Draft Initial Study Proposed Mitigated Negative Declaration

for the

Forbestown Ditch Pipeline Project

June 2020



Lead Agency:

North Yuba Water District 8691 La Porte Road Brownsville, CA 95919

Prepared By:



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TABLE OF CONTENTS	
LIST OF TABLES	
LIST OF FIGURES	
APPENDICES	
1. PROJECT CONTACTS AND INFORMATION	1
2.0 PROJECT DESCRIPTION	2
3. DETERMINATION	
4.0 ENVIRONMENTAL CHECKLIST	
1. Аезтнетіся	
2. AGRICULTURAL AND FORESTRY RESOURCES	
3. Air Quality	
4. BIOLOGICAL RESOURCES	
5. Cultural Resources	
6. ENERGY	
7 GEOLOGY AND SOILS	40
8. GREENHOUSE GAS EMISSIONS	44
9. HAZARDS AND HAZARDOUS MATERIALS	46
10. Hydrology and Water Quality	49
11. Land Use and Planning	51
12. MINERAL RESOURCES	
13. Noise	52
14. POPULATION AND HOUSING	54
15. Public Services	54
16. RECREATION	55
17. TRAFFIC AND TRANSPORTATION	55
18. TRIBAL CULTURAL RESOURCES	
19. Utilities and Service Systems	59
20 WILDFIRE	60
4. MANDATORY FINDINGS OF SIGNIFICANCE	
5. PREPARERS AND REFERENCES	63
REPORT PREPARATION	63
References	63
6. ACRONYMS AND ABBREVIATIONS	65
APPENDICES	

List of Tables

Table 3.1: Attainment Status for Criteria Air Pollutants for Butte County CA.	.21
Table 3.2: Butte County Air Quality Management District Criteria Pollutant Emissions Thresholds	.22
Table 3.3: Butte County Air Quality Management District Criteria Pollutant Emissions Thresholds	.23

List of Figures

Figure 1: Location Map	12
Figure 2: Staging Areas.	13

Appendices

Appendix A: Draft Project Details Appendix B: CalEEMod Output Appendix C: Biological Resources Assessment

1. Project Contacts and Information

This Project Information, Description, and Environmental Checklist contained herein constitute the contents of an Initial Study in accordance with Section 15063 of the California Environmental Quality Act (CEQA) Guidelines:

Project Title	Forbestown Ditch Pipeline Project			
Lead Agency Contact and Address	North Yuba Water District 8691 La Porte Road Brownsville, CA 95919			
Project Sponsor's Name and Address	North Yuba Water District Jeff Maupin, General Manager 8691 La Porte Road Brownsville, CA 95919 Jeff Maupin, General Manager			
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2.1 **PROJECT LOCATION**

The Forbestown Ditch is located in Butte and Yuba Counties and begins near the community of Woodleaf. The ditch is within Sections 33 and 34, Township 20 North, Range 07 East, Sections 3-9, Township 19 North, Range 07 East, and Section 12, Township 19 North, Range 06 East of the Clipper Mills United States Geologic Survey (USGS) 7.5-minute quadrangle and Sections 11 and 12, Township 19 North, Range 06 East of the Forbestown USGS 7.5-minute quadrangle. The total length of the Forbestown Ditch is approximately 10 miles broken into two sections, the upper section is approximately eight miles and begins at the Woodleaf Penstock South Fork gauging station (SF 14) and travels to the inlet of the Costa Creek Siphon. The upper section, for the most part, meanders parallel to the natural topographic contours. The lower section is approximately two miles long and begins at the Water Treatment Plant located in Forbestown. See **Figure 1 – Location Map**.

2.2 PROJECT DESCRIPTION

2.2.1 Introduction and Background

The North Yuba Water District (NYWD) is proposing to implement the Forbestown Ditch Piping Project. The purpose of the project is to replace the open, unlined ditch with a 42-inch pipeline which would convey raw water while reducing water leakage and losses, increase water supply reliability, and improve water quality at the Forbestown Water Treatment Plant.

The NYWD receives surface water from the South Fork of the Feather River conveyed via the Forbestown Ditch to the Forbestown Water Treatment Plant. From there, water is then conveyed to the surrounding communities of Forbestown, Challenge, Rackerby, and Brownsville. The NYWD Forbestown Water Treatment Plant has a maximum storage capacity of ten days without additional inflows for adequate conveyance of water. The NYWD depends on this water supply to provide treated domestic and agricultural supply water, as well as fire suppression flows, to customers within its service areas. The NYWD's raw water conveyance infrastructure has deteriorated over the years and currently does not meet operational requirements.

The Forbestown Ditch was completed in 1857 by the South Feather Water Company, over the intervening years portions of the ditch were sold to various entities. It was constructed to divert water from the Feather River to gold mining encampments from high along the western slope of the Sierra Nevada all the way to Oroville. As mining faded over the years, the water was then used for irrigation purposes, and by the end of World War I people began to move into the area due to Pacific Gas and Electric's project to construct hydroelectric facilities in the Feather River canyon. Ultimately, the ditch was acquired by South Feather Water and Power Agency (SFWPA). Around 1968, substantial construction modifications of the overall water delivery system were constructed to accommodate increased water demands. The modifications included the construction of tunnels, surge tanks, siphons, diversion flumes and numerous upgrades to the ditch itself, including lining portions of the interior with gunite. The NYWD operates in partnership with SFWPA for conveyance of agricultural, domestic, and hydroelectric water supplies. In 2011, SFWPA transferred all right and title of the Forbestown Ditch to NYWD.

The existing open Forbestown Ditch was constructed in native soil, it was constructed by completing a high side excavation, which was side cast and compacted to provide a low side

embankment berm. In general, the resultant trapezoidal ditch consists of a four-foot-wide bottom with 1:1 side slopes and is approximately four feet deep. The low side berm has an approximate top width of four feet with an approximate 2:1 downhill embankment fill slope.

2.2.2 Purpose and Need

The purpose of the project is to improve the existing water conveyance system and increase its efficiency by reducing raw water loss and minimize environmental contamination. The open unlined conveyance system is susceptible to both natural and man-made pollutants, vandalism, damage due to fire, unauthorized withdrawals, and significant water losses. The current conveyance does not reliably deliver raw water capacities due to water losses.

There are several areas along the 10-mile alignment that are vulnerable to slope instability and overtopping during severe storm events. Through the years, several failures and areas of distress have occurred that have caused disruptions or complete stoppages to water conveyance. The most recent failure occurred in the winter of 2016/2017 during an extended and intense period of rainfall which created completely saturated soil conditions and caused low side berm failures in two different locations. A preliminary study of these locations opined one area was adversely affected by slope creep and shallow slope failures while the other area is being adversely affected by rotational and translation slope failures and local slope creep. The geotechnical report stated the piping of the ditch would have a net benefit of reducing the amount of water introduced to subsurface soils, which would ultimately increase the stability of the slopes below the ditch.

In addition to storm related emergencies that can overwhelm the water delivery system, another risk associated with the open and unlined channel are significant water losses due to surge flows that cannot be utilized during storm events, leakage, evaporation, evapotranspiration, and unpermitted water diversion. It is estimated that between 50-70% of flows are lost to leakage and evaporation respectively.

The open and unlined ditch is causing water quality concerns at NYWD's Forbestown Water Treatment Plant. The treatment plant's Waste Discharge Requirements from the NYWD's permit renewal requires significantly reduced mineral concentrations from overflows at the treatment plant's on-site storage reservoir. The open channel can be affected by a variety of issues from the surrounding land such as animal waste or local grazing practices which can cause bacterial contamination when surface runoff enters the ditch and is conveyed to the Water Treatment Facility.

In summary, the project provides the following benefits: 1) Improves existing water supply reliability in all years and especially during dry and extended drought years; 2) Removes the potential for contamination and; 3) Provides net increases slope stability in areas prone to failure.

2.2.3 **Project Components**

The proposed project involves the piping of the Forbestown Ditch from its origination at the Woodleaf Surge Tower to the Forbestown Water Treatment Facility. The primary component of the project is the installation of a 42-inch high density polyethlene (HDPE) pipe, however, there are a number of other components that are necessary to install the pipe along the alignment including access ports, turnouts, sheet flow drainage areas, modified wooden flumes, open channel to pipe transitions, pipe to open channel transitions, siphon inlet to pipe connections, siphon outlet to pipe connections, pipe to pipe connections, road crossings, and culverts. The details of each of these

components are described below in more detail and can be seen in **Attachment A** – Draft Project Details.

The project will involve the placement of the new pipe within the current ditch alignment. The pipe utilized will be HDPE ADS N-12, which provides a smooth interior wall and corrugated exterior wall providing durability and hydraulic efficiency. This type of pipe was selected because of its ease of installation and flexibility which allows for minor sagging and deformation. Additionally, the integrated bell and gasket makes it a cost-effective option as it does not require an extra coupler, grout, or special equipment for installation.

The installation methods would be different between the upper section of the ditch (Woodleaf Surge Tank to Costa Creek Siphon inlet) and the lower section (Costa Creek Siphon outfall to Forbestown Water Treatment Facility). The upper section would include the placement of the 42inch HDPE pipe within the ditch at grade. The pipe would be stabilized with anchor blocks and pipe straps approximately every 10 feet. The anchor block would be precast concrete with a saddle that the pipe would seat within. The blocks are approximately 6 inches tall, 12 inches deep, and 54 inches long with an insert on each end for pipe straps. The insert would be a galvanized bolt and washer that would provide an attachment point for the straps. The straps would be a galvanized metal strap. Minor excavations within the ditch may be necessary to remove organic material and sediment to a competent subgrade material that will allow for the level placement of the anchor blocks. Directly adjacent to the pipe an overland sheet flow ditch would be excavated on the side of the pipe opposite the berm. This small ditch would convey overland sheet flow downstream to sheet flow drainage areas where this water can be conveyed from the alignment. This small ditch would be approximately one foot across at the bottom and 0.5 feet tall and a total width of two feet minimally. In the upper portion of the alignment, a tight corner is present where the existing ditch berm will be excavated towards the ditch at approximate 3:1 slopes to provide a smooth transition from the berm to the ditch. An overland flow ditch would be constructed to convey sheet flow beneath the 42-inch HDPE pipe and across the newly excavated ditch berm. The overland sheet flow ditch would be lined with geotextile fabric and rock slope protection (RSP) and it would be approximately five feet wide at the bottom, approximately one foot deep with a total width of seven feet. An inlet catch basin would be excavated at the upper portion of the overland sheet flow ditch to facilitate water movement under the HDPE pipe and across the berm.

Installation in the lower section of the ditch would include the placement of the pipe within the existing alignment and covered on top with a minimum of one foot of backfill material to be even with the existing ground level. The pipe would be stabilized with the same anchor blocks as the upper section to prevent the pipe from floating due to hydrostatic uplift pressure. This pipe anchoring system would be placed approximately every 20 feet. Because the pipe would be buried and backfilled, approximately nine footbridges that span the existing ditch would need to be removed.

The low side earthen berm exists at its current height to maintain freeboard in the ditch. With the piping of the ditch, freeboard height will no longer need to be maintained, therefore, approximately two feet of the top portion of the berm will be excavated and used as backfill material. The excavation of the top portion of the berm will create a wider access road (approximately six feet wide) sufficient in size to allow small all-terrain utility vehicles and mini excavators to access the entire length of the pipe.

Access Ports

Access into the pipe for maintenance and observation will be achieved through the placement of pipe access ports. Two port configurations will be utilized within the alignment. The first will be utilized in the upper portion of the ditch from SF14 to the Costa Creek Siphon.

In the lower portion of the ditch, from the bottom of the Costa Creek Siphon to the Forbestown Treatment Plant the pipe access port would be placed in the pipe alignment and the structure will be covered with backfill material to be even with the existing grade as the pipe is buried in this portion.

For both configurations, the access ports will be constructed utilizing an ADS HDPE pipe tee fitting pointing upward to provide continuity within the conveyance system. The top of the tee fitting will have a cast-in-place or pre-fabricated concrete frame around the pipe with a lockable diamond plate cover or equivalent. The access ports will be placed along the alignment approximately every 1,000 linear feet.

For pipe access ports within the upper portion of the ditch, a pipe access embankment will be constructed around the concrete frame. The embankment will utilize existing native backfill material excavated from the adjacent berm to prevent movement. Immediately upstream from the pipe access port a sheet flow drainage would be placed to convey overland sheet flow out of the flow ditch prior to it reaching the access port structure.

Sheet Flow Drainage

There are several areas where overland sheet flow is concentrated and flows into the ditch. This surface water is assumed to contribute to mineral and bacterial contamination observed at the Forbestown Treatment Plant. This surface water will no longer be captured in the conveyance system once pipe is installed. This water will still flow into the ditch; however, it will be released to natural elevational drainage courses using sheet flow drainages. The installation of these sheet flow drainages beneath the main pipe line will prevent water from ponding and causing hydrostatic uplift pressure and soil saturation. At areas determined to be overland sheet flow concentration sites, these sheet flow drainages installed beneath the conveyance system will divert flows out of the ditch.

Where designated, sheet flow drainage ditches would be installed from the existing alignment running beneath the 42-inch HDPE pipe and traveling across the earthen berm. The sheet flow drainage ditch would be approximately five feet wide at the bottom and approximately one foot deep. The earthen berm would need to be excavated to provide a smooth transition from the top of the earthen berm to the bottom of the drainage ditch and alignment. The drainage ditch would be lined with RSP and geotextile fabric to protect against any scour. The inlet would have a catch basin excavated in the ditch to collect the sheet flow and direct it out. A four-foot-wide barrier will be constructed at the downstream side of the sheet flow drainage ditch to prevent any surface water from bypassing the drainage area and continuing down the alignment.

<u>Turnouts</u>

In the event any portion of the pipeline requires flows to be diverted and released out of the system, a turnout would be installed. Five turnout areas needing structures have been identified where they will be installed. The turnout structure will be a 60 inch by 60-inch precast concrete box

with two canal gates installed at each outlet. The structure will be within the pipe alignment and will have a 42-inch HDPE outlet pipe. The outlet of the pipe will be protected with RSP and geotextile fabric. The outlet pipe will be installed at approximately two percent slope to facilitate water flow from the turnout. The structure will be covered with approximately one foot of native backfill material from the top portion of the berm for protection of the outfall pipe.

Additionally, a sheet flow drainage as described above would be placed upstream of the turnout to direct over land sheet flow collected in the ditch beneath the 42-inch HDPE pipe and out of the alignment.

Open Channel to Pipe Transitions

Several open channel to pipe transitions occur along the alignment, as portions of the existing ditch have been lined with concrete. In areas where the concrete is in good condition and functional, as such it will remain. To facilitate water flows into the piped ditch from these open channels the construction of headwalls to direct water into the pipe will be necessary. There will be two types of headwalls constructed to direct flows: one utilizing quickcrete bags anchored into the toe of the ditch for stabilization, and the other utilizing shotcrete to form the headwall. For open earth channel to pipe transitions quickcrete bags would be utilized to construct the headwall. In open shotcrete channels to pipe transitions, shotcrete will be utilized to form the headwall. In both cases, the 42-inch HDPE pipe would be mitered to provide a smooth transition from the headwall into the pipe. A trash rack will be constructed to remove large debris from entering the piped portion. The trash rack will be approximately 50 inches long and oriented to properly capture debris. The trash rack would consist of metal pipes oriented vertically with one pipe oriented horizontally at the bottom. It would be attached to the pipe by a metal plate with a bolt and washer.

Pipe to Open Channel Transitions

As previously mentioned, there are a number of concrete lined sections within the existing alignment that are in good condition and will remain in place. At the downstream side of these lined sections the concrete will need to transition into the 42-inch HDPE pipe. Two types of pipe to open channel transitions will be installed depending on the location within the alignment, one in the upper portion and one in the lower portion of the ditch.

In the upper portion of the alignment just upstream of the transition from pipe to open channel backfill material would be placed over the 42-inch HDPE pipe level with the existing berm. The backfill material would be sloped to the transition. At the outfall of the pipe RSP would be placed along both the slope of the backfill material and extending approximately five feet from the end of the pipe. The RSP would be underlaid by geotextile fabric. Upstream of the backfill a sheet flow drainage area would be installed as previously described to remove excess water from the alignment.

In the lower portion of the alignment the 42-inch HDPE pipe is buried, as such, the backfill material will be sloped towards the transition of the pipe to the open channel. The slope would be protected with RSP underlaid by geotextile fabric. Additionally, an RSP apron would extend approximately five feet beyond the end of the pipe to protect against scour.

Modified Wood Flumes

Several wood flumes are present within the ditch alignment. These wooden flumes will need to be modified for the piping of the ditch. To facilitate placement of the 42-inch HDPE pipe in these structures the existing supports on the flume will be removed and replaced. New top supports will be approximately 2" by 4" by 80" while side supports will be approximately 2" by 4" by 55". New wood supports for the bottom of the pipe will be approximately 2" by 4" by 55". New wood supports to stabilize the pipe within the flume. Wood shims may be installed below the pipe to maintain a positive slope facilitating flow. New supports for the pipe will be installed approximately every 10 feet within the wooden flume sections. Wooden walkways will be installed along the top portion of the flume.

HDPE Pipe to Corrugated Metal Pipe Connection

In places where the new 42-inch HDPE pipe must be connected to existing corrugated metal pipe (CMP), a double wide pipe coupler would be utilized at the connection point. The coupler would be one size larger in diameter in order to provide suitable overlap between the two pipe types. The HDPE pipe will have an internal coupler spigot adapter to facilitate a smooth transition between pipe types. A HDPE pipe reducer would be utilized to connect the different sized pipes to the existing corrugated metal pipes. A minor excavation will be necessary within the ditch to avoid soil intrusion into the pipes. The excavation would be back-filled with Class II bedding (crushed rock or gravel) to a depth of approximately six inches.

HDPE Pipe to Reinforced Concrete Pipe Connection

Large diameter (48 inch) concrete reinforced pipe is present within the ditch alignment. It has been determined to be in good condition and will be left in place. To facilitate connection of the new HDPE pipe to the reinforced concrete pipe, a cast-in-place concrete encasement will be constructed. Minor excavations will be necessary to seat the concrete encasement. These excavations would be backfilled to support the collar. The encasement will have non-woven geotextile wrapped around the connection of the two pipes. A 48-inch HDPE pipe will be connected to the existing concrete pipe with an internal coupler spigot adapter. Additionally, a pipe reducer with matching inverts will transition the 42-inch HDPE pipe into the 48-inch HDPE pipe and into the 48-inch concrete pipe.

Pipe to Siphon Connections

Pipe to Siphon Inlet Connection (Woodleaf and Oroleve Siphons)

To facilitate the installation of pipe at the Woodleaf and Oroleve siphons the construction of an eight-inch-thick headwall will be necessary. The existing trash rack will be removed and salvaged, if possible. Stainless steel clamps and non-shrink patching compound will be placed at the end of the pipe to attach it to the newly constructed headwall. The existing covers at the siphons will need to be modified to fit the new inlet configuration. Non-shrink patching compound will be used to attach the pipe to the existing siphon.

A sheet flow drainage area would be installed upstream of the siphon (as previously described in the sheet flow drainage section) to facilitate the removal of any excess sheet flow from the alignment.

Siphon Inlet to Pipe Connection (Beehive Siphon)

At the Beehive Siphon, the 42-inch HDPE pipe will need to be attached to the inlet. An eight-inchthick concrete headwall will be constructed to seat the pipe into the siphon. Non-shrink patching compound will be utilized around the outside of the pipe to ensure attachment of the pipe to the newly constructed headwall. The cover would be modified to fit the new inlet configuration. The structure would be backfilled.

Siphon Outlet to Pipe Connection (Beehive Siphon)

At the Beehive Siphon the 42-inch HDPE pipe will need to be attached to the outlet. An eight-inchthick concrete headwall will be constructed to seat the pipe into the siphon, the bottom of the headwall would be shaped to provide a smooth transition from the headwall to the pipe. Stainless steel clamps and non-shrink patching compound will be placed around the end of the pipe to ensure attachment to the newly constructed headwall. Retainer hooks would be placed into the existing concrete to attach a diamond plate access door to the top of the siphon outlet.

Dirt Road Crossings

There are approximately 21 areas along the alignment where dirt roads cross the Forbestown Ditch. In these areas, there are corrugated metal pipes that convey water beneath the roadway. These corrugated metal pipes would be removed to make way for the 42-inch HDPE pipe and the road crossings would remain. The side slopes of the road would be sloped and a sheet flow drainage area would be placed upstream of the road to remove sheet flow accumulated next to the 42-inch HDPE pipe from the Forbestown Ditch. Aggregate base would be installed on the top of the roadway and it would be compacted.

<u>Culverts</u>

Five culverts will be installed beneath Woodleaf Tunnel Road to facilitate roadside drainage. The culverts would be 18 inches in diameter and approximately 20 feet long. A small inlet catch basin would be excavated to facilitate flow into the inlet of the culvert and an RSP facing would be installed on the outfall of each culvert to protect against scour.

Staging and Access Roads

Access to the project site would be accomplished using established roads the District uses to inspect and perform routine maintenance on the ditch. Five staging areas have been identified along the ditch alignment with four occurring in the upper portion of the ditch and one occurring in the lower portion. Additional materials may be stored at the North Yuba Water District yard located in Brownsville on La Porte Road. Construction materials would be staged within these areas and along the berm directly adjacent to the ditch. See **Figure 2** for a depiction of the proposed staging areas.

Construction Methods, Timing, and Equipment

Construction Methods and Timing

It is anticipated that construction of the entire alignment will take three years due to the overall length of the alignment. Construction is set to take place in the late fall when irrigation water deliveries for customers has ceased, generally around October. Construction will continue through the fall and winter and conclude in the spring when irrigation water deliveries commence, generally May. During the non-irrigation season, water must be delivered to the Forbestown Treatment Plant to provide drinking water supplies for the communities within the District. During the construction season, water must be delivered down the ditch to the Forbestown Treatment Plant every 10 days. Therefore, it is anticipated, the contractor will work for 10 days and then have a three day stand down period while water is delivered to the treatment plant for drinking water supplies. This pattern would continue for the entirety of the construction period from approximately October to May.

Construction may be broken into three separate phases (one during each construction season) depending on a number of considerations including inclement weather, construction issues, site conditions, etc. It is anticipated the first phase (first construction season) would be from the SF14 at the upper end of the ditch to the Oroleve Siphon. Subsequent, phases would move from the bottom of the Oroleve Siphon towards the Forbestown Treatment Plant. Construction would travel in a linear fashion along the Forbestown Ditch moving from the upper portion to the lower portion. Construction is anticipated to begin in the Fall of 2020.

Construction Equipment

Construction equipment would depend on the contractor's planned operation, such equipment may include, but is not limited to excavators, mini excavators, backhoes, front end loader, off-road hauling trucks, compactors, pickup trucks, generators, and welding equipment.

Environmental Setting

The project is located in Butte and Yuba Counties, within Sections 33 and 34, Township 20 North, Range 07 East, Sections 3-9, Township 19 North, Range 07 East, and Section 12, Township 19 North, Range 06 East of the Clipper Mills United States Geologic Survey (USGS) 7.5-minute quadrangle and Sections 11 and 12, Township 19 North, Range 06 East of the Forbestown USGS 7.5-minute quadrangle.

The existing open Forbestown Ditch was constructed in native soil, by completing a high side excavation. Excavated material was side cast and compacted to provide a low side embankment berm. In general, the resultant trapezoidal ditch consists of a four-foot-wide bottom with 1:1 side slopes and is approximately four feet deep. The low side berm has an approximate top width of four feet with an approximate 2:1 downhill embankment fill slope. Typically, the canal is approximately 10 feet wide and four feet deep. Generally, the bottom of the ditch is soil with buildup of organic materials (i.e. leaf litter) however, some portions are more rocky consisting of underlying bedrock materials. The earthen berm in most parts is lightly vegetated with grasses and forbs. Woodleaf Tunnel Road travels near and crosses the ditch in the upper portion. Where the road crosses the ditch, large diameter corrugated metal pipes convey water under the roadway. Over the years, the District has repaired portions of the canal when necessary utilizing concrete lining, visqueen, or corrugated metal pipes, and such repairs are present in various locations along the entirety of the alignment.

The Forbestown Ditch contains water throughout the irrigation season, which runs from the spring to the early fall. When water is present in the ditch it is typically two to three feet deep. Typically, during the non-irrigation period water diversions from SF14 cease and only sheet flow is present within the ditch and most of it is dry. However, the District can divert water into the ditch if necessary, to replenish drinking water supplies at the Forbestown Treatment Plant. The plant has

the capacity for 10 days of drinking water supply for the surrounding communities so periodically water must be run through the ditch during the non-irrigation season. Limited amounts of emergent vegetation are present within the ditch, with tall cyperus (*Cyperus eragrostis*) and pale spike rush (*Elocharis macrostachya*) being dominant.

Approximately eight concrete lined sections can be found along the alignment. These concrete lined sections are variable in length from approximately 100 to 1,000 feet in length. Additionally, several portions of the ditch are lined with visqueen to prevent additional water loss. Most of the lined concrete sections are found in the upper portion of the ditch.

Nine wooden flumes are found along the ditch alignment in areas where spanning topographical or geological features is necessary. The flumes are variable in length ranging from approximately 30 to 200 feet in length. In addition to the flumes, there are approximately 33 corrugated metal, reinforced concrete, or steel pipes along the alignment, with many are found under road crossings.

Several large siphons are present along the alignment including the Oroleve Siphon, Woodleaf Siphon, Costa Creek Siphon and the Beehive Siphon. These siphons carry water over large topographical features that cannot be spanned easily by flumes. The siphons are large diameter pipes that are either above ground or buried. In addition to the siphons, there is a section of the ditch known as the Cascade Falls Segment which is approximately 1,000 feet long. This segment is relatively steep, dropping approximately 230 feet in elevation over a distance of approximately 1,000-feet. along bedrock for nearly its entirety.

Five turnouts are present within the ditch alignment, these turnouts are concrete structures with boards or a gate that can be opened to allow the District to remove water from the system when necessary (i.e. storm events). During the non-irrigation season several of these turnouts are left open so stormwater runoff does not overwhelm the ditch and damage the system.

The ditch can be effectively separated into two distinct sections, an upper portion and a lower portion. The upper portion extends from SF14 to the Costa Creek Siphon while the lower portion runs from the outfall of the Costa Creek Siphon to the Forbestown Treatment Plant. The upper portion is remote with very little surrounding development with the ditch traveling through vacant forested land. While the lower portion is surrounded by rural residential land uses with the ditch traveling through properties in closer proximity to houses. The upper portion of the project site is relatively remote with only a single house and the Woodleaf Camp in close proximity to the ditch. Land surrounding the upper portion of the Forbestown Ditch is primarily vacant with much of it utilized by private logging companies such as Chy Company and Soper Wheeler. Additionally, large portions surrounding the existing ditch are owned by the federal government and managed by the U.S. Forest Service. The upper portions of the ditch can be accessed via Woodleaf Tunnel Road. Habitat in the upper portion of the project site is dominated by coniferous forest with large overstory trees and variably dense shrub cover, ranging from sparse to dense. The surrounding area overstory is comprised of Douglas fir (Psuedotsuga menziesii), ponderosa pine (Pinus ponderosa), incense cedar (Calocedrus decurrens), California black oak (Quercus kelloggii), pacific madrone (Arbutus menziesii), pacific dogwood (Cornus nuttallii), big-leaf maple (Acer macrophyllum), interior live oak (Quercus wislizeni), canyon live oak (Q. chysolepis), tan oak (Notholithocarpus densiflorus), California bay (Umbellularia californica), and white alder (Alnus rhambifolia). Commonly encountered shrub species included toyon (Heteromeles arbutifolia), spice bush (Calycanthus occidentalis), poison oak (Toxicodendron diversilobium), scrub oak (Quercus berberidifolia), common manzanita (Arctostaphylos manzanita), Himalayan blackberry (Rubus armeniacus), sword fern (Polystichum munitum), gooseberry (Ribes californicum) and scotch broom

(*Cytisus scoparius*). Ground cover and herbaceous species included western columbine (*Aquilegia formosa*), Klamath weed (*Hypericum perforatum*), blue dicks (*Dichelostemma capitatum*), rabbitbrush (*Ericameria nauseosa*), foothill penstemon (*Penstemon heterophyllus*), mugwort (*Artemisia douglasiana*), foothill poppy (*Eschscholzia caespitosa*) and a variety of native and non-native grasses.

The lower portion of the project area is characterized as more residential in nature as the ditch reaches Forbestown. Generally, the ditch parallels Forbestown Road until ultimately crossing Challenge Cutoff Road before reaching the Forbestown Treatment Plant. Many rural residences are present along this portion of the ditch. Habitat throughout this portion of the ditch is coniferous forest dominated by ponderosa pine, Douglas fir, California black oak, and big leaf maple. Since this portion of the ditch is present within residential parcels, homeowner improvements such as foot bridges and gates/fences can be found within the alignment.

The project site is gently sloping, meandering parallel to the natural topographic contours as the ditch was constructed along the natural topography of the area. The elevation of the project site ranges from approximately 3,120 feet above mean sea level (MSL) at the upper end to approximately 2,720 feet above MSL at the treatment plant. Temperatures range from a mean of 40 degrees Fahrenheit in winter to 66 degrees Fahrenheit in the summer. Rainfall totals average approximately 82 inches per year while snowfall totals average approximately 109 inches per year.

Other Public Agencies Whose Approval is Required

- U.S. Army Corps of Engineers
- Regional Water Quality Control Board
- California Department of Fish and Wildlife
- Butte County



Waters

Within: Sections 33 & 34, T20N, R07E; Sections 3-9, T19N, R07E; and Section 12, T19N, R06E CLIPPER MILLS USGS 7.5' QUAD and Sections 11 & 12, T19N, R06E FORBESTOWN USGS 7.5' QUAD Butte County, CA





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es	Imagery Source:	Map Date:	Drawn By:	NSE Project #
	USGS Topo	2/7/2020	BSA	17-002



3. Determination

Environmental Factors Potentially Affected

The environmental factors checked below could be potentially affected by this project; however, with the incorporation of mitigation measures,* potentially significant impacts are reduced to less than significant level by the project" (CEQA Guidelines Section 15382).

	Aesthetics		Agricultural/Forestry Resources	\boxtimes	Air Quality
\boxtimes	Biological Resources	\boxtimes	Cultural Resources		Energy
	Geology/Soils		Greenhouse Gas Emissions		Hazards/Hazardous Materials
	Hydrology/Water Quality		Land Use/Planning		Mineral Resources
	Noise		Population & Housing		Public Services
	Recreation		Transportation		Tribal Cultural Resources
	Utilities/Service Systems		Wildfire	\boxtimes	Mandatory Findings of Significance

Determination:

On the basis of this initial evaluation:

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

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

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

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

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

Matthew Rogers	6-19-20
Signature	Date
Matt Rogers, Associate Planner	North Yuba Water District
Printed Name	For

Evaluation of Environmental Impacts:

- 1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards, (e.g., the project will not expose sensitive receptors to pollutants based on a project-specific screening analysis.)
- 2) All answers must take account of the whole action involved including off-site as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- 3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
- 4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 ©(3)(D). In this case, a brief discussion should identify the following:
 - a) Earlier Analysis Used: Identify and state where they are available for review.
 - b) Impacts Adequately Addressed: Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
 - c) Mitigation Measures: For effects that are "Less Than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
- 8) The explanation of each issue should identify:
 - a) The significance criteria or threshold, if any, used to evaluate each question; and
 - b) The mitigation measure identified, if any, to reduce the impact to less than significant.

1. Aesthetics

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

Setting

The Butte County General Plan Figures COS-7, COS-8, and COS-9 display identified scenic resources within Butte County. The scenic resources depicted in COS-7 include the land based scenic resources (Table Mountain, Butte Creek Canyon, Feather Falls Scenic Area, and Sacramento River Wildlife Refuge) and water based scenic resources (Lake Oroville, Lake Wyandotte, Thermalito Afterbay, and Philbrook Reservoir). The Yuba County General Plan identifies areas with significant unique and picturesque views including the Sutter Buttes, the Sierra Nevada foothills and mountains, the valley floor, expansive agricultural lands, rivers, and lakes and reservoirs. From the valley floor there are views of expanses of agricultural lands crossed by rivers. The most prominent scenic vista is experienced from the foothills, where distant views of the Sutter Buttes are possible. There are several local scale scenic views of the Feather, Yuba, and Bear rivers at bridge crossings where roads parallel these rivers.

There are no officially designated State Scenic highways within Butte and Yuba Counties, however, State Route 70 (SR 70) north of the intersection of State Route 149 (SR 149) is considered an eligible State Scenic Highway. As seen in Figure COS-8 in the Butte County General Plan the County has designated SR 70 through the Feather River Canyon and a portion of State Route 32 (SR 32) north of Forest Ranch as County Scenic Highways. Additionally, State Route 49 (SR 49) located in the eastern portion of Yuba County is an eligible state highway.

Scenic Highway Overlay Zones are identified in COS-9 of the General Plan, the zones extend 350 linear feet from the centerline of each of the scenic routes identified. The Scenic Overlay Zones can be found on portions of SR 32 north of Chico, the Skyway, southern portions of State Route 191 (SR 191) and Pentz Road, and portions along Forbestown Road and Lumpkin Road.

Based on information presented within the Butte County General Plan, the project area is not located within, or in the vicinity of any identified scenic resources. The Yuba County General Plan identifies the Sierra Nevada foothills and mountains as aesthetic resources.

Discussion

- **a) No Impact.** The proposed project will not have an adverse effect on any scenic vistas. Piping of the Forbestown Ditch will not significantly interfere with the views of scenic vistas from adjacent residences and public right-of-way as the piping will occur within the existing ditch alignment and will not extend vertically from the current ditch prism.
- **b)** No Impact. There are no resources within a state scenic highway in the project area. Furthermore, there are no officially recognized scenic roadways in Butte and Yuba counties. The proposed project would not result in a significant change to the appearance of the existing roadway, nor would it eliminate access to scenic views or alter the landscapes surrounding the project site.
- **c)** No Impact. The proposed project will not substantially degrade the existing visual character or quality of the site and its surroundings. The project would not create structures with a substantial vertical presence. Temporary visual impacts may occur during construction activities, when heavy equipment and construction materials will be present within the project area. Neither the function nor the general appearance of the surrounding area would be substantially modified by the proposed project.
- **d)** No Impact. The improvements associated with this project do not include lighting or reflective surfaces that could contribute to substantial sources of light or glare. Additionally, construction will not occur during the evening or nighttime hours.

Mitigation: None Required

2. Agricultural and Forestry Resources

Would the project:	Potentially Significant	Less Than Significant with Mitigation	Less Than Significant	No Impact
a) Convert Farmland (Prime, Unique or of Statewide Importance) pursuant to the Farmland Mapping and Monitoring Program of the CA Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				х
 c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 1220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? 			X	
d) Result in the loss of forest land or conversion of			X	

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

Setting

Important Farmland

To characterize the environmental baseline for agricultural resources, Important Farmland Maps produced by the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) were reviewed. Important Farmland maps show categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance (if adopted by the county), Grazing Land, Urban and Built-up Land, Other Land, and Water. Prime Farmland and Farmland of Statewide Importance map categories are based on qualifying soil types, as determined by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), as well as current land use. These map categories are defined by the Department of Conservation's FMMP as follows:

Prime Farmland: Land which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods.

Farmland of Statewide Importance: Land that is similar to *Prime Farmland* but with minor shortcomings, such as greater slopes or less ability to hold and store moisture.

Unique Farmland: Land of lesser quality soils used for the production of specific high economic value crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. It is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Examples of crops include oranges, olives, avocados, rice, grapes, and cut flowers.

Farmland of Local Importance: Land of importance to the local agricultural economy, as determined by each county's board of supervisors and local advisory committees. Examples include dairies, dryland farming, aquaculture, and uncultivated areas with soils qualifying for *Prime Farmland* and *Farmland of Statewide Importance*. Butte County has not adopted a definition of Farmland of Local Importance.

Grazing Land: Land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock.

Urban and Built-up Land: Land used for residential, industrial, commercial, construction, institutional, public administrative purpose, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are also included in this category.

Other Land: Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

Water: Water areas with an extent of at least 40 acres.

Williamson Act

The California Land Conservation Act of 1965, commonly known as the Williamson Act, was established based on numerous State legislative findings regarding the importance of agricultural lands in an urbanizing society. Policies emanating from those findings include those that discourage premature and unnecessary conversion of agricultural land to urban uses and discourage discontinuous urban development patterns, which unnecessarily increase the costs of community services to community residents. The Williamson Act authorizes each County to establish an agricultural preserve. Land that is within the agricultural preserve is eligible to be placed under a contract between the property owner and County that would restrict the use of the land to agriculture in exchange for a tax assessment that is based on the yearly production yield. The contracts have a 9-year term that is automatically renewed each year, unless the property owner or county requests a non-renewal or the contract is cancelled.

Discussion

- **a) No Impact.** The proposed project does occur adjacent to lands designated as Important Farmlands; however, the project will occur within the existing Forbestown Ditch alignment. Thus, the project would not result in the conversion of Prime Farmland, Farmland of Statewide Importance, Unique Farmland or Farmland of Local Importance, as shown on the maps prepared pursuant to Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- **b)** No Impact. The project will not conflict with existing zoning for agricultural use, or a Williamson Act Contract. There are no Williamson Act Contracts on lands adjacent to the project, project activities in these areas will occur within the existing ditch alignment and access road. Therefore, relative to land use designations and Williamson Act contracts, there would be no impact.
- **c)** Less than Significant. The proposed project would not conflict with existing zoning for, or cause the rezoning of forestland (as defined in Public Resources Code §1220(g)), timberland (as defined in Public Resources Code §4526), or Timberland Production (as defined in Government Code §51104(g)).
- **d)** Less than Significant. The proposed project would not cause the rezoning or loss of forestland or timberland to non-forest use. Implementation of the project does not involve the removal of trees as the project will occur within the existing ditch alignment.
- **e)** No Impact. The proposed project does not involve changes to the existing environment that could result in the conversion of Farmland to non-agricultural use. The proposed project involves the piping of the Forbestown Ditch within its current alignment. Any agricultural uses that may be in the surrounding area will continue.

Mitigation: None Required

3. Air Quality

Would the project:	Potentially Significant	Less Than Significant with Mitigation	Less Than Significant	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		Х		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including emissions that exceed quantitative thresholds for ozone precursors)?		Х		
d) Expose sensitive receptors to substantial pollutant concentrations?		х		
e) Create objectionable odors affecting a substantial number of people?			X	

Setting

The proposed project is located within the Northern Sacramento Valley Air Basin (NSVAB). Summer conditions in the NSVAB are typically characterized by high temperatures and low humidity, with temperatures averaging from approximately 90 degrees Fahrenheit during the day and 50 degrees Fahrenheit at night. During the summer months, the prevailing winds are typically from the south. Winter conditions are characterized by occasional rainstorms interspersed with stagnant and sometimes foggy weather. The daytime average temperature is in the low 50s°F and nighttime temperatures average in the upper 30s°F. During winter, winds predominate from the south, but north winds frequently occur. Rainfall occurs mainly from late October to early May, with an average of 17.2 inches per year, but this amount can vary significantly each year.

Dispersion of local pollutant emissions are predominately affected by the prevailing wind patterns and inversions that often occur in the NSVAB. Within the NSVAB, two types of inversions can occur. During the summer months, sinking air forms a "lid" over the region and confines pollution to a shallow layer near the ground, which can contribute to photochemical smog problems. During winter nights, air near the ground cools while the air aloft remains warm, which can cause poor dispersion of ground level pollutant emissions (Butte County General Plan EIR; BCAQMD, 2014).

Current Ambient Air Quality

Federal and state standards have been established for six criteria pollutants, including ozone (O_3) , carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulates less than 10 microns and 2.5 microns in diameter (PM₁₀ and PM_{2.5}), and lead (Pb). The Butte County Air Quality Management District (BCAQMD) is the primary agency responsible for assuring that the federal and

state ambient air quality standards are attained and maintained in Butte County. The BCAQMD operates a network of ambient air monitoring stations throughout Butte County. Depending on whether the standards for a particular criteria air pollutant has been met or exceeded, the local air basin is classified as being in "attainment" or "nonattainment." Based on the most recent monitoring data, Butte County is a nonattainment area for both state and federal ozone standards, the state PM_{2.5} standards, and the state PM₁₀ standards. Butte County is in attainment for the state and federal standards for sulfur dioxide, nitrogen dioxide, and carbon monoxide (BCAQMD, 2018).

Pollutant	State	Federal
NOx	Attainment	Attainment
SO ₂	Attainment	Attainment
СО	Attainment	Attainment
1-hour Ozone	Non-Attainment	
8-hour Ozone	Non-Attainment	Non-Attainment
24-Hour PM ¹⁰	Non-Attainment	Attainment
24-Hour PM ^{2.5}	No Standard	Attainment
Annual PM ¹⁰	Attainment	No Standard
Annual PM ^{2.5}	Non-Attainment	Attainment
Source: BCAQMD 2018	· · · ·	

Table 3.1: Attainment Status for Criteria Air Pollutants for Butte County CA.

Air Quality Planning

The California Clean Air Act requires air districts to prepare a plan for air quality improvement for criteria pollutants for which the District is in nonattainment. The BCAQMD's Air Quality Attainment Plan was first adopted in 1991 and updated in 1994, 1997, 2000 and 2003. In 2006, the District collaborated with other air pollution control districts in the NSVAB to prepare a joint Air Quality Attainment Plan. That joint plan has been updated in 2006, 2009 and 2012 as the Northern Sacramento Valley Planning Area Triennial Air Quality Attainment Plan. The attainment plan is the basis for an air district's functional strategy to meet federal and state ambient air quality standards.

The BCAQMD, in its role of insuring projects are properly evaluated for consistency with ambient air quality standards and the Northern Sacramento Valley Planning Area Triennial Air Quality Attainment Plan, have prepared guidelines to assist applicants and lead agencies in evaluating potential air quality and greenhouse impacts that may occur with a proposed project. Established with these guidelines are screening criteria to determine whether or not additional modeling for criteria air pollutants is necessary for a project. The screening criteria listed in Table 4.3-2 of the BCAQMD CEQA Air Quality Handbook were created using CalEEMod version 2013.2.2 for the given land use types. To determine whether or not a proposed project meets the screening criteria, the size and metric for the land use type (units or square footage) should be compared with that of the proposed project. If a project meets the applicable screening criteria, then further quantification of criteria air pollutants is not necessary, and it may be assumed that the project would have a less than significant impact for criteria air pollutants. If a project exceeds the size provided by the screening criteria for a given land use type then additional modeling and quantification of criteria air pollutants should be performed (BCAQMD, 2014).

At the local level, responsibilities of air quality districts include overseeing stationary source emissions, approving permits, maintaining emission inventories, maintaining air quality stations, reviewing air quality sections of environmental documents, etc. The air quality districts are also responsible for establishing and enforcing local air quality rules and regulations that address requirements of federal and state air quality laws for ensuring compliance with the National Ambient Air Quality Standards and the California Standards.

The following BCAQMD rules may apply to implementation of the proposed project. This list may not be all encompassing as additional BCAQMD rules may apply. Rule 200 (Nuisance) establishes general limitations on air contaminants and Rule 205 (Fugitive Dust Emissions) limits fugitive emissions of PM10 from construction activities. The significance criteria established by BCAQMD may be relied on to make significance determinations for potential impacts on environmental resources. Analysis requirements for construction and operation-related pollutant emissions are contained BCAQMD's CEQA Air Quality Handbook: Guidelines for Assessing Air Quality and Greenhouse Gas Impacts for Projects Subject to CEQA Review (BCAQMD 2014). These thresholds are presented in Table 4.3.2. For air quality analysis purposes, the project is considered a long-term project because gravel removal will continue, only construction related thresholds were considered in this analysis.

Table	3.2:	Butte	County	Air	Quality	Management	District	Criteria	Pollutant	Emissions
Thres	holds									

Pollutant	Construction Related	Operation Related				
ROG	137 pounds/day, not to exceed 4.5 tons/year	25 pounds/day				
NOX	137 pounds/day, not to exceed 4.5 tons/year	25 pounds/day				
PM<10 microns	80 pounds/day	80 pounds/day				
Source: Butte County Air Quality Management District 2014						

Discussion

a) Less than Significant. The proposed project is the piping of the Forbestown Ditch and replacement of small, structurally deficient water control facilities along its alignment. It does not involve the construction of new expanded facilities. The proposed project will be required to comply with all applicable rules, regulations, and control measures including permitting, prohibitions, and limits to emissions that work to reduce air pollution throughout California. Therefore, it will not conflict with or obstruct implementation of any air quality plans in Butte County. The proposed project would not create a source of new vehicle traffic, such as a new housing development or commercial uses, and thus there would be no added vehicle trips to the

existing roadway network, and no long-term air quality impacts. The proposed project is located within the Northern Sacramento Valley Air Basin (NSVAB) and the jurisdiction of the Butte County Air Quality Management District (BCAQMD). Construction activities may result in minimal ground disturbance due to placement of water control components. To comply with the BCAQMD rules (3.0 and 3.16, visible and fugitive dust emissions), the District shall comply with all Best Available Mitigation Measures (BAMMs) for the control of construction related particulate emissions.

b) Less than Significant with Mitigation Incorporated. Implementation of the proposed project would result in the generation of short-term construction-related air pollutant emissions. Diesel fumes may be noticeable near the site; however, diesel fumes will be a short-term effect. All equipment must comply with California emissions standards. Exhaust emissions from construction equipment would contain reactive organic gases (ROG), nitrogen oxides (NOx), carbon monoxide (CO) and particulate matter less than 10 microns in diameter (PM10). Particulate matter less than 10 microns emissions would also result from windblown dust (fugitive dust) generated during construction activities. As shown in Table 1, per the California Ambient Air Quality Standards (CAAQS) the project area is designated as non-attainment for ozone, and a non-attainment area for 24-hour PM10.

Air Quality modeling was performed using project specific details in order to determine whether the project would result in criteria air pollutant emissions in excess of the applicable thresholds of significance. The proposed project construction-related maximum daily emissions were modeled utilizing the most recent version of the California Emissions Estimator Model (CalEEMod) and are presented in Table 4.3.3 below. The results were compared to BCAQMD standards of significance, as seen in Table 4.3.3, in order to determine the associated level of impact.

Criteria Air Pollutants Category PM₁₀ Total ROG NOx (or smaller) 137 lbs/day, 4.5 137 lbs/day, 4.5 **BCAQMD** Threshold 80 lbs/day tons/yr tons/yr 3.04 Daily (lbs/day) 2.48 23.24 0.0815 0.0998 Annual (tons/yr) 0.7666

Table 3.3: Butte County Air Quality Management District Criteria Pollutant EmissionsThresholds

The project would not result in construction related emissions exceeding BCAQMD emission thresholds, having a less than significant impact to regional air quality. The proposed project construction would occur over three construction seasons for an estimated total of 18 months, and as such the increases to criteria pollutants would be temporary and minimal. The incorporation of **Air Quality MM-1**, would ensure construction related emissions impacts would be less than significant.

c) Less than Significant with Mitigation Incorporated. The project involves the piping of the Forbestown Ditch within the water district, and will not generate new traffic, thereby generating more emissions, as would new development (i.e., residential or commercial land uses).

The project will generate short-term construction related emissions associated with equipment used for construction activities. These emissions would contain ozone precursors, PM10 and PM2.5. Additional particulate matter emissions in the form of fugitive dust could be generated during ground disturbing activities for placement of weir boxes, culverts, headwalls, and head gates.

The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. Each of the above impacts are temporary, local, and construction related. The incorporation of **Air Quality MM-1** would reduce these impacts to a less than significant level. Air quality mitigation measures are consistent with the requirements of the Butte County General Plan and the BCAQMD specifications for pollution and dust control.

- **d)** Less than Significant with Mitigation Incorporated. Residences can be found in close proximity to the project area within and surrounding the community of Forbestown. Project activities consist of the piping of the Forbestown Ditch. Although residences are found in close proximity to the project area, there are no schools or hospitals in the area and no substantial pollutant concentrations are anticipated to occur. Temporary construction activities would result in particulate emissions in an area designated as non-attainment. However, implementation of BAMM's and Standard Mitigation Measures for construction outlined in section the BCAQMD CEQA review, and the incorporation of Air Quality MM-1 would minimize the exposure of sensitive receptors to fugitive dust to the maximum extent possible.
- **e)** Less than Significant. Other than construction activities (diesel odors may be noticeable near the construction site), no long-term odor producing activities would result from the project. Therefore, the proposed project would not result in less than significant objectionable odor impacts

Mitigation

Air Quality MM-1

The following best practice measures to reduce impacts to air quality will be incorporated into the project during construction. These measures are intended to reduce criteria air pollutants that may originate from the site during the course of construction operations.

<u>Diesel PM Exhaust from Construction Equipment and Commercial On-Road Vehicles Greater than</u> <u>10,000 Pounds</u>

- All on- and off-road equipment shall not idle for more than five minutes. Signs shall be posted in the designated queuing areas and/or job sites to remind drivers and operators of the five-minute idling limit.
- Idling, staging and queuing of diesel equipment within 1,000 feet of sensitive receptors is prohibited.
- All construction equipment shall be maintained in proper tune according to the manufacturer's specifications. Equipment must be checked by a certified mechanic and determined to be running in proper condition before the start of work.
- Install diesel particulate filters or implement other CARB-verified diesel emission control strategies.

- Shall not operate a diesel-fueled auxiliary power system (APS) to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than 5 minutes at any location when within 100 feet of a restricted areas.
- To the extent feasible, truck trips shall be scheduled during non-peak hours to reduce peak hour emissions.

Fugitive Dust

Construction activities can generate fugitive dust that can be a nuisance to local residents and businesses near a construction site. Dust complaints could result in a violation of the District's "Nuisance" and "Fugitive Dust" Rules 200 and 205, respectively. The following is a list of measures that may be required throughout the duration of the construction activities:

- Reduce the amount of the disturbed area where possible.
- Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible.
- All dirt stockpile areas should be sprayed daily as needed, covered, or a District approved alternative method will be used.
- Permanent dust control measures identified in the approved project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities.
- Exposed ground areas that will be reworked at dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established.
- All disturbed soil areas not subject to re-vegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the Butte County Air Quality Management District.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
- All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with local regulations.
- Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.
- Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible.
- Post a sign in prominent location visible to the public with the telephone numbers of the contractor and the Butte County Air Quality Management District (530) 332-9400 for any questions or concerns about dust from the project."

All fugitive dust mitigation measures required should be shown on grading and building plans. In addition, the contractor or builder should designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend period when work may not be in progress. The name

and telephone number of such persons shall be provided to the District prior to land use clearance for map recordation and finished grading of the area.

4. Biological Resources

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		Х		
 b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service? 			X	
c) Have a substantial adverse effect on protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Setting

A Biological Resources Assessment (BRA) (Appendix A), which assessed the potential for significant impacts to special-status species, was prepared for the proposed project by NorthStar in January 2020. As part of the BRA, a list of special-status plant and animal species was compiled from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation database, California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), and the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants to determine special-status species that may potentially be affected by the proposed project.

The BSA encompasses an approximately 10-mile-long 200-foot-wide corridor along the Forbestown ditch extending southwest from the Woodleaf surge tank to the Forbestown water treatment facility in the community of Forbestown, California. The BSA follows the path of the ditch southeasterly through the unpopulated areas to the northeast of Forbestown, south near the community of Woodleaf, westerly through the populated areas of Forbestown, ending at the Forbestown water treatment plant.

The existing open Forbestown Ditch was constructed in native soil, it was constructed by completing a high side excavation, which was side cast and compacted to provide a low side embankment berm. In general, the resultant trapezoidal ditch consists of a four-foot-wide bottom with 1:1 side slopes and is approximately four feet deep. The low side berm has an approximate top width of four feet with an approximate 2:1 downhill embankment fill slope. Several gunite lined sections can be found along the alignment. Additionally, a portion is lined with visqueen to prevent water loss. Additionally, several wooden and metal flumes are found along the alignment in areas where spanning topographical or geological features is necessary.

The region surrounding the project site is mountainous with steep river canyons and mixed conifer forests. Generally, the project site is gently sloping, meandering parallel to the natural topographic contours. The elevation of the project site ranges from approximately 3,120 feet above mean sea level (MSL) at the upper end to approximately 2,720 feet above MSL at the treatment plant. Temperatures range from a mean of 40 degrees Fahrenheit in winter to 66 degrees Fahrenheit in the summer. Rainfall totals average approximately 82 inches per year while snowfall totals average approximately 109 inches per year.

The BSA is composed almost exclusively of the Montane Hardwood-Conifer (MHC) habitat type. For the purposes of this BRA the Forbestown ditch will be considered riverine habitat, but due to the controlled nature of the system this classification is limited. The Montane Hardwood-Conifer (MHC) habitat type generally has a mix of both conifers and hardwoods where at least one-third of the trees are conifer and one-third are broad leaved. Pure stands of conifers are often interspersed with smaller stands of hardwood species. In the northern Sierra Nevada species commonly associated with the MHC habitat type include California black oak (*Quercus kelloggii*), black cottonwood (*Populus trichocarpa*), canyon live oak (*Quercus chrysolepis*), Jeffrey pine (*Pinus jeffreyi*), Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), incense-cedar (*Calocedrus decurrens*), and localized areas of giant sequoia (*Sequoiadendron giganeum*). The understory is sparse; however, ground and shrub cover can occur in disturbed areas.

All the habitat surrounding the Forbestown Ditch is montane-conifer hardwood habitat consisting of California black oak, Douglas fir, ponderosa pine, incense cedar, and big-leaf maple with and understory of toyon (*Heteromeles arbutifolia*), common manzanita (*Arctostaphylos manzanita*), California coffeeberry (*Frangula californica*), and poison oak (*Toxicodendron diversilobium*).

Riverine habitats are rivers, creeks, and streams that occur in association with a variety of terrestrial habitats and are frequently contiguous to lakes and fresh emergent wetland habitats. Rivers and streams often support riparian vegetation. Seasonal (often intermittent) versus perennial (continual) water distinguishes rivers and streams. Streams originate from higher-elevation lakes or springs and flow downslope at a rate regulated by factors including slope gradient, obstacles present, and the volume of surface runoff or discharge. Velocity decreases at lower elevations where the slope angle gradually decreases. At flat elevations, water covers a larger surface area, becoming a slow-moving river. Flow in riverine habitats is variable, ranging from high

to low volume but with continuous flows in rivers, to becoming dry every summer in some streams. Riverine waters provide food for birds such as waterfowl, herons, shorebirds, and songbirds, and habitat for fish, pond turtles, amphibians, and other aquatic species.

Although the Forbestown Ditch is a controlled conveyance that is dewatered annually, it functions similarly to riverine habitat when water is present. The ditch is relatively narrow and water depth at maximum is approximately three to four feet and can appear creek-like.

The special-status species with at least moderate potential to occur within the BSA include Ahart's buckwheat (*Eriogonum umbellatum* var. *ahartii*), brownish beaked rush (*Rhynchospora capitellata*), Butte County calycadenia (*Calycadenia oppositifolia*), Butte County fritillary (*Fritillaria eastwoodiae*), Humboldt's lily (*Lilium humboldtii* ssp. *humboldtii*), Mosquin's clarkia (*Clarkia mosquinii*), northern sierra daisy (*Erigeron petrophilus*), Sierra arching sedge (*Carex cyrtostachya*), True's manzanita (*Arctostaphylos mewukka* ssp. *truei*), white-stemmed clarkia (*Clarkia gracilis* ssp. *albicaulis*), western bumble bee (*Bombus occidentalis*), foothill yellow-legged frog (*Rana boylii*), northern goshawk (*Accipiter gentilis*), migratory birds and raptors protected by the MBTA, silverhaired bat (*Lasionycteris noctivagans*), and western red bat (*Lasiurus blossevillii*).

Discussion

a) Less than Significant with Mitigation Incorporated. Field surveys of the project area were conducted on June 13, 2017 by NorthStar biologists Carol Wallen and Matt Rogers, June 4, 2018 by NorthStar principal planner Kamie Loeser and NorthStar biologist Matt Rogers, November 12, 2019 by NorthStar biologists Carol Wallen, Matt Rogers, and Billy Abbott, and December 11, 2019 by NorthStar biologists Carol Wallen, Matt Rogers, Billy Abbott, and Drew Huneycutt to determine the presence of sensitive biological resources within the BSA and to determine if these resources would be impacted by the proposed project. Based on the survey results and literature research, 16 special-status species have at least moderate potential to occur within the project area including Ahart's buckwheat, brownish beaked rush, Butte County calycadenia, Butte County fritillary, Humboldt's lily, Mosquin's clarkia, northern sierra daisy, Sierra arching sedge, True's manzanita, white-stemmed clarkia, western bumble bee, foothill yellow-legged frog, northern goshawk, migratory birds and raptors protected by the MBTA, silver-haired bat, and western red bat.

Ahart's Buckwheat

Ahart's buckwheat is a CNPS list 1B.2 plant that is rare, threatened, or endangered in California and elsewhere. It is known to occur in Butte, Plumas, Sierra, and Yuba counties. This perennial herb typically inhabiting serpentine soils at an elevation of approximately 400-1000 meters above sea level. The flowers are typically yellow and bloom from June through September.

There are several known occurrences within serpentine openings near the Forbestown Ditch. However, the species was not observed during biological surveys of the BSA. Implementation of **Biological Resources MM-1** would ensure any impacts to Ahart's buckwheat would be less than significant.

Brownish Beaked Rush

The brownish beaked rush is a CNPS list 2 plant with limited distribution in California and Oregon. It is known to occur in Butte, Mariposa, Nevada, Plumas, Tehama, Trinity, Yuba, Sierra

counties, and is known to occur in many states from Texas east towards the Atlantic coast. This perennial herb inhabits wet soils in marshes, swamps, seeps, and meadows in lower and upper montane coniferous forests, ranging in elevation from 455 to 2000 meters above sea level. The flowers are inconspicuous terminal spikelets with a blooming period between July and August.

The nearest known occurrence of brownish beaked-rush is approximately 3.5 miles east of the project area. Wet areas within the BSA may provide suitable habitat for the species. However, it was not observed during biological surveys of the BSA. Implementation of **Biological Resources MM-1** would ensure any impacts to brownish beaked rush would be less than significant.

Butte County Calycadenia

Butte County Calycadenia is a CNPS list 4.2 plant with limited distribution in California. It is endemic to the state and is found primarily in Butte county with additional observations from Plumas, Nevada, Solano, Marin, Sonoma, Mariposa, and San Benito counties. The species has a strong affinity for serpentine soils and is typically found in chaparral, valley grassland, and foothill woodland habitats from approximately 90-950 meters above sea level. The flowers are white and bloom from April to July.

One occurrence is found near the community of Forbestown along Forbestown Road at milepost 59.35. This record is from 1977 and it is unknown if the species still persists at this location. Serpentine soils within the BSA may provide suitable habitat for the species. However, it was not observed during biological surveys of the BSA. Implementation of **Biological Resources MM-1** would ensure any impacts to Butte County calycadenia would be less than significant.

Butte County Fritillary

Butte County fritillaria is a California endemic species known to occur in chaparral, cismontane woodland, and openings in lower montane coniferous forests in Northern California. It is a CNPS list 3 plant that has been documented to occur in Butte, Shasta, Tehama, Yuba, Placer, El Dorado, and Nevada Counties. Butte County fritillaria is a perennial herb that inhabits dry benches and slopes between 500 to 1500 meters above sea level, and can be observed blooming with nodding, greenish-white to reddish flowers between March and June.

A number of known occurrences are found within and near the BSA. The montane habitat within the BSA is suitable for the species although it was not observed during biological surveys of the BSA. Implementation of **Biological Resources MM-1** would ensure any impacts to Butte County fritillary would be less than significant.

<u>Humboldt's Lily</u>

Humboldt's lily is a CNPS list 4.2 plant of limited distribution that is endemic to California known to occur in openings within chaparral and yellow pine forest habitats in the Sierra Nevada range at elevations from 600-1100 meters above sea level. The species primarily occurs in Butte, Yuba, Nevada, and El Dorado counties with occurrences in several other counties to the south and west. The flower is widely bell shaped, reflexed, and orange with magenta spots. The plant can reach heights of two to three meters.

The montane habitat present within the BSA is suitable for the species. However, the nearest known occurrence is near Lake Oroville over five miles from the BSA. Humbolt's lily was observed within the BSA but subspecies could not be inferred so it is unknown if *Lilium humboldtii* ssp. *humboldtii* was observed. Implementation of **Biological Resources MM-1** would ensure any impacts to Humboldt's lily would be less than significant.

<u>Mosquin's Clarkia</u>

Mosquin's clarkia is a California endemic annual plant in the evening primrose family (Onagraceae). This plant species is known only from populations located in eastern Butte County and adjacent Plumas County and is currently listed by the CNPS as a List 1B.1 plant species. Mosquin's clarkia is typically found in natural openings and road cuts within ponderosa pine/oak forests and lower mixed-conifer forests at elevations ranging from 1,000 to 4,300 feet (300 to 1,300 meters). Mosquin's clarkia is often found in full sun on southerly exposures with little vegetation competition. Depending on annual seasonal conditions, the plant can be observed blooming from May into August. The multiple lavender-purple flowers are borne on a long raceme. Each flower has 4 petals with narrow stalk-like bases. The entire plant ranges in height from 15 to 40 inches (0.4 to 1 meter) tall.

There are several known occurrences of the species found within the vicinity of the BSA, the nearest of which is approximately one mile west of the project area near its start at the penstock. The mixed conifer forest habitat found within the BSA is suitable for the species. It was not observed during biological surveys. Implementation of **Biological Resources MM-1** would ensure impacts to Mosquin's clarkia would be less than significant.

Northern Sierra Daisy

The northern Sierra daisy is a CNPS list 4.3 plant of limited distribution endemic to California primarily found in Butte and Plumas counties. The species is a broad serpentine endemic found in foothill woodland, lodgepole pine forest, red fir forest, and yellow pine forest habitats in northern California. The species can be found at elevations ranging from approximately 300-1900 meters above sea level. The flower color is yellow and blooms from July to October.

Several known occurrences are found in the vicinity of the BSA, the nearest of which is approximately one mile west of the project area near its start at the penstock. The coniferous forest habitat found within the BSA is suitable for the species. It was not observed during biological surveys. Implementation of **Biological Resources MM-1** would ensure any impacts to northern sierra daisy would be less than significant.

Sierra Arching Sedge

Sierra arching sedge is a CNPS list 1B.2 plant that is rare, threatened, or endangered in California. The species is found in Butte, Yuba, and El Dorado counties in wet meadows, marshes, seasonally wet outcrops, seeps, swales, riparian margins, and floodplain terraces from approximately 600-1350 meters above sea level. The fruiting time for this perennial grass-like herb is May through August.

There are several known occurrences of the species within and surrounding the BSA near Woodleaf. The wet habitats within the BSA provide suitable habitat for the species. However, it

was not observed during biological surveys. Implementation of **Biological Resources MM-1** would ensure any impacts to Sierra arching sedge would be less than significant.

<u>True's Manzanita</u>

True's manzanita is a CNPS list 4.2 plant of limited distribution endemic to the state. The species is primarily found in Butte, Plumas, Yuba, and Nevada counties in chaparral openings and yellow pine forest habitats from approximately 300-1350 meters above sea level. The perennial evergreen shrub can grow to heights of approximately three meters with glaborous or glandulary-hairy twigs, the flowers are generally white and bloom from March through April.

There are two known occurrences for the species in the vicinity of the BSA. One is at the junction of Forbestown Road and Black Bart Road from 1988 and the other is approximately three miles northwest of Forbestown near Ponderosa Way. The coniferous forest and chaparral habitats within the BSA provide suitable habitat for the species. It was not observed during biological surveys. Implementation of **Biological Resources MM-1** would ensure any impacts to True's manzanita would be less than significant.

White-Stemmed Clarkia

White-stemmed clarkia is a CNPS list 1B.2 plant that is rare, threatened, or endangered in California. The species is endemic to the state and is found primarily in Butte County within chaparral and foothill woodland habitats above 500 meters above sea level. The flower is pink-lavender to light purple shading to white near the middle with a red base.

The chaparral and foothill woodland habitat within the BSA are suitable for the species, however, the nearest known occurrence is approximately eight miles northwest of the BSA near Lake Oroville. The species was not observed during biological surveys of the BSA. Implementation of **Biological Resources MM-2** would ensure any impacts to white-stemmed clarkia would be less than significant.

Western Bumble Bee

A petition to federally list the western bumble bee as threatened or endangered is currently under review by USFWS. Additionally, the petition requests designation of critical habitat for the species. The western bumble bee (bombus occidentalis) is one of five North American members of the subgenus *Bombus sensu stricto*. It is a medium-sized (1-2 cm) bumble bee with a short head. The abdomen color can vary, but all individuals have a transverse band of yellow hair on the thorax in front of the wing bases, and the tip of the abdomen is almost always white. Western bumble bees live in a diverse range of habitats, including mixed woodlands, farmlands, urban areas, montane meadows and into the western edge of the prairie grasslands. Like many bumble bees, it typically nests underground in abandoned rodent burrows or within hollows in decaying wood. The Western bumble bee has an annual life cycle. Mated queens emerge from wintering sites in the spring and search for potential nest sites. Once a nest site is chosen, the queen then forages for pollen and nectar, returning to the nest site to lay eggs which will eventually produce a brood of workers. Workers emerge and take over nest care, pollen and nectar foraging. In late summer, males and new queens are produced. These reproductive individuals leave the colony, mate, and only the mated queens enter hibernation while all other castes, including the old queen, perish at the onset of colder temperatures. Possible reasons for the decline in Western bumble bee populations may include the transfer of pathogens, agricultural pesticide, chemical use, and habitat loss.

Meadows and grasslands within the BSA may provide suitable habitat for this species. Implementation of **Biological Resources MM-3** would ensure any impacts to western bumblebee would be less than significant.

Foothill Yellow-legged Frog

The foothill yellow-legged frog is a state species of concern which occurs along the Coast Range of California, to the Transverse Mountains in Los Angeles County, and throughout most of northern California west of the Cascade crest. It can be found in or near rocky streams in a variety of habitats including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, costal scrub, mixed chaparral, and wet meadows. Adult yellow-legged frogs eat both aquatic and terrestrial invertebrates and yellow-legged frog tadpoles generally graze on algae and diatoms on rocky stream bottoms. The foothill yellow-legged frog is typically found in partly shaded, shallow streams and riffles with a rocky substrate in a variety of aquatic habitats. They generally prefer low- to moderate-gradient streams, especially for breeding and egg-laying, requiring at least some cobble-sized substrate for egg-laying, which they do following the end of spring flooding (mid-March to May). During the summer and fall, adult frogs prefer stream channels that provide exposed basking sites and cool shady areas. The tadpoles require water for at least 3 to 4 months while continuing to develop, hence the yellow-legged frog is rarely found far from permanent water sources. Garter snakes and bullfrogs have been documented as predators of the foothill yellow-legged frog.

The Forbestown ditch provides a source of water for the species, however, the ditch often goes dry for extended periods during the non-irrigation season. Additionally, substrates within the ditch are less suitable for egg laying when compared to natural streams where the species occurs. The wetlands and drainages found in proximity to the Forbestown Ditch also provide suitable habitat for the foothill yellow-legged frog. Additionally, there are known occurrences within the BSA. However, the species was not observed during biological surveys of the project area. Implementation of **Biological Resources MM-4** would ensure impacts to foothill yellow-legged frog would be less than significant.

Northern Goshawk

The northern goshawk breeds mainly in North Coast Ranges through Sierra Nevada, Klamath, Cascade, and Warner Mountains. They prefer middle to higher elevations in mature dense conifer and deciduous forests and may winter in foothills, northern deserts in pinyon-juniper habitats, and in low-elevation riparian habitats. Typically, the northern goshawk hunts in wooded areas where there are snags and dead-topped trees for observation and perches. They feed mainly on birds ranging from the size of robins to grouse but will eat small mammals, carrion and insects. They nest in dense stands on north slopes near water and openings in the forest. They will use old nest sites and maintain alternate sites since they have been known to abandon nests due to human disturbance and will strike at intruders including humans. In northern California the northern goshawk begins breeding by mid-June and females will incubate eggs for 36-41 days. Once hatched, the young are usually independent by 70 days.

The coniferous forests present surrounding the Forbestown Ditch are potentially suitable for the species. Northern goshawk was not observed during biological surveys of the BSA.
Implementation of **Biological Resources MM-5** would ensure any impacts to northern goshawk would be less than significant.

Migratory Bird Species

Migratory birds are protected in varying degrees under California Fish and Game Code, Section 3503.5, and the MBTA. The project site currently provides suitable nesting and/or foraging habitat for many of these species that may nest in blue oak woodlands present within the BSA. The site also provides a small amount of low vegetation that may be utilized by species that typically nest on the ground.

A number of species protected by the MBTA were observed during biological surveys of the project area. Implementation of **Biological Resources MM-5** would ensure any impacts to migratory birds and raptors would be less than significant.

<u>Silver-haired Bat</u>

The silver-haired bat can be found in forested habitats from Oregon south to Inyo County in the Sierra Nevada range, as well as the coast range from Oregon south to the San Francisco bay. The species also occurs in southern California from Ventura to Mexico. During the spring and fall migration periods the species may be found anywhere within the state. Summer habitats include coastal and montane coniferous forests, foothill woodlands, juniper woodlands, and foothill and riparian habitats. The species feeds primarily on moths and soft bodied insects but may take beetles or other hard-shelled prey. Primary roosting locations are in hollow snags or trees but can be found roosting in buildings, rock crevices, and caves.

The mixed conifer woodlands within the BSA provide suitable roosting habitat. Additionally, the canal provides suitable foraging habitat for the species. No bat species or roosts were observed during biological surveys of the project area. Implementation of **Biological Resources MM-6** would ensure any impacts to bats would be less than significant.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is found in California from Shasta County to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts. Winter range includes western lowlands and coastal habitats south of San Francisco. The western red bat roosts primarily in trees within forests and woodlands in edge habitats from sea level to mixed conifer forests (Williams and Findley 1979). However, the western red bat may have an association with riparian habitats with dense stands of cottonwood and sycamore, and orchards (Bolster, 1998). Family groups are known to roost together, forming nursing colonies. They forage in open areas and feed on a variety of insects including moths, crickets, beetles, and cicadas (Shump and Shump 1982). Migrations typically occur in the spring from March to May and in the autumn from September to October. The western red bat has been seen at temperatures as low as 44°F, however, in these cold climates the bat spends winter in hibernation (LaVal and LaVal 1979).

The mixed conifer woodland surrounding the Forbestown ditch provides suitable roosting habitat. Additionally, open areas surrounding the BSA provide suitable foraging habitat for the species. Implementation of **Biological Resources MM-6** would ensure any impacts to bats would be less than significant.

With the implementation of **Biological Resources Mitigation Measures 1 through 6**, any impacts to special-status plants species, western bumblebee, migratory birds and raptors, northern goshawk, silver-haired bat, and western red bat would be less than significant.

- **b)** Less than Significant. The proposed project occurs within the existing Forbestown Ditch alignment and may temporarily and permanently impact habitat that may be jurisdictional to the USACE and CDFW. Temporary impacts will be returned to pre-construction conditions as feasible. The proposed project will obtain necessary environmental permits as necessary which will outline any potential mitigation for impacts to habitat which the project would incorporate.
- **c)** Less than Significant. The Forbestown Ditch is potentially jurisdictional under Section 404 of the Clean Water Act (CWA). The proposed project could therefore affect Waters of the U.S. and Waters of the State. The proposed project would be required to adhere to the applicable performance standards of the USACE, the RWQCB, and the CDFW via the regulatory permit process. Due to the potential involvement of waters of the U.S., the following regulatory permits may be required prior to the start of any grading or construction activities within the project area:
 - CWA Section 404 permit #14 Linear Transportation from the USACE
 - CWA Section 401 Water Quality Certification from the RWQCB
 - F.G.C. Section 1602 Streambed Alteration Agreement from CDFW

Obtaining any appropriate regulatory permits would ensure: 1) compliance with applicable state and federal laws, 2) that potential impacts to wetlands and other waters of the U.S., waters of the state, and streambed and banks (including irrigation ditches), and listed species are mitigated appropriately (including the payment of mitigation fees), and 3) minimizes, reduces, or avoids potentially significant impacts.

- **d)** Less than Significant. The project would not result in the introduction of permanent barriers to movement of any resident or migratory fish or wildlife species, nor would it result in the introduction of any new long-term factors (light, fencing, noise, human/presence and/or domestic animals) which could hinder the normal activities of wildlife.
- **e) No Impact.** The proposed project would not conflict with any local plans or policies that protect biological resources. The project would be required to adhere to the mitigation measures and standard/permitting requirements of regulatory agencies, as set forth in this study.
- **f) No Impact.** The project site is not subject to the provisions of any adopted habitat conservation plans or natural community conservation plans, as the Yuba-Sutter Regional Conservation Plan is yet to be adopted. Regarding local plans, policies and ordinances, the proposed project would result in no impact.

Mitigation

Biological Resources MM-1: Obtain Regulatory Permits and Implementation of Avoidance and Minimization Measures.

- The project will obtain the following permits, as necessary and applicable:
 - CWA Section 404 permit #14 Linear Transportation from the USACE

- CWA Section 401 Water Quality Certification from the RWQCB
- F.G.C. Section 1602 Streambed Alteration Agreement from CDFW

Biological Resources MM-2: Implement Special-Status Plant Species Avoidance and Minimization Measures.

Prior to the start of construction, the project proponent shall retain a qualified biologist to conduct pre-construction surveys for special-status botanical species. Should any special-status species be discovered during surveys they should be protected to the extent feasible. Avoidance buffers and ESA fencing should be utilized to protect any special-status botanical species encountered.

If the project proponent cannot completely avoid impact to special-status botanical species then CDFW must be notified and given a reasonable opportunity to harvest plants or seeds.

Biological Resources MM-3: Implement Western Bumblebee Avoidance and Minimization Measures.

Western bumble bees could potentially occur within the BSA and it will be up to the CEQA lead agency to determine if mitigation will be required to be considered during the planning process. If western bumble bee's status were to upgrade to threatened or endangered status at any time during the construction process, protocol-level surveys and mitigation would likely be required. In addition, care should be taken during construction activities not to disturb western bumble bees.

Biological Resources MM-4: Implement Foothill Yellow-legged Frog Avoidance and Minimization Measures.

Although construction will take place when the ditch is dry. Five days prior to the start of construction, a qualified biologist shall perform a pre-construction survey within the boundaries of the project area. The survey will include a 500-foot buffer upstream and downstream of the construction area. The survey should include a description of any standing or flowing water.

If foothill yellow-legged frog is found during the pre-construction survey, the project proponent shall:

- 1. Consult with CDFW and provide a short description of observations, including a count of individuals and the life stage(s), condition at the site, and other species observed; and
- 2. Propose site-specific measures that the proponent shall use to avoid take.

Biological Resources MM-5: Implement Migratory Birds and Nesting Raptors including Northern Goshawk Avoidance and Minimization Measures.

Vegetation removal or ground disturbance in areas where nests of birds protected by the MBTA (16 USC §703) and the CFGC (§3503) potentially occur, should be conducted between September 1 and February 28 (i.e. the non-breeding season). If vegetation removal or ground disturbance occurs during the breeding season (i.e. March 1 to August 31) then a qualified biologist shall:

• Conduct a survey for raptors and all other birds protected by the MBTA and map all nests located within 250 feet of construction areas. The survey should be conducted no more than two weeks prior to the start of project activities. If no nests are discovered no further mitigation is required.

• If active nests are discovered, a qualified biologist shall establish buffer zones around active nests that are sufficient enough in size to ensure impacts to nesting species are avoided. Active nests shall be monitored at reasonable intervals, as determined by the qualified biologist. Project activities shall be prohibited within the buffer zones until the young have fledged or the nest fails, as determined by a qualified biologist.

Biological Resources MM-6: Implement Silver-haired Bat and Western Red Bat Avoidance and Minimization Measures.

It is anticipated that limited vegetation removal will be necessary.

In the event that vegetation removal is necessary, a pre-construction bat survey shall be conducted by a qualified biologist to determine the presence of any roosting bats on-site during the appropriate time of day to maximize detectability. The survey should be conducted within 14 days prior to commencement of vegetation removal activities. The survey methodology may include visual surveys of bats (e.g. observations of bats during foraging period), inspection of suitable habitat or signs of bat presence (e.g. guano, urine staining, vocalizations, etc.). The type of survey will depend on the condition of the potential roosting habitat.

Any vegetation that has been identified as potential roosting habitat must be removed between October 1 and February 28. If trees must be removed during the maternity roosting season (March 1 to September 30), a qualified biologist shall conduct a pre-construction survey to identify those trees proposed for disturbance that could provide hibernacula or nursery colony roosting habitat for bats. Trees identified as potentially supporting an active nursery shall be inspected by a qualified biologist no more than 7 days prior to disturbance to determine presence or absence of roosting bats. Trees determined to support active maternity roosts shall be left in place until the maternity season (September 30) or until the qualified biologist determines the bats are no longer present.

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations, Section 15064.5?		Х		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CA Code of Regulations, §15064.5?		Х		
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			Х	
d) Disturb any human remains, including those interred outside of dedicated cemeteries?			Х	

5. Cultural Resources

Setting

A record search for existing archaeological sites and surveys on the project site and a 1/8-mile radius surrounding the area of potential effect (APE) was conducted by Sean Jensen of Genesis Society through the Northeast Information Center (NEIC) and North Central Information Center of the California Historical Resources Information System on October 23, 2017 and again on March 30, 2020 and April 14, 2020. Additionally, an intensive pedestrian survey was conducted along the entire length of the Forbestown Ditch by Sean Jensen and Sutter Jensen of Genesis Society.

The record search returned 41 investigations that have been performed within and/or within 1/8mile of the APE, 33 performed in Butte County and 8 performed in Yuba County. According to the NEIC records, one site (P-04-1841), the Forbestown Ditch, has been formally documented within the APE. No additional sites have been documented within the APE.

The pedestrian survey was conducted on December 17, 18, and 30, 2017 by Sean Jensen, Principal Investigator, and again on April 3, 6 and 7 2020 by Sean Jensen. No special problems were encountered and all survey objectives were satisfactorily achieved. The pedestrian survey involved walking parallel transects along the entire APE and searching the ground surface for any evidence of cultural resources. No evidence of prehistoric activity or occupation was observed during the present pedestrian survey.

As part of the Plumas National Forest's review process, Forest Archaeologist Charles James, III prepared a Determination of Effect, and concluded that the site was not eligible for inclusion in the National Register of Historical Places (NRHP), concurring with Day's findings that the ditch was simply, "one of their (OWID) many modern waterways". Jensen (2003) identified and recorded a segment of this ditch, within the present APE, and due to a lack of sufficient integrity, recommended the site not eligible for inclusion in the NRPH. Similarly, Maniery and Maniery (1997) recommended Forest Service Site Number 05-11-53-793 (Forbestown Ditch) as not eligible for inclusion in the NRHP.

Discussion

a) Less than Significant with Mitigation Incorporated. The archaeological field surveys were conducted by Genesis Society on December 17, 18, and 30 2017 and April 3, 6, and 7 2020 by Sean Jensen. The survey resulted in the identification of one previously recorded historic era site P-58-1974/P-04-1841/CA-BUT-1841-H, the Forbestown Ditch. The Forbestown Ditch had been previously recorded by several investigators including Sean Jensen in 2003. In each of those cases the archaeologists determined the Forbestown Ditch to not be eligible for the NRHP due to a lack of sufficient integrity. Over the past 150 years, the Forbestown Ditch has undergone numerous changes and modifications including ditch extension, replacement, realignment, concrete lining, inclusion of steel and polyethylene pipes, etc. Consequently, the only components of integrity that continue to exist are location and setting, the other five are severely compromised. Considering the site integrity has been dramatically compromised, the site is not considered significant per the criteria for inclusion in the NRHP and is therefore not considered a significant historical resource or unique archaeological resource.

No evidence of prehistoric activity or occupation was observed during the present pedestrian surveys. The absence of such resouces may be explained by the nature of the APE itself, a ditch, which has been subjected to intensive and ongoing disturbance since its construction in the 1850s.

As part of the Archaeological Survey Report prepared for the project, Native American consultation was undertaken with the Native American Heritage Commission (NAHC) regarding sacred land listing for the property, and with the Native American representatives identified by the NAHC. The NAHC response, dated October 25, 2017 indicated that a search of the Sacred Lands Files failed to identify any sacred lands within the APE or project vicinity. An informational letter was submitted to the NAHC on March 25, 2020 requesting a review of their sacred lands files and a response dated March 30, 2020 indicated that a search of the files did identify sacred lands within or near the project are. The NAHC identified 10 Native American Tribes, letters were sent to each and all were requested to supply any information they may have concerning prehistoric sites or traditional use areas with, adjacent or near the project area. A letter dated March 31, 2020 was received from the Mooretown Rancheria and indicated the Rancheria was not aware of any cultural resources within the area. Incorporation of Cultural Resources MM-1 will ensure impacts to archaeological resources would be less than significant.

- **b)** Less than Significant with Mitigation Incorporated. The proposed project would not generate potentially significant impacts to any known cultural resources as stated previously. However, in the event human remains are uncovered during work activities, pursuant to Health and Safety Code (§7050.5), the Coroner must be contacted if human remains are uncovered during construction activities (See item d below). Previously unidentified human remains are subject to regulations set forth at the state and federal levels, including the CA Public Resources Code and the Native American Graves Protection and Repatriation Act (NAGPRA). Incorporation of Cultural Resources MM-1 will ensure impacts to archaeological resources would be less than significant.
- **c)** Less than Significant. The project footprint has been previously disturbed by the construction of the existing Forbestown Ditch, therefore, no paleontological resources are anticipated to be impacted.
- **d)** Less than Significant. While unlikely, there is the chance that currently unidentified remains could be uncovered during excavation. Per Health and Safety Code §7050.5, all work must cease and the County Coroner must be notified when previously unidentified human remains are discovered. No further disturbances may occur until the Coroner has made findings as to the origins and disposition per Public Resource Code §5097.98. Adherence to the applicable local, state and federal regulations ensures less than significant potential impacts to any newly discovered human remains.

Mitigation

Cultural Resources MM-1

Although no prehistoric sites have been formally recorded or otherwise identified within the project site, the presence of buried cultural resources is always a possibility. Therefore, although unlikely, if unknown resources are discovered during construction and excavation activities, the following Cultural Resources Minimization Measures will be included in all contract documents and construction plans.

• Should archaeological resources be encountered at any point during project excavation and construction activities, all activity around the discovery will cease. The County will retain the services of a qualified archaeologist to examine the findings, assess their significance,

and offer proposals for any exploratory procedures deemed appropriate to further investigate and/or mitigate any adverse impacts.

- Should human remains be encountered during excavation activities in the project area, the following procedures shall be followed:
 - Per Health and Safety Code §7050.5(b), the Butte County Coroner's Office will be contacted immediately; all work must cease, no further disturbances may occur until the Coroner has made findings as to the origins and disposition per Public Resources Code §5097.98.
 - If the Coroner determines the remains are Native American, the Office will notify the Native American Heritage Commission (NAHC) within 24 hours.
 - Following receipt of the Coroners notice, the NAHC will contact a Most Likely Descendent (MLD). The MLD will then have 48 hours in which to make recommendations to the County and the consulting archaeologist regarding the treatment and/or re-interment of the human remains and any associated grave items.

6. Energy

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
 b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? 			х	

- a) Less than Significant. The proposed project will not result in any potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. Construction energy consumption would largely occur from fuel consumption by equipment during project construction, transportation of materials to and from the site, and construction worker trips to and from the project site. Energy consumption during construction related activities would vary substantially depending on the level of activities, length of construction period, construction operations, type of equipment used, and number of personnel present. Despite this variability, the overall scope of construction is minor due to the short time period construction would take place. Increasingly stringent state and federal regulations regarding engine efficiency combined with state, local, and federal regulations limiting engine idling times and recycling of construction debris, would further reduce the amount of transportation fuel demand during construction.
- **b)** Less than Significant. Many of the state and federal regulations regarding energy efficiency focus on increasing building efficiency and renewable energy generation, as well as reducing water consumption and vehicle miles traveled. The proposed project includes conservation

measures to meet or exceed the regulatory requirements including limiting idling time of equipment during construction activities. The project will comply with BCAQMD standards regarding engine efficiency and limiting idling time during project construction. Additionally, the project involves improvements to water infrastructure that will aid in the conservation of water resources.

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

7 Geology and Soils

Setting

The Seismic and Geologic Hazards section of the Butte County General Plan indicates that all of Butte County is in Moderate Earthquake Intensity Zone VIII. The project site is not within an Alquist-Priolo Earthquake fault zone or an aftershock zone. The only known active fault within Butte County is the Cleveland Hill fault, located approximately 10.7 miles west of the project site, where activity on August 1, 1975 resulted in the Oroville earthquake. The 1975 Oroville earthquake registered a Richter magnitude of 5.7 and resulted in approximately 2.2 miles of ground rupture along the western flank of Cleveland Hill.

Yuba County is located within an area with relatively low seismic activity and is not located within a highly active fault zone. The nearest active fault to the county is the Cleveland Hills Fault in south Butte County near Lake Oroville.

Geologic Hazards

Expansive Soils

Expansive soils possess a "shrink-swell" behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. The Health and Safety Element Figure HS-6 of the Butte County General Plan identifies the project site as having a "Moderate" potential of expansive soils.

Soil Erosion

Erosion is the wearing away of soil and rock by processes such as wind and precipitation runoff. Soils containing high amounts of silt or clay can be easily erodible, while sandy soils are less susceptible. Excessive soil erosion can eventually lead to damage of building foundations and roadways. Typically, soil erosion potential is reduced once the soil is graded and covered with gravel, concrete, structures, asphalt, or a vegetative cover. The Health and Safety Element Figure HS-5 of the Butte County General Plan identifies the project site as having a "Moderate" potential for soil erosion.

Landslides

A landslide is the sliding of a mass of loosened rock and/or soil down a hillside or slope. Some of the natural causes of this instability are earthquakes, weak soils, erosion, heavy rainfall and fire. Human activities such as poor grading that undercuts steep slopes or overloads them will fill; excessive irrigation and removal of vegetation can also contribute to landslides. Most landslides in Butte County occur on slopes greater than 15 percent, and most new landslides occur in areas that have experience previous landslides. The areas of highest landslide potential are in the mountainous central area of the county where well-developed soils overlay impervious bedrock on steep slopes. The remaining areas of Butte County has moderate to low landslide potential. The areas of lowest landslide potential are the flat lands of the Sacramento Valley. The Health and Safety Element Figure HS-4 of the Butte County General Plan identifies the project site as having "High" landslide potential.

Seismic Hazards

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to movement on the fault place. The magnitude, sense, and nature of fault rupture can vary for different faults or event along different strands of the same fault. Ground rupture is considered more likely along active faults. The Cleveland Hills fault (located approximately 10.7 miles west of the project site) is the only fault located within Butte County that has been identified as an active fault pursuant to the Alquist-Priolo Earthquake Fault Zones Act. This fault was responsible for the 1975 Oroville earthquake, which had a Richter magnitude of 5.7 and produced surface displacement along approximately 2.2 miles of the fault. Other active and potentially active faults are located in the region. However, because there are no known active faults underlying or adjacent to the project site, the likelihood of surface fault rupture is very low and would not be a design consideration.

Ground Shaking

Ground shaking at the project site could occur due to earthquakes on the regions active faults. However, ground motions attenuate with distance from the causative fault, as well as the local geologic and soil conditions. The Seismic Hazards Mapping Program of the California Geological Survey categorizes all of Butte County as a "seismic hazard zone" since the entire County is subject to earthquakes of Modified Mercalli Intensity scale VIII. The Oroville earthquake of 1975 is the only earthquake of this intensity recorded in Butte County. This earthquake resulted in structural damage, partial destruction of some buildings, fires and numerous injuries. Though, it is accepted that earthquakes of magnitude 6.0 or 6.5 are possible anywhere in Butte County, the county is generally considered to be an area of low seismic activity.

Liquefaction

Liquefaction is a phenomenon whereby unconsolidated and/or near saturated soils lose cohesion and are converted to a fluid state as a result of sever vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in the temporary fluid-like behavior of the soil. Soil liquefaction causes ground failure that can damage roads, pipelines, underground cables, and building with shallow foundations. Liquefaction can occur in areas characterized by water-saturated, cohesionless, granular materials at depths less than 50 feet. Due to the relatively low potential for strong ground motions and a general lack of significant deposits of saturated loose soils, such as alluvium, the liquefaction potential, if any, can be addressed in the design of future structures during the building permit review process.

Seiches

A seiche is a periodic oscillation of a body of water such as a reservoir, river, lake, harbor, or bay resulting from seismic shaking or other causes such as landslides into a body of water. The period of the oscillation varies depending on the side of the body of water and may be several minutes to several hours. Depending on the magnitude of the oscillations, seiches can cause considerable damage to dams, levees and shoreline facilities. Seiches have not been recorded in any of the reservoirs in Butte County that are within the jurisdiction of the California Division of Dam Safety. However, the potential for seiches does exist in Butte County, either from landslides or from stronger earthquakes that have been experienced in historical times.

Discussion

a) No Impact. The site is not located in an Alquist-Priolo Earthquake fault zone, and there are no known active faults underlying, or adjacent to, the project site. The Cleveland Hill fault is located approximately 10.7 miles west of the project site. Because the nearest active fault is located a considerable distance from the project site, the likelihood of a surface rupture at the project site is very low, and would not be a design consideration.

Ground shaking at the project site could occur due to the earthquake potential of the region's active faults. However, active faults are relatively distant from the project site. As a result, ground shaking due to seismic events is expected to have low intensities at the project site. The California Building Code (CBC) would provide minimum standards to safeguard life or limb, health, property and public welfare by regulating the controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of buildings and structures within Butte County. Among the provisions of the CBC are building design criteria for

earthquake conditions in Butte County. Adherence to the CBC during building construction would ensure that potential impacts are less than significant.

Liquefaction is restricted to certain geologic and hydrologic environments, primarily recently deposited sand and silt in areas with high ground water levels. The CBC regulates the construction of structures, which may be constructed with approval of the proposed project. Adherence to CBC standards at the time of development of the project ensure that any impacts from an unstable geologic unit or soil are less than significant.

The potential for landslides is high in the areas surrounding Forbestown according to the Butte County General Plan Draft EIR, shallow slope failures can occur in virtually any sloping terrain during construction activities. Previous slope failures during heavy storm events have occurred along the alignment and have affected water conveyance. Avoidance of potentially sensitive slopes and/or implementation of appropriate engineering and construction measures at the time of project construction would avoid or reduce potential impacts of landslides to a less than significant level.

- **b)** Less than Significant. The project is the replacement of structurally deficient water control structures. During construction-related activities, specific erosion control and surface water protection methods would be implemented within the project site such as straw wattles and silt fencing, and the use of erosion control seeding. The potential water control upgrades are primarily within areas that have been previously disturbed and graded. However, since construction will disturb one or more acres of land activities would be subject to the National Pollutant Discharge Elimination System (NPDES) General Construction Activities Stormwater permit program. This program requires implementation of erosion control measures during and immediately after construction that are designed to avoid significant erosion. In addition, project operations would be subject to State Water Resources Control Board requirements for the preparation and implementation of a project specific Stormwater Pollution Prevention Plan (SWPPP) to control pollution in stormwater runoff from the project site, which includes excessive erosion and sedimentation. The SWPPP would need to be obtained prior to any soil disturbing activities. The implementation of standard erosion control best management practices (BMPs) during future construction activities and adherence to State requirements would ensure potential erosion impacts are less than significant.
- c) No Impact. The project is the replacement of structurally deficient water control structures. During construction-related activities, specific erosion control and surface water protection methods would be implemented within the project site such as straw wattles and silt fencing, and the use of erosion control seeding. The potential water control upgrades are primarily within areas that have been previously disturbed and graded. However, since construction will disturb one or more acres of land activities would be subject to the National Pollutant Discharge Elimination System (NPDES) General Construction Activities Stormwater permit program. This program requires implementation of erosion control measures during and immediately after construction that are designed to avoid significant erosion. In addition, project operations would be subject to State Water Resources Control Board requirements for the preparation and implementation of a project specific Stormwater Pollution Prevention Plan (SWPPP) to control pollution in stormwater runoff from the project site, which includes excessive erosion and sedimentation. The SWPPP would need to be obtained prior to any soil disturbing activities. The implementation of standard erosion control best management practices (BMPs) during future construction activities and adherence to State requirements would ensure potential erosion impacts are less than significant.

- **d)** Less than Significant. Expansive soils are generally found in basin deposits in the low-lying portions of the county near the Sacramento and Feather Rivers as well as localized areas around Butte County. The soils around the community of Forbestown are depicted as having Moderate expansive soil potential as depicted in Figure 4.6-3 of the Butte County General Plan Draft EIR. However, all design and construction will comply with the California Building Code requirements.
- **e) No Impact.** The project will not utilize septic tanks or an alternative wastewater disposal system on the site. Therefore, the proposed project will not result in an impact due to soils incapable of adequately supporting septic systems.

Mitigation: None Required

8. Greenhouse Gas Emissions

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Generate greenhouse gas emissions, directly or indirectly, that may have a significant impact on the environment?			Х	
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?			Х	

Setting

The earth's atmosphere naturally contains a number of gases, including (but not limited to) carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which are collectively referred to as greenhouse gases (GHGs). GHG emissions are generally numerically depicted (when applicable) as carbon dioxide equivalents (CO_2e). CO_2e represents CO_2 plus the additional warming potential from CH_4 and N_2O . The common unit of measurement for carbon dioxide equivalents is in metric tons (MTCO_2e).

These gases trap some amount of solar radiation and the earth's own radiation, preventing it from passing through earth's atmosphere and into space. GHG are vital to life on earth; without them, earth would be an icy planet. For example, CO_2 is an element that is essential to the cycle of life. In general, CH_4 and N_2O have 21 and 310 times the warming potential of CO_2 , respectively. Human-made emissions of GHG occur through the combustion of fuels, as well as a variety of other sources.

Increasing GHG concentrations are believed to be warming the planet. As the average temperature of the earth increases weather may be affected, including changes in precipitation patterns, accumulation of snow pack, and intensity and duration of spring snowmelt. Climate zones may change, affecting the ecology and biological resources of a region. There may also be changes in fire hazards due to the changes in precipitation and climate zones.

While scientists have established a connection between increasing GHG concentrations and increasing average temperatures, important scientific questions remain about how much warming would occur, how fast it would occur, and how the warming would affect the rest of the climate

system. At this point, scientific efforts are unable to quantify the degree to which human activity impacts climate change. The phenomenon is worldwide, yet it is expected that there would be substantial regional and local variability in climate changes. It is not possible with today's science to determine the effects of global climate change in a specific locale, or whether the effect of one aspect of climate change may be counteracted by another aspect of climate change, or exacerbated by it.

Section 15183.5(b) of Title 14 of the California Code of Regulations states that a GHG Reduction Plan, or a Climate Action Plan, may be used for tiering and streamlining the analysis of GHG emissions in subsequent CEQA project evaluation provided that the CAP does the following:

A. Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;

B. Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;

C. Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;

D. Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;

E. Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels; and

F. Be adopted in a public process following environmental review.

A 2006 baseline GHG emission inventory was prepared for unincorporated Butte County. The inventory identified the sources and the amount of GHG emissions produced in the county. Within Butte County, the leading contributors of GHG emissions are agriculture (43%), transportation (29%), and residential energy (17%).

A Climate Action Plan (CAP) was adopted by Butte County on February 25, 2014. The CAP provides a framework for the County to reduce GHG emissions while simplifying the review process for new development. Measures and actions identified in the CAP lay the groundwork to achieve the adopted General Plan goals related to climate change, including reducing GHG emissions to 1990 levels by 2020.

In an effort to implement the measures of the CAP, a development checklist was created to evaluate a new projects consistency with the CAP, and to identify which GHG emission reduction measures would be implemented with project approval. The CAP development checklist identified three reduction measures applicable to the proposed project. These measures include expansion of renewable energy systems for new residential development by prewiring future development for photovoltaic systems; reduction of construction equipment idling time; and, installation of electric vehicle charging outlets in the garage or the exterior of the home

Discussion

- a) Less than Significant. It is anticipated that piping the ditch would generate short-term temporary GHG emissions associated with construction equipment. The BMP's discussed in Section 3, Air Quality, minimize temporary emissions associated with the construction activities.
- **b)** Less than Significant. Although development of the project will result in temporary construction related GHG emissions, the project will implement measures from the BCAQMD and FRAQMD that limit construction idling time. As such, the project will not conflict with the County's CAP nor would it conflict with any other identified plans, policies, or regulations adopted for the reduction of greenhouse gas emissions.

Mitigation: None Required

9. Hazards and Hazardous Materials

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

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
 h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? 			х	

Setting

Under Government Code Section 65962.5, the California Department of Toxic Substances Control (DTSC) maintains a list of hazardous substance sites. The list, often referred to as the "Cortese list", includes CALSITE hazardous materials sites, sites with leaking underground storage tanks, and landfills with evidence of groundwater contamination. A search of the state and federal agency databases for hazardous materials sites within one-mile of the project site was performed and the project site is not within one-mile of an identified clean-up site (envirostor.dtsc.ca.gov).

Airports

Air transportation in Butte County is served by a number of private and public airfields and heliports serving general aviation and agricultural users. There are four major aviation facilities in Butte County that serve the general public, Chico Municipal Airport, Ranchaero Airport, Oroville Municipal Airport, and Paradise Skypark. The Brownsville Airport is the nearest general aviation airport to the project site. The airport is located approximately 4.25 miles southwest of the project site.

Wildland Fire Conditions

The combination of highly flammable fuel, long dry summers and steep slopes creates a natural hazard of wildland fires in many areas of Butte County. Wildland fires can result in death, injury, economic losses, and a large public investment in firefighting efforts. Woodland and other natural vegetation can also be destroyed during wildfires, resulting in the loss of timber, wildlife habitat, scenic quality, and recreation. Areas in the county that are particularly susceptible to wildland fires largely contain dense vegetation and steep slopes, which aide in the spread of fire. These areas have been designated as Fire Hazard Severity Zones by the State Department of Forestry and Fire Protection (Cal Fire), and generally include the foothill and mountainous regions of Butte County.

Fire protection services for unincorporated Butte County are generally provided by the Butte County Fire Department (BCFD) and the California Department of Forestry and Fire Protection (CalFire), with CalFire having fiscal responsibility for preventing and suppressing wildfires. The project area falls into the service area of Butte Unit-Battalion 4 of BCFD.

- a) Less than Significant. The proposed project would not involve the routine transport, use, or disposal of hazardous materials, and would not result in such impact. Construction activities associated with the project would include refueling and minor onsite maintenance of construction equipment, which could lead to minor fuel or oil spills. The use and handling of hazardous materials during construction activities would occur in accordance with applicable federal, state, and local laws including California Occupational Health and Safety Administration (CalOSHA) requirements. It is not anticipated that large quantities of hazardous materials would be permanently stored or used within the project site. However, if large quantities are stored at the project site, the owner would be required to obtain a Hazardous Materials Business Plan. As previously mentioned, it is more likely small quantities of publicly available materials would be utilized during project construction. These materials would not be used in sufficient quantity or strength to create a substantial risk of fire or explosion, or otherwise pose a substantial risk to human or environmental health.
- **b)** Less than Significant. The proposed project would not result in new land uses when compared to existing conditions. The project would not construct dwellings, occupy structures, or result in land uses that could generate or emit hazardous materials. Project activities are not anticipated to result in a release of hazardous materials into the environment, or to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions. Additionally, the project will comply with the BCAQMD rules and regulations.
- **c)** No Impact. The proposed project does not involve any emission or handling of any hazardous materials, substances, or waste within one-quarter mile of an existing school. No existing or proposed school facilities are located within a one-quarter mile radius of the project site.
- **d)** No Impact. The project is not included on a list of sites containing hazardous materials, and would not result in a significant hazard to the public or to the environment. The project site is not included on the Cortese list compiled pursuant to Government Code Section 65962.5. The nearest sites containing hazardous materials are located in Oroville approximately 14 miles west of the project site.
- **e) No Impact.** The proposed project site is not located within two miles of a public airport. The nearest public airport is found approximately 4.25 miles southwest of the project site in Brownsville, CA.
- **f) No Impact.** The proposed project site is not located within the vicinity of a private airstrip and the project would not result in permanent structures that expose people to a safety hazard. The nearest private airstrip is located in Brownsville located approximately 4.25 miles southwest of the project site.
- **g)** No Impact. The proposed project does not include any actions within the roadways that would physically interfere with any emergency response or emergency evacuation plans. The project would not result in an increase in traffic, and thus would not significantly reduce the current level of service of the area road network.
- **h)** Less than Significant. The proposed project is located in an area generally used for agricultural lumber harvesting purposes, due to the coniferous forest dominated habitats it is susceptible to fires. However, the project does not involve the construction of any dwelling units or vertical

structures, therefore, the proposed project will not expose people or structures to a significant risk of loss, injury, or death involving wildfires. Additionally, the project activities would follow all local, state and federal regulations which ensure the potential for construction equipment to spark a wildland fire is minimal.

Mitigation: None Required

10. Hydrology and Water Quality

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Violate any water quality standards or waste discharge requirements?			X	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			Х	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			Х	
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				x
f) Otherwise degrade water quality?				X
 g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? 				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				х
j) Inundation by seiche, tsunami, or mudflow?				X

- a) Less than Significant. As identified in Section 4.4 of this document (Biological Resources), the project will obtain any appropriate regulatory permits including certification from a RWQCB per Section 401 Water Quality Certification of the Clean Water Act prior to construction activities. Additionally, the project would be required to implement all applicable erosion control BMPs as a condition of RWQCB approval, which include: the installation of straw wattles, and silt fencing, etc. to prevent silt/sediment from entering the water, and re-seeding of disturbed upland areas post construction. As described in the Biological Resources Section of this document (Section 4.4), the project may be required to adhere to the requirements of Section 404 and Section 401 of the Clean Water Act, and Section 1600 of the CA Fish and Game Code, as well as the air quality standard mitigation measures for fugitive dust control outlined in Section 4.3, Air Quality MM-1. A Section 401 permit is contingent on sufficient evidence that a project would not pose a threat to water quality or quantity leaving the proposed project's site. No additional mitigation measures are necessary.
- **b)** No Impact. The proposed project involves the piping of the Forbestown Ditch and does not propose activities requiring permanent increases in groundwater use. No new extraction wells or buildings with the potential to increase water usage are proposed.
- **c)** Less than Significant. Project activities include the piping of the Forbestown Ditch. The overall direction of drainage on the site will not change. The implementation of standard erosion control measures and BMPs during construction activities will minimize soil erosion and siltation. Additionally, the proposed project will not alter the existing drainage pattern of the site, including through the alteration of the course of the District's canals in a manner that will result in substantial erosion or siltation on- or off-site
- **d)** Less than Significant. The proposed project involves the piping of Forbestown Ditch. The piping of the ditch will not alter the existing drainage pattern of the site. Additionally, the project will not result in an increase in runoff rate which would result in flooding on- or off-site.
- e)-j) No Impact. The proposed project would not result in significant increases in the surface area of impervious materials, or redirect flood flows. The proposed project is located within two map boundaries (FIRM Map Numbers 06007C0850E and 06007C0875E), the project does not involve the construction of dwelling units and will not place housing within the flood hazard area. Furthermore, the project would not expose people or structures to significant loss, injury, or death involving flooding, including levee or dam failure. There are no anticipated impacts to the proposed project from seiche, tsunami, or mudflow, as no topographical features of water bodies capable of producing such events exist within the project site vicinity.

Mitigation: None Required

11. Land Use and Planning

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

Discussion

- **a)**, **b) No Impact.** The project involves the piping of the Forbestown Ditch and will not physically divide an established community. The proposed project would not conflict with an applicable land use plan, policy, or regulation of any agencies with jurisdiction adopted for the purpose of avoiding or mitigating an environmental effect.
- **c)** No Impact. The project will not have a substantial conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The project site is located within the boundaries of the proposed Yuba-Sutter Regional Conservation Plan (YSRCP). The YSRCP has not been completed or adopted at this time, no impact is anticipated.

Mitigation: None Required

12. Mineral Resources

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				Х
b) Result in the loss of availability of a locally- important mineral resource recovery site on a local general plan, specific plan or other land use plan?				Х

Setting

Mining activities in Butte County focus on sand and gravel extraction, though other mineral resources have been extracted within the County. The majority of the County's sand and gravel deposits occur along the Sacramento River and within a band running north to south down the center of the County. Gravel mining is most active in the central "gravel belt" which is the transitional region where sediments washed down from the Sierra Nevadas into the valley's slower moving rivers were deposited. These deposits are mined for sand and gravel to be used in combination with Portland cement or asphalt compounds for road construction, and for silica. The County's designated mineral resource zones are identified by GPEIR Figure 4.6-5.

Discussion

a), **b) No Impact.** The California Geological Survey's (Department of Conservation) map "Fifty-Year Aggregate Demand Compared to Permitted Aggregate Resources" (2012) does not identify extraction facilities near the project site. The General Plan and State of California Division of Mines and Geology Special Publication 132 do not list the site as having any substantial mineral deposits of a significant or substantial nature. Relative to mineral resources, there would be no impact.

Mitigation: None Required

13. Noise

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

Setting

For the most part the project site is located in an area characterized by forested land, especially at the upper portions of the canal where the surrounding land is primarily utilized for logging. However, as one travels closer to the terminus of the ditch at the water treatment plant located in Forbestown the area is characterized by rural single-family residential development at low densities. Therefore, sensitive receptors (residences) are located in proximity to the proposed project area.

The Butte County Noise Control Ordinance provides the County with a means of assessing complaints of alleged noise violations and to address noise level violations from stationary sources. The ordinance includes a list of activities that are exempt from the provisions of the ordinance. Construction-related noise within 1,000 feet of residential uses are included among the exempted activities, provided construction activities do *not* take place:

- From sunset to sunrise on weekends and non-holidays;
- Fridays commencing at 6:00 pm through and including 8:00 am on Saturday;
- Before 8:00 am on holidays;
- Saturday commencing at 6:00 pm through and including 10:00 am on Sunday; and Sunday after 6:00 pm.

- a)-d) Less Than Significant. The project is consistent with the Butte County General Plan, Noise Element (Butte County 2010). The nearest residences (sensitive receptor) are located adjacent to portions of the ditch near the community of Forbestown. There are homes within 1000 feet of the project work limits. The Butte County Noise Ordinance states that construction noise within 1,000 feet of noise-sensitive uses (i.e., residential uses, daycares, schools, convalescent homes, and medical care facilities) is limited to daytime hours between sunrise to sunset on weekdays and non-holidays, 8:00 am and 6:00 pm on Saturdays and holidays, and Sundays between 10:00 a.m. to 6:00 p.m. No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with applicable local noise standards discussed above. Increases in noise is limited to temporary, intermittent construction noise in the immediate project area. The proposed project would not alter land use or traffic, and thus would not increase the ambient noise within the area. Construction activities are limited to the hours allowed by the County Ordinance. No permanent increase in ambient noise will take place due to the project. Noise impacts will take place during the construction period and they will be temporary and limited to daytime hours as stated above. No mitigation measures are necessary.
- **e)** No Impact. The proposed project is not located within an airport land use plan area and is located approximately 4.25 miles from the nearest public airport. The proposed project will not expose people residing or working in the project area to excessive noise levels.
- **f)** No Impact. The proposed project is not located within two miles of a private airstrip and people residing or working in the project area will not be exposed to excessive noise levels generated by private airstrips.

Mitigation: None Required

14. Population and Housing

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				Х
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				Х

Discussion

a)-c) No Impact. The proposed project involves the piping of the Forbestown Ditch. The project will not induce substantial population growth in the area, directly or indirectly, or displace a substantial number of people or existing housing. The project will not displace people or housing nor necessitate the construction of replacement housing elsewhere.

Mitigation: None Required

15. Public Services

Would the project: result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Fire protection?				Х
b) Police protection?				X
c) Schools?				Х
d) Parks?				X
e) Other public facilities?				X

Discussion

a)-e) No Impact. The proposed project would not construct buildings, businesses, or other facilities that would result in an increased population in the area. As required by state and local regulations, emergency vehicles will be given the right-of-way in the event of their presence at

the project site. There would be no long-term demands on public services such as fire protection, police protection, schools, or parks generated by this project.

Mitigation: None Required

16. Recreation

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				Х
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				х

Discussion

a),b) No Impact. The proposed project will not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility will occur or be accelerated nor will the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. This proposed project will not result in residential development. There are no existing neighborhoods or regional parks in the vicinity of the project site and the project does not proposed recreational facilities or require the expansion of existing recreational facilities; therefore, no impacts are anticipated.

Mitigation

17. Traffic and Transportation

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				Х

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				Х
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?				Х
 f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? 				x

- **a) No Impact.** The proposed project involves the piping of the Forbestown Ditch and will not conflict with an applicable plan, ordinance, or policy regarding the effectiveness of the performance of the circulation system. The proposed project would not generate additional traffic, as it would not construct facilities that would generate additional vehicular traffic such as a retail center or residential subdivision.
- **b)** No Impact. The project is not expected to result in additional vehicular trips, or to impact levels of service and trip distribution within the project area. The proposed project will not conflict with an applicable congestion management program and will not affect travel demand measures.
- **c) No Impact.** The proposed project will not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that will result in substantial safety risks. The project site is not located in the vicinity of a public airport, the nearest is located approximately 4.25 miles from the project site. The project will not obstruct air traffic patterns.
- **d)** No Impact. The proposed project involves the piping of the Forbestown Ditch and will not increase hazards due to a design feature or incompatible uses.
- **e)** Less than Significant. The project will be required to adhere to pertinent local and state construction site regulations. Thus, temporary traffic control activities during the construction phase of the proposed project would not prevent emergency vehicle movement throughout the

area. The proposed improvements, which would result in the piping of the Forbestown Ditch, would provide better passage and access to emergency vehicles along the ditch alignment. Therefore, relative to emergency access, impacts would be less than significant.

f) No Impact. The proposed project will not conflict with an applicable plan, ordinance, or policy regarding public transit, bicycle or pedestrian facilities because the project site is located in a rural mountainous area that does not have provisions for alternative transportation.

Mitigation: None Required

18. Tribal Cultural Resources

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:			Х	
 i.) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or 			Х	
 ii.) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe 			Х	

Setting

A Tribal Cultural Resource is a site, feature, place, cultural landscape, sacred place or object, which is of cultural value to a Tribe. Often cultural resources are found in foothill areas, areas with high bluffs, rock outcroppings, areas overlooking deer migration corridors, or near bodies of water. Although the project area is in the mountainous portion of Butte and Yuba Counties, the site has been extensively disturbed by past construction and subsequent modification to the water delivery system.

Discussion

ai), aii) Less than Significant with Mitigation Incorporated. As part of the ASR prepared for the project by the Genesis Society, a sacred lands file request with the NAHC and Native American Consultation with the identified tribes was conducted. Consultation letters were sent to 10 tribes on November 21, 2017 with follow up emails and phone calls and again on March 30, 2020. Tribes contacted included the Berry Creek Rancheria of Maidu Indians, Greenville Rancheria, Konkow Valley Band of Maidu, Mechoopda Indian Tribe, Mooretown Rancheria of Maidu Indians, the United Auburn Indian Community of the Auburn Rancheria, Pakan'yani Maidu of Strawberry Valley Rancheria, Estom Yumeka Maidu Tribe of the Enterprise Rancheria, Tsi-Akim Maidu, and the Colfax-Todds Valley Consolidated Tribe. To date only one response has been received from the Mooretown Rancheria. Their response indicated the Rancheria was not aware of any cultural resources within the area. No other cultural resources were identified within the project site or vicinity during pedestrian surveys. Incorporation of Cultural Resources MM-1 would ensure any impacts to potential cultural resources would be less than significant.

Mitigation

Cultural Resources MM-1

Although no prehistoric sites have been formally recorded or otherwise identified within the project site, the presence of buried cultural resources is always a possibility. Therefore, although unlikely, if unknown resources are discovered during construction and excavation activities, the following Cultural Resources Minimization Measures will be included in all contract documents and construction plans.

- Should archaeological resources be encountered at any point during project excavation and construction activities, all activity around the discovery will cease. The County will retain the services of a qualified archaeologist to examine the findings, assess their significance, and offer proposals for any exploratory procedures deemed appropriate to further investigate and/or mitigate any adverse impacts.
- Should human remains be encountered during excavation activities in the project area, the following procedures shall be followed:
 - Per Health and Safety Code §7050.5(b), the Butte County Coroner's Office will be contacted immediately; all work must cease, no further disturbances may occur until the Coroner has made findings as to the origins and disposition per Public Resources Code §5097.98.
 - If the Coroner determines the remains are Native American, the Office will notify the Native American Heritage Commission (NAHC) within 24 hours.

Following receipt of the Coroners notice, the NAHC will contact a Most Likely Descendent (MLD). The MLD will then have 48 hours in which to make recommendations to the County and the

consulting archaeologist regarding the treatment and/or re-interment of the human remains and any associated grave items.

19. Utilities and Service Systems

Would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Exceed wastewater treatment requirements of the applicable Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				Х
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				х
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e) Result in a determination by the wastewater treatment provider which serves/may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				х
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g) Comply with federal, state, and local statutes and regulations related to solid waste?				x

- **a)-e)** No Impact. The proposed project involves the piping of the Forbestown Ditch and does not involve the disposal of any wastewater. The proposed project will not significantly increase the amount of impervious surfaces in the area, and will not increase surface runoff of the area. All work will be conducted within the existing ditch alignments and will not require additional water supplies or entitlements. The project will not result in exceeding wastewater treatment requirements for the applicable RWQCB or result in the need for new wastewater treatment facilities because the project is not a use that generates wastewater.
- **f), g) No Impact.** The proposed project would not generate impacts relative to landfill capacity, wastewater treatment or solid waste generation. Therefore, there would be no impact.

Mitigation: None Required

20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			Х	
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?			X	
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?			х	
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, poste-fire slope instability, or drainage changes?			х	

Setting

Portions of the project site have been designated as very high in the Fire Hazard Severity Zone Map by the State Department of Forestry and Fire Protection. The project site is also within a designated Federal or State Responsibility Area (SRA), which means the state jurisdiction or federal jurisdiction has fiscal responsibility for preventing and suppressing wildfires.

- **a)** Less Than Significant. The project is located along the length of the Forbestown Ditch from SF 14 to the water treatment plant within the community of Forbestown and is accessed via access routes along the canal top. The project occurs along the existing ditch alignment and will not impair an adopted emergency response plan or evacuation plan.
- **b)** Less Than Significant. The project site is located in the mountains and foothills of Butte and Yuba counties and as such the topography surrounding the project site is fairly steep. The topography along the Forbestown Ditch alignment is gently sloping when compared to the surrounding area. Although fires in the area could be large if conditions are right the project does not involve the construction of dwelling units that could expose project occupants to pollution concentrations from a wildfire or the uncontrolled spread of wildfire. No conditions or factors have been identified in the project area that would exacerbate wildfire risks

- **c)** Less Than Significant. The proposed project involves improvements to the Forbestown Ditch. The project doesn't involve the construction of infrastructure that would exacerbate fire risk.
- **d)** Less Than Significant. The proposed project is located in the mountainous areas of Butte and Yuba Counties with steel adjacent slopes. The existing Forbestown Ditch alignment is much less steep than the surrounding terrain as it follows natural elevational contours as it travels from its origination to its terminus at the Forbestown Treatment Plant. As the alignment is considerably less steep than the surrounding terrain it is not anticipated the project would expose people or structures to significant risks including downslope flooding or landslide as a result of post fire instability or drainage changes as the alignment follows a natural contour and it thus perpendicular to the major slopes.

Mitigation: None Required

4. Mandatory Findings of Significance

Mandatory Findings of Significance	Potentially Significant	Less Than Significant With Mitigation	Less Than Significant	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		Х		
 b) Does the project have impacts that are individually limited, but cumulatively considerable ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? 				Х
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				Х

- a) Less Than Significant with Mitigation Incorporated. With the implementation of the mitigation measures included in this Initial Study, Air Quality MM-1, Biological Resources MM-1 through MM-6 and Cultural Resources MM-1, the proposed project would not degrade the environment; result in an adverse impact on fish, wildlife, or plant species including special status species, or prehistoric or historic resources.
- **b)** No Impact. The project involves the piping of the Forbestown Ditch from its origination at SF14 to the Forbestown Treatment Plant. The project does not involve the addition of new expanded structures, facilities, or growth inducing effects, which would be considered cumulatively considerable with regards to past or future projects as the pipe has been sized to convey the water the District has existing right to.
- **c) No Impact.** Based on the preceding environmental analysis and adherence to applicable local, state and federal regulations, as noted in this document, the proposed project would not result in potentially significant cumulative, direct or indirect adverse effects on human beings.

Report Preparation

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Matt Rogers, Associate Environmental Planner/Biologist, Preparer

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Agencies, Boards, Commissions, Districts:

BCAQMD	Butte County Air Quality Management District
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
DWR	(California) Department of Water Resources
DTSC	(California) Department of Toxic Substances Control
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
NAHC	Native American Heritage Association
NSVAB	Northern Sacramento Valley Air Board
RWQCB	Regional Water Quality Control Board
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Guidelines, Policies, Progra	ims, Regulations:
CEQA	
CESA	
CWA	
ESA	Endangered Species Act
FGC	
FMMP	
НСР	Habitat Conservation Plan
MBTA	Migratory Bird Treaty Act
NAGPRA	
NCCP	Natural Community Conservation Plan
NHPA	National Historical Preservation Act
NPDES	National Pollution Discharge Elimination System
NRHP	
PRC	Public Resources Code
SIP	State Implementation Plan
Miscellaneous:	
APE	Area of Potential Effect
ASR	Archaeological Survey Report
BMPs	Best Management Practices
BBA	Biological Resources Assessment
BSA	Biological Study Area
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon Monoxide
dB	Derihel(s)
FIRM	Flood Insurance Rate Man
GHG	Green House Gases
MLD	Most Likely Descendant

NOx	Nitrogen Oxides
03	Ozone
Pb	Lead
PM ₁₀ / 2.5	Particulate Matter less than 10 / 2.5 Microns
ROG	
SR 32	
SR 70	
SR 149	State Route 149
SR 191	State Route 191

Appendices






Page 1 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

Forbestown Ditch

Sacramento Valley Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	37.00	Acre	37.00	1,611,720.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	3.5	Precipitation Freq (Days)	65
Climate Zone	3			Operational Year	2022
Utility Company	Pacific Gas & Electric Com	pany			
CO2 Intensity (Ib/MWhr)	641.35	CH4 Intensity (Ib/MWhr)	0.029	N2O Intensity ((Ib/MWhr)).006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction will take place over two seasons when the canal is out. Typically Oct. to approximately April

Land Use - Project area in total approximately 37 acres

Construction Phase - Only phase of construction is pipe installation. It will occur in a linear fashion downstream and occur over three years between october and april. It is anticipated work will occur 5 days a week

Off-road Equipment - Equipment used, excavator, dump haul, work truck, welder, generator

Off-road Equipment - Anticipated equipment used includes a small excavator, haul trucks, work trucks, generators, welding equipment, air compressor, compactor

Trips and VMT - Conservative estimate of number of worker trips per day.

Energy Use -

Construction Off-road Equipment Mitigation - Equipment will comply with Carb regulations. Anticipated tier 4

Page 2 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	740.00	131.00
tblConstructionPhase	PhaseEndDate	3/6/2024	4/1/2021
tblConstructionPhase	PhaseStartDate	5/6/2021	10/1/2020
tblOffRoadEquipment	HorsePower	158.00	60.00
tblOffRoadEquipment	HorsePower	16.00	89.00
tblOffRoadEquipment	HorsePower	78.00	97.00
tblOffRoadEquipment	LoadFactor	0.38	0.29
tblOffRoadEquipment	LoadFactor	0.38	0.20

Forbestown Ditch - Sacramento Valley Air Basin, Winter

tblOffRoadEquipment	LoadFactor	0.48	0.37
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	264.00	10.00
tblTripsAndVMT	WorkerTripNumber	677.00	30.00

2.0 Emissions Summary

Page 4 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

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/o	day							lb/d	lay		
2020	2.4852	23.2425	20.6518	0.0364	0.4444	1.2819	1.7263	0.1193	1.1998	1.3191	0.0000	3,526.584 7	3,526.584 7	0.7707	0.0000	3,545.852 9
2021	2.2259	20.8837	20.2229	0.0362	0.4444	1.0948	1.5392	0.1193	1.0246	1.1439	0.0000	3,512.397 8	3,512.397 8	0.7641	0.0000	3,531.498 8
Maximum	2.4852	23.2425	20.6518	0.0364	0.4444	1.2819	1.7263	0.1193	1.1998	1.3191	0.0000	3,526.584 7	3,526.584 7	0.7707	0.0000	3,545.852 9

Mitigated Construction

	ROG	NOx	СО	SO2	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	1.7439	16.6383	20.9064	0.0364	0.4444	0.8447	1.2891	0.1193	0.7775	0.8968	0.0000	3,474.715 3	3,474.715 3	0.7631	0.0000	3,493.791 8
2021	1.5867	15.1467	20.5513	0.0362	0.4444	0.7246	1.1691	0.1193	0.6670	0.7862	0.0000	3,460.528 3	3,460.528 3	0.7573	0.0000	3,479.460 5
Maximum	1.7439	16.6383	20.9064	0.0364	0.4444	0.8447	1.2891	0.1193	0.7775	0.8968	0.0000	3,474.715 3	3,474.715 3	0.7631	0.0000	3,493.791 8
	ROG	NOx	СО	SO2	Fugitive	Exhaust	PM10	Fugitive	Exhaust	PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
					FINITO	FINITO	Total	F WIZ.J	F WIZ.J	Total						
Percent Reduction	29.30	27.97	-1.43	0.00	0.00	33.97	24.72	0.00	35.06	31.67	0.00	1.47	1.47	0.94	0.00	1.47

Page 5 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	со	SO2	Fugitive 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/c	day		
Area	0.6940	3.0000e- 005	3.7800e- 003	0.0000		1.0000e- 005	1.0000e- 005		1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005		8.6300e- 003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.6940	3.0000e- 005	3.7800e- 003	0.0000	0.0000	1.0000e- 005	1.0000e- 005	0.0000	1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005	0.0000	8.6300e- 003

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/	day							lb/d	day		
Area	0.6940	3.0000e- 005	3.7800e- 003	0.0000		1.0000e- 005	1.0000e- 005		1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005		8.6300e- 003
Energy	0.0000	0.0000	0.0000	0.0000	1	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	,	0.0000
Total	0.6940	3.0000e- 005	3.7800e- 003	0.0000	0.0000	1.0000e- 005	1.0000e- 005	0.0000	1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005	0.0000	8.6300e- 003

Forbestown Ditch - Sacramento Valley Air Basin, Winter

	ROG	NOx	со	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	Construction Year 1	Building Construction	10/1/2020	4/1/2021	5	131	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 37

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction Year 1	Cranes	1	7.00	231	0.29
Construction Year 1	Other Construction Equipment	2	2.00	172	0.42
Construction Year 1	Forklifts	3	8.00	89	0.20
Construction Year 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Construction Year 1	Excavators	1	7.00	60	0.29
Construction Year 1	Dumpers/Tenders	2	8.00	89	0.20
Construction Year 1	Generator Sets	1	8.00	84	0.74
Construction Year 1	Air Compressors	1	2.00	97	0.37
Construction Year 1	Welders	1	2.00	46	0.45

CalEEMod Version: CalEEMod.2016.3.2

Page 7 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

Trips and VMT

Phase Name	Offroad Equipment	Worker Trip	Vendor Trip	Hauling Trip	Worker Trip	Vendor Trip	Hauling Trip	Worker Vehicle	Vendor	Hauling
	Count	Number	Number	Number	Length	Length	Length	Class	Vehicle Class	Vehicle Class
Construction Year 1	15	30.00	10.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Alternative Fuel for Construction Equipment

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

3.2 Construction Year 1 - 2020

Unmitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive 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/e	day							lb/c	lay		
Off-Road	2.2653	21.9661	19.0881	0.0303		1.2737	1.2737	1 1 1	1.1920	1.1920		2,909.193 1	2,909.193 1	0.7432		2,927.774 2
Total	2.2653	21.9661	19.0881	0.0303		1.2737	1.2737		1.1920	1.1920		2,909.193 1	2,909.193 1	0.7432		2,927.774 2

Page 8 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

3.2 Construction Year 1 - 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/o	day							lb/c	lay		
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	0.0393	1.1340	0.2873	2.5700e- 003	0.0612	5.6700e- 003	0.0669	0.0176	5.4300e- 003	0.0231		269.4405	269.4405	0.0175		269.8772
Worker	0.1806	0.1425	1.2764	3.4900e- 003	0.3832	2.5300e- 003	0.3857	0.1016	2.3300e- 003	0.1040		347.9511	347.9511	0.0100		348.2016
Total	0.2199	1.2764	1.5638	6.0600e- 003	0.4444	8.2000e- 003	0.4526	0.1193	7.7600e- 003	0.1270		617.3916	617.3916	0.0275		618.0788

Mitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive 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/c	lay							lb/d	lay		
Off-Road	1.5240	15.3619	19.3426	0.0303		0.8365	0.8365		0.7698	0.7698	0.0000	2,857.323 7	2,857.323 7	0.7356		2,875.713 0
Total	1.5240	15.3619	19.3426	0.0303		0.8365	0.8365		0.7698	0.7698	0.0000	2,857.323 7	2,857.323 7	0.7356		2,875.713 0

Page 9 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

3.2 Construction Year 1 - 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/c	day							lb/c	lay		
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	0.0393	1.1340	0.2873	2.5700e- 003	0.0612	5.6700e- 003	0.0669	0.0176	5.4300e- 003	0.0231		269.4405	269.4405	0.0175		269.8772
Worker	0.1806	0.1425	1.2764	3.4900e- 003	0.3832	2.5300e- 003	0.3857	0.1016	2.3300e- 003	0.1040		347.9511	347.9511	0.0100		348.2016
Total	0.2199	1.2764	1.5638	6.0600e- 003	0.4444	8.2000e- 003	0.4526	0.1193	7.7600e- 003	0.1270		617.3916	617.3916	0.0275		618.0788

3.2 Construction Year 1 - 2021

Unmitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive 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/o	day							lb/d	lay		
Off-Road	2.0254	19.7198	18.8099	0.0303		1.0895	1.0895		1.0197	1.0197		2,909.284 8	2,909.284 8	0.7383		2,927.741 8
Total	2.0254	19.7198	18.8099	0.0303		1.0895	1.0895		1.0197	1.0197		2,909.284 8	2,909.284 8	0.7383		2,927.741 8

Page 10 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

3.2 Construction Year 1 - 2021

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/o	day							lb/c	lay		
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	0.0327	1.0366	0.2515	2.5500e- 003	0.0612	2.8300e- 003	0.0641	0.0176	2.7100e- 003	0.0203		267.1325	267.1325	0.0168		267.5534
Worker	0.1678	0.1273	1.1615	3.3700e- 003	0.3832	2.4500e- 003	0.3856	0.1016	2.2600e- 003	0.1039		335.9805	335.9805	8.9300e- 003		336.2036
Total	0.2005	1.1639	1.4130	5.9200e- 003	0.4444	5.2800e- 003	0.4497	0.1193	4.9700e- 003	0.1242		603.1129	603.1129	0.0258		603.7570

Mitigated Construction On-Site

	ROG	NOx	со	SO2	Fugitive 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/c	lay							lb/c	lay		
Off-Road	1.3862	13.9828	19.1383	0.0303		0.7194	0.7194		0.6620	0.6620	0.0000	2,857.415 4	2,857.415 4	0.7315		2,875.703 5
Total	1.3862	13.9828	19.1383	0.0303		0.7194	0.7194		0.6620	0.6620	0.0000	2,857.415 4	2,857.415 4	0.7315		2,875.703 5

Page 11 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

3.2 Construction Year 1 - 2021

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/o	day							lb/c	lay		
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	0.0327	1.0366	0.2515	2.5500e- 003	0.0612	2.8300e- 003	0.0641	0.0176	2.7100e- 003	0.0203		267.1325	267.1325	0.0168		267.5534
Worker	0.1678	0.1273	1.1615	3.3700e- 003	0.3832	2.4500e- 003	0.3856	0.1016	2.2600e- 003	0.1039		335.9805	335.9805	8.9300e- 003		336.2036
Total	0.2005	1.1639	1.4130	5.9200e- 003	0.4444	5.2800e- 003	0.4497	0.1193	4.9700e- 003	0.1242		603.1129	603.1129	0.0258		603.7570

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Page 12 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

	ROG	NOx	CO	SO2	Fugitive 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/o	day							lb/c	lay		
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Avei	rage Daily Trip Ra	ate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.541953	0.036671	0.197425	0.116479	0.022488	0.005639	0.021973	0.046454	0.001649	0.001750	0.005772	0.000785	0.000960

5.0 Energy Detail

Historical Energy Use: N

Page 13 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

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/o	lay							lb/c	lay		
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

<u>Unmitigated</u>

	NaturalGa s Use	ROG	NOx	СО	SO2	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/e	day							lb/c	lay		
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		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Page 14 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGa s 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/e	day							lb/c	lay		
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		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	со	SO2	Fugitive 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/d	day							lb/d	day		
Mitigated	0.6940	3.0000e- 005	3.7800e- 003	0.0000		1.0000e- 005	1.0000e- 005		1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005		8.6300e- 003
Unmitigated	0.6940	3.0000e- 005	3.7800e- 003	0.0000		1.0000e- 005	1.0000e- 005		1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005		8.6300e- 003

Page 15 of 16

Forbestown Ditch - Sacramento Valley Air Basin, Winter

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	СО	SO2	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/o	day							lb/d	day		
Architectural Coating	0.1228					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5709					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5000e- 004	3.0000e- 005	3.7800e- 003	0.0000		1.0000e- 005	1.0000e- 005		1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005		8.6300e- 003
Total	0.6940	3.0000e- 005	3.7800e- 003	0.0000		1.0000e- 005	1.0000e- 005		1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005		8.6300e- 003

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					lb/	day							lb/d	day		
Architectural Coating	0.1228					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5709					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5000e- 004	3.0000e- 005	3.7800e- 003	0.0000		1.0000e- 005	1.0000e- 005		1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005		8.6300e- 003
Total	0.6940	3.0000e- 005	3.7800e- 003	0.0000		1.0000e- 005	1.0000e- 005		1.0000e- 005	1.0000e- 005		8.1000e- 003	8.1000e- 003	2.0000e- 005		8.6300e- 003

7.0 Water Detail

Forbestown Ditch - Sacramento Valley Air Basin, Winter

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

Page 1 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

Forbestown Ditch

Sacramento Valley Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	37.00	Acre	37.00	1,611,720.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	3.5	Precipitation Freq (Days)	65
Climate Zone	3			Operational Year	2022
Utility Company	Pacific Gas & Electric Com	pany			
CO2 Intensity (Ib/MWhr)	641.35	CH4 Intensity (Ib/MWhr)	0.029	N2O Intensity ((Ib/MWhr)).006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction will take place over two seasons when the canal is out. Typically Oct. to approximately April

Land Use - Project area in total approximately 37 acres

Construction Phase - Only phase of construction is pipe installation. It will occur in a linear fashion downstream and occur over three years between october and april. It is anticipated work will occur 5 days a week

Off-road Equipment - Equipment used, excavator, dump haul, work truck, welder, generator

Off-road Equipment - Anticipated equipment used includes a small excavator, haul trucks, work trucks, generators, welding equipment, air compressor, compactor

Trips and VMT - Conservative estimate of number of worker trips per day.

Energy Use -

Construction Off-road Equipment Mitigation - Equipment will comply with Carb regulations. Anticipated tier 4

Page 2 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	740.00	131.00
tblConstructionPhase	PhaseEndDate	3/6/2024	4/1/2021
tblConstructionPhase	PhaseStartDate	5/6/2021	10/1/2020
tblOffRoadEquipment	HorsePower	158.00	60.00
tblOffRoadEquipment	HorsePower	16.00	89.00
tblOffRoadEquipment	HorsePower	78.00	97.00
tblOffRoadEquipment	LoadFactor	0.38	0.29
tblOffRoadEquipment	LoadFactor	0.38	0.20

Forbestown Ditch - Sacramento Valley Air Basin, Annual

tblOffRoadEquipment	LoadFactor	0.48	0.37
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	264.00	10.00
tblTripsAndVMT	WorkerTripNumber	677.00	30.00

2.0 Emissions Summary

Page 4 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

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					ton	s/yr							MT	/yr		
2020	0.0815	0.7666	0.6809	1.2100e- 003	0.0141	0.0423	0.0564	3.8000e- 003	0.0396	0.0434	0.0000	106.0403	106.0403	0.0231	0.0000	106.6165
2021	0.0718	0.6784	0.6568	1.1800e- 003	0.0139	0.0356	0.0495	3.7400e- 003	0.0333	0.0370	0.0000	104.0045	104.0045	0.0225	0.0000	104.5671
Maximum	0.0815	0.7666	0.6809	1.2100e- 003	0.0141	0.0423	0.0564	3.8000e- 003	0.0396	0.0434	0.0000	106.0403	106.0403	0.0231	0.0000	106.6165

Mitigated Construction

	ROG	NOx	СО	SO2	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					tor	ns/yr							М	T/yr		
2020	0.0570	0.5486	0.6893	1.2100e- 003	0.0141	0.0279	0.0420	3.8000e- 003	0.0257	0.0295	0.0000	104.4873	104.4873	0.0228	0.0000	105.0578
2021	0.0511	0.4919	0.6675	1.1800e- 003	0.0139	0.0236	0.0375	3.7400e- 003	0.0217	0.0254	0.0000	102.4751	102.4751	0.0223	0.0000	103.0327
Maximum	0.0570	0.5486	0.6893	1.2100e- 003	0.0141	0.0279	0.0420	3.8000e- 003	0.0257	0.0295	0.0000	104.4873	104.4873	0.0228	0.0000	105.0578
	ROG	NOx	CO	SO2	Fugitive	Exhaust	PM10	Fugitive	Exhaust	PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
					PM10	PM10	Total	PM2.5	PM2.5	Total						
Percent Reduction	29.51	27.99	-1.43	0.00	0.00	33.98	24.99	0.00	35.07	31.77	0.00	1.47	1.47	0.94	0.00	1.46

Page 5 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-1-2020	12-31-2020	0.8453	0.6040
2	1-1-2021	3-31-2021	0.7428	0.5379
3	4-1-2021	6-30-2021	0.0082	0.0060
		Highest	0.8453	0.6040

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Area	0.1266	0.0000	3.4000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.6000e- 004	6.6000e- 004	0.0000	0.0000	7.0000e- 004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste	19					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.1266	0.0000	3.4000e- 004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.6000e- 004	6.6000e- 004	0.0000	0.0000	7.0000e- 004

Page 6 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

2.2 Overall Operational

Mitigated Operational

	ROG	NO	X	СО	SO2	Fugi PN	itive 110	Exhaust PM10	PM10 Total	Fugi PM	itive I I2.5	Exhaust PM2.5	PM2.5 Tot	al Bio	o- CO2	NBio- CO2	total	CO2	CH4	N	20	CO2e
Category							tons	s/yr										MT/y	r			
Area	0.1266	0.00	00 3.	.4000e- 004	0.0000			0.0000	0.0000			0.0000	0.0000	0	.0000	6.6000e- 004	6.60 00	00e- 04	0.0000) 0.(000	7.0000e- 004
Energy	0.0000	0.00	00 C	0.0000	0.0000			0.0000	0.0000			0.0000	0.0000	0	.0000	0.0000	0.0	000	0.0000) 0.(000	0.0000
Mobile	0.0000	0.00	00 C	0.0000	0.0000	0.0	000	0.0000	0.0000	0.0	000	0.0000	0.0000	0	.0000	0.0000	0.0	000	0.0000) 0.(000	0.0000
Waste	F;							0.0000	0.0000			0.0000	0.0000	0	.0000	0.0000	0.0	000	0.0000) 0.(000	0.0000
Water	F;	, , , , ,						0.0000	0.0000			0.0000	0.0000	0	.0000	0.0000	0.0	000	0.0000) 0.(000	0.0000
Total	0.1266	0.00	00 3.	.4000e- 004	0.0000	0.0	000	0.0000	0.0000	0.0	000	0.0000	0.0000	0	.0000	6.6000e- 004	6.60 00	00e-)4	0.0000	0.0	000	7.0000e- 004
	ROG		NOx	С	0	SO2	Fugit PM	tive Exh 10 Pl	aust I M10	PM10 Total	Fugitiv PM2.	ve Ext .5 Pl	naust Pl M2.5 T	/12.5 otal	Bio- C	O2 NBio	-CO2	Total CO	02	CH4	N2	0 CO2e
Percent Reduction	0.00		0.00	0.	00	0.00	0.0	0 00	.00	0.00	0.00) 0	0.00 (.00	0.00) 0.	00	0.00		0.00	0.0	0 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	Construction Year 1	Building Construction	10/1/2020	4/1/2021	5	131	

Acres of Grading (Site Preparation Phase): 0

Page 7 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

Acres of Grading (Grading Phase): 0

Acres of Paving: 37

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction Year 1	Cranes	1	7.00	231	0.29
Construction Year 1	Other Construction Equipment	2	2.00	172	0.42
Construction Year 1	Forklifts	3	8.00	89	0.20
Construction Year 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Construction Year 1	Excavators	1	7.00	60	0.29
Construction Year 1	Dumpers/Tenders	2	8.00	89	0.20
Construction Year 1	Generator Sets	1	8.00	84	0.74
Construction Year 1	Air Compressors	1	2.00	97	0.37
Construction Year 1	Welders	1	2.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment	Worker Trip	Vendor Trip	Hauling Trip	Worker Trip	Vendor Trip	Hauling Trip	Worker Vehicle	Vendor	Hauling
	Count	Number	Number	Number	Length	Length	Length	Class	Vehicle Class	Vehicle Class
Construction Year 1	15	30.00	10.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Alternative Fuel for Construction Equipment

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Page 8 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

3.2 Construction Year 1 - 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					ton	s/yr							МТ	/yr		
Off-Road	0.0748	0.7249	0.6299	1.0000e- 003		0.0420	0.0420		0.0393	0.0393	0.0000	87.0928	87.0928	0.0223	0.0000	87.6491
Total	0.0748	0.7249	0.6299	1.0000e- 003		0.0420	0.0420		0.0393	0.0393	0.0000	87.0928	87.0928	0.0223	0.0000	87.6491

Unmitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/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	1.2500e- 003	0.0375	8.6000e- 003	9.0000e- 005	1.9600e- 003	1.8000e- 004	2.1400e- 003	5.7000e- 004	1.8000e- 004	7.4000e- 004	0.0000	8.2221	8.2221	4.9000e- 004	0.0000	8.2344
Worker	5.4500e- 003	4.1900e- 003	0.0424	1.2000e- 004	0.0122	8.0000e- 005	0.0122	3.2300e- 003	8.0000e- 005	3.3100e- 003	0.0000	10.7254	10.7254	3.1000e- 004	0.0000	10.7331
Total	6.7000e- 003	0.0417	0.0510	2.1000e- 004	0.0141	2.6000e- 004	0.0144	3.8000e- 003	2.6000e- 004	4.0500e- 003	0.0000	18.9475	18.9475	8.0000e- 004	0.0000	18.9674

Page 9 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

3.2 Construction Year 1 - 2020

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					ton	s/yr							MT	/yr		
Off-Road	0.0503	0.5069	0.6383	1.0000e- 003		0.0276	0.0276		0.0254	0.0254	0.0000	85.5399	85.5399	0.0220	0.0000	86.0904
Total	0.0503	0.5069	0.6383	1.0000e- 003		0.0276	0.0276		0.0254	0.0254	0.0000	85.5399	85.5399	0.0220	0.0000	86.0904

Mitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/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	1.2500e- 003	0.0375	8.6000e- 003	9.0000e- 005	1.9600e- 003	1.8000e- 004	2.1400e- 003	5.7000e- 004	1.8000e- 004	7.4000e- 004	0.0000	8.2221	8.2221	4.9000e- 004	0.0000	8.2344
Worker	5.4500e- 003	4.1900e- 003	0.0424	1.2000e- 004	0.0122	8.0000e- 005	0.0122	3.2300e- 003	8.0000e- 005	3.3100e- 003	0.0000	10.7254	10.7254	3.1000e- 004	0.0000	10.7331
Total	6.7000e- 003	0.0417	0.0510	2.1000e- 004	0.0141	2.6000e- 004	0.0144	3.8000e- 003	2.6000e- 004	4.0500e- 003	0.0000	18.9475	18.9475	8.0000e- 004	0.0000	18.9674

Page 10 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

3.2 Construction Year 1 - 2021

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					ton	s/yr							MT	/yr		
Off-Road	0.0658	0.6409	0.6113	9.8000e- 004		0.0354	0.0354		0.0331	0.0331	0.0000	85.7759	85.7759	0.0218	0.0000	86.3201
Total	0.0658	0.6409	0.6113	9.8000e- 004		0.0354	0.0354		0.0331	0.0331	0.0000	85.7759	85.7759	0.0218	0.0000	86.3201

Unmitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/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	1.0200e- 003	0.0338	7.3800e- 003	8.0000e- 005	1.9300e- 003	9.0000e- 005	2.0200e- 003	5.6000e- 004	9.0000e- 005	6.4000e- 004	0.0000	8.0291	8.0291	4.7000e- 004	0.0000	8.0407
Worker	4.9900e- 003	3.6900e- 003	0.0381	1.1000e- 004	0.0120	8.0000e- 005	0.0121	3.1800e- 003	7.0000e- 005	3.2600e- 003	0.0000	10.1995	10.1995	2.7000e- 004	0.0000	10.2062
Total	6.0100e- 003	0.0375	0.0455	1.9000e- 004	0.0139	1.7000e- 004	0.0141	3.7400e- 003	1.6000e- 004	3.9000e- 003	0.0000	18.2286	18.2286	7.4000e- 004	0.0000	18.2470

Page 11 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

3.2 Construction Year 1 - 2021

Mitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Off-Road	0.0451	0.4544	0.6220	9.8000e- 004		0.0234	0.0234		0.0215	0.0215	0.0000	84.2465	84.2465	0.0216	0.0000	84.7857
Total	0.0451	0.4544	0.6220	9.8000e- 004		0.0234	0.0234		0.0215	0.0215	0.0000	84.2465	84.2465	0.0216	0.0000	84.7857

Mitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/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	1.0200e- 003	0.0338	7.3800e- 003	8.0000e- 005	1.9300e- 003	9.0000e- 005	2.0200e- 003	5.6000e- 004	9.0000e- 005	6.4000e- 004	0.0000	8.0291	8.0291	4.7000e- 004	0.0000	8.0407
Worker	4.9900e- 003	3.6900e- 003	0.0381	1.1000e- 004	0.0120	8.0000e- 005	0.0121	3.1800e- 003	7.0000e- 005	3.2600e- 003	0.0000	10.1995	10.1995	2.7000e- 004	0.0000	10.2062
Total	6.0100e- 003	0.0375	0.0455	1.9000e- 004	0.0139	1.7000e- 004	0.0141	3.7400e- 003	1.6000e- 004	3.9000e- 003	0.0000	18.2286	18.2286	7.4000e- 004	0.0000	18.2470

4.0 Operational Detail - Mobile

Page 12 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

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					ton	s/yr							МТ	/yr		
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Ave	rage Daily Trip Ra	ate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Other Non-Asphalt Surfaces 0.541953 0.036671 0.197425 0.11647	0.022488	0.005639	0.021973	0.046454	0.001649	0.001750	0.005772	0.000785	0.000960

Page 13 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

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					ton	s/yr							МТ	/yr		
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated	Fr== == == == == == == == == = ; = ; = ; =		1			0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Page 14 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

5.2 Energy by Land Use - NaturalGas

<u>Unmitigated</u>

	NaturalGa s 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					ton	s/yr							MT	/yr		
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	- 	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGa s 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					ton	s/yr							MT	/yr		
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

CalEEMod Version: CalEEMod.2016.3.2

Page 15 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

5.3 Energy by Land Use - Electricity

<u>Unmitigated</u>

	Electricity Use	Total CO2	CH4	N2O	CO2e						
Land Use	kWh/yr	MT/yr									
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000						
Total		0.0000	0.0000	0.0000	0.0000						

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e						
Land Use	kWh/yr	MT/yr									
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000						
Total		0.0000	0.0000	0.0000	0.0000						

6.0 Area Detail

6.1 Mitigation Measures Area

Page 16 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

	ROG	NOx	со	SO2	Fugitive 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	0.1266	0.0000	3.4000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.6000e- 004	6.6000e- 004	0.0000	0.0000	7.0000e- 004
Unmitigated	0.1266	0.0000	3.4000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.6000e- 004	6.6000e- 004	0.0000	0.0000	7.0000e- 004

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr							MT/yr								
Architectural Coating	0.0224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1042					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e- 005	0.0000	3.4000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.6000e- 004	6.6000e- 004	0.0000	0.0000	7.0000e- 004
Total	0.1266	0.0000	3.4000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.6000e- 004	6.6000e- 004	0.0000	0.0000	7.0000e- 004
Page 17 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

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					ton	s/yr					MT/yr					
Architectural Coating	0.0224					0.0000	0.0000	1 1 1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1042					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e- 005	0.0000	3.4000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.6000e- 004	6.6000e- 004	0.0000	0.0000	7.0000e- 004
Total	0.1266	0.0000	3.4000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.6000e- 004	6.6000e- 004	0.0000	0.0000	7.0000e- 004

7.0 Water Detail

7.1 Mitigation Measures Water

Page 18 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

	Total CO2	CH4	N2O	CO2e
Category		MI	ī/yr	
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

<u>Unmitigated</u>

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		МТ	/yr	
Other Non- Asphalt Surfaces	0/0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

CalEEMod Version: CalEEMod.2016.3.2

Page 19 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

7.2 Water by Land Use

Mitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		MT	/yr	
Other Non- Asphalt Surfaces	0/0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e			
		MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000			
Unmitigated	0.0000	0.0000	0.0000	0.0000			

CalEEMod Version: CalEEMod.2016.3.2

Page 20 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

8.2 Waste by Land Use

<u>Unmitigated</u>

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		МТ	/yr	
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		МТ	ī/yr	
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Page 21 of 21

Forbestown Ditch - Sacramento Valley Air Basin, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

<u>Boilers</u>

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
_ 4===					

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Biological Resources Assessment

Forbestown Ditch Improvement Project Butte and Yuba Counties, California

January 2020



Prepared for: Jeff Maupin, General Manager North Yuba Water District 8691 La Porte Road Brownsville, CA. 95919

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EXECUTIVE SUMMARY

NorthStar conducted biological surveys within the Biological Survey Area (BSA) for the proposed Forbestown ditch improvement project located in Butte and Yuba Counties, California. The BSA is composed of mixed conifers with a mixed hardwood and shrub understory. The BSA encompasses the approximately 10-mile length of the ditch, from the Woodleaf surge tank to the Forbestown water treatment plant, with a 100-foot buffer out from the ditch center line. Surveys were conducted on June 13, 2017 by NorthStar biologists Carol Wallen and Matt Rogers to determine the presence of sensitive biological resources within the BSA and to determine if these resources would be impacted by the proposed project.

Due to the disturbed nature of the ditch, suitable habitat for special-status plant species is minimal. Many of the special-status species listed by the United States Fish and Wildlife Service (USFW), California Department of Fish and Wildlife (CDFW), and California Native Plant Society (CNPS) as potentially occurring in the area are found living within gabbroic and serpentine soils which are not present on-site. Several species were determined to have moderate potential to occur within the BSA including Ahart's buckwheat (*Eriogonum umbellatum* var. *ahartii*), brownish beaked rush (*Rhynchospora capitellata*), Butte County calycadenia (*Calycadenia oppositifolia*), Butte County fritillary (*Fritillaria eastwoodiae*), Humboldt lily (*Lilium humboldtii* ssp. *humboldtii*), Mosquin's clarkia (*Clarkia mosquinii*), northern sierra daisy (*Erigeron petrophilus var. sierrensis*), Sierra arching sedge (*Carex cyrtostachya*), True's manzanita (*Arctostaphylos mewukka* ssp. *truei*), and white-stemmed clarkia (*Clarkia gracilis* ssp. *albicaulis*).

The BSA potentially provides suitable habitat for one special-status amphibian species, the foothill yellow-legged frog (*Rana boylii*). The Forbestown ditch provides aquatic habitat that could support the species however, breeding habitat is limited due to a lack of suitable cobble for egg attachment. Additionally, the Forbestown Ditch is dewatered annually for approximately three months which dramatically limits available habitat for the species during that time. Generally, the dewatering occurs after the agricultural season when water deliveries to customers are limited.

The mixed conifer woodlands surrounding the Forbestown ditch provide potentially suitable roosting habitat for the silver-haired bat (*Lasionycteris noctivagans*) and western red bat (*Lasiurus blossevillii*). Open areas surrounding the BSA could provide suitable foraging habitat for these species as well.

The BSA provides suitable foraging and nesting habitat for variety of migratory birds protected by the Migratory Bird Treaty Act (MBTA) within the mixed conifer woodlands surrounding the Forbestown ditch.

Table of Contents

1.	INTRODUCTION	1
	1.1 Project Description	2
2	METHODS	8
4.	2.1 Riological Resources	8
	2.1 1 Sensitive Natural Communities	8
	2.1.2 Critical Habitat	8
	2.1.3 Special-Status Species	8
-		
3.	RESULTS	
	3.1 Existing Conditions	
	3.1.1 Montane Hardwood-Conifer	
	3.2 Sensitive Natural Communities	13
	3.3 Critical Habitat	13
	3.4 Special-Status Species	13
	3.4.1 Plants	
	3.4.2 Invertebrates	
	3.4.5 Reputes and Amphibians	
	3.4.5 Birds	27
	3.4.6 Mammals	27 28
4.	REGULATORY FRAMEWORK	
	4.1 Federal Regulations	
	4.1.1 Federal Endangered Species Act	
	4.1.2 Migratory Bird Treaty Act Title 16 USC Section 703	
	4.1.3 Clean Water Act 11tle 33 U.S.C. §1251	
	4.2 State Regulations.	
	4.2.1 Collifornia Endonesnad Creation Ast	21
	4.2.1 California Endangered Species Act	
	 4.2.1 California Endangered Species Act 4.2.2 California Fish and Game Code 4.2.3 Public Poscurous Code 	31
	 4.2.1 California Endangered Species Act 4.2.2 California Fish and Game Code 4.2.3 Public Resources Code 	31 31 32
5.	 4.2.1 California Endangered Species Act 4.2.2 California Fish and Game Code 4.2.3 Public Resources Code CONCLUSIONS AND RECOMMENDATIONS 	31 31 32
5.	 4.2.1 California Endangered Species Act 4.2.2 California Fish and Game Code 4.2.3 Public Resources Code CONCLUSIONS AND RECOMMENDATIONS 5.1 Plants including Ahart's Buckwheat, Brownish Beaked Rush, Butte County 	31 31 32 33
5.	 4.2.1 California Endangered Species Act	31 31 32 33
5.	 4.2.1 California Endangered Species Act	31 31 32 33
5.	 4.2.1 California Endangered Species Act	31 31 32 33
5.	 4.2.1 California Endangered Species Act	31 32 33 33 33
5.	 4.2.1 California Endangered Species Act	31 32 33 33 33 33
5.	 4.2.1 California Endangered Species Act	31 32 33 33 33 33
5.	 4.2.1 California Endangered Species Act	31 32 33 33 33 33 34 34

List of Tables and Figures

Tables

Table 1. Special-status Species and Sensitive Natural Communities Identified by USFWS, CNDDB, and CNPS as Potentially Occurring in the Biological Survey Area.	. 15
Figures	

Figure 1. Project location map	. 10
Figure 2. CNDDB occurrences in the vicinity of the Biological Survey Area	. 14

Appendices

USFWS Species List
CNDDB Species List
CNPS Species List
Species Observed
California Red-legged Frog Habitat Assessment

List of Abbreviated Terms

BSA	Biological Survey Area		
CDFW	California Department of Fish and Wildlife		
CEQA	California Environmental Quality Act		
CESA	California Endangered Species Act		
CFGC	California Fish and Game Code		
CNDDB	California Natural Diversity Database		
CNPS	California Native Plant Society		
CWA	Clean Water Act		
CWHR	California Wildlife Habitat Relationships		
EPA	U.S. Environmental Protection Agency		
ESA	Federal Endangered Species Act		
IPAC	Information for Planning and Consultation		
MBTA	Migratory Bird Treaty Act		
msl	Mean Sea Level		
NEPA	National Environmental Policy Act		
NPDES	National Pollutant Discharge Elimination System		
NRCS	Natural Resources Conservation Service		
NRPW	Non-Relatively Permanent Waters		
OWOUS	Other Waters of the United States		
RPW	Relatively Permanent Waters		
RWQCB	Regional Water Quality Control Board		
SNC	Sensitive Natural Community		
SWRCB	State Water Resources Control Board		
TNW	Traditional Navigable Waters		
USACE	U.S. Army Corps of Engineers		
USFWS	U.S. Fish and Wildlife Service		
USGS	U.S. Geological Survey		
WOUS	Waters of the United States		

1. INTRODUCTION

NorthStar conducted biological surveys for the Forbestown ditch improvement project within Butte and Yuba Counties, California. The Biological Survey Area (BSA) is a linear corridor extending approximately 10-miles in length and 200 feet in width, extending from the Woodleaf Surge Tank and the Oroleve Creek Diversion, and sloping down, generally southwesterly, to the Forbestown Water Treatment facility within the community of Forbestown, in Butte County. The BSA occurs in sections 11 and 12 of Township 19 North, Range 6 East, portions of Sections 3, 4, 5, 6, 7, 8 and 9 of Township 19 North, Range 7 East, and portions of Sections 33 and 34 of Township 20 North, Range 7 East, as shown on the USGS Clipper Mills and Forbestown, California, 7.5' Series Quadrangles (**Figure 1**). Surveys were conducted on June 13, 2017 by NorthStar biologists Carol Wallen and Matt Rogers, to determine the presence of sensitive biological resources and to determine if these resources would be impacted by the proposed project.

The North Yuba Water District (NYWD) is proposing to implement the Forbestown Ditch Piping Project. The purpose of the project is to replace the open, unlined ditch with a 36-inch pipeline which would convey raw water while reducing water leakage and losses, and improving water quality at the Forbestown Water Treatment Plant.

The NYWD receives surface water from the South Fork of the Feather River conveyed via the Forbestown Ditch to the Forbestown Water Treatment Plant. From there, water is then conveyed to the surrounding communities of Forbestown, Challenge, Rackerby, and Brownsville.

The Forbestown Ditch was completed in 1857 by the South Feather Water Company, over the intervening years portions of the ditch were sold to various entities. Ultimately, the ditch was acquired by South Feather Water and Power Agency (SFWPA). Around 1968, substantial construction modifications of the overall water delivery system were constructed to accommodate increased water demands. The modifications included the construction of tunnels, surge tanks, siphons, diversion flumes and numerous upgrades to the ditch itself, including lining portions of the interior with gunite. The NYWD operates in partnership with SFWPA for conveyance of agricultural, domestic, and hydroelectric water supplies. In 2011, SFWPA transferred all right and title of the Forbestown Ditch to NYWD.

The existing open Forbestown Ditch was constructed in native soil, it was constructed by completing a high side excavation, which was side cast and compacted to provide a low side embankment berm. In general, the resultant trapezoidal ditch consists of a four-foot-wide bottom with 1:1 side slopes and is approximately four feet deep. The low side berm has an approximate top width of four feet with an approximate 2:1 downhill embankment fill slope. During each year the ditch is dewatered for approximately three months after the agricultural irrigation season to allow for routine maintenance.

The purpose of the project is to improve the existing water conveyance system and increase its efficiency by reducing raw water loss and minimize environmental contamination. The open unlined conveyance system is susceptible to both natural and man-made pollutants, vandalism, damage due to fire, unauthorized withdrawals, and significant water losses. The current conveyance does not reliably deliver raw water capacities due to losses.

There are several areas along the 10-mile alignment that are vulnerable to slope instability and overtopping during severe storm events. Through the years, several failures and areas of distress have occurred that have caused disruptions or complete stoppages to water conveyance. The most recent failure occurred in the winter of 2016/2017 during a extended and intense period of rainfall which created completely saturated soil conditions and caused low side berm failures in two different locations. A preliminary study of these locations opined one area was adversely affected by slope creep and shallow slope failures while the other area is being adversely affected by rotational and translation slope failures and local slope creep. The geotechnical report stated the piping of the ditch would have a net benefit of reducing the amount of water introduced to subsurface soils, which would ultimately increase the stability of the slopes below the ditch.

In addition to storm related emergencies that can overwhelm the water delivery system, another risk associated with the open and unlined channel are significant water losses due to surge flows that cannot be utilized during storm events, leakage, evaporation, evapotranspiration, and unpermitted water diversion. It is estimated that between 50-70% of flows are lost to leakage and evaporation respectively.

The open and unlined ditch is causing water quality concerns at NYWD's Forbestown Water Treatment Plant. The treatment plant's Waste Discharge Requirements from the NYWD's permit renewal requires significantly reduced mineral concentrations from overflows at the treatment plant's on-site storage reservoir.

In summary, the project provides the following benefits: 1) Improves existing water supply reliability in all years and especially during dry and extended drought years; 2) Removes the potential for contamination and; 3) Provides net increases slope stability in areas prone to failure.

1.1 Project Description

The proposed project involves the piping of the Forbestown Ditch from its origination at the Woodleaf Surge Tower to the Forbestown Water Treatment Facility. The primary component of the project is the installation of a 42-inch high density polyethlene (HDPE) pipe, however, there are a number of other components that are necessary to install the pipe along the alignment including access ports, turnouts, sheet flow drainage areas, modified wooden flumes, open channel to pipe transitions, pipe to open channel transitions, siphon inlet to pipe connections, siphon outlet to pipe connections, pipe to pipe connections, road crossings, and culverts.

The project will involve the placement of the new pipe within the current ditch alignment. The pipe utilized will be HDPE ADS N-12, which provides a smooth interior wall and corrugated exterior wall providing durability and hydraulic efficiency. This type of pipe was selected because of its ease of installation and flexibility which allows for minor sagging and deformation. Additionally, the integrated bell and gasket makes it a cost-effective option as it does not require an extra coupler, grout, or special equipment for installation.

The installation methods would be different between the upper section of the ditch (Woodleaf Surge Tank to Costa Creek Siphon inlet) and the lower section (Costa Creek Siphon outfall to Forbestown Water Treatment Facility). The upper section would include the placement of the 42-inch HDPE pipe within the ditch at grade. The pipe would be stabilized with anchor blocks and

pipe straps approximately every 10 feet. The anchor block would be precast concrete with a saddle that the pipe would seat within. The blocks are approximately 6 inches tall, 12 inches long, and 54 inches long with an insert on each end for pipe straps. The insert would be a 3/8" by 8" galvanized bolt and washer that would provide an attachment point for the straps. The straps would be a 2" galvanized metal strap. Minor excavations within the ditch may be necessary to remove organic material and sediment to a competent subgrade material that will allow for the level placement of the anchor blocks. Directly adjacent to the pipe an overland sheet flow ditch would be excavated on the side of the pipe opposite the berm. This small ditch would convey overland sheet flow downstream to sheet flow drainage areas where this water can be conveyed from the alignment. This small ditch would be approximately one foot across at the bottom and 0.5 feet tall with 1:1 side slopes and a total width of two feet minimally. In the upper portion of the alignment a tight corner is present where the existing ditch berm will be excavated towards the ditch at 3:1 slopes to provide a smooth transition from the berm to the ditch. An overland flow ditch would be constructed to convey sheet flow beneath the 42-inch HDPE pipe and across the newly excavated ditch berm. The overland sheet flow ditch would be lined with geotextile fabric and rock slope protection and it would be approximately five feet wide at the bottom, approximately one foot deep with 1:1 side slopes for a total width of seven feet. An inlet catch basin would be excavated at the upper portion of the overland sheet flow ditch to facilitate water movement under the HDPE pipe and across the berm.

Installation in the lower section of the ditch would include the placement of the pipe within the existing alignment and covered on top with a minimum of one foot of backfill material to be even with the existing ground level. The pipe would be stabilized with the same anchor blocks as the upper section to prevent the pipe from floating due to hydrostatic uplift pressure. This pipe anchoring system would be placed every 20 feet. Because the pipe would be buried and backfilled, approximately nine footbridges that span the existing ditch would be removed.

The low side earthen berm exists at its current height to maintain freeboard in the ditch. With the piping of the ditch, freeboard height will no longer need to be maintained, therefore, approximately 2-feet of the top portion of the berm will be excavated and used as backfill material. The excavation of the top portion of the berm will create a wider access road (approximately six feet wide) sufficient in size to allow small all-terrain utility vehicles and mini excavators to access the entire length of the pipe.

Access Ports

Access into the pipe for maintenance and observation will be achieved through the placement of pipe access ports. Two port configurations will be utilized within the alignment. The first will be utilized in the upper portion of the ditch from SF14 to the Costa Creek Siphon.

In the lower portion of the ditch, from the bottom of the Costa Creek Siphon to the Forbestown Treatment Plant the pipe access port would be placed in the pipe alignment and the structure will be covered with backfill material to be even with the existing grade as the pipe is buried in this portion.

For both configurations, the access ports will be constructed utilizing an ADS HDPE pipe tee fitting pointing upward to provide continuity within the conveyance system. The top of the tee fitting will have a cast-in-place or pre-fabricated concrete frame around the pipe with a lockable diamond plate cover or equivalent. The access ports will be placed along the alignment approximately every 1,000 linear feet.

For pipe access ports within the upper portion of the ditch, a pipe access embankment will be constructed around the concrete frame. The embankment will utilize existing native backfill material excavated from the adjacent berm to prevent movement. Immediately upstream from the pipe access port a sheet flow drainage would be placed to convey overland sheet flow out of the flow ditch prior to it reaching the access port structure.

Sheet Flow Drainage

There are several areas where overland sheet flow is concentrated and flows into the ditch. This surface water is assumed to contribute to mineral and bacterial contamination observed at the Forbestown Treatment Plant. This surface water will no longer be captured in the conveyance system once pipe is installed. This water will still flow into the ditch; however, it will be released to natural elevational drainage courses using sheet flow drainages. The installation of these sheet flow drainages beneath the main pipe line will prevent water from ponding and causing hydrostatic uplift pressure and soil saturation. At areas determined to be overland sheet flow concentration sites, these sheet flow drainages installed beneath the conveyance system will divert flows out of the ditch.

Where designated, sheet flow drainage ditches would be installed from the existing alignment running beneath the 42-inch HDPE pipe and traveling across the earthen berm. The sheet flow drainage ditch would be approximately five feet wide at the bottom and approximately one foot deep. The earthen berm would need to be excavated to provide a smooth transition from the top of the earthen berm to the bottom of the drainage ditch and alignment. The drainage ditch would be lined with RSP and geotextile fabric to protect against any scour. The inlet would have a catch basin excavated in the ditch to collect the sheet flow and direct it out. A four-foot-wide barrier will be constructed at the downstream side of the sheet flow drainage ditch to prevent any surface water from bypassing the drainage area and continuing down the alignment.

<u>Turnouts</u>

In the event any portion of the pipeline requires flows to be diverted and released out of the system, a turnout would be installed. Five turnout areas needing structures have been identified where they will be installed. The turnout structure will be a 60 inch by 60-inch precast concrete box with two canal gates installed at each outlet. The structure will be within the pipe alignment and will have a 42-inch HDPE outlet pipe. The outlet of the pipe will be protected with RSP and geotextile fabric. The outlet pipe will be installed at approximately two percent slope to facilitate water flow from the turnout. The structure will be covered with approximately one foot of native backfill material from the top portion of the berm for protection of the outfall pipe.

Additionally, a sheet flow drainage as described above would be placed upstream of the turnout to direct over land sheet flow collected in the ditch beneath the 42-inch HDPE pipe and out of the alignment.

Open Channel to Pipe Transitions

Several open channel to pipe transitions occur along the alignment, as portions of the existing ditch have been lined with concrete. In areas where the concrete is in good condition and functional, as such it will remain. To facilitate water flows into the piped ditch from these open channels the construction of headwalls to direct water into the pipe will be necessary. There will be two types of headwalls constructed to direct flows: one utilizing quickcrete bags anchored into the toe of the ditch for stabilization, and the other utilizing shotcrete to form the headwall. For open earth channel to pipe transitions quickcrete bags would be utilized to construct the headwall. In open shotcrete channels to pipe transitions, shotcrete will be utilized to form the headwall. In both cases, the 42-inch HDPE pipe would be mitered to provide a smooth transition from the headwall into the pipe. A trash rack will be constructed to remove large debris from entering the piped portion. The trash rack would consist of metal pipes oriented vertically with one pipe oriented horizontally at the bottom. It would be attached to the pipe by a metal plate with a bolt and washer.

Pipe to Open Channel Transitions

As previously mentioned, there are a number of concrete lined sections within the existing alignment that are in good condition and will remain in place. At the downstream side of these lined sections the concrete will need to transition into the 42-inch HDPE pipe. Two types of pipe to open channel transitions will be installed depending on the location within the alignment, one in the upper portion and one in the lower portion of the ditch.

In the upper portion of the alignment just upstream of the transition from pipe to open channel backfill material would be placed over the 42-inch HDPE pipe level with the existing berm. The backfill material would be sloped to the transition. At the outfall of the pipe RSP would be placed along both the slope of the backfill material and extending approximately five feet from the end of the pipe. The RSP would be underlaid by geotextile fabric. Upstream of the backfill a sheet flow drainage area would be installed as previously described to remove excess water from the alignment.

In the lower portion of the alignment the 42-inch HDPE pipe is buried, as such, the backfill material will be sloped towards the transition of the pipe to the open channel. The slope would be protected with RSP underlaid by geotextile fabric. Additionally, an RSP apron would extend approximately five feet beyond the end of the pipe to protect against scour.

Modified Wood Flumes

Several wood flumes are present within the ditch alignment. These wooden flumes will need to be modified for the piping of the ditch. To facilitate placement of the 42-inch HDPE pipe in these structures the existing supports on the flume will be removed and replaced. New top supports will be approximately 2" by 4" by 80" while side supports will be approximately 2" by 4" by 55". New wood supports for the bottom of the pipe will be approximately 2" by 4" by 34" and will connect to the side supports to stabilize the pipe within the flume. Wood shims may be installed below the pipe to maintain a positive slope facilitating flow. New supports for the pipe will be installed approximately every 10 feet within the wooden flume sections. Wooden walkways will be installed along the top portion of the flume.

HDPE Pipe to Corrugated Metal Pipe Connection

In places where the new 42-inch HDPE pipe must be connected to existing corrugated metal pipe (CMP), a double wide pipe coupler would be utilized at the connection point. The coupler would be one size larger in diameter in order to provide suitable overlap between the two pipe types. The HDPE pipe will have an internal coupler spigot adapter to facilitate a smooth transition between pipe types. A HDPE pipe reducer would be utilized to connect the different sized pipes to the existing corrugated metal pipes. A minor excavation will be necessary within the ditch to avoid soil intrusion into the pipes. The excavation would be back-filled with Class II bedding (crushed rock or gravel) to a depth of approximately six inches.

HDPE Pipe to Reinforced Concrete Pipe Connection

Large diameter (48 inch) concrete reinforced pipe is present within the ditch alignment. It has been determined to be in good condition and will be left in place. To facilitate connection of the new HDPE pipe to the reinforced concrete pipe, a cast-in-place concrete encasement will be constructed. Minor excavations will be necessary to seat the concrete encasement. These excavations would be backfilled to support the collar. The encasement will have non-woven geotextile wrapped around the connection of the two pipes. A 48-inch HDPE pipe will be connected to the existing concrete pipe with an internal coupler spigot adapter. Additionally, a pipe reducer with matching inverts will transition the 42-inch HDPE pipe into the 48-inch HDPE pipe and into the 48-inch concrete pipe.

Pipe to Siphon Connections

Pipe to Siphon Inlet Connection (Woodleaf and Oroleve Siphons)

To facilitate the installation of pipe at the Woodleaf and Oroleve siphons the construction of an eight-inch-thick headwall will be necessary. The existing trash rack will be removed and salvaged, if possible. Stainless steel clamps and non-shrink patching compound will be placed at the end of the pipe to attach it to the newly constructed headwall. The existing covers at the siphons will need to be modified to fit the new inlet configuration. Non-shrink patching compound will be used to attach the pipe to the existing siphon.

A sheet flow drainage area would be installed upstream of the siphon (as previously described in the sheet flow drainage section) to facilitate the removal of any excess sheet flow from the alignment.

Siphon Inlet to Pipe Connection (Beehive Siphon)

At the Beehive Siphon, the 42-inch HDPE pipe will need to be attached to the inlet. An eightinch-thick concrete headwall will be constructed to seat the pipe into the siphon. Non-shrink patching compound will be utilized around the outside of the pipe to ensure attachment of the pipe to the newly constructed headwall. The cover would be modified to fit the new inlet configuration. The structure would be backfilled.

Siphon Outlet to Pipe Connection (Beehive Siphon)

At the Beehive Siphon the 42-inch HDPE pipe will need to be attached to the outlet. An eightinch-thick concrete headwall will be constructed to seat the pipe into the siphon, the bottom of the headwall would be shaped to provide a smooth transition from the headwall to the pipe. Stainless steel clamps and non-shrink patching compound will be placed around the end of the pipe to ensure attachment to the newly constructed headwall. Retainer hooks would be placed into the existing concrete to attach a diamond plate access door to the top of the siphon outlet.

Dirt Road Crossings

There are approximately 21 areas along the alignment where dirt roads cross the Forbestown Ditch. In these areas, there are corrugated metal pipes that convey water beneath the roadway. These corrugated metal pipes would be removed to make way for the 42-inch HDPE pipe and the road crossings would remain. The side slopes of the road would be sloped and a sheet flow drainage area would be placed upstream of the road to remove sheet flow accumulated next to the 42-inch HDPE pipe from the Forbestown Ditch. Aggregate base would be installed on the top of the roadway and it would be compacted.

Culverts

Five culverts will be installed beneath Woodleaf Tunnel Road to facilitate roadside drainage. The culverts would be 18 inches in diameter and approximately 20 feet long. A small inlet catch basin would be excavated to facilitate flow into the inlet of the culvert and an RSP facing would be installed on the outfall of each culvert to protect against scour.

Staging and Access Roads

Access to the project site would be accomplished using established roads the District uses to inspect and perform routine maintenance on the ditch. Five staging areas have been identified along the ditch alignment with four occurring in the upper portion of the ditch and one occurring in the lower portion. Additional materials may be stored at the North Yuba Water District yard located in Brownsville on La Porte Road. Generally, construction materials would be staged within these areas and along the berm directly adjacent to the ditch.

Construction Methods, Timing, and Equipment

Construction Methods and Timing

It is anticipated that construction of the entire alignment will take three years due to the overall length of the alignment. Construction is set to take place in the late fall when irrigation water deliveries for customers has ceased, generally around October. Construction will continue through the fall and winter and conclude in the spring when irrigation water deliveries commence, generally May. During the non-irrigation season, water must be delivered to the Forbestown Treatment Plant to provide drinking water supplies for the communities within the District. During the construction season, water must be delivered down the ditch to the Forbestown Treatment Plant every 10 days. Therefore, it is anticipated, the contractor will work for 10 days and then have a three day stand down period while water is delivered to the treatment plant for drinking water supplies. This pattern would continue for the entirety of the construction period from approximately October to May.

Construction may be broken into three separate phases (one during each construction season) depending on a number of considerations including inclement weather, construction issues, site conditions, etc. It is anticipated the first phase (first construction season) would be from the SF14 at the upper end of the ditch to the Oroleve Siphon. Subsequent, phases would move from the bottom of the Oroleve Siphon towards the Forbestown Treatment Plant. Construction would travel in a linear fashion along the Forbestown Ditch moving from the upper portion to the lower portion. Construction is anticipated to begin in the Fall of 2020.

Construction Equipment

Construction equipment would depend on the contractor's planned operation, such equipment may include, but is not limited to excavators, mini excavators, back hoes, front end loader, off-road hauling trucks, compactors, pickup trucks, generators, and welding equipment.

2. METHODS

Prior to conducting the onsite survey, a review of existing databases, topographic maps, and aerial photos of the site were reviewed and areas of potential habitat noted. After conducting the onsite survey, the agency special-status species lists were reviewed and edited, taking into account existing conditions observed within the BSA.

2.1 Biological Resources

2.1.1 Sensitive Natural Communities

Using Rarefind 5 NorthStar accessed the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) to identify Sensitive Natural Communities (SNCs) occurring on the Forbestown, Clipper Mills, and their ten surrounding USGS 7.5-minute quadrangles. These SNCs were then surveyed for within the BSA during the field visit.

2.1.2 Critical Habitat

NorthStar determined if United States Fish and Wildlife Service (USFWS)-designated critical habitat for special-status species occurs in the BSA by reviewing the USFWS Information for Planning and Consultation (IPAC) database for the project site.

2.1.3 Special-Status Species

NorthStar obtained lists of special-status species that potentially occur in the vicinity of the BSA from the USFWS IPAC (USFWS, **Appendix A**), the CDFW's CNDDB, (**Appendix B**), the CDFW's Special Animals List, and the California Native Plant Society's (CNPS) Online Rare and Endangered Plant Inventory v8-03 (**Appendix C**).

Biological surveys were conducted within the BSA on June 13, 2017 by NorthStar biologists Carol Wallen and Matt Rogers, June 4, 2018 by NorthStar principal planner Kamie Loeser and NorthStar biologist Matt Rogers, November 12, 2019 by NorthStar biologists Carol Wallen, Matt Rogers, and Billy Abbott, and December 11, 2019 by NorthStar biologists Carol Wallen, Matt Rogers, Billy Abbott, and Drew Huneycutt. General biological resource surveys and habitat assessments were conducted to determine the presence of special-status species and habitats in the BSA and to determine if these resources would be impacted by the proposed project. The surveys included conducting meandering transects throughout the BSA, with special focus on habitat types frequently associated with special-status species. Species encountered during biological surveys can be found in **Appendix D**.



Waters

Within: Sections 33 & 34, T20N, R07E; Sections 3-9, T19N, R07E; and Section 12, T19N, R06E CLIPPER MILLS USGS 7.5' QUAD and Sections 11 & 12, T19N, R06E FORBESTOWN USGS 7.5' QUAD Butte County, CA





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es	Imagery Source:	Map Date:	Drawn By:	NSE Project #
	USGS Topo	2/7/2020	BSA	17-002

Following the field survey, the "potential for occurrence" was determined based on the quality and types of habitats observed on the site. For plants, the potential for occurrence on-site is considered during the appropriate survey/flowering period. For birds and bats, the potential for occurrence is considered during the appropriate timeframes when these species breed, forage, roost, over-winter, or stop-over in the BSA during migration. Any bird or bat species could fly over the BSA, but this is not considered a potential for occurrence. The categories for the potential for occurrence include:

- None: The species or natural community is known not to occur, and has no potential to occur in the BSA based on sufficient surveys, the lack of suitable habitat (including soil, vegetation, connectivity, etc.), and/or the BSA is well outside of the known distribution of the species.
- Low: Potential habitat in the BSA is sub-marginal and the species is not known to occur in the vicinity of the BSA. Protocol-level surveys are not recommended.
- **Moderate:** Suitable habitat is present in the BSA and the species is known to occur in the vicinity of the BSA.
- **High:** Habitat in the BSA is highly suitable for the species and there are reliable records close to the BSA, but the species was not observed.
- **Known:** The species or natural community was detected in the BSA or a recent reliable record exists for the BSA.

3. **RESULTS**

3.1 Existing Conditions

The BSA encompasses an approximately 10-mile-long 200-foot-wide corridor along the Forbestown ditch extending southwest from the Woodleaf surge tank to the Forbestown water treatment facility in the community of Forbestown, California. The BSA follows the path of the ditch southeasterly through the unpopulated areas to the northeast of Forbestown, south near the community of Woodleaf, westerly through the populated areas of Forbestown, ending at the Forbestown water treatment plant.

The existing open Forbestown Ditch was constructed in native soil, it was constructed by completing a high side excavation, which was side cast and compacted to provide a low side embankment berm. In general, the resultant trapezoidal ditch consists of a four-foot-wide bottom with 1:1 side slopes and is approximately four feet deep. The low side berm has an approximate top width of four feet with an approximate 2:1 downhill embankment fill slope. Several gunite lined sections can be found along the alignment. Additionally, a portion is lined with visqueen to prevent water loss. Additionally, several wooden and metal flumes are found along the alignment in areas where spanning topographical or geological features is necessary.

The region surrounding the project site is mountainous with steep river canyons and mixed conifer forests. Generally, the project site is gently sloping, meandering parallel to the natural topographic contours. The elevation of the project site ranges from approximately 3,120 feet above mean sea level (MSL) at the upper end to approximately 2,720 feet above MSL at the treatment plant. Temperatures range from a mean of 40 degrees Fahrenheit in winter to 66

degrees Fahrenheit in the summer. Rainfall totals average approximately 82 inches per year while snowfall totals average approximately 109 inches per year.

Soils within the project area consist of 42 mapped soil units. Units covering less than one percent of the BSA were excluded which left 24 units, accounting for 95 percent of the AOI.

Habitat Types

California habitat types are described in the California Wildlife Habitat Relationships (CWHR) system based on classifications created by Mayer and Laudenslayer (1988). The CWHR system was designed to aid in the mapping of habitats utilized by California's commonly-occurring birds, mammals, reptiles, and amphibians.

The BSA is composed almost exclusively of the Montane Hardwood-Conifer (MHC) habitat type. For the purposes of this BRA the Forbestown ditch will be considered riverine habitat, but due to the controlled nature of the system this classification is limited.

3.1.1 Montane Hardwood-Conifer

The Montane Hardwood-Conifer (MHC) habitat type generally has a mix of both conifers and hardwoods where at least one-third of the trees are conifer and one-third are broad leaved. Pure stands of conifers are often interspersed with smaller stands of hardwood species. In the northern Sierra Nevada species commonly associated with the MHC habitat type include California black oak (*Quercus kelloggii*), black cottonwood (*Populus trichocarpa*), canyon live oak (*Quercus chrysolepis*), Jeffrey pine (*Pinus jeffreyi*), Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), incense-cedar (*Calocedrus decurrens*), and localized areas of giant sequoia (*Sequoiadendron giganeum*). The understory is sparse; however, ground and shrub cover can occur in disturbed areas.

All the habitat surrounding the Forbestown Ditch is montane-conifer hardwood habitat consisting of California black oak, Douglas fir, ponderosa pine, incense cedar, and big-leaf maple with and understory of toyon (*Heteromeles arbutifolia*), common manzanita (*Arctostaphylos manzanita*), California coffeeberry (*Frangula californica*), and poison oak (*Toxicodendron diversilobium*).

3.1.2 *Riverine*

Riverine habitats are rivers, creeks, and streams that occur in association with a variety of terrestrial habitats and are frequently contiguous to lakes and fresh emergent wetland habitats. Rivers and streams often support riparian vegetation. Seasonal (often intermittent) versus perennial (continual) water distinguishes rivers and streams. Streams originate from higher-elevation lakes or springs and flow downslope at a rate regulated by factors including slope gradient, obstacles present, and the volume of surface runoff or discharge. Velocity decreases at lower elevations where the slope angle gradually decreases. At flat elevations, water covers a larger surface area, becoming a slow-moving river. Flow in riverine habitats is variable, ranging from high to low volume but with continuous flows in rivers, to becoming dry every summer in

some streams. Riverine waters provide food for birds such as waterfowl, herons, shorebirds, and songbirds, and habitat for fish, pond turtles, amphibians, and other aquatic species.

Although the Forbestown Ditch is a controlled conveyance that is dewatered annually, it functions similarly to riverine habitat when water is present. The ditch is relatively narrow and water depth at maximum is approximately three to four feet and can appear creek-like.

3.2 Sensitive Natural Communities

Sensitive natural communities (SNCs) are important ecologically as their elimination or degradation could threaten populations of dependent plant and wildlife species and significantly reduce the regional distribution and viability of the community. The loss of SNCs may eliminate or reduce important ecosystem functions including water filtration by wetlands or bank stabilization by riparian woodlands. No sensitive natural communities were present within the BSA.

3.3 Critical Habitat

No designated critical habitat is found within the site.

3.4 Special-Status Species

All of the special-status species listed by the USFWS, CDFW, and CNPS as occurring within the Forbestown, Clipper Mills, and/or eight surrounding USGS quadrangles are presented in **Table 1** along with their assessed potential to occur within the BSA. A map of all CNDDB special-status species occurrences within five miles of the BSA is provided in **Figure 2**. The special-status species with at least moderate potential to occur within the BSA include Ahart's buckwheat (*Eriogonum umbellatum* var. *ahartii*), brownish beaked rush (*Rhynchospora capitellata*), Butte County calycadenia (*Calycadenia oppositifolia*), Butte County fritillary (*Fritillaria eastwoodiae*), Humboldt's lily (*Lilium humboldtii* ssp. *humboldtii*), Mosquin's clarkia (*Clarkia mosquinii*), northern sierra daisy (*Erigeron petrophilus*), Sierra arching sedge (*Carex cyrtostachya*), True's manzanita (*Arctostaphylos mewukka* ssp. *truei*), white-stemmed clarkia (*Clarkia gracilis* ssp. *albicaulis*), western bumble bee (*Bombus occidentalis*), foothill yellow-legged frog (*Rana boylii*), northern goshawk (*Accipiter gentilis*), migratory birds and raptors protected by the MBTA, silver-haired bat (*Lasionycteris noctivagans*), and western red bat (*Lasiurus blossevillii*).



CNDDB Occurences within 5 miles

(printed at 8.5 x 11)

Drawn By:

BSA

0.75

Map Date:

7 February 2020

1 inch = 2 miles

1.5

Miles

NSE Project #

17-002

Within:

Sections 33 & 34, T20N, R07E; Sections 3-9, T19N, R07E; and Section 12, T19N, R06E CLIPPER MILLS USGS 7.5' QUAD and Sections 11 & 12, T19N, R06E FORBESTOWN USGS 7.5' QUAD Butte & Yuba Counties, CA

Imagery Source: USDA - FSA, August 2012; CNDDB Data Provided By: CA Dept. of Fish and Wildlife Forbestown Ditch Project - Butte & Yuba Counties, CA -



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Table 1. Special-status Species and Sensitive Natural Communities Identified by USFWS,
CNDDB, and CNPS as Potentially Occurring in the Biological Survey Area.

Common Name (Scientific Name)	<u>Status</u> Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*
PLANTS			
Ahart's Buckwheat (Eriogonum umbellatum var. ahartii)	//1B	Serpentinite soils, openings, and slopes in chaparral and cismontane woodland. (Jun- Sep)	High: Suitable habitat is present within the BSA and known occurrences are found in close proximity to the BSA. The species was not observed during biological surveys of the BSA.
Bacigalupi's yampah (Perideridia bacigalupii)	//4.2	Chaparral, yellow pine forest, (Jun-Aug)	<u>Low:</u> Sub-marginally suitable chaparral habitat is present within the BSA.
Big-scale Balsam Root (Balsamorhiza macrolepis var. macrolepis)	//1B.2	Cismontane woodlands and chaparral. Valley and Foothill grasslands. Sometimes serpentinite. (Mar-June)	Low: Sub-marginal chaparral and grassland habitat present within the BSA. The nearest known occurrence is over 5 miles from the BSA.
Bolander's Bruchia (Bruchia bolanderi)	_/_/2	Meadows and seeps and damp soils in lower montane coniferous forests and upper montane coniferous forests.	Low: Habitat is marginally suitable, however, no occurrences are found within the vicinity of the BSA.
Brandegee's Clarkia (Clarkia biloba ssp. brandegeeae)	//1B	Chaparral. Cismontane woodlands/often along roadcuts. (May-July)	Low: Marginally suitable habitat is present within the BSA. The nearest known occurrence is approximately 3 miles northwest of the BSA near Lake Oroville.
Brownish Beaked-Rush (Rhynchospora capitellata)	_/_/2	Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest (mesic), 455-2000 meters. (Jul-Aug)	<u>Moderate:</u> Suitable habitat is present within the BSA. A known occurrence is found approximately 3.5 miles east of the BSA.
Butte County Calycadenia (Calycadenia oppositifolia)	//4.2	Chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland. (Apr- Jul)	<u>Moderate:</u> Suitable habitat is present within the BSA. A known occurrence is in close proximity to the BSA.
Butte County Golden Clover (Trifolium jokerstii)	//1B	Valley and foothill grassland, vernal pools. (Mar-May)	<u>None:</u> No suitable vernal pool or valley grassland habitat is present within the BSA.
Butte County Fritillary (Fritillaria eastwoodiae)	//3.2	Chaparral, cismontane woodland, openings in lower montane coniferous forests, sometimes serpentinite. (Mar-Jun)	High: Habitat within the BSA is suitable and a number of occurrences are found within close proximity to the BSA.

Common Name (Scientific Name)	<u>Status</u> Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*
			during biological surveys of the BSA.
Buxbaumia Moss (Buxbaumia viridis)	//2	Fallen decorticated wood or humus in lower montane coniferous forests, subalpine coniferous forests, and upper montane coniferous forests.	Low: Marginally suitable habitat present within the BSA. No occurrences are found within the vicinity of the BSA.
California lady's-slipper (Cypripredium californicum)	//4.2	Yellow pine forests, freshwater wetlands, wetland-riparian. (Apr-Aug)	Low: Marginally suitable habitat is present within the BSA. No occurrences are found within the vicinity of the BSA.
California pitcherplant (Darlingtonia californica)	//4.2	Redwood Forest, Douglas-Fir Forest, Yellow Pine Forest, Red Fir Forest, Freshwater Wetlands, wetland-riparian. Seeps, meadows, bogs. (Apr-Jul)	<u>None:</u> No suitable habitat is present within the BSA.
Cantelow's Lewisia (Lewisia cantelovii)	//1B	Broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest (mesic, granitic, serpentinite seeps). (May-Oct)	<u>Low:</u> Sub-marginally suitable habitat present within the BSA.
Caribou coffeeberry (Frangula purshiana ssp. ultramafica)	_/_/1B.2	Occurs usually in non-wetlands, occasionally in wetlands, mountains, valleys and coast. (May-Jul)	Low: Marginal habitat is present within the BSA. However, the nearest known occurrence is adjacent to Paradise Lake approximately 20 miles from the BSA.
Chaparral Sedge (<i>Carex xerophila</i>)	//1B	Serpentine, gabbroic. Chaparral, Cismontane woodland, lower montane coniferous forest. (Mar-Jun)	<u>None</u> : No gabbroic or serpentine soils located within the BSA
Clifton's Eremogone (Eremogone cliftonii)	//1B	Chaparral, lower montane coniferous forest, and openings in upper montane coniferous forests (usually granitic soils). (Apr-Sep)	Low: Sub-marginal granitic soils are present within the BSA. Additionally, the nearest known occurrences are over 5 miles north of the BSA.
Clustered lady's slipper (Cypripedium fasciculatum)	//4.2	Yellow Pine Forest, Redwood Forest, Douglas-Fir Forest, wetland-riparian. (Mar-Aug)	Low: Suitable habitat is present within the BSA. However, there are no known occurrences within 5 miles of the BSA.
Coleman's rein orchid (Piperia colemanii)	_/_/4.3	Coniferous forests and chaparral in deep sandy substrates. (Jun-Aug)	Low: Sub-marginally suitable deep sandy substrates are present within the BSA. Additionally, no known occurrences are found within 5 miles of the BSA.
Cut-leaved monkeyflower (Erythranthe laciniata)	//4.3	Red Fir Forest, Yellow Pine Forest, wetland-riparian. (Apr-Jul)	Low: Suitable habitat is present within the BSA. However, no occurrences are within 5 miles of the

Common Name (Scientific Name)	Status Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*
			BSA.
Dissected-leaved Toothwort (<i>Cardamine pachystigma</i> var. <i>dissectifolia</i>)	_/_/3	Chaparral and lower montane coniferous forests, usually serpentinite and rocky. (Feb-May)	<u>None:</u> No suitable serpentinite and rocky habitat is present within the BSA.
Felt-leaved violet (Viola tomentosa)	//4.2	Lodgepole forest, subalpine forest, yellow pine forest. (May-Oct)	Low: Suitable habitat is present within the BSA. However, there are no known occurrences within 5 miles of the BSA.
Flexuose threadmoss (Pohlia flexuosa)	//2B.1	Lower montane coniferous forest, roadsides, rocky seeps. 3,117 to 3,363 ft in elevation.	Low: Suitable habitat is present within the BSA. However, the nearest known occurrence is over 7 miles to the east.
Giant checkerbloom (Sidalcea gigantean)	//4.3	Upper/lower montane coniferous forest, meadows and seeps. (Jan-Oct)	None: Suitable habitat is present within the BSA. The species was not observed during biological surveys of the BSA.
Golden-anthered Clarkia (<i>Clarkia mildreadiae</i> ssp. <i>lutescens</i>)	//4.2	Openings in lower montane coniferous forests and cismontane woodlands (often rocky roadcuts). (Jun-Aug)	<u>Low:</u> Marginal habitat is present within the BSA. The nearest known occurrence is over 5 miles from the BSA.
Henderson's Bent Grass (Agrostis hendersonii)	//3	Vernal pools in valley and foothill grasslands. (Apr-May)	<u>None:</u> No suitable vernal pool habitat is present within the BSA.
Humboldt's Lily (Lilium humboldtii ssp. humboldtii)	//4.2	Openings. Chaparral. Cismontane woodland, and lower montane coniferous forest. (May-Jul(Aug)	Moderate: Suitable habitat is present within the BSA.
Hutchison's Lewisia (Lewisia kelloggii ssp. hutchisonii)	//3	Openings and slate outcrops in upper montane coniferous forests. (May-Aug)	<u>None:</u> No suitable slate outcrops are present within the BSA.
Jepson's Onion (Allium jepsonii)	//1B	Chaparral, cismontane woodland, and serpentine or volcanic lower montane coniferous forest. (May-Aug)	<u>None</u> : No serpentine soils located within the BSA Nearest known occurrence more than 5mi away.
Layne's Ragwort (Packera layneae)	FT//1B	Chaparral, cismontane woodland/serpentinite or gabbroic, rocky. 200-1000 meters. (Apr-Aug)	<u>None</u> : No gabbroic or serpentine soils located within the BSA. The nearest known occurrences are approximately 4.2 miles south of the BSA in Brownsville.
Lewis Rose's Ragwort (Packera eurycephala var. lewisrosei)	//1B	Chaparral, cismontane woodland, and serpentine lower montane coniferous forest. (Mar-Jul/Sep)	<u>None:</u> No suitable serpentine soils present within the BSA. Nearest known occurrences over 5 miles from BSA.
Long-fruit jewelflower (Streptanthus longisiliquus)	//4.3	Butte, Tehama, and Shasta Counties. It can be found in forest and woodland	Low: Forested montane habitat is present within the

Common Name (Scientific Name)	Status Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*
		habitat in mountains and foothills. (Apr-Sep)	BSA. However, the nearest known occurrences are well over 5 miles from the BSA.
Mildred's clarkia (Clarkia mildrediae ssp. mildrediae)	//1B	Cismontane woodland and sandy, usually granitic lower montane coniferous forest. (May-Aug)	Low: Sub-marginally suitable habitat is present within the BSA. The nearest known occurrence is approximately 0.85 miles north of the BSA near the South Fork of the Feather River.
Minute pocket-moss (Fissidens pauperculus)	//1B	North Coast coniferous forest (damp coastal soils)	<u>None:</u> No suitable North Coast coniferous forests are present in the BSA as it occurs in the Cascade/Sierra Nevada Range.
Mosquin's Clarkia (Clarkia mosquinii)	//1B	Cismontane woodland, lower montane coniferous forest (rocky), and roadsides. (May-Jul)	Moderate: Suitable habitat is present within the BSA. Additionally, several occurrences are in the vicinity of the BSA.
Northern Sierra daisy (Erigeron petrophilus var. sierrensis)	_/_/4.3	Foothill Woodland, Lodgepole Forest, Red Fir Forest, Yellow Pine Forest. (Jun- Oct)	Moderate: Suitable habitat is present within the BSA. Additionally, several occurrences are found within the vicinity of the BSA.
Northern yellow lady's- slipper (Cypripedium parviflorum var. makasin)	//3	Bogs and fens and mesic meadows and seeps	<u>Low:</u> Sub-marginally suitable habitat is present within the BSA.
Obtuse starwort (Stellaria obtuse)	//4.3	Streambanks, riparian woodland, upper montane coniferous forest, lower montane coniferous forest.	Low: Marginally suitable habitat is present within the BSA. No known occurrences are found within 5 miles of the BSA.
Pine Hill flannelbush (Fremontodendron decumbens)	FE//1B	Gabbroic or serpentinite, rocky. Chaparral, Cismontane woodland. (Apr- July)	<u>None</u> : No gabbroic or serpentine soils located within the BSA.
Plumas rayless daisy (Erigeron lassenianus var. deficiens)	//1B	Gravelly, sometimes serpentinite and disturbed sites in lower montane coniferous forests. (Jun-Sep)	Low: Marginally suitable habitat present within the BSA. However, no known occurrences are found within 5 miles of the BSA.
Quincy lupine (Lupinus dalesiae)	//4.2	Openings in disturbed areas, cismontane woodlands, chaparral, lower montane coniferous forests, upper montane coniferous forests. (May-Aug)	Low: Marginally suitable habitat is present within the BSA. However, the nearest known occurrence is a collection from 1920 that was not re-found in subsequent surveys.

Common Name (Scientific Name)	Status Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*
Sanborn's onion (Allium sanbornii)	//4	Serpentinite, chaparral, cismontane woodland, lowermontane coniferous forest. (May-Sep)	Low: Suitable lower montane habitat present within the BSA, however, no suitable serpentinite habitat within the BSA.
Sanford's arrowhead (Sagittaria sanfordii)	//1B	Marshes and swamps, assorted shallow freshwater. (May-Oct)	Low: Marginal habitat present within the BSA. No known occurrences within 5 miles of the BSA
Shield-bracted monkeyflower (Erythranthe glaucescens)	//4.3	Serpentinite seeps, sometimes streambanks. Chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland. (Feb-Aug(Sep))	Low: Suitable habitat is present within the BSA. However, no known occurrences are found within 5 miles of the BSA. Additionally, the species was not observed during biological surveys of the BSA.
Sierra arching sedge (Carex cytrostachya)	/_/1B.2	Lower montane coniferous forest (mesic), Meadows and seeps, Marshes and swamps, Riparian forest (margins). (May-Aug)	High: Suitable habitat is present within the BSA. Known occurrences are found in close proximity to the BSA. The species was not observed during biological surveys of the BSA.
Sierra Blue Grass (Poa sierrae)	/_/1B	Openings in lower montane coniferous forests. (Apr-Jun)	Low: Marginally suitable habitat is present within the BSA. However, no known occurrences are found within 5 miles of the BSA.
Sierra clarkia (Clarkia virgate)	//4.3	Foothill Woodland, Yellow Pine Forest. (May-Aug)	Low: Suitable habitat is present in the BSA. However, there are no occurrences within 5 miles of the BSA.
Sierra Foothills Brodiaea (Brodiaea sierra)	//4.3	Usually serpentinite or gabbroic. Chaparral, cismontane woodland, and lower montane coniferous forest.	Low: Sub-marginally suitable habitat is present within the BSA.
Siskiyou mountains huckleberry (Vaccinium coccineum)	//3	Lower montane coniferous forest, upper montane coniferous forest/often serpentinite. (Jun-Aug)	Low: Sub-marginally suitable habitat is present within the BSA.
Small-flowered monkeyflower (Erythranthe inconspicua)	//4.3	Yellow Pine Forest, Red Fir Forest, Lodgepole Forest, Foothill Woodland, Chaparral, Occurs usually in non wetlands, occasionally in wetlands. (May-Jun)	Low: Suitable habitat is present within the BSA. However, no known occurrences are within the vicinity of the BSA.
Sticky Pyrrocoma (Pyrrocoma lucida)	//1B	Alkaline clay meadows and seeps in lower montane coniferous forests and	Low: Sub-marginally suitable habitat is present

Common Name (Scientific Name)	<u>Status</u> Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*
		Great Basin scrub. (Jul-Oct)	within the BSA. The nearest occurrence is over 5 miles from the BSA.
Streambank spring beauty (Claytonia parviflora ssp. grandiflora)	//4.2	Moist areas, along brooks and around springs; disturbed areas in sun or shade. 2500-7500 feet. (Mar-May)	Low: Marginally suitable habitat is present within the BSA. No known occurrences are found with the vicinity of the BSA.
Sylvan microseris (microseris sylvatica)	//4.2	California Coast Ranges and inland mountain ranges, including the Sierra Nevada, grassland and openings in wooded areas. (Mar-Jun)	Low: Sub-marginally suitable grassland is present within the BSA.
Thread-leaved beakseed (Bulbostylis capillaris)	//4.2	Moist areas, pine forest, wetland-riparian, and meadows. (Jun-Aug)	Low: Marginally suitable habitat is present within the BSA. The nearest known occurrence is over 5 miles from the BSA.
Tracy's sanicle (Sanicula tracyi)	//4.2	Openings in foothill woodland, red fir forest, yellow pine forest. (Apr-Jul)	Low: Marginally suitable habitat is present within the BSA.
True's Manzanita (Arctostaphylos mewukka ssp. truei)	//4.2	Chaparral and lower montane coniferous forest (sometimes roadsides). (Feb- May/Jun)	Moderate: Suitable habitat is present within the BSA. Additionally, a known occurrence is found in close proximity to the BSA.
Upswept moonwort (Botrychium ascendens)	_/_/2	Mesic, lower montane coniferous forest, meadows, seeps. (Jun-Aug)	Low: Marginally suitable habitat is present within the BSA. However, no occurrences are found within 5 miles of the BSA.
Western campion (Silene occidentalis ssp. occidentalis)	//4.3	Endemic to northern California, from southern Cascade Range, sections of the Modoc Plateau, and Sierra Nevada; chaparral and mountain forest habitat.	Low: Marginal habitat is present within the BSA. However, no occurrences are found in the vicinity of the project.
Western waterfan lichen (Peltigera gowardii)	_/_/4.2	On rocks in cold water creeks with little or no sediment or disturbance. 3000-6000 feet.	None: No suitable habitat is present within the BSA. Habitat within the ditch is frequently disturbed by sediment and alteration of flow regime.
White-stemmed Clarkia (Clarkia gracilis ssp. albicaulis)	//1B	Chaparral and cismontane woodland (sometimes serpentine). (May-Jul)	Moderate: Suitable habitat is present within the BSA.
INVERTEBRATES			
Western Bumble Bee (Bombus occidentalis)	//	Nests in underground cavities, other animal nests and in open west-southwest slopes bordered by trees.	Moderate: Habitat present within the BSA. No know occurrences within 5mi of BSA.
FISH			

Common Name (Scientific Name)	Status Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*	
Delta Smelt (Hypomesus transpacificus)	FT//	Bay and estuary habitat in the Sacramento and San Joaquin Delta.	<u>None</u> : No suitable habitat is present within the BSA.	
REPTILES AND AMPHIBIAN	S			
California Red-legged Frog (Rana draytonii)	FT//	Inhabits quiet pools of streams, marshes, and occasionally ponds.	Low: Sub-marginally suitable ponded habitat present within the BSA. Nearest known occurrence is over 8 miles to the southeast of the BSA.	
Foothill Yellow-legged Frog (Rana boylii)	_/CT SSC/_	Partly-shaded, shallow streams and riffles with cobble sized substrates for egg laying.	Moderate: Suitable aquatic habitat is present within the BSA. Generally, substrates within the ditch are mostly unsuitable for egg laying as they are smaller than cobble. Several known occurrences are found within the vicinity of the BSA.	
Northwestern Pond Turtle (Actemys marmorata)	/SSC/	Occur in both permanent and intermittent waters, including marshes, streams, rivers, ponds, and lakes.	Low: Sub-marginally suitable habitat present within the BSA. No know occurrences within 5 miles of BSA.	
Sierra Nevada Yellow-legged Frog (Rana sierra)	FE/ST/	Alpine reaches of streams, tarns and alpine lakes north of the Kings river.	Low: Sub-marginally suitable breeding habitat present within the BSA. Nearest known occurrence is approximately five miles northeast of the BSA at Pinkard Creek.	
Southern Long-toed Salamander (Ambystoma macrodactylum sigillatum)	_/SSC/_	Breeding occurs in permanent or temporary ponds, lakes, and flooded meadows from the southern Cascades to the Northern Sierra Nevada Mountain Range.	<u>None:</u> No suitable ponded breeding habitat is present within the BSA.	
Western Spadefoot (Spea hammondii)	_/SSC/_	Grassland and woodland and vernal pools without aquatic predators for breeding.	<u>None:</u> No suitable vernal pool habitat is present within the BSA.	
BIRDS				
Bald Eagle (Haliaeetus leucocephalus)	/SE/	Lakes, rivers, estuaries, reservoirs and some coastal habitats.	Low: Sub-marginally suitable nesting habitat present within the BSA.	
Black Swift (<u>Cypseloides niger</u>)	_/SSC/_	Nests in moist crevices or caves on sea cliffs or on cliffs behind or adjacent to waterfalls.	None: No suitable nesting habitat is present within the BSA.	
California Black Rail (Laterallus jamaicensis coturniculus)	/ST/	Yearlong resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay Area, Sacramento-San Joaquin Delta, coastal Southern California, the Salton Sea and lower	Low: Sub-marginally suitable habitat is present within portions of the BSA.	

Common Name (Scientific Name)	<u>Status</u> Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*	
		Colorado River area.		
Great Gray Owl (Strix nebulosa)	/SE/	Old-growth red fir, mixed conifer, or lodgepole pine forests in the vicinity of wet meadows.	Low: Suitable habitat present within the BSA. No known occurrences within 5mi.	
Northern Goshawk (Accipiter gentilis)	_/SSC/_	Mature old-growth stands of conifer and deciduous forests interspersed with meadows, openings and riparian areas. Nest on north-facing slopes near water.	<u>Moderate:</u> Suitable coniferous habitat is present within the BSA.	
Osprey (Pandion haliaetus)	MBTA/ SSC/	Wetland, open water.	<u>Low</u> : Sub-marginally suitable habitat present within the BSA.	
Migratory Birds and Raptors	MBTA	Nest and forage in a variety of habitats including hardwood woodlands, coniferous forests, meadows, grasslands and riparian.	Known: Birds protected by the MBTA were observed within the BSA.	
MAMMALS				
Fisher – West Coast DPS (Pekania pennanti)	FC/SC/	Dense canopy closure, large diameter conifers and hardwoods with multiple canopy layers, and snags with cavities and other deformities. Range in elevation from 83 to 3300 feet.	<u>Low</u> : Sub-marginally suitable habitat present within the BSA. Nearest known occurrences are from approximately 40 years ago.	
Pallid Bat (Antrozous pallidus)	/SSC/	Arid and semi-arid habitats; roosts in rock crevices, caves, and mine shafts.	<u>Low</u> : Sub-marginally suitable roosting habitat present within the BSA.	
Silver-haired Bat (Lasionycteris noctivagans)	/_/_	Coniferous and mixed deciduous forest as well as riparian areas.	<u>Moderate:</u> Suitable deciduous forest habitat present within the BSA.	
Townsend's Big-eared Bat (Corynorhinus townsendii)	_/SSC/_	Coniferous forests and woodlands, deciduous riparian woodland, semi-desert and montane shrub lands – prefers caves, mines and buildings.	Low: No suitable cave habitat present within the BSA. No known occurrences within 5 mi of the BSA.	
Western Red Bat (Lasiurus blossevillii)	_/SSC/_	Roosting habitat includes forest and broadleaf woodlands from sea level to coniferous forest. Feeds over grasslands, shrublands, open woodlands, and croplands. Known to occur from Shasta Co. to the Mexican border.	<u>Moderate:</u> Suitable roosting habitat is present within the BSA.	
CODE DESIGNATIONS				
FE = Federally-listed Endangered FT = Federally-listed Threatened FC = Federal Candidate Species BCC = Federal Bird of Conservation Common Common Sector Product Sector Produ	is considered the po	 SSC = CDFW Species of Special Concern FP = CDFW Fully Protected Species SNC= CDFW Sensitive Natural Community CNPS 1B = Rare or Endangered in California or elsewhere CNPS 2 = rare or Endangered in California, more common elsewhere CNPS 3 = More information is needed CNPS 4 = Plants with limited distribution 		
breed, forage, roost, over-winter, or stop-over in the BSA during migration. Any bird or bat species could fly over the BSA, but this is not considered a potential for occurrence. The categories for the potential for occurrence include:				

None: The species or natural community is known not to occur, and has no potential to occur in the BSA based on sufficient surveys, the lack of suitable

Common Name (Scientific Name)	<u>Status</u> Fed/State/ CNPS	Associated Habitats	Potential for Occurrence*		
habitat, and/or the BSA is well outside of the known distribution of the species. <u>Low</u> : Potential habitat in the BSA is sub-marginal and the species is not known to occur in the vicinity of the BSA. Protocol-level surveys are not recommended					
<u>Moderate</u> : Suitable habitat is present in the BSA and the species is known to occur in the vicinity of the BSA. <u>High</u> : Habitat in the BSA is highly suitable for the species and there are reliable records close to the BSA, but the species was not observed. Known: Species was detected in the BSA or a recent reliable record exists for the BSA.					
Kilowi. Species was detected in the BSA of a recent reliable record exists for the BSA.					

Only species with a moderate to high potential of occurring within the BSA are discussed in the following section. Species with no or a low potential to occur within the BSA are not discussed further because the potential for these species to occur is negligible.

3.4.1 Plants

Habitat for special-status species was likely disturbed during the construction of the ditch many years ago. Combined with the routine maintenance activities and operation of the conveyance facilities the potential habitat for special-status plant species along the alignment is limited. Additionally, many of the special-status plant species that occur in the area are specific to gabbro and serpentine soils which are not found within the project area. Several special-status plant species were determined to have at least moderate potential to occur within the BSA including Ahart's buckwheat, brownish beaked rush, Butte County calycadenia, Butte County fritillary, Humboldt lily, Mosquin's clarkia, Northern Sierra daisy, Sierra arching sedge, True's manzanita, and white-stemmed clarkia.

Ahart's Buckwheat

Ahart's buckwheat is a CNPS list 1B.2 plant that is rare, threatened, or endangered in California and elsewhere. It is known to occur in Butte, Plumas, Sierra, and Yuba counties. This perennial herb typically inhabiting serpentine soils at an elevation of approximately 400-1000 meters above sea level. The flowers are typically yellow and bloom from June through September.

There are several known occurrences within serpentine openings near the Forbestown Ditch. The species was not observed during biological surveys of the BSA.

Brownish Beaked Rush

The brownish beaked rush is a CNPS list 2 plant with limited distribution in California and Oregon. It is known to occur in Butte, Mariposa, Nevada, Plumas, Tehama, Trinity, Yuba, Sierra counties, and is known to occur in many states from Texas east towards the Atlantic coast. This perennial herb inhabits wet soils in marshes, swamps, seeps, and meadows in lower and upper montane coniferous forests, ranging in elevation from 455 to 2000 meters above sea level. The flowers are inconspicuous terminal spikelets with a blooming period between July and August.

The nearest known occurrence of brownish beaked-rush is approximately 3.5 miles east of the project area. Wet areas within the BSA may provide suitable habitat for the species. It was not observed during biological surveys of the BSA.

Butte County Calycadenia

Butte County Calycadenia is a CNPS list 4.2 plant with limited distribution in California. It is endemic to the state and is found primarily in Butte county with additional observations from Plumas, Nevada, Solano, Marin, Sonoma, Mariposa, and San Benito counties. The species has a strong affinity for serpentine soils and is typically found in chaparral, valley grassland, and foothill woodland habitats from approximately 90-950 meters above sea level. The flowers are white and bloom from April to July.

One occurrence is found near the community of Forbestown along Forbestown Road at milepost 59.35. This record is from 1977 and it is unknown if the species still persists at this location. Serpentine soils within the BSA may provide suitable habitat for the species. It was not observed during biological surveys of the BSA.

Butte County Fritillary

Butte County fritillaria is a California endemic species known to occur in chaparral, cismontane woodland, and openings in lower montane coniferous forests in Northern California. It is a CNPS list 3 plant that has been documented to occur in Butte, Shasta, Tehama, Yuba, Placer, El Dorado, and Nevada Counties. Butte County fritillaria is a perennial herb that inhabits dry benches and slopes between 500 to 1500 meters above sea level, and can be observed blooming with nodding, greenish-white to reddish flowers between March and June.

A number of known occurrences are found within and near the BSA. The montane habitat within the BSA is suitable for the species although it was not observed during biological surveys of the BSA.

Humboldt's Lily

Humboldt's lily is a CNPS list 4.2 plant of limited distribution that is endemic to California known to occur in openings within chaparral and yellow pine forest habitats in the Sierra Nevada range at elevations from 600-1100 meters above sea level. The species primarily occurs in Butte, Yuba, Nevada, and El Dorado counties with occurrences in several other counties to the south and west. The flower is widely bell shaped, reflexed, and orange with magenta spots. The plant can rich heights of 2-3 meters.

The montane habitat present within the BSA is suitable for the species. However, the nearest known occurrence is near Lake Oroville over five miles from the BSA. Humbolt's lily was observed within the BSA but subspecies could not be inferred so it is unknown if *Lilium humboldtii* ssp. *humboldtii* was observed.

Mosquin's Clarkia

Mosquin's clarkia is a California endemic annual plant in the evening primrose family (Onagraceae). This plant species is known only from populations located in eastern Butte County and adjacent Plumas County and is currently listed by the CNPS as a List 1B.1 plant species.
Mosquin's clarkia is typically found in natural openings and road cuts within ponderosa pine/oak forests and lower mixed-conifer forests at elevations ranging from 1,000 to 4,300 feet (300 to 1,300 meters). Mosquin's clarkia is often found in full sun on southerly exposures with little vegetation competition. Depending on annual seasonal conditions, the plant can be observed blooming from May into August. The multiple lavender-purple flowers are borne on a long raceme. Each flower has 4 petals with narrow stalk-like bases. The entire plant ranges in height from 15 to 40 inches (0.4 to 1 meter) tall.

There are several known occurrences of the species found within the vicinity of the BSA, the nearest of which is approximately one mile west of the project area near its start at the penstock. The mixed conifer forest habitat found within the BSA is suitable for the species. It was not observed during biological surveys.

Northern Sierra Daisy

The northern Sierra daisy is a CNPS list 4.3 plant of limited distribution endemic to California primarily found in Butte and Plumas counties. The species is a broad serpentine endemic found in foothill woodland, lodgepole pine forest, red fir forest, and yellow pine forest habitats in northern California. The species can be found at elevations ranging from approximately 300-1900 meters above sea level. The flower color is yellow and blooms from July to October.

Several known occurrences are found in the vicinity of the BSA, the nearest of which is approximately one mile west of the project area near its start at the penstock. The coniferous forest habitat found within the BSA is suitable for the species. It was not observed during biological surveys.

Sierra Arching Sedge

Sierra arching sedge is a CNPS list 1B.2 plant that is rare, threatened, or endangered in California. The species is found in Butte, Yuba, and El Dorado counties in wet meadows, marshes, seasonally wet outcrops, seeps, swales, riparian margins, and floodplain terraces from approximately 600-1350 meters above sea level. The fruiting time for this perennial grass-like herb is May through August.

There are several known occurrences of the species within and surrounding the BSA near Woodleaf. The wet habitats within the BSA provide suitable habitat for the species.

True's Manzanita

True's manzanita is a CNPS list 4.2 plant of limited distribution endemic to the state. The species is primarily found in Butte, Plumas, Yuba, and Nevada counties in chaparral openings and yellow pine forest habitats from approximately 300-1350 meters above sea level. The perennial evergreen shrub can grow to heights of approximately three meters with glaborous or glandulary-hairy twigs, the flowers are generally white and bloom from March through April.

There are two known occurrences for the species in the vicinity of the BSA. One is at the junction of Forbestown Road and Black Bart Road from 1988 and the other is approximately three miles northwest of Forbestown near Ponderosa Way. The coniferous forest and chaparral habitats within the BSA provide suitable habitat for the species. It was not observed during biological surveys.

White-Stemmed Clarkia

White-stemmed clarkia is a CNPS list 1B.2 plant that is rare, threatened, or endangered in California. The species is endemic to the state and is found primarily in Butte County within chaparral and foothill woodland habitats above 500 meters above sea level. The flower is pink-lavender to light purple shading to white near the middle with a red base.

The chaparral and foothill woodland habitat within the BSA is suitable for the species, however, the nearest known occurrence is approximately eight miles northwest of the BSA near Lake Oroville.

3.4.2 Invertebrates

One special-status invertebrate species were determined to have the potential to occur within the BSA, western bumble bee (*Bombus occidentalis*).

Western Bumble Bee

A petition to federally list the western bumble bee as threatened or endangered is currently under review by USFWS. Additionally, the petition requests designation of critical habitat for the species. The western bumble bee (bombus occidentalis) is one of five North American members of the subgenus Bombus sensu stricto. It is a medium-sized (1-2 cm) bumble bee with a short head. The abdomen color can vary, but all individuals have a transverse band of yellow hair on the thorax in front of the wing bases, and the tip of the abdomen is almost always white. Western bumble bees live in a diverse range of habitats, including mixed woodlands, farmlands, urban areas, montane meadows and into the western edge of the prairie grasslands. Like many bumble bees, it typically nests underground in abandoned rodent burrows or within hollows in decaying wood. The Western bumble bee has an annual life cycle. Mated queens emerge from wintering sites in the spring and search for potential nest sites. Once a nest site is chosen, the queen then forages for pollen and nectar, returning to the nest site to lay eggs which will eventually produce a brood of workers. Workers emerge and take over nest care, pollen and nectar foraging. In late summer, males and new queens are produced. These reproductive individuals leave the colony, mate, and only the mated queens enter hibernation while all other castes, including the old queen, perish at the onset of colder temperatures. Possible reasons for the decline in Western bumble bee populations may include the transfer of pathogens, agricultural pesticide, chemical use, and habitat loss.

Meadows and grasslands within the BSA may provide suitable habitat for this species.

3.4.3 *Reptiles and Amphibians*

One special status amphibian species, foothill yellow-legged frog (*Rana boylii*) was determined to have a moderate potential to occur within the BSA. No other special-status reptile or amphibian species were determined to have potential to occur.

Foothill Yellow-legged Frog

The foothill yellow-legged frog is a state species of concern which occurs along the Coast Range of California, to the Transverse Mountains in Los Angeles County, and throughout most of northern California west of the Cascade crest. It can be found in or near rocky streams in a variety of habitats including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, costal scrub, mixed chaparral, and wet meadows. Adult yellow-legged frogs eat both aquatic and terrestrial invertebrates and yellow-legged frog tadpoles generally graze on algae and diatoms on rocky stream bottoms. The foothill yellow-legged frog is typically found in partly shaded, shallow streams and riffles with a rocky substrate in a variety of aquatic habitats. They generally prefer low- to moderate-gradient streams, especially for breeding and egg-laying, requiring at least some cobble-sized substrate for egg-laying, which they do following the end of spring flooding (mid-March to May). During the summer and fall, adult frogs prefer stream channels that provide exposed basking sites and cool shady areas. The tadpoles require water for at least 3 to 4 months while continuing to develop, hence the yellow-legged frog is rarely found far from permanent water sources. Garter snakes and bullfrogs have been documented as predators of the foothill yellow-legged frog.

The Forbestown ditch provides a nearly permanent source of water for the species. The associated wetlands provide suitable habitat for the foothill yellow-legged frog. Additionally, there are known occurrences within the BSA. However, the species was not observed during biological surveys of the project area.

3.4.4 Fish

No special-status fish species have potential to occur within the BSA due to the lack of suitable stream and riverine habitats present on the site.

3.4.5 *Birds*

The BSA contains potentially suitable habitat for a number of migratory bird species protected by the Migratory Bird Treaty Act (MBTA).

Northern Goshawk

The northern goshawk breeds mainly in North Coast Ranges through Sierra Nevada, Klamath, Cascade, and Warner Mountains. They prefer middle to higher elevations in mature dense conifer and deciduous forests and may winter in foothills, northern deserts in pinyon-juniper habitats, and in low-elevation riparian habitats. Typically, the northern goshawk hunts in wooded areas where there are snags and dead-topped trees for observation and perches. They feed mainly on birds ranging from the size of robins to grouse but will eat small mammals, carrion

and insects. They nest in dense stands on north slopes near water and openings in the forest. They will use old nest sites and maintain alternate sites since they have been known to abandon nests due to human disturbance and will strike at intruders including humans. In northern California the northern goshawk begins breeding by mid June and females will incubate eggs for 36-41 days. Once hatched, the young are usually independent by 70 days.

Migratory Bird Species

Migratory birds are protected in varying degrees under California Fish and Game Code, Section 3503.5, and the MBTA. The project site currently provides suitable nesting and/or foraging habitat for many of these species that may nest in blue oak woodlands present within the BSA. The site also provides a small amount of low vegetation that may be utilized by species that typically nest on the ground.

A number of species protected by the MBTA were observed during biological surveys of the project area.

3.4.6 *Mammals*

The BSA contains suitable roosting habitat for the silver haired bat (*Lasionycteris noctivagans*) and western red bat. The silver-haired bat is not state or federally listed but appears in the CDFW Special Animals List while the western red bat is a species of special concern. No other special-status mammal species have the potential to occur within the BSA.

Silver-haired Bat

The silver-haired bat can be found in forested habitats from Oregon south to Inyo County in the Sierra Nevada range, as well as the coast range from Oregon south to the San Francisco bay. The species also occurs in southern California from Ventura to Mexico. During the spring and fall migration periods the species may be found anywhere within the state. Summer habitats include coastal and montane coniferous forests, foothill woodlands, juniper woodlands, and foothill and riparian habitats. The species feeds primarily on moths and soft bodied insects but may take beetles or other hard-shelled prey. Primary roosting locations are in hollow snags or trees but can be found roosting in buildings, rock crevices, and caves.

The mixed conifer woodlands within the BSA provide suitable roosting habitat. Additionally, the canal provides suitable foraging habitat for the species. No bat species or roosts were observed during biological surveys of the project area.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is found in California from Shasta County to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts. Winter range includes western lowlands and coastal habitats south of San Francisco. The western red bat roosts primarily in trees within forests and woodlands in edge habitats from sea level to mixed conifer forests (Williams and Findley 1979). However, the western red bat may have an association with riparian habitats with dense stands of cottonwood and sycamore, and orchards (Bolster, 1998). Family groups are known to roost together, forming nursing colonies. They forage in open areas

and feed on a variety of insects including moths, crickets, beetles, and cicadas (Shump and Shump 1982). Migrations typically occur in the spring from March to May and in the autumn from September to October. The western red bat has been seen at temperatures as low as 44°F, however, in these cold climates the bat spends winter in hibernation (LaVal and LaVal 1979).

The mixed conifer woodland surrounding the Forbestown ditch provides suitable roosting habitat. Additionally, open areas surrounding the BSA provide suitable foraging habitat for the species.

4. **REGULATORY FRAMEWORK**

The following describes federal, state, and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process.

4.1 Federal Regulations

4.1.1 Federal Endangered Species Act

The United States Congress passed the federal ESA in 1973 to protect those species that are endangered or threatened with extinction. The ESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

Under the ESA, species may be listed as "endangered", "threatened.", "candidate", or "proposed" An endangered species is in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. "Candidate" species are species for which there is enough information to warrant proposing them for listing, but that have not yet been proposed. "Proposed" species are those that have been proposed for listing, but have not yet been listed.

Section 9 of the ESA prohibits the "take" a listed animal without a permit. "Take" is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting or any attempt to engage in any such conduct. "Harm" is defined as "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering." Under Section 7 of the ESA, federal agencies are required to consult with the USFWS or National Marine Fisheries Service (NMFS) if their actions, including permit approvals or funding, could adversely affect an endangered plant or wildlife species or its habitat, or could adversely affect designated critical habitat. Through consultation and the issuance of a biological opinion, USFWS or NMFS can issue an incidental take statement allowing take of the species, provided the action will not jeopardize the continued existence of any federally listed species or result in the destruction or adverse modification of habitats of those species. Section 10 of the ESA provides for issuance of incidental take permits to private parties without a federal nexus provided a Habitat Conservation Plan (HCP) is developed.

4.1.2 *Migratory Bird Treaty Act Title 16 USC Section 703*

The federal Migratory Bird Treaty Act (MBTA) (16 USC §703) prohibits the killing of migratory birds or the destruction of their occupied nests and eggs except in accordance with regulations prescribed by the USFWS. The bird species covered by the MBTA includes nearly all of those that breed in North America, excluding introduced (i.e. exotic) species (50 Code of Federal Regulations §10.13).

4.1.3 Clean Water Act Title 33 U.S.C. §1251

4.1.3.1 Section 404 Clean Water Act

The purpose of the Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill materials into Waters of the United States (WOUS) without a permit from the United States Army Corps of Engineers (USACE). Additionally, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal permit to conduct any activity that may result in the discharge of a pollutant into WOUS, to obtain certification that the discharge will comply with the applicable water quality standards. A Water Quality Certification is required for Section 404 permit actions and they are issued by the Regional Water Quality Control Board (RWQCB).

The term "waters of the United States" is an encompassing term that includes "wetlands" and "other waters." Wetlands have been defined for regulatory purposes as: "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3, 40 CFR 230.3). Wetlands generally include swamps, marshes, bogs, and similar areas." Other Waters of the United States (OWOUS) are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (i.e., hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).

The USACE may issue either individual permits on a case-by-case basis or general permits on a program level. General permits are pre-authorized and are issued to cover similar activities that are expected to cause only minimal adverse environmental effects. Nationwide permits are general permits issued to cover particular fill activities. All nationwide permits have general conditions that must be met for the permits to apply to a particular project, as well as specific conditions that apply to each nationwide permit.

4.1.3.2 Section 401 Clean Water Act

The Clean Water Act (§401) requires water quality certification and authorization for placement of dredged or fill material in wetlands and Other Waters of the United States. In accordance with the Clean Water Act (§401), criteria for allowable discharges into surface waters have been developed by the State Water Resources Control Board (SWRCB), Division of Water Quality. The resulting requirements are used as criteria in granting National Pollutant Discharge Elimination System (NPDES) permits or waivers, which are obtained through the Regional Water Quality Control Board (RWQCB). Any activity or facility that will discharge waste (such as soils from construction) into surface waters, or from which waste may be discharged, must obtain an NPDES permit or waiver from the RWQCB. The RWQCB evaluates an NPDES permit application to determine whether the proposed discharge is consistent with the adopted water quality objectives of the basin plan.

4.2 State Regulations

4.2.1 California Endangered Species Act

The California Endangered Species Act enacted in 1984, is similar to the federal ESA, but pertains to state-listed endangered and threatened species. The CESA requires state agencies to consult with the CDFW when preparing documents to comply with the CEQA. The purpose is to ensure that the actions of the lead agency do not jeopardize the continued existence of a listed species or result in the destruction, or adverse modification of habitat essential to the continued existence of those species. In addition to formal listing under the federal and state endangered species acts, "species of special concern" receive consideration by CDFW. Species of special concern are those whose numbers, reproductive success, or habitat may be threatened.

4.2.2 California Fish and Game Code

4.2.2.1 CFGC Section 3503 and 3503.5

The California Fish and Game Code (CFGC) (§3503) states that "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." "Take" includes the disturbance of an active nest resulting in the abandonment or loss of young.

Section §3503.5 of the CFGC states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation pursuant thereto."

4.2.2.2 CFGC Section 1600

The CDFW is a trustee agency that has jurisdiction under the CFGC (§1600 et seq.). The California Fish and Game Code (§1602), requires that a state or local government agency, public utility, or private entity must notify CDFW if a proposed project will "substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds... except when the department has been notified pursuant to §1601." If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures that will allow protection of those resources. If these measures are agreeable to the parties involved, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures.

4.2.2.3 CFGC Section 1900-1913

The California Native Plant Protection Act (CFGC §1900-1913) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered as defined by CDFW. An exception to this prohibition allows landowners, under specific circumstances, to take listed plant species, provided that the owners first notify CDFW and give the agency at least 10 days to retrieve (and presumably replant) the plants before they are destroyed. Fish and Game Code §1913 exempts from the "take" prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way." Very few of the plants constituting List 3 and List 4 meet the definitions of §1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Therefore, List 3 and List 4 plant species are not required to be considered in the preparation of environmental documents relating to CEQA unless they are considered locally or regionally significant.

The CNPS maintains a list of plant species native to California with low population numbers, limited distribution, or otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California (CNPS 2001). Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review. The CNPS listings categorize plants as follows:

- List 1A: Plants presumed extinct in California;
- List 1B: Plants rare, threatened, or endangered in California or elsewhere;
- List 2: Plants rare, threatened, or endangered in California, but more numerous elsewhere;
- List 3: Plants about which we need more information; and
- List 4: Plants of limited distribution.

4.2.3 Public Resources Code

4.2.3.1 CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines §15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled based on the definition in the ESA and the section of the CFGC dealing with rare, threatened, and endangered plants and animals. The CEQA Guidelines (§15380) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFW (e.g. candidate species, species of concern) would occur. Thus, CEQA provides a lead agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

4.2.3.1 Oak Woodlands Section 21083.4

As part of the determination made by a county as to whether a project is required to prepare an environmental impact report or negative declaration, "A county shall determine whether a project within its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment" (Public Resources Code (PRC) Section 21083.4(b)). If a county determines that there may be a significant effect to oak woodlands, the county shall require mitigation as identified in PRC Section 21083.4(b).

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Plants including Ahart's Buckwheat, Brownish Beaked Rush, Butte County Calycadenia, Butte County Fritillary, Humboldt Lily, Mosquin's Clarkia, Northern Sierra Daisy, Sierra Arching Sedge, True's Manzanita, and White-Stemmed Clarkia

Prior to the start of construction, the project proponent shall retain a qualified biologist to conduct pre-construction surveys for special-status botanical species. Should any special-status species be discovered during surveys they should be protected to the extent feasible. Avoidance buffers and ESA fencing should be utilized to protect any special-status botanical species encountered.

If the project proponent cannot completely avoid impact to special-status botanical species then CDFW must be notified and given a reasonable opportunity to harvest plants or seeds

5.2 Western Bumble Bee

Western bumble bees could potentially occur within the BSA and it will be up to the CEQA lead agency to determine if mitigation will be required to be considered during the planning process. If western bumble bee's status were to upgrade to threatened or endangered status at any time during the construction process, protocol-level surveys and mitigation would likely be required. In addition, care should be taken during construction activities not to disturb western bumble bees.

5.3 Foothill Yellow-legged Frog

Although construction will take place when the ditch is dry. Five days prior to the start of construction, a qualified biologist shall perform a pre-construction survey within the boundaries of the project area. The survey will include a 500-foot buffer upstream and downstream of the construction area. The survey should include a description of any standing or flowing water.

If foothill yellow-legged frog is found during the pre-construction survey, the project proponent shall:

1. Consult with CDFW by telephone or email and provide a short description of observations, including a count of individuals and the life stage(s), condition at the site, and other species observed; and

2. Propose site-specific measures that the proponent shall use to avoid take.

5.4 Silver-haired Bat and Western Red Bat

It is anticipated that limited vegetation removal will be necessary.

In the event that vegetation removal be necessary, a pre-construction bat survey shall be conducted by a qualified biologist for the presence of any roosting bats on-site during the appropriate time of day to maximize detectability. The survey should be conducted within 14 days prior to commencement of vegetation removal activities. The survey methodology may include visual surveys of bats (e.g. observations of bats during foraging period), inspection of suitable habitat or signs of bat presence (e.g. guano, urine staining, vocalizations, etc.). The type of survey will depend on the condition of the potential roosting habitat.

Any vegetation that has been identified as potential roosting habitat must be removed between October 1 and February 28. If trees must be removed during the maternity roosting season (March 1 to September 30), a qualified biologist shall conduct a pre-construction survey to identify those trees proposed for disturbance that could provide hibernacula or nursery colony roosting habitat for bats. Trees identified as potentially supporting an active nursery shall be inspected by a qualified biologist no greater than 7 days prior to disturbance to determine presence or absence of roosting bats. Trees determined to support active maternity roosts will be left in place until the maternity season (September 30) or until the qualified biologist determines the bats are no longer present.

6.5 Migratory Birds, and Nesting Raptors including Northern Goshawk

Vegetation removal or ground disturbance in areas where nests of birds protected by the MBTA (16 USC §703) and the CFGC (§3503) potentially occur, should be conducted between September 1 and February 28 (i.e. the non-breeding season). If vegetation removal or ground disturbance occurs during the breeding season (i.e. March 1 to August 31) then a qualified biologist shall:

- Conduct a survey for raptors and all other birds protected by the MBTA and map all nests located within 250 feet of construction areas. The survey should be conducted no more than two weeks prior to the start of project activities. If no nests are discovered no further mitigation is required.
- If active nests are discovered, a qualified biologist shall establish buffer zones around active nests that are sufficient enough in size to ensure impacts to nesting species are avoided. Active nests shall be monitored at reasonable intervals, as determined by the qualified biologist. Project activities shall be prohibited within the buffer zones until the young have fledged or the nest fails, as determined by a qualified biologist.

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Appendix A USFWS Species List



United States Department of the Interior

FISH AND WILDLIFE SERVICE Sacramento Fish And Wildlife Office Federal Building 2800 Cottage Way, Room W-2605 Sacramento, CA 95825-1846 Phone: (916) 414-6600 Fax: (916) 414-6713



In Reply Refer To: Consultation Code: 08ESMF00-2018-SLI-2024 Event Code: 08ESMF00-2018-E-05925 Project Name: Forbestown Ditch May 04, 2018

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 threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) 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 Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

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 impacts 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

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/currentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our 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:

Sacramento Fish And Wildlife Office

Federal Building 2800 Cottage Way, Room W-2605 Sacramento, CA 95825-1846 (916) 414-6600

Project Summary

Consultation Code:	08ESMF00-2018-SLI-2024
Event Code:	08ESMF00-2018-E-05925
Project Name:	Forbestown Ditch
Project Type:	WATER SUPPLY / DELIVERY

Project Description: Ditch Improvement Project

Project Location:

Approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/place/39.53396270008744N121.21312458707882W</u>



Counties: Butte, CA | Yuba, CA

Endangered Species Act Species

There is a total of 4 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 Fisheries¹, 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.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/2891</u>	Threatened
Sierra Nevada Yellow-legged Frog <i>Rana sierrae</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/9529</u>	Endangered
Fishes	
NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/321</u>	Threatened

Flowering Plants

NAME	STATUS
Layne's Butterweed Senecio layneae	Threatened
No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/4062</u>	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix B CNDDB Species List





Quad IS (Forbestown (3912153) OR Berry Creek (3912164) OR Strawberry Valley (3912151) OR Brush Creek (3912163) OR Cascade (3912162) OR Oroville Dam (3912154) OR Cascade (3912162) OR Oroville Dam (3912154) OR Cascade (3912162) OR Oroville Dam (3912154) OR Oroville Dam (3912154) OR </span style='col OR Clipper Mills (3912152) OR Bangor (3912144) OR Rackerby (3912143) OR Challenge (3912142) OR American House (3912161) OR Camptonville (3912141))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Ahart's buckwheat	PDPGN086UY	None	None	G5T3	S3	1B.2
Eriogonum umbellatum var. ahartii						
bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Haliaeetus leucocephalus						
big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
Balsamorhiza macrolepis						
black swift	ABNUA01010	None	None	G4	S2	SSC
Cypseloides niger						
Bolander's bruchia Bruchia bolanderi	NBMUS13010	None	None	G3G4	S3	4.2
Brandegee's clarkia	PDONA05053	None	None	G4G5T4	<u>S4</u>	42
Clarkia biloba ssp. brandegeeae		Hono		010011	01	
brownish beaked-rush	PMCYP0N080	None	None	G5	S1	2B.2
Rhynchospora capitellata						
Butte County fritillary	PMLIL0V060	None	None	G3Q	S3	3.2
Fritillaria eastwoodiae						
buxbaumia moss	NBMUS1B040	None	None	G4G5	S1	2B.2
Buxbaumia viridis						
California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Laterallus jamaicensis coturniculus						
California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Rana draytonii						
Cantelow's lewisia	PDPOR04020	None	None	G3	S3	1B.2
Lewisia cantelovii						
chaparral sedge	PMCYP03M60	None	None	G2	S2	1B.2
Carex xerophila						
Clifton's eremogone	PDCAR17010	None	None	G2G3	S2S3	1B.3
Eremogone cliftonii						
Darlingtonia Seep Darlingtonia Seep	CTT51120CA	None	None	G4	S3.2	
dissected-leaved toothwort	PDBRA0K1B1	None	None	G3G5T2Q	S2	1B.2
Cardamine pachystigma var. dissectifolia						
felt-leaved violet	PDVIO04280	None	None	G3	S3	4.2
Viola tomentosa						
fern-leaved monkeyflower	PDPHR01150	None	None	G2	S2	1B.2
Erythranthe filicifolia						



Selected Elements by Common Name California Department of Fish and Wildlife California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFV SSC or FP
fisher - West Coast DPS	AMAJF01021	None	Candidate	G5T2T3Q	S2S3	SSC
Pekania pennanti			Threatened			
flexuose threadmoss	NBMUS5S1D0	None	None	G5	S1	2B.1
Pohlia flexuosa						
foothill yellow-legged frog Rana boylii	AAABH01050	None	Candidate Threatened	G3	S3	SSC
fringed myotis	AMACC01090	None	None	G4	S3	
Myotis thysanodes						
great gray owl	ABNSB12040	None	Endangered	G5	S1	
Strix nebulosa						
Henderson's bent grass	PMPOA040K0	None	None	G2Q	S2	3.2
Agrostis hendersonii						
Jepson's onion	PMLIL022V0	None	None	G2	S2	1B.2
Allium jepsonii						
Layne's ragwort	PDAST8H1V0	Threatened	Rare	G2	S2	1B.2
Packera layneae						
Lewis Rose's ragwort	PDAST8H182	None	None	G4T2	S2	1B.2
Packera eurycephala var. lewisrosei						
long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis evotis						
long-legged myotis	AMACC01110	None	None	G5	S3	
Myotis volans						
Mildred's clarkia	PDONA050Q2	None	None	G3T3	S3	1B.3
Clarkia mildrediae ssp. mildrediae						
minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Fissidens pauperculus				_	_	_
Mosquin's clarkia	PDONA050S0	None	None	G2	S2	1B.1
Clarkia mosquinii						
North American porcupine	AMAFJ01010	None	None	G5	\$3	
Eretnizon dorsatum						
northern goshawk	ABNKC12060	None	None	G5	\$3	SSC
Accipiter gentilis					.	
obtuse starwort	PDCAR0X000	None	None	G5	S4	4.3
Stellaria obtusa				<u></u>	.	
osprey	ABNKC01010	None	None	G5	S4	WL
Pandion nallaetus				<u></u>		
pallid bat	AMACC10010	None	None	G5	\$3	SSC
Anirozous palilaus		-	5	0.4	<u>.</u>	10.0
Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1	51	1B.2
Fremontoaenaron aecumpens				000 (7070	0000	10.0
Fridaron Jassonianus var. deficiens	PDAS13M262	INONE	None	G3G41213	5253	1B.3



Selected Elements by Common Name California Department of Fish and Wildlife California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Quincy lupine	PDFAB2B1A0	None	None	G3	S3	4.2
Lupinus dalesiae						
Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Sagittaria sanfordii						
Sierra arching sedge	PMCYP03M00	None	None	G2	S2	1B.2
Carex cyrtostachya						
Sierra blue grass	PMPOA4Z310	None	None	G3	S3	1B.3
Poa sierrae						
Sierra marten	AMAJF01014	None	None	G5T3	S3	
Martes caurina sierrae						
Sierra Nevada mountain beaver	AMAFA01013	None	None	G5T3T4	S2S3	SSC
Aplodontia rufa californica						
Sierra Nevada yellow-legged frog	AAABH01340	Endangered	Threatened	G1	S1	WL
Rana sierrae						
silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasionycteris noctivagans						
southern long-toed salamander	AAAAA01085	None	None	G5T4	S3	SSC
Ambystoma macrodactylum sigillatum						
sticky pyrrocoma	PDASTDT0E0	None	None	G3	S3	1B.2
Pyrrocoma lucida						
Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Corynorhinus townsendii						
Tracy's sanicle	PDAPI1Z0K0	None	None	G4	S4	4.2
Sanicula tracyi						
upswept moonwort	PPOPH010S0	None	None	G3G4	S2	2B.3
Botrychium ascendens						
western bumble bee	IIHYM24250	None	None	G2G3	S1	
Bombus occidentalis						
western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Margaritifera falcata						
western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Emys marmorata						
western red bat	AMACC05060	None	None	G5	S3	SSC
Lasiurus blossevillii						
western spadefoot	AAABF02020	None	None	G3	S3	SSC
Spea hammondii						
western waterfan lichen	NLVER00460	None	None	G3G4	S3	4.2
Peltigera gowardii						
white-stemmed clarkia	PDONA050J1	None	None	G5T3	S3	1B.2
Clarkia gracilis ssp. albicaulis						
Yuma myotis	AMACC01020	None	None	G5	S4	
Myotis yumanensis						

Record Count: 60

Appendix C CNPS Species List



Plant List Inventory of Rare and Endangered Plants

59 matches found. Click on scientific name for details

Search Criteria

Found in Quads 3912151, 3912152, 3912153, 3912163, 3912162, 3912142, 3912143, 3912144, 3912154, 3912164 3912141 and 3912161;

Q Modify Search Criteria Export to Excel O Modify Columns 2 Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
<u>Agrostis hendersonii</u>	Henderson's bent grass	Poaceae	annual herb	Apr-Jun	3.2	S2	G2Q
<u>Allium jepsonii</u>	Jepson's onion	Alliaceae	perennial bulbiferous herb	Apr-Aug	1B.2	S2	G2
<u>Allium sanbornii var.</u> <u>sanbornii</u>	Sanborn's onion	Alliaceae	perennial bulbiferous herb	May-Sep	4.2	S3S4	G4T3T4
<u>Arctostaphylos</u> mewukka ssp. truei	True's manzanita	Ericaceae	perennial evergreen shrub	Feb-Jul	4.2	S3	G4?T3
<u>Balsamorhiza</u> macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2
Botrychium ascendens	upswept moonwort	Ophioglossaceae	perennial rhizomatous herb	(Jun)Jul- Aug	2B.3	S2	G3G4
Brodiaea sierrae	Sierra foothills brodiaea	Themidaceae	perennial bulbiferous herb	May-Aug	4.3	S3	G3
Bruchia bolanderi	Bolander's bruchia	Bruchianceae	moss		4.2	S3	G3G4
Bulbostylis capillaris	thread-leaved beakseed	Cyperaceae	annual herb	Jun-Aug	4.2	S3	G5
<u>Buxbaumia viridis</u>	buxbaumia moss	Buxbaumiaceae	moss		2B.2	S1	G4G5
Calycadenia oppositifolia	Butte County calycadenia	Asteraceae	annual herb	Apr-Jul	4.2	S3	G3
<u>Cardamine</u> pachystigma var. dissectifolia	dissected-leaved toothwort	Brassicaceae	perennial rhizomatous herb	Feb-May	1B.2	S2	G3G5T2Q
Carex cyrtostachya	Sierra arching sedge	Cyperaceae	perennial herb	May-Aug	1B.2	S2	G2
Carex xerophila	chaparral sedge	Cyperaceae	perennial herb	Mar-Jun	1B.2	S2	G2
<u>Clarkia biloba ssp.</u> brandegeeae	Brandegee's clarkia	Onagraceae	annual herb	May-Jul	4.2	S4	G4G5T4
<u>Clarkia gracilis ssp.</u> <u>albicaulis</u>	white-stemmed clarkia	Onagraceae	annual herb	May-Jul	1B.2	S2S3	G5T2T3

<u>Clarkia mildrediae ssp.</u> <u>lutescens</u>	golden-anthered clarkia	Onagraceae	annual herb	Jun-Aug	4.2	S3	G3T3
<u>Clarkia mildrediae ssp.</u> mildrediae	Mildred's clarkia	Onagraceae	annual herb	May-Aug	1B.3	S3	G3T3
<u>Clarkia mosquinii</u>	Mosquin's clarkia	Onagraceae	annual herb	May- Jul(Sep)	1B.1	S2	G2
Clarkia virgata	Sierra clarkia	Onagraceae	annual herb	May-Aug	4.3	S3	G3
<u>Claytonia parviflora</u> ssp. grandiflora	streambank spring beauty	Montiaceae	annual herb	Feb-May	4.2	S3	G5T3
Cypripedium californicum	California lady's- slipper	Orchidaceae	perennial rhizomatous herb	Apr- Aug(Sep)	4.2	S4	G4
Cypripedium fasciculatum	clustered lady's- slipper	Orchidaceae	perennial rhizomatous herb	Mar-Aug	4.2	S4	G4
Cypripedium parviflorum var. makasin	northern yellow lady's-slipper	Orchidaceae	perennial herb	May-Aug	3.1	S1	G5T4T5
Darlingtonia californica	California pitcherplant	Sarraceniaceae	perennial rhizomatous herb (carnivorous)	Apr-Aug	4.2	S4	G4
Eremogone cliftonii	Clifton's eremogone	Caryophyllaceae	perennial herb	Apr-Sep	1B.3	S2S3	G2G3
<u>Erigeron lassenianus</u> var. deficiens	Plumas rayless daisy	Asteraceae	perennial herb	Jun-Sep	1B.3	S2S3	G3G4T2T3
Erigeron petrophilus var. sierrensis	northern Sierra daisy	Asteraceae	perennial rhizomatous herb	Jun-Oct	4.3	S4	G4T4
Eriogonum umbellatum var. ahartii	Ahart's buckwheat	Polygonaceae	perennial herb	Jun-Sep	1B.2	S3	G5T3
Erythranthe glaucescens	shield-bracted monkeyflower	Phrymaceae	annual herb	Feb- Aug(Sep)	4.3	S3S4	G3G4
Erythranthe inconspicua	small-flowered monkeyflower	Phrymaceae	annual herb	May-Jun	4.3	S4	G4
Erythranthe laciniata	cut-leaved monkeyflower	Phrymaceae	annual herb	Apr-Jul	4.3	S4	G4
Fissidens pauperculus	minute pocket moss	Fissidentaceae	moss		1B.2	S2	G3?
Frangula purshiana ssp. ultramafica	Caribou coffeeberry	Rhamnaceae	perennial deciduous shrub	May-Jul	1B.2	S2S3	G4T2T3
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	perennial evergreen shrub	Apr-Jul	1B.2	S1	G1
Fritillaria eastwoodiae	Butte County fritillary	Liliaceae	perennial bulbiferous herb	Mar-Jun	3.2	S3	G3Q
Lewisia cantelovii	Cantelow's lewisia	Montiaceae	perennial herb	May-Oct	1B.2	S3	G3
<u>Lewisia kelloggii ssp.</u> <u>hutchisonii</u>	Hutchison's Iewisia	Montiaceae	perennial herb	(Apr)May- Aug	3.2	S3	G3G4T3Q
Lilium humboldtii ssp. humboldtii	Humboldt lily	Liliaceae	perennial bulbiferous herb	May- Jul(Aug)	4.2	S 3	G4T3

Lupinus dalesiae	Quincy lupine	Fabaceae	perennial herb	May-Aug	4.2	S3	G3
Microseris sylvatica	sylvan microseris	Asteraceae	perennial herb	Mar-Jun	4.2	S4	G4
Packera eurycephala var. lewisrosei	Lewis Rose's ragwort	Asteraceae	perennial herb	Mar- Jul(Aug- Sep)	1B.2	S2	G4T2
Packera layneae	Layne's ragwort	Asteraceae	perennial herb	Apr-Aug	1B.2	S2	G2
Peltigera gowardii	western waterfan lichen	Peltigeraceae	foliose lichen (aquatic)		4.2	S3	G3G4
Perideridia bacigalupii	Bacigalupi's yampah	Apiaceae	perennial herb	Jun-Aug	4.2	S3	G3
Piperia colemanii	Coleman's rein orchid	Orchidaceae	perennial herb	Jun-Aug	4.3	S4	G4
Poa sierrae	Sierra blue grass	Poaceae	perennial rhizomatous herb	Apr-Jul	1B.3	S3	G3
Pohlia flexuosa	flexuose threadmoss	Mielichhoferiaceae	moss		2B.1	S1	G5
Pyrrocoma lucida	sticky pyrrocoma	Asteraceae	perennial herb	Jul-Oct	1B.2	S3	G3
<u>Rhynchospora</u> capitellata	brownish beaked- rush	Cyperaceae	perennial herb	Jul-Aug	2B.2	S1	G5
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May- Oct(Nov)	1B.2	S3	G3
Sanicula tracyi	Tracy's sanicle	Apiaceae	perennial herb	Apr-Jul	4.2	S4	G4
Sidalcea gigantea	giant checkerbloom	Malvaceae	perennial rhizomatous herb	(Jan- Jun)Jul-Oct	4.3	S3	G3
Silene occidentalis ssp. occidentalis	Western campion	Caryophyllaceae	perennial herb	Jun-Aug	4.3	S3	G4T3
Stellaria obtusa	obtuse starwort	Caryophyllaceae	perennial rhizomatous herb	May- Sep(Oct)	4.3	S4	G5
<u>Streptanthus</u> Iongisiliquus	long-fruit jewelflower	Brassicaceae	perennial herb	Apr-Sep	4.3	S3	G3
Trifolium jokerstii	Butte County golden clover	Fabaceae	annual herb	Mar-May	1B.2	S2	G2
Vaccinium coccineum	Siskiyou Mountains huckleberry	Ericaceae	perennial deciduous shrub	Jun-Aug	3.3	S2S3	G3Q
Viola tomentosa	felt-leaved violet	Violaceae	perennial herb	(Apr)May- Oct	4.2	S3	G3

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rareplants@cnps.org

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Appendix D Species Observed in the BSA by NorthStar Biologists.

Plants				
Scientific Name	Common Name			
Abies concolor	White fir			
Acer macrophyllum	Big leaf maple			
Aesculus californica	California Buckeye			
Alnus rhombifolia	White alder			
Aquilegia formosa	Western columbine			
Arbutus menziesii	Pacific madrone			
Arctostaphylos arctostaphylos	Common manzanita			
Arctostaphylos viscida	Whiteleaf manzanita			
Bromus hordeaceus	Soft brome			
Calocedrus decurrens	Incense cedar			
Calochortus monophyllus	Yellow star tulip			
Calycanthus occidentalis	Spice bush			
Ceanothus cuneatus	Buck brush			
Ceanothus intergerrimus	Deer brush			
Cercis occidentalis	Western redbud			
Cornus nuttallii	Pacific dogwood			
Cynoglossum grande	Western houndstongue			
Darmera peltate	Indian rhubarb			
Dichelostemma multiflorum	Many flowered brodiaea			
Eleocharis macrostachya	Pale spike rush			
Elymus caput-medusae	Medusa head			
Equisetum arvense	Common horsetail			
Eriodictyon californicum	Yerba santa			
Festuca occidentalis	Western fescue			
Festuca perennis	Italian rye grass			
Heteromeles arbutifolia	Toyon			
Hypericum perforatum	Klamathweed			
Iris hartwegii	Hartweg's iris			
Juncus effuses	Common rush			
Lathyrus nevadensis	Sierra pea			
Lathyrus sulphureus	Brewer's pea			
Lilium humboldtii	Humboldt lily			
Lonicera interrupta	Chaparral honeysuckle			
Lupinus latifol	Bigleaf lupine			

Notholithocarpus densiflorus	Tanoak
Pinus ponderosa	Ponderosa pine
Plantago lanceolate	English plantain
Polystichum californicum	California sword fern
Pseudotsuga menziesii	Douglas fir
Quercus chrysolepis	Canyon live oak
Quercus kelloggii	Black oak
Quercus wislizeni	Interior live oak
Rosa gymnocarpa	Wood rose
Rubus armeniacus	Himalayan blackberry
Rumex crispus	Curly dock
Salix sp.	Unidentified willow
Silene californica	California Indian pink
Toxicodendron diversilobium	Poison oak
Triteleia ixoides	Golden brodiaea
Umbellularia californica	California bay
Woodwardia fimbriata	Chain fern
Wildlife	
Scientific Name	Common Name
	Common r (unit
Aphelocoma californica	California scrub-jay
Aphelocoma californica Baeolophus inornatus	California scrub-jay Oak titmouse
Aphelocoma californica Baeolophus inornatus Cardellina pusilla	California scrub-jay Oak titmouse Wilson's warbler
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus Colaptes auratus	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus Colaptes auratus Calypte anna	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus Colaptes auratus Calypte anna Cathartes aura	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus Colaptes auratus Calypte anna Cathartes aura Catharus ustulatus	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus Colaptes auratus Calypte anna Cathartes aura Cathartes aura Catharus ustulatus Chamaea fasciata	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus Colaptes auratus Calypte anna Cathartes aura Catharus ustulatus Chamaea fasciata Cinclus mexicanus	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus Colaptes auratus Calypte anna Cathartes aura Catharus ustulatus Chamaea fasciata Cinclus mexicanus Contopus cooperi	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper Olive-sided flycatcher
Aphelocoma californica Baeolophus inornatus Cardellina pusilla Catharus guttatus Colaptes auratus Calypte anna Cathartes aura Catharus ustulatus Chamaea fasciata Cinclus mexicanus Contopus cooperi Contopus sordidulus	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper Olive-sided flycatcher Western wood pewee
Aphelocoma californicaBaeolophus inornatusCardellina pusillaCatharus guttatusColaptes auratusCalypte annaCatharus ustulatusCatharus ustulatusChamaea fasciataCinclus mexicanusContopus cooperiContopus sordidulusCorvus brachyrhynchos	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper Olive-sided flycatcher Western wood pewee American crow
Aphelocoma californicaBaeolophus inornatusCardellina pusillaCatharus guttatusColaptes auratusCalypte annaCatharus ustulatusCatharus ustulatusChamaea fasciataCinclus mexicanusContopus cooperiContopus sordidulusCorvus brachyrhynchosCorvus corax	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper Olive-sided flycatcher Western wood pewee American crow Common raven
Aphelocoma californicaBaeolophus inornatusCardellina pusillaCatharus guttatusColaptes auratusCalypte annaCatharus ustulatusCatharus ustulatusChamaea fasciataCinclus mexicanusContopus cooperiContopus sordidulusCorvus brachyrhynchosCorvus coraxCyanocitta stelleri	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper Olive-sided flycatcher Western wood pewee American crow Common raven Stellar's jay
Aphelocoma californicaBaeolophus inornatusCardellina pusillaCatharus guttatusColaptes auratusCalypte annaCatharus ustulatusCatharus ustulatusChamaea fasciataCinclus mexicanusContopus cooperiContopus sordidulusCorvus brachyrhynchosCorvus coraxCyanocitta stelleriElgaria multicarinata	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper Olive-sided flycatcher Olive-sided flycatcher Western wood pewee American crow Common raven Stellar's jay Southern alligator lizard
Aphelocoma californicaBaeolophus inornatusCardellina pusillaCatharus guttatusColaptes auratusCalypte annaCathartes auraCathartes auraCatharus ustulatusChamaea fasciataCinclus mexicanusContopus cooperiContopus sordidulusCorvus brachyrhynchosCorvus coraxCyanocitta stelleriElgaria multicarinataEmpidonax difficilis	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper Olive-sided flycatcher Western wood pewee American crow Common raven Stellar's jay Southern alligator lizard Pacific-slope flycatcher
Aphelocoma californicaBaeolophus inornatusCardellina pusillaCatharus guttatusColaptes auratusCalypte annaCatharus ustulatusCatharus ustulatusChamaea fasciataCinclus mexicanusContopus cooperiContopus sordidulusCorvus brachyrhynchosCorvus coraxCyanocitta stelleriElgaria multicarinataEmpidonax difficilisEmpidonax oberholseri	California scrub-jay Oak titmouse Wilson's warbler Hermit thrush Northern flicker Anna's hummingbird Turkey vulture Swainson's thrush Wrentit American dipper Olive-sided flycatcher Olive-sided flycatcher Western wood pewee American crow Common raven Stellar's jay Southern alligator lizard Pacific-slope flycatcher

Varied thrush
Dark-eyed junco
Hairy woodpecker
Acorn woodpecker
California towhee
Black-tailed deer
Orange-crowned warbler
Mountain quail
Band-tailed pigeon
Black-headed grosbeak
Nuttall's woodpecker
Spotted towhee
Western tanager
Gopher snake
Blue-gray gnatcatcher
Bushtit
Sierran treefrog
Ruby-crowned kinglet
Western fence lizard
Western gray squirrel
Red-breasted nuthatch
Black-throated gray warbler
Yellow warbler
Townsend's warbler
Red-breasted nuthatch
Bewick's wren
Pacific wren
American Robin
Cassin's vireo
Hutton's vireo
Golden-crowned sparrow
White-crowned sparrow