



November 12, 2024

306.39

Cheng Vue  
Water Resource Control Engineer  
State Water Resources Control Board  
Division of Financial Assistance  
1001 I Street, 16th Floor  
Sacramento, CA 95814  
cheng.vue@waterboards.ca.gov

Dear Cheng,

Subject: Burney Water District  
Wastewater Treatment Plant Improvement Project (Project)  
CWSRF Agreement No. SWRCB D1901026, Project No. C-06-8108-210  
Project Completion Report

As required under Section A.2.2.2, Reports of the Clean Water State Revolving Fund (CWSRF), Agreement No. SWRCB D1901026, Project No. C-06-8108-210, Exhibit A, Burney Water District (District) is to prepare a Project Completion Report, which summarizes the following:

- Description of the Project
- Description of the water quality problem the Project sought to address
- Discussion of the Project's likelihood of successfully addressing that water quality problem in the future
- Summary of compliance with applicable environmental conditions

#### **PROJECT DESCRIPTION**

The Project included various equipment upgrades as well as new facilities, including but not limited to:

- New influent flow meter
- New disc aerators and control system at the oxidation ditch
- New secondary clarifier tank and mechanism
- New return/wasting sludge pumps and appurtenances
- Conversion of the existing clarifier to an aerobic digester, including construction of a blower building
- Sludge lagoon liner replacement and underdrain system installation
- Sludge lagoon supernatant pump station improvements
- New return pump station to return scum, supernatant, and sanitary drainage to the headworks
- Control building upgrades to HVAC and control systems and panels
- Emergency diesel generator and automatic transfer switch

RTA Construction, Inc. was awarded the contract as the Prime Contractor, with Bullert Electric, Inc. as the Electrical Subcontractor. Construction of the Project was substantially completed on March 15, 2024. The Notice of Completion with Shasta County was filed on August 28, 2024. Project Funding Agreement Amendment No. 1 was authorized by the State Water Resources Control Board. Amendment No. 1 included the final budget approval for the Project, with adjustments to budget and dates.

### **PROJECT NEEDS AND IMPROVEMENTS**

The Project aimed to address effluent water quality, overall treatment quality concerns within the treatment system, and sludge disposal practices. Improvements have improved the water quality problems as described below.

At the headworks, just before the screening building, a new influent flow meter was installed to allow for accurate measurement and compliance reporting of the treatment plant influent flow. Additionally, the concrete apron surrounding the screening building was extended, along with replacement of the drainage inlet. This allows for better drainage of screenings from the dumpster and creates ease of dumpster access for disposal of screenings, which helps to prevent runoff to the ponds.

The existing oxidation ditch brush and floating aerators were replaced with new disc aerators and a dissolved oxygen (DO) package control system. These disc aerators operate more efficiently, with lower energy use and less maintenance than their brush predecessors. The previous aerators struggled to provide adequate DO at certain times of the year. The new DO control system ramps the speed of the aerators and changes the direction of rotation based on required DO to the ditch. These new aerators can provide additional air to the biological treatment, further treating the wastewater.

A new 50-foot-diameter and 14-foot-deep secondary clarifier was constructed to replace the existing clarifier, which was shallow and struggled with solids carryover into the treatment plant effluent. The new clarifier is complete with a new clarifier mechanism, density current baffle, and associated piping and appurtenances for influent, effluent, and scum. These improvements will allow for improved settling and sludge withdrawal and will minimize solids carryover.

The existing secondary clarifier was then utilized for conversion to an aerobic digester for improved solids management. The digester is equipped with duck bill coarse bubble diffusers, a new blower building with two positive displacement blowers, a supernatant decanter, and associated piping and appurtenances for these modifications. The aerobic digester is intended to break down solids further and remove separated supernatant before being sent to the sludge lagoon. By further breaking down the solids in the aerobic digester, a smaller and more concentrated volume will be received at the sludge lagoon.

The seepage from the failed sludge lagoon liner into underlying soil was at risk of negatively impacting the surrounding groundwater. The failing sludge lagoon liner was removed, an underdrain system was installed, grading of the sides and bottom were performed, and a new liner was installed, thus protecting groundwater quality. Existing aerators from the oxidation ditch were moved and installed at the sludge lagoon to aerate the supernatant to help with odors and nitrification/denitrification. The sludge lagoon receives sludge from the digester and clarifier-wasted sludge, where it is stored, further broken down, and eventually removed for disposal.

The existing sludge lagoon supernatant pump station pump was replaced with a submersible pump capable of pumping to the force main to be pumped back to the headworks for screening and returning to the treatment system. The supernatant pump station is also equipped with alternative piping to send supernatant to Pond 8, if required. The existing pump was only capable of sending supernatant to Pond 8, which had the potential of adding to the groundwater quality issues, along with the leaking lagoon liner. Additionally, a new backflow preventer and meter were installed on the water line from the supernatant pump station to the District's water main to avoid potential cross contamination issues that previously were possible.

Due to the depth of the supernatant decanter in the digester and additional drainage collected on site, including scum from the new clarifier, a new vac truck drainage platform, and the headworks drainage, a new pump station was constructed to return this waste to the headworks of the process. This return pump station includes an 18.25-foot-deep vault, two submersible pumps, and required piping and appurtenances.

These improvements required significant overhaul of the control system and replacement of control panels. Most of these improvements took place in the control building. HVAC systems were also upgraded to serve the needs of the increased output of the new control panels and motor control center.

A permanent emergency generator with automatic transfer switch was installed to protect against power failures and during Public Safety Power Shutoff events.

As can be expected for this type of project, processes are still being optimized. The Project successfully installed the components outlined in the funding agreement's scope of work, less the sludge press and building and screening unit. These were not included primarily due to lack of available grant funds.

**Headworks:**



**Headworks Apron Extension**



**New Flow Meter**

**Oxidation Ditch:**



**New Disc Aerators**

**Aerobic Digester:**



**Converted Aerobic Digester**

**Secondary Clarifier:**



**New Secondary Clarifier**

**Sludge Lagoon and Supernatant Pump Station:**



Sludge Lagoon Backflow Preventer and Meter



Supernatant Pump Station and Sludge Lagoon

**Return Pump Station:**



Return Pump Station

**Emergency Generator:**



Emergency Generator

**COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS**

The Project contained a series of Mitigation Measures (MM), which were included in Attachment D of the Project Manual, Volume 1.

- MM 4.3.1 for air quality was monitored and verified by the Construction Observer and District staff.
- MM 4.4.1 was monitored by the Construction Observer.
- MM 4.4.2 for migratory birds was addressed with a migratory bird survey, which found several active nests. These findings altered the course of work to maintain required buffers around these nests. An initial survey by ENPLAN identified a Canada Goose nest requiring a 100-foot buffer at the sludge lagoon and percolation pond, Barn Swallow nests requiring a 50-foot buffer on the screening building, and Cliff Swallow nests requiring a 50-foot buffer. As the Project progressed, some nests became inactive and new ones developed. During the last survey in July 2022, only one Cliff Swallow nest remained on the control building and, since it was approximately 75 feet from active construction and obstructed from view by the office building, monitoring was concluded. The final report is attached as Exhibit A.

- MM 4.5.1 and MM 4.5.2 for cultural resources was monitored by the Construction Observer.
- MM 4.8.1 for hazards/hazardous materials was monitored by the Construction Observer.
- MM 4.12.1-4 for noise was monitored by the Construction Observer.

### **PROJECT SCHEDULE**

Approximately 856 days elapsed to complete the construction of the Project from the Notice to Proceed date of April 25, 2022, to the filing of the Notice of Completion on August 28, 2024.

### **CONTRACT CHANGE ORDERS**

Twenty change orders were issued in the amount of \$1,027,945.93, for a total construction contract cost of \$7,116,973.78. Change orders included the following:

- No. 1 – More rock removal and secondary clarifier over-excavation was required than estimated; therefore, Items 15 and 16 exceeded the bid quantity. This change order accounted for additional rock removal and over-excavation completed to date at that time, for a total increased cost of \$43,751.26.
- No. 2 – PG&E design was modified, CP-WWTP and automatic transfer switch locations were moved, conduit was rerouted around the future sludge dewatering building, and foundational slurry was used at the clarifier instead of aggregate base, for a total increased cost of \$56,615.95.
- No. 3 – More rock removal and drying bed sludge were required to be disposed than estimated; therefore, Items 4 and 15 exceeded bid quantity, for a total increased cost of \$152,187.34.
- No. 4 – Sludge lagoon construction ramp was backfilled with native material instead of aggregate base, clarifier drain height was reduced, submitted MPC-A panel required mounting redesign, structural calculations were required for the clarifier submittal, installation of bollards was needed around the new flow meter vault, more rock removal for disposal exceeded bid quantity, and preparation of sludge lagoon walls to receive liner due to bench in the wall that was not indicated by previous drawings was needed. Costs were increased by \$65,610.17.
- No. 5 – Fixed mechanical aerator footing design was modified, which required additional rebar to meet the needs of the updated submittal from Evoqua, the 8-inch influent plug valve prior to the headworks was replaced, and a meter and reduced pressure principle device were installed on the water line from the District main to the sludge lagoon. Costs were increased by \$31,471.51.
- No. 6 – Bid item quantities were exceeded by more than 125% of the quantity shown on the bid item list for Item 5 – Dredging, Drying, Removing, and Disposing of Sludge Lagoon Sludge. Per Supplementary Conditions, Article 13.E, the Owner requested reevaluation of unit price, which also considered the cost increases due to COVID-19, such as gas and materials. This change order covered the additional quantities as the agreed-upon unit prices. Costs were increased by \$330,362.74.
- No. 7 – Installation of Gilsulate insulation material around a section of blower piping and installation of an additional two-way cleanout in the 6-inch waste digested sludge line. Costs were increased by \$5,146.08.
- No. 8 – Additional rock removal at an increased unit price due to additional effort required for trench rock excavation. Costs were increased by \$26,374.66.

- No. 9 – Pump replacement, panel replacement, and mounting hardware were adjusted to accommodate the submitted plans in the sludge pumping building. Costs were increased by \$5,815.52.
- No. 10 – Adjustments to installation of the CP-WWTP were required to allow for earlier installation to accommodate the collection system schedule. Additionally, time-programmed controls were added to the sludge lagoon aerators. Costs were increased by \$9,041.40.
- No. 11 – Bid Item A was removed, an approximate grit quantity was determined, an additional fitting was added for valve replacement, material changes were required due to a generator variance, and the fan/light was separated in the control building. Costs were decreased by \$73,268.15.
- No. 12 – Due to the delay in the delivery of various equipment, contract times, insurance coverage, and personnel time were added accordingly in anticipation of a January 31, 2024, final payment. Costs were increased by \$17,424.29.
- No. 13 – Miscellaneous required project additions, including digester radar level sensor, isolation valve on clarifier spray piping, modification of wiring of clarifier, and rerouting of unknown electrical conduits and water lines. Costs were increased by \$25,914.63.
- No. 14 – Replacement and modification of scum piping was made due to discovered conditions, a credit was given for paid SWPPP annual fee, modifications were made to operation of louvers in blower local mode, modification was made to valve actuator spare conductors to provide SCADA with remote status, 3 inches of aggregate base was added in designated areas to manage mud on-site, improvements were made to existing oxidation ditch walkway railings, imported fill was required to replace rock removal, sandblasting and painting were required on the drive section of the digester column, dewatering of the sludge lagoon during subgrade construction, a 2-inch water line was relocated, remaining rock removal was completed, and a credit was given for removing a yard hydrant from scope. Costs were increased by \$55,965.23.
- No. 15 – EYS seals and classified locations were modified, and indoor blower piping insulation was installed. Costs were increased by \$25,778.56.
- No. 16 – A davit crane footing and base were installed at the return pump station, a davit crane base and sign were installed at the supernatant pump station, blower enclosure exhaust fan operation was modified, inoperable 10-inch plug valve was exposed and problem was diagnosed, modifications were made to flowline supernatant control panel for proper float operation, installation of bollards, material cost increases due to extraordinary inflation, and installation of floor tiles where motor control center was removed. Costs were increased by \$65,874.89.
- No. 17 – Dikes were raised at Ponds 1, 2, 3, 5, and 6 to 2.1 feet of freeboard, the oxidation ditch influent 10-inch valve gearbox was fixed, a 4-inch cleanout was installed on the headworks drain line, additional aggregate base grading was installed, generator steps were fabricated, and a drainage platform, drain pipe, and grit manhole were installed. Costs were increased by \$142,336.50.
- No. 18 – Ductile iron pipe and high temperature insulation was installed at the drain pipe/blower pipe crossing location, and the headworks concrete apron was extended. Costs were increased by \$41,543.35.

- No. 19 – The sludge pump motor high temperature switches needed to be reconfigured for the normally open-type switches. Costs were increased by \$1,704.33, and 80 days were added to the date ready for final payment.
- No. 20 – A trash pump was purchased for use at the sludge lagoon dewatering manhole. Costs were increased by \$54,555.58.

**PROJECT BUDGET**

The final Project budget is summarized below in Table 1, except for final billing due to completion of the operations and maintenance manual and other Project close-out tasks.

<b>Table 1 Percentages of Work Tasks Billed</b>			
<b>Task</b>	<b>Final Budget</b>	<b>Amount Spent</b>	<b>Percent Complete</b>
Construction	\$6,089,028	\$6,089,028	100%
Pre-Purchased Material/Equipment	\$45,543	\$0	0%
Contingency	\$1,510,466	\$1,084,206	72%
<b>Soft Costs</b>			
Design	\$561,260	\$589,584	105%
Construction Management	\$826,500	\$1,262,536	153%
Administration	\$30,000	\$3,415	11%
<b>TOTALS:</b>	<b>\$9,062,797</b>	<b>\$9,028,769</b>	<b>99.6%</b>

Please call me with any questions you have regarding this Project Completion Report.

Sincerely,



Laurie McCollum  
Principal Engineer

Enclosure

- c: David Zevely, Burney Water District, dzevely@burneywater.org
- Stephanie McQuade, Burney Water District, smcquade@burneywater.org
- Paige Cibart, PACE Engineering, Inc., pcibart@paceengineering.us





032-33  
August 11, 2022

David Zevely  
Burney Water District  
20222 Hudson Street  
Burney, CA 96013

SUBJECT: Burney Wastewater Collection and Treatment Improvement Project  
Biological Monitoring Summary Report

ENPLAN conducted biological monitoring of active bird nests at the Burney Wastewater Treatment Plant from April 27, 2022, through July 22, 2022, at the request of CDFW, in support of the Burney Water District's Wastewater Collection and Treatment Improvement Project. Nesting bird surveys were also conducted on April 22, 2022, and twice per week for the duration of monitoring. Species with active nests being monitored included barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), black phoebe (*Sayornis nigricans*), and downy woodpecker (*Dryobates pubescens*). The attached figures were created based on field surveys to provide active nest updates periodically throughout the monitoring duration. Changes in the active nest locations resulted from the completion of some nesting cycles and the initiation of others.

The nesting bird surveys consisted of observing the work location and vicinity for nests, listening for bird vocalizations, examining the ground for raptor pellets/whitewash, and assessing the status of known active nests in the area. The survey boundary was established in the field by the biologist while considering potential acoustic impacts and line-of-sight disturbances that have the potential to occur as a result of the project.

Biological monitoring consisted of a combination of full-day monitoring and site check-ins for a total of thirty site visits. The monitor ensured that the construction crew was aware of and remained outside of the designated exclusion zone for each active nest, and observed the active nests for signs of disturbance or stress (e.g., adults not returning to feed young). The distance of the exclusion zone was based on the species of bird and in consultation with CDFW.

The nesting bird surveys and biological monitoring visits were conducted by Brooke McDonald and Allison Loveless. Brooke has a Bachelor of Science degree in Wildland Soil Science and has worked as a bird biologist conducting surveys for 15 years. Allison has a Master of Science degree in Zoology and has worked as a consulting biologist, including conducting nesting bird surveys and construction monitoring, for over five years.

Biological monitoring and nesting bird surveys were concluded when active nesting activities within at least 50-feet of the construction and equipment staging were complete. A cliff swallow nest was the only nest that remained active at the time biological monitoring was complete (see attached figure: Burney WWTP – Active bird nests 7/22/2022). The active nest was located beneath the rafters of the front deck of the WWTP office building,

approximately 75 feet from construction activities and/or equipment staging. Because construction was obstructed from view by the office building, and the nest had shown no signs of disturbance as a result of construction, CDFW concurred that monitoring was no longer necessary at the site.

No nests were determined to have been impacted by construction activities or any other form of human disturbance.

Please contact me if you have any questions regarding this report.

Sincerely,

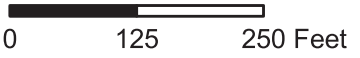


Allison Loveless  
Environmental Scientist

C: Amy Henderson, CDFW  
Paige Cibart, PACE Engineering  
Wesley Miller, PACE Engineering



● Location of Nest  
□ Construction Buffer Zone



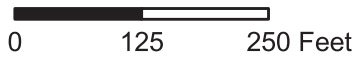
**Burney Wastewater Collection and Treatment Improvement Project**  
**Nesting Bird Survey Results**  
April 26, 2022

All depictions are approximate. Not a survey product. 04.26.22





All depictions are approximate. Not a survey product. 05.06.22



**Burney Wastewater Collection and Treatment Improvement Project**  
**Currently Active Bird Nests**  
May 06, 2022

# Burney WWTP

Active Nest Locations  
June 16, 2022

Legend

Black Phoebe nest



Pond turtle basking rocks



Duck nest



Cliff Swallow nests



Barn Swallow nests



Downy Woodpecker nest



Carlton Enterprises



Black Ranch Rd

299

Google Earth


800 ft



# Burney WWTP

Active bird nests 7/22/2022

## Legend

 Cliff Swallow Nest Location

Black Ranch Rd

Cliff Swallow Nest Location

Carlton Enterprises

299

Google Earth

900 ft

