)	479	13,261	16,242	2,979		5,687	38,648
7041.0 - Legal	35,000	1,000	5,000	1,000		1,000	43,000
7041.001 - Special Legal - Moller	-						-
7050.1 - Office Exp Supplies	5,000	400	650	1,000		650	7,700
7050.2 - Office Exp Postage	6,000	100	800	400		100	7,400
7050.4 - Office Exp Maintenance	6,400			1,850			8,250
7051.0 - Public Safety Supplies (PD/Fire)						3,000	3,000
7051.1 - Mandatory Safety Equipment						12,000	12,000
7061.0 - Rental equipment		500					500
7062.0 - Repair & Maintenance	3,500	20,000	45,000	1,300		2,000	71,800
7063.0 - Fuel		5,000	5,000	7,500		5,000	22,500
7064.0 - Materials, Supplies & Small Tools	500	5,000	8,000	4,000		2,500	20,000
7065.0 - Vehicle Repair/Maintenance		5,000	3,000	6,500		20,000	34,500
7067.0 - Vehicle Replacement				5,000			5,000
7075.0 - VFA Grant Equipment						15,000	15,000
7080.0 - Interest Expense (Sewer Pond Loan)		23,400					23,400
7085.0 - Municipal Finance (Principle)		37,626					37,626
7100.0 - Lease/Rent Expense		1,775	1,775				3,550
7101.0 - Property Taxes	140						140
7105.0 - Utilities - CSD	1,000			600		850	2,450
7105.1 - Utilities - Telephone	2,300	490	2,900	5,000		2,000	12,690
7105.2 - Utilities - Electric	4,200	52,000	97,000	2,860		3,300	159,360
7105.3 - Utilities - Waste		510	510	480		480	1,980
7105.4 - Utilities - Propane	500			1,000		1,000	2,500
7105.6 - Utilities - Internet				1,000		1,000	2,000
7204.0 - Events	500			500		500	1,500
7245.0 - Election							-
7501.0 - Payroll Expense	233,779	205,604		213,626	58,745	31,680	743,434
7513.0 - Payroll Taxes	5,994	5,143		18,396	4,928	2,714	37,174
7514.0 - Payroll Benefits	72,756	62,148		56,844	19,584	19,727	231,059
7516.1 - Pension (EJ)				10,758	2,475		13,233
7516.2 - Pension (CalPERS)	18,426	14,897					33,323
7516.5 - CalPERS UAL Expense	28,191	24,014					52,205
7518.0 - Workers Comp	20,136	17,576		18,594	5,516	9,366	71,188
7530.0 - Payroll Reimbursement (Sewer)		(138,340)	138,340			500	500
7530.1 - Payroll Reimbursement (Admin)	(113,259)			(11,365)			(124,624)
7549.0 - Volunteer FF Stipend						14,000	14,000
7550.0 - Travel & Training	1,500	1,500	2,000	6,000	4,000	2,000	17,000
7551.0 - Meals	500	400	350	1,000	500	1,500	4,250
7552.0 - Employee Physical Exams/Shots		500		1,000	300	600	2,400
7556.0 - Uniforms		1,200	1,200	5,000	500	1,000	8,900
Dept. 22 - Medical Clinic - General Fund Sub Dept.							-
7026.0 - Contract Services	2,000						2,000
7040.0 - Insurance (Property/Liability)-Med Clinic	650						650
7041.001 - Special Legal - Moller	10,000						10,000
7062.0 - Repair & Maintenance (Med Clinic)	4,000						4,000
7080.0 - Interest Expense (Med Bldg)	4,175						4,175
7084.0 - Loan Principle Expense	39,825						39,825
7530.0 - Payroll Reimbursement (Med Clinic)	2,500						2,500
Medical Clinic Reserves	8,164						8,164
Dept. 23 - Green Waste Site - Sewer Fund Sub Dept.							-
7063.0 - Fuel		200					200
7064.0 - Materials, Supplies & Small Tools		200					200
7530.0 - Payroll Reimbursement (GWS)		5,000					5,000
Dept. 36 - Plannig Grants - Sewer Fund Sub Dept.							-
7026.0 - Contract Services		425,000					425,000
7041.0 - Legal		30,000					30,000
7530.0 - Payroll Reimbursement (PG)		45,000					45,000
Dept. 45 - Mutual Aid Strike Team - Fire Sub Dept.							-
7063.0 - Fuel						1,200	1,200
7065.0 - Vehicle Repair/Maintenance							-
7501.0 - Payroll Expense						93,576	93,576
7513.0 - Payroll Taxes						8,027	8,027
7518.0 - Workers Comp						8,048	8,048
TOTAL EXPENSE 2017-2018 projected	**117,419**	**1,282,298**	**795,412**	**447,370**	**96,548**	**305,977**	**3,045,025**
Reimbursement for Cap. Exp. from Reserves	19,000	232,000	288,800	38,800		3,000	581,600
Net Expense	98,419	1,050,298	506,612	408,570	96,548	302,977	2,463,425
Sewer Pond principle applied to Liability paydown		37,626					37,626
NET PROFIT (LOSS) 2017-2018 projected	**(11,050)**	**62,123**	**8,192**	**37,270**	**42,868**	**57,854**	**197,257**

LAKE SHASTINA COMMUNITY SERVICES DISTRICT
2017-2018

Notes:

Administrative Overhead Allocation Calculation used for this budget period: Sewer 42%, Water 42%, Police 8%, Fire 8%.
Worker's Comp includes the Board coverage.
2017-2018 Audit - L Bain CPA $11,200

Payroll for 2017-2018 includes:

- Anticipated current staffing level Step increases
- 3% COLA for Teamsters Union member employees
- CalPERS increase 0.041% for Classic members and decrease 0.02% for PEPRA members per Actuarial
- Workers Comp EMOD rates increased with new coverage with GSRMA

Capital Improvements/Expenditures:

					As of 12/31/2017
General Fund:		Current Balance in LAIF Reserves:		$	169,392
Capital Improvements from Reserves-	$ 19,000	FundBalance modules Billing, AR & Cash Rec (Est.)		$	10,000
		Desktop computers for Admin - 3 new (Est incl Install)		$	9,000
Sewer Department:		Current Balance in LAIF Reserves:		$	428,071
Capital Improvements from Reserves-	$ 232,000	Sewer Pond Containment/Drying Beds Design/Engineering	**	$	35,000
		Sewer Lift Station B-107 Refit/Refurbishment		$	45,000
		Sewer Lift Station B-114 Refit/Refurbishment (updated 7/19/17)		$	109,000
Items marked ** may be paid through Planning Grant if approved		Sewer Rate Study	**	$	23,000
		Planning Grants - construction		$	15,000
		New Service Bed for Pickup #19		$	5,000
Water Department:		Current Balance in LAIF Reserves:		$	1,010,093
Capital Improvements from Reserves-	$ 288,800	Hydrant Replacement (4 per year)		$	20,000
		Meter Replacement (150 per year)		$	21,000
		Test wells for new well		$	100,000
Items marked ** may be paid through Planning Grant if approved		Water Rate Study - to complete immediately		$	23,000
		B-50 Juniper Peak & B56 Stonecrest Tank/Pumps Engineering design & specs		$	10,000
		Tank Lining Planning - Bypass #3		$	15,000
		Supervisory Control and Data Acquisition (SCADA)		$	85,300
		New Service Bed for Pickup #19		$	5,000
		SCADA system meteres		$	6,000
		SCADA system VFD Drives for Booster Station B-53		$	3,500
Police Department:		Current Balance in LAIF Reserves:		$	296,760
Capital Improvements from Reserves-	$ 38,800	New insulated windows (1 way glass)		$	3,000
		Building Improvements		$	7,500
		Replacement vehicles		$	25,000
		New desktop computer/monitors & installation		$	3,300
		New DOJ compliant Server			TBD
Fire Department:		Current Balance in LAIF Reserves:		$	85,195
Capital Improvements from Reserves-	$ 3,000	New insulated windows		$	3,000

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

FINANCIAL STATEMENTS

JUNE 30, 2017

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

Table of Contents

LARRY BAIN, CPA
An Accounting Corporation

2148 Frascati Drive, El Dorado Hills, CA 95762 / 916.601-8894
lpbain@sbcglobal.net

INDEPENDENT AUDITOR'S REPORT

To the Board of Directors
Lake Shastina Community Services District
Weed, California

We have audited the accompanying financial statements of the governmental activities, the business-type activities, each major fund and the aggregate remaining fund information of Lake Shastina Community Service District, as of and for the year ended June 30, 2017, which collectively comprise the District's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the accounting principles generally accepted in the United States of America; this includes the design, implementation and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit includes performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the District's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the District's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall financial statement presentation.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the basic financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, each major fund and the aggregate remaining funds of the Lake Shastina Community Service District as of June 30, 2017, and the changes in financial position, of those activities and funds for the fiscal year then ended in conformity with U.S. generally accepted accounting principles.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis on pages 3–8, the budgetary comparison for the General fund, Police Fund and Fire Fund on pages 27-29 the District's Employees' Retirement System Schedule of the District's Proportionate Share of the Net Pension Liability and the Retirement System Schedule of the District's Contributions on pages 30-31; be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board (GASB), who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

In accordance with *Government Auditing Standards*, we have also issued a report dated March 1, 2018 on our consideration of the District's internal control over financial reporting and our tests of its compliance with certain provisions of laws, regulations, contracts and grants. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* and should be read in conjunction with this report in considering the results of our audit. The purpose of that report is to describe the scope of our testing of internal control over financial reporting, compliance and other matters and the results of that testing and not to provide an opinion of the internal control over financial reporting, compliance or on other matters.

Larry Bain, CPA,
An Accounting Corporation
March 1, 2018

Management's Discussion and Analysis

This section of the District's Financial Statement presents our analysis of the District's financial performance for the Fiscal Year that ended June 30, 2017. Readers are encouraged to read this section in conjunction with the accompanying financial statements.

The District's Operation – an Overview

The LSCSD is a special district formed under Government Code §61000 to operate and manage the community's Wastewater Treatment Plant/System (WWTP), the Drinking Water System (DWS), Police services and Fire services. The major activities of the District include the collection and treatment of domestic wastewater for the community of Lake Shastina, operate the pumping, storage and distribution of drinking water, manage the Lake Shastina Police Department and administer the Lake Shastina Fire Department. Lake Shastina is one of four special districts in the State that has police services as a latent power. The operation and maintenance of the WWTP and the DWS are funded through service fees, while the capital improvements are funded through grants and low interest loans through the State Water Resources Control Board. Loans are repaid through service fees. The operation and maintenance of the Lake Shastina Police and Fire Departments are funded through taxes and grants, including an annual COPS grant that offsets the cost of one full-time officer. The Fire Department participates in the California Mutual Aid Plan and receives reimbursement for personnel and equipment assigned to major fires throughout the state. The District is a post Prop 13 special district and as such gets no tax money from the county or state. Capital improvements are also funded through tax revenue and grants. Additional revenue is from the lease of a medical building the District owns, cellular antennas leases, animal control fees and miscellaneous grants and donations.

Lake Shastina was planned as a second home recreational area in 1968, which has evolved into a community consisting of retirees and families. The District was formed in 1978; the DWS was transferred to the District from the Lake Shastina Mutual Water Company in 2003 in an as-is condition. The WWTP and the DWS have several problem areas due to aging infrastructure. The District has embarked on aggressive improvement projects in order to improve the overall wastewater and water systems and the safety of the community and the environment. We recently received a planning grant for wastewater and are pursuing drinking water system improvement grants. The recently approved wastewater planning grant is for the planning of upgrades and rehabilitation of the community's wastewater system. The results and findings determined from the planning grant will possibly lead to additional State and Federal Grants or minimally assist in finding loans to make the necessary capital improvements for the District.

The Lake Shastina Police Department recently increased its staffing level to two full-time Patrol Officers, one part-time Patrol Officer, one full-time Police Sergeant and a part-time Chief of Police. This addition came as a result of a successful tax measure placed on the ballot in November of 2016. This ballot measure increased the tax revenue for police services to $110 per year per property. This was the first increase in the Police tax in 20 years and amounts to an increase of just $3.75 per month per property owner.

The Lake Shastina Fire Department is a volunteer department with one full-time Fire Chief. The Department is one of the best trained volunteer departments in the County and has participated in several local government strike teams throughout Northern California during this year's fire season as part of the California Mutual Aid Plan. The Strike Teams have brought in revenue from the State and Federal governments for staffing and the use of our equipment. It is anticipated the revenue generated this year will be over $200,000.

Basic Financial Statements

In accordance with the Government Accounting Standards Board (GASB) Statement No. 34, the District's basic financial statements include a Statement of Net Assets, Statement of Revenues, Expenses and Changes in Net Assets and a Statement of Cash Flows.

The Statement of Net Assets includes the District's assets and liabilities and provides information about the nature and amounts of investments in resources (assets) and the obligations to District creditors (liabilities). The difference between the assets and liabilities is shown as net assets. This statement also provides the basis of evaluating the capital structure of the District and assessing its liquidity and financial flexibility.

The Statement of Revenues, Expenses and Changes in Net Assets accounts for the current year's revenues and expenses. This statement measures the success of the District's operations over the past year and determines whether the District has recovered its costs through user fees and other charges.

The final required statement is the Statement of Cash Flows. This statement reports cash receipts, cash disbursements and net changes in cash resulting from operations and investments during the reporting period.

The notes to the basic financial statements provide a description of the accounting policies used to prepare the financial statements and present disclosures required by generally accepted accounting principles that are not otherwise present in the financial statements.

Financial Highlights

• Current Assets decreased over the last year by $913 in cash and cash equivalents.

• Fixed Assets decreased by $593,660 over the same period reflecting the depreciation of the assets and the purchase of a used pick-up for a Fire Chief vehicle.

• Change in Total Assets over the last year amounts to $(594,573).

• Total Liabilities were reduced by $355,377 reflecting prior period corrections, principal payments to the Water Department loan for the Medical Clinic Building and $37,626 for the principal payment to City Bank for the Sewer Pond Improvement Project.

• The District's Net Income was $(56,665) and the LAIF reserves were decreased by $199,843.

Capital Assets

The WWTP Capital Improvement Projects include the upgrade and rehabilitation of the aging wastewater system for the safety of the community and the environment. Projects include 20 lift station sump and pump upgrades improving the safety of the stations and reducing the energy usage, develop sludge drying beds and head works containment as mandated by the Regional Board, line evaporation pond and start rehabilitation on manholes and collection lines as recommended by the SWRCB SSO program, a SCADA system for automatic alarms and remote operation, Photovoltaic solar system for energy reduction and general upgrades to plant infrastructure.

The DWS Capital Improvement Projects include the upgrade, rehabilitation and expansion of the aging drinking water system for the safety of the community and the environment. Projects include developing new wells for the long term and drought protection of the water supply for the community, reline four

storage tanks, refurbish two booster stations, rehabilitate three wells, replace meters, upgrade telemetry and SCADA system, Cathodic Protection Replacement, rehabilitate fire hydrant system and general upgrades to system infrastructure.

Our Water, Sewer, Police and Fire Departments maintain a very aged fleet of equipment and vehicles. A majority of the equipment and fleet have well surpassed the "useful life" expectancy as described under the Fixed Assets portion of the Summary of Significant Accounting Policies. A separation of the LSCSD and the LSPOA has resulted in a division of equipment, limiting the Water and Sewer Departments' access to a fully functional Backhoe, Dump Truck, Trailers and other Maintenance Equipment.

The District continues to pay down the Water Department loan for the Medical Clinic Building and the loan for the Sewer Pond Improvements. The main priorities of the District Board are to make the necessary improvements to the Wastewater and Water Systems with grant funding in order to develop safe, reliable and environmentally friendly systems, building District Reserves, strengthening the Police Department, fully equip the Fire Department, add additional leases for cellular towers and establish uniform and effective rate structures.

Long-Term Debt

The District continues to pay down the Water Department loan for the Medical Clinic Building and the loan for the Sewer Pond Improvements.

Economic Factors and Next Year's Budget

The District has applied for a $500,000 Planning Grant from the State Water Resources Control Board Drinking Water SRF for the planning and design for a major Improvement and Rehabilitation Project for the Drinking Water System.

The District has applied for grants through FEMA for Hazard Mitigation focusing on ground water storage and supply of generators to provide power back up to the wells and pumps within the District.

The main priorities of the District Board are to make the necessary improvements to the Wastewater and Water Systems with grant funding in order to develop safe, reliable and environmentally friendly systems, building District Reserves, strengthening the Police Department, fully equip the Fire Department, add additional leases for cellular towers and establish uniform and effective rate structures.

Contacting the District Administrator

This financial report is designed to provide our citizens, customers, investors and creditors with a general overview of the District's finances and to demonstrate the District's accountability for the money it receives. If you have any questions about this report or need additional information, contact the General Manager, Lake Shastina Community Services District, 16320 Everhart Dr., Weed CA 96094.

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

STATEMENT OF NET POSITION
JUNE 30, 2017

	Governmental Activities	Business-type Activities	Total
Assets			
Cash and investments	$ 589,903	$ 1,589,358	$ 2,179,261
Receivables			
General receivables	24,796	33,355	58,151
Unbilled service receivables	24,191	202,495	226,686
Delinquent accounts-tax roll	148,701	112,583	261,284
Grant receivable	9,947		9,947
Interest receivable	1,270		1,270
Due from others	8,360		8,360
Prepaid expense	22,543	5,152	27,695
Inventory		22,981	22,981
Total current assets	829,711	1,965,924	2,795,635
Noncurrent assets			
Intergovernmental advance	(417,519)	417,519	-
Asset held for investment	389,263		389,263
Capital assets:			
Nondepreciable capital assets			
Land	37,506	31,433	68,939
Construction in progess		124,534	124,534
Depreciable capital assets			
Infrastructure		8,575,996	8,575,996
Land improvements		21,318	21,318
Structures and improvements	426,089	289,889	715,978
Equipment and vehicles	1,249,432	306,324	1,555,756
Less accumulated depreciation	(1,236,491)	(5,102,791)	(6,339,282)
Total capital assets (net of accumulated depreciation)	476,536	4,246,703	4,723,239
Total noncurrent assets	448,280	4,664,222	5,112,502
Total assets	1,277,991	6,630,146	7,908,138
Deferred outflows of resources			
Deferred outflows-pensions	55,601	150,330	205,931
Liabilities			
Current liabilities:			
Accounts payable and accrued expense	31,864	7,663	39,528
Accrued payroll	23,953	6,841	30,794
Capital lease-current		37,626	37,626
Compensated absences	11,280	21,078	32,358
Total current liabilities	67,097	73,208	140,305
Noncurrent liabilities			
Net pension liability	207,278	560,419	767,697
Capital lease-due in more than one year		364,918	364,918
Compensated absences	16,919	21,079	37,998
Total noncurrent liabilities	224,197	946,416	1,170,613
Total Liabilities	291,294	1,019,624	1,310,919
Deferred inflows of resources			
Deferred inflows-pensions	25,701	69,491	95,192
Net Position			
Net investment in capital assets	476,536	4,209,078	4,685,614
Unrestricted	540,061	1,482,283	2,022,344
Total Net Position	$ 1,016,597	$ 5,691,361	$ 6,707,958

The notes to the financial statements are an integral part of this statement

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

STATEMENT OF ACTIVITIES
JUNE 30, 2017

		Program Revenues			Net (Expense) Revenue and Changes in Net Position		
Functions/programs	Expenses	Charges for Services	Capital Grants and Contributions	Operating Grants and Contributions	Governmental Activities	Business-type Activities	Total
Governmental Activities:							
General	$ 80,695	$ -	$ -	$ -	$ (80,695)	$ -	$ (80,695)
Public safety	672,330	463,991		258,695	50,356		50,356
Total Governmental Activities	753,025	463,991	-	258,695	(30,339)		(30,339)
Business-type activities:							
Water	575,431	468,426				(107,005)	(107,005)
Sewer	545,126	588,955				43,830	43,830
Interest	25,543					(25,543)	(25,543)
Total Business-type Activities	1,146,099	1,057,382	-			(88,718)	(63,175)
Total	$1,899,124	$ 1,521,373	$ -	$ 258,695	(30,339)	(88,718)	(93,514)
General Revenues:							
Rental income					80,942		80,942
Gain on sale of equipment						7,486	7,486
Other					17,759		17,759
Investment income					3,946	14,762	18,707
Total general revenues					102,647	22,248	124,895
Change in net position					72,308	(66,470)	5,838
Net position - beginning					649,144	6,074,956	6,724,100
Prior period adjustment					295,145	(317,125)	(21,980)
Net position - ending					$ 1,016,597	$ 5,691,361	$ 6,707,958

The notes to the financial statements are an integral part of this statement

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

GOVERNMENTAL FUNDS
BALANCE SHEET
JUNE 30, 2017

	General Fund	Major Special Revenue Funds			Total Governmental Funds
		Police	Fire	Cops Grant	
Assets					
Cash and investments	$ 185,193	$ 319,637	$ 85,073	$ -	$ 589,903
Receivables					
Accounts	8,087	16,507	202		24,796
Assessements		24,191			24,191
Delinquent accounts-tax roll		107,177	41,524		148,701
Grants			5,733	4,214	9,947
Interest	404	656	210		1,270
Due from other fund		91,168			91,168
Prepaid expense	13,971	3,784	1,596	3,192	22,543
Due from others	8,360				8,360
Total Assets	$ 216,015	$ 563,120	$ 134,338	$ 7,406	$ 920,879
Liabilities and Fund Equity					
Liabilities					
Accounts payable	$ 19,436	$ 5,620	$ 1,379	$ 5,427	$ 31,862
Accrued payroll	12,264	7,088	1,260	3,341	23,953
Due to other funds				91,168	91,168
Advance from other fund	417,519				417,519
Total Liabilities	449,219	12,708	2,639	99,936	564,502
Fund Equity					
Fund balances					
Nonspendable					
Prepaid expense	13,971	3,784	1,596	3,192	22,543
Assigned for police		546,628		(95,722)	450,906
Assigned for fire			130,103		130,103
Unassigned	(247,175)				(247,175)
Total Fund Equity	(233,204)	550,412	131,699	(92,530)	356,377
Total Liabilities and Fund Equity	$ 216,015	$ 563,120	$ 134,338	$ 7,406	$ 920,879

The notes to the financial statements are an integral part of this statement

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

RECONCILIATION OF GOVERNMENTAL FUNDS BALANCE SHEET TO THE STATEMENT OF NET POSITION
JUNE 30, 2017

Fund Balances of Governmental Funds	$ 356,377
Amounts reported for governmental activities in the statement of net position are different because:	
Capital assets, net of accumulated depreciation, are not current financial resources and are not included in the governmental funds.	476,536
Assets held for investment are not current financial resources and are not included in the governmental funds	389,263
Some liabilities, including long-term debt, accrued interest and compensated absences are not due and payable in the current period and therefore are not reported in the funds.	
Compensated absences	(28,199)
Net pension liability, deferred inflows/outflows	(177,379)
Net position of governmental activities	$ 1,016,597

The notes to the financial statements are an integral part of this statement

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

GOVERNMENTAL FUNDS
STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE
FOR THE FISCAL YEAR ENDED JUNE 30, 2017

	General Fund	Major Special Revenue Funds			Total Governmental Funds
		Police	Fire	Cops Grant	
Revenues					
Assessments	$ -	$ 338,108	$ 115,447	$ -	$ 453,555
Intergovernmental revenues			129,372	129,324	258,696
Use of money and property	82,506	1,905	477		84,888
Licenses and permits		4,940			4,940
Other	4,446	9,957	8,853		23,256
Total Revenues	86,952	354,910	254,149	129,324	825,335
Expenditures					
Current:					
General administration	81,326				81,326
Public protection-police		230,235		172,369	402,604
Public protection-fire			228,268		228,268
Interest expense	3,323				3,323
Capital outlay	9,000		53,223		62,223
Total Expenditures	93,649	230,235	281,491	172,369	777,744
Excess (Deficit) of Revenues over Expenditures	(6,697)	124,675	(27,342)	(43,045)	47,591
Fund Balances, July 1, 2016	(229,117)	425,737	159,041	(49,485)	306,176
Prior Period Adjustment	2,610				2,610
Fund Balances, June 30, 2017	$ (233,204)	$ 550,412	$ 131,699	(92,530)	$ 356,377

The notes to the financial statements are an integral part of this statement

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

RECONCILIATION OF THE STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE OF GOVERNMENTAL FUNDS TO THE GOVERNMENT-WIDE STATEMENT OF ACTIVITIES-GOVERNMENTAL ACTIVITIES FOR THE FISCAL YEAR ENDED JUNE 30, 2017

Net Change in Fund Balances - Total Governmental Funds	$ 47,591
Amounts reported for governmental activities in the Statement of Activities differs from the amounts reported in the Statement of Revenues, Expenditures and Changes in Fund Balances because:	
Governmental funds report capital outlays as expenditures. However, in the Statement of Activities the costs of those assets are allocated over their estimated useful lives as depreciation expense or are allocated to the appropriate functional expense when the cost is below the capitalization threshold. This activity is reconciled as follows:	
Cost of assets capitalized	62,224
Depreciation expense	(59,367)
Changes in proportions from the pension do not effect expenditures in the governmental funds, but the change is adjusted through expense in the government-wide statement.	9,575
Compensated absences reported in the statement of activities do not require the use of current financial resources and, therefore, are not reported in governmental funds.	12,285
Change in net position of governmental activities	$ 72,308

The notes to the financial statements are an integral part of this statement

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

STATEMENT OF NET POSITION
PROPRIETARY FUNDS
FOR THE FISCAL YEAR ENDED JUNE 30, 2017

	Water	Sewer	Totals
Current Assets: `			
Cash and investments	$ 1,036,933	$ 552,425	$ 1,589,358
General receivables	18,403	14,952	33,355
Unbilled services receivable	84,048	118,447	202,495
Delinquent accounts-tax roll	66,729	45,854	112,583
Prepaid expense		5,152	5,152
Inventory	17,475	5,506	22,981
Total current assets	1,223,588	742,336	1,965,924
Noncurrent Assets			
Advances to other funds	417,519		417,519
Capital assets:			
Nondepreciable capital assets:			
Land	26,136	5,297	31,433
Construction in progress	38,747	85,787	124,534
Depreciable capital assets			-
Infrastructure	2,224,302	6,351,694	8,575,996
Land improvements	21,318		21,318
Structures and improvements	172,905	116,984	289,889
Equipment and vehicles	234,086	72,238	306,324
Less accumulated depreciation	(1,640,935)	(3,461,856)	(5,102,791)
Total capital assets (net of accumulated depreciation)	1,011,676	3,079,060	4,090,736
Total noncurrent assets	1,494,078	3,170,144	4,664,222
Total Assets	$ 2,717,666	$ 3,912,480	$ 6,630,146
Deferred Outflows of Resources			
Deferred outflows from pensions	63,838	86,492	150,330
Liabilities			
Current liabilities:			
Accounts payable and accrued expense	6,290	1,373	7,663
Accrued payroll	2,376	4,465	6,841
Compensated absences-current	9,739	11,339	21,078
Capital lease-current		37,626	37,626
Total current liabilities	18,405	54,803	73,208
Noncurrent liabilities			
Compensated absences-noncurrent	11,340	9,739	21,079
Net pension liability	237,986	322,433	560,419
Capital lease payable-noncurrent		364,918	364,918
Total noncurrent liabilities	249,326	697,090	946,416
Total Liabilities	267,731	751,893	1,019,624
Deferred Inflows of Resources			
Deferred inflows from pensions	29,510	39,981	69,491
Net position:			
Net investment in capital assets	1,494,078	2,767,600	4,261,678
Unrestricted	990,185	439,498	1,429,683
Total Net Position	$ 2,484,263	$ 3,207,098	$ 5,691,361

The notes to the financial statements are an integral part of this statement

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
PROPRIETARY FUNDS
FOR THE FISCAL YEAR ENDED JUNE 30, 2017

	Water	Sewer	Totals
Operating Revenues			
Charges for services	$ 454,889	$ 547,124	$ 1,002,012
Other	8,699	5,589	14,289
Total Operating Revenues	463,588	552,713	1,016,301
Operating Expenses			
Salary and benefits	189,076	166,915	355,991
Services and supplies	248,885	209,746	458,630
Depreciation expense	137,470	168,465	305,935
Total Operating Expenses	575,431	545,126	1,120,557
Operating Inome	(111,843)	7,587	(104,256)
Non-operating Revenue (Expense)			
Connection fees	4,838	36,243	41,081
Interest revenue	11,539	3,223	14,762
Gain on sale of equipment	3,743	3,743	7,486
Interest expense		(25,543)	(25,543)
Total Non-operating Revenue (Expense)	20,120	17,666	37,786
Change in net position	(91,723)	25,253	(66,470)
Net Position, July 1, 2016	2,790,639	3,284,317	6,074,956
Prior year adustment	(214,653)	(102,472)	(317,125)
Net Position, June 30, 2017	$ 2,484,263	$ 3,207,098	$ 5,691,361

The notes to the financial statements are an integral part of this statement

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

STATEMENT OF CASH FLOWS
PROPIETARY FUNDS
JUNE 30, 2017

	Water	Sewer	Totals
Cash Flows from Operating Activities			
Cash received from customers	$ 453,672	$ 542,141	$ 995,812
Cash payments to suppliers	(262,758)	(216,361)	(479,119)
Cash payments to employees	(178,355)	(171,139)	(349,494)
Net Cash Provided By Operating Activities	12,559	154,641	167,200
Cash Flows from Non-Capital Financing Activities			
Payment for interfund advances	40,677		40,677
Net Cash Provided (Used) By Noncapital Financing Activities	40,677	-	40,677
Cash Flows from Capital and Related Financing Activities			
Purchases of capital assets	(178,707)	(87,364)	(266,071)
Gain on sale of assets	3,743	3,743	7,486
Principal paid on debt		(35,482)	(35,482)
Interest paid on debt		(25,543)	(25,543)
Connection fees	4,838	36,243	41,081
Net Cash Provided (Used) By Capital And Related Financing Activities	(170,126)	(108,403)	(278,529)
Cash flows from investing activities:			
Interest received on investments	11,539	3,223	14,762
Net Increase (Decrease) in Cash and Cash Equivalents	(105,351)	49,460	(55,891)
Cash and Cash Equivalents, July 1, 2016	1,142,284	502,965	1,645,249
Cash and Cash Equivalents, June 30, 2017	$ 1,036,933	$ 552,425	$ 1,589,358
Reconciliation of Cash and Cash Equivalents:			
Cash and investments	$ 1,036,933	$ 552,425	$ 1,589,358
Reconciliation of operating income to net cash flows from operating activities:			
Operating income	$ (111,843)	$ 7,587	$ (104,256)
Noncash items included in operating loss:			
Depreciation	137,470	168,465	305,935
Changes in:			
General receivables	(1,503)	(4,550)	(6,052)
Unbilled service receivables	(1,956)	(776)	(2,732)
Tax roll receivables	(6,458)	(5,246)	(11,704)
Prepaids		451	451
Inventory	(2,623)	(335)	(2,958)
Accounts payables	(11,249)	(6,732)	(17,981)
Accrued payroll and benefits	638	1,071	1,709
Compensated absences	21,079	9,603	30,682
GASB 68 pension adjustments	(10,996)	(14,898)	(25,894)
Net Cash Provided By Operating Activities	$ 12,559	$ 154,641	$ 167,200

The notes to the financial statements are an integral part of this statement

Note 1: Summary of Significant Accounting Policies

The basic financial statements of Lake Shastina Community Services District, (the "District") have been prepared in conformity with accounting principles generally in the United States of America ("U.S. GAAP") as applied to governmental agencies. The Governmental Accounting Standards Board ("GASB") is the acceptable standard setting body for establishing governmental accounting and financial reporting principles. The more significant of the District's accounting policies are described below.

A. Reporting Entity

The District was form in 1978 and is located in Siskiyou County, California. The District operated under a five member Board of Directors and provides services including police and fire protection, the collection and treatment of wastewater and provides water to the residences within the District's boundaries.

The financial reporting entity, as defined by the GASB, consists of the primary government, the District, organizations for which the primary government is financially accountable, and any other organization for which the nature and significance of their relationship with the primary government are such that exclusion would cause the reporting entity's financial statements to be misleading or incomplete.

B. Basis of Accounting

The government-wide and proprietary fund financial statements are reported using the economic resources measurement focus and the accrual basis of accounting. Revenues are recorded when earned or, for assessment revenues, in the period for which levied. Expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Revenues from grants, entitlements and donations are recognized in the fiscal year in which all eligible requirements have been satisfied.

Governmental funds are reported using the current financial resources measurement focus and the modified accrual basis of accounting. Revenues are recognized when both measurable and available. Measurable means the amount of the transaction can be determined and available means collectible in the current period or soon enough thereafter to be used to pay liabilities of the current period. Resources not available to finance expenditures and commitments of the current period are recognized as deferred revenue or as a reservation of fund balance..

Expenditures are recorded when the related fund liability is incurred. Principal and interest on general long-term debt, as well as compensated absences and claims and judgments are recorded only when payment is due. General capital acquisitions are reported as expenditures in governmental funds. Proceeds of general long-term debt and capital leases are reported as other financial sources.

Proprietary fund operating revenues, such as charges for services, result from exchange transactions associated with the principal activity of the fund. Exchange transactions are those in which each party receives and gives up essentially equal values. Nonoperating revenues, such as subsidies and investment earnings, result from non-exchange transactions or ancillary activities.

C. Basis of Presentation

Government-Wide Financial Statements

The statement of net position and statement of activities display information about the District. These statements include the financial activities of the overall government. These statements distinguish between the governmental and business-type activities of the District. Governmental activities, which normally are supported by taxes, assessments and intergovernmental revenues, are reported separately from business-type activities, which rely to a significant extent on fees charged to external parties.

Note 1: Summary of Significant Accounting Policies (Continued)

C. Basis of Presentation (Continue)

The statement of activities demonstrates the degree to which the program expenses of a given function are offset by program revenues. Program expenses include direct expenses, which are clearly identifiable with a specific function. Program revenues include 1) charges paid by the recipient of goods or services offered by the programs and 2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular program. Revenues that are not classified as program revenues, including all taxes, are presented instead as general revenues.

When both restricted and unrestricted net position are available, unrestricted resources are used only after the restricted resources are depleted.

Fund Financial Statements

The fund financial statements provide information about the District's funds. Separate statements for each fund category – governmental and proprietary – are presented. The emphasis of fund financial statements is on major governmental and enterprise funds, each displayed in separate columns.

The District reports the following major governmental funds:

General Fund - This fund accounts for all the financial resources not required to be accounted for in another fund. This fund consists primarily of general government type activities.

Special Revenue Funds – These funds are used to account for the proceeds of specific revenue sources that are legally restricted to expenditures for specific purposes. The District has three special revenue funds; the police fund, the fire fund and the COPS Grant fund.

The District reports the following major enterprise funds.

Water and Sewer Funds - account for the operation of the District's water and sewer utilities. Activities of these funds include administration, operation and maintenance of the water and sewer systems and billing and collection activities. The Funds also accumulate resources for, and payment of long-term debt principal and interest. All costs are financed through charges made to utility customers with rates reviewed regularly and adjusted if necessary to ensure the integrity of the Funds.

D. Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenditures/expenses during the reporting period. Actual results could differ from those estimates.

E. Cash and Cash Equivalents

For the purpose of the statement of cash flows, the District considers cash and cash equivalents as short term, highly liquid investments that are both readily convertible to known amounts of cash and so near their maturity that they present insignificant risk of changes in value because of changes in interest rates.

Restricted cash and unrestricted pooled cash and investments held by the District are considered cash equivalents for purposes of the combined statement of cash flow's because the District's cash management pool and funds invested by the District possess the characteristics of demand deposit accounts.

Note 1: Summary of Significant Accounting Policies (Continued)

F. Accounts Receivable

Accounts receivable are recorded for services, provided to individuals or non-governmental entities that are billed but unpaid. Proprietary Fund receivables are shown net of allowance for uncollectible accounts.

G. Inventory of Supplies

The inventory of supplies account is valued at cost and is determined on a first-in, first-out basis, which approximates market.

H. Prepaid Expense

Prepaid expenses are payments made to vendors in the current accounting period for costs applicable to future accounting periods.

I. Fixed Assets

Capital assets, recorded at historical cost or estimated historical cost if actual historical cost is not available, are reported in governmental activities column of the government-wide financial statements. Contributed fixed assets are valued at their estimated fair market value. Capital assets include land, buildings and building improvements and equipment. Capital assets are defined by the District as assets with an initial, individual cost of more than $2,500.

The costs of normal maintenance and repairs that do not add to the value of the asset or materially extend assets lives are not capitalized. Major outlays for capital assets and improvements are capitalized as projects are constructed. Depreciation is recorded in the government-wide financial statements on the straight-line basis over the useful life of the assets as follows:

Assets	Useful Life
Subsurface sewer lines	40-50 years
Sewage collections facilities	10-40 years
Sewage disposal facilities	40 years
Water System	5-35 years
Building	20-40 years
Equipment	5-20 years
Vehicles	5-10 years

J. Compensated Absences

District employees are granted vacation and sick time in varying amounts based on classification and length of service. Upon termination or retirement, the District is to pay 100% of the vacation time accrued and sick time will be paid based on the tier system the District has established for sick time earned. For employees who retire from the District, accrued sick leave at the time retirement will be added to years of service for pension purposes.

K. Pensions

For purposes of measuring the net pension liability and deferred outflows/inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the District's California Public Employees' Retirement System (CalPERS) plans (Plans) and additions to/deductions from the Plans' fiduciary net position have been determined on the same basis as they are reported by CalPERS. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

Note 1: Summary of Significant Accounting Policies (Continued)

L. Deferred Outflows of Resources and Deferred Inflows of Resources

In addition to assets, the statement of net position includes a separate section for deferred outflows of resources. This separate financial statement element, deferred outflows of resources, represents a consumption of net position that applies to a future period(s) which will only be recognized as an outflow of resources (expense/expenditures) in the futures. The change in proportion and differences between the District contributions and proportionate share of contributions, and resources in the government-wide statement of net position. District contributions subsequent to the measurement date are being amortized in the current fiscal year as provided by accounting pronouncement GASB Statement No. 71. The change in proportion and difference between District contributions and proportionate share of contributions is amortized over the estimated service lives of pension plan participants. In addition to liabilities, the statement of net position includes a separate section of deferred inflows of resources. This separate financial statement element, deferred inflows of resources, represents an acquisition of net position that applies to future period(s) and would only be recognized as an inflow of resources (revenue) at that time. The District's proportionate share of the net difference between projected and actual earnings on pension plan investments is reported as deferred inflows of resources in the government-wide statement of net position. The amount will be amortized over a five year period.

M. Net Position

The government-wide and proprietary fund financial statements utilize a net position presentation. Net position are categorized as invested in capital assets (net of related debt), restricted, and unrestricted.

- Invested in capital assets, net of related debt – Consists of capital assets including restricted capital assets, net of accumulated depreciation and reduced by the outstanding balances of any bonds, mortgages, notes or other borrowings that are attributable to the acquisition, construction or improvement of those assets.

- Restricted net position – Consists of net position with constraints placed on their use either by (1) external groups such as creditors, grantors, contributors or laws or regulations of other governments; or (2) law through constitutional provisions or enabling legislation. These principally include restrictions for capital projects, debt service requirements and other special revenue fund purposes.

- Unrestricted net position – All other net position that do not meet the definition of "restricted" or "invested in capital assets, net of related debt."

N. Fund Balances

As prescribed by GASB Statement No. 54, governmental funds report fund balance in classifications based primarily on the extent to which the District is bound to honor constraints on the specific purposes for which amounts in the funds can be spent. As of June 30, 2017, fund balances for governmental funds are made up of the following:

- Nonspendable fund balance - includes amounts that are (a) not in spendable form, or (b) legally or contractually required to be maintained intact. The "not in spendable form" criterion includes items that are not expected to be converted to cash, for example: inventories, prepaid amounts, and long-term notes receivable.

- Restricted fund balance - includes amounts that can be spent for specific purposes stipulated by external resource providers, constitutionally or through enabling legislation. Restrictions may effectively be changed or lifted only with the consent of resource providers.

Note 1: Summary of Significant Accounting Policies (Continued)

N. Fund Balances (Continued)

- Committed fund balance - includes amounts that can only be used for the specific purposes determined by a formal action of the District's highest level of decision-making authority, the Board of Directors. Commitments may be changed or lifted only by the District taking the same formal action that imposed the constraint originally (for example: resolution and ordinance).

- Assigned fund balance - comprises amounts intended to be used by the District for specific purposes that are neither restricted nor committed. Intent is expressed by (1) the Board of Directors or (b) a body (for example: a budget or finance committee) or official to which the Board of Directors has delegated the authority to assign amounts to be used for specific purposes.

- Unassigned fund balance - is the residual classification for the General Fund and includes all amounts not contained in the other classifications. Unassigned amounts are technically available for any purpose. In other governmental funds, if expenditures incurred for specific purposes exceeded the amounts restricted, committed, or assigned to those purposes, that fund would report a negative unassigned fund balance.

Note 2: Cash and Investments

The District maintains a cash and investment pool that is available for use by all funds. Each fund type's portion of this pool is displayed on the combined balance sheet as cash and investments. Unless otherwise dictated by legal or contractual requirements, income earned or losses arising from the investment of pooled cash are allocated on a quarterly basis to the participating funds and component units based on their proportionate shares of the average quarterly cash balance.

The District maintains "restricted cash and investments".

Cash and investments at June 30, 2017, consisted of the following:

Cash on hand	$	303
Deposit accounts		303,085
Investments (LAIF)		1,875,874
Total cash and investments	$	2,179,261

A. Investments Authorized by the California Government Code and the Entity's Investment Policy

The table below identifies the **investment types** that are authorized for Lake Shastina Community Services District by the California Government Code (or the District's investment policy, where more restrictive). The table also identifies certain provisions of the California Government Code (or the District's investment policy, where more restrictive) that address **interest rate risk, credit risk** and **concentration of credit risk**. This table does not address investments of debt proceeds held by bond trustees that are governed by the provisions of debt agreements of the District, rather than the general provisions of the California Government Code or the District investment policy.

Note 2: Cash and Investments (Continued)

A. Investments Authorized by the California Government Code and the Entity's Investment Policy (Continued)

Authorized Investment Type	Maximum Maturity	Percentage of Portfolio	Investment in One Issuer
Investment pools authorized under CA Statutes governed by Government Code	N/A	None	$40 million
U.S. Treasury Obligations	5 years	None	None
Bank Savings Accounts	N/A	25%	None
Federal Agencies	5 years	75%	None
Commercial Paper	180 days	20%	None
Negotiable Certificates of Deposit	180 days	20%	None
Re-Purchase Agreements	180 days	20%	None
Corporate Debt	5 years	25%	None

B. Disclosures Relating to Interest Rate Risk

Interest rate risk is the risk that changes in market interest rates will adversely affect the fair value of all investments. Generally, the longer the maturity of an investment the greater the sensitivity of its fair value to changes in market interest rates. Information about the sensitivity of the fair values of the District's investments to market interest rate fluctuations is provided by the following table that shows the distribution of the District's investment maturity:

		Remaining Maturity (in Months)	
Investment Type	Totals	12 Months or Less	13-48 Months
Local Agency Investment Fund	$ 1,875,874	$ 1,875,874	$ -
Totals	$ 1,875,874	$ 1,875,874	$ -

*Not subject to categorization

C. Concentrations of Credit Risk

The investment policy of the District contains limitations on the amount that can be invested in any one issuer. There are no investments to one issuer exceeding those limits.

D. Custodial Credit Risk

Custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, a government will not be able to recover its deposit or will not be able to recover collateral securities that are in the possession of an outside party. The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty (e.g. broker-dealer) to a transaction, a government will not be able to recover the value of its investment of collateral securities that are in the possession of another party. The California Government Code and the District's investment policy do not contain legal or policy requirements that would limit the exposure to custodial credit risk for deposits or investments, other than the following provision for deposits; The California Government Code requires that a financial institution secured deposits made by state or local governmental units by pledging securities in an undivided collateral pool held by a depository regulated under state law (unless so waived by the government unit). The fair value of the pledged securities in the collateral pool must equal at least 110% of the total amount deposited by the public agencies. California law also allows financial institutions to secure the District's deposits by pledging first deed mortgage notes having a value of 150% of the secured public deposits.

At June 30, 2017, the District's deposits balance was $335,831 and the carrying amount was $303,085. The difference between the bank balance and the carrying amount was due to normal outstanding checks and deposits in transit. Of the bank balance $250,000 was covered by the Federal Depository Insurance or by collateral held in the pledging bank's trust department in the District's name and $85,831 was collateralized with pledged securities.

Note 2: Cash and Investments (Continued)
D. Custodial Credit Risk (Continued)

LAIF is included in the State's Pooled Money Investment Account. The total amount invested by all public agencies in the State's Pooled Money Investment Account approximates $77.56 billion. Of the $77.56 billion managed by the State Treasurer, 100% is invested in non-derivative financial products and 2.89% is invested in structured notes and asset-backed securities. The Local Investment Advisory Board (Board) has oversight responsibility for LAIF. The Board consists of five members as designated by state statute.

Investments are accounted for in accordance with the provisions of GASB Statement No. 31, which requires governmental entities to report certain investments at fair value in the balance sheet and recognize the corresponding change in fair value of investments in the year in which the change occurred. The District reports its investments at fair value based on quoted market information obtained from fiscal agents or other sources if the change is material to the financial statements.

Note 3: Assessments and Accounts Receivable

Major receivable balances for both governmental and business-type activities include assessments for services and assessments for services placed on the Siskiyou County tax rolls. There is no allowances for uncollectible accounts as management feels all amounts are collectible.

Charges for sewer and water services are recorded when earned. Services provided but unbilled at year-end have been included in the accompanying financial statements.

Note 4: Capital Assets

Capital asset activity for the year ended June 30, 2017 was as follows:

Governmental Activities	Balance July 1, 2016	Additions	Retirements/ Adjustments	Balance June 30, 2017
Capital assets, not being depreciated:				
Land	$ 37,506	$ -	$ -	$ 37,506
Capital assets, being depreciated:				
Structures and improvements	182,168		243,921	426,089
General equipment	451,744	9,000	454	461,198
Vehicles and rolling stock	735,011	53,223		788,234
Total capital assets, being depreciated	1,368,923	53,223		1,675,521
Less accumulated depreciation:	(1,119,755)	(59,769)	(56,967)	(1,236,491)
Governmental activities capital assets, net	$ 286,674	$ (6,546)	$ (56,967)	$ 476,536
Business-Type Activities				
Capital assets, not being depreciated:				
Land	$ 31,433	$ -	$ -	$ 31,433
Construction in progress	118,596	5,938		124,534
Capital assets, being depreciated:				
Infrastructure	8,316,812	260,133	(949)	8,575,996
Land improvements	21,318			21,318
Structures and improvements	289,890			289,890
Vehicles and rolling stock	306,323			306,323
Total capital assets, being depreciated	8,934,343	260,133	(949)	9,193,527
Less accumulated depreciation:	(4,699,348)	(305,769)	(97,674)	(5,102,791)
Total capital assets, being depreciated, net	4,234,995	(45,636)	(98,623)	4,090,736
Business- type activities capital assets, net	$ 4,385,024	$ (39,698)	$ (98,623)	$ 4,246,703

Note 5: Long-term Liabilities

Governmental Activities:

A summary of the changes in the District's long-term liabilities reported in the governmental activities column of the government-wide financial statements for the year ended June 30, 2017:

	Balance 7/1/2016	Additions	Adjustments/ Retirements	Balance 6/30/2017	Due Within One Year
Compensated absences	$ 40,484	$ 18,541	$ (30,826)	$ 28,199	$ 11,280
Net pension liability	429,123	30,703	(252,548)	207,278	
Total	$ 469,607	$ 49,244	$ (283,374)	$ 235,477	$ 11,280

Business Activities:

A summary of the changes in the District's long-term business-type liabilities reported in the proprietary funds statement of net position and the business-type activities column of the government-wide financial statements for the year ended June 30, 2017:

	Balance 7/1/2016	Additions	Adjustments/ Retirements	Balance 6/30/2017	Due Within One Year
Compensated absences	$ 11,475	$ 34,485	$ (3,803)	$ 42,157	$ 16,863
Net pension liability	224,859	83,013	252,547	560,419	
Note Payable	438,026	-	(35,482)	402,544	37,626
Total	$ 674,360	$ 117,498	$ 213,262	$ 1,005,120	$ 54,489

Note Payable

On August 18, 2010, the sewer fund obtained a $600,000 loan to finance the sewer pond construction. The loan, with interest calculated at 5.95%, is to be repaid in thirty semi-annual payments of $30,513 over fifteen years. Principal and interest paid for the current year was $61,026. Total principal and interest remaining on the loan is $518,718 which is the amount of the remaining dedicated source of pledged revenues.

The annual debt service requirements to maturity for Business-Type Activities are as follows:

Fiscal Year Ending June 30,	Principal	Interest	Total
2018	$ 37,626	$ 23,400	$ 61,026
2019	39,898	21,128	61,026
2020	42,307	18,719	61,026
2021	44,862	16,164	61,026
2022	47,570	13,456	61,026
2023-2026	190,282	23,307	213,589
Totals	$ 402,544	$ 116,174	$ 518,718

Note 6: Defined Benefit Pension Cost-Sharing Employer Plan

A. General Information about the Pension Plans

Plan Descriptions – All qualified non-safety permanent and probationary employees are eligible to participate in the District's separate Miscellaneous Employee Pension Plans, cost-sharing multiple employer defined benefit pension plans administered by the California Public Employees' Retirement System (CalPERS). Benefit provisions under the Plans are established by State statute and District resolution. CalPERS issues publicly available reports that include a full description of the pension plans regarding benefit provisions, assumptions and membership information that can be found on the CalPERS website.

Benefits Provided – CalPERS provides service retirement and disability benefits, annual cost of living adjustments and death benefits to plan members, who must be public employees and beneficiaries. Benefits are based on years of credited service, equal to one year of full time employment. Members with five years of total service are eligible to retire between ages 55 and 60, dependent upon the individual plan criteria, with statutorily reduced benefits. All members are eligible for non-duty disability benefits after 10 years of service. The death benefit is one of the following: the Basic Death Benefit, the 1957 Survivor Benefit, or the Optional Settlement 2W Death Benefit. The cost of living adjustments for each plan are applied as specified by the Public Employees' Retirement Law.

The Plans' provisions and benefits in effect at June 30, 2017, are summarized as follows:

	Miscellaneous	
Hire date	Prior to January 1, 2013	On or after January 1, 2013
Benefit formula	2.0% @ 55	2.0% @ 62
Benefit vesting s chedule	5 years service	5 years service
Benefit payments	monthly for life	monthly for life
Retirement age	50-57	52-67
Monthly benefits , as a % of compensation	1.5% to 2.0%	1.0% to 2.0%
Required employee contribution rates	7.00%	6.25%
Required employer contribution rates	8.38%	6.56%

Contributions – Section 20814(c) of the California Public Employees' Retirement Law requires that the employer contribution rates for all public employers be determined on an annual basis by the actuary and shall be effective on the July 1 following notice of a change in the rate. Funding contributions for the Plans are determined annually on an actuarial basis as of June 30 by CalPERS. The actuarially determined rate is the estimated amount necessary to finance the costs of benefits earned by employees during the year, with an additional amount to finance any unfunded accrued liability. The District is required to contribute the difference between the actuarially determined rate and the contribution rate of employees.

For the year ended June 30, 2017, the contributions recognized as part of pension expense for each Plan were as follows:

Contributions-Employer-Misc Tier 1	$	68,061
Contributions-Employer-PEPRA		3,942

B. Pension Liabilities, Pension Expenses and Deferred Outflows/Inflows of Resources Related to Pensions

As of June 30, 2017, the District reported net pension liabilities for its proportionate shares of the net pension liability of the Plan as follows:

	Proportionate share of Net pension liability	
Miscellanous Plan	$	767,697

Note 6: Defined Benefit Pension Cost-Sharing Employer Plan (Continued)

The District's net pension liability for each Plan is measured as the proportionate share of the net pension liability. The net pension liability of each of the Plans is measured as of June 30, 2016, and the total pension liability for each Plan used to calculate the net pension liability was determined by an actuarial valuation as of June 30, 2015 rolled forward to June 30, 2016 using standard update procedures. The District's proportion of the net pension liability was based on a projection of the District's long-term share of contributions to the pension plans relative to the projected contributions of all participating employers, actuarially determined.

The District's proportionate share of the net pension liability as of June 30, 2015 and 2016 was as follows:

	Miscellaneous
Proportion - June 30, 2015	0.02384%
Proportion - June 30, 2016	0.02210%
Change - Increase (Decrease)	-0.00174%

For the year ended June 30, 2017, the District recognized pension expense of $36,511. At June 30, 2017, the District reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	**Deferred Inflows of Resources**
Differences between expected and actual experience	$ 2,065	$ -
Changes of assumptions		(25,340)
Net difference between projected and actual earnings on pension plan investments	131,884	-
Changes in proportion and differences between District contributions and proportionate share of contributions		(69,853)
District contributions subsequent to the measurement date	71,983	-
Total	$ 205,932	$ (95,193)

$71,983 reported as deferred outflows of resources related to contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended June 30, 2018.

Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized as pension expense as follows:

Measurement Period Year Ended June 30:	
2018	$ (37,029)
2019	(4,196)
2020	45,821
2021	34,160
2022	-
Thereafter	-

Note 6: Defined Benefit Pension Cost-Sharing Employer Plan (Continued)

Actuarial Assumptions – The total pension liabilities in the June 30, 2015 actuarial valuations were determined using the following actuarial assumptions:

	Miscellaneous
Valuation Date	June 30, 2015
Measurement Date	June 30, 2016
Actuarial Cost Method	Entry-Age Normal
Actuarial Assumptions:	
Discount Rate	7.65%
Inflation	2.75%
Payroll Growth	3.00%
Projected Salary Increase	3.30% - 14.20%
Investment Rate of Return	7.50%

The underlying mortality assumptions and all other actuarial assumptions used in the June 30, 2015 valuation were based on the results of a January 2010 actuarial experience study for the period 1997 to 2007. Further details of the Experience Study can found on the CalPERS website.

Discount Rate – The discount rate used to measure the total pension liability was 7.65% for each Plan. To determine whether the municipal bond rate should be used in the calculation of a discount rate for each plan, CalPERS stress tested plans that would most likely result in a discount rate that would be different from the actuarially assumed discount rate. Based on the testing, none of the tested plans run out of assets. Therefore, the current 7.65 percent discount rate is adequate and the use of the municipal bond rate calculation is not necessary. The long term expected discount rate of 7.65 percent will be applied to all plans in the Public Employees Retirement Fund (PERF). The stress test results are presented in a detailed report that can be obtained from the CalPERS website.

CalPERS is scheduled to review all actuarial assumptions as part of its regular Asset Liability Management (ALM) review cycle that is scheduled to be completed in February 2018. Any changes to the discount rate will require Board action and proper stakeholder outreach. For these reasons, CalPERS expects to continue using a discount rate net of administrative expenses for GASB 67 and 68 calculations through at least the 2017-18 fiscal year. CalPERS will continue to check the materiality of the difference in calculation until such time as they have changed their methodology.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class.

In determining the long-term expected rate of return, CalPERS took into account both short-term and long-term market return expectations as well as the expected pension fund cash flows. Using historical returns of all the funds' asset classes, expected compound returns were calculated over the short-term (first 10 years) and the long-term (11-60 years) using a building-block approach. Using the expected nominal returns for both short-term and long-term, the present value of benefits was calculated for each fund. The expected rate of return was set by calculating the single equivalent expected return that arrived at the same present value of benefits for cash flows as the one calculated using both short-term and long-term returns. The expected rate of return was then set equivalent to the single equivalent rate calculated above and rounded down to the nearest one quarter of one percent.

Note 6: Defined Benefit Pension Cost-Sharing Employer Plan (Continued)

The table below reflects the long-term expected real rate of return by asset class. The rate of return was calculated using the capital market assumptions applied to determine the discount rate and asset allocation. These rates of return are net of administrative expenses.

Asset Class	New Strategic Allocation	Real Return Years 1-10 (1)	Real Return Years 11+ (2)
Global Equity	51.0%	5.25%	5.71%
Global Fixed Income	19%	0.99%	2.43
Inflation Sensitive	6%	0.45%	3.36
Private Equity	10%	6.83%	6.95
Real Estate	10%	4.50%	5.13
Infrastructure and Forestland	2%	4.50%	5.09
Liquidity	2%	-0.55%	(1.05)

(1) An expected inflation of 2.5% used for this period
(2) An expected inflation of 3.0% used for this period

Sensitivity of the Proportionate Share of the Net Pension Liability to Changes in the Discount Rate – The following presents the District's proportionate share of the net pension liability for each Plan, calculated using the discount rate for each Plan, as well as what the District's proportionate share of the net pension liability would be if it were calculated using a discount rate that is 1-percentage point lower or 1-percentage point higher than the current rate:

	Discount Rate -1% (6.65%)	Current Discount Rate (7.65%)	Discount Rate +1% (8.65%)
Misc Tier I	$ 1,196,050	$ 767,697	$ 413,682

Note 7: Money Purchase Pension Plan

The Lake Shastina Community Services District Money Purchase Pension Plan was adopted for the purpose of rewarding long and loyal service to the District by providing Police Officer employees additional financial security at retirement. Incidental benefits are provided in the case of disability, death or termination of employment. The Plan is a type of qualified retirement plan commonly referred to as a money purchase plan. Since the principal purpose of the plan is to provide benefits at normal retirement age, the principal goal of the investment of the funds in the plan should be both security and long-term stability with moderate growth commensurate with the anticipated retirement dates of participants. Investments, other than "fixed dollar" investments, should be included among the plan's investments to prevent erosion by inflation. However, investments should be sufficiently liquid to enable to plan, on short notice, to make some distributions in the event of death or disability of a participant. Employees are generally not taxed on the amounts the District contributes to the Plan on their behalf until they withdraw these amounts from the Plan.

The District contributes an amount equal to 6 percent of eligible police department employees' regular wages. Total contributions for the year ended June 30, 2017 and were $7,343 Police department eligible employees are also covered by Social Security.

Note 8: Interfund Transactions

Transfers are used to (1) move revenues from the fund required by statute or budget to collect them to the fund required by statute or budget to expend them, and (2) use unrestricted revenues collected in the General Fund to finance various programs accounted for in other funds in accordance with budgetary authorizations.

Receivables and Payables

Balances representing lending/borrowing transactions between funds outstanding at the fiscal year end are reported as either "due from/due to other funds" (amounts due within one year), "advances to/from other funds" (non-current portions of interfund lending/borrowing transactions), or "loans to/from other funds" (long-term lending/borrowing transactions evidenced by loan agreements). Advances and loans to other funds are offset by a fund balance reserve in applicable governmental funds to indicate they are not available for appropriation and are not expendable available financial resources.

Note 9: Related Party Transaction

The District prepares, bills and collects the association dues for the Lake Shastina Property Owner's Association (LSPOA). The District also processes bills, payroll and provides other financial and administrative services for the LSPOA. The LSPOA utilizes office space in the District administration building, has a separate Board of Directors, is a separate legal entity and is not presented as a component unit of Lake Shastina Community Services District as defined by its reporting entity.

Note 10: Stewardship, Compliance and Accountability

A. Deficit Fund Balances

At June 30, 2017, the General Fund had a negative fund balance of $233,204, and the Cops Fund had a negative fund balance of $92,530.

B. Prior Period Adjustments

A prior period adjustment was made in the general fund increasing fund balance $2,610 for an adjustment to a prior year prepaid permit and meter.

A prior period adjustment was made in the water fund reducing net position $214,953 for activity related to prior year unrecorded net pension liability and unrecorded deferred inflows/outflows.

A prior period adjustment was made in the sewer fund reducing beginning net position $4,015 to reallocate net pension liability and unrecorded deferred inflows/outflows.

A prior period adjustment was made to the sewer fund reducing beginning net position $98,457 for errors in the formula to record the prior year accumulated depreciation expense.

A prior period adjustment was made increasing governmental activities net position $292,535 to reallocate beginning net pension liability and deferred inflows/outflows.

Note 11: Revenue Limitations Imposed by California Proposition 218

Proposition 218, which was approved by the voters in November 1996, regulates the District's ability to impose, increase, and extend taxes and assessments. Any new increase or extended taxes and assessments subject to the provisions of Proposition 218, requires voter approval before they can be implemented. Additionally, Proposition 218 provides that these taxes and assessments are subject to voter initiative and may be rescinded in the future years by the voters.

Note 12: Commitments and Contingencies

Contingent Liabilities

Amounts received or receivable from grant agencies are subject to audit and adjustment by grantor agencies. Any disallowed claims, including amounts already collected, may constitute a liability of the applicable funds. The amount, if any, of expenditures that may be disallowed by the grantor cannot be determined at this time, although the District expects such amounts, if any, to be immaterial.

In the normal course of business, the District is subject to various lawsuits. Defense of lawsuits is typically handled by the District's insurance carrier and losses, if any, are expected to be covered by insurance.

Commitments

The District had professional service commitments as of June 30, 2017.

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

REQUIRED SUPPLEMENTARY INFORMATION
BUDGETARY COMPARISON SCHEDULE
GENERAL FUND
June 30, 2017

	Original Budget	Final Budget	Actual	Variance Favorable (Unfavorable)
Revenues				
Interest	$ 200	$ 200	$ 1,564	$ 1,364
Rental income	82,331	82,331	80,942	(1,389)
Other revenues and reimbursements	3,000	3,000	4,446	1,446
Total Revenues	85,531	85,531	86,952	1,421
Expenditures				
General administration	83,335	83,335	81,326	2,009
Interest expense	2,196	2,196	3,323	(1,127)
Capital outlay		9,000	9,000	(0)
Total Expenditures	85,531	94,531	93,649	882
Change in Fund Balances*	$ -	$ (9,000)	(6,697)	$ 2,303
Fund Balances, July 1, 2016			(229,117)	
Prior Period Adjustment			2,610	
Fund Balances, June 30, 2017			$ (233,204)	

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

REQUIRED SUPPLEMENTARY INFORMATION
BUDGETARY COMPARISON SCHEDULE
POLICE FUND
June 30, 2017

	Original Budget	Final Budget	Actual	Variance Favorable (Unfavorable)
Revenues				
Assessments	$ 257,315	$ 344,238	$ 338,108	$ (6,130)
Use of money and property			1,905	1,905
License and permits	4,300	4,300	4,940	640
Other revenues and reimbursements	7,700	7,700	9,957	2,257
Total Revenues	269,315	356,238	354,910	(1,328)
Expenditures				
Public protection-police	239,690	256,445	230,235	26,210
Capital outlay	3,000	3,000		3,000
Total Expenditures	242,690	259,445	230,235	29,210
Change in Fund Balances	$ 26,625	$ 96,793	124,675	$ 27,882
Fund Balances, July 1, 2016			425,737	
Fund Balances, June 30, 2017			$ 550,412	

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

REQUIRED SUPPLEMENTARY INFORMATION
BUDGETARY COMPARISON SCHEDULE
FIRE FUND
June 30, 2017

	Original Budget	Final Budget	Actual	Variance Favorable (Unfavorable)
Revenues				
Assessments	$ 118,070	$ 118,070	$ 115,447	$ (2,623)
Intergovernmental revenues	7,500	129,734	129,372	(362)
Use of money and property			477	477
Other revenues and reimbursements	134,316	26,316	8,853	(17,463)
Total Revenues	259,886	274,120	254,149	(19,971)
Expenditures				
Public protection-fire	233,873	273,907	228,268	45,639
Capital outlay	113,000	113,000	53,223	59,777
Total Expenditures	346,873	386,907	281,491	105,416
Change in Fund Balances*	$ (86,987)	$ (112,787)	(27,342)	$ 85,444
Fund Balances, July 1, 2016			159,041	
Fund Balances, June 30, 2017			$ 131,699	

*Reserve carryover used to balance the budget.

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF THE PLAN'S PROPORTIONATE SHARE OF THE NET PENSION LIABILITY
June 30, 2017

Measurement Date	District's proportionate share of the net pension liability (asset)	District's proportionate share of the net pension liability (asset)	District's covered-employee payroll	District's proportionate share of the net pension liability (asset) as a percentage of its covered-employee payroll	Plan fiduciary net position as a percentage of the total pension liability
6/30/2014	0.01041%	$647,752	$531,976	121.76%	66.00%
6/30/2015	0.02384%	$653,982	$433,896	150.72%	71.25%
6/30/2016	0.02210%	$767,697	$334,425	229.56%	72.61%

The schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, only information for those years for which information is available is presented.

LAKE SHASTINA COMMUNITY SERVICES DISTRICT

REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF DISTRICT PENSION CONTRIBUTIONS
June 30, 2017

Measurement Date	Contractually required contribution	Contributions in relation to the contractually required contribution	Contribution deficiency (excess)	District's covered employees payroll	Contribution as a percentage of covered-employee payroll
6/30/2014	$83,991	($83,991)	$0	$531,976	15.79%
6/30/2015	$83,991	($83,991)	$0	$433,896	19.36%
6/30/2016	$71,983	($71,983)	$0	$334,425	21.52%

The schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, only information for those years for which information is available is presented.

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION
June 30, 2017

Budgets and Budgetary Accounting

As required by the laws of the State of California, the District prepares and legally adopts a final balanced operating budget. Public hearings were conducted on the proposed final budget to review all appropriations and the sources of financing. Because the final budget must be balanced, any shortfall in revenue requires an equal reduction in financing requirements. At the fund level, actual expenditures cannot exceed budgeted appropriations.

Budgets for the general, and special revenue funds are adopted on the modified accrual basis of accounting. The budgets for the general and special revenue funds are the only legally adopted budgets. Budgets for the proprietary funds are used for management and control purposes only.

The budgetary data presented in the accompanying financial statements includes all revisions approved by the Board of Directors.

LARRY BAIN, CPA
An Accounting Corporation

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INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

To the Board of Directors
Lake Shastina Community Services District
Weed, California

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards issued by the Comptroller General of the United States, the financial statements of the governmental activities, the business-type activities, each major fund and the aggregate remaining fund information of Lake Shastina Community Services District as of and for the fiscal year ended June 30, 2017, and the related notes to the financial statements, which collectively comprise Lake Shastina Community Services District basic financial statements and have issued our report thereon dated March 1, 2018.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered Lake Shastina Community Service District's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Lake Shastina Community Services District internal control. Accordingly, we do not express an opinion on the effectiveness of Lake Shastina Community Services District's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of the internal control over financial reporting was for the limited purpose described in the preceding paragraph and would not necessarily identify all deficiencies in internal control that might be significant deficiencies or material weaknesses and, therefore, there can be no assurance that all such deficiencies have been identified. We consider findings FS 17-1 through FS 17-4 in the following schedule of findings to be deficiencies in internal control that we considered a material weaknesses.

A significant deficiency is a deficiency, or combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance. We consider finding FS 17-5 through FS 17-8 in the following schedule of findings to be significant deficiencies in the District's internal control:

Compliance and Other Matters

As part of obtaining reasonable assurance about whether Lake Shastina Community Service District's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under Government Auditing Standards.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with Government Auditing Standards in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

The Lake Shastina Community Service District's written response to the significant deficiencies identified in our audit and any follow up for subsequent year corrections has not been subjected to the audit procedures applied in the audit of the financial statements and accordingly, we do not express an opinion on the responses.

This report is intended solely for the information and use of management, the audit committee, Board of Directors, the Siskiyou County Auditor Controller's Office, the California State Controller's Office, federal awarding agencies and pass-through entities and is not intended to be and should not be used by anyone other than these specified parties.

Larry Bain, CPA,
An Accounting Corporation
March 1, 2018

Deemed to be Significant Deficiency and Material Weaknesses

Finding 17-1: During our testing of capital assets we noted during the prior fiscal year ended June 30, 2016 audit, a journal entry to remove the medical building from the capital assets schedule was recorded offset to assets held for investment, per the new GASB 72 accounting standard. In the process reclassifying the medical building, the District administration building was also removed from the capital asset schedule. We provided the District with a journal entry to move $243,921 less $59,915 accumulated depreciation from assets held for investments back to the buildings and accumulated depreciation accounts to account for the administration building with general fixed assets.

Recommendation: The District should review the balance of capital assets in the auditor's financial report and determine the balance agrees to the District's internal capital asset schedule.

Management Response: The District agrees with this recommendation and will work on creating an up to date internal capital asset schedule to compare with the balance of capital assets in the auditor's financial report for future internal audits and reviews.

Finding 17-2: During our testing of the administrative overhead expenses, accounted for and allocated in the general fund of the District, we noted the District accounted for legal cost of $59,660 associated with the medical clinic law suit as part of the administrative overhead. Because the general fund accounts for the medical clinic revenues and related expenditures, the cost noted above should have been recorded to the medical clinic department 22 expenditures in the general fund and should not be part of the overhead allocation where the cost is spread out to the other funds. We removed this cost from the overhead allocation.

We also noted the District allocates the administrative overhead as follows: 42% to the Sewer fund, 42% to the Water fund, 8% to the Police Department fund and 8% to the Fire Department fund. Based on our review these percentages may not reflect the actual use of administrative resources used by each fund (Police, Fire, Water and Sewer).

Recommendation: We recommend the District record all revenue and expenditure activity related to the medical clinic to the general fund department 22 and not include the medical clinic related expenditures in the overhead allocation accounts.

We also recommend the District review the percentage of the general fund overhead allocation recorded to each fund and determine if it is a reasonable basis or if the percentages should be changed to reflect each funds use of administrative resources.

Management Response: The District agrees with the first part of this recommendation for the District to record all revenue and expenditure activity related to the medical clinic to the general fund department 22 and not include the medical clinic related expenditures in the general overhead allocation accounts.

The District also agrees with the second part of this recommendation and will initially rectify this by changing the allocations as follows: 25% to the Sewer fund, 25% to the Water fund, 25% to the Police Department fund and 25% to the Fire Department fund. In follow up, the District will conduct a workload study to determine actual time and resources used for the administration of each department.

Finding 17-3: During our testing of accounts receivable we noted the District had not reconciled their accounts receivable balance to the general ledger at year-end. We also noted the District was unable to provide us with a detailed report to show the accounts receivable balance for each outstanding customer at June 30, 2017. This detail is necessary in order to validate that the accounts receivable balance as stated in the general ledger is supported. According to District staff in order to obtain the detail report it needs to be printed as of the specific date and the system will not allow the user to print the detail as of a past date.

Recommendation: We recommend the print, or save to a PDF, the accounts receivable detail as of year-end and reconcile the balance to the general ledger.

Deemed to be Significant Deficiency and Material Weaknesses (Continued)

Management Response: The District agrees with the recommendation to print, or save to a PDF, the accounts receivable detail as of year-end and reconcile the balance to the general ledger. The Board has approved the purchase of FundBalance software for the needed Accounts Receivable, Cash Receipts and Billing modules, which will address this issue. Staff and IT services will be implementing this new system in the coming months.

Finding 17-4: The District relies on the external auditor to ensure its financial statements are in accordance with GAAP. In addition, the District relies on the external auditor to ensure that all necessary disclosures are included in the notes to the financial statements. The District does not employ a staff member with the necessary knowledge and training to prepare governmental financial statements. In accordance with Statement of Auditing Standards No. 122c external auditors cannot be part of an entity's internal controls over preparation of the financial statements and are prohibited from auditing their own work, which would impair their independence. We also posted numerous material journal entries as part of our audit in order to agree the financial statements with the underlying support.

Recommendation: The District should consider training staff in preparing GAAP financial statements or hire an external qualified accountant to prepare the GAAP financial statements. The District could opt to take no action if it considers the cost will outweigh the benefit.

Management Response: The District agrees with this recommendation and, in addition to providing staff with additional training in preparing GAAP financial statements, the District will explore the costs of hiring a CPA to prepare GAAP financial statements after fiscal year end or as needed.

Deemed to be Significant Deficiency and Not Material Weakness

Finding 17-5: During our testing of Fire Department strike teams we noted the District is paying the strike team members at a high rate than what the District is actually being reimbursed for by OES. For the firefighter's category, the District was paying $24.59 per hour and the Chief category was paid $31.35 per hour while OES reimbursed the District at $19.98 per hour. Based on our sample testing of the Chimney, Clayton and Cold fire the District paid the strike members $3,250.48 more than what was received by OES.

Recommendation: The District can submit rate a schedule to OES annually to request the base rates they would need to support the cost of paying strike team member, administration cost and engine expenses. The District should request these adjustments to be in line with what they are actually compensating the District firefighters. The intent of the reimbursements is to make the District whole and not use District funds to pay for out of District fires.

Management Response: The District acknowledges this finding and believes it has resolved any future similar circumstances by providing accurate rate schedules to OES. In the future, the District will continue to be aware of this and will continue to submit accurate rate schedules.

Finding 17-6: The District allocates CalPERS pension expense as part of the administration overhead allocation and to the Sewer Fund. The CalPERS net pension liability and related deferred inflows/outflows are also only recorded in the Sewer fund and governmental funds and are not recorded in the Water fund. We proposed a journal entry to record the amount of the net pension liability and deferred inflows/outflows that should have been recorded in the Water fund as a prior period adjustment and then allocated the current year activity based on the % of salary for each function.

During our review of the prior year balances for the CalPERS net pension liability and deferred inflows/outflows we noted material errors made in the calculations. We proposed a prior year adjustment to correct the errors.

Recommendation: We recommend the District allocate the pension expense and the net pension liability and deferred inflows/outflows (GASB 68) based on each funds share of the expense, liability and deferred inflow/outflow.

Deemed to be Significant Deficiency and Not Material Weakness (Continued)

Management Response: The District agrees with this recommendation and will correct the CalPERS pension expenses and liabilities to both the Sewer and Water Funds based on actual employee activity within those departments. In follow up, these changes will correctly reflect each department's share of the CalPERS pension expense, liability and deferred inflows/outflows.

Finding 17-7: During our audit we noted the Cops Fund had a negative cash balance of $91,168 which was reclassified as a due to/from the Cops Grant Fund to the Policy Department fund. The Cops Grant fund also had a negative fund balance of $92,530 at June 30, 2017.

Recommendation: We recommend the District review why the Cops Grant fund has a negative cash balance and negative fund balance and take action to cure the deficits.

Management Response: The District has reviewed the negative cash balance and determined this occurred when the District was challenged with the shortage of personnel. This situation required a single officer to provide 24/7/365 day coverage for most of the year, which is not typical. The District has resolved the staffing shortage and does not expect to see a negative cash balance in the future. The District does understand if a negative cash balance occurs at fiscal year-end, funds will be transferred from the Police Department fund to Cops Grant fund to cure the deficit.

Finding 17-8: During the fiscal year under audit the former general manager was working as an independent contractor. Based on our review of his duties it does not appear that he fit the criteria to be classified as an independent contractor, but should have been classified as an employee subject to all applicable payroll withholdings.

Recommendation: The District should review all personnel classified as independent contractors and analyze if they meet the criteria needed to be treated as such.

Management Response: The District agrees with the recommendations and has resolved this situation by terminating the contract of the independent contractor who was working as General Manager and hiring a regular employee to fill this position. The District will be cognizant of this in the future and review with legal counsel any personnel classified as independent contractors to determine if they meet the criteria needed to be treated as such.

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Cost Estimates 3

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Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-100

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ -	none needed
2	Electrical Upgrades	LS	$ 102,354	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 105,354	
		Construction Contingency (20%):	$ 21,071	
		Total Construction:	***$ 126,425***	
		Engineering, Administration (15%):	$ 18,964	
		Total Project:	***$ 145,389***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B100 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	Generator, 40KW, WP Enclosure	1	EA	28,000.00	28,000	3,000.00	3,000	31,000
2	ATS, 100A, 480V	1	EA	2,000.00	2,000	335.00	335	2,335
3	Concrete base	1	JOB	500.00	500	1,200.00	1,200	1,700
4	Conduit and Wire	1	JOB		680		900	1,580
5	Trench and backfill 18"D, 18"W	25	LF	3.00	75	3.00	75	150
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	None			0.00	0	0.00	0	0
Task D - Pump Control Panel Upgrade								
1	Remove misc existing bldg electrical	1	JOB	100.00	100	640.00	640	740
2	Remove misc exist drywell electrical	1	JOB	100.00	100	640.00	640	740
3	Remove wetwell floats & handholes	1	JOB	100.00	100	640.00	640	740
4	Remove existing control panel	1	JOB	100.00	100	640.00	640	740
5	Custom control panel with VFDs	1	JOB	15,000.00	15,000	640.00	640	15,640
6	Signal Handhole	1	EA	200.00	200	240.00	240	440
7	Level float cable splice box	1	EA	150.00	150	240.00	160	310
8	Level floats & support bracket	2	EA	150.00	300	240.00	480	780
9	Pump control station	2	EA	75.00	150	240.00	480	630
10	GRC conduit & Wiring	1	JOB	300.00	300	1,280.00	1,280	1,580
Task E - Pump Renovation								
1	None			0.00	0	0.00	0	0
Task F - General Renovation								
1	480-120/240V 15KVA Transformer	1	EA	30.00	30	320.00	320	350
2	Panel, 120/240V, 1Ph, MB, 100A	1	EA	1,250.00	1,250	755.00	755	2,005
3	Duplex receptacles	2	EA	15.00	30	80.00	160	190
4	Drywell light & fan switches	2	EA	30.00	60	80.00	160	220
5	Drywell sump pump with float	1	EA	500.00	500	240.00	240	740
Miscellaneous								
1	Electrical permit	1	JOB				1000	1000
2	Product submittals	1	JOB				960	960
3	Startup and testing	1	JOB				2400	2400
	SUBTOTAL				60,825		17,585	78,410
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				60217		21278	81495
	OVERHEAD @ 16%						3404	3404
	PROFIT @ 10%				6022		2128	8149
	LIFT STATION B100 ELECTRICAL SUBCONTRACTOR TOTAL							**$93,049**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-101

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 85,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 47,092	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 135,092	
		Construction Contingency (20%):	$ 27,019	
		Total Construction:	***$ 162,111***	
		Engineering, Administration (15%):	$ 24,317	
		Total Project:	***$ 186,428***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B101 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	725.00	725	140.00	140	865
3	4"x4"x48" Treated wood post & Base	1	EA	65.00	65	140.00	210	275
4	Conduit and Wire	1	JOB		500		800	1,300
5	Trench and backfill 18"D, 18"W	100	LF	3.00	300	3.00	300	600
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Relocate Station Power Panelboard	1	EA	10.00	10	320.00	320	330
4	Relocate Station Power Disc Switch	1	EA	10.00	10	160.00	160	170
5	Relocate Pump Control Panel	1	EA	30.00	30	640.00	640	670
6	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
7	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
8	Alarm Annunciator Beacon, LED	1	EA	200.00	200	80.00	80	280
9	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
10	GRC conduit & Wiring	1	JOB	200.00	200	1,280.00	1,280	1,480
11	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Power Utility Company Charges	1	JOB				500	500
3	Product submittals	1	JOB				800	800
4	Startup and testing	1	JOB				640	640
	SUBTOTAL				24,150		10,830	34,980
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				23909		13104	37013
	OVERHEAD @ 16%						2097	2097
	PROFIT @ 10%				2391		1310	3701
	LIFT STATION B101 ELECTRICAL SUBCONTRACTOR TOTAL							**$42,811**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-102

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 85,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 48,601	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 6,000	concrete pad, retaining wall
		Construction Subtotal:	$ 139,601	
		Construction Contingency (20%):	$ 27,921	
		Total Construction:	***$ 167,522***	
		Engineering, Administration (15%):	$ 25,128	
		Total Project:	***$ 192,651***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B102 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	4"x4"x48" Treated wood post & Base	1	EA	65.00	65	140.00	210	275
4	Conduit and Wire	1	JOB		500		800	1,300
5	Trench and backfill 18"D, 18"W	100	LF	3.00	300	3.00	300	600
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Panelboard w/ Station Main Disc Sw	1	EA	1,250.00	1,250	755.00	755	2,005
4	Relocate Pump Control Panel	1	EA	30.00	30	640.00	640	670
5	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
6	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
7	Alarm Annunciator Beacon, LED	1	EA	200.00	200	80.00	80	280
8	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
9	GRC conduit & Wiring	1	JOB	200.00	200	1,280.00	1,280	1,480
10	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Power Utility Company Charges	1	JOB				500	500
3	Product submittals	1	JOB				800	800
4	Startup and testing	1	JOB				640	640
	SUBTOTAL				25,025		11,105	36,130
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				24775		13437	38212
	OVERHEAD @ 16%						2150	2150
	PROFIT @ 10%				2477		1344	3821
	LIFT STATION B102 ELECTRICAL SUBCONTRACTOR TOTAL							**$44,183**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-103

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ -	already lined
2	Electrical Upgrades	LS	$ 43,087	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 46,087	
		Construction Contingency (20%):	$ 9,218	
		Total Construction:	***$ 55,305***	
		Engineering, Administration (15%):	$ 8,296	
		Total Project:	***$ 63,601***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B103 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTI		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Relocate Station Panel w/ Disc Sw	1	EA	10.00	10	320.00	320	330
4	Relocate Pump Control Panel	1	EA	30.00	30	640.00	640	670
5	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
6	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
7	Alarm Annunciator Beacon, LED	1	EA	200.00	200	80.00	80	280
8	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
9	GRC conduit & Wiring	1	JOB	200.00	200	1,280.00	1,280	1,480
10	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	New submersible pump installation	2	EA	10.00	20	160.00	320	340
3	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Power Utility Company Charges	1	JOB				500	500
3	Product submittals	1	JOB				800	800
4	Startup and testing	1	JOB				640	640
	SUBTOTAL				22,970		9,285	32,255
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				22740		11235	33975
	OVERHEAD @ 16%						1798	1798
	PROFIT @ 10%				2274		1123	3398
	LIFT STATION B103 ELECTRICAL SUBCONTRACTOR TOTAL							**$39,170**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-104

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 51,908	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 134,908	
		Construction Contingency (20%):	$ 26,982	
		Total Construction:	***$ 161,890***	
		Engineering, Administration (15%):	$ 24,283	
		Total Project:	***$ 186,173***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B104 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Panelboard w/ Station Main Disc Sw	1	EA	1,250.00	1,250	755.00	755	2,005
4	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
5	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
6	Alarm Annunciator Beacon, LED	1	EA	200.00	200	80.00	80	280
7	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
8	GRC conduit & Wiring	1	JOB	200.00	200	1,280.00	1,280	1,480
9	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	Custom control panel with VFDs	1	JOB	5,300.00	5,300	640.00	640	5,940
Task E - Pump Renovation								
1	Existing vertical turbine pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Power Utility Company Charges	1	JOB				500	500
3	Product submittals	1	JOB				800	800
4	Startup and testing	1	JOB				640	640
	SUBTOTAL				29,500		9,880	39,380
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				29205		11955	41160
	OVERHEAD @ 16%						1913	1913
	PROFIT @ 10%				2921		1195	4116
	LIFT STATION B104 ELECTRICAL SUBCONTRACTOR TOTAL							**$47,189**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-105

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ -	already lined
2	Electrical Upgrades	LS	$ 50,840	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 7,000	concrete pad, retaining wall, steps
		Construction Subtotal:	$ 57,840	
		Construction Contingency (20%):	$ 11,568	
		Total Construction:	***$ 69,408***	
		Engineering, Administration (15%):	$ 10,411	
		Total Project:	***$ 79,819***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B105 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	100A, NEMA 1 manual transfer sw	1	EA	400.00	400	180.00	180	580
2	100A, Crouse Hinds receptacle	1	EA	725.00	725	140.00	140	865
3	Conduit and Wire	1	JOB		100		90	190
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Relocate Station Power Panelboard	1	EA	10.00	10	320.00	320	330
4	Station Main Disc Sw	1	EA	640.00	640	200.00	200	840
5	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
6	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
7	Alarm Annunciator Beacon, LED	1	EA	200.00	200	80.00	80	280
8	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
9	GRC conduit & Wiring	1	JOB	200.00	200	1,280.00	1,280	1,480
10	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	Replace CS starter with VFD	2	EA	2,000.00	4,000	640.00	1,280	5,280
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Power Utility Company Charges	1	JOB				500	500
3	Product submittals	1	JOB				800	800
4	Startup and testing	1	JOB				640	640
	SUBTOTAL				28,035		10,290	38,325
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				27755		12451	40206
	OVERHEAD @ 16%						1992	1992
	PROFIT @ 10%				2775		1245	4021
	LIFT STATION B105 ELECTRICAL SUBCONTRACTOR TOTAL							**$46,218**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-106

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 39,972	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 122,972	
		Construction Contingency (20%):	$ 24,595	
		Total Construction:	***$ 147,567***	
		Engineering, Administration (15%):	$ 22,135	
		Total Project:	***$ 169,702***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B106 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	100A, NEMA 1 manual transfer sw	1	EA	400.00	400	180.00	180	580
2	100A, Crouse Hinds receptacle	1	EA	725.00	725	140.00	140	865
3	Conduit and Wire	1	JOB		100		90	190
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Panelboard w/ Station Main Disc Sw	1	EA	1,250.00	1,250	755.00	755	2,005
2	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
6	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
7	Building Electrical Demolition	1	JOB	50.00	50	640.00	640	690
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Handhole removal	1	EA	20.00	20	240.00	240	260
2	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
3	Existing level float removal	2	EA	10.00	20	80.00	160	180
4	New submersible pump installation	2	EA	10.00	20	160.00	320	340
5	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
6	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				21,685		8,345	30,030
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				21468		10097	31566
	OVERHEAD @ 16%						1616	1616
	PROFIT @ 10%				2147		1010	3157
	LIFT STATION B106 ELECTRICAL SUBCONTRACTOR TOTAL							**$36,338**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-107

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 52,159	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 135,159	
		Construction Contingency (20%):	$ 27,032	
		Total Construction:	***$ 162,191***	
		Engineering, Administration (15%):	$ 24,329	
		Total Project:	***$ 186,519***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B107 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTI		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Panelboard w/ Station Main Disc Sw	1	EA	1,250.00	1,250	755.00	755	2,005
4	Relocate Pump Control Panel	1	EA	30.00	30	640.00	640	670
5	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
6	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
7	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
8	GRC conduit & Wiring	1	JOB	200.00	200	1,280.00	1,280	1,480
9	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	Replace CS starter with VFD	2	EA	2,000.00	4,000	640.00	1,280	5,280
Task E - Pump Renovation								
1	Existing vertical turbine pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Power Utility Company Charges	1	JOB				500	500
3	Product submittals	1	JOB				800	800
4	Startup and testing	1	JOB				640	640
	SUBTOTAL				28,030		11,080	39,110
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				27750		13407	41157
	OVERHEAD @ 16%						2145	2145
	PROFIT @ 10%				2775		1341	4116
	LIFT STATION B107 ELECTRICAL SUBCONTRACTOR TOTAL							**$47,417**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-108

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 52,841	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 135,841	
		Construction Contingency (20%):	$ 27,169	
		Total Construction:	***$ 163,010***	
		Engineering, Administration (15%):	$ 24,451	
		Total Project:	***$ 187,461***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B108 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTI		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Panelboard w/ Station Main Disc Sw	1	EA	1,525.00	1,525	965.00	965	2,490
4	Relocate Pump Control Panel	1	EA	30.00	30	640.00	640	670
5	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
6	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
7	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
8	GRC conduit & Wiring	1	JOB	200.00	200	1,280.00	1,280	1,480
9	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	Replace CS starter with VFD	2	EA	2,000.00	4,000	640.00	1,280	5,280
Task E - Pump Renovation								
1	Existing vertical turbine pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Power Utility Company Charges	1	JOB				500	500
3	Product submittals	1	JOB				800	800
4	Startup and testing	1	JOB				640	640
	SUBTOTAL				28,305		11,290	39,595
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				28022		13661	41683
	OVERHEAD @ 16%						2186	2186
	PROFIT @ 10%				2802		1366	4168
	LIFT STATION B108 ELECTRICAL SUBCONTRACTOR TOTAL							**$48,037**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-109

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 53,556	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 6,000	concrete pad, retaining wall
		Construction Subtotal:	$ 139,556	
		Construction Contingency (20%):	$ 27,912	
		Total Construction:	***$ 167,468***	
		Engineering, Administration (15%):	$ 25,120	
		Total Project:	***$ 192,588***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B109 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTI		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Panelboard w/ Station Main Disc Sw	1	EA	1,250.00	1,250	755.00	755	2,005
4	Relocate Pump Control Panel	1	EA	30.00	30	640.00	640	670
5	Aerator Combination motor starter	1	EA	610.00	610	230.00	230	840
6	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
7	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
8	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
9	GRC conduit & Wiring	1	JOB	200.00	200	1,280.00	1,280	1,480
10	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	Replace CS starter with VFD	2	EA	2,000.00	4,000	640.00	1,280	5,280
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	New submersible aerator installation	1	EA	10.00	10	160.00	160	170
5	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Power Utility Company Charges	1	JOB				500	500
3	Product submittals	1	JOB				800	800
4	Startup and testing	1	JOB				640	640
	SUBTOTAL				28,650		11,470	40,120
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				28364		13879	42242
	OVERHEAD @ 16%						2221	2221
	PROFIT @ 10%				2836		1388	4224
	LIFT STATION B109 ELECTRICAL SUBCONTRACTOR TOTAL							**$48,687**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-110

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 45,423	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 7,000	concrete pad, retaining wall, steps
		Construction Subtotal:	$ 132,423	
		Construction Contingency (20%):	$ 26,485	
		Total Construction:	***$ 158,908***	
		Engineering, Administration (15%):	$ 23,836	
		Total Project:	***$ 182,745***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B110 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	100A, NEMA 1 manual transfer sw	1	EA	400.00	400	180.00	180	580
2	100A, Crouse Hinds receptacle	1	EA	725.00	725	140.00	140	865
3	4"x4"x48" Treated wood post & Base	1	EA	65.00	65	140.00	210	275
4	Conduit and Wire	1	JOB		700		1,000	1,700
5	Trench and backfill 18"D, 18"W	150	LF	3.00	450	3.00	450	900
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Panelboard w/ Station Main Disc Sw	1	EA	1,250.00	1,250	755.00	755	2,005
2	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
6	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
7	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
5	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				23,030		10,635	33,665
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				22800		12868	35668
	OVERHEAD @ 16%						2059	2059
	PROFIT @ 10%				2280		1287	3567
	LIFT STATION B110 ELECTRICAL SUBCONTRACTOR TOTAL							**$41,294**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-111

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 40,530	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 4,500	concrete pad, door modification
		Construction Subtotal:	$ 125,030	
		Construction Contingency (20%):	$ 25,006	
		Total Construction:	***$ 150,036***	
		Engineering, Administration (15%):	$ 22,505	
		Total Project:	***$ 172,541***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B111 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	100A, NEMA 1 manual transfer sw	1	EA	400.00	400	180.00	180	580
2	100A, Crouse Hinds receptacle	1	EA	725.00	725	140.00	140	865
3	Conduit and Wire	1	JOB		100		90	190
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Panelboard	1	EA	1,250.00	1,250	755.00	755	2,005
2	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
6	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
7	Building Electrical Demolition	1	JOB	100.00	100	800.00	800	900
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
5	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				21,815		8,585	30,400
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				21597		10388	31985
	OVERHEAD @ 16%						1662	1662
	PROFIT @ 10%				2160		1039	3198
	LIFT STATION B111 ELECTRICAL SUBCONTRACTOR TOTAL							**$36,845**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-112

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 40,530	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 4,500	concrete pad, door modification
		Construction Subtotal:	$ 125,030	
		Construction Contingency (20%):	$ 25,006	
		Total Construction:	***$ 150,036***	
		Engineering, Administration (15%):	$ 22,505	
		Total Project:	***$ 172,541***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B112 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	100A, NEMA 1 manual transfer sw	1	EA	400.00	400	180.00	180	580
2	100A, Crouse Hinds receptacle	1	EA	725.00	725	140.00	140	865
3	Conduit and Wire	1	JOB		100		90	190
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Panelboard	1	EA	1,250.00	1,250	755.00	755	2,005
2	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
6	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
7	Building Electrical Demolition	1	JOB	100.00	100	800.00	800	900
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
5	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				21,815		8,585	30,400
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				21597		10388	31985
	OVERHEAD @ 16%						1662	1662
	PROFIT @ 10%				2160		1039	3198
	LIFT STATION B112 ELECTRICAL SUBCONTRACTOR TOTAL							**$36,845**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-113

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ -	already lined
2	Electrical Upgrades	LS	$ 38,759	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 4,500	concrete pad, door modification
		Construction Subtotal:	$ 43,259	
		Construction Contingency (20%):	$ 8,652	
		Total Construction:	***$ 51,911***	
		Engineering, Administration (15%):	$ 7,787	
		Total Project:	***$ 59,697***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B113 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	100A, NEMA 1 manual transfer sw	1	EA	400.00	400	180.00	180	580
2	100A, Crouse Hinds receptacle	1	EA	725.00	725	140.00	140	865
3	Conduit and Wire	1	JOB		100		90	190
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Panelboard w/ Station Main Disc Sw	1	EA	1,525.00	1,525	965.00	965	2,490
2	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
6	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
7	Building Electrical Demolition	1	JOB	100.00	100	800.00	800	900
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				21,610		7,675	29,285
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				21394		9287	30681
	OVERHEAD @ 16%						1486	1486
	PROFIT @ 10%				2139		929	3068
	LIFT STATION B113 ELECTRICAL SUBCONTRACTOR TOTAL							**$35,235**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-114

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ -	already lined
2	Electrical Upgrades	LS	$ 43,832	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 4,500	concrete pad, door modification
		Construction Subtotal:	$ 48,332	
		Construction Contingency (20%):	$ 9,667	
		Total Construction:	***$ 57,999***	
		Engineering, Administration (15%):	$ 8,700	
		Total Project:	***$ 66,699***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B114 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	200A, NEMA 1 manual transfer sw	1	EA	700.00	700	180.00	180	880
2	200A, Crouse Hinds receptacle	1	EA	1,740.00	1,740	140.00	140	1,880
3	Conduit and Wire	1	JOB		200		170	370
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Panelboard, 200A, 3ph, MB	1	EA	2,750.00	2,750	1,250.00	1,250	4,000
2	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
6	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
7	Building Electrical Demolition	1	JOB	200.00	200	1,280.00	1,280	1,480
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
3	Alarm Annunciator Beacon, LED	1	EA	200.00	200	80.00	80	280
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				24,550		8,600	33,150
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				24305		10406	34711
	OVERHEAD @ 16%						1665	1665
	PROFIT @ 10%				2430		1041	3471
	LIFT STATION B114 ELECTRICAL SUBCONTRACTOR TOTAL							**$39,847**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-115

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 37,237	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 120,237	
		Construction Contingency (20%):	$ 24,048	
		Total Construction:	***$ 144,285***	
		Engineering, Administration (15%):	$ 21,643	
		Total Project:	***$ 165,928***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B115 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
2	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
3	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
4	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
5	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
6	Building Electrical Demolition	1	JOB	100.00	100	800.00	800	900
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
5	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				20,130		7,825	27,955
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				19929		9468	29397
	OVERHEAD @ 16%						1515	1515
	PROFIT @ 10%				1993		947	2940
	LIFT STATION B115 ELECTRICAL SUBCONTRACTOR TOTAL							**$33,852**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-116

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ -	already lined
2	Electrical Upgrades	LS	$ 46,938	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 4,500	concrete pad, door modification
		Construction Subtotal:	$ 51,438	
		Construction Contingency (20%):	$ 10,288	
		Total Construction:	***$ 61,726***	
		Engineering, Administration (15%):	$ 9,259	
		Total Project:	***$ 70,985***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B116 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Panelboard w/ Station Main Disc Sw	1	EA	1,250.00	1,250	755.00	755	2,005
2	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
6	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
7	Building Electrical Demolition	1	JOB	100.00	100	800.00	800	900
Task D - Pump Control Panel Upgrade								
1	Replace CS starter with VFD	2	EA	2,000.00	4,000	640.00	1,280	5,280
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
5	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				25,380		9,860	35,240
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				25126		11931	37057
	OVERHEAD @ 16%						1909	1909
	PROFIT @ 10%				2513		1193	3706
	LIFT STATION B116 ELECTRICAL SUBCONTRACTOR TOTAL							**$42,671**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-117

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 40,000	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 4,500	concrete pad, door modification
		Construction Subtotal:	$ 124,500	
		Construction Contingency (20%):	$ 24,901	
		Total Construction:	***$ 149,401***	
		Engineering, Administration (15%):	$ 22,410	
		Total Project:	***$ 171,812***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B117 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Panelboard w/ Station Main Disc Sw	1	EA	1,250.00	1,250	755.00	755	2,005
2	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
6	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
7	Building Electrical Demolition	1	JOB	100.00	100	800.00	800	900
Task D - Pump Control Panel Upgrade								
1	None			0.00	0	0.00	0	0
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
5	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				21,380		8,580	29,960
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				21166		10382	31548
	OVERHEAD @ 16%						1661	1661
	PROFIT @ 10%				2117		1038	3155
	LIFT STATION B117 ELECTRICAL SUBCONTRACTOR TOTAL							**$36,364**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-118

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ 80,000	liner, pumps, piping
2	Electrical Upgrades	LS	$ 57,826	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 140,826	
		Construction Contingency (20%):	$ 28,166	
		Total Construction:	***$ 168,992***	
		Engineering, Administration (15%):	$ 25,349	
		Total Project:	***$ 194,341***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B118 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	60A, NEMA 1 manual transfer sw	1	EA	350.00	350	180.00	180	530
2	60A, Crouse Hinds receptacle	1	EA	370.00	370	140.00	140	510
3	Conduit and Wire	1	JOB		70		85	155
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
2	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
3	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
4	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
5	Site Electrical Demolition	1	JOB	200.00	200	640.00	640	840
Task D - Pump Control Panel Upgrade								
1	Remove existing control panel	1	JOB	100.00	100	640.00	640	740
2	Custom control panel with VFDs	1	JOB	6,000.00	6,000	640.00	640	6,640
3	Alarm Annunciator Beacon, LED	1	EA	200.00	200	80.00	80	280
Task E - Pump Renovation								
1	Existing submersible pump removal	2	EA	20.00	40	160.00	320	360
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	New submersible pump installation	2	EA	10.00	20	160.00	320	340
4	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
5	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
Task F - General Renovation								
1	72W,72H,18D Free-stand Enclosure	1	EA	7,800.00	7,800	640.00	640	8,440
2	Relocate Utility Meter	1	EA	30.00	30	320.00	320	350
3	Relocate Power Disc Sw	1	EA	10.00	10	320.00	320	330
4	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
5	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				300	300
2	Product submittals	1	JOB				800	800
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				34,070		10,145	44,215
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				33729		12275	46005
	OVERHEAD @ 16%						1964	1964
	PROFIT @ 10%				3373		1228	4600
	LIFT STATION B118 ELECTRICAL SUBCONTRACTOR TOTAL							**$52,569**

Opinion of Probable Project Cost
Lake Shastina Community Services District
Pump Station B-120

Item	Description	Units	Total Cost	Comments
1	Wet Well Rehabilitation	LS	$ -	no lining needed
2	Electrical Upgrades	LS	$ 32,940	see estimates from RSE for detail; includes 10% markup by general contractor
3	Other items	LS	$ 3,000	concrete pad
		Construction Subtotal:	$ 35,940	
		Construction Contingency (20%):	$ 7,188	
		Total Construction:	***$ 43,128***	
		Engineering, Administration (15%):	$ 6,469	
		Total Project:	***$ 49,597***	

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18

SUBJECT: LIFT STATION B120 ELECTRICAL COSTS

CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708

ESTIMATE BY: RICHARD SAMPLE, P.E.

BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report

2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	Already Existing	0	EA		0		0	0
Task B - Telemetry System Equipment								
1	XiO Cell Transmitter,Modem,Antenna	1	EA	11,200.00	11,200	240.00	240	11,440
Task C - NEC Requirements Addressed								
1	Remove exist handhole & Junct box	1	JOB	100.00	100	640.00	640	740
2	Existing level float removal	2	EA	10.00	20	80.00	160	180
3	48W,36H,18D Free-stand Enclosure	1	EA	4,700.00	4,700	640.00	640	5,340
4	Power & Signal J-box, NEMA 7	2	EA	600.00	1,200	160.00	320	1,520
5	Core drill wetwell, grouting, permagum	2	EA	200.00	400	160.00	320	720
6	EYS conduit seal fittings	2	EA	30.00	60	160.00	320	380
7	GRC & PVC conduit & Wiring	1	JOB	400.00	400	1,280.00	1,280	1,680
8	Intrinsic Barrier Relays & Enclosure	1	EA	300.00	300	160.00	160	460
9	Level float switch, support bracket	2	EA	200.00	400	160.00	320	720
Task D - Pump Control Panel Upgrade								
1	None	0	EA		0		0	0
Task E - Pump Renovation								
1	None	0	EA		0		0	0
Task F - General Renovation								
1	LED handlight w/ cord, plug, bracket	1	EA	400.00	400	160.00	160	560
2	Duplex receptacle, conduit, wire	1	EA	100.00	100	320.00	320	420
Miscellaneous								
1	Electrical permit	1	JOB				100	100
2	Product submittals	1	JOB				250	250
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				19,280		5,870	25,150
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				19087		7103	26190
	OVERHEAD @ 16%						1136	1136
	PROFIT @ 10%				1909		710	2619
	LIFT STATION B120 ELECTRICAL SUBCONTRACTOR TOTAL							**$29,945**

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Tel. 541/827-7855

JOB	517027		
SHEET NO.	1	OF	1
CALC'ED BY	AHR	DATE	3/13/2018
CHECKED BY		DATE	

Pump Station Upgrades
Additional detail for project cost line items

Item No.: 1 Wet Well Rehabilitation

Based on discussion with Valley Pump & Motor Works (Yuba City, CA)
Valley Pump has performed all of the wet well rehabilitation as turn-key projects.
Includes gutting existing wet well, cleaning wet well, liner, new submersible pumps, new piping, new valve box with check valves.

Budgetary price: $ 80,000 fiberglass liner
$ 85,000 hanging or sprayed on liner

Item No.: 2 Electrical Upgrades

Electrical subcontrator construction estimate by pump station.
See detail sheet from Richard Sample Engineering.
Estimates below include 10% markup for general contractor.

Pump Stn	Estimate
B-100	$ 102,354
B-101	$ 47,092
B-102	$ 48,601
B-103	$ 43,087
B-104	$ 51,908
B-105	$ 50,840
B-106	$ 39,972

Pump Stn	Estimate
B-107	$ 52,159
B-108	$ 52,841
B-109	$ 53,556
B-110	$ 45,423
B-111	$ 40,530
B-112	$ 40,530
B-113	$ 38,759

Pump Stn	Estimate
B-114	$ 43,832
B-115	$ 37,237
B-116	$ 46,938
B-117	$ 40,000
B-118	$ 57,826
B-120	$ 32,940

Markup by general contractor accounted for on main table.

Item No.: 3 Other items

Concrete Pad:	$	3,000	up to 8 ft x 5 ft
Retaining Wall:	$	3,000	small dry stacked wall, up to 36" high.
Steps:	$	1,000	access through retaining wall
Door Modification:	$	1,500	change to open outward for electrical code compliance

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/8/18
CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708
ESTIMATE BY: RICHARD SAMPLE, P.E.
BASE RATES: CONTRACTOR: $70/HR — ESTIMATE PHASE: Prelim Report
2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Portable Generator No. 1								
1	Generator, 45KW	1	EA	36,000.00	36,000	1,000.00	1,000	37,000
2	Conduit: Schedule 80 PVC - 3/4"	30	LF	2.06	62	3.62	109	170
3	Wire: THHN, copper - No. 12	100	LF	0.10	10	0.41	41	51
4	WP duplex Receptacle	1	JOB	15.00	15	70.00	70	85
5	20A, 1-pole breaker	1	JOB	25.00	25	70.00	70	95
6	Electrical permit	1	JOB				100	100
7	Product submittals	1	JOB				420	420
8	Startup and testing	1	JOB				560	560
	SUBTOTAL				36,112		2,370	38,481
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				35751		2867	38618
	OVERHEAD @ 16%						459	459
	PROFIT @ 10%				3575		287	3862
	ELECTRICAL SUBCONTRACTOR TOTAL							**$42,938**

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/8/18
CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708
ESTIMATE BY: RICHARD SAMPLE, P.E.
BASE RATES: CONTRACTOR: $70/HR — ESTIMATE PHASE: Prelim Report
2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Portable Generator No. 2								
1	Generator, 35KW	1	EA	33,000.00	33,000	1,000.00	1,000	34,000
2	Conduit: Schedule 80 PVC - 3/4"	30	LF	2.06	62	3.62	109	170
3	Wire: THHN, copper - No. 12	100	LF	0.10	10	0.41	41	51
4	WP duplex Receptacle	1	JOB	15.00	15	70.00	70	85
5	20A, 1-pole breaker	1	JOB	25.00	25	70.00	70	95
6	Electrical permit	1	JOB				100	100
7	Product submittals	1	JOB				420	420
8	Startup and testing	1	JOB				560	560
	SUBTOTAL				33,112		2,370	35,481
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				32781		2867	35648
	OVERHEAD @ 16%						459	459
	PROFIT @ 10%				3278		287	3565
	ELECTRICAL SUBCONTRACTOR TOTAL							**$39,671**

LAKE SHASTINA COMMUNITY SERVICES DISTRICT
LAKE SHORE DRIVE BYPASS FORCE MAIN PROJECT

ENGINEER ESTIMATE OF PROBABLE COSTS

Date: Updated 4/9/18
By: SHN
Proj. No. 517027

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	Mobilization	All	LS	$ 15,000	$ 15,000
2	Erosion and Sediment Control	All	LS	$ 5,000	$ 5,000
3	Closeout Procedures	All	LS	$ 2,500	$ 2,500
4	Survey for as-built	1	LS	$ 2,500	$ 2,500
5	Sewer Main Piping and Appurtenances (Pressure Sewer)	2523	LF	$ 4	$ 10,092
6	Trench Excavation and Backfill	2513	LF	$ 150	$ 376,950
7	Pavement Grinding and Patching (trench)	559	SQYD	$ 45	$ 25,155
8	Manhole Connection	1	LS	$ 1,600	$ 1,600
9	Manhole Disconnection	1	LS	$ 1,600	$ 1,600
10	Traffic Control	All	LS	$ 20,000	$ 20,000
	Subtotal				$ 460,397
	Third Party Testing	All	LS	$ 5,000	$ 5,000
	Subtotal construction				$ 465,397
	20% Contingency				$ 93,079
	Total Construction				**$ 558,476**
	Engineering, Administration (15%)				$ 83,771
	Total Project				***$ 642,248***

Cost does not include acquisition of easements along Lake Shore Drive

LAKE SHASTINA COMMUNITY SERVICES DISTRICT
TONY LEMA DRIVE DIVERSION PROJECT

ENGINEER ESTIMATE OF PROBABLE COSTS

Date: Updated 4/9/18
By: SHN
Proj. No. 517027

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	Mobilization	All	LS	$ 15,000	$ 15,000
2	Erosion and Sediment Control	All	LS	$ 5,000	$ 5,000
3	Closeout Procedures	All	LS	$ 2,500	$ 2,500
4	Survey for as-built	1	LS	$ 2,500	$ 2,500
5	Clearing and Grubbing	All	LS	$ 2,000	$ 2,000
6	Sewer Main Piping and Appurtenances (Gravity Sewer)	800	LF	$ 40	$ 32,000
7	Trench Excavation and Backfill	800	LF	$ 200	$ 160,000
8	Manhole Connection	2	LS	$ 1,600	$ 3,200
9	Pavement Grinding and Patching (trench)	5	SQYD	$ 45	$ 225
10	Golf Course Repair	All	LS	$ 10,000	$ 10,000
	Subtotal				$ 222,425
	Third Party Testing	All	LS	$ 5,000	$ 5,000
	Subtotal construction				$ 227,425
	20% Contingency				$ 45,485
	Total Construction				**$ 272,910**
	Engineering, Administration (15%)				$ 40,937
	Total Project				***$ 313,847***

Cost does not include acquisition of easements through the golf course and other private property

Opinion of Probable Project Cost
Wastewater Treatment Facility Improvements
Lake Shastina Community Services District

Item	Description	Units	Quantity	Unit Cost	Total Cost	Comments
1	Pond 5 Liner	SF	180,000	$1.10	$198,000	60 mil HPDE liner
2	Sludge Drying Bed	EA	2	$99,066	$198,132	45' x 100 ' each
3	New Primary Solids Settling Tank	LS	1	$27,737	$27,737	
4	New Flowmeter and Vault	LS	1	$24,494	$24,494	
5	Piping	LS	1	$5,870	$5,870	Influent piping to new tank
6	Bypass outlet from new tank	LS	1	$7,374	$7,374	
7	Electrical	LS	1	$36,846	$36,846	
8	Mobilization (12%)	LS	1	$60,000	$60,000	
				Subtotal:	$558,453	
				Contingency (20%):	$112,000	
				Total Construction:	***$670,453***	
				Engineering, Administration (15%):	$101,000	
				Total Project:	***$771,453***	

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JOB	517027		
SHEET NO.	1	OF	4
CALC'ED BY	AHR	DATE	3/16/2018
CHECKED BY		DATE	

Item No.: 1 **Pond 5 Liner**

Pond 4 (same size as Pond 5) was lined in 2010 at a cost of approximately $120,000 per Robert Moser.
Pond 4 unit cost (with 180,000 SF of liner needed) was $120,000/180,000 or $0.67/SF.
Estimate used for Falcon Heights PER (2014) was $0.75/SF for 60 mil liner.
This pond will require removal of organic material (weeds) along bottom and side slopes.
Also will require recompacting the existing surface after weed removal.

Assume the following:

Base liner cost:	$	0.80	/SF	liner plus installation
Additional for prep:	$	0.30	/SF	weed removal, compact existing surface
Total:	$	1.10	/SF	

Item No.: 2 **Sludge Drying Bed**

Item	Quantity	Unit	Unit Cost	Total	Source
Rough Grading and Spoils Disposal	1	LS	$ 3,600.00	$ 3,600.00	1
Finish Grading	1	LS	$ 3,600.00	$ 3,600.00	1
Concrete + Rebar	132	CY	$ 600.00	$ 79,200.00	1
Coarse Sand	8	CY	$ 30.00	$ 240.00	1
Drain Rock	8	CY	$ 60.00	$ 480.00	1
Class 2 Agg Base	111	CY	$ 50.00	$ 5,550.00	1
4" Perforated Sch 40 Pipe	45	LF	$ 40.00	$ 1,800.00	1
4" Sch 40 PVC Pipe	1	LF	$ 26.00	$ 26.00	1
2" Sch 40 PVC Pipe	80	LF	$ 8.85	$ 708.00	2
PVC Fittings	13	EA	$ 12.00	$ 156.00	1
10 MIL Membrane	6,000	SF	$ 0.50	$ 3,000.00	1
Sump Pump	1	EA	$ 556.00	$ 556.00	3
100 gallon Sump Barrel	1	EA	$ 150.00	$ 150.00	3
			Subtotal:	$ 99,066.00	

Sources:
1. MCCSD drying bed rehab
2. www.homedepot.com 280-PSI-Schedule-40-PVC
3. www.grainger.com submersible-sewage-pumps N-hv4

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JOB	517027		
SHEET NO.	2	OF	4
CALC'ED BY	AHR	DATE	4/9/2018
CHECKED BY		DATE	

Item No.: 3 **New Primary Solids Settling Tank**

Item	Quantity	Unit	Unit Cost	Total	Source
Excavation	238	CY	$ 29.00	$ 6,905.00	2
Class 2 Agg Base	21	CY	$ 50.00	$ 1,039.00	1
Concrete + Rebar, Bottom	11	CY	$ 600.00	$ 6,889.00	1
Concrete + Rebar, Walls	18	CY	$ 600.00	$ 10,904.00	1
Overflow to Existing Solids Tank	1	EA	$ 2,000.00	$ 2,000.00	
			Subtotal:	$ 27,737.00	

Notes:
1. Tank dimensions taken to be 31' x 15'
2. Assume 8" thick concrete
3. Assume 12" agg base

Item No.: 4 **New Flowmeter and Vault**

Item	Quantity	Unit	Unit Cost	Total	Source
Excavation	42	CY	$ 29.00	$ 1,229.00	2
Class 2 Agg Base	5	CY	$ 50.00	$ 265.00	1
Flow Meter Vault	1	EA	$ 8,000.00	$ 8,000.00	4
Magnetic Flow Meter	1	EA	$ 15,000.00	$ 15,000.00	3
			Subtotal:	$ 24,494.00	

Material costs doubled for construction

Sources:
1. MCCSD drying bed rehab
2. ODOT weighted average unit price with 1.2 or 1.5 multiplier
3. Link River Pump Station project
4. Advanced precast products, Redmond, Oregon

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JOB	517027		
SHEET NO.	3	OF	4
CALC'ED BY	AHR	DATE	3/21/2016
CHECKED BY		DATE	

Item No.: 5 **Piping**

Item	Quantity	Unit	Unit Cost	Total	Source
Excavation	44	CY	$ 29.00	$ 1,289.00	2
Class 2 Agg Base	4	CY	$ 50.00	$ 223.00	1
8" AWWA C900	20	LF	$ 24.00	$ 480.00	3
90 Degree Elbow	1	EA	$ 384.00	$ 384.00	3
Tee Fitting	1	EA	$ 564.00	$ 564.00	3
Megalug Joint Restraint	5	EA	$ 186.00	$ 930.00	3
Trench Backfill	40	CY	$ 50.00	$ 2,000.00	
			Subtotal:	$ 5,870.00	

Notes:
1. Assume 9' deep inlet pipe

Item No.: 6 **Bypass outlet from new tank**

Item	Quantity	Unit	Unit Cost	Total	Source
Excavation	7	CY	$ 29.00	$ 194.00	2
Class 2 Agg Base	6	CY	$ 50.00	$ 290.00	1
Bypass Overflow Structure	1	EA	$ 5,000.00	$ 5,000.00	
8" Class 5 RCP Pipe	30	LF	$ 63.00	$ 1,890.00	2
			Subtotal:	$ 7,374.00	

Notes:
1. Shallow pipe with minimal cover must be Class 5

Sources:
1. MCCSD drying bed rehab
2. ODOT weighted average unit price with 1.2 or 1.5 multiplier
3. Budge McHugh Plumbing Supply, Medford, Oregon

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JOB	517027		
SHEET NO.	4	OF	4
CALC'ED BY	AHR	DATE	4/10/2018
CHECKED BY		DATE	

Item No.: 7 **Electrical**

Costs from Richard Sample Engineering, see separate detail sheet (attached)
Construction estimate includes 10% markup for general contractor

RSE Estimate: $ 36,846

ELECTRICAL CONSTRUCTION COST ESTIMATE

Richard Sample Engineering

PROJECT: LAKE SHASTINA PLANNING STUDY — DATE: 3/30/18
SUBJECT: WASTEWATER TREATMENT PLANT ELECTRICAL COSTS
CLIENT: COMMUNITY OF LAKE SHASTINA — JOB NO: 1708
ESTIMATE BY: RICHARD SAMPLE, P.E.
BASE RATES: CONTRACTOR: $80/HR — ESTIMATE PHASE: Prelim Report
2018 RSMeans city cost index multiplier city: Susanville, California

NO	DESCRIPTION	QUANTITY		MATERIAL		LABOR		TOTAL
		MEASURE	UNIT	PER UNIT	TOTAL	PER UNIT	TOTAL	
Task A - Standby Power Equipment								
1	Does not apply	0	EA		0		0	0
Task B - Telemetry System Equipment								
1	Does not apply	0	EA		0		0	0
Task C - NEC Requirements Addressed								
1	Does not apply	0	EA		0		0	0
Task D - Pump Control Panel Upgrade								
1	Does not apply	0	EA		0		0	0
Task E - Pump Renovation								
1	Does not apply	0	EA		0		0	0
Task F - General Renovation								
1	Remove flowmeter, solar equipment	1	JOB	200.00	200	1,280.00	1,280	1,480
2	72W,36H,18D Free-stand Enclosure	1	EA	6,360.00	6,360	640.00	640	7,000
3	Enclosure Light, Recept, Switch	1	EA	150.00	150	240.00	240	390
4	Flow transmitter installation	2	EA	25.00	50	160.00	320	370
5	Power & Signal J-box, NEMA 1	2	EA	100.00	200	160.00	320	520
6	Flow sensor installation	2	EA	25.00	50	160.00	320	370
7	Sump Pump electrical installation	2	EA	25.00	50	160.00	320	370
8	Weatherproof Duplex receptacle	2	EA	100.00	200	320.00	640	840
9	Conduit: Schedule 80 PVC - 1"	900	LF	2.53	2,277	4.12	3,708	5,985
10	Wire: THHN, copper - No. 14	1,200	LF	0.07	84	0.35	420	504
11	Wire: THHN, copper - No. 12	900	LF	0.10	90	0.41	369	459
12	Wire: THHN, copper - No. 10	2,400	LF	0.16	384	0.46	1,104	1,488
13	Wire: 2-pr #18 TWSD	600	LF	0.57	342	0.76	456	798
14	Trench and backfill 18"D, 18"W	600	LF	3.00	1,800	3.00	1,800	3,600
15	20A, 1-pole breaker at Exist Panel	2	EA	30.00	60	80.00	160	220
Miscellaneous								
1	Electrical permit	1	JOB				200	200
2	Product submittals	1	JOB				250	250
3	Startup and testing	1	JOB				640	640
	SUBTOTAL				12,297		13,187	25,484
	RS Means city multipliers: Susanville				0.99		1.21	
	SUBTOTAL				12174		15956	28130
	OVERHEAD @ 16%						2553	2553
	PROFIT @ 10%				1217		1596	2813
	WWTP ELECTRICAL SUBCONTRACTOR TOTAL							**$33,496**

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Technical Memorandum

UPDATE

Reference:	517027-Lake Shastina CSD Wastewater Project
Date:	March 29, 2020
To:	Bruce Grove, Senior Planner; Anders Rasmussen, Project Manager
From:	Mark Chaney, Principal Scientist
Subject:	**Updated Biological Resources Technical Memo**

Background

The Biological Resources Technical Memorandum for the Lake Shastina CSD Wastewater Project, originally prepared on April 13, 2018, has been updated (January 9, 2020) to include additional information regarding the development of the original biological resources investigations, to more clearly describe the potential impacts from proposed work activities at all of the project's existing wastewater pump stations (also commonly referred to as 'lift stations').

While the research and field investigations prepared in the original report evaluated potential impacts to all twenty (20) of the Lake Shastina Community Services District pump stations, the original report only displayed four (4) pump stations on the report mapping, giving the impression that studies only evaluated potential impacts to these four facilities (in addition to the wastewater treatment facility and new pipelines).

This updated biological resources technical memorandum includes the original biological resources evaluations (noted as "Original Project"), a section titled "Revised Project" that provides consistency with other updated project documents, and a "Revised Conclusions" section. This update also includes updated California Natural Diversity Data Base research, as well as current research for Federally protected species.

Original Project

Background

On October 15, 2017 and March 12, and April 5, 2018 SHN's principal scientist Mark Chaney and project botanist Kathy Tyler Moody (Resource Management) conducted independent biological site

reconnaissance and surveys for special status botanical and wildlife species[1] within the area of potential effect for the Lake Shastina Wastewater Project. The project consists of reconfigurations of existing wastewater ponds, upgrades to wastewater equipment, upgrades to existing and addition of new sewer pipelines, and upgrades to the existing twenty (20) sewer pump stations by the Lake Shastina Community Services District (Lake Shastina CSD). Funding is being provided to the City by the State Water Resources Control Board (SWRCB) Proposition 1 Grant (Prop 1).

The proposed Project consists of wastewater facility improvements that generally upgrade the facility operations, replace aging equipment, and install new equipment and underground pipelines. The Project is located at Lake Shastina, California. The site is within the United States Geological Survey (USGS) 7.5-minute Juniper Flat topographic quadrangle located in Siskiyou County. Refer to **Figure 1** for the Project Location and **Figures 2** to **5** for the Project Site Maps. The Project generally consisted of the following:

1. Improvements to the existing wastewater treatment facility with an emphasis on optimal sludge drying beds, winter storage and evaporation pond configurations, and addition of enhanced aeration equipment;
2. Installation of a new solar array within the boundaries of the existing fenced wastewater treatment facility;
3. Future expansion of the eastern boundary of the existing wastewater treatment facility by approximately 4.5 acres for future operations and maintenance efficiencies;
4. Improvements and upgrades to extend the Tony Lema Drive sewer line to Lift Station B-120 to reduce the risk of Sanitary Sewer Overflows, provide for energy reduction costs for pumping and for use as a redundant line during emergencies;
5. Installation of a new sewer bypass pipeline between sewer lift stations B-109 and B-110 along Lake Shore Drive to reduce the risk of Sanitary Sewer Overflows and for use as a redundant line during emergencies.
6. Existing sewer pump station repair and maintenance activities to provide updated electrical and control components, repairs to sewer wet wells and piping configuration rehabilitation at 20 pump stations.

Methodology

The survey protocol for this effort consisted of database queries and a focused biological field survey to identify suitable and potentially suitable habitat at the Project sites that could be used by species of special concern. Prior to conducting fieldwork, the following references were reviewed:

[1] The Term "Special Status Species" is used collectively to refer to species that are state or federally listed, species that are state or federal candidates for listing, and all species listed by the California Natural Diversity Database. This term is consistent with the biological resources that need to be assessed pursuant to the California Environmental Quality Act and the National Environmental Policy Act.

- CNDDB query for the Juniper Flat and the surrounding USGS 7.5 minute topographic quadrangles[2] (CDFW, 2018a).
- Electronic Inventory of Rare and Endangered Vascular Plants of California (California Native Plant Society [CNPS], 2018a) query for a list of all plant species reported for the Juniper Flat and surrounding USGS 7.5 minute topographic quadrangles.
- United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) was query for threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of the proposed Project and/or may be affected by the proposed Project (USFWS, 2017).
- Biogeographical Information and Observation System (BIOS; CDFW, 2018b).

From the database queries, a list of potential plant and animal target species for the study area was compiled and is presented as **Table A-1 and Table A-2** in **Appendix A**. These tables include all plant and animal species reported by the CNDDB, CNPS, and USFWS that have the potential to be present in the region of the Project Sites. Database queries identified 47 botanical species of concern and 30 wildlife species of concern that might be encountered at or near the Project Site. Of the 47 potential plant species listed by the agency resources, only 15 species have a low potential to occur within the Project area. Of the 30 potential animal species listed by the resources agencies, five species have a low potential to occur within the Project area. The remaining plant and animal species occupy habitats that are not found at the Project Sites.

Using information about sensitive species potentially present in the Project area, SHN conducted focused field evaluations in an attempt to determine if any of Project sites had suitable habitat for these species. Due to winter evaluations and the need to complete the biological evaluations prior to the spring and summer blooming periods to meet grant funding requirements, no focused seasonal botanical surveys were possible. Evaluations of biological resources were undertaken in the field, but only the early nesting season was captured for avian species that have a late winter return and courtship period.

Biological Investigations

General Observations of the Area

The Project Site has been developed for the use as the Lake Shastina CSD wastewater treatment facility (WWTF), roadways that provide routes for underground sewer pipelines, developed residential areas, developed sewer pump stations, and a managed golf course. Vegetation in these areas is generally comprised of disturbed low-growing grasses/forbs, with minor components of trees and shrubs that have been left after the original developments. No vegetation exists within the roadways, and limited vegetation exists around sewer pump stations as vegetation is seasonal cleared/managed from the sites. The landscape surrounding the Project Sites is comprised of developed residential uses, and areas of agricultural development (crop and grazing lands) adjacent to the WWTF. In areas where residential development is approved, but has not yet been achieved, native stands of juniper (*Juniperus*

[2] Grass Lake, Hotlum, Lake Shastina, Little Shasta, Mount Shasta, Solomons Temple, The Whaleback, Weed

occidentalis) and sage (*Artemisia tridentata*) dominate, with pockets of Ponderosa pine (*Pinus ponderosa*). Developed residential properties are composed primarily of non-native ornamental vegetation managed for residential purposes. Some properties have remnant juniper/sage vegetation remaining, though this is managed to reduce the threat of wildfire impacts to structures.

Botanical

Botanical investigations were conducted in general conformance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW, 2009). A variation to the protocol included seasonal timing, which required botanical surveys of potential habitat to be conducted before the typical seasonal blooming period, due to grant funding constraints of the Project. The lack of seasonal timing is not seen as a significant issue, since the proposed work at the WWTF is within the previously developed wastewater ponds, roads and other developed sites; the pipelines are being reconstructed within the existing roadways of the residential areas and within the golf course; and the pump stations are existing developments that have vegetation removed and managed for access and to reduce wildfire threats.

Field observations characterized the natural community type as the "*Southern Cascade Alliance*" (CNPS, 2018b). The tree canopy within the study area (when not completely altered by existing residential and public facility development) was dominated by 25 to 35–foot tall junipers, with a canopy cover ranging from 20 to 40 percent. The shrub and herb layers were generally open, with less than five percent cover. In some areas adjacent to the Project sites, brush was dominant in patches with 100 percent cover.

The US Fish and Wildlife Service (USFWS, 2018) "National Wetland Inventory" (NWI) has mapped the existing wastewater treatment ponds as "freshwater ponds"; no other wetlands are identified by the NWI mapping for the balance of the Project. Since these water bodies are active wastewater ponds, managed for treatment of sewage, they do not qualify for other waters of the US, and are excluded from further evaluation. The NWI mapping does not necessarily consist of jurisdictional wetlands under the Clean Water Act, and in some cases NWI wetlands are mapped based solely on aerial imagery or soil descriptions with little or no ground verification. Field review did not locate any other wetlands or water bodies within the Project that would require special protections or further evaluations as wetlands. As a result of these investigations, the Project does not contain wetlands or other waters of the US, therefore the proposed Project developments will not impact wetlands or other waters of the US.

No habitat was found that is suitable for any Threatened or Endangered (including Proposed and Candidate) plant species under state or federal endangered species acts. Of the 47 total special status plant species reported within the Project area, only 15 species were identified that would have a low potential to be present at the Project Sites. Evaluation determined that the Project was being developed in areas that had previously been disturbed and that the Project would not impact any sites that had suitable habitat for the species with low potential for occurrence.

Wildlife

Very limited wildlife sitings were made during field investigations. Observations included black tailed deer (*Odocoileus hemionus columbianus*) pellets, turkey vulture (*Cathartes aura*), raven (*Corvus corax*), American robin (*Turdus migratorius*), Scrub Jay (*Aphelocoma californica*), and white-breasted nuthatch (*Sitta carolinensis*). The presence of rodents was confirmed from ground burrow debris and burrow openings for ground squirrels (*Ostopermophilus beecheyi*). Based on the habitat present, it is anticipated that the Project Site and immediate surrounding areas are primarily used by small mammals and birds that can find forage and develop nest sites within the native and non-native vegetation present in the area. The lack of downed logs, dense stands and multi-layered forest vegetation, as well as proximity to human activities (treatment plant, residential development, roadways, golf course), eliminate the use of this area by old-growth related species.

Larger mammals such as coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), and mountain lion (*Puma concolor*), have been seen in the vicinity (investigator's personal observations and previous studies in the Project area) and are known to frequent the area. They are likely present to hunt prey (both native and residential/agricultural) and find limited daytime refuge in the juniper stands and patches of brush near the Project Site. Denning opportunities are not found at the Project Site, or in the immediate surrounding areas, due to lack of habitat and human disturbances. Other nocturnal mammals such as the striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), and raccoons (*Procyon lotor*) are frequent visitors to residences and associated structures, and while not observed during our review, are known to occur in the area. Habitat offsite of the Project Site (houses, out-buildings, vegetation) is suitable for several of these species to use for daytime refuges.

Large raptors, such as hawks, owls, vultures, eagles are common in the Lake Shastina area and there is significant local observations and knowledge about their presence in the area (National Audubon Society, 2018; investigator's personal observations from previous studies in the Project area). Prairie falcon (*Falco mexicanus*) is listed in the literature as being present in the surrounding area, but was not observed. Habitat for this species lies further to the east where agricultural operations provide open terrain for this bird to hunt and suitable nesting habitats can be found. While this species may fly over the various portions of the Project, its suitable nesting and foraging habitat is not present in the areas proposed for development by this Project. A pedestrian survey of the Project Site and surrounding areas, including observations of area trees failed to locate large nests/nesting platforms for raptors.

Habitat within the proposed Project Site has been heavily impacted by historical construction the wastewater treatment facility, paved and unpaved roads, residential home developments, golf course, overhead power lines, underground utilities and related infrastructure. The WWTF site has been particularly impacted with development activities that have removed vegetation and constructed wastewater ponds, roads and ancillary facilities for collection, treatment and disposal of wastewater.

Primary species that are anticipated to be temporarily impacted by this Project include small mammals (mice, voles, ground squirrels), birds (finches, sparrows, scrub jay, warblers, etc.) and mammals such as

black-tailed deer. Impacts would be to the use of the area by these species during construction, but once construction terminated these species are likely to return to pre-construction levels.

No habitat was found that is suitable for any listed Threatened or Endangered (including Proposed and Candidate) special status species. Specifically, for the 30 special status species of concern for the Project Area, five (5) species had a Low potential to be present at the Project Site. Those species are shown in **Table A-2** of **Appendix A**.

Revised Project Description

The project description has been revised to include a *listing* of all the LSCSD pump stations that could potentially be upgraded through project funding provided by the California State Water Resources Control Board through the Proposition 1 Small Community Wastewater program. There are twenty (20) existing pump stations located within the LSCSD that pump wastewater to the district's wastewater treatment facility. These existing pump stations (also called 'lift' stations) have been identified as needing to have a variety of upgrades such as electrical and control components, repairs to sewer wet wells, installation of concrete pads for location of temporary emergency generators, installation of concrete steps at pump station doorways, and rehabilitation to existing underground piping. Not all pump stations need the same repairs. **Appendix B, Table B-1** provides a listing of each component of the revised project, including the pump stations, locations, physical impacts to ground area and a general description of the proposed improvements. ***NOTE: There are no changes to the proposed work at these sites, only a more detailed description with a listing of specific impacts at each project component location.***

Improvements correspond to those recommended by the Preliminary Engineering Report (PER) for the Wastewater Improvement project. Many of these improvements were not called out in detail in the Final Mitigated Negative Declaration (FMND), as they would normally be considered routine maintenance/replacement projects that would be exempt from CEQA. However, the analysis provided in the Original Biological Resources Technical Memorandum (BRTM) did evaluate these potential impacts as though the actions at the pumps stations would be completed as a single project and appropriate analysis was completed to determine if there might be any significant impacts to biological resources. While the analysis found no significant impacts, it was determined that the FMND was not clear enough in specifying those results and more clarification to document those lack of impacts was required. Like the original approved project, the revised project would not expand existing wastewater operations but would improve the overall efficiency of the system through upgraded facilities and equipment, and no new areas of impact would occur.

Updated Biological Data Evaluation

Using the Revised Project description, a reevaluation of biological resources was undertaken to determine if the more detailed areas of impact for the pump stations would have an impact to special status species. Evaluations were conducted in November 2019 and both state and federal species lists

were updated again in January 2020 to reflect potential new listings that could have occurred with the new year. SHN reviewed the current CNDDG and USFWS IPaC species lists and other relevant information to determine any changes to the previous lists, as noted below:

- CNDDB query for the Juniper Flat and the surrounding USGS 7.5 minute topographic quadrangles[3] (CDFW, 2020a).
- Electronic Inventory of Rare and Endangered Vascular Plants of California (California Native Plant Society [CNPS], 2020a) query for a list of all plant species reported for the Juniper Flat and surrounding USGS 7.5 minute topographic quadrangles.
- United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) was query for threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of the proposed Project and/or may be affected by the proposed Project (USFWS, 2020).
- Biogeographical Information and Observation System (BIOS; CDFW, 2020b).

The combined species of special concern list is found in **Appendix A**, and copies of the USFWS IPaC updated species lists are found in **Appendix C.**

Updated Results

As a result of the updated review, it was determined that there were no new federal species added to the IPaC species lists, as previously evaluated in the Original Project. Based on the fact that there were no new species listed, the original biological investigations were confirmed, and reevaluation of the potential impacts to these listed species from the Revised Project determined that there would still be no impacts.

Reevaluation of the CNDDB information determined that there were three (3) additional wildlife species that had the potential to be located within the region of the project, but that were not specifically located within the immediate vicinity of the proposed actions. Review of the CNDDB and CNPS data showed that there were no new botanical species of special concern identified for the area. Additional evaluation determined that the three additional wildlife species had a low potential for occurrence at the project activity sites; these species have been added to the consolidated tables in **Appendix A**. Data show that the Bald Eagle, Swainson's Hawk, and the Western Pond Turtle have been mapped in the vicinity of the project. The potential impacts to these species are presented below.

Bald Eagle (Haliaeetus leucocephalis)

The bald eagle is a Federally Delisted species, but is protected by the Bald and Golden Eagle Protection Act. It is also a state listed Endangered species. This species has been mapped south of the project area, and utilizes Lake Shastina to forage. There is no suitable habitat at any of the Revised Project sites,

[3] Grass Lake, Hotlum, Lake Shastina, Little Shasta, Mount Shasta, Solomons Temple, The Whaleback, Weed

and project activities do not encroach on existing offsite nesting locations. While the bald eagle is likely to hunt and traverse through the project area (which has been developed for residential, recreational and public facility uses), there is no specific habitat for this species that would be impacted by the project. Since development of the Revised Project is within previously disturbed and other developed sites, there would be no impact to this species from the Revised Project.

Swainson's Hawk (Buteo swainsoni)

The Swainson's hawk is a state listed Threatened species. Habitat for this species consists of open fields and farmlands where the animal hunts, located to the east of the project site, though they may be found farther west along the open prairies along Interstate 5. Nesting is generally in isolated trees that have vistas of their hunting grounds. There is no suitable nesting or foraging habitat at the project site, which has been developed for residential and recreational purposes. While this species is likely to transit the project area, and may take the opportunity to hunt the golf course, this use is not considered significant as their primary habitats are elsewhere. Based on this species requirements, and the lack to any visible nesting sites, there will be no impact to this species from the Revised Project.

Western Pond Turtle (Emys marmorata)

The western pond turtle is known to occur outside of the project area to the south in an area of Lake Shastina. This is a state Species of Special Concern. It is likely that there are more western pond turtle sites along the shore of Lake Shastina, but they are not documented in the literature. The Revised Project does not propose any activities on the banks or shoreline of Lake Shastina, or in waterways; this project is an upland project in previously developed areas, well away from water sources. As such, the Revised Project will have no impact to western pond turtles.

Revised Conclusions

After review of the Revised Project, it was confirmed that there are 80 special status plant and animal species reported within the region consisting of the study area's quadrangle (Juniper Flat) and the surrounding topographic quadrangles (CDFW, 2018a; USFWS, 2017) that would have the potential for being impacted by the Revised Project. Of the 80 special status species, 23 species listed in **Tables A-1 and A-2** of **Appendix A** are considered to have a Low potential to occur near the study area. The other species have no potential to occur based on habitat requirements. Survey of the Project Site and immediate surrounding habitat failed to locate special status species or specific habitat that might be impacted by this Project. Based on this investigation, there would be not effect to special status species.

Updated species lists from the CNDDB and USFWS was secured for the project, and included all of the areas of the Revised Project. A copy of the compiled list is found in **Appendix A** and copies of the USFWS species lists are found in **Appendix C**. Review of that list confirmed that there are no new federally designated special status species, and that results of the original investigations are still valid. Additionally, review of the Revised Project confirms that there are no new impacts as a result of the Revised Project.

Avoidance and Minimization

No special status plant or animal species or their habitats were observed within or adjacent to the Project Site for the Revised Project; therefore, no avoidance or minimizations of impacts are recommended.

Mitigation Measures

Based on research and review of data collected for the Revised Project, and subsequent site specific evaluations, no biological mitigation measures are needed for the development of this Project.

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Potential Regionally Occurring Sensitive Species

A

Potential Regionally Occurring Sensitive Species
Lake Shastina CSD Wastewater Improvement Project
Lake Shastina, Siskiyou County, California

A California Natural Diversity Database (CNDDB; CDFW, 2018a) search was completed for the 7.5-minute U.S. Geological Survey (USGS) Juniper Flat quadrangle and the surrounding USGS 7.5 minute topographic quadrangles (**Tables A-1 and A-2**). Additionally, the US Fish and Wildlife Service (USFWS, 2017) species list was used to determine the potential presence of federally protected species (**Tables A-1 and A-2**).

Table A-1 presents the botanical species and **Table A-2** presents the animal species reported from the queries, their preferred habitat, and whether there is suitable habitat present within the study area for the species. Each species was evaluated for its potential to occur within the study area according to the following criteria:

1) **None**. Species listed as having "none" with regard to their potential to occur on the study area are those species for which:
    - There is no suitable habitat present in the study area. (Habitats in the study area are unsuitable for the species requirements [for example, elevation, hydrology, plant community, disturbance regime, and so on].)
2) **Low**. Species listed as having a "low" potential to occur in the study area are those species for which:
    - There is no known record of occurrence in the vicinity of the study area, and
    - There is marginal or very limited suitable habitat present in the study area.
3) **Moderate**. Species listed as having a "moderate" potential to occur on the study area are those species for which:
    - There is a known record of occurrence in the vicinity of the study area, and
    - There is suitable habitat present in the study area.
4) **High**. Species listed as having a "high" potential to occur in the study area are those species for which:
    - There is a known record of occurrence in the vicinity of the study area (there are many records and/or records in close proximity), and
    - There is highly suitable habitat present in the study area.
5) **Present**. Species listed as "present" in the study area are those species for which:
    - The species was observed in the study area during the investigations.

Table A-1
Updated Potential Regionally Occurring Sensitive Botanical Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence
Allium siskiyouense	Siskiyou onion	--/--/4.3	Perennial bulbiferous herb. Lower montane coniferous forest, Upper montane coniferous forest. Rocky, sometimes serpentinite. 855-2500 meters.	May-Jul	Low
Balsamorhiza lanata	woolly balsamroot	--/--/1B.2	Perennial herb. Cismontane woodland, open woodland, grassy slopes; Elevation: 800-1050 meters	Apr-Jun	Low
Balsamorhiza sericea	Silky balsamroot	--/--/1B.3	Perennial herb. Lower montane coniferous forest (serpentinite) 2785-6990 meters	Apr-May	Low
Campanula scabrella	Rough harebell	--/--/4.3	Perennial rhizomatous herb. Alpine bare talus slopes 7495-9185 meters	Aug-Sept	None
Calochortus greenei	Greene's mariposa-lily	--/--/1B.2	Perennial bulbiferous herb. Cismontane woodland, Meadows and seeps, Pinyon and juniper woodland, Upper montane coniferous forest 3395-6200 meters	Jun-Aug	Low
Calochortus monanthus	Single-flowered mariposa-lily	--/--/1A	Perennial bulbiferous herb. Presumed extinct; vernal meadow 2440-2625 meters	Jun	None
Carex geyeri	Geyer's sedge	--/--/4.2	Perennial rhizomatous herb. Open forest, slopes 3785-7200 meters	May-Aug	Low
Carex viridula ssp. Viridula	Green yellow sedge	--/--/2B.3	Perennial rhizomatous herb Sphagnum bogs, wet meadows, dune swales, lakeshores, serpentine fens 0-5250 meters	(Jun)Jul-Sep(Nov)	None
Chaenactis suffrutescens	Shasta chaenactis	--/--/1B.3	Perennial herb. Lower montane coniferous forest, Upper montane coniferous forest. Sandy or serpentine soils. 750-2800 meters.	May-Sep	None
Chamaesyce hooveri	Hoover's spurge	FT--/1B.2	An annual herb that is associated with vernal pools	Jul-Sep	None

Table A-1 (continued)
Updated Potential Regionally Occurring Sensitive Botanical Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence
Collomia tracyi	Tracy's collomia	--/--/4.3	Annual. Rocky, sometimes serpentinite. Broadleafed upland forest, or Lower montane coniferous forest 980-6890 meters	Jun-Jul	Low
Cordylanthus tenuis ssp. Pallescens	Pallid birds-beak	--/--/1B.2	Annual herb (hemiparasitic) Lower montane coniferous forest (gravelly, volcanic alluvium). 2280-5395 meters.	Jul-Sept	Low
Cypripedium californicum	California lady's-slipper	--/--/4.2	Perennial rhizomatous herb Stream banks, moist slopes, fens, partial shade to full sun, mixed-evergreen or conifer forest. 95-9020 meters	Apr-Aug	None
Cypripedium fasciculatum	clustered lady's-slipper	--/--/4.2	Perennial rhizomatous herb. Lower montane coniferous forest, North Coast coniferous forest. Usually serpentinite seeps and stream banks. In serpentine seeps and moist stream banks. 100-2435 meters.	Mar-Aug	None
Darlingtonia californica	California pitcher plant	--/--/4.2	Perennial rhizomatous herb (carnivorous). Bogs and fens, Meadows and seeps. Mesic, generally serpentinite seeps. On ultramafic soils. 0-8480 meters.	Apr-Aug	None
Epilobium luteum	Yellow willowherb	--/--/2B.3	Perennial stoloniferous herb. Lower montane coniferous forest , Moist streambanks, montane meadows 4920-7200 meters	Jul-Sep	None
Erigeron bloomeri var. *nudatus*	Waldo daisy	--/--/2B.3	Perennial herb. Lower montane coniferous forest, Upper montane coniferous forest. In open areas on dry rocky outcrops on serpentine. 730-1740 meters.	Jun-Jul	None
Eriogonum nivalis	Snow fleabane daisy	--/--/2B.3	Perennial herb. Upper montane coniferous forest (often serpentinite). Often on serpentine. 1735-2440 meters.	Jun-Sep	None

Table A-1 (continued)
Updated Potential Regionally Occurring Sensitive Botanical Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence
Eriogonum siskiyouense	Siskiyou buckwheat	--/--/4.3	Perennial herb. Lower montane coniferous forest. Rocky sites and serpentine outcrops. 970-2740 meters.	Jul-Sep	None
Eriogonum strictum var. *greenei*	Greene's buckwheat	--/--/4.3	Perennial herb. Lower montane coniferous forest. Rocky, serpentine sites. 800-2100 meters.	Jul-Sep	None
Erythronium revolutum	Coast fawn lily	--/--/2B.2	Perennial bulbiferous herb. Mesic, streambanks. Bogs and fens, Broadleafed upland forest, North Coast coniferous forest 0-5250 meters.	Mar-Jul	None
Fritillaria gentneri	Gentner's fritillary	FE/--/1B.1	Chaparral, cismontane woodlands and lower montane coniferous forests. Often associated with serpentine.	Apr-May	None
Galium serpenticum ssp. *scotticum*	Scott Mountain bedstraw	--/--/1B.2	Perennial herb. Lower montane coniferous forest. Generally on North-facing slopes on serpentine in mixed conifer forest. 1000-2075 meters.	May-Aug	None
Hesperocyparis bakeri	Baker's cypress	--/--/4.2	Evergreen Tree. Chaparral, Lower montane coniferous forest, open slopes, flats, often on serpentine 2690-6545 meters	N/A	Low
Hymemoxys lemmonii	Alkali hymenoxys	--/--/2B.2	Perennial herb. Great Basin scrub. Lower montane coniferous forest. Meadows and seeps 785-11120 meters	Jun-Aug	Low
Iliamna bakeri	Baker's globe mallow	--/--/4.2	Perennial herb Mtn slopes, juniper woodland, lava beds 3280-8200 meters	Jun-Sept	Low
Ivesia pickeringii	Pickering's ivesia	--/--/1B.2	Perennial herb. Lower montane coniferous forest, Meadows and seeps. Mesic, clay, usually serpentinite seeps. 850-1525 meters.	Jun-Aug	None
Lomatium engelmannii	Engelmann's lomatium	--/--/4.3	Perennial herb. Chaparral, Lower montane coniferous forest, Upper montane coniferous forest. Gravelly serpentine slopes in yellow pine and red fir forests, serpentine ridges. 870-2740 meters.	May-Aug	None

Table A-1 (continued)
Updated Potential Regionally Occurring Sensitive Botanical Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence
Lomatium peckianum	Peck's lomatium	--/--/2B.2	Perennial herb. Chaparral, Lower montane coniferous forest, Upper montane coniferous forest. Gravelly serpentine slopes in yellow pine and red fir forests, serpentine ridges. 870-2740 meters.	May-Aug	None
Opuntia fragilis	Brittle prickly-pear	--/--/2B.1	Perennial stem succulent. Pinyon and juniper woodland (volcanic) 2690-2885 Meters	Apr-Jul	Low
Orcuttia tenuis	Slender Orcutt grass	FT/SE/1B.1	Grasslands, freshwater wetlands, and wetland-riparian habitats.	May-Sep.	None
Orthocarpus pachystachyus	Shasta orthocarpus	--/--/1B.2	Annual herb Great Basin scrub, Meadows and seeps, Valley and foothill grassland. 2755-2790	May	Low
Phacelia cookei	Cook's Phacelia	--/--/1B.1	Sandy, volcanic Great Basin scrub, lower montane coniferous forest open areas, volcanic, sandy soils, scrub 2620-8005 meters.	Jun-Jul	Low
Phacelia greenei	Scott Valley phacelia	--/--/1B.2	Annual herb. Closed-cone coniferous forest, Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. Bare serpentine ridges and openings in yellow pine and red fir forest communities. 850-2380 meters.	Apr-Jun	None
Phacelia sericea var. ciliosa	Blue alpine Phacelia	--/--/2B.3	Perennial herb. Ridges, talus slopes, Great Basin scrub, Upper montane coniferous forest (rocky) 6885-8860 meters	Jun-Aug	None
Phlox hirsuta	Yreka phlox	FE/SE/1B.2	Perennial herb. Lower montane coniferous forest, Upper montane coniferous forest. Serpentinite talus/gravel. Open slopes and grasslands, on serpentine gravel. 830-1280 meters.	Apr-Jun	None
Polemonium pulcherrimum var. *shastense*	Mt. Shasta sky pilot	--/--/1B.2	Perennial herb. Alpine boulder and rock field, Subalpine coniferous forest, Upper montane coniferous forest. 2175-3900 meters.	Jun-Sep	None

Table A-1 (continued)
Updated Potential Regionally Occurring Sensitive Botanical Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence
Sabulina stolonifera	Scott Mountain sandwort	--/--/1B.3	Perennial stoloniferous herb. Lower montane coniferous forest. Serpentine soils, Jeffrey pine forest. 1125-2020 meters.	May-Aug	None
Sedum divergens	Cascade stonecrop	--/--/2B.3	Perennial herb. Alpine boulder and rock field. 5245-7645 meters	Jul-Sep	None
Sedum laxum ssp. Flavidum	Pale yellow stonecrop	--/--/4.3	Perennial herb. Serpentinite or volcanic. Broadleafed upland forest, Chaparral, Cismontane woodland 1490-6560 meters	May-Jul	None
Shepherdia canadensis	Canadian buffalo-berry	--/--/2B.1	Perennial shrub. Streamside, serpentinite, rocky. Upper montane coniferous forest. 5675-5680 meters	Apr-July	None
Stachys pilosa	Hairy marsh hedge-nettle	--/--/2B.3	Perennial herb. streamside, serpentinite, rocky. Upper montane coniferous. 3935-5805 meters	Jun-Aug	None
Thelypodium branchycarpum	Short-podded thelypodium	--/--/4.2	Perennial herb. Serpentinite, adobe, alkaline. Chaparral, Lower montane coniferous forest, Meadows and seeps. 2195-8400 meters	May-Aug	None
Trifolium siskiyouense	Siskiyou clover	--/--/1B.1	Perennial herb. Meadows and seeps (mesic). Sometimes stream banks. 880-1500 meters.	Jun-Jul	None
Triteleia grandiflora	Large-flowered triteleia	--/--/2B.1	Perennial bulbiferous herb. Great Basin scrub, Pinyon and juniper woodland. 2295-4920 meters.	Apr-Jun	Low
Triteleia hendersonii	Henderson's triteleia	--/--/2B.1	Perennial bulbiferous herb. Cismontane woodland, dry slopes. 2490-3935 meters.	May-Jul	Low
Vaccinium scoparium	little-leaved huckleberry	--/--/2B.2	Perennial deciduous shrub. Subalpine coniferous forest. Sometimes serpentine. 1035-2200 meters.	Jun-Aug	None

Table A-1 (continued)
Updated Potential Regionally Occurring Sensitive Botanical Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence

1. **FC:** Federal Candidate species being proposed for listing under the Federal Endangered Species Act (FESA), as amended.
   FE: Federal Endangered species pursuant to the FESA, as amended.
   FT: Federal Threatened species, pursuant to the FESA, as amended.
   SE: State Endangered species, pursuant to California Endangered Species Act (CESA).
   ST: State Threatened species, pursuant to CESA.
   CNPS List 1B includes plants that are rare, threatened, or endangered in CA and elsewhere.
   CNPS List 2 includes plants that are rare, threatened, or endangered in California but more common elsewhere.
   CNPS List 3 includes plants for which more information is needed–a review list.
   CNPS List 4 includes plants of limited distribution and should be documented as they are watch list species

2. Plant habitat descriptions are from CDFW (2017a), CDFW (2017b), CNPS (2017), and Baldwin et. al (2012).

N/A: Not Applicable
"-": no status/listing.

Table A-2
Updated Potential Regionally Occurring Sensitive Wildlife Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/State)[1]	General Habitat Requirements	Potential for Occurrence
Crustaceans/Mollusks				
Branchinecta lynchi	vernal pool fairy shrimp	FT/--	A freshwater fairy shrimp. Found in palustrine habitats of herbaceous wetland, scrub-shrub wetland and temporary pools. This species inhabits vernal pools or basalt flow depression pools in unplowed grasslands.	None
Branchinecta conservation	conservancy fairy shrimp	FE/--	A freshwater fairy shrimp. Found in palustrine habitats of herbaceous wetland, scrub-shrub wetland and temporary pools. This species inhabits vernal pools or basalt flow depression pools in unplowed grasslands.	None
Lepidurus packardi	vernal pool tadpole shrimp	FE/--	Lives in freshwater vernal pools associated with grasslands, primarily in the Central Coast, Sacramento and San Joaquin Valleys, and the southern Sierra Nevada foothills. Requires vernal pools and other seasonally temporary water bodies that are inundated for a portion of the year.	None
Monadenia infumata ochromphalus	yellow-based sideband	--/ST	A terrestrial snail. This sub-species is an old growth and riparian associate found on leaves, sticks, concrete walls of irrigation ditches and mossy boulders and stones. Species has not been found since 1960s and possibly extirpated from the region.	None
Fish				
Chasmistes brevirostris	shortnose sucker	FE/--	A sucker (fish) with a hump on the snout; up to 64 cm long. Adults and juveniles prefer shallow, turbid, and highly productive lakes that are cool, but not cold, in summer. Habitat for this species is found in the Upper Klamath Basin, with young utilizing the mouths of streams along the Klamath River during outmigration.	None
Deltistes luxatus	Lost River sucker	FE/--	A sucker (fish) with a distinct hump on the snout; to 86 cm long. Found in the upper Klamath River Basin. Habitat includes deep-water lakes and impoundments, and swift water and deep pools of small to medium rivers. Suckers can be found throughout the reservoirs they inhabit but they appear to prefer shorelines with emergent vegetation that can provide cover from predators and invertebrate food.	None

Table A-2
Updated Potential Regionally Occurring Sensitive Wildlife Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/State)[1]	General Habitat Requirements	Potential for Occurrence
Oncorhynchus kisutch	Southern Oregon/northern California (SONCC) coho salmon (ESU)	FT/--	Freshwater, near shore and offshore environments throughout their lifecycles. Coho prefer low stream velocity, shallow water and small gravel. Spawning and rearing habitat mainly in low gradient tributaries and side channels of river systems. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water, and sufficient dissolved oxygen.	None
Oncorhynchus mykiss irideus	Steelhead-Central California Cast (DPS)	--/SSC	A trout of variable appearance. In California, adult migrants of summer-run steelhead enter freshwater streams April-June (sometimes extending into July), during or shortly after final high spring flows. Spawns in gravelly substrate in cool, clear, well-oxygenated streams (natal stream), in water flowing 23-155 cm/sec and 10-150 cm deep, usually at the tail of a pool or at the riffle at the head of a pool; favors areas with well-vegetated banks and abundant in stream cover such as boulders, logs, and undercut banks	None
Onchrhynchus tshawytscha	Chinook Salmon-California Coast (ESU)	FC/--	Spawns tributaries of coastal California, including the Klamath River and Scott River.	None
Amphibians				
Ambystoma macrodactylum sigillatum	southern long-toed salamander	--/SSC	A large salamander associated with permanent water where it lays eggs and young live in water before transitioning to terrestrial life stage. Live under logs, and in other animals burrows, in cool and moist/wet sites.	None
Ascaphus truei	Pacific tailed frog	--/SC	A small frog with a tail-like appendage in males. Found in clear, cold swift-moving mountain streams with coarse substrates. Primarily in older forest sites. May be found on land during wet weather near water in humid forests or in more open habitat	None
Emys marmorata	Western pond turtle	--/SSC	Inhabits ponds, streams rivers and lakes where slow moving or backwaters allow for calm water. Utilizes submerged and exposed logs, rocks and other structures to access water and bask in sun. Will migrate between water bodies, and overwinters in some locations in moist uplands.	Low

Table A-2
Updated Potential Regionally Occurring Sensitive Wildlife Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/State)[1]	General Habitat Requirements	Potential for Occurrence
Plethodon elongates	Del Norte salamander	--/SSC	A terrestrial species, this salamander prefers talus and rocky substrates, and downed logs with nearby rocky substrates of forests. Canopy cover is typically 60% or greater. This salamander uses the rocky substrate that is moist, but not wet, and does not require any standing water.	None
Rana boylii	foothill yellow-legged frog	--/SC	A frog with dorsolateral ridges. This species usually occurs in or near quiet permanent water of streams, marshes, ponds, lakes, and other quiet bodies of water. In summer, frogs estivate in small mammal burrows, leaf litter, or other moist sites in or near (within a few hundred feet of) riparian areas. Individuals may range far from water along riparian corridors and in damp thickets and forests.	None
Rana cascadae	Cascades frog	--/SC	A medium sized frog. Found in wet mountain meadows, sphagnum bogs, ponds, lakes, and streams, in open coniferous forest. Prefers quiet ponds with shallow open water for breeding and egg laying.	None
Rana pretiosa	Oregon spotted frog	FT/--	A medium sized frog. Highly aquatic, avoids dry uplands; rarely found far from permanent quiet water; usually occurs at the grassy margins of streams, lakes, ponds, springs, and marshes.	None
Birds				
Accipiter gentilis	Northern Goshawk	--/SSC	Forest habitats of medium to large conifers where it nests and hunts through the tree canopy. May be found near open fields to take prey of small mammals and birds that are feeding in these agricultural areas.	Low
Accipiter striatus	Sharp-shinned hawk	--/SSC	Forest habitat where it nests and hunts. May be found adjacent to open fields during migration periods.	Low
Aquila chrysaetos	Golden Eagle	--/SSC	Wide ranging bird that prefers to build nests in high locations such as cliffs. They hunt a variety of habitats such as forest openings and agricultural fields where they take small mammals.	None
Ardea herodias	great blue heron	--/SSC	Herons live along freshwater habitats, including streams, rivers, lakes, ponds and residential fish/koi ponds where they feed on small fish, rodents, reptiles, insects and sometimes small birds. They use agricultural fields for hunting. Breeding colonies occur in isolated areas of swamps, bogs islands and other areas bordered by water.	Low

Table A-2
Updated Potential Regionally Occurring Sensitive Wildlife Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/State)[1]	General Habitat Requirements	Potential for Occurrence
Buteo swainsoni	Swanson's Hawk	--/ST	A medium sized hawk that breeds in the western US and Canada and overwinters in South America. Hunts in open grasslands and agricultural fields where it takes rodents, small mammals and birds. Nests adjacent to riparian systems but is also known to utilize isolated trees adjacent to foraging habitat.	Low
Coccyzus americanus	Western yellow-billed cuckoo	FT/--	Nests in tall cottonwood and willow riparian woodland. Requires patches of at least 10 hectares (25 acres) of dense riparian forest with a canopy cover of at least 50 percent in both the understory and overstory; nests typically in mature willows.	None
Falco mexicanus	prairie falcon	--/SSC	A brown falcon. Primarily open situations, especially in mountainous areas, steppe, plains or prairies. Typically nests in pot hole or well-sheltered ledge on rocky cliff or steep earth embankment. Vertical cliffs with rock structure overhanging the site are preferred. May use old nest of raven, hawk, eagle, etc. Winter foraging habitat includes wheat and other irrigated croplands. In all cases, large patches with low vegetation stature characterize the habitats used.	Low
Falco peregrines anatum	American peregrine falcon	FD/SD	Found in forests, mountain ranges and river valleys. Is also becoming more common in cities with large buildings that can act as breeding locations. Nests are generally 'scraped' into the cliff ledge. Hunts primarily on other birds, but will take small mammals when available.	None
Grus canadensis	greater sandhill crane	--/ST	Habitat for foraging consists of prairies and grasslands and marshes where they hunt invertebrates and grain crops. Breeding areas can be in marshes and bogs or dry land, depending on available habitat and protection from predators.	None
Haliaetus leucocephalus	Bald eagle	FD/SE	Inhabits a wide range of areas but prefers access to water bodies (lakes, rivers, ponds, ocean) where it can fish and forage for carcasses of animals. Nests in large platform nests in larger trees. Perches in trees, power poles and other tall structures to observe prey in fields and waterways.	Low

Table A-2
Updated Potential Regionally Occurring Sensitive Wildlife Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/State)[1]	General Habitat Requirements	Potential for Occurrence
Pandion haliaetus	Osprey	--/SSC	Ospreys are found in a wide variety of habitats, but always associated with rivers, lakes and ocean inlets/bays/estuaries. They are an exclusive fish eater. Nests are at the top or very upper most parts of single trees, tops of telephone/power poles, and other manmade 'pole' structures that provide an adequate platform to build a stick nest and have views of water.	None
Riparia riparia	bank swallow	--/ST	Habitat includes open and partly open situations, frequently near flowing water. Nests are in steep sand, dirt, or gravel banks, in burrows dug near the tip of the bank. They can also be found along the edge of inland water, or along the coast. Occasionally they are seen in gravel pits or road embankments. Individuals tend to return to the same nesting area in successive years.	None
Strix occidentalis caurina	northern spotted owl	FT/--	Northern spotted owl is generally found in coastal to mountainous mature coniferous forests. This species nests in cavities or on natural platforms of dense mature forests.	None
Mammals				
Canis lupus	gray wolf	FE/SCE	Large tracts of land that include forest, range and agriculturally developed areas. Reported in northern Siskiyou County near Oregon.	Low
Corynorhinus townsendii	Townsend's Big-eared Bat	--/SSC	This bat is known to inhabit mines, caves and buildings where it establishes roosts and maternal colonies to raise young; brood colonies can number into the hundreds of individuals. They feed on a variety of insects.	None
Gulo gulo	California wolverine	FPT/ST	A large mustelid. Found in Alpine and arctic tundra, boreal and mountain forests (primarily coniferous). Usually found in areas with snow on the ground in winter. Riparian areas may be important winter habitat. May disperse through atypical habitat. When inactive, occupies den in cave, rock crevice, under fallen tree in thicket, or similar site. Terrestrial and may climb trees.	None

Table A-2
Updated Potential Regionally Occurring Sensitive Wildlife Species
Lake Shastina Community Services District Wastewater Treatment Facility and Collections System Upgrades

Species Latin Name	Common Name	Status (Federal/State)[1]	General Habitat Requirements	Potential for Occurrence
Pekania pennanti	fisher, West Coast DPS	FPT/SCT	Utilizes low- to mid-elevation coniferous, mixed conifer and hardwood forests that have an abundant variety of physical structures (downed logs, snags, dense ground vegetation, open patches, etc.). These habitats provide a wide variety of prey which are key for the fisher. Fishers also occupy and reproduce in some managed forest landscapes and forest stands not classified as late-successional that provide some of the habitat elements important to fisher, such as relatively large trees, high canopy closure, abundant snags, down logs and variety of vegetation types.	None

1. Abbreviation/Acronym:

"-- ": No Status/Listing
DPS: Distinct Population Segment
ESU: Evolutionarily Significant Unit
FC: Federal Candidate. This designation includes taxa that require additional information to propose for listing pursuant to the Federal Endangered Species Act (FESA), as amended.
FD: Federally Delisted, but protected under other federal laws and management plans
FE: Federally-listed Endangered, pursuant to the FESA, as amended. This designation includes taxa that are in danger of extinction throughout all or a significant portion of their range.
FT: Federally-listed Threatened, pursuant to the FESA, as amended. This designation refers to species that are not presently threatened with extinction but are likely to become endangered throughout all or a significant portion of their range in the foreseeable future if special protection and management efforts are not undertaken.
FPT: Federally Proposed Threatened-while not fully "listed" the Proposed status requires protection as though the species was listed.
SCE: State Candidate Endangered-Species is a candidate for listing and is protected as such
SCT: State Candidate Threatened-Species is a candidate for listing and is protected as such.
SD: State Delisted, but protected under other state laws and regulations
SE: State-listed Endangered, pursuant to California Endangered Species Act (CESA). SE designation includes taxa that are in danger of extinction throughout all or a significant portion of their range.
SONCC: Southern Oregon Northern California Coast
SSC: Species of Special Concern are species that the CDFG consider of conservation concern. These species must be considered pursuant to CEQA.
ST: State-listed Threatened, pursuant to CESA. ST designation includes taxa that are likely to become endangered throughout a significant portion of their range.

Revised Project Components

B

The following table (**Table B-1**) provides a summary of the Revised Project components, outlining the various project element components, location and areas of impacts.

Table B-1 Summary of Revised Project Components

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
Pond 5 Liner	Wastewater Treatment Facility (Big Springs Road)	N/A	N/A	N/A	N/A	N/A	Liner applied to surface of existing Pond 5 that has been previously constructed. No new surface impacts.
Ton Lema Pipeline	From Tony Lema Drive at Rossburg Place to Pump/Lift Station B-120, crossing the 6th Fairway of the Scottish Links Golf Course.	Trenching for electrical and piping	1,400	1.5	4	N/A	Approximately 800 feet of project within minimally developed land of the golf course and vacant residential lot. Remaining 600 feet within existing streets.
Lake Shore Pipeline	On Lake Shore Drive starting near the intersection of Cottonwood Drive at Pump/Lift Station B-111 and terminating just south of Palmer Drive near Pump/Lift Station B-109.	Trenching for electrical and piping	3,100	1.5	4	N/A	All pipeline work will be within existing Lake Shore Drive, a paved street. Electrical line upgrades will be through existing underground conduit. Pump/Lift stations B-109 and B-111 are within the pipelines APE. No work will occur at B-109 as this station is being bypassed by the work.

Table B-1 Summary of Revised Project Components

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
Primary Tank	Wastewater Treatment Facility (Big Springs Road)	New tank construction in previously developed site	20	20	8	N/A	Install new tank in area of historic construction activity. Previous import of non-native fill at site for use in wastewater pond construction. Depth of construction may impact up to 2-feet of native soils below 8 feet.
Sludge Drying Bed	Wastewater Treatment Facility (Big Springs Road)	Concrete pad installation	100	45	2.5 feet of excavation	N/A	Drying bed located in previously excavated area adjacent to Ponds 1 and 2. Leachate pipeline connected to Ponds that are immediately adjacent.
Pond 1 Reconfiguration	Wastewater Treatment Facility (Big Springs Road)	N/A	N/A	N/a	N/A	N/A	Modify existing pond to accommodate headworks and wastewater flows. Work within existing Pond 1, no expansion of size
Pump/Lift Station B-100	Lake Shore Drive between intersections with Rainbow Drive and Indian Island.	Trenching for electrical and piping	75	1.5	1.5	N/A	Electrical upgrades within existing building. No work proposed for wet wells or pipelines. Construction of concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-101	East side of Spear Point Drive	Trenching for electrical and piping	75	1.5	1.5	N/A	Re-lining of existing wet wells. Upgrades to electrical inside existing building. Trenching for piping and electrical. Construction of concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station	West side of Spear	Trenching for electrical and	100	1.5	1.5	N/A	Shown as B-107 on District mapping. Re-lining of existing wet wells. Concrete pad and

Table B-1 Summary of Revised Project Components

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
B-102	Point Drive	piping					retaining wall for emergency generator. Trenching for piping and electrical. Upgrades to electrical inside existing building.
		Concrete pad for emergency generator	10	6	1	N/A	
		Retaining wall	20	1.5	1.5	1	
Pump/Lift Station B-103	Lake Shastina Dr. North of Lakeview Dr.	Trenching for electrical and piping	100	1.5	1.5	N/A	Electrical system & control upgrades inside building. Trenching for piping and electrical. Construction of concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-104	Inside the triangle created by Indian Island Dr	Trenching for electrical and piping	50	1.5	1.5	N/A	New liner, new submersible pumps, new discharge piping. Electrical system & control upgrades inside building. Trenching for piping and electrical. Construction of concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-105	On Browndeer Rd between Rainbow Dr and Antler Way	Trenching for electrical and piping	50	1.5	1.5	N/A	Trenching for piping and electrical. Upgrades to electrical inside existing building. Concrete pad and retaining wall for emergency generator. New steps for existing building.
		Concrete pad for emergency generator	10	6	1	N/A	
		Retaining wall	20	1.5	1.5	1	

Table B-1 Summary of Revised Project Components

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
		Building steps	3	3	1	0.5	
Pump/Lift Station B-106	Near 4632 Rainbow Dr.	Trenching for electrical and piping	50	1.5	1.5	N/A	Trenching for piping and electrical. Upgrades to electrical & controls inside existing building. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-107	Near 4204 Rainbow Dr.	Trenching for electrical and piping	50	1.5	1.5	N/A	New wet well liner, new submersible pumps, new discharge piping. Trenching for piping and electrical. Upgrades to electrical & controls inside existing building. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-108	At the end of Casper Rd.	Trenching for electrical and piping	50	1.5	1.5	N/A	New wet well liner, new submersible pumps, new discharge piping. Trenching for piping and electrical. Upgrades to electrical & controls inside existing building. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-109	Off of Lakeshore Dr between Palmer Dr and Tennis Ct	Trenching for electrical and piping	50	1.5	1.5	N/A	New wet well liner, new submersible pumps, new discharge piping. Trenching for piping and electrical. Upgrades to electrical & controls inside existing building. Concrete pad and retaining wall for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	

Table B-1 Summary of Revised Project Components

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
		Retaining wall	20	1.5	1.5	1	
Pump/Lift Station B-110	Off of Tennis Road on the Lake Shore Drive west area	Trenching for electrical and piping	50	1.5	1.5	N/A	New wet well liner, new submersible pumps, new discharge piping. Trenching for piping and electrical. Upgrades to electrical & controls inside existing building. Concrete pad and retaining wall for emergency generator. New steps for existing building.
		Concrete pad for emergency generator	10	6	1	N/A	
		Retaining wall	20	1.5	1.5	1	
		Building steps	3	3	1	0.5	
Pump/Lift Station B-111	Lake Shore Drive, just east of the Intersection with Cottonwood Drive	Trenching for electrical and piping	50	1.5	1.5	N/A	Station B-111 a part of the Lake Shore Drive pipeline work and impacts have been assessed as part of that APE. Trenching for piping and electrical. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-112	At the end of Valley View Dr.	Trenching for electrical and piping	50	1.5	1.5	N/A	New wet well liner, new submersible pumps, new discharge piping. Trenching for piping and electrical. Upgrades to electrical & controls inside existing building. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-113	At the end of Elk Ridge Rd.	Trenching for electrical and piping	50	1.5	1.5	N/A	Electrical system & control upgrades inside existing building. Trenching for piping and electrical. Concrete pad for emergency

Table B-1 Summary of Revised Project Components

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
		Concrete pad for emergency generator	10	6	1	N/A	generator.
Pump/Lift Station B-114	Intersection of Valley View Dr. and Mountain Wood Dr.	Trenching for electrical and piping	50	1.5	1.5	N/A	Electrical system & control upgrades inside existing building. Trenching for piping and electrical. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-115	Intersection of Riverside Dr. and Hidden Valley Rd	Trenching for electrical and piping	50	1.5	1.5	N/A	New wet well liner, new submersible pumps, new discharge piping. Electrical system & control upgrades inside existing building. Trenching for piping and electrical. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-116	Riverside Dr. Between Seldom Seen Ranch Rd and Mountain Wood Dr.	Trenching for electrical and piping	50	1.5	1.5	N/A	Electrical system & control upgrades inside existing building. Trenching for piping and electrical. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-117	On Brookside Rd between Lamplighter Pl and	Trenching for electrical and piping	50	1.5	1.5	N/A	New wet well liner, new submersible pumps, new discharge piping. Electrical system & control upgrades inside existing building.

Table B-1 Summary of Revised Project Components

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
	Sandy Ln	Concrete pad for emergency generator	10	6	1	N/A	Trenching for piping and electrical. Concrete pad for emergency generator.
Pump/Lift Station B-118	At the end of Wildhorse Pl.	Trenching for electrical and piping	50	1.5	1.5	N/A	New wet well liner, new submersible pumps, new discharge piping. Electrical system & control upgrades inside existing building. Trenching for piping and electrical. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	
Pump/Lift Station B-120	Adjacent to 6th Fairway of the Scottish Links Golf Course, near Fairway Drive.	Trenching for electrical and piping	50	1.5	1.5	N/A	This facility is part of the Tony Lema pipeline work and impacts have been assessed as part of that APE. Trenching for piping and electrical. Concrete pad for emergency generator.
		Concrete pad for emergency generator	10	6	1	N/A	

USFWS
2020 Species Lists

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
Phone: (530) 842-5763 Fax: (530) 842-4517

In Reply Refer To: January 03, 2020
Consultation Code: 08EYRE00-2018-SLI-0032
Event Code: 08EYRE00-2020-E-00125
Project Name: Lake Shastina WWTF

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies federally threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that this list does not reflect State listed species or fulfill requirements related to any California Department of Fish and Wildlife consultation. Additionally, this list does not include species covered by the National Marine Fisheries Service (NMFS). For NMFS species please see the related website at the following link:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

If your project does not involve Federal funding or permits and does not occur on Federal land, we recommend you review this list and determine if any of these species or critical habitat may be affected. If you determine that there will be no effects to federally listed or proposed species or critical habitat, there is no need to coordinate with the Service. If you think or know that there will be effects, please contact our office for further guidance. We can assist you in incorporating measures to avoid or minimize impacts, and discuss whether permits are needed.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential effects to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be

completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html).

Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

The table below outlines lead Service field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project. Please send any documentation regarding your project to that office. Please note that the lead Service field office for your consultation may not be the office listed above in the letterhead. Please visit the following link to view a map of Service field office jurisdictional boundaries:

http://www.fws.gov/yreka/specieslist/JurisdictionalBoundaryES_R8_20150313.pdf

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of the letter you submit to our office along with any request for consultation or correspondence about your project.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO

Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)

Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO

Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO

Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EYRE00-2018-SLI-0032

Event Code: 08EYRE00-2020-E-00125

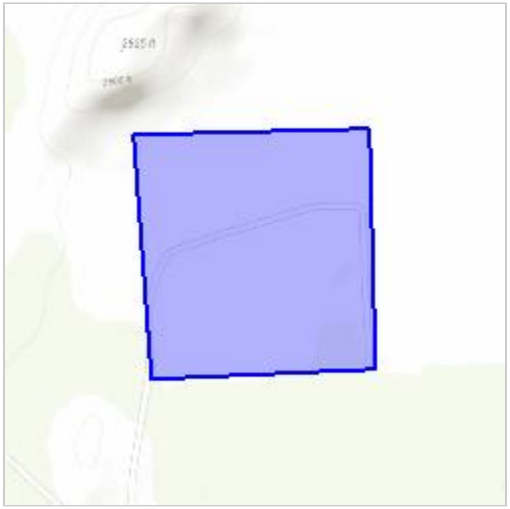
Project Name: Lake Shastina WWTF

Project Type: WASTEWATER FACILITY

Project Description: Upgrades to wastewater treatment facility

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.55752414903342N122.37816608883419W



Counties: Siskiyou, CA

Endangered Species Act Species

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: West coast DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Proposed Threatened
Gray Wolf *Canis lupus* Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
Lost River Sucker *Deltistes luxatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5604	Endangered
Shortnose Sucker *Chasmistes brevirostris* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7160	Endangered

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Gentner's Fritillary *Fritillaria gentneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8120	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
Phone: (530) 842-5763 Fax: (530) 842-4517

In Reply Refer To: January 03, 2020
Consultation Code: 08EYRE00-2018-SLI-0034
Event Code: 08EYRE00-2020-E-00119
Project Name: Lake Shore Sewer Extension

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies federally threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that this list does not reflect State listed species or fulfill requirements related to any California Department of Fish and Wildlife consultation. Additionally, this list does not include species covered by the National Marine Fisheries Service (NMFS). For NMFS species please see the related website at the following link:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

If your project does not involve Federal funding or permits and does not occur on Federal land, we recommend you review this list and determine if any of these species or critical habitat may be affected. If you determine that there will be no effects to federally listed or proposed species or critical habitat, there is no need to coordinate with the Service. If you think or know that there will be effects, please contact our office for further guidance. We can assist you in incorporating measures to avoid or minimize impacts, and discuss whether permits are needed.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential effects to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be

completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html).

Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

The table below outlines lead Service field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project. Please send any documentation regarding your project to that office. Please note that the lead Service field office for your consultation may not be the office listed above in the letterhead. Please visit the following link to view a map of Service field office jurisdictional boundaries:

http://www.fws.gov/yreka/specieslist/JurisdictionalBoundaryES_R8_20150313.pdf

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of the letter you submit to our office along with any request for consultation or correspondence about your project.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO

Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)

Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO

Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO

Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EYRE00-2018-SLI-0034

Event Code: 08EYRE00-2020-E-00119

Project Name: Lake Shore Sewer Extension

Project Type: WASTEWATER PIPELINE

Project Description: Extension of sewer along Lake Shore Drive to existing lift station

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.506600772499425N122.38037659536533W

Counties: Siskiyou, CA

Endangered Species Act Species

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: West coast DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Proposed Threatened
Gray Wolf *Canis lupus* Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
Lost River Sucker *Deltistes luxatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5604	Endangered
Shortnose Sucker *Chasmistes brevirostris* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7160	Endangered

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Gentner's Fritillary *Fritillaria gentneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8120	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
Phone: (530) 842-5763 Fax: (530) 842-4517

In Reply Refer To: January 03, 2020
Consultation Code: 08EYRE00-2018-SLI-0033
Event Code: 08EYRE00-2020-E-00122
Project Name: Tony Lema Sewer Extension

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies federally threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that this list does not reflect State listed species or fulfill requirements related to any California Department of Fish and Wildlife consultation. Additionally, this list does not include species covered by the National Marine Fisheries Service (NMFS). For NMFS species please see the related website at the following link:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

If your project does not involve Federal funding or permits and does not occur on Federal land, we recommend you review this list and determine if any of these species or critical habitat may be affected. If you determine that there will be no effects to federally listed or proposed species or critical habitat, there is no need to coordinate with the Service. If you think or know that there will be effects, please contact our office for further guidance. We can assist you in incorporating measures to avoid or minimize impacts, and discuss whether permits are needed.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential effects to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be

completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html).

Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

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www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

The table below outlines lead Service field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project. Please send any documentation regarding your project to that office. Please note that the lead Service field office for your consultation may not be the office listed above in the letterhead. Please visit the following link to view a map of Service field office jurisdictional boundaries:

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We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of the letter you submit to our office along with any request for consultation or correspondence about your project.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO

Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)

Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO

Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO

Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

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Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EYRE00-2018-SLI-0033

Event Code: 08EYRE00-2020-E-00122

Project Name: Tony Lema Sewer Extension

Project Type: WASTEWATER PIPELINE

Project Description: Extension of the Tony Lema sewer line across golf course to lift station

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.51706503027996N122.37035980408601W

Counties: Siskiyou, CA

Endangered Species Act Species

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: West coast DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Proposed Threatened
Gray Wolf *Canis lupus* Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
Lost River Sucker *Deltistes luxatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5604	Endangered
Shortnose Sucker *Chasmistes brevirostris* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7160	Endangered

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Gentner's Fritillary *Fritillaria gentneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8120	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
Phone: (530) 842-5763 Fax: (530) 842-4517

In Reply Refer To: January 03, 2020
Consultation Code: 08EYRE00-2020-SLI-0035
Event Code: 08EYRE00-2020-E-00128
Project Name: Lake Shastina Pump Stations North

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies federally threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that this list does not reflect State listed species or fulfill requirements related to any California Department of Fish and Wildlife consultation. Additionally, this list does not include species covered by the National Marine Fisheries Service (NMFS). For NMFS species please see the related website at the following link:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

If your project does not involve Federal funding or permits and does not occur on Federal land, we recommend you review this list and determine if any of these species or critical habitat may be affected. If you determine that there will be no effects to federally listed or proposed species or critical habitat, there is no need to coordinate with the Service. If you think or know that there will be effects, please contact our office for further guidance. We can assist you in incorporating measures to avoid or minimize impacts, and discuss whether permits are needed.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential effects to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be

completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html).

Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

The table below outlines lead Service field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project. Please send any documentation regarding your project to that office. Please note that the lead Service field office for your consultation may not be the office listed above in the letterhead. Please visit the following link to view a map of Service field office jurisdictional boundaries:

http://www.fws.gov/yreka/specieslist/JurisdictionalBoundaryES_R8_20150313.pdf

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of the letter you submit to our office along with any request for consultation or correspondence about your project.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO

Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)

Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO

Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO

Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EYRE00-2020-SLI-0035

Event Code: 08EYRE00-2020-E-00128

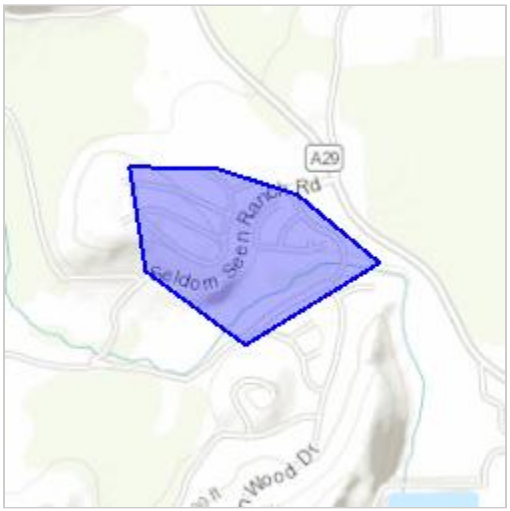
Project Name: Lake Shastina Pump Stations North

Project Type: WASTEWATER FACILITY

Project Description: Existing wastewater pump station improvements

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.548942107646425N122.38406339516884W



Counties: Siskiyou, CA

Endangered Species Act Species

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: West coast DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Proposed Threatened
Gray Wolf *Canis lupus* Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
Lost River Sucker *Deltistes luxatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5604	Endangered
Shortnose Sucker *Chasmistes brevirostris* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7160	Endangered

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Gentner's Fritillary *Fritillaria gentneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8120	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
Phone: (530) 842-5763 Fax: (530) 842-4517

In Reply Refer To: January 03, 2020
Consultation Code: 08EYRE00-2020-SLI-0036
Event Code: 08EYRE00-2020-E-00130
Project Name: Lake Shastina Pump Stations South

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies federally threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that this list does not reflect State listed species or fulfill requirements related to any California Department of Fish and Wildlife consultation. Additionally, this list does not include species covered by the National Marine Fisheries Service (NMFS). For NMFS species please see the related website at the following link:

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completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html).

Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

The table below outlines lead Service field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project. Please send any documentation regarding your project to that office. Please note that the lead Service field office for your consultation may not be the office listed above in the letterhead. Please visit the following link to view a map of Service field office jurisdictional boundaries:

http://www.fws.gov/yreka/specieslist/JurisdictionalBoundaryES_R8_20150313.pdf

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of the letter you submit to our office along with any request for consultation or correspondence about your project.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO

Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)

Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO

Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO

Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EYRE00-2020-SLI-0036

Event Code: 08EYRE00-2020-E-00130

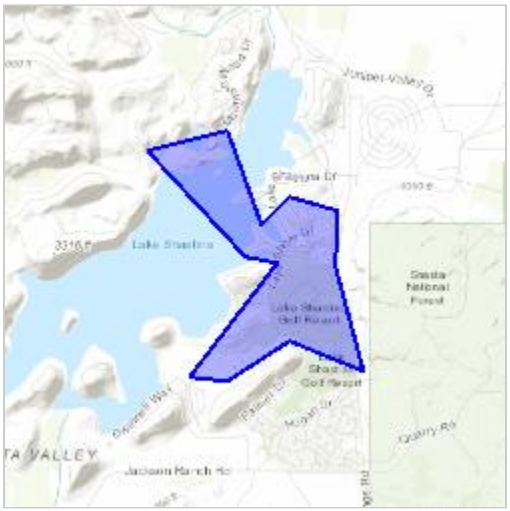
Project Name: Lake Shastina Pump Stations South

Project Type: WASTEWATER FACILITY

Project Description: Improvements to existing wastewater pump stations

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.51911586329433N122.37404523215622W



Counties: Siskiyou, CA

Endangered Species Act Species

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: West coast DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Proposed Threatened
Gray Wolf *Canis lupus* Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
Lost River Sucker *Deltistes luxatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5604	Endangered
Shortnose Sucker *Chasmistes brevirostris* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7160	Endangered

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Gentner's Fritillary *Fritillaria gentneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8120	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

UPDATED
Archaeological Report

C

UPDATED
ARCHAEOLOGICAL SURVEY REPORT
for the
Lake Shastina Community Services District
Wastewater Improvement Project

View Northwest along Lake Shore Drive

Resource Management
P.O. Box 146
Fort Jones, CA 96032

For

SHN Consulting Engineers & Geologists, Inc.
Redding, California

Report Prepared By:
Kathleen Tyler
(Archaeologist)

Updated December 2019
(Original Mach 2018)

Table of Contents

TABLES

APPENDICES

SUMMARY

This Archaeological Survey Report has been prepared for the Lake Shastina Community Services District Wastewater Improvement Project. This report reflects an update (December 2019) to the original survey report (March 2018). An updated record search was completed, new letters were sent out to the Tribal interests and the Native American Heritage Commission. Additionally, a recent pedestrian/field visit was also completed. This project includes work on public lands owned by the Lake Shastina Community Services District, private lands under the jurisdiction of the Lake Shastina Property Owners Association and other private lands owned by individuals. Work associated with this project includes:

1. Onsite upgrades to the wastewater treatment facility, within the limits of the Districts' existing wastewater facility footprint where previous work has been completed;
2. Upgrades and new construction of underground wastewater collection pipelines that lie within existing streets under the jurisdiction of the Lake Shastina Property Owners Association, and across privately owned lands that have been previously developed but do not have wastewater pipelines;
3. Upgrades within the existing footprints of wastewater lift stations that have had previous underground and above ground disturbances, including pipelines, above and below ground power lines, water lines, wastewater wet wells (underground pits), above ground lift stations, roads/driveways.

The project's archaeological Area of Potential Effects consists of approximately 15 acres in existing disturbed areas to accomplish upgrades.

Background information was collected through pre-field literature searches of the authors cultural resource files, a background records search through the Northeast Information Center of the California Historical Resources Information System, contact with the Native American Heritage Commission for a review of the Sacred Lands File and outreach to Native American Tribes. There were two previously documented archaeological investigations in and adjacent to the project area, with one resource identified as a scattered can dump.

On March 12-13, 2018, Resource Management archaeologist Kathy Tyler, BA, conducted a pedestrian survey of the Area of Potential Effects, using a mixture of survey strategies. This pedestrian survey was updated and completed as of December 2019. The wastewater treatment facility was evaluated in areas that had not been developed with wastewater ponds by walking transects at approximately 15 meters apart. Along the alignments of the new pipeline (existing roads and across the golf course), a single transect along the proposed alignment was walked, with other areas of the receiving transects approximately 15 meters apart. All the wastewater lift stations were walked in their entirety, due to their limited size at each of the 20 sites.

The report of this investigation is on file with the author, SHN Consulting Engineers & Geologists, and the Northeast Information Center, Chico State University, on behalf of Resource Management, Fort Jones, California.

STATEMENT OF CONFIDENTIALITY

As nonrenewable resources, archaeological sites can be significantly impacted by disturbances that can affect their cultural, scientific, and artistic values. Disclosure of site information to the public may be in

violation of both federal and state laws. To discourage damage resulting from vandalism and artifact looting, cultural resources locations should be kept confidential and report distribution restricted. Applicable U.S. laws include, but are not be limited to, Section 304 of the National Historic Preservation Act (16 USC 470w-3) and the Archeological Resources Protection Act of 1979, as amended (PL 96-95; 93 Stat. 721; 16 USC 47Oaa et seq.). California state laws that apply include, but are not be limited to, Government Code Sections 6250 et seq. and 6254 et seq.

INTRODUCTION

The study was undertaken to be in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) standards to 1) identify and record cultural resources within the Area of Potential Effects (APE) and, 2) to make preliminary evaluations and recommendations based on a found resources significance according to the criteria of the National Historic Preservation Act (NHPA). Work proposed by this project is being funded by the State of California Proposition 1 Small Community Wastewater Program.

Work under this project consists of upgrades to the existing wastewater treatment facility, installation of new wastewater collection pipelines in existing roads and on new ground, and upgrades to existing wastewater lift stations. The project's APE consists of approximately 15 acres on previously disturbed areas. Due to the complexity and numerous areas for the undertakings of the project, a summary of the APE components is provided as **Table 1**.

All work associated with this project report was undertaken and developed by Kathleen Tyler, archaeologist for Resource Management. Ms. Tyler has been working in the field of archaeology for 17 years, providing data collection and assessment for a variety of projects. She holds a BA in Ancient History and Archaeology from Leicester University, and a BA in Organizational Leadership from Simpson University. Her work experience includes projects that required compliance for local jurisdictions, NEPA, Section 106 and CEQA.

LOCATION

The Lake Shastina Community Services District (District) and its residential community is situated north of the inactive volcano of Mt. Shasta, approximately 12 miles north of Weed, California. The District lies between two major transportation routes; County Roads A29 (Big Springs Road) and Jackson Ranch Road. The entire District has a network of private roads that are maintained by the Lake Shastina Property Owners Association (LSPOA), as well as private roads and driveways to individual residences. The County of Siskiyou operates and maintains Dwinell Way that accesses a county maintained campground and a series of boat ramps within the District. The District has two privately owned and operated golf courses, as well as several public parks and private boat ramps.

The Lake Shastina Wastewater Treatment Project is located within the Lake Shastina USGS 7.5' topographic quadrangle at Township 42N, Range 5W, portions of Sections 1, 11, 12 and 24, Mt. Diablo Meridian, Lake Shastina quadrangle. **Figure 1** shows the Project Location and **Figures 2, 3** and **4** show the APE of the various project components. Figures are included in **Appendix I**.

NATURAL SETTING

Geologically, the project area is situated at generally 3,000 feet in elevation above mean sea level (msl). Quaternary basaltic lava flows have formed ridges and valleys and give the appearance of a rocky and

rolling landscape. Several large springs surface either through gaps in the lava or remain on surface after snow melt due to the hard, subsurface volcanic layer.

Table 1
Area of Potential Effects Summary

Lead Agency:	**State Water Resources Control Board**	**Lead Agency:**	**Lake Shastina Community Services District**
Project Title:	**Lake Shastina Community Services District Wastewater Improvement Project**	**Date:**	**March 2018**

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
Pond 5 Liner	Wastewater Treatment Facility (Big Springs Road)					N/A	Liner applied to surface of existing Pond 5 that has been previously constructed. No new surface impacts.
Ton Lema Pipeline	From Tony Lema Drive at Rossburg Place to Pump/Lift Station B-120, crossing the 6th Fairway of the Scottish Links Golf Course.	*1	1,400	1.5	4	N/A	Approximately 800 feet of project within minimally developed land of the golf course and vacant residential lot. Remaining 600 feet within existing streets.
Lake Shore Pipeline	On Lake Shore Drive starting near the intersection of Cottonwood Drive at Pump/Lift Station	*1	3,100	1.5	4	N/A	All pipeline work will be within existing Lake Shore Drive, a paved street. Electrical line upgrades will be through existing underground conduit. Pump/Lift stations B-109 and B-111 are within the pipelines APE. No work will occur at B-109.

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
	B-111 and terminating just south of Palmer Drive near Pump/Lift Station B-109.						
Primary Tank	Wastewater Treatment Facility (Big Springs Road)		20	20	8	N/A	Install new tank in area of historic construction activity. Previous import of non-native fill at site for use in wastewater pond construction. Depth of construction may impact up to 2-feet of native soils below 8 feet.
Sludge Drying Bed	Wastewater Treatment Facility (Big Springs Road)	*2	100	45	2.5 feet of excavation	N/A	Drying bed located in previously excavated area adjacent to Ponds 1 and 2. Leachate pipeline connected to Ponds that are immediately adjacent.
Pond 1 Reconfiguration	Wastewater Treatment Facility (Big Springs Road)				N/A	N/A	Modify existing pond to accommodate headworks and wastewater flows. Work within existing Pond 1, no expansion of size
Pump/Lift Station B-100	Lake Shore Drive between intersections with Rainbow Drive and Indian Island.	*1 *2	75 10	1.5 6	1.5 1	N/A	Electrical upgrades within existing building only. No work proposed for wet wells or pipelines. Construction of concrete pad.

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
Pump/Lift Station B-101	East side of Spear Point Drive	*1 *2	75 10	1.5 6	1.5 1	N/A	Re-lining of existing wet wells. Upgrades to electrical inside existing building. Construction of concrete pad and trenching.
Pump/Lift Station B-102	West side of Spear Point Drive	*1 *2 *3	100 10 20	1.5 6 1.5	1.5 1 1.5	N/A 1	Shown as B-107 on District mapping. Re-lining of existing wet wells. Concrete pad and retaining wall, Upgrades to electrical inside existing building.
Pump/Lift Station B-103	Lake Shastina Dr. North of Lakeview Dr.	*1 *2	100 10	1.5 6	1.5 1	N/A	Electrical system upgrades, control upgrades, backup power, and telemetry
Pump/Lift Station B-104	Inside the triangle created by Indian Island Dr	*1 *2	50 10	1.5 6	1.5 1	N/A	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, concrete pad, and telemetry
Pump/Lift Station B-105	On Browndeer Rd between Rainbow Dr and Antler Way	*1 *2 *3 *4	50 10 20 3	1.5 6 1.5 3	1.5 1 1.5 1	N/A N/A 1 .5	Electrical system upgrades, control upgrades, backup power, telemetry, trenching, retaining wall and concrete pad
Pump/Lift Station B-106	Near 4632 Rainbow Dr.	*1 *2	50 10	1.5 6	1.5 1	N/A	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
Pump/Lift Station B-107	Near 4204 Rainbow Dr.	*1 *2	50 10	1.5 6	1.5 1	N/A	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad
Pump/Lift Station B-108	At the end of Casper Rd.	*1 *2	50 10	1.5 6	1.5 1	N/A	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, trenching, retaining wall and concrete pad
Pump/Lift Station B-109	Off of Lakeshore Dr between Palmer Dr and Tennis Ct	*1 *2 *3	50 10 20	1.5 6 1.5	1.5 1 1.5	N/A N/A 1	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, trenching, retaining wall, steps and concrete pad
Pump/Lift Station B-110	Off of Tennis Road on the Lake Shore Drive west area	*1 *2 *3 *4	50 10 20 3	1.5 6 1.5 3	1.5 1 1.5 1	N/A N/A 1 .5	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, concrete pad, retaining wall, stairs, and trenching.
Pump/Lift Station B-111	Lake Shore Drive, just east of the Intersection with Cottonwood Drive	*1 *2	50 10	1.5 6	1.5 1	N/A	Station B-111 a part of the Lake Shore Drive pipeline work and impacts have been assessed as part of that APR. Trenching for conduit and concrete pad.

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
Pump/Lift Station B-112	At the end of Valley View Dr.	*1 *2	50 10	1.5 6	1.5 1	N/A	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad
Pump/Lift Station B-113	At the end of Elk Ridge Rd.	*1 *2	50 10	1.5 6	1.5 1	N/A	Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad
Pump/Lift Station B-114	Intersection of Valley View Dr. and Mountain Wood Dr.	*1 *2	50 10	1.5 6	1.5 1	N/A	Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad
Pump/Lift Station B-115	Intersection of Riverside Dr. and Hidden Valley Rd	*1 *2	50 10	1.5 6	1.5 1	N/A	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad
Pump/Lift Station B-116	Riverside Dr. Between Seldom Seen Ranch Rd and Mountain Wood Dr.	*1 *2	50 10	1.5 6	1.5 1	N/A	Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad
Pump/Lift Station B-117	On Brookside Rd between Lamplighter Pl and Sandy Ln	*1 *2	50 10	1.5 6	1.5 1	N/A	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad

Project Component/Activity	Location	Ground Disturbing Activity	Length (ft.)	Width (ft.)	Depth below ground surface (ft.)	Height above ground surface (ft.)	Notes
Pump/Lift Station B-118	At the end of Wildhorse Pl.	*1 *2	50 10	1.5 6	1.5 1	N/A	New liner, new submersible pumps, new discharge piping, Electrical system upgrades, control upgrades, backup power, telemetry, trenching and concrete pad
Pump/Lift Station B-120	Adjacent to 6th Fairway of the Scottish Links Golf Course, near Fairway Drive.	*1 *2	50 10	1.5 6	1.5 1	N/A	This facility is part of the Tony Lema pipeline work and impacts have been assessed as part of that APE. GDA includes trenching and concrete pad

*1: Trenching for electrical and piping

*2: Concrete Pad

*3: Retaining Wall

*4: Steps

The soil composition within the project area is primarily comprised of Delaney Sand, Gravelly Sand, Stony Sand, Mary Stony Loam and Mary Rock Outcrop Complex on slopes of 0-50%. On slopes 0-9% soil attributes include Dotta Gravelly Loam, Louie Loam, Redola Loam, Salisbury Loam, Salisbury Gravelly Clay Loam, and Xerofluvents. Overall soil development has been poor. The ground surface is basically stony, with weathering volcanic material transforming into volcanic sand.

This area is naturally dominated by dense manzanita (*Arctostaphylos patula)*, sagebrush (*Artemisia tridentata)*, and buckbrush (*Ceanothus cuneatus)*), with stands of juniper (*Juniperus occidentalils*), Ponderosa pine (*Pinus ponderosa*), and varieties of native/non-native grasses. Agricultural fields have been developed within the vicinity where water is available, and these fields are dominated by alfalfa grass. The golf course property has had native vegetation removed on fairways and greens, replacing it with turf grasses used for golf courses.

CULTURAL SETTING

The project area is within the accepted traditional Shasta Indian Territory. It is understood that Shasta Valley and the tributaries contained within was an important to the Shasta Valley branch of the Shasta Indians. Since the territory where the Shasta lived provided all of their food needs, they developed a subsistence economy based on hunting, fishing, and gathering patterns. Seasonal base camps were located at key resource areas and were visited once a year depending on the availability of the targeted subsistence resource. After the food gathering cycle was over the Shasta would return to their permanent villages with their food stores to spend the winters. Structures in winter villages might include rectangular multi-family dwellings, assembly houses, communal men's sweathouses, smaller communal sweathouses, and menstrual huts.

The Shasta Indians utilized a large array of animal food sources such as deer, elk, antelope, big horn sheep, bear, rodents, turtles, crayfish, insects, mussels, eels, salmon, other fish, small mammals, and various birds. The Shasta similarly had a wide variety of plants, which occupied a substantial part of their living resources. In general, the seasons dictated their food procurement activities. For instance, starting in February they would fish; early spring (March) they would gather a variety of plants for greens; April and May would be key times to gather geophytes (root and bulb plants). During June they would fish, and July would be the time to gather seeds. In August, the berries were ready for harvest, and in September and October were the times to harvest acorns. They would fish again in November, and December was normally a time to stay in the permanent village. Deer were hunted primarily in January; however, game was hunted year round. It should be noted that even though they had many choices their staples were acorns, deer, and fish; some areas the dependence of the fleshy root crops was also a staple. Over hundreds of years of co-existence with the local flora and fauna the Shasta developed a sophisticated knowledge of their environment that would sustain them until contact with the Euro-Americans. Most of the project area could have been passed through as they followed their prehistoric pattern of hunting and gathering. Some Shasta cultural use plants located in the project area were oaks, pines, elderberries, gooseberries, currants, manzanita, and deerbrush.

Some pipe tips used in smoking Indian tobacco were sometimes carved out of serpentine. Rock art in the form of cupules was used for rain ceremonies and female fertility. The most renowned Shasta cupules rock now located in front of the Fort Jones museum is named the "Rain Rock". House pits, middens, fire rings, hearths, and burial locations (the Shasta sometimes buried their dead by placing rocks over them) were features typical of Shasta sites. Sometimes food was stored by piling rocks over baskets or placing them in talus pits, otherwise food was stored in baskets or caches near the shelters. Other artifacts found in the later period (Pacific) were Gunther barbed projectile points made out of obsidian, jasper, and CCS (cryptocrystalline silicates). Grinding stones (metates) were used for the processing of roots and other

plants. The hopper/mortars were used for processing acorns.

The Shasta people used the of local flora and fauna as raw material sources for manufacturing an immense array of primary and secondary tools and implements. The collection and processing of the various food resources were accompanied with use of a wide variety of wood, bone, and stone artifacts. Only fragmentary evidence of their material culture remains. This is due in part to how perishable their belongings were, and in part to the impacts to prehistoric archaeological sites resulting from later historic land use practices such as farming, mining, and logging.

POST-CONTACT SETTING

In the 1820's and 1830's, the first European Americans exploring and utilizing resources in the vicinity were the Hudson Bay Company fur trappers. These historical figures, namely Peter Skene Ogden, Alexander McLeod, Michel La Framboise, and John Work, were instrumental in opening the area which led to the subsequent development of the Oregon to California Trail and settlement in Siskiyou County.

The arrival of a significant number of gold miners, beginning after the discovery of gold nearby in 1850, prompted many individuals to settle onto the land to produce the needed goods and supplies sought by the miners. Many families went into the ranching and dairying industry. As Harry Wells states in his history of Siskiyou County, "As early as 1851 land claims were taken up in Scott and Shasta Valleys, the first industry being the cutting of hay for the Yreka (market)…as well as the grazing of cattle for a supply of beef." (Wells, 1881). In addition, as a response to the economic growth within the ranching and dairying industries, Siskiyou County's principal exports by 1877, were wool, butter, and flour.

Initially, many of the early ranches produced hay relying on their own water supply. When the Prather brothers began to delve into Siskiyou County real estate by buying a large amount of acreage in and north of Montague, California, they realized the need for additional water to increase land production. In 1885, the Prather's, along with their East San Francisco Bay area investors, formed a corporation known as the 'Shasta Land and Cattle Company'. After a succession of failed attempts to transport water for irrigation, stock, and domestic use, the Shasta Land and Cattle Company sold 2,600 acres bordering the north boundary of Montague in 1908.

While subsequent pumping stations and ditches extended some of the farmable land, it was the arrival of a young doctor from Chicago in 1891 who became a local icon and benevolent financier in Siskiyou County. Dr. (only known as Dr. in historical literature that was accessed) Dwinnell, a Montague resident, soon became an advocate for water. From 1913-1915, Dr. Dwinnell helped establish the Shasta River, Big Springs, and Mt. Shasta Land Company water districts. Seeking potential water diversion systems to areas in Shasta Valley, a topographical map revealed a natural reservoir site 15 miles southeast of Montague.

On April 13, 1925, the Montague Water Conservation District was formed. Enticed with the potential to have a large lake gravity feed water along a canal with lateral ditches to 23,000 acres in Shasta Valley, the District began feasibility studies. As construction began in 1926, it was soon apparent that the reservoir became riddled with leakage problems. After numerous financial disasters amongst the farmers and investors, the reservoir gradually retained more water as lake silt and debris worked their way into the crevices.

The land in the area was, and continues to be, conducive to raising cattle and sheep for market – often by families of the original homesteaders. Raising cattle and the production of hay is still evident although the large ranch holdings are gradually yielding to the development of smaller parcels of land. During

more prosperous times, the new construction of homes and structures appear in areas that were once pasture. More homes, too, are constructed in timbered areas that are prone to wildland fires with limited escape routes.

Of interest is the organization in 1928 of the Shastina Fire Department. It was formed after two disastrous fires in 1927 and 1928 where a number of homes and businesses in Shastina were destroyed. In 1952 the Shastina Fire District obtained a new 1,000 gallon pumper, which was stationed at the Long-Bell fire station.

While the lake water is still used for irrigation purposes, the area of Lake Shastina, since the 1970s, has been an area of interest for real-estate development. Featuring two golf courses and a modest resort, it has the added attraction of being practically located at the base of Mt. Shasta with easy drivable access to the communities of Yreka (north), Weed and the City of Mt. Shasta (south).

METHODOLOGY

Native American Heritage Commission

As part of this survey/report update, on December 10, 2019, Resource Management mailed a request to the Native American Heritage Commission (NAHC) requesting a search of the Sacred Lands Files for a listing of individuals who might have knowledge of cultural resources within the APE. Results were received on December 16, 2019, and are included in **Appendix III**.

Native American Tribal Consultation

As part of this survey/report update, additional letters (dated December 13, 2019) were sent to the Quartz Valley Indian Reservation, Karuk Tribe, and the Shasta Nation, requesting information on any known archaeological or cultural sites in the project area. These letters we in addition to the earlier requests sent to these tribes as part of the original work for this project in 2018. As of the date of this report, no responses have been received these Tribal Consultations. Refer to **Appendix IV**.

Records and Literature Search

As part of this survey/report update, the Northeast Center of the California Historical Resources Information System (CHRIS) was again contacted on December 13, 2019, for information on previously documented archaeological survey results and of any known recorded sites located within one-eighth of a mile of the project area. Based on the findings of the CHRIS (I.C. file #_D19-181) eight previously documented archaeological sites have been recorded with in a ¼ mile radius of the project location (**Appendix V**).

Additional search of historical maps, literature and reports for the area were reviewed (Copies of GLO Plat maps 1856 & 1866 which depicted the Shasta River and streams in the project vicinity.) A copy of Shasta Valley Sheet No. 10 (1922) also depicts roads, structures, and a power line in the project vicinity. These maps were viewed to evaluate potential evidence of historical uses at the site, but these reviews failed to locate any evidence of historic-era developments or prehistoric sites within the APE other than those shown in the CHRIS results.

FIELD WORK RESULTS

The APE for this project consists of the publicly owned lands where the District's wastewater treatment facility and wastewater lift stations are located, privately-owned roads that contain existing underground wastewater and other pipelines, and private parcels of land that have been developed as a golf course and contain underground water and power lines.

An intensive survey strategy was implemented by Resource Management archaeologist Kathleen Tyler on March 12 and 13, 2018, with updates and reevaluations on December 21, 2019, using a mixture of survey strategies. The wastewater treatment facility was evaluated in areas that had not been developed with wastewater ponds by walking transect at approximately 15 meters apart. Along the alignments of the new pipeline (existing roads and across the golf course), a single transect along the alignment was walked, with the remainder of the APE receiving transects at approximately 15 meter spacing. At the wastewater lift stations, the entire facilities were again walked due to their limited size, taking into consideration the proposed work at these sites.

During surveys, ground visibility on approximately one third of the project area was prohibitive due to dense vegetation such as manzanita, rabbit brush, and vegetative debris (leaf litter, needle cast, and previously shredded and decomposing brush and other vegetative matter). Where ground visibility was limited, a meandering survey between brush patches was employed and good coverage was still accomplished as not all areas were obstructed. Most of the area surveyed reflects previous land-altering activities such as clearing, grading and excavating for wastewater facility improvements; leveling the ground surfaces for road building and laying in of pipes or facility cables, and driveway intersections; development of the golf course, including grading and vegetation manipulation (golf turf management), installation of underground water and power lines, roads and cart-paths.

Random historic debris, such as wood fence posts, and sections of rusted barbed wire (4-feet in length), were located in some parcels along with recent trash. Non-historic debris such as plastic water bottles and paper products that can be easily blown about, were lodged in the brush due to the propensity of high winds in the area.

No cultural resources were located during the field investigations. As this was solely a surface survey, no surface survey can guarantee to have located subsurface archaeological materials if they are present. If prehistoric or historic material is discovered in the course of future project implementation, work at the site should be suspended until the finds are evaluated by a qualified archaeologist and, in the case of prehistoric material, the appropriate Native American tribes consulted.

REPORT OF FINDINGS

No prehistoric or potentially significant historic archaeological resources were located within the APE as a result of the records search and field investigations. Areas outside of the immediate proposed work areas within the APE has dense patches of intermixed vegetation consisting of manzanita, grasses, rabbitbrush, juniper, young pines and the ground is covered with considerable needle cast. The sandy soils dominating the project area also have a tendency to move during high wind events and have the potential to bury, or rebury, materials left on the surface of the landscape. Prehistoric sites may be temporarily obliterated due to this kind of natural soil movement.

Table 2
Recorded Cultural Resource Sites within ¼ Mile of Project

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-47-000642	CA-SIS-000642	Other - GH-6		Prehistoric	AP02	1978 (BOWMAN / HENTON)	000511
P-47-000645	CA-SIS-000645H	Other - LS-1		Historic	AH04; AH11	1978 (KOWTA / MANNING)	000511
P-47-000932	CA-SIS-000932H		Site	Historic	AH02; AH11	1983 (William Kinnicutt, Professional Archaeological Services); 2010 (T. Vaughan, Coyote & Fox Enterprises)	003330
P-47-000933	CA-SIS-000933	Other - Old Sawmill Can Dump	Site	Historic	AH04	1983 (William Kinnicutt, Professional Archaeological Services); 2010 (C. Crackel, Coyote and Fox Enterprises)	003330, 011052
P-47-003421	CA-SIS-003421H	BLM - CA-030-224; Other - VABM Fence Site	Site	Historic	AH11	1984 (Eric Ritter, Bureau of Land Management); 2010 (C. Crackel & T. Vaughan, Coyote & Fox Enterprises)	011052
P-47-003461	CA-SIS-003461H	Other - SEMIH'S ROCK FENCE		Historic	AH11	2003 (J. WOLFF, TRUDY VAUGHAN, COYOTE & FOX ENTERPRISES)	005633
P-47-005360		Other - HVR01	Site	Historic	AH06	2016 (John Jones, Native-X, Inc.)	013157
P-47-005361	CA-SIS-005361H	Other - M2-MWCD Main Canal; Resource Name - Montague Water Conservation District Main Canal	Structure	Historic	HP20; HP21	2016 (R. Scott Baxter and Heidi Koenig, ESA)	014268
P-47-005435		Submitter ID - Zen 4	Site	Historic	AH04	2015 (John S. Kessler, John Kessler Forestry)	013391

The sites listed above in **Table 2** are within a ¼ mile of the project that are on file with CHRIS. Review of the previous investigations found one archaeological site identified near the project location (but outside of the APE) and documented in 2015 by John Kessler. This site consisted of 24 solder top cans scattered over an area approximately 2,290 feet x 60 feet, on gently sloping ground (identified originally as Zen 3). Documentation shows an Evaluation of Significance was given as not significant by Richard Jenkins, CAL-Fire Archaeologist, and that the site would not receive protection measures.

The prehistoric site is located to the east ¼ mile from the sewage disposal ponds, at the northern most location of the project, the site is off road and will not be impacted by the project. The other six historic sites are well outside of the APE.

RECOMMENDATIONS

Based on the records search, field investigations and historic ground disturbing activities that have occurred over much of the APE, and especially at the sites where wastewater improvements are proposed by the Districts' project, no cultural resources were identified within the APE. Provided that all ground-disturbing activities are confined to the APE as is currently defined, a finding of No Historic Properties Affected is recommended. No further archaeological study is recommended at this time.

To prevent unanticipated impacts to buried cultural resources, it is recommended that mitigation measures be implemented as part of construction work to protect cultural resources that may be inadvertently found during excavation and grading activities. Also, it is recommended that mitigation measures for the unanticipated discovery of human remains be included in construction contracts, including the provision for compliance with regulations of the Native American Graves Protection and Repatriation Act, as applicable.

REFERENCES CITED AND/OR UTILIZED

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Debo, Angie. 1979. *A History of the Indians of the United States.* In: The Civilization of the American Indian Series, Volume 106, Sixth Printing. University of Oklahoma Press, Oklahoma.

Drennon, Nancy. 1998. *Siskiyou, Then & Now*, Part I of II and Part II of II. On file at the Siskiyou County Museum, Yreka, California.

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Silva, Richard and Orsola. 2001. *2001 Tour Book of Oregon To California Trail, Sacramento River Segment.* Published by the Siskiyou County Historical Society, Yreka, California.

Silver, Shirley. 1978. *Shasta Peoples***.** In: The Handbook of North American Indians, Volume 8. William Sturtevant, Editor. The Smithsonian Institution, Washington, D.C.

Wells, Harry L. 1881. *History of Siskiyou County, California*. D.J. Stewart and Co., Oakland, California.

Winthrop, Robert H. 1986. *Survival and Adaptation Among the Shasta Indians*. Prepared for the U.S. Forest Service, Klamath National Forest. Winthrop Associates, Ashland, Oregon.

Other Reference Materials Cited and/or Utilized:

Web Sources:
USDA Natural Resource Conservation Service (https://websoilsurvey.sc.egov.usda.gov/ provide web links or what data you got from these online sources) (mapped soil types of the area)
http://maps.conservation.ca.gov/cgs/gmc/
California Geological Survey Tertiary
GENERAL LITHOLOGY volcanic rocks

Appendix I
Maps of the Project Area

Figure 1 – Area of Potential Effects General Map Locations

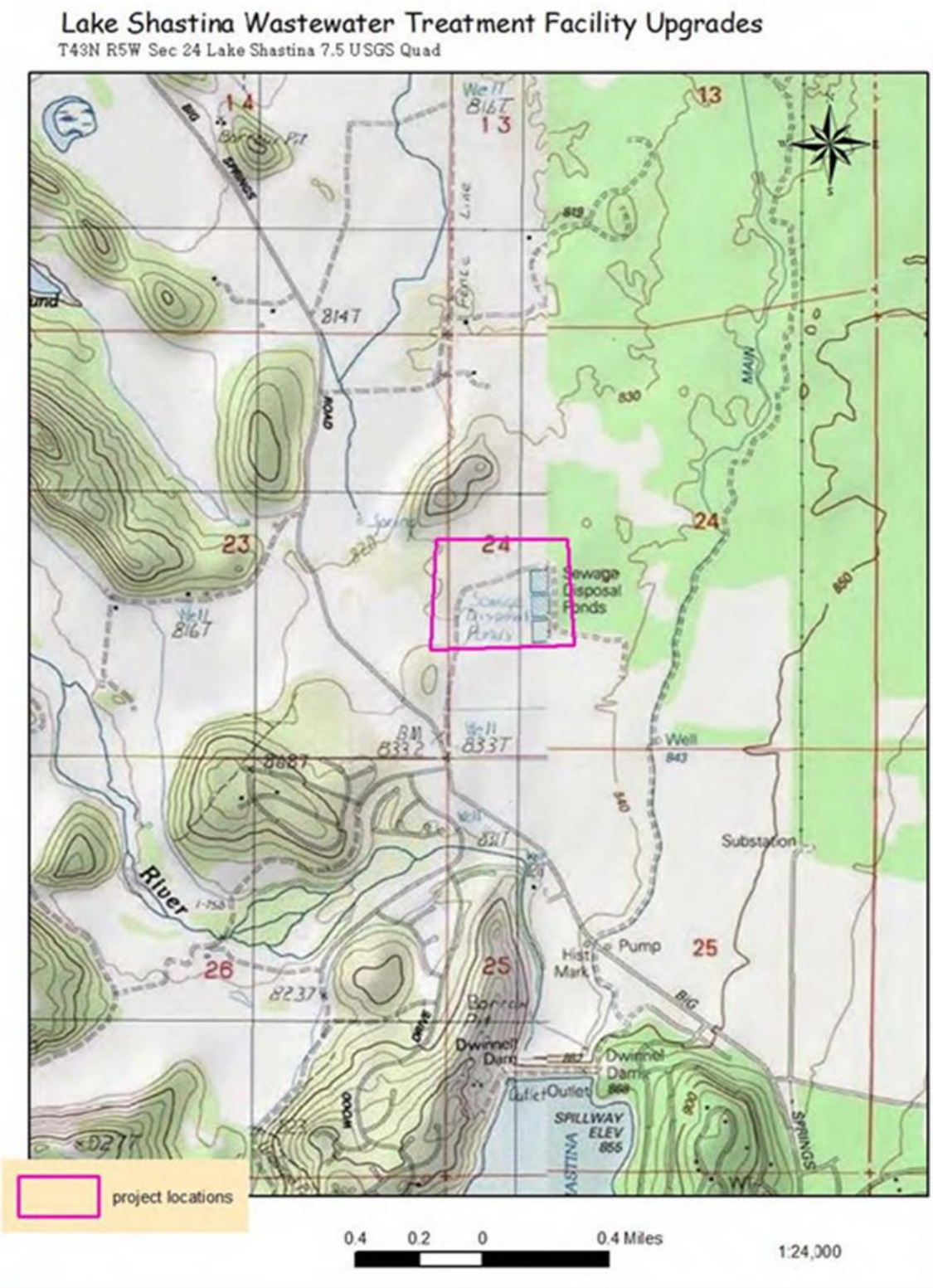

Figure 2 – Area of Potential Effects of Wastewater Treatment Facility

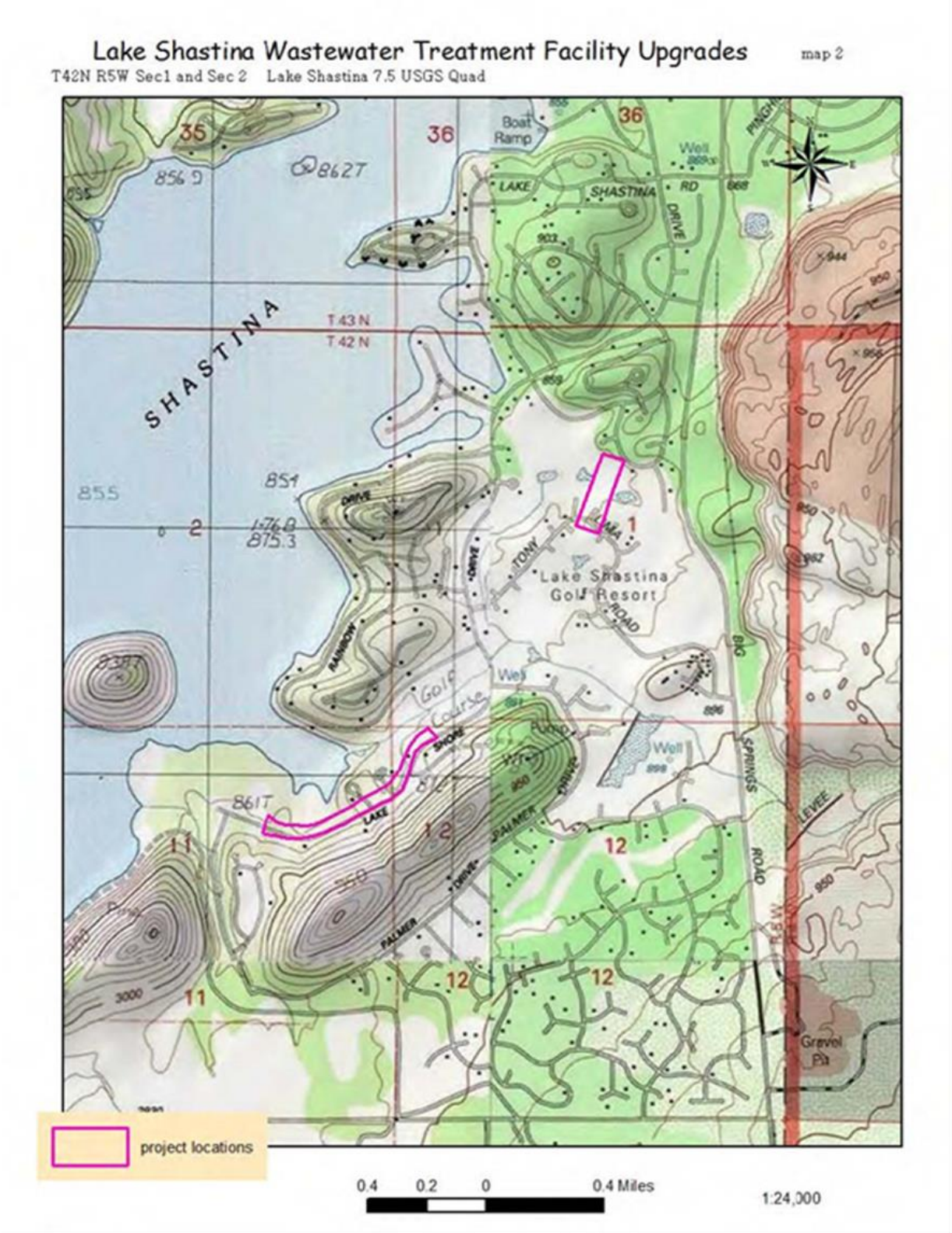

Figure 3 – Area of Potential Effects Lake Shore and Tony Lema Pipelines

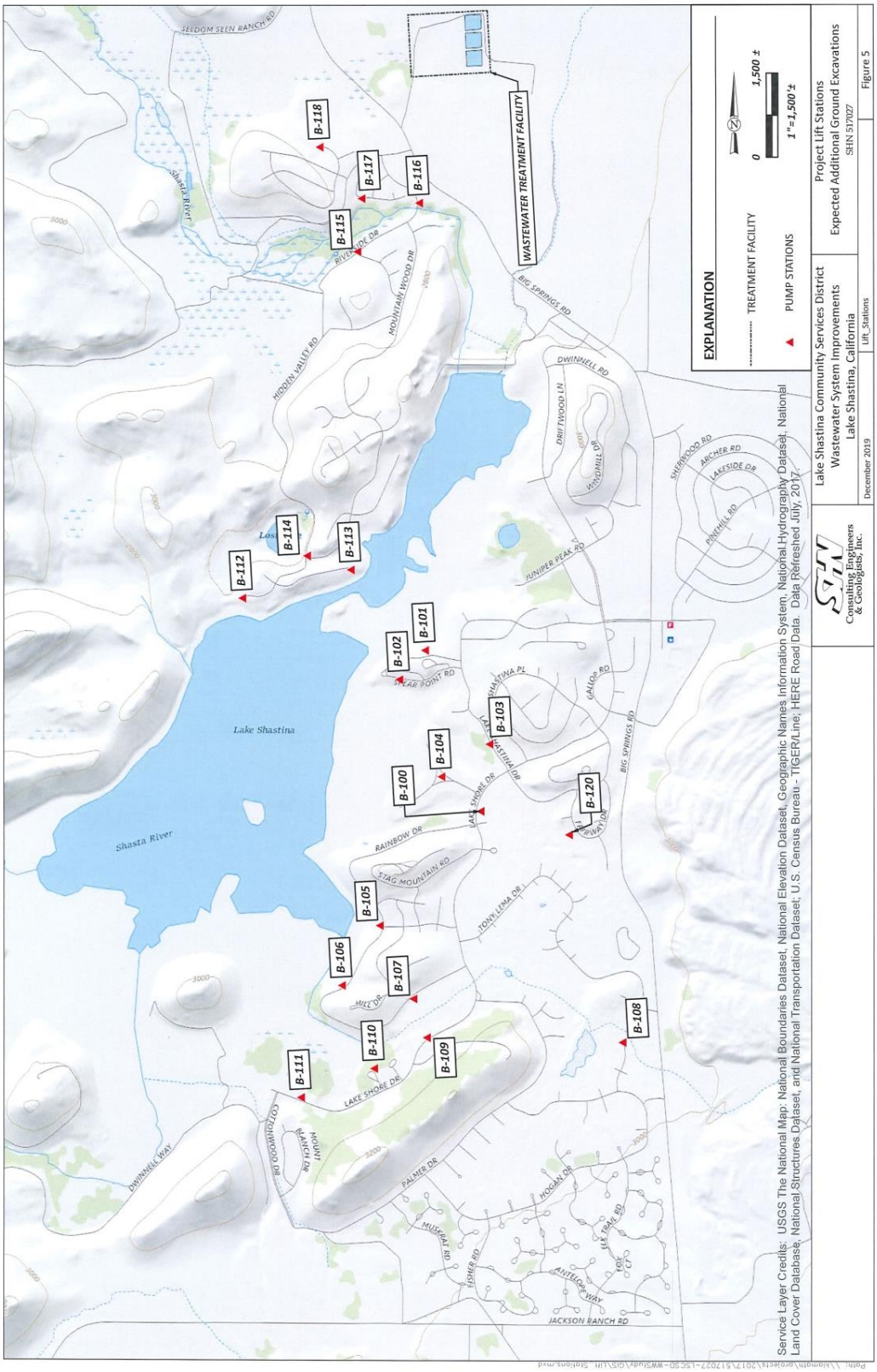

Figure 4 – Area of Potential Effects all Project Lift Stations

Appendix II

Photographs of the Project Area

***Photo 1**-View Southeast from Lake Shore Drive showing the areas outside of roadways where project is being developed. March 12, 2018*

***Photo 2**-View Northwest from Cerrudo Court towards Rossburg Place showing vegetation conditions between paved streets and developed golf course. March 12, 2018*

Appendix III

Native American Heritage Commission Correspondence

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

December 16, 2019

Larry Alexander
Northern California Resource Center

VIA Email to: lalexander@sisqtel.net

RE: Lake Shastina Community Services District Wastewater System Improvements, Siskiyou County

Dear Mr. Alexander:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,

Nancy Gonzalez-Lopez
Staff Services Analyst

Attachment

Appendix IV

Tribal Consultation Letters

Dec 13, 2019
Shasta Nation
Chairman Roy Hall Jr.
P.O. Box 1054
Yreka, CA 96097

Dear Chairman Hall, This is a 2nd request a response or concerns to this project

The Lake Shastina Community Services District Wastewater Improvement Project

This project includes work on public lands owned by the Lake Shastina Community Services District, private lands under the jurisdiction of the Lake Shastina Property Owners Association and other private lands owned by individuals. Work associated with this project includes:

1. Onsite upgrades to the wastewater treatment facility, within the limits of the Districts' existing wastewater facility footprint where previous work has been completed;

2. Upgrades and new construction of underground wastewater collection pipelines that lie within existing streets under the jurisdiction of the Lake Shastina Property Owners Association, and across privately owned lands that have been previously developed but do not have wastewater pipelines;

3. Upgrades within the existing footprints of wastewater lift stations that have had previous underground and above ground disturbances, including pipelines, above and below ground power lines, water lines, wastewater wet wells (underground pits), above ground lift stations, roads/driveways.

The project's archaeological Area of Potential Effects consists of approximately 15 acres in existing disturbed areas to accomplish upgrades.

This letter is a second request for information regarding any unrecorded traditional cultural properties, archaeological, or other cultural concerns within or adjacent to the project area. If there are any issues or concerns, they will be included within the final Archaeological Survey Report.

Updated Maps of the project area enclosed.

Sincerely,

Kathleen Tyler
Archaeologist
Northern California Resource Center *Enclosed 2 updated maps*

Northern California Resource Center
P.O. Box 146 Fort Jones, California 96032
Phone: 530-468-2888 Fax: 530-468-4426

Dec 13, 2019

Environmental Director: Crystal Robinson
13601 Quartz Valley Rd
Fort Jones, CA 96032

Dear Ms. Robinson,

This is a 2nd request a response or concerns to this project

The Lake Shastina Community Services District Wastewater Improvement Project

This project includes work on public lands owned by the Lake Shastina Community Services District, private lands under the jurisdiction of the Lake Shastina Property Owners Association and other private lands owned by individuals. Work associated with this project includes:

1. Onsite upgrades to the wastewater treatment facility, within the limits of the Districts' existing wastewater facility footprint where previous work has been completed;

2. Upgrades and new construction of underground wastewater collection pipelines that lie within existing streets under the jurisdiction of the Lake Shastina Property Owners Association, and across privately owned lands that have been previously developed but do not have wastewater pipelines;

3. Upgrades within the existing footprints of wastewater lift stations that have had previous underground and above ground disturbances, including pipelines, above and below ground power lines, water lines, wastewater wet wells (underground pits), above ground lift stations, roads/driveways.

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Updated Maps of the project area enclosed.

Sincerely,

Kathleen Tyler
Archaeologist
Northern California Resource Center *Enclosed 2 updated maps*

Northern California Resource Center
P.O. Box 146 Fort Jones, California 96032
Phone: 530-468-2888 Fax: 530-468-4426

Dec 13, 2019

Karuk Tribe of California
Arch Super, Chairperson
P.O. Box 1016
Happy Camp, CA 96039,

Dear Chairperson Hall, This is a 2nd request a response or concerns to this project

The Lake Shastina Community Services District Wastewater Improvement Project

This project includes work on public lands owned by the Lake Shastina Community Services District, private lands under the jurisdiction of the Lake Shastina Property Owners Association and other private lands owned by individuals. Work associated with this project includes:

1. Onsite upgrades to the wastewater treatment facility, within the limits of the Districts' existing wastewater facility footprint where previous work has been completed;

2. Upgrades and new construction of underground wastewater collection pipelines that lie within existing streets under the jurisdiction of the Lake Shastina Property Owners Association, and across privately owned lands that have been previously developed but do not have wastewater pipelines;

3. Upgrades within the existing footprints of wastewater lift stations that have had previous underground and above ground disturbances, including pipelines, above and below ground power lines, water lines, wastewater wet wells (underground pits), above ground lift stations, roads/driveways.

The project's archaeological Area of Potential Effects consists of approximately 15 acres in existing disturbed areas to accomplish upgrades.

This letter is a second request for information regarding any unrecorded traditional cultural properties, archaeological, or other cultural concerns within or adjacent to the project area. If there are any issues or concerns, they will be included within the final Archaeological Survey Report.

Updated Maps of the project area enclosed.

Sincerely,

Kathleen Tyler
Archaeologist
Northern California Resource Center *Enclosed 2 updated maps*

Northern California Resource Center
P.O. Box 146 Fort Jones, California 96032
Phone: 530-468-2888 Fax: 530-468-4426

Appendix V
CHRIS Results

Northeast Center of the
California Historical Resources
Information System

BUTTE
GLENN
LASSEN
MODOC
PLUMAS
SHASTA
SIERRA
SISKIYOU
SUTTER
TEHAMA
TRINITY

123 West 6th Street, Suite 100
Chico CA 95928
Phone (530) 898-6256
neinfocntr@csuchico.edu

December 18, 2019

Northern California Resource Center
P.O. Box 342
Fort Jones, CA 96032
Attn.: Ms. Candace Cook-Slette

I.C. File # D19-181
Priority Records Search

RE: Lake Shastina Community Services District
T42N, R5W, Sections 1, 10, 11, 12; T43N, R5W, Sections 23, 24, 25, 26, 36, 36
USGS Juniper Flat, Lake Shastina, Hotlum, and Weed 7.5' and Lake Shastina and Weed 15' quads
Approximately 4,000 acres, estimated from project maps (Siskiyou County)

Dear Ms. Cook-Slette,

In response to your request, a records search for the project cited above was conducted by examining the official maps and records for archaeological sites and surveys in Siskiyou County. Please note, the search includes a ¼-mile radius surrounding the project area, per your request.

RESULTS:

Prehistoric Resources: According to our records, one site of this type has been recorded within the project area or the ¼-mile project radius. The resource, CA-SIS-642, consists of a flaked stone scatter. The resource location is plotted on the enclosed NEIC-generated map and a PDF of the record is enclosed. The project is located in a region utilized by Shastan populations. Unrecorded prehistoric cultural resources may be located within the project area.

Historic Resources: According to our records, eight sites of this type have been recorded in the project area or ¼-mile radius. These sites have been plotted on the enclosed NEIC-generated map and PDFs of the records are enclosed. The sites are listed in Table 1, below. Unrecorded historic cultural resources may be located in the project area.

Table 1, Historical Resources Located Within the Project Area or the ¼-mile Radius

Primary #	Trinomial	Resource Name	Attributes
P-47-000645	CA-SIS-000645H		AH04; AH11
P-47-000932	CA-SIS-000932H		AH02; AH11
P-47-000933	CA-SIS-000933		AH04
P-47-003421	CA-SIS-003421H		AH11
P-47-003461	CA-SIS-003461H		AH11
P-47-005360			AH06
P-47-005361	CA-SIS-005361H	Montague Water Conservation District Main Canal	HP20; HP21
P-47-005435			AH04

The USGS Lake Shastina, Juniper Flat, Hotlum, and Weed 7.5' and Lake Shastina (1954) and Weed (1954) 15' quad maps indicate that Lake Shastina, Lost Lake, Mountain Wood Drive, Rainbow Drive, lake Shore Drive, boat Ramp, Shasta River, sewage disposal ponds, golf course, earthen dam, Shasta Valley, Garrick Creek, roads, and structures are located within the project area, while Shasta-Trinity National Forest, Big Springs, Juniper Flat, Weed, historical marker, structures, and roads are located in the general project vicinity.

The historic Oregon to California trail passed through the project area, and the Yreka Emigrant Trail was located in the general project vicinity. Copies of GLO plat maps for T42N, R5W (1866) and T43N, R5W (1856) are enclosed, along with the historic Shasta Sheet (1894/1910).

Previous Archaeological Investigations: According to our records, portions of the project area and the ¼-mile radius have been previously surveyed for cultural resources. Survey locations are plotted on the enclosed NEIC-generated maps. The studies are listed below.

Briggs, Gaylord
2006 *Confidential Archaeological Letter for the Shasta O Ranch Emergency Timber Operations, Siskiyou County, California.*
NEIC Report 008668

Hopkins, Joseph W.
1981 *A Cultural Resources Survey of Big Springs Road From Highway 97 to A-12.*
NEIC Report 000574

Jensen & Associates (Jensen & Associates)
1992 *Archaeological Inventory Survey for a Proposed 112-Unit Duplex-Condominium Project, near Lake Shastina, Siskiyou County, California.*
NEIC Report 010833

Jones, John W. (Native-X, Inc.)
2016 *Cultural Resource Survey for the Hidden Valley Ranch Efficiency Project.*
NEIC Report 013157
Resources:
P-47-005360

Kessler, John (John Kessler Forestry)
2015 *Confidential Archaeological Letter for the Zen Mountain Mortality Project, Siskiyou County, California.*
NEIC Report 013391
Resources:
P-47-005435

Kowta, Makoto (Society for California Archaeology District 2 Clearinghouse)
1978 *An Archaeological Reconnaissance of the Lake Shastina Expansion Project, Siskiyou County, California.*
NEIC Report 000511
Numerous Resources

Martin, Ilse B., David T. Hodder, and Clark Whitaker (Geoscientific Systems and Consulting)
1981 *Overview of the Cultural Historic Resources of Euro-American and Other Immigrant Groups in the Shasta-Trinity National Forest.*
NEIC Report 000585

Meyer, Jack (Far Western Anthropological Research Group, Inc.)
2013 *A Geoarchaeological Overview and Assessment of Northeast California, Cultural Resources Inventory of Caltrans District 2 Rural Conventional Highways: Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama, and Trinity Counties.*
NEIC Report 012349

Tsudama, Ted T. (California Department of Forestry and Fire Protection)
2001 *CDF Project Review Report for Archaeological and Historical Resources for the Lake Shastina FIRESAFE Project VMP.*
NEIC Report 003330
Resources:
P-47-000932 (CA-SIS-000932H)
P-47-000933 (CA-SIS-000933)

Tyler, Kathleen (Northern California Resource Center)
2016 *An Archaeological Survey Report for the Greater Lake Shastina Fuels Reduction Project, Siskiyou County, California.*
NEIC Report 013283

2017 *An Archaeological Survey Report for the Greater Lake Shastina Fuels Reduction Project, Siskiyou County, California.*
NEIC Report 013283A

Vaughan, Trudy (Coyote and Fox Enterprises)

2003 *Archaeological Reconnaissance for the Proposed Emerald Crescent Estates on Lake Shastina, Siskiyou County, California.*
NEIC Report 005633
Resources:
P-47-003461 (CA-SIS-003461H)

2010 *Archaeological Reconnaissance for the Proposed Chertkov Subdivision (131.5 acres) on the South Shore of Lake Shastina, Siskiyou County, California.*
NEIC Report 011052
Resources:
P-47-000933 (CA-SIS-000933)
P-47-003421 (CA-SIS-003421H)

2014 *Archaeological Reconnaissance for the Shasta River Riparian Protection and Enhancement Project.*
NEIC Report 012342

Literature Search: The official records and maps for archaeological sites and surveys in Siskiyou County were reviewed. Also reviewed: **National Register of Historic Places - Listed properties and Determined Eligible Properties** (2012); **California Register of Historical Resources** (2012); **California Points of Historical Interest** (2012); **California Inventory of Historic Resources** (1976); **California Historical Landmarks** (2012); **Gold Districts of California – Bulletin 193** (2012); **Directory of Properties in the Historic Property Data File for Siskiyou County** (2012); and **Handbook of North American Indians, Vol. 8, California** (1978).

RECOMMENDATIONS:

We recommend that you contact the appropriate local Native American representatives for information regarding traditional cultural properties that may be located within project boundaries for which we have no records.

The charge for this record search is **$914.40** (please refer to the following page for more information). An invoice will follow from the CSUC Research Foundation for billing purposes. Thank you for your concern in preserving California's cultural heritage, and please feel free to contact us if you have any questions or need any further information or assistance.

Sincerely,

Amy Huberland
Coordinator

CalEEMod Data

D

Lake Shastina CSD Wastewater Improvement Project

Siskiyou County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.50	1000sqft	0.03	1,500.00	0
Other Non-Asphalt Surfaces	4.10	Acre	4.10	178,596.00	0
Other Asphalt Surfaces	0.25	Acre	0.25	10,890.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	85
Climate Zone	14			**Operational Year**	2020
Utility Company	PacifiCorp				
CO2 Intensity (lb/MWhr)	1656.39	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Start of Construction and Operational Year per project construction schedule.

Land Use - Other Non-Asphalt Surfaces land use subtype was used for the wastewater ponds and some of the utility infrastructure improvements. Other Asphalt Surfaces land use subtype was used for the new sewer force main along Lake Shore Drive and a portion of the sewer line off of Tony Lema Drive. General Heavy Industry land use subtype was used to obtain estimates of operational emissions for the headworks facility and lift station improvements.

Construction Phase - Construction schedule for Grading and Building Construction phases were modified per project description. The default values were used for all other categories. Construction was conservatively assumed to last for 100 days.

Grading - Estimated that approximately 325 c.y. of material would be imported for the sewer pipeline trenches. Estimated that approximately 160 c.y. of waste material would be exported. Assumed that the approximately 4.38 acre project area would be passed over four times during grading activity.

Demolition - It is estimated that approximately 5,000 square feet of existing wastewater infrastructure will be demolished as part of the project.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	8.00	100.00
tblConstructionPhase	PhaseEndDate	4/30/2020	8/7/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	9/3/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	5/28/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	9/17/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	7/24/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	5/7/2020
tblConstructionPhase	PhaseStartDate	5/1/2020	7/15/2020
tblConstructionPhase	PhaseStartDate	5/1/2020	7/1/2020
tblGrading	AcresOfGrading	50.00	17.50
tblGrading	MaterialExported	0.00	160.00
tblGrading	MaterialImported	0.00	325.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2020	17.0216	126.8197	87.8192	0.1606	26.3737	6.2846	32.6583	13.7944	5.8212	19.6156	0.0000	15,606.0319	15,606.0319	3.9871	0.0000	15,705.7101
Maximum	**17.0216**	**126.8197**	**87.8192**	**0.1606**	**26.3737**	**6.2846**	**32.6583**	**13.7944**	**5.8212**	**19.6156**	**0.0000**	**15,606.0319**	**15,606.0319**	**3.9871**	**0.0000**	**15,705.7101**

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					
2020	17.0216	126.8197	87.8192	0.1606	12.8877	6.2846	19.1723	6.4804	5.8212	12.3016	0.0000	15,606.0319	15,606.0319	3.9871	0.0000	15,705.7101
Maximum	**17.0216**	**126.8197**	**87.8192**	**0.1606**	**12.8877**	**6.2846**	**19.1723**	**6.4804**	**5.8212**	**12.3016**	**0.0000**	**15,606.0319**	**15,606.0319**	**3.9871**	**0.0000**	**15,705.7101**

	ROG	**NOx**	**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**	**51.13**	**0.00**	**41.29**	**53.02**	**0.00**	**37.29**	**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	0.1449	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Energy	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
Mobile	8.8400e-003	0.0793	0.1126	3.2000e-004	0.0187	4.2000e-004	0.0191	5.0200e-003	4.0000e-004	5.4200e-003		32.9954	32.9954	2.2800e-003		33.0524
Total	**0.1539**	**0.0807**	**0.1144**	**3.3000e-004**	**0.0187**	**5.3000e-004**	**0.0192**	**5.0200e-003**	**5.1000e-004**	**5.5300e-003**		**34.7034**	**34.7034**	**2.3100e-003**	**3.0000e-005**	**34.7706**

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	0.1449	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Energy	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
Mobile	8.8400e-003	0.0793	0.1126	3.2000e-004	0.0187	4.2000e-004	0.0191	5.0200e-003	4.0000e-004	5.4200e-003		32.9954	32.9954	2.2800e-003		33.0524
Total	**0.1539**	**0.0807**	**0.1144**	**3.3000e-004**	**0.0187**	**5.3000e-004**	**0.0192**	**5.0200e-003**	**5.1000e-004**	**5.5300e-003**		**34.7034**	**34.7034**	**2.3100e-003**	**3.0000e-005**	**34.7706**

	ROG	NOx	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	Building Construction	Building Construction	5/1/2020	9/3/2020	5	90	
2	Demolition	Demolition	5/1/2020	5/28/2020	5	20	
3	Grading	Grading	5/1/2020	9/17/2020	5	100	
4	Site Preparation	Site Preparation	5/1/2020	5/7/2020	5	5	
5	Paving	Paving	7/1/2020	7/24/2020	5	18	
6	Architectural Coating	Architectural Coating	7/15/2020	8/7/2020	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 17.5

Acres of Paving: 4.35

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 2,250; Non-Residential Outdoor: 750; Striped Parking Area: 11,369 (Architectural Coating – sqft)

OffRoad Equipment

Lake Shastina CSD Wastewater Improvement Project - Siskiyou County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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
Architectural Coating	1	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	80.00	31.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	23.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	48.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.2 Building Construction - 2020

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	0.1988	3.8632	1.4619	8.7900e-003	0.1901	0.0208	0.2109	0.0548	0.0198	0.0746		917.1099	917.1099	0.0798		919.1052
Worker	0.9512	0.8085	6.3170	0.0107	1.0218	9.7400e-003	1.0316	0.2710	8.9800e-003	0.2800		1,055.9742	1,055.9742	0.0613		1,057.5062
Total	**1.1500**	**4.6717**	**7.7789**	**0.0194**	**1.2120**	**0.0305**	**1.2424**	**0.3257**	**0.0288**	**0.3546**		**1,973.0841**	**1,973.0841**	**0.1411**		**1,976.6114**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.2 Building Construction - 2020

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	0.1988	3.8632	1.4619	8.7900e-003	0.1901	0.0208	0.2109	0.0548	0.0198	0.0746		917.1099	917.1099	0.0798		919.1052
Worker	0.9512	0.8085	6.3170	0.0107	1.0218	9.7400e-003	1.0316	0.2710	8.9800e-003	0.2800		1,055.9742	1,055.9742	0.0613		1,057.5062
Total	**1.1500**	**4.6717**	**7.7789**	**0.0194**	**1.2120**	**0.0305**	**1.2424**	**0.3257**	**0.0288**	**0.3546**		**1,973.0841**	**1,973.0841**	**0.1411**		**1,976.6114**

3.3 Demolition - 2020

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					0.2461	0.0000	0.2461	0.0373	0.0000	0.0373			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419		3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**0.2461**	**1.6587**	**1.9048**	**0.0373**	**1.5419**	**1.5791**		**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.3 Demolition - 2020

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	0.0103	0.3334	0.0577	9.5000e-004	0.0202	1.2200e-003	0.0214	5.5300e-003	1.1700e-003	6.7000e-003		99.4846	99.4846	5.3700e-003		99.6188
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	0.1783	0.1516	1.1844	2.0000e-003	0.1916	1.8300e-003	0.1934	0.0508	1.6800e-003	0.0525		197.9952	197.9952	0.0115		198.2824
Total	**0.1886**	**0.4850**	**1.2422**	**2.9500e-003**	**0.2118**	**3.0500e-003**	**0.2148**	**0.0563**	**2.8500e-003**	**0.0592**		**297.4798**	**297.4798**	**0.0169**		**297.9012**

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					0.1107	0.0000	0.1107	0.0168	0.0000	0.0168			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419	0.0000	3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**0.1107**	**1.6587**	**1.7694**	**0.0168**	**1.5419**	**1.5586**	**0.0000**	**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.3 Demolition - 2020

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	0.0103	0.3334	0.0577	9.5000e-004	0.0202	1.2200e-003	0.0214	5.5300e-003	1.1700e-003	6.7000e-003		99.4846	99.4846	5.3700e-003		99.6188
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	0.1783	0.1516	1.1844	2.0000e-003	0.1916	1.8300e-003	0.1934	0.0508	1.6800e-003	0.0525		197.9952	197.9952	0.0115		198.2824
Total	**0.1886**	**0.4850**	**1.2422**	**2.9500e-003**	**0.2118**	**3.0500e-003**	**0.2148**	**0.0563**	**2.8500e-003**	**0.0592**		**297.4798**	**297.4798**	**0.0169**		**297.9012**

3.4 Grading - 2020

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					6.2077	0.0000	6.2077	3.3303	0.0000	3.3303			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716		2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**6.2077**	**1.2734**	**7.4811**	**3.3303**	**1.1716**	**4.5018**		**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

3.4 Grading - 2020

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	4.2800e-003	0.1392	0.0241	4.0000e-004	8.4200e-003	5.1000e-004	8.9200e-003	2.3100e-003	4.9000e-004	2.8000e-003		41.5240	41.5240	2.2400e-003		41.5800
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	0.1783	0.1516	1.1844	2.0000e-003	0.1916	1.8300e-003	0.1934	0.0508	1.6800e-003	0.0525		197.9952	197.9952	0.0115		198.2824
Total	**0.1826**	**0.2908**	**1.2085**	**2.4000e-003**	**0.2000**	**2.3400e-003**	**0.2023**	**0.0531**	**2.1700e-003**	**0.0553**		**239.5192**	**239.5192**	**0.0137**		**239.8624**

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					2.7935	0.0000	2.7935	1.4986	0.0000	1.4986			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716	0.0000	2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**2.7935**	**1.2734**	**4.0669**	**1.4986**	**1.1716**	**2.6702**	**0.0000**	**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

3.4 Grading - 2020

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	4.2800e-003	0.1392	0.0241	4.0000e-004	8.4200e-003	5.1000e-004	8.9200e-003	2.3100e-003	4.9000e-004	2.8000e-003		41.5240	41.5240	2.2400e-003		41.5800
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	0.1783	0.1516	1.1844	2.0000e-003	0.1916	1.8300e-003	0.1934	0.0508	1.6800e-003	0.0525		197.9952	197.9952	0.0115		198.2824
Total	**0.1826**	**0.2908**	**1.2085**	**2.4000e-003**	**0.2000**	**2.3400e-003**	**0.2023**	**0.0531**	**2.1700e-003**	**0.0553**		**239.5192**	**239.5192**	**0.0137**		**239.8624**

3.5 Site Preparation - 2020

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.5 Site Preparation - 2020

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	0.2140	0.1819	1.4213	2.4000e-003	0.2299	2.1900e-003	0.2321	0.0610	2.0200e-003	0.0630		237.5942	237.5942	0.0138		237.9389
Total	**0.2140**	**0.1819**	**1.4213**	**2.4000e-003**	**0.2299**	**2.1900e-003**	**0.2321**	**0.0610**	**2.0200e-003**	**0.0630**		**237.5942**	**237.5942**	**0.0138**		**237.9389**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**8.1298**	**2.1974**	**10.3272**	**4.4688**	**2.0216**	**6.4904**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.5 Site Preparation - 2020

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	0.2140	0.1819	1.4213	2.4000e-003	0.2299	2.1900e-003	0.2321	0.0610	2.0200e-003	0.0630		237.5942	237.5942	0.0138		237.9389
Total	**0.2140**	**0.1819**	**1.4213**	**2.4000e-003**	**0.2299**	**2.1900e-003**	**0.2321**	**0.0610**	**2.0200e-003**	**0.0630**		**237.5942**	**237.5942**	**0.0138**		**237.9389**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1837	11.8015	12.2823	0.0189		0.6509	0.6509		0.6005	0.6005		1,804.7070	1,804.7070	0.5670		1,818.8830
Paving	0.0364					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2201**	**11.8015**	**12.2823**	**0.0189**		**0.6509**	**0.6509**		**0.6005**	**0.6005**		**1,804.7070**	**1,804.7070**	**0.5670**		**1,818.8830**

3.6 Paving - 2020

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	0.2378	0.2021	1.5793	2.6600e-003	0.2555	2.4300e-003	0.2579	0.0678	2.2400e-003	0.0700		263.9935	263.9935	0.0153		264.3765
Total	**0.2378**	**0.2021**	**1.5793**	**2.6600e-003**	**0.2555**	**2.4300e-003**	**0.2579**	**0.0678**	**2.2400e-003**	**0.0700**		**263.9935**	**263.9935**	**0.0153**		**264.3765**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1837	11.8015	12.2823	0.0189		0.6509	0.6509		0.6005	0.6005	0.0000	1,804.7070	1,804.7070	0.5670		1,818.8830
Paving	0.0364					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2201**	**11.8015**	**12.2823**	**0.0189**		**0.6509**	**0.6509**		**0.6005**	**0.6005**	**0.0000**	**1,804.7070**	**1,804.7070**	**0.5670**		**1,818.8830**

3.6 Paving - 2020

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	0.2378	0.2021	1.5793	2.6600e-003	0.2555	2.4300e-003	0.2579	0.0678	2.2400e-003	0.0700		263.9935	263.9935	0.0153		264.3765
Total	**0.2378**	**0.2021**	**1.5793**	**2.6600e-003**	**0.2555**	**2.4300e-003**	**0.2579**	**0.0678**	**2.2400e-003**	**0.0700**		**263.9935**	**263.9935**	**0.0153**		**264.3765**

3.7 Architectural Coating - 2020

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					
Archit. Coating	9.2500					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**9.4922**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

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	0.1902	0.1617	1.2634	2.1300e-003	0.2044	1.9500e-003	0.2063	0.0542	1.8000e-003	0.0560		211.1948	211.1948	0.0123		211.5012
Total	**0.1902**	**0.1617**	**1.2634**	**2.1300e-003**	**0.2044**	**1.9500e-003**	**0.2063**	**0.0542**	**1.8000e-003**	**0.0560**		**211.1948**	**211.1948**	**0.0123**		**211.5012**

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					
Archit. Coating	9.2500					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**9.4922**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

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	0.1902	0.1617	1.2634	2.1300e-003	0.2044	1.9500e-003	0.2063	0.0542	1.8000e-003	0.0560		211.1948	211.1948	0.0123		211.5012
Total	**0.1902**	**0.1617**	**1.2634**	**2.1300e-003**	**0.2044**	**1.9500e-003**	**0.2063**	**0.0542**	**1.8000e-003**	**0.0560**		**211.1948**	**211.1948**	**0.0123**		**211.5012**

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	8.8400e-003	0.0793	0.1126	3.2000e-004	0.0187	4.2000e-004	0.0191	5.0200e-003	4.0000e-004	5.4200e-003		32.9954	32.9954	2.2800e-003		33.0524
Unmitigated	8.8400e-003	0.0793	0.1126	3.2000e-004	0.0187	4.2000e-004	0.0191	5.0200e-003	4.0000e-004	5.4200e-003		32.9954	32.9954	2.2800e-003		33.0524

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	2.25	2.25	2.25	8,693	8,693
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	2.25	2.25	2.25	8,693	8,693

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
General Heavy Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	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
General Heavy Industry	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248
Other Non-Asphalt Surfaces	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248
Other Asphalt Surfaces	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248

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	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
NaturalGas Unmitigated	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168

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					
General Heavy Industry	14.5068	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
Other 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
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
Total		**1.6000e-004**	**1.4200e-003**	**1.1900e-003**	**1.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**		**1.7067**	**1.7067**	**3.0000e-005**	**3.0000e-005**	**1.7168**

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					
General Heavy Industry	0.0145068	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
Other 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
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
Total		**1.6000e-004**	**1.4200e-003**	**1.1900e-003**	**1.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**		**1.7067**	**1.7067**	**3.0000e-005**	**3.0000e-005**	**1.7168**

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	0.1449	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Unmitigated	0.1449	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0456					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0992					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0000e-005	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Total	**0.1449**	**1.0000e-005**	**6.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.2800e-003**	**1.2800e-003**	**0.0000**		**1.3700e-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	lb/day										lb/day					
Architectural Coating	0.0456					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0992					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0000e-005	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Total	**0.1449**	**1.0000e-005**	**6.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.2800e-003**	**1.2800e-003**	**0.0000**		**1.3700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 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

Lake Shastina CSD Wastewater Improvement Project

Siskiyou County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.50	1000sqft	0.03	1,500.00	0
Other Non-Asphalt Surfaces	4.10	Acre	4.10	178,596.00	0
Other Asphalt Surfaces	0.25	Acre	0.25	10,890.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	85
Climate Zone	14			**Operational Year**	2020
Utility Company	PacifiCorp				
CO2 Intensity (lb/MWhr)	1656.39	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Start of Construction and Operational Year per project construction schedule.

Land Use - Other Non-Asphalt Surfaces land use subtype was used for the wastewater ponds and some of the utility infrastructure improvements. Other Asphalt Surfaces land use subtype was used for the new sewer force main along Lake Shore Drive and a portion of the sewer line off of Tony Lema Drive. General Heavy Industry land use subtype was used to obtain estimates of operational emissions for the headworks facility and lift station improvements.

Construction Phase - Construction schedule for Grading and Building Construction phases were modified per project description. The default values were used for all other categories. Construction was conservatively assumed to last for 100 days.

Grading - Estimated that approximately 325 c.y. of material would be imported for the sewer pipeline trenches. Estimated that approximately 160 c.y. of waste material would be exported. Assumed that the approximately 4.38 acre project area would be passed over four times during grading activity.

Demolition - It is estimated that approximately 5,000 square feet of existing wastewater infrastructure will be demolished as part of the project.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	8.00	100.00
tblConstructionPhase	PhaseEndDate	4/30/2020	8/7/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	9/3/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	5/28/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	9/17/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	7/24/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	5/7/2020
tblConstructionPhase	PhaseStartDate	5/1/2020	7/15/2020
tblConstructionPhase	PhaseStartDate	5/1/2020	7/1/2020
tblGrading	AcresOfGrading	50.00	17.50
tblGrading	MaterialExported	0.00	160.00
tblGrading	MaterialImported	0.00	325.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2020	16.7563	126.3440	86.6803	0.1619	26.3737	6.2839	32.6576	13.7944	5.8206	19.6149	0.0000	15,741.9789	15,741.9789	3.9768	0.0000	15,841.3974
Maximum	**16.7563**	**126.3440**	**86.6803**	**0.1619**	**26.3737**	**6.2839**	**32.6576**	**13.7944**	**5.8206**	**19.6149**	**0.0000**	**15,741.9789**	**15,741.9789**	**3.9768**	**0.0000**	**15,841.3974**

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					
2020	16.7563	126.3440	86.6803	0.1619	12.8877	6.2839	19.1716	6.4804	5.8206	12.3009	0.0000	15,741.9789	15,741.9789	3.9768	0.0000	15,841.3973
Maximum	**16.7563**	**126.3440**	**86.6803**	**0.1619**	**12.8877**	**6.2839**	**19.1716**	**6.4804**	**5.8206**	**12.3009**	**0.0000**	**15,741.9789**	**15,741.9789**	**3.9768**	**0.0000**	**15,841.3973**

	ROG	**NOx**	**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**	**51.13**	**0.00**	**41.30**	**53.02**	**0.00**	**37.29**	**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	0.1449	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Energy	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
Mobile	8.8600e-003	0.0741	0.0991	3.4000e-004	0.0187	4.1000e-004	0.0191	5.0200e-003	3.9000e-004	5.4100e-003		34.5508	34.5508	2.1100e-003		34.6036
Total	**0.1539**	**0.0755**	**0.1009**	**3.5000e-004**	**0.0187**	**5.2000e-004**	**0.0192**	**5.0200e-003**	**5.0000e-004**	**5.5200e-003**		**36.2587**	**36.2587**	**2.1400e-003**	**3.0000e-005**	**36.3218**

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	0.1449	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Energy	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
Mobile	8.8600e-003	0.0741	0.0991	3.4000e-004	0.0187	4.1000e-004	0.0191	5.0200e-003	3.9000e-004	5.4100e-003		34.5508	34.5508	2.1100e-003		34.6036
Total	**0.1539**	**0.0755**	**0.1009**	**3.5000e-004**	**0.0187**	**5.2000e-004**	**0.0192**	**5.0200e-003**	**5.0000e-004**	**5.5200e-003**		**36.2587**	**36.2587**	**2.1400e-003**	**3.0000e-005**	**36.3218**

	ROG	NOx	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	Building Construction	Building Construction	5/1/2020	9/3/2020	5	90	
2	Demolition	Demolition	5/1/2020	5/28/2020	5	20	
3	Grading	Grading	5/1/2020	9/17/2020	5	100	
4	Site Preparation	Site Preparation	5/1/2020	5/7/2020	5	5	
5	Paving	Paving	7/1/2020	7/24/2020	5	18	
6	Architectural Coating	Architectural Coating	7/15/2020	8/7/2020	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 17.5

Acres of Paving: 4.35

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 2,250; Non-Residential Outdoor: 750; Striped Parking Area: 11,369 (Architectural Coating – sqft)

OffRoad Equipment

Lake Shastina CSD Wastewater Improvement Project - Siskiyou County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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
Architectural Coating	1	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	80.00	31.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	23.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	48.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.2 Building Construction - 2020

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	0.1805	3.7945	1.1295	9.1800e-003	0.1901	0.0201	0.2102	0.0548	0.0192	0.0740		958.5824	958.5824	0.0703		960.3401
Worker	0.8004	0.5624	5.8212	0.0112	1.0218	9.7400e-003	1.0316	0.2710	8.9800e-003	0.2800		1,112.3341	1,112.3341	0.0613		1,113.8668
Total	**0.9810**	**4.3569**	**6.9506**	**0.0204**	**1.2120**	**0.0298**	**1.2418**	**0.3257**	**0.0282**	**0.3539**		**2,070.9165**	**2,070.9165**	**0.1316**		**2,074.2070**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.2 Building Construction - 2020

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	0.1805	3.7945	1.1295	9.1800e-003	0.1901	0.0201	0.2102	0.0548	0.0192	0.0740		958.5824	958.5824	0.0703		960.3401
Worker	0.8004	0.5624	5.8212	0.0112	1.0218	9.7400e-003	1.0316	0.2710	8.9800e-003	0.2800		1,112.3341	1,112.3341	0.0613		1,113.8668
Total	**0.9810**	**4.3569**	**6.9506**	**0.0204**	**1.2120**	**0.0298**	**1.2418**	**0.3257**	**0.0282**	**0.3539**		**2,070.9165**	**2,070.9165**	**0.1316**		**2,074.2070**

3.3 Demolition - 2020

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					0.2461	0.0000	0.2461	0.0373	0.0000	0.0373			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419		3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**0.2461**	**1.6587**	**1.9048**	**0.0373**	**1.5419**	**1.5791**		**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.3 Demolition - 2020

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	9.7800e-003	0.3241	0.0485	9.8000e-004	0.0202	1.1800e-003	0.0213	5.5300e-003	1.1300e-003	6.6600e-003		102.5174	102.5174	4.7100e-003		102.6351
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	0.1501	0.1054	1.0915	2.1000e-003	0.1916	1.8300e-003	0.1934	0.0508	1.6800e-003	0.0525		208.5627	208.5627	0.0115		208.8500
Total	**0.1599**	**0.4296**	**1.1400**	**3.0800e-003**	**0.2118**	**3.0100e-003**	**0.2148**	**0.0563**	**2.8100e-003**	**0.0592**		**311.0800**	**311.0800**	**0.0162**		**311.4852**

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					0.1107	0.0000	0.1107	0.0168	0.0000	0.0168			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419	0.0000	3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**0.1107**	**1.6587**	**1.7694**	**0.0168**	**1.5419**	**1.5586**	**0.0000**	**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.3 Demolition - 2020

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	9.7800e-003	0.3241	0.0485	9.8000e-004	0.0202	1.1800e-003	0.0213	5.5300e-003	1.1300e-003	6.6600e-003		102.5174	102.5174	4.7100e-003		102.6351
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	0.1501	0.1054	1.0915	2.1000e-003	0.1916	1.8300e-003	0.1934	0.0508	1.6800e-003	0.0525		208.5627	208.5627	0.0115		208.8500
Total	**0.1599**	**0.4296**	**1.1400**	**3.0800e-003**	**0.2118**	**3.0100e-003**	**0.2148**	**0.0563**	**2.8100e-003**	**0.0592**		**311.0800**	**311.0800**	**0.0162**		**311.4852**

3.4 Grading - 2020

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					6.2077	0.0000	6.2077	3.3303	0.0000	3.3303			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716		2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**6.2077**	**1.2734**	**7.4811**	**3.3303**	**1.1716**	**4.5018**		**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

3.4 Grading - 2020

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	4.0800e-003	0.1353	0.0202	4.1000e-004	8.4200e-003	4.9000e-004	8.9100e-003	2.3100e-003	4.7000e-004	2.7800e-003		42.7899	42.7899	1.9700e-003		42.8390
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	0.1501	0.1054	1.0915	2.1000e-003	0.1916	1.8300e-003	0.1934	0.0508	1.6800e-003	0.0525		208.5627	208.5627	0.0115		208.8500
Total	**0.1542**	**0.2407**	**1.1117**	**2.5100e-003**	**0.2000**	**2.3200e-003**	**0.2023**	**0.0531**	**2.1500e-003**	**0.0553**		**251.3525**	**251.3525**	**0.0135**		**251.6890**

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					2.7935	0.0000	2.7935	1.4986	0.0000	1.4986			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716	0.0000	2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**2.7935**	**1.2734**	**4.0669**	**1.4986**	**1.1716**	**2.6702**	**0.0000**	**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

3.4 Grading - 2020

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	4.0800e-003	0.1353	0.0202	4.1000e-004	8.4200e-003	4.9000e-004	8.9100e-003	2.3100e-003	4.7000e-004	2.7800e-003		42.7899	42.7899	1.9700e-003		42.8390
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	0.1501	0.1054	1.0915	2.1000e-003	0.1916	1.8300e-003	0.1934	0.0508	1.6800e-003	0.0525		208.5627	208.5627	0.0115		208.8500
Total	**0.1542**	**0.2407**	**1.1117**	**2.5100e-003**	**0.2000**	**2.3200e-003**	**0.2023**	**0.0531**	**2.1500e-003**	**0.0553**		**251.3525**	**251.3525**	**0.0135**		**251.6890**

3.5 Site Preparation - 2020

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.5 Site Preparation - 2020

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	0.1801	0.1265	1.3098	2.5200e-003	0.2299	2.1900e-003	0.2321	0.0610	2.0200e-003	0.0630		250.2752	250.2752	0.0138		250.6200
Total	**0.1801**	**0.1265**	**1.3098**	**2.5200e-003**	**0.2299**	**2.1900e-003**	**0.2321**	**0.0610**	**2.0200e-003**	**0.0630**		**250.2752**	**250.2752**	**0.0138**		**250.6200**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**8.1298**	**2.1974**	**10.3272**	**4.4688**	**2.0216**	**6.4904**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.5 Site Preparation - 2020

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	0.1801	0.1265	1.3098	2.5200e-003	0.2299	2.1900e-003	0.2321	0.0610	2.0200e-003	0.0630		250.2752	250.2752	0.0138		250.6200
Total	**0.1801**	**0.1265**	**1.3098**	**2.5200e-003**	**0.2299**	**2.1900e-003**	**0.2321**	**0.0610**	**2.0200e-003**	**0.0630**		**250.2752**	**250.2752**	**0.0138**		**250.6200**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1837	11.8015	12.2823	0.0189		0.6509	0.6509		0.6005	0.6005		1,804.7070	1,804.7070	0.5670		1,818.8830
Paving	0.0364					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2201**	**11.8015**	**12.2823**	**0.0189**		**0.6509**	**0.6509**		**0.6005**	**0.6005**		**1,804.7070**	**1,804.7070**	**0.5670**		**1,818.8830**

3.6 Paving - 2020

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	0.2001	0.1406	1.4553	2.8000e-003	0.2555	2.4300e-003	0.2579	0.0678	2.2400e-003	0.0700		278.0835	278.0835	0.0153		278.4667
Total	**0.2001**	**0.1406**	**1.4553**	**2.8000e-003**	**0.2555**	**2.4300e-003**	**0.2579**	**0.0678**	**2.2400e-003**	**0.0700**		**278.0835**	**278.0835**	**0.0153**		**278.4667**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1837	11.8015	12.2823	0.0189		0.6509	0.6509		0.6005	0.6005	0.0000	1,804.7070	1,804.7070	0.5670		1,818.8830
Paving	0.0364					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2201**	**11.8015**	**12.2823**	**0.0189**		**0.6509**	**0.6509**		**0.6005**	**0.6005**	**0.0000**	**1,804.7070**	**1,804.7070**	**0.5670**		**1,818.8830**

3.6 Paving - 2020

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	0.2001	0.1406	1.4553	2.8000e-003	0.2555	2.4300e-003	0.2579	0.0678	2.2400e-003	0.0700		278.0835	278.0835	0.0153		278.4667
Total	**0.2001**	**0.1406**	**1.4553**	**2.8000e-003**	**0.2555**	**2.4300e-003**	**0.2579**	**0.0678**	**2.2400e-003**	**0.0700**		**278.0835**	**278.0835**	**0.0153**		**278.4667**

3.7 Architectural Coating - 2020

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					
Archit. Coating	9.2500					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**9.4922**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

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	0.1601	0.1125	1.1642	2.2400e-003	0.2044	1.9500e-003	0.2063	0.0542	1.8000e-003	0.0560		222.4668	222.4668	0.0123		222.7734
Total	**0.1601**	**0.1125**	**1.1642**	**2.2400e-003**	**0.2044**	**1.9500e-003**	**0.2063**	**0.0542**	**1.8000e-003**	**0.0560**		**222.4668**	**222.4668**	**0.0123**		**222.7734**

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					
Archit. Coating	9.2500					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**9.4922**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

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	0.1601	0.1125	1.1642	2.2400e-003	0.2044	1.9500e-003	0.2063	0.0542	1.8000e-003	0.0560		222.4668	222.4668	0.0123		222.7734
Total	**0.1601**	**0.1125**	**1.1642**	**2.2400e-003**	**0.2044**	**1.9500e-003**	**0.2063**	**0.0542**	**1.8000e-003**	**0.0560**		**222.4668**	**222.4668**	**0.0123**		**222.7734**

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	8.8600e-003	0.0741	0.0991	3.4000e-004	0.0187	4.1000e-004	0.0191	5.0200e-003	3.9000e-004	5.4100e-003		34.5508	34.5508	2.1100e-003		34.6036
Unmitigated	8.8600e-003	0.0741	0.0991	3.4000e-004	0.0187	4.1000e-004	0.0191	5.0200e-003	3.9000e-004	5.4100e-003		34.5508	34.5508	2.1100e-003		34.6036

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	2.25	2.25	2.25	8,693	8,693
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	2.25	2.25	2.25	8,693	8,693

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
General Heavy Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	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
General Heavy Industry	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248
Other Non-Asphalt Surfaces	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248
Other Asphalt Surfaces	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248

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	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
NaturalGas Unmitigated	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168

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					
General Heavy Industry	14.5068	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
Other 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
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
Total		**1.6000e-004**	**1.4200e-003**	**1.1900e-003**	**1.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**		**1.7067**	**1.7067**	**3.0000e-005**	**3.0000e-005**	**1.7168**

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					
General Heavy Industry	0.0145068	1.6000e-004	1.4200e-003	1.1900e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		1.7067	1.7067	3.0000e-005	3.0000e-005	1.7168
Other 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
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
Total		**1.6000e-004**	**1.4200e-003**	**1.1900e-003**	**1.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**		**1.7067**	**1.7067**	**3.0000e-005**	**3.0000e-005**	**1.7168**

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	0.1449	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Unmitigated	0.1449	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0456					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0992					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0000e-005	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Total	**0.1449**	**1.0000e-005**	**6.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.2800e-003**	**1.2800e-003**	**0.0000**		**1.3700e-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	lb/day										lb/day					
Architectural Coating	0.0456					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0992					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0000e-005	1.0000e-005	6.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.2800e-003	1.2800e-003	0.0000		1.3700e-003
Total	**0.1449**	**1.0000e-005**	**6.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.2800e-003**	**1.2800e-003**	**0.0000**		**1.3700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 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

Lake Shastina CSD Wastewater Improvement Project

Siskiyou County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.50	1000sqft	0.03	1,500.00	0
Other Non-Asphalt Surfaces	4.10	Acre	4.10	178,596.00	0
Other Asphalt Surfaces	0.25	Acre	0.25	10,890.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	85
Climate Zone	14			**Operational Year**	2020
Utility Company	PacifiCorp				
CO2 Intensity (lb/MWhr)	1656.39	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Start of Construction and Operational Year per project construction schedule.

Land Use - Other Non-Asphalt Surfaces land use subtype was used for the wastewater ponds and some of the utility infrastructure improvements. Other Asphalt Surfaces land use subtype was used for the new sewer force main along Lake Shore Drive and a portion of the sewer line off of Tony Lema Drive. General Heavy Industry land use subtype was used to obtain estimates of operational emissions for the headworks facility and lift station improvements.

Construction Phase - Construction schedule for Grading and Building Construction phases were modified per project description. The default values were used for all other categories. Construction was conservatively assumed to last for 100 days.

Grading - Estimated that approximately 325 c.y. of material would be imported for the sewer pipeline trenches. Estimated that approximately 160 c.y. of waste material would be exported. Assumed that the approximately 4.38 acre project area would be passed over four times during grading activity.

Demolition - It is estimated that approximately 5,000 square feet of existing wastewater infrastructure will be demolished as part of the project.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	8.00	100.00
tblConstructionPhase	PhaseEndDate	4/30/2020	8/7/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	9/3/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	5/28/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	9/17/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	7/24/2020
tblConstructionPhase	PhaseEndDate	4/30/2020	5/7/2020
tblConstructionPhase	PhaseStartDate	5/1/2020	7/15/2020
tblConstructionPhase	PhaseStartDate	5/1/2020	7/1/2020
tblGrading	AcresOfGrading	50.00	17.50
tblGrading	MaterialExported	0.00	160.00
tblGrading	MaterialImported	0.00	325.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2020	0.4170	2.9650	2.3809	4.4700e-003	0.4259	0.1444	0.5703	0.2100	0.1342	0.3442	0.0000	394.2562	394.2562	0.0912	0.0000	396.5361
Maximum	**0.4170**	**2.9650**	**2.3809**	**4.4700e-003**	**0.4259**	**0.1444**	**0.5703**	**0.2100**	**0.1342**	**0.3442**	**0.0000**	**394.2562**	**394.2562**	**0.0912**	**0.0000**	**396.5361**

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					
2020	0.4170	2.9650	2.3809	4.4700e-003	0.2289	0.1444	0.3734	0.1045	0.1342	0.2387	0.0000	394.2559	394.2559	0.0912	0.0000	396.5358
Maximum	**0.4170**	**2.9650**	**2.3809**	**4.4700e-003**	**0.2289**	**0.1444**	**0.3734**	**0.1045**	**0.1342**	**0.2387**	**0.0000**	**394.2559**	**394.2559**	**0.0912**	**0.0000**	**396.5358**

	ROG	**NOx**	**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**	**46.24**	**0.00**	**34.53**	**50.22**	**0.00**	**30.64**	**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	**5-1-2020**	**7-31-2020**	2.5072	2.5072
2	**8-1-2020**	**9-30-2020**	0.8529	0.8529
		Highest	2.5072	2.5072

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	0.0264	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-004	1.0000e-004	0.0000	0.0000	1.1000e-004
Energy	3.0000e-005	2.6000e-004	2.2000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	5.1962	5.1962	9.0000e-005	2.0000e-005	5.2054
Mobile	1.5800e-003	0.0139	0.0190	6.0000e-005	3.2400e-003	8.0000e-005	3.3100e-003	8.7000e-004	7.0000e-005	9.4000e-004	0.0000	5.5433	5.5433	3.6000e-004	0.0000	5.5523
Waste						0.0000	0.0000		0.0000	0.0000	0.3776	0.0000	0.3776	0.0223	0.0000	0.9354
Water						0.0000	0.0000		0.0000	0.0000	0.1101	1.4102	1.5202	0.0113	2.7000e-004	1.8845
Total	**0.0281**	**0.0141**	**0.0192**	**6.0000e-005**	**3.2400e-003**	**1.0000e-004**	**3.3300e-003**	**8.7000e-004**	**9.0000e-005**	**9.6000e-004**	**0.4876**	**12.1498**	**12.6375**	**0.0341**	**2.9000e-004**	**13.5777**

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	0.0264	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-004	1.0000e-004	0.0000	0.0000	1.1000e-004
Energy	3.0000e-005	2.6000e-004	2.2000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	5.1962	5.1962	9.0000e-005	2.0000e-005	5.2054
Mobile	1.5800e-003	0.0139	0.0190	6.0000e-005	3.2400e-003	8.0000e-005	3.3100e-003	8.7000e-004	7.0000e-005	9.4000e-004	0.0000	5.5433	5.5433	3.6000e-004	0.0000	5.5523
Waste						0.0000	0.0000		0.0000	0.0000	0.3776	0.0000	0.3776	0.0223	0.0000	0.9354
Water						0.0000	0.0000		0.0000	0.0000	0.1101	1.4102	1.5202	0.0113	2.7000e-004	1.8845
Total	**0.0281**	**0.0141**	**0.0192**	**6.0000e-005**	**3.2400e-003**	**1.0000e-004**	**3.3300e-003**	**8.7000e-004**	**9.0000e-005**	**9.6000e-004**	**0.4876**	**12.1498**	**12.6375**	**0.0341**	**2.9000e-004**	**13.5777**

	ROG	NOx	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	Building Construction	Building Construction	5/1/2020	9/3/2020	5	90	
2	Demolition	Demolition	5/1/2020	5/28/2020	5	20	
3	Grading	Grading	5/1/2020	9/17/2020	5	100	
4	Site Preparation	Site Preparation	5/1/2020	5/7/2020	5	5	
5	Paving	Paving	7/1/2020	7/24/2020	5	18	
6	Architectural Coating	Architectural Coating	7/15/2020	8/7/2020	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 17.5

Acres of Paving: 4.35

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 2,250; Non-Residential Outdoor: 750; Striped Parking Area: 11,369 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Lake Shastina CSD Wastewater Improvement Project - Siskiyou County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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
Architectural Coating	1	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	80.00	31.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	23.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	48.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0954	0.8634	0.7582	1.2100e-003		0.0503	0.0503		0.0473	0.0473	0.0000	104.2245	104.2245	0.0254	0.0000	104.8602
Total	**0.0954**	**0.8634**	**0.7582**	**1.2100e-003**		**0.0503**	**0.0503**		**0.0473**	**0.0473**	**0.0000**	**104.2245**	**104.2245**	**0.0254**	**0.0000**	**104.8602**

3.2 Building Construction - 2020

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	8.4800e-003	0.1719	0.0578	4.1000e-004	8.2000e-003	9.2000e-004	9.1200e-003	2.3800e-003	8.8000e-004	3.2500e-003	0.0000	38.4207	38.4207	3.0400e-003	0.0000	38.4967
Worker	0.0382	0.0303	0.2679	4.9000e-004	0.0437	4.4000e-004	0.0441	0.0116	4.0000e-004	0.0120	0.0000	43.6917	43.6917	2.4700e-003	0.0000	43.7535
Total	**0.0467**	**0.2022**	**0.3257**	**9.0000e-004**	**0.0519**	**1.3600e-003**	**0.0532**	**0.0140**	**1.2800e-003**	**0.0153**	**0.0000**	**82.1124**	**82.1124**	**5.5100e-003**	**0.0000**	**82.2501**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0954	0.8634	0.7582	1.2100e-003		0.0503	0.0503		0.0473	0.0473	0.0000	104.2244	104.2244	0.0254	0.0000	104.8601
Total	**0.0954**	**0.8634**	**0.7582**	**1.2100e-003**		**0.0503**	**0.0503**		**0.0473**	**0.0473**	**0.0000**	**104.2244**	**104.2244**	**0.0254**	**0.0000**	**104.8601**

3.2 Building Construction - 2020

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	8.4800e-003	0.1719	0.0578	4.1000e-004	8.2000e-003	9.2000e-004	9.1200e-003	2.3800e-003	8.8000e-004	3.2500e-003	0.0000	38.4207	38.4207	3.0400e-003	0.0000	38.4967
Worker	0.0382	0.0303	0.2679	4.9000e-004	0.0437	4.4000e-004	0.0441	0.0116	4.0000e-004	0.0120	0.0000	43.6917	43.6917	2.4700e-003	0.0000	43.7535
Total	**0.0467**	**0.2022**	**0.3257**	**9.0000e-004**	**0.0519**	**1.3600e-003**	**0.0532**	**0.0140**	**1.2800e-003**	**0.0153**	**0.0000**	**82.1124**	**82.1124**	**5.5100e-003**	**0.0000**	**82.2501**

3.3 Demolition - 2020

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					2.4600e-003	0.0000	2.4600e-003	3.7000e-004	0.0000	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.3320	0.2175	3.9000e-004		0.0166	0.0166		0.0154	0.0154	0.0000	33.9986	33.9986	9.6000e-003	0.0000	34.2386
Total	**0.0331**	**0.3320**	**0.2175**	**3.9000e-004**	**2.4600e-003**	**0.0166**	**0.0191**	**3.7000e-004**	**0.0154**	**0.0158**	**0.0000**	**33.9986**	**33.9986**	**9.6000e-003**	**0.0000**	**34.2386**

3.3 Demolition - 2020

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	1.0000e-004	3.2700e-003	5.2000e-004	1.0000e-005	1.9000e-004	1.0000e-005	2.0000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.9185	0.9185	5.0000e-005	0.0000	0.9196
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.2600e-003	0.0112	2.0000e-005	1.8200e-003	2.0000e-005	1.8400e-003	4.8000e-004	2.0000e-005	5.0000e-004	0.0000	1.8205	1.8205	1.0000e-004	0.0000	1.8231
Total	**1.6900e-003**	**4.5300e-003**	**0.0117**	**3.0000e-005**	**2.0100e-003**	**3.0000e-005**	**2.0400e-003**	**5.3000e-004**	**3.0000e-005**	**5.6000e-004**	**0.0000**	**2.7390**	**2.7390**	**1.5000e-004**	**0.0000**	**2.7427**

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					1.1100e-003	0.0000	1.1100e-003	1.7000e-004	0.0000	1.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.3320	0.2175	3.9000e-004		0.0166	0.0166		0.0154	0.0154	0.0000	33.9986	33.9986	9.6000e-003	0.0000	34.2385
Total	**0.0331**	**0.3320**	**0.2175**	**3.9000e-004**	**1.1100e-003**	**0.0166**	**0.0177**	**1.7000e-004**	**0.0154**	**0.0156**	**0.0000**	**33.9986**	**33.9986**	**9.6000e-003**	**0.0000**	**34.2385**

3.3 Demolition - 2020

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	1.0000e-004	3.2700e-003	5.2000e-004	1.0000e-005	1.9000e-004	1.0000e-005	2.0000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.9185	0.9185	5.0000e-005	0.0000	0.9196
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.2600e-003	0.0112	2.0000e-005	1.8200e-003	2.0000e-005	1.8400e-003	4.8000e-004	2.0000e-005	5.0000e-004	0.0000	1.8205	1.8205	1.0000e-004	0.0000	1.8231
Total	**1.6900e-003**	**4.5300e-003**	**0.0117**	**3.0000e-005**	**2.0100e-003**	**3.0000e-005**	**2.0400e-003**	**5.3000e-004**	**3.0000e-005**	**5.6000e-004**	**0.0000**	**2.7390**	**2.7390**	**1.5000e-004**	**0.0000**	**2.7427**

3.4 Grading - 2020

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					0.3104	0.0000	0.3104	0.1665	0.0000	0.1665	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1214	1.3193	0.8027	1.4800e-003		0.0637	0.0637		0.0586	0.0586	0.0000	130.2937	130.2937	0.0421	0.0000	131.3472
Total	**0.1214**	**1.3193**	**0.8027**	**1.4800e-003**	**0.3104**	**0.0637**	**0.3741**	**0.1665**	**0.0586**	**0.2251**	**0.0000**	**130.2937**	**130.2937**	**0.0421**	**0.0000**	**131.3472**

3.4 Grading - 2020

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	2.1000e-004	6.8200e-003	1.0900e-003	2.0000e-005	4.0000e-004	3.0000e-005	4.3000e-004	1.1000e-004	2.0000e-005	1.3000e-004	0.0000	1.9168	1.9168	9.0000e-005	0.0000	1.9192
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	7.9600e-003	6.3200e-003	0.0558	1.0000e-004	9.0900e-003	9.0000e-005	9.1900e-003	2.4200e-003	8.0000e-005	2.5100e-003	0.0000	9.1024	9.1024	5.1000e-004	0.0000	9.1153
Total	**8.1700e-003**	**0.0131**	**0.0569**	**1.2000e-004**	**9.4900e-003**	**1.2000e-004**	**9.6200e-003**	**2.5300e-003**	**1.0000e-004**	**2.6400e-003**	**0.0000**	**11.0192**	**11.0192**	**6.0000e-004**	**0.0000**	**11.0345**

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					0.1397	0.0000	0.1397	0.0749	0.0000	0.0749	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1214	1.3193	0.8027	1.4800e-003		0.0637	0.0637		0.0586	0.0586	0.0000	130.2936	130.2936	0.0421	0.0000	131.3471
Total	**0.1214**	**1.3193**	**0.8027**	**1.4800e-003**	**0.1397**	**0.0637**	**0.2033**	**0.0749**	**0.0586**	**0.1335**	**0.0000**	**130.2936**	**130.2936**	**0.0421**	**0.0000**	**131.3471**

3.4 Grading - 2020

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	2.1000e-004	6.8200e-003	1.0900e-003	2.0000e-005	4.0000e-004	3.0000e-005	4.3000e-004	1.1000e-004	2.0000e-005	1.3000e-004	0.0000	1.9168	1.9168	9.0000e-005	0.0000	1.9192
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	7.9600e-003	6.3200e-003	0.0558	1.0000e-004	9.0900e-003	9.0000e-005	9.1900e-003	2.4200e-003	8.0000e-005	2.5100e-003	0.0000	9.1024	9.1024	5.1000e-004	0.0000	9.1153
Total	**8.1700e-003**	**0.0131**	**0.0569**	**1.2000e-004**	**9.4900e-003**	**1.2000e-004**	**9.6200e-003**	**2.5300e-003**	**1.0000e-004**	**2.6400e-003**	**0.0000**	**11.0192**	**11.0192**	**6.0000e-004**	**0.0000**	**11.0345**

3.5 Site Preparation - 2020

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					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0102	0.1060	0.0538	1.0000e-004		5.4900e-003	5.4900e-003		5.0500e-003	5.0500e-003	0.0000	8.3577	8.3577	2.7000e-003	0.0000	8.4253
Total	**0.0102**	**0.1060**	**0.0538**	**1.0000e-004**	**0.0452**	**5.4900e-003**	**0.0507**	**0.0248**	**5.0500e-003**	**0.0299**	**0.0000**	**8.3577**	**8.3577**	**2.7000e-003**	**0.0000**	**8.4253**

3.5 Site Preparation - 2020

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	4.8000e-004	3.8000e-004	3.3500e-003	1.0000e-005	5.5000e-004	1.0000e-005	5.5000e-004	1.5000e-004	1.0000e-005	1.5000e-004	0.0000	0.5462	0.5462	3.0000e-005	0.0000	0.5469
Total	**4.8000e-004**	**3.8000e-004**	**3.3500e-003**	**1.0000e-005**	**5.5000e-004**	**1.0000e-005**	**5.5000e-004**	**1.5000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.5462**	**0.5462**	**3.0000e-005**	**0.0000**	**0.5469**

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					0.0203	0.0000	0.0203	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0102	0.1060	0.0538	1.0000e-004		5.4900e-003	5.4900e-003		5.0500e-003	5.0500e-003	0.0000	8.3577	8.3577	2.7000e-003	0.0000	8.4252
Total	**0.0102**	**0.1060**	**0.0538**	**1.0000e-004**	**0.0203**	**5.4900e-003**	**0.0258**	**0.0112**	**5.0500e-003**	**0.0162**	**0.0000**	**8.3577**	**8.3577**	**2.7000e-003**	**0.0000**	**8.4252**

3.5 Site Preparation - 2020

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	4.8000e-004	3.8000e-004	3.3500e-003	1.0000e-005	5.5000e-004	1.0000e-005	5.5000e-004	1.5000e-004	1.0000e-005	1.5000e-004	0.0000	0.5462	0.5462	3.0000e-005	0.0000	0.5469
Total	**4.8000e-004**	**3.8000e-004**	**3.3500e-003**	**1.0000e-005**	**5.5000e-004**	**1.0000e-005**	**5.5000e-004**	**1.5000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.5462**	**0.5462**	**3.0000e-005**	**0.0000**	**0.5469**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0107	0.1062	0.1105	1.7000e-004		5.8600e-003	5.8600e-003		5.4000e-003	5.4000e-003	0.0000	14.7348	14.7348	4.6300e-003	0.0000	14.8506
Paving	3.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0110**	**0.1062**	**0.1105**	**1.7000e-004**		**5.8600e-003**	**5.8600e-003**		**5.4000e-003**	**5.4000e-003**	**0.0000**	**14.7348**	**14.7348**	**4.6300e-003**	**0.0000**	**14.8506**

3.6 Paving - 2020

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	1.9100e-003	1.5200e-003	0.0134	2.0000e-005	2.1800e-003	2.0000e-005	2.2000e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	2.1846	2.1846	1.2000e-004	0.0000	2.1877
Total	**1.9100e-003**	**1.5200e-003**	**0.0134**	**2.0000e-005**	**2.1800e-003**	**2.0000e-005**	**2.2000e-003**	**5.8000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**2.1846**	**2.1846**	**1.2000e-004**	**0.0000**	**2.1877**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0107	0.1062	0.1105	1.7000e-004		5.8600e-003	5.8600e-003		5.4000e-003	5.4000e-003	0.0000	14.7348	14.7348	4.6300e-003	0.0000	14.8506
Paving	3.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0110**	**0.1062**	**0.1105**	**1.7000e-004**		**5.8600e-003**	**5.8600e-003**		**5.4000e-003**	**5.4000e-003**	**0.0000**	**14.7348**	**14.7348**	**4.6300e-003**	**0.0000**	**14.8506**

3.6 Paving - 2020

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	1.9100e-003	1.5200e-003	0.0134	2.0000e-005	2.1800e-003	2.0000e-005	2.2000e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	2.1846	2.1846	1.2000e-004	0.0000	2.1877
Total	**1.9100e-003**	**1.5200e-003**	**0.0134**	**2.0000e-005**	**2.1800e-003**	**2.0000e-005**	**2.2000e-003**	**5.8000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**2.1846**	**2.1846**	**1.2000e-004**	**0.0000**	**2.1877**

3.7 Architectural Coating - 2020

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					
Archit. Coating	0.0833					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1800e-003	0.0152	0.0165	3.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	2.2979	2.2979	1.8000e-004	0.0000	2.3024
Total	**0.0854**	**0.0152**	**0.0165**	**3.0000e-005**		**1.0000e-003**	**1.0000e-003**		**1.0000e-003**	**1.0000e-003**	**0.0000**	**2.2979**	**2.2979**	**1.8000e-004**	**0.0000**	**2.3024**

3.7 Architectural Coating - 2020

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	1.5300e-003	1.2100e-003	0.0107	2.0000e-005	1.7500e-003	2.0000e-005	1.7600e-003	4.6000e-004	2.0000e-005	4.8000e-004	0.0000	1.7477	1.7477	1.0000e-004	0.0000	1.7501
Total	**1.5300e-003**	**1.2100e-003**	**0.0107**	**2.0000e-005**	**1.7500e-003**	**2.0000e-005**	**1.7600e-003**	**4.6000e-004**	**2.0000e-005**	**4.8000e-004**	**0.0000**	**1.7477**	**1.7477**	**1.0000e-004**	**0.0000**	**1.7501**

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					
Archit. Coating	0.0833					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1800e-003	0.0152	0.0165	3.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	2.2979	2.2979	1.8000e-004	0.0000	2.3024
Total	**0.0854**	**0.0152**	**0.0165**	**3.0000e-005**		**1.0000e-003**	**1.0000e-003**		**1.0000e-003**	**1.0000e-003**	**0.0000**	**2.2979**	**2.2979**	**1.8000e-004**	**0.0000**	**2.3024**

3.7 Architectural Coating - 2020

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	1.5300e-003	1.2100e-003	0.0107	2.0000e-005	1.7500e-003	2.0000e-005	1.7600e-003	4.6000e-004	2.0000e-005	4.8000e-004	0.0000	1.7477	1.7477	1.0000e-004	0.0000	1.7501
Total	**1.5300e-003**	**1.2100e-003**	**0.0107**	**2.0000e-005**	**1.7500e-003**	**2.0000e-005**	**1.7600e-003**	**4.6000e-004**	**2.0000e-005**	**4.8000e-004**	**0.0000**	**1.7477**	**1.7477**	**1.0000e-004**	**0.0000**	**1.7501**

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	1.5800e-003	0.0139	0.0190	6.0000e-005	3.2400e-003	8.0000e-005	3.3100e-003	8.7000e-004	7.0000e-005	9.4000e-004	0.0000	5.5433	5.5433	3.6000e-004	0.0000	5.5523
Unmitigated	1.5800e-003	0.0139	0.0190	6.0000e-005	3.2400e-003	8.0000e-005	3.3100e-003	8.7000e-004	7.0000e-005	9.4000e-004	0.0000	5.5433	5.5433	3.6000e-004	0.0000	5.5523

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	2.25	2.25	2.25	8,693	8,693
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	2.25	2.25	2.25	8,693	8,693

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
General Heavy Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	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
General Heavy Industry	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248
Other Non-Asphalt Surfaces	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248
Other Asphalt Surfaces	0.480138	0.040615	0.180049	0.120387	0.037372	0.006792	0.008746	0.115531	0.001256	0.001655	0.005192	0.001016	0.001248

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	4.9137	4.9137	9.0000e-005	2.0000e-005	4.9211
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	4.9137	4.9137	9.0000e-005	2.0000e-005	4.9211
NaturalGas Mitigated	3.0000e-005	2.6000e-004	2.2000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2826	0.2826	1.0000e-005	1.0000e-005	0.2842
NaturalGas Unmitigated	3.0000e-005	2.6000e-004	2.2000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2826	0.2826	1.0000e-005	1.0000e-005	0.2842

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					
General Heavy Industry	5295	3.0000e-005	2.6000e-004	2.2000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2826	0.2826	1.0000e-005	1.0000e-005	0.2842
Other 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
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
Total		**3.0000e-005**	**2.6000e-004**	**2.2000e-004**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.2826**	**0.2826**	**1.0000e-005**	**1.0000e-005**	**0.2842**

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					
General Heavy Industry	5295	3.0000e-005	2.6000e-004	2.2000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2826	0.2826	1.0000e-005	1.0000e-005	0.2842
Other 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
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
Total		**3.0000e-005**	**2.6000e-004**	**2.2000e-004**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.2826**	**0.2826**	**1.0000e-005**	**1.0000e-005**	**0.2842**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	6540	4.9137	9.0000e-005	2.0000e-005	4.9211
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**4.9137**	**9.0000e-005**	**2.0000e-005**	**4.9211**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	6540	4.9137	9.0000e-005	2.0000e-005	4.9211
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**4.9137**	**9.0000e-005**	**2.0000e-005**	**4.9211**

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	0.0264	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-004	1.0000e-004	0.0000	0.0000	1.1000e-004
Unmitigated	0.0264	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-004	1.0000e-004	0.0000	0.0000	1.1000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.3300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-004	1.0000e-004	0.0000	0.0000	1.1000e-004
Total	**0.0265**	**0.0000**	**5.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0000e-004**	**1.0000e-004**	**0.0000**	**0.0000**	**1.1000e-004**

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	8.3300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-004	1.0000e-004	0.0000	0.0000	1.1000e-004
Total	**0.0265**	**0.0000**	**5.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0000e-004**	**1.0000e-004**	**0.0000**	**0.0000**	**1.1000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.5202	0.0113	2.7000e-004	1.8845
Unmitigated	1.5202	0.0113	2.7000e-004	1.8845

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.346875 / 0	1.5202	0.0113	2.7000e-004	1.8845
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1.5202**	**0.0113**	**2.7000e-004**	**1.8845**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.346875 / 0	1.5202	0.0113	2.7000e-004	1.8845
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1.5202**	**0.0113**	**2.7000e-004**	**1.8845**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.3776	0.0223	0.0000	0.9354
Unmitigated	0.3776	0.0223	0.0000	0.9354

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.86	0.3776	0.0223	0.0000	0.9354
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.3776**	**0.0223**	**0.0000**	**0.9354**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.86	0.3776	0.0223	0.0000	0.9354
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.3776**	**0.0223**	**0.0000**	**0.9354**

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