CALAVERAS COUNTY WATER DISTRICT
ENGINEERING COMMITTEE MEETING

OUR MISSION

Protect, enhance, and develop Calaveras County's water resources and watersheds to provide safe, reliable, and cost-effective services to our communities.

2021-2026 Strategic Plan, Adopted April 28, 2021, can be viewed at this link

Engineering Committee
Tuesday, June 4, 2024
2:00 p.m.

Calaveras County Water District
120 Toma Court
San Andreas, California 95249

Board Chambers are open to the public and the following alternative is available to members of the public who wish to participate in the meeting virtually:

Microsoft Teams meeting

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Microsoft Teams Need help?

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Meeting ID: 292 599 062 206
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+1 689-206-0281,,944700258# United States, Orlando
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In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Administration Office at 209-754-3028. Notification in advance of the meeting will enable CCWD to make reasonable arrangements to ensure accessibility to this meeting. Any documents that are made available to the Board before or at the meeting, not privileged or otherwise protected from disclosure, and related to agenda items, will be made available at CCWD for review by the public.

ORDER OF BUSINESS

CALL TO ORDER / PLEDGE OF ALLEGIANCE

1. ROLL CALL

2. PUBLIC COMMENT

COMMITTEE MEMBERS

Director Davidson, Chair Russ Thomas, Director

3. **APPROVAL OF MINUTES:** For the meeting of April 9, 2024

4. **NEW BUSINESS**

4a Grant Procurement Update – Landstedt Consulting
(Mark Rincon-Ibarra, District Engineer)

4b Construction Project Lookback
(Kelly Gerkensmeyer, External Affairs Manager)

4c O'Byrne's Ferry Pipeline Extension
(Kevin Williams, Senior Civil Engineer)

4d Huckleberry Lift Station Update
(Kevin Williams, Senior Civil Engineer)

5. **OLD BUSINESS**

5a Capital Improvement Updates
(Engineering Department)

5b Other Updates
(Engineering Department)

6.* **GENERAL MANAGER COMMENTS**

7.* **DIRECTOR COMMENTS OR FUTURE AGENDA ITEMS**

8. **NEXT COMMITTEE MEETING:** July 2, 2024

9. **ADJOURNMENT**

*No information included in packet

CALAVERAS COUNTY WATER DISTRICT
SPECIAL ENGINEERING COMMITTEE

MINUTES
April 9, 2024

Directors/Committee Members present:

Russ Thomas
Jeff Davidson

Staff present:

Michael Minkler	General Manager
Mark Rincon-Ibarra	District Engineer
Kevin Williams	Senior Civil Engineer
Sam Singh	Senior Engineering Technician
Jared Gravette	Senior Supervisor Construction Inspection
Juan Maya	Civil Engineer
Haley Airola	Engineering Coordinator
Kelly Gerkensmeyer	External Affairs Manager
John Coleman	Water Resources Manager
Pat Burkhardt	Construction/Maintenace Manger
Damon Wycoff	Director of Operations
Kate Jesus	Human Resources Technician*
Rebecca Hitchcock	Executive Assistance/Clerk to the board*
Jason Knick	Construction Inspector*
Jeff Meyer	Director of Administrative Services*
Bana Rousan-Gedese	Water Resource Specialist *

Others present:

Jeremy	Member of the Public

CALL TO ORDER / PLEDGE OF ALLEGIANCE.

1. ROLL CALL

Director Thomas called the Engineering Committee to order at 2:01 p.m. and led the Pledge of Allegiance.

2. PUBLIC COMMENT

No Comments from the Public

3. APPROVAL OF MINUTES

The January 9, 2024, minutes were approved by a motion from Director Davidson and seconded by Director Thomas.

4. NEW BUSINESS

4a Review of the FY 2024-25 District's Five-Year Capital Improvement Program Update (Kevin Williams, Senior District Engineer)

DISCUSSION: Mark Rincon-Ibarra, District Engineer, provided a list of Capital Improvement Projects that are needed within the next five-year period, with additional projects within 10 years. Committee approved item to move to full Board. Questions from the committee were answered directly by both Mark Rincon-Ibara and Damon Wycoff, Director of Operations.

PUBLIC COMMENT: No public comment

5. OLD BUSINESS

None.

6. GENERAL MANAGER COMMENTS

None.

7. DIRECTOR COMMENTS OR FUTURE AGENDA ITEMS

Director Davidson requested infrastructure expenditures over the pasted dedicated, with a comparison to other agencies.
Director Thomas requested for attendees appearing virtually to be identified on the minutes.

8. NEXT COMMITTEE MEETING

Date to be determined - Original Date May 7, 2024

9. ADJOURNMENT

There being no further business, the meeting adjourned at approximately 3:00 p.m.

Respectfully submitted,

Haley Airola

Haley Airola
Engineering Coordinator

Agenda Item

DATE: June 4, 2024

TO: Engineering Committee, Calaveras County Water District
Michael Minkler, General Manager

FROM: Mark Rincon-Ibarra, District Engineer

RE: Grant Procurement Update

SUMMARY

This grant pursuit program supports the Fiscal Responsibility Objective FR-2, creating alternative funding and financing through grants and partnerships to execute our CIP for short, mid- and long-term investments.

CCWD's grant consultant, Landstedt Consulting (consultant), presented the May 2024 Initial Funding Research Report (FRR) to Engineering staff May 23, 2024. This initial FRR provides a comprehensive overview of opportunities specific to project types, and what specific requirements are needed by the funding applications. The initial FRR included many opportunities and is wide-ranging in scope. CCWD, along with the consultant, needed to determine the feasibility of each opportunity listed. Engineering staff met with the consultant to review the initial FRR, determining projects and feasibility of each opportunity listed. The listing was consolidated for further consideration/pursuits and was streamlined to track and review these opportunities (Attachment 1). Grants/loans with close deadlines will be reviewed and a Go/No-Go Assessment will be made. Other grant opportunities flagged for follow up will be tracked in future FRRs. Opportunities that CCWD is not interested in tracking further, the opportunity was removed and noted that CCWD has no further interest.

The initial FRR provided the data in a summary table with a narrative for a quick look at upcoming potential opportunities. The consultant also provided past funding opportunities for CCWD that may have possible future funding cycles. As the consultant tracks opportunities, as new information is released and a funding opportunity cycle has been announced, that past opportunity will be presented to CCWD as a "new" opportunity.

In addition, a grant opportunity reporting schedule was established at the review meeting. The next FRR will be provided mid-July 2024. If a new funding opportunity with a possible funding potential for a CCWD project is identified prior to the next report and has a timely due date, the consultant will send out a Grant/Funding Alert by email to provide the details of that opportunity. Consideration for that specific opportunity will be given promptly and a decision whether to conduct a Go/No-Go Assessment.

The funding opportunities highlighted at the initial review meeting are to be given further consideration. The consultant will generate a Go/No-Go Assessment tailored to each specific funding opportunity. A decision to apply for funding will require both a thorough understanding of the project and analysis of the funding opportunity to identify project eligibility, competitiveness, timing, funding amount, and other considerations before deciding to apply. The Go/No-Go Assessment will utilize a pre-application questionnaire as a guide in consideration of CCWD objectives and priorities, eligibility, competitiveness, funding amount per award, funding schedule compared to project timing, application content, etc. to decide whether to pursue the funding opportunity. A CCWD team will be established for the purpose of deciding whether to pursue grants/loans. It will include the General Manager, Director of Administrative Services, Director of Operations, and Engineering staff.

FINANCIAL CONSIDERATIONS

No further financial data to report.

Attachments:
1) May 2024 Initial Funding Research Report Condensed Summary of Opportunities

CALAVERAS COUNTY WATER DISTRICT

MAY 2024 INITIAL FUNDING RESEARCH REPORT
CONDENSED SUMMARY OF OPPORTUNITIES

The May 2024 Initial Funding Research Report focus is on funding research for priority water and wastewater projects identified by Calaveras County Water District (CCWD).

The **Funding Opportunities Condensed Summary Table** provides a quick summary of near-term and continuous submission opportunities for consideration that have a higher potential as a match for CCWD priority projects. The Initial funding Research Report includes additional opportunities and funding detail.

The Summary Table is organized first by 1) Current due dates that are matched with a CCWD project, and then by 2) Continuous submission that are matched with a CCWD project.

CCWD Priority Improvement Projects Condensed Summary of Funding Opportunities with Upcoming and Continuous Deadlines					
Funding Source and Type	**Agency and Program**	**Funding and Cost Share**	**Due**	**CCWD Project Name**	**Comments**
Funding Opportunities with Upcoming Due Dates					
Federal Grant	U.S. Bureau of Reclamation WaterSMART Grants - Environmental Water Resources Projects (EWRP)	Total Funding: Estimated (last cycle) $80 million Awards: Up to $3 million Cost Share: 25% - 50%	Released: April 18, 2024 Applications Due: June 18, 2024	• White Pine Reservoir Dredging Project (if can be broken into phases)	Need to discuss eligibility and competitiveness. Total project costs must be <$6 million.
Federal Grant	U.S. Environmental Protection Agency - 2024 Clean Heavy-Duty Vehicles (CHDV) Grant Program	Total Funding: $932 million Cost Share: Based on the vehicle and fuel type of the replacement vehicle.	Released: April 24, 2024 Questions: By July 8, 2024 Applications Due: July 25, 2024	• Electric Vehicles and Charging Stations	For Class 6 and Class 7 school buses, Refuse Haulers/Dump Trucks, Class 6/7 Transit Buses, Delivery Trucks, Utility Trucks, Bucket Trucks, Other Box Trucks.
Federal Grant	US Bureau of Reclamation WaterSMART Grants - Water and Energy Efficiency Grants (WEEG) for Fiscal Year 2024 and Fiscal Year 2025	Estimated Total Program Funding: TBD Funding Group I: $500,000 Funding Group II: Up to $2,000,000 Funding Group III: $5,000,000 Cost Share: 50%	Opened: November 14, 2023 Applications Due: October 30, 2024	• Water System Monitoring - Flow Meters and Pressure Systems, • In-Pipe Hydroelectric Projects	Need to discuss eligibility and competitiveness.

CCWD Priority Improvement Projects Condensed Summary of Funding Opportunities with Upcoming and Continuous Deadlines					
Funding Source and Type	**Agency and Program**	**Funding and Cost Share**	**Due**	**CCWD Project Name**	**Comments**
Funding Opportunities with Continuous Due Dates					
State Loan	CA Infrastructure and Economic Development Bank (IBank) – Infrastructure State Revolving Fund (ISRF)	Total Funding: $100 million Loans: $1 million to $65 million No principal forgiveness Cost Share: 0%	Continuous	All infrastructure related CCWD Priority Projects	Wide range of eligible project types; large or combined projects.
State Grants and Loans	California State Water Resources Control Board – Clean Water Revolving Fund (CWSRF) Program: Wastewater Treatment Projects and Expanded Use	FY2024 $3.00 billion FY2025 $3.25 billion FY2026 $3.25 billion No maximum but depends on available funding and ability to repay Loans and loan forgiveness for some stormwater projects Cost Share: 50% by applicant or through repayable CWSRF financing, or other repayable financing; reduced for DACs	Continuous; due by December 31 to be considered for next year	• Copper Cove WWTP Tertiary Improvements and Pond 6 Dam Raise • Six Mile Lift Station/Force Main • La Contenta WWTP • La Contenta Planning Study, Sewer System I/I Mitigation	Lengthy process. Can submit portions of application and then update. Contact Division early to coordinate financing schedule.
State Grants and Loans	California State Water Resources Control Board - Drinking Water State Revolving Fund (DWSRF)	State is considering a $50 million cap on loans; cap on principal forgiveness varies Principal Forgiveness: prioritized for the most serious health risks for DACs/SDACs in certain categories Cost Share: 20% repayable DWSRF funds or other non-SWRCB sources; waived for small DACs/SDACs	Continuous; due by December 31 to be considered for next year	• West Point Dam Raise • Ebbetts Pass Hunters Raw Water Intake Pumps • Sheep Ranch Water Supply • Groundwater Recharge - Burson/Wallace • Jenny Lind Infiltration Gallery Relocation • Timber Trails Redwood Tank • Bulk Water Fill Stations • White Pine Reservoir Dredging	Lengthy process; large or combined projects. Includes funds for emerging contaminants including PFAS and disinfectant byproducts.

CCWD Priority Improvement Projects Condensed Summary of Funding Opportunities with Upcoming and Continuous Deadlines					
Funding Source and Type	**Agency and Program**	**Funding and Cost Share**	**Due**	**CCWD Project Name**	**Comments**
State Grant/ Loan	California State Water Resources Control Board - Small Community Water/ Wastewater (SCWW) Funding	Total Funding: $110 million Grants, low interest loans and principal forgiveness Cost Share: 0%	Continuous	• Sheep Ranch Water Supply Project • White Pine Reservoir Dredging Project	Applicants must serve small communities (<20,000) qualifying as a DAC or SDAC.
Federal Grant	U.S. Environmental Protection Agency - FEMA Hazard Mitigation Grant Program (HMGP)	Funding: $89 million; based on total or aggregate cost of disaster assistance Cost Share: 25%	Continuous; Apply within 12 months of disaster declaration	• Sheep Ranch Water Supply Project • Timber Trails Redwood Tank • Sewer System I/I Mitigation Project	Lengthy process.
Federal Loan	U.S. Environmental Protection Agency - Water Infrastructure Finance and Innovation Act (WIFIA) Loan Program	Total Funding: $15 billion Loans: Large Communities - $20 million minimum project size Small Communities (<25,000 population) - $5 million minimum project size Cost Share: 51%	Continuous	All infrastructure related CCWD Priority Projects	Significant loan fees; involved application process; applicable for large or bundled projects.

Agenda Item

DATE: June 4, 2024

TO: Michael Minkler, General Manager

FROM: Kevin Williams, Senior Civil Engineer
Kelly Gerkensmeyer, External Affairs Manager

RE: Construction Project Lookback

SUMMARY

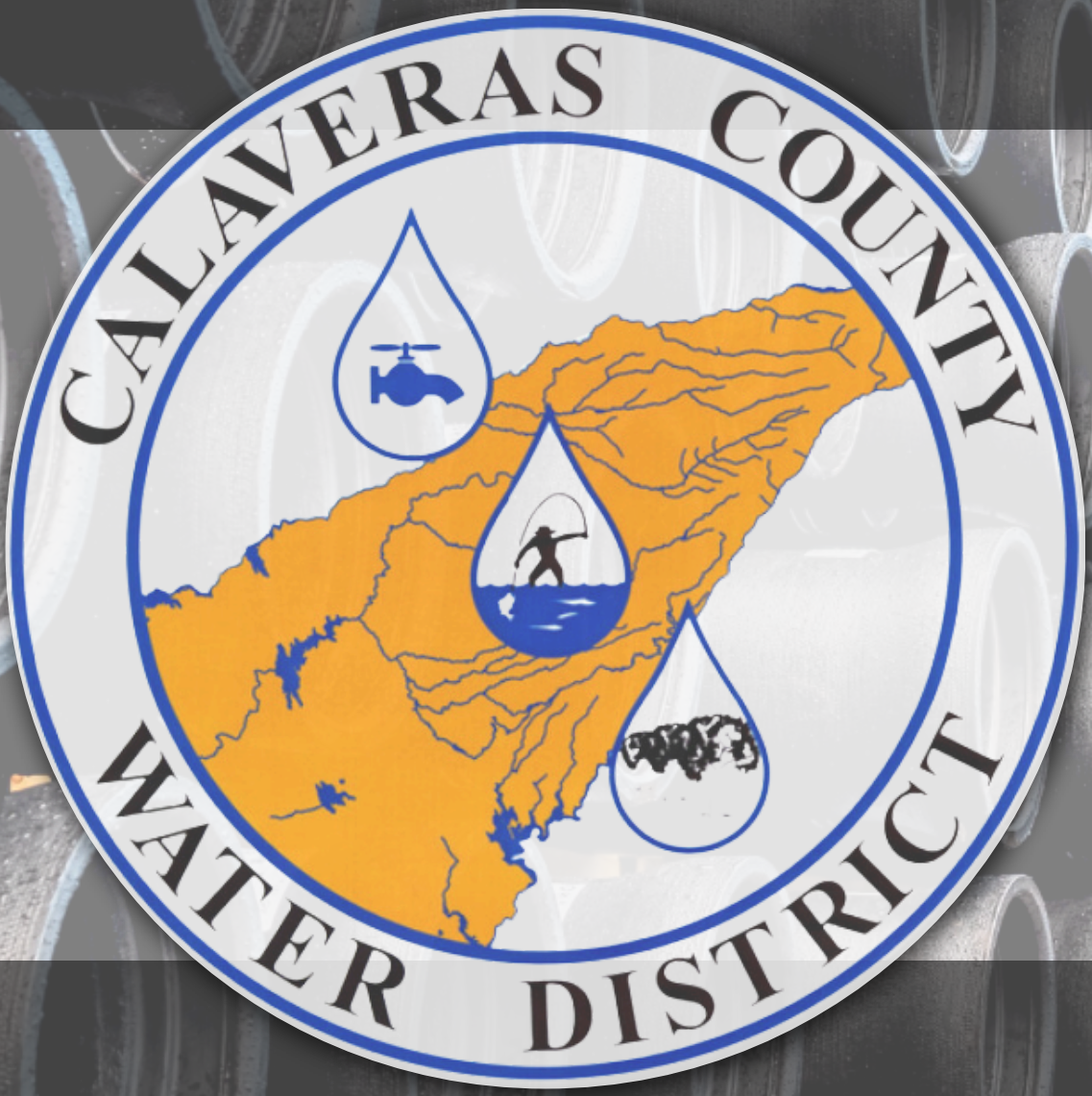
The District has made substantial investments in the Water and Wastewater Infrastructure over the last 10-15 years. Through dedication of Board and hard work by Staff, these improvements have increased the reliability and safety of both the drinking water system and wastewater conveyance/treatment.

As part of this Presentation, Staff has provided a graphical representation of the increase in investments in Construction at the District. This graph shows a steady increase in the investment in Construction Projects and an increase in the percentage of the Budget used for Construction. Staff has also highlighted some of the most impressive Projects complete by the District.

The work is not done, but this report is intended to explain how the investment made by the Board and our ratepayers made a real difference. Stong financial support of the Captial Improvement Program is critical to ensure that the investments made are sustained long into the future.

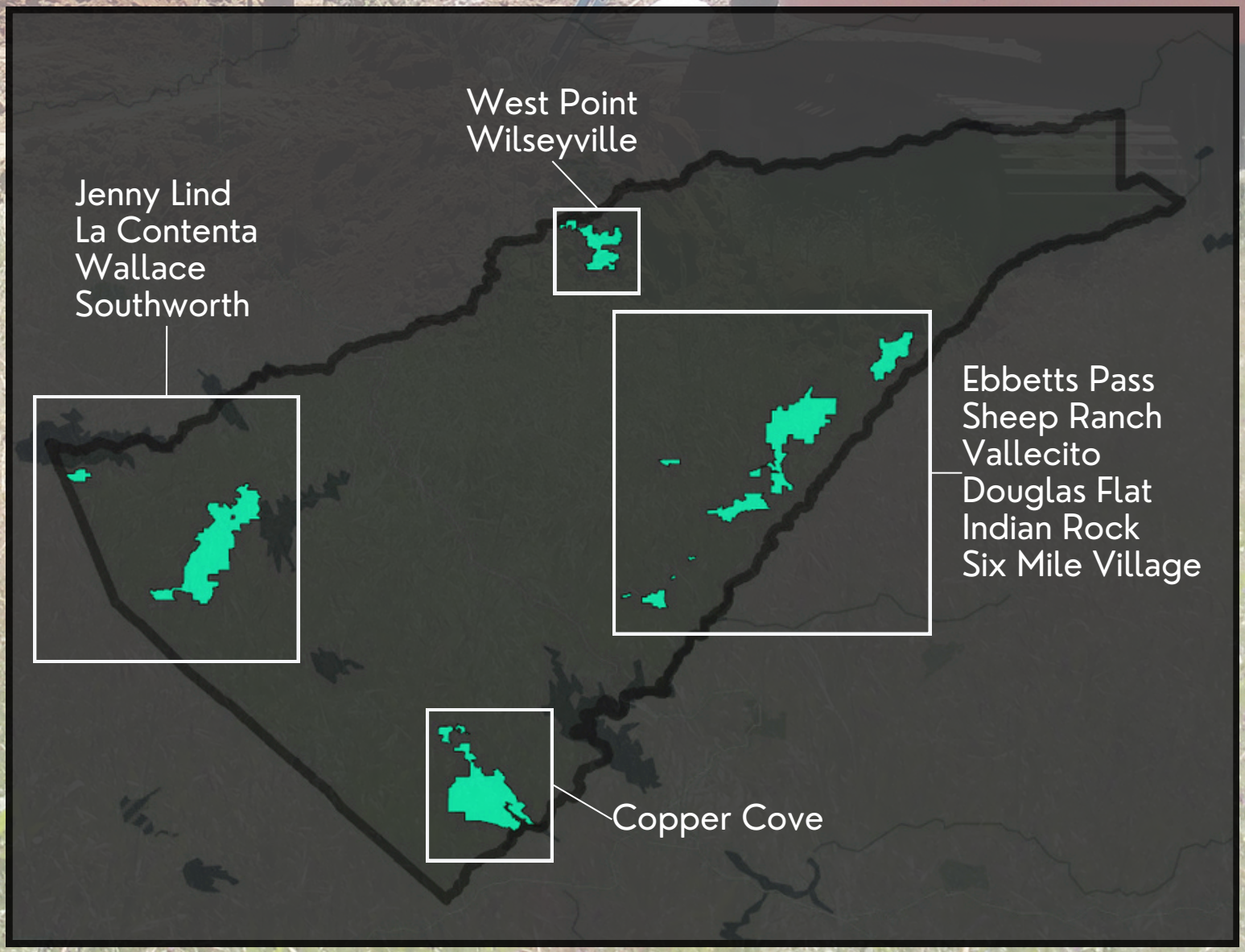
Attachments:
1) CCWD Construction Lookback Report

CONSTRUCTION

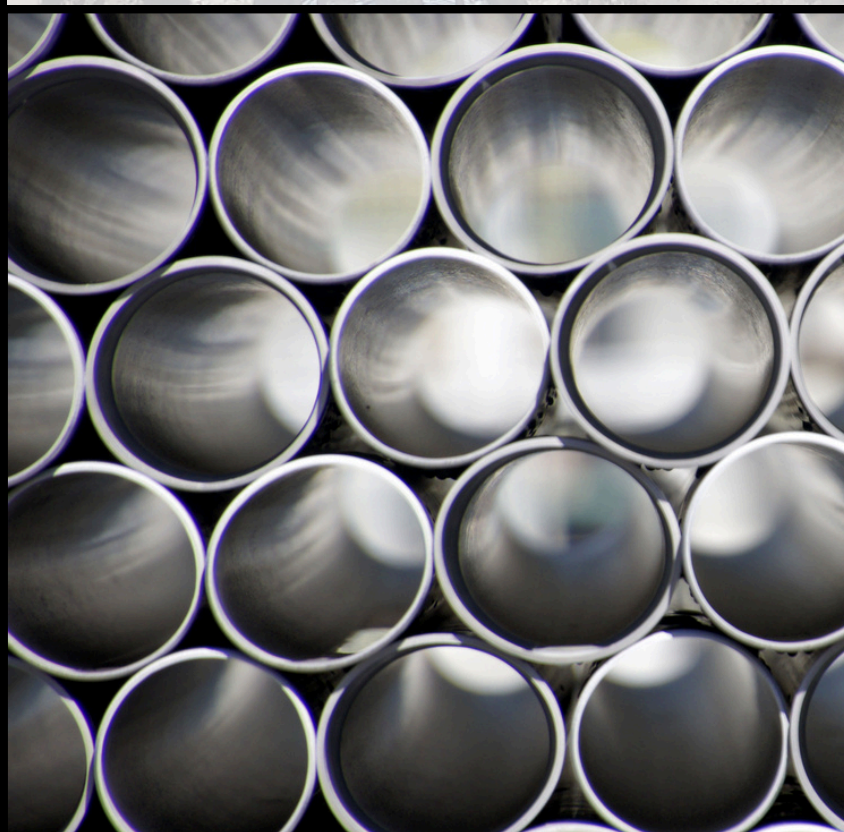


LOOKBACK

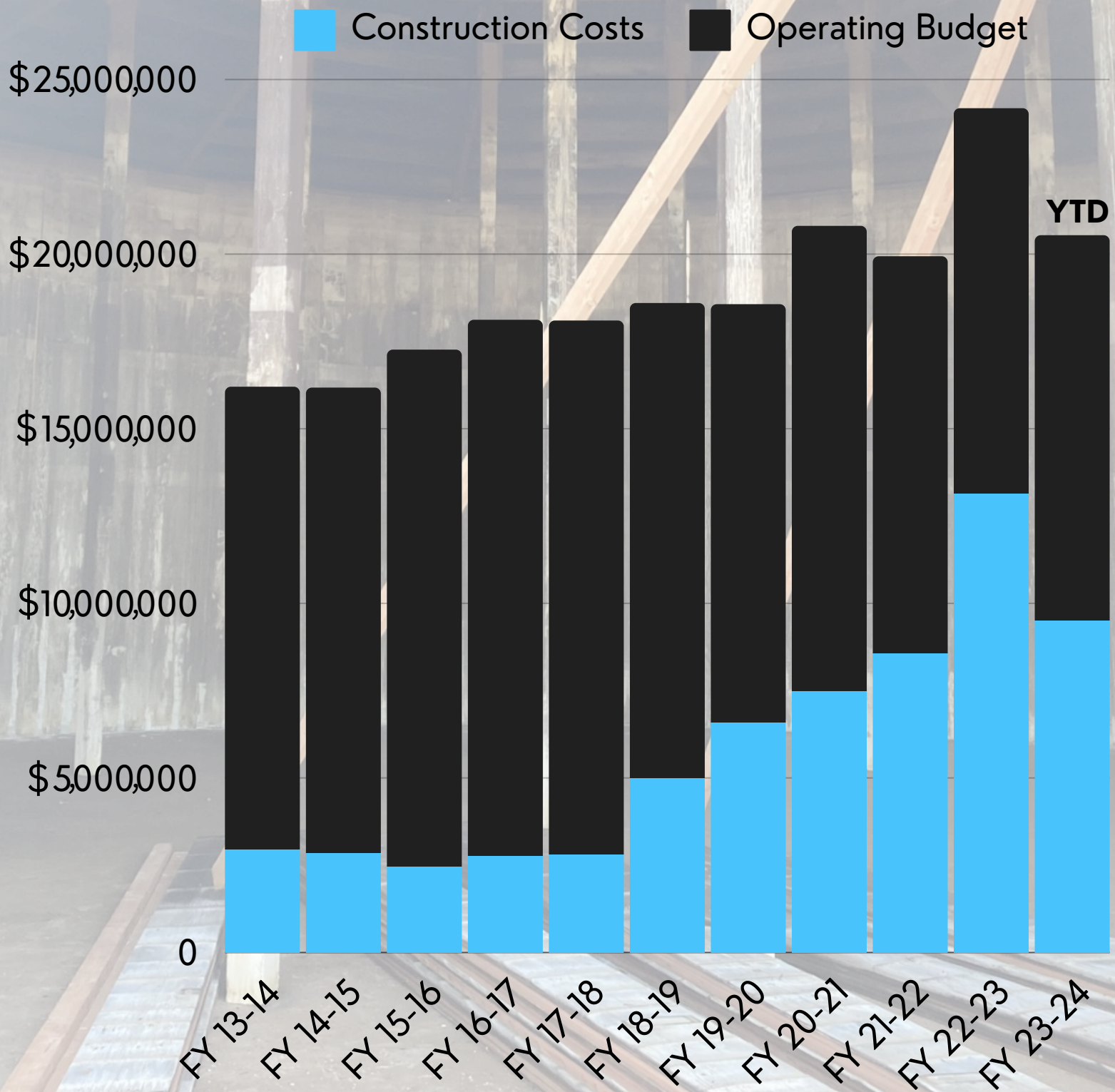
CCWD Service Areas



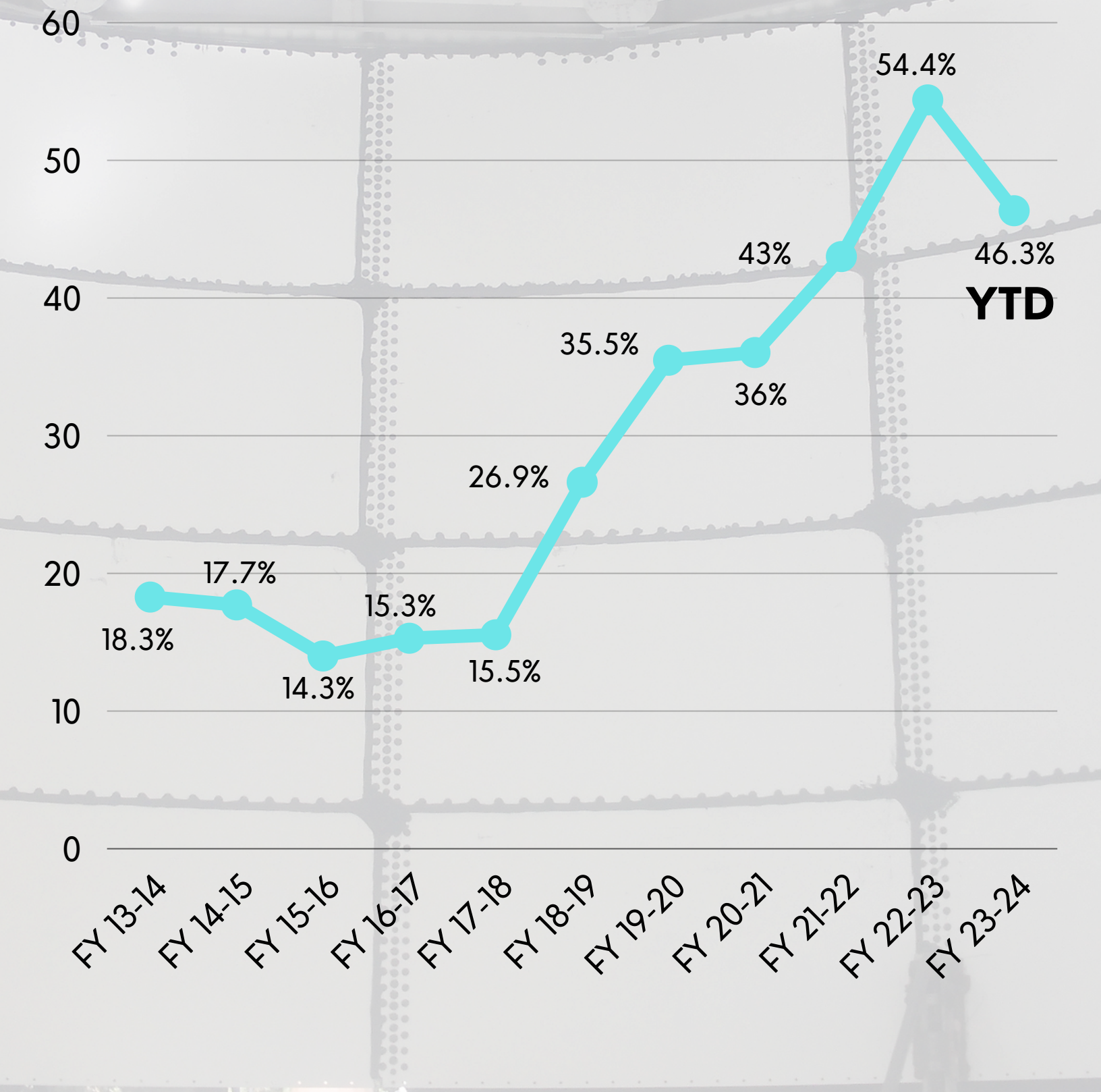
Take a look back over the years of the Calaveras County Water Districts Capital Improvement Program and Construction Projects. Through meticulous planning, strong financial support, and innovative strategies, this program ensures the reliable delivery of safe drinking water and efficient wastewater treatment.

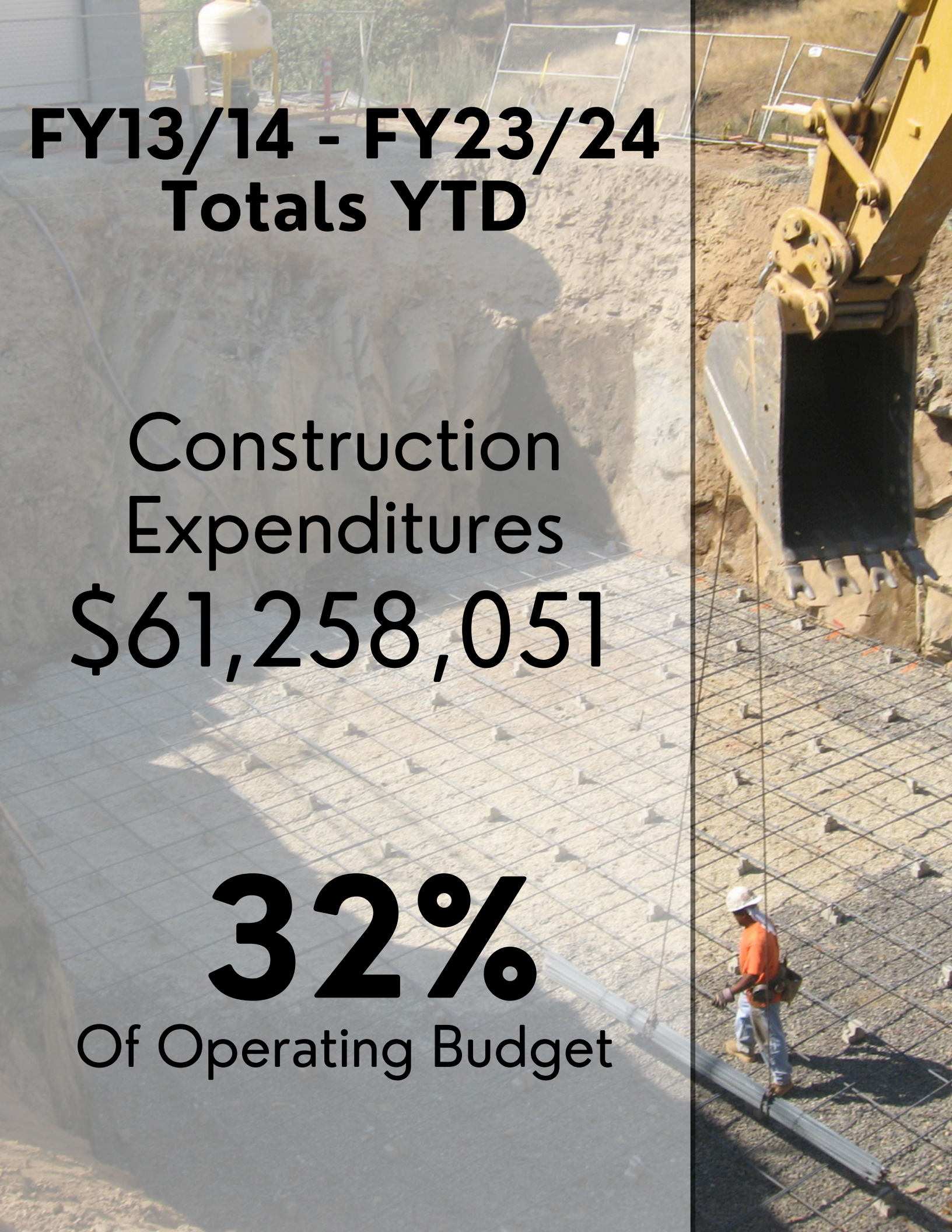


FY13/14 - FY23/24 Construction Costs vs. Operating Budget



FY13/14 - FY23/24 Construction Percentage of Budget





FY13/14 - FY23/24 Totals YTD

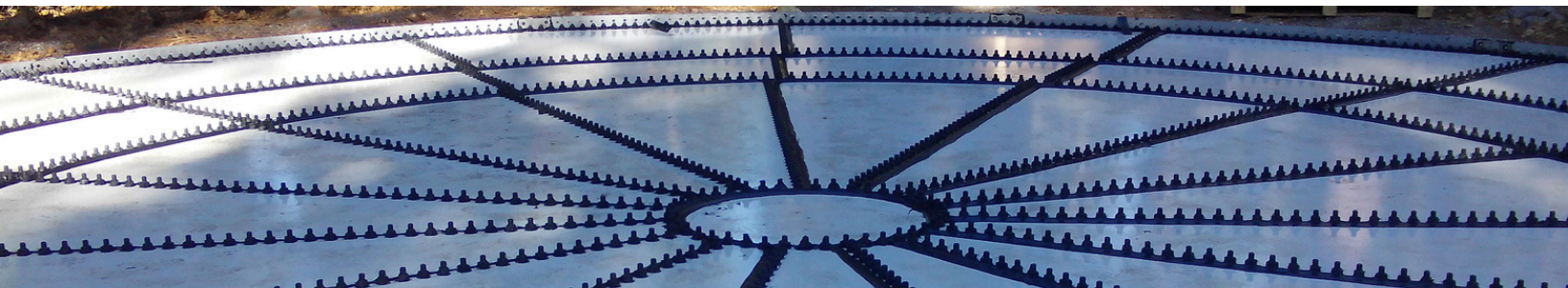
Construction Expenditures

$61,258,051

32%

Of Operating Budget

This report offers a brief chronological exploration of the infrastructure improvements to our water and wastewater systems. Looking back, we observe the formidable commitment and labor invested in infrastructure projects by the Calaveras County Water District. These initiatives serve as tangible evidence of the strategic foresight and unwavering determination that underpinned the establishment of the reliable systems we now benefit from.



Water Projects

2010 - Current

West Point

West Point Clearwell
WP Downtown Distribution System
Master Plan Updates - WP
WP Water System Prop 84 Rehab
WP Water System USDA Rehab
WP Pipeline Leak Repair
West Point Backup Water Filter
WP SCADA Improvements
West Point Water Supply Drought Resiliency

Jenny Lind

Master Plan Update - Jenny Lind
JL WTP Flood Protection
Clearwell #2 / Repair & Paint
Wallace Tanks / Repair & Paint
Jenny Lind Tank A-B Transmission Line
Jenny Lind Pre-Treatment
Vista Del Lago/SR 26 Pipe Relocation
JL Pressure Regulating Station
Wallace SCADA System Improvements
JL Filters 3/4/5 Rehab/Coating
JL Filter 1&2 Rehab

Copper Cove

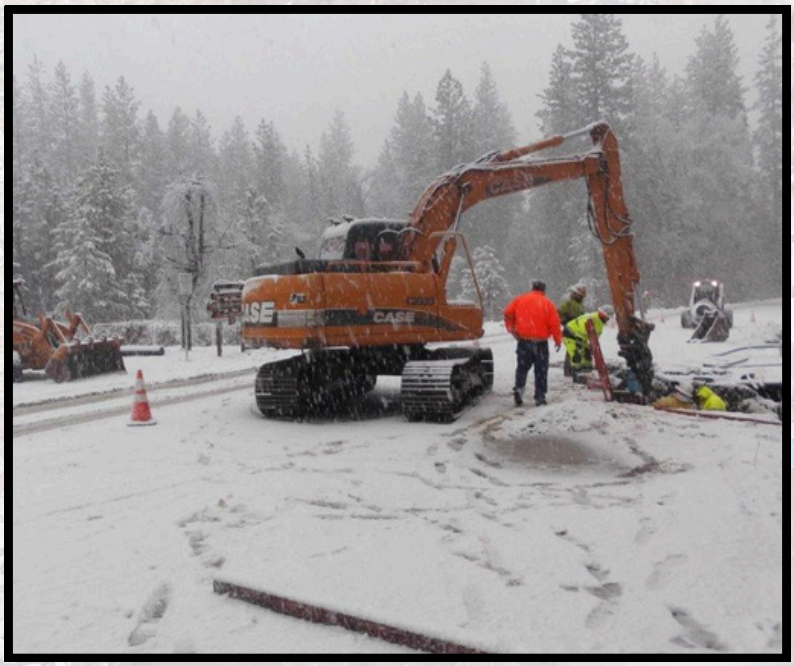
Lake Tulloch Raw Water Pump Renovation
Bow Drive Waterline Replacement
CC B-Tank Pump Station Design
CC Tank B Rehab
Master Plans Update - Copper Cove
Tank Management-CC Clearwell/Tank B
Lake Tulloch Drought Emergency
Lake Tulloch Submerged Water Line Cross
Reeds Turnpike Pump Station Replacement
Copper Cove Tank B Pump Station Renovation
CC SCADA Improvements
CC Zone B-C Trans Pipeline & Pump Station
CC O'Byrne's Water Line Extension
CC Ozone Unit Replacement

Water Projects

2010 - Current

Ebbetts Pass

EP/Reach 1 Transmission Main Replacement
Master Plans Update - Ebbetts Pass
EP Big Trees Redwood Tank Replacement
EP Reach 3A Trans Pipe
Larkspur Tank / Repair & Paint
EP Techite Water Line Replacement
EP Reach 1 Water Line Replacement
Fly In Acres Assessment District Construction
Blagen Mill Pond Restoration
EP Redwood Tanks Replacement
EP WTP Filter Rehab/Painting
Meadowmont P/S Improvement
Hunter's Raw Water Pumps Renovation
Big Trees Pump Stations 1, 4 & 5 Replacement
White Pines Tule Removal/Spillway
White Pines Dam/Blanket Drain Rehab
Avery Pumps/Motor Control Soft Starts
Sheep Ranch Water Plant Replacement
Sheep Ranch Distribution System Replacement



Other Projects

AMR/AMI Meter Program
Slurry Line Improvements
West County GW Monitoring
Pipeline Replacement Program
SNC Regional Hwy 4 Study
CCWD Operations Headquarters
Capital R&R-General
Wilson Dam
District Corp Yard
Turbidimeter/Analyzer Replacement

Sewer Projects

2010 - Current

Vallecito

Vallecito WWTP Expansion
Vallecito WWTP Permit and Monitoring
Vallecito WWTP Monitoring Well Installation
Vallecito WWTP Storage Expansion
Vallecito I&I/Equalization Improvements
Indian Rock East Sand Filter Rehab
Vallecito/DF Headworks Screen
Vallecito WWTP System Improvements

Arnold

WWTP Improvements
Secondary Clarifier
Leach Field Improvements

Forest Meadows

FM WWTP Phase 1 Improvements
FM UV Disinfection System Replacement

West Point / Wilseyville

WP/Wilseyville Sewer Service Area Plan Study
West Point/Wilseyville Consolidation

La Contenta / Jenny Lind / Wallace

Wallace Improvement Projects
LC WWTP Discharge Permit
Jenny Lind Capacity Plan Update
La Contenta Wastewater Master Plan
LC Huckleberry LS (Pre-design)
Wallace Treatment Plant Renovations
Huckleberry L/S Rehab/Expansion
LC Biolac, Clarifier & UV Improvements
La Contenta Spray Fields
La Contenta Sand Filter Rehab
Jenny Lind Force Main

Copper Cove

CC WWTP Expansion to 0.5mgd, Phase 1
CCS Pond 6 Expansion
CC Lift Station #22
CC WW Reclaim Permit Project
Poker Flat L/S 8, 12 & 13 Force Main
CC L/S 22 Replacement
Poker Flat L/S 9, 10 & 11 Replacement
CC L/S 15 & 18-Electrical Upgrades
Copper Cove Pond 6
Copper Cove Wastewater Master Plan
Eagle Pt LS CC LS #11 Replace
Millie Ct LS CC LS #9 Replace
Poker Flat Rd LS CC LS #10 Replace
CC Secondary Filter
CC Tertiary/UV Improvements

Other Projects

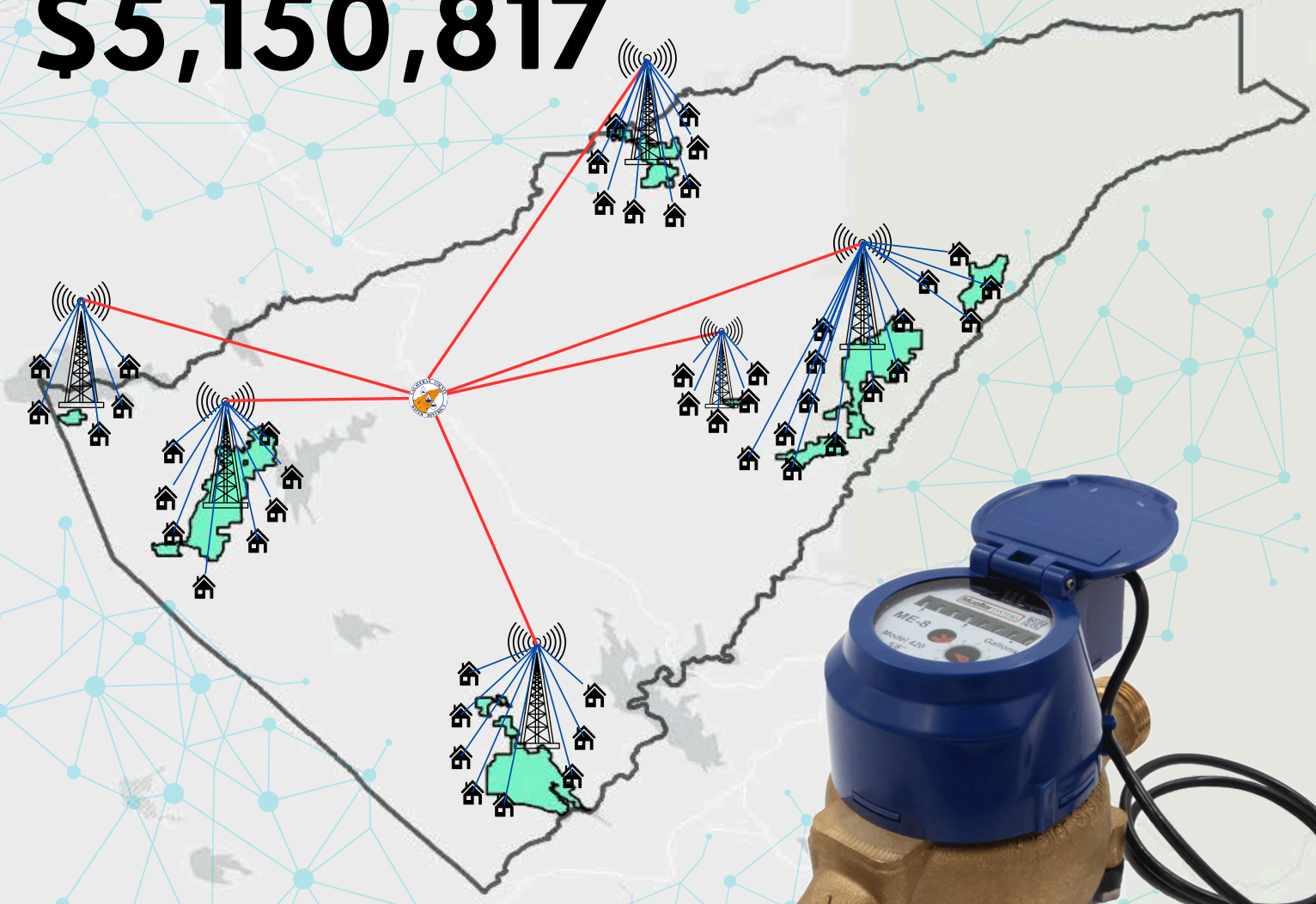
Pipeline Replacement Program
Capital R&R-General
Lift Station Renovations
Southworth Collection System/I&I Mitigation
Capital Non-CIP Projects
Tertiary Filter Rehab
Sludge Tank/Belt Press Improvements
Collection System Rehab and I&I Mitigation

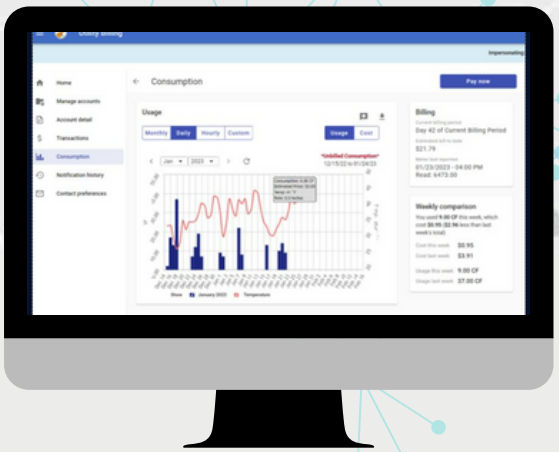
AMI

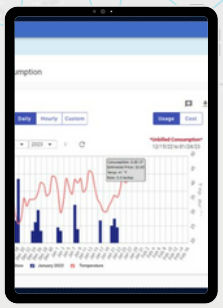
Advanced Metering Infrastructure

Replacement of 13,500+ revenue water meters, including network for remote reading meters and integration with customer billing system.

$5,150,817





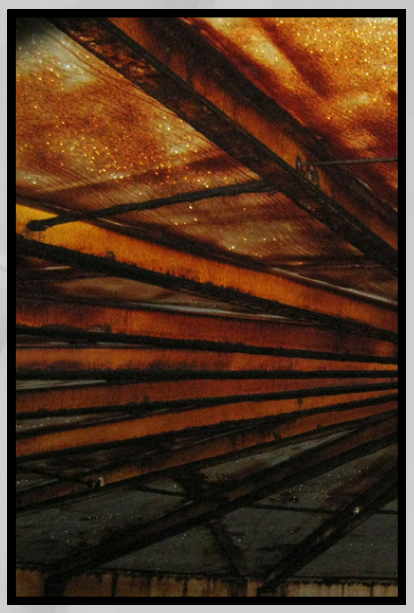


Ebbetts Pass Redwood Tank Replacement Hazard Mitigation Grant Program 2023 - **$2,176,353**

Replacement of 4 redwood tanks with new glass-lined bolted steel tanks for wildfire hazard mitigation purposes. Project.

Larkspur Tank Replacement 2023 - **$597,735**

Replaced a failing steel tank with a new larger glass-lined bolted steel tank and concrete foundation. The project also included new yard piping, altitude valves, telemetry equipment, and pressure relief valve.



Ebbetts Pass Reach 1
Highway 4
2020 - **$8,121,205**

Stretching along Highway 4, a significant overhaul took place, encompassing the replacement of 24,000 linier feet of water transmission main, along with multiple PRVs, fire hydrants, and other essential components. This endeavor was prompted by the persistent failures of the original 8" steel pipe, dating back to 1965.

Techite
Water Line Replacement
2020 - **$2,385,573**

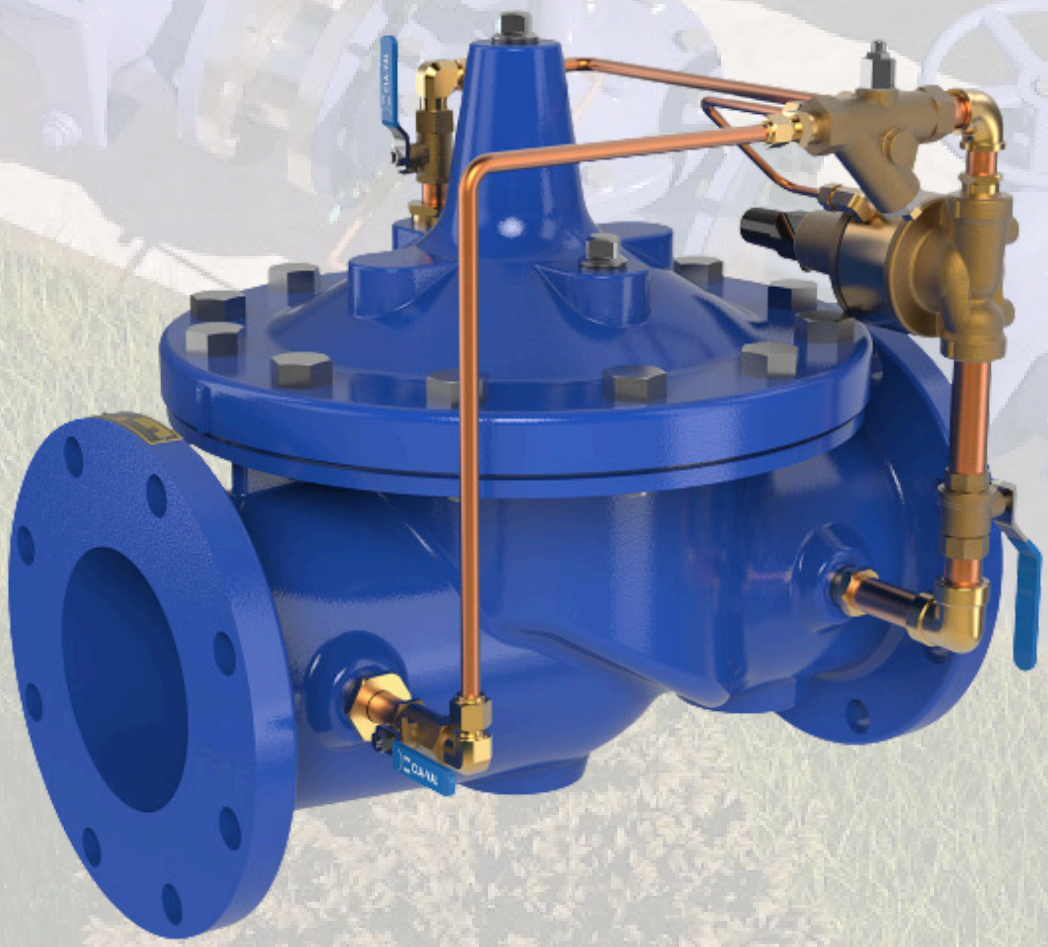
We replaced the 14-inch fiberglass pipe from the 1970's with a new 10-inch ductile iron pipe. The replacement spanned 6,900 linear feet and included the installation of 7 fire hydrants, 1 pressure reducing valve (PRV), and 80 service lines.

Jenny Lind Pre-Treatment Actiflow System 2019 - **$5,104,644**

As a result of the Butte Fire in the watershed area of New Hogan Lake, water quality for Jenny Lind Water Plant was significantly compromised. To meet water quality standards, the District purchased a package pretreatment system and installed it at the water treatment facility. Significant site improvements were made including demolition of existing metal building, new drainage improvements, a new retaining wall, paving, new process piping, new slab foundation, chemical systems, and electrical service upgrades.

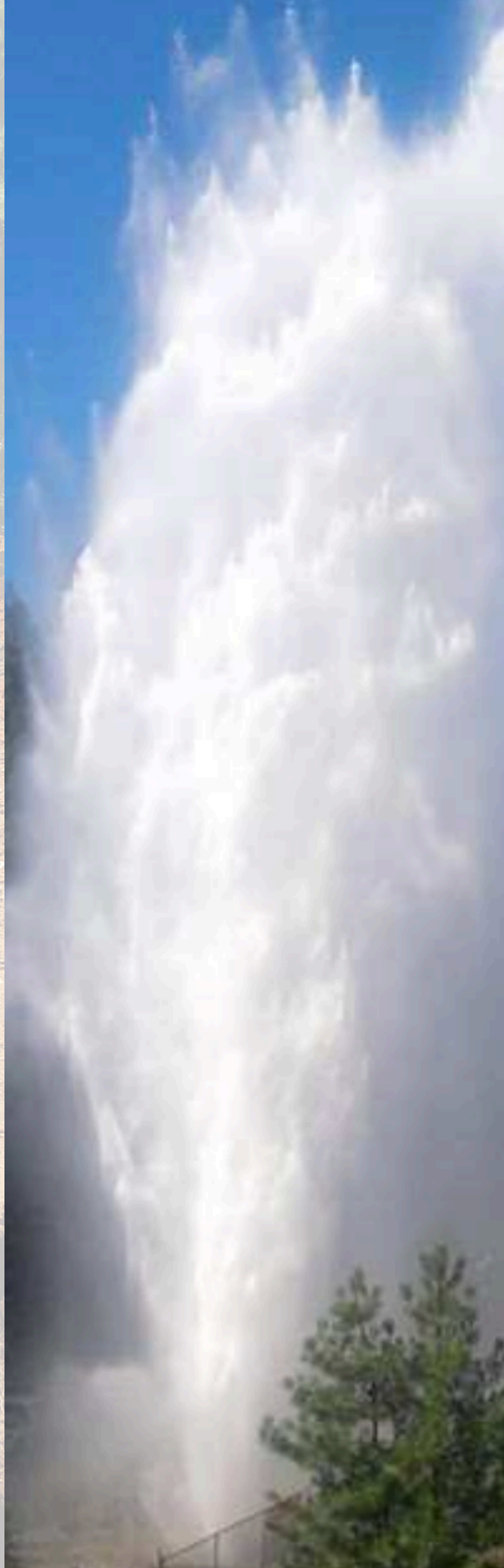
Jenny Lind Pressure Regulating System 2018 - **$316,944**

Installed three new pressure regulating stations to enhance service pressures for customers in the southern region of Rancho Calaveras.



Reach 3A Water Pipeline Replacement 2017 - **$4,583,600**

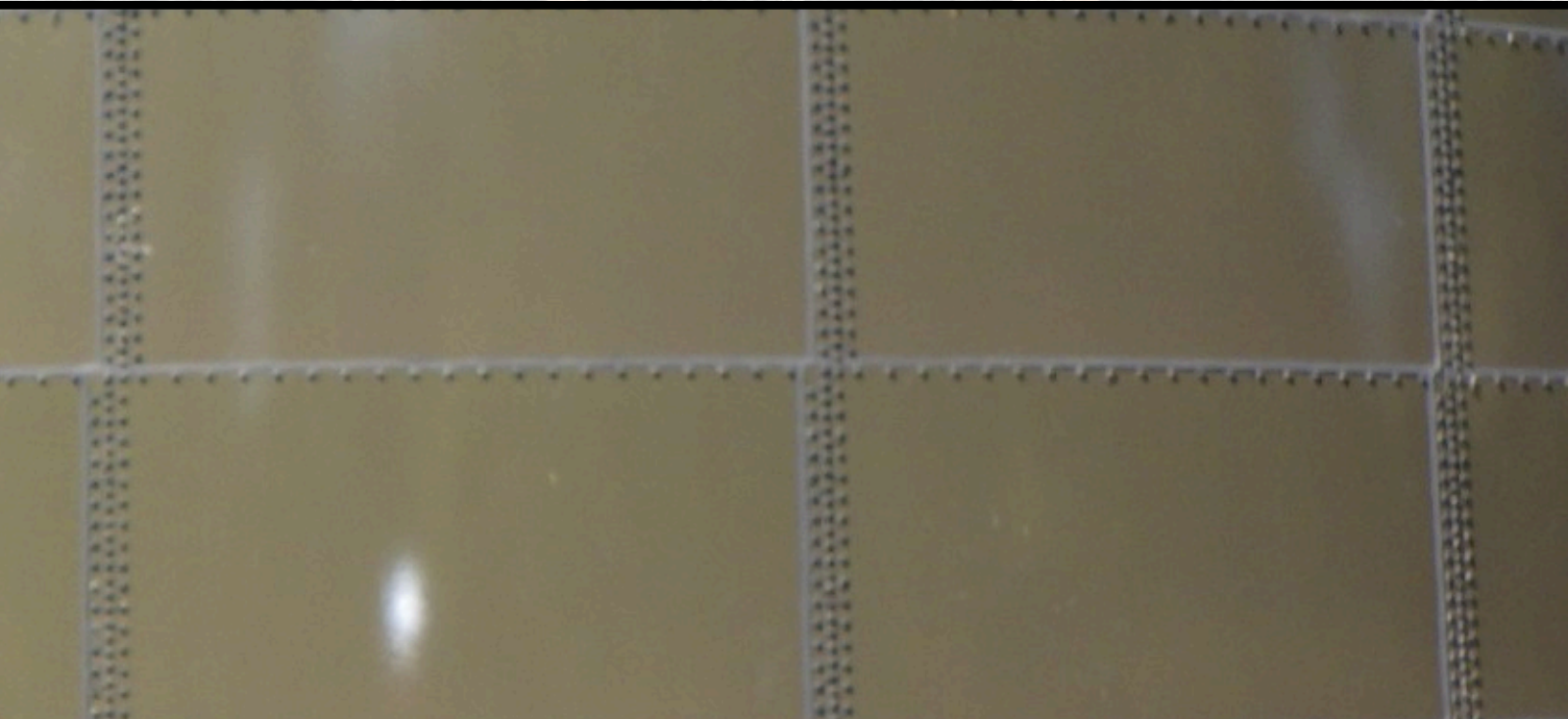
We replaced 19,500 linear feet of transmission pipeline and updated 16 high-pressure reducing stations. The original steel pipeline, installed in 1965, was in poor condition and had experienced multiple failures.



Redwood Tank Replacement

2016 - **$1,508,389**

Two glass-fused, bolted steel tanks were constructed to replace existing redwood tanks in Big Trees Village. Additionally, 900 linear feet of 8" water main and a pressure reducing valve (PRV) were installed.



Copper Cove Lift Station #22 Replacement
2016 - **$1,516,935**

Completed a comprehensive upgrade of Lift Station 22, also known as the Upper Cross Country Lift Station. This project included the installation of new pumps, a wet well, advanced electrical and instrumentation systems, new buildings, a backup power generator, and updated electrical service. These improvements addressed aging infrastructure and significantly enhanced capacity.

Lake Tulloch Drought Emergency 2015 - **$742,464**

During the 2014/2015 drought, Tri-dam aimed to utilize storage, which compelled the District to lower its first stage raw water intake pumps. This included extending the raw water intake pipeline and relocating intake screens and pump skids. Underwater work was carried out by a specialized dive team.

Lake Tulloch Raw Water Pump Renovation 2019 - **$102,292**

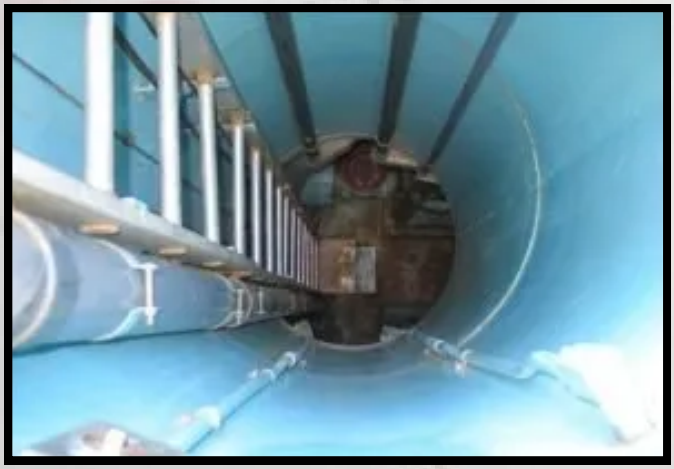
Fly-In Acres Water System

2015 - **$2,500,232**

Established an assessment district to completely overhaul the water system, including the construction of all services, installation of fire hydrants, pressure reducing valves, water mains, and other necessary appurtenances.

Poker Flat
Lift Station 9,10 & 11 Replacement
2014 - **$493,406**

Improved the aging lift stations, electrical equipment with new electrical controls, pumps. Steel cans were replaced with fiberglass tanks.



Jenny Lind Flood Protection

2013 - **$592,654**

Constructed a new building elevated above the floodplain and installed new motor controls for the raw water intake pumps.

Southworth Collection System I&I Mitigation

Septic Tank Effluent Pump System upgrades, contractor rehabilitated tanks, added and sealed new risers, adjusted grade elevations to mitigate infiltration inflow.

Vallecito Recycled Water Project

The project was supported by funding from IRWMP/TSTAN. In anticipation of future phases, an additional pump station was incorporated into the Wastewater Treatment Plant infrastructure, enhancing its capacity to distribute reclaimed water to offsite destinations.

Hunters Water Treatment Plant Surge Tank 2009

Copper Cove
Lower Cross Country
Lift Station
2008

Investing in our water and wastewater infrastructure is not just about pipes and treatment plants; it's an investment in the health, prosperity, and sustainability of our community. A sound Capital Improvement Program ensures that we have the foundation to thrive, protecting our most precious resource and securing a brighter future for all.


CAT


CAT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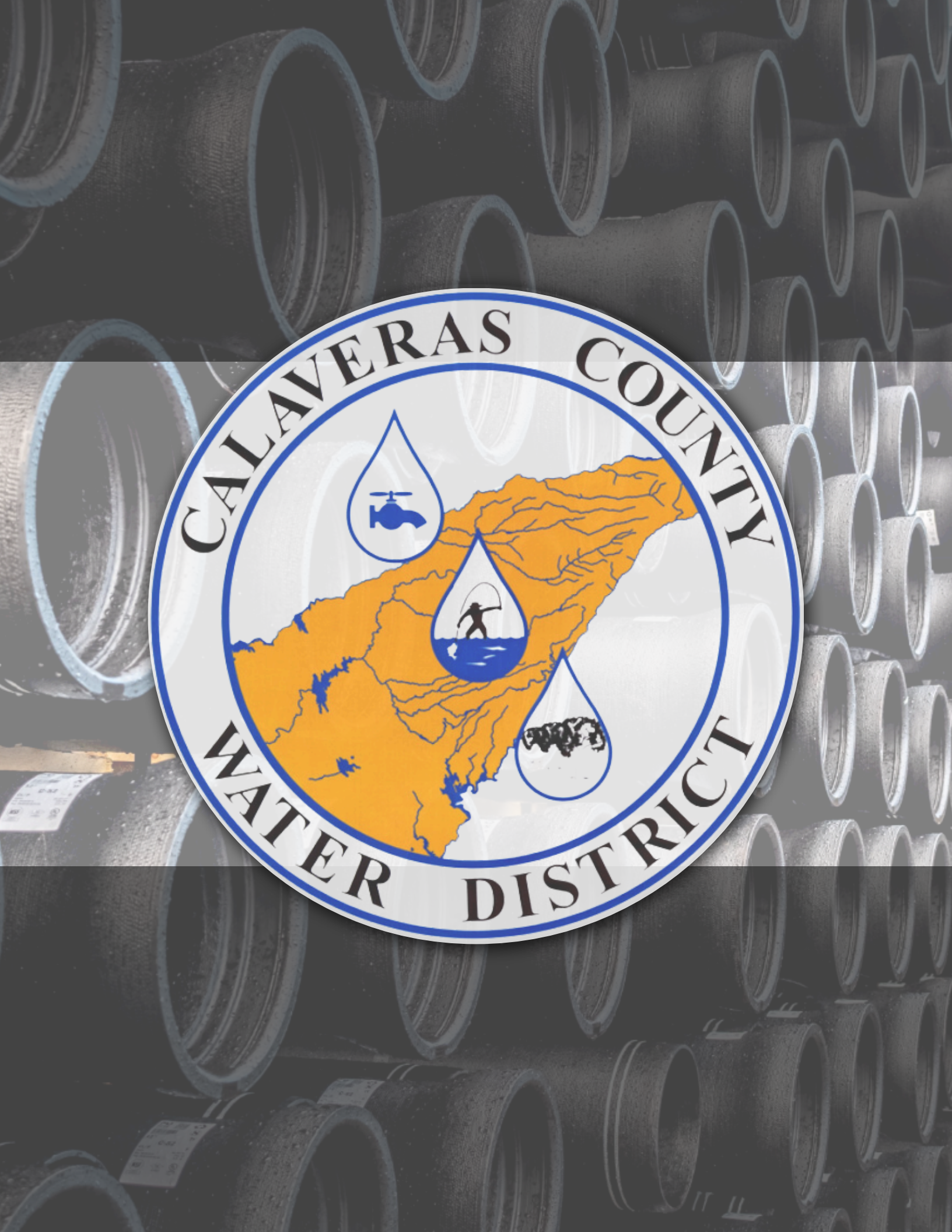

CALAVERAS COUNTY
WATER DISTRICT

Agenda Item

DATE: June 4, 2024

TO: Michael Minkler, General Manager

FROM: Kevin Williams, Senior Civil Engineer

SUBJECT: Discussion Regarding Awarding of Engineering and Design Contract for the O'Byrnes Ferry Pipeline (Intertie for Submerged Waterline Crossing), CIP#11104

SUMMARY:

Within the Copper Cove service area, B4 Zone (Lake Tulloch Estates, Connor Shores, Calypso Beach Villas developments, etc.), contains approximately 750 domestic water customers, located between Lake Tulloch and O'Byrne's Ferry Road. Currently water is provided from B Tank by a 10-inch diameter distribution water main located at the bottom of Lake Tulloch. The District has identified the need for an intertie should the underwater distribution main fail.

The O'Byrnes Ferry Pipeline Extension is the proposed intertie, will be a 12-inch distribution main approximately 15,300 feet in length. The alignment would follow O'Bryne's Ferry Road, beginning near Copper Meadows Road and ending on Conner Estates Drive. The second intertie on Sanguinetti Drive will require an 8-inch main, approximately 1,400 feet in length. The current B4 zone would then be fed from C-Tank via Copper Cove Drive

This O'Brynes Ferry Pipeline Extension would be considered an emergency intertie until the Clearwell to C-Tank Transmission Main currently in design is completed. Once both Projects are complete the underwater crossing will no longer be needed and can be removed from service or maintained as redundant emergency line. This Proposed Intertie could also provide water services where they are currently not available along O'Byrnes Ferry Road.

PBI Engineering Consulting provided a phased design for Copperopolis Water Systems, the initial design effort was to create pre-design report for this Proposed Intertie Project. Staff is satisfied with the Pre-Design report provided by PBI and would like to contract with PBI to complete the Engineering and Design. We have included copies of the Pre-Design Report along with the Proposal for Design and Engineering services to complete the Design.

Staff is requesting Engineering Committee direction on taking the PBI Budget Amendment proposal to the Full Board of Directors for Approval.

FINANCIAL CONSIDERATIONS:

The Proposed Budget for FY 2024-25 has adequate budget, estimated cost from PBI to complete design and Environmental is $366,058.

Attachments:
1) PBI – Request for Budget Amendment
2) Pre-Design Report. (Phase 3 Lake Tulloch Interie)

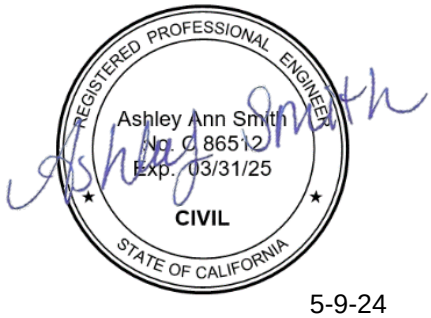
Technical Memorandum

Copper Cove Water System Improvements Project

Phase 3 Lake Tulloch Intertie

Calaveras County Water District

May 6, 2024



Prepared by: Natali van Leeuwen, E.I.T., Greg Garrison, E.I.T.

Reviewed by: Ashley Smith, P.E., Karl Brustad, P.E. 5-9-24

Introduction

Background

The Calaveras County Water District (District) has retained Peterson Brustad Inc. (PBI) to provide design services for eight different capital improvements within the Copper Cove water system (Copper Cove). The Lake Tulloch intertie was identified in the 2018 Copper Cove Water System Master Plan (2018 Master Plan) as the B4 Zone backup main project. The 2018 Master Plan prepared by PBI identified several projects and repair programs in response to the current conditions of the Copper Cove water system. The projects have been broken into three phases:

- Phase 1
  - Replace the redwood tank at the B Tank Site
  - New Copper Cove Water Treatment Plant (WTP) clearwell
- Phase 2
  - Rehabilitate or replace welded steel tank at B Tank Site
  - Rehabilitate or replace existing clearwell at WTP.
  - Replace B-C Zone Booster Pump Station (BPS)
- Phase 3
  - C Tank BPS and transmission main
  - Lake Tulloch intertie
  - C Tank overflow improvements

Multiple preliminary design reports (PDRs) were developed to analyze these projects based on priority and opportunity for redundancy. The five PDRs are as follows:

- Phase 1 Tank Improvements
- Phase 2 Tank Improvements
- Phase 2/Phase 3 BPS Improvements
- Phase 3 Lake Tulloch Intertie
- Phase 3 C Tank Overflow Improvements

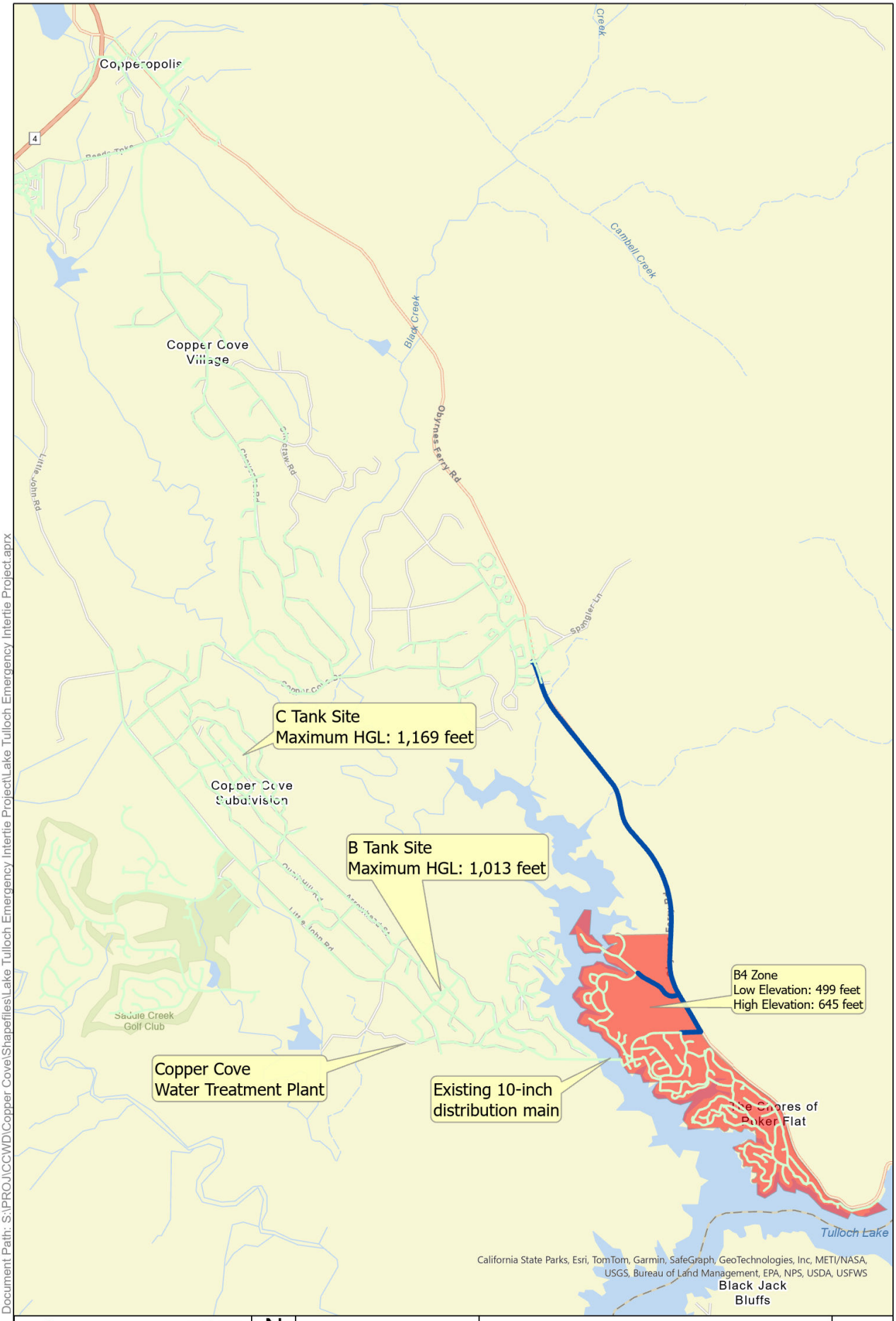
The B4 Zone of the Copper Cove water system is located on the east side of Lake Tulloch and is currently supplied by the B Zone Tanks via a single 10-inch transmission main. The Lake Tulloch intertie project includes the construction of a new transmission main to serve as the primary supply from the C Tanks to the B4 Zone.

Purpose

The purpose of this Technical Memorandum (TM) is to recommend the PRV station location, pipe size and material, and an alignment location for the new transmission main. Additionally, this TM also presents the design criteria and construction requirements which will need to be considered during the design of the project.

Problem Statement

Approximately 750 domestic water customers on the east side of Lake Tulloch are provided service via a single 10-inch distribution main that crosses underneath the bottom of Lake Tulloch. In the event this distribution main were to fail, the entire community on the east side of Lake Tulloch would be left without a water supply. The Lake Tulloch Intertie will serve as the primary water supply to these customers, replacing the current distribution main and minimizing the risk of catastrophic failure. Figure 1 depicts the B4 Zone and the existing 10-inch distribution main that passes under Lake Tulloch.



Document Path: S:\PROJ\CCWD\Copper Cove\Shapefiles\Lake Tulloch Emergency Intertie Project\Lake Tulloch Emergency Intertie Project.aprx

PBI ENGINEERING CONSULTING™
A Verdantas Company
80 Blue Ravine Rd., Suite 280
Folsom, CA 95630
Phone: (916) 608-2212

N

0 0.17 0.35 0.7 Miles

May 2024

CALAVERAS COUNTY WATER DISTRICT

Existing B4 Zone 10" Distribution Main Supply

FIGURE 1

Design Considerations

Design Criteria

The design criteria for the capacity of the proposed transmission main is to supply the B4 Zone for either peak hour demand (PHD) or the maximum day demand (MDD) plus fire flow (FF), whichever is greater. The California Fire Code (CFC), Title 24, Part 9, Appendix B: Fire Flow Requirements for Buildings lists the required gpm of fire flow for one- and two-family dwellings, and townhouses to be 1,000-gpm. The CFC, Title 24, Part 9, Appendix BB: Fire Flow Requirements for Buildings lists the required gpm of fire flow for schools and commercial buildings to be 1,500-gpm. The maximum FF demand is based on the California's standard for commercial land use. Table 1 outlines these demand capacities.

Table 1. Demand Capacities

Demand	Capacity (gallons per minute, GPM)
PHD	455 gpm
MDD	297 gpm
Residential FF	1,000 gpm
Commercial FF	1,500 gpm

The combined MDD and FF demand for the B4 Zone is approximately 1,800 gpm, which is greater than the 455 gpm for PHD. Therefore, the transmission main will be sized based on the combined MDD and FF demand.

District Standards

The District's Design and Construction Standards, October 2021 Revision (2021 Standards) have been reviewed and considered for the design of the new pipeline. The 2021 Standards are discussed briefly below and will be incorporated into the final design documents. The referenced 2021 Standards can be found in Appendix A.

- Location – Pipeline shall be located in the paved road right-of-way; pipeline centerline shall be parallel to and offset a minimum of 5 feet from the edge of pavement, or a minimum of 3 feet from lip of gutter.
- Minimum Pressure – 40 pounds per square inch (psi) during MDD
- Velocity – Minimum, 2.0 feet per second (fps); Maximum under PHD, 5.0 fps
- Fire Flow – Maximum velocity of 12 fps
- Hazen-Williams coefficient – 130 is to be used for new pipelines
- Minimum Pipe Size – 6-inch diameter
- Pipe Material – 12-inch and smaller diameter shall either be:
    - AWWA C900 Polyvinyl Chloride (PVC) Pipe Pressure Class 235 (DR 18) or Class 305 (DR 14) or
    - AWWA C150/C151 ductile iron pipe (DIP) Pipe Pressure Class 350
- Pipe Material – larger than 12-inches shall be determined by the District Engineer.

- Allowable Deflection – PVC pipe has allowable deflection (combined vertical and horizontal angles) of 5 degrees per coupling using mechanical or push-on joints; DIP allowable deflection at joints is 80 percent of the manufacturer's recommendation for push-on mechanical joints.
- Minimum Depth of Cover – 36-inches in paved and unpaved areas
- Crossing – A minimum vertical clearance of 1-foot is required for pipe crossings and culverts.
- Air Valves – 1-inch or 2-inch air vacuum valve (AVV) will be installed at all significant high points along the pipeline.
- Blowoff Valves – 6-inch blowoff valves shall be installed at all low points on dedicated transmission main.
- Pressure Reducing Stations – Pressure reducing stations shall be equipped with pressure reducing valves (PRV) sized for low and maximum flows; PRV station must be located outside the traveled way of street or roadways.
- Inline Valves – Inline valves shall be installed every 2,000 feet.
- Trench Width – Minimum trench width, outer diameter (OD) + 12 inches; Maximum trench width, OD + 18 inches

County Standards

The County of Calaveras Department of Public Works (County) General Permit Conditions and Specifications for Trench Cuts and Street Resurfacing, September 2019 Revision (2019 Specifications) have been reviewed and incorporated into the trenching and pavement repairs associated with the new transmission main. For trenches 300 feet or longer, pavement restoration is required in accordance with Table 8.1 from the 2019 Specifications as shown in Figure 2.

Table 8. 1 – Pavement Restoration Options

Street Category	Options
A	**Option 1 -** Trenching prohibited. Directional boring or jacking may be permitted. **Option 2 -** Grind and replace length of trench with 2" overlay over half road width. **Option 3 -** 1 ½" overlay over entire road surface for length of trench with shoulder backing as appropriate. **Option 4 - (Qualified Projects) -** CIP Project, eligible for in-lieu cash contribution.
B	**Option 1 -** Grind and replace length of trench with 2" overlay over half road width. **Option 2 -** Type II or Type III Microsurface across entire road width for length of trench. **Option 3 -** Other approved resurfacing method to conform to current road conditions. **Option 4 -** Directional boring or jacking may be permitted. **Option 5 - (Qualified Projects) -** CIP Project, eligible for in-lieu cash contribution.
C	**Option 1 -** Trench pavement repair (per Section 8.2) and crack seal trench. No additional pavement restoration required.

STREET CATEGORIES
A-Street newly constructed or repaved within 3 years of trench cut application date or PCI of 80 or greater.
B-Street in good or fair condition that have not been newly constructed or repaved within 3 years and PCI of less than 80 or greater than 45.
C-Street in poor condition, PCI 45 or less.

Figure 2. Table 8.1 from the 2019 Specifications

The County was contacted to determine which street category defines O'Byrnes Ferry Road. The County confirmed O'Byrnes Ferry Road was repaved in August of 2022 which increased the paving conditions index (PCI) to approximately 95. This places the roadway in street category A. The repaving requirements

for trenching in the roadway of O'Byrnes Ferry Road will fall under option 2 of street category A and states the entire width of the lane that the pipeline is constructed to be overlayed.

The County also requires that trench edges less than 3 feet from the edge of the pavement include the strip of pavement between the trench and edge of pavement in the replacement paving.

Traffic Control

O'Byrnes Ferry Road is a heavily trafficked roadway that will require traffic control during construction of the proposed transmission main. Traffic control will be in accordance with the County Code and the most recent revision of California Manual on Uniform Traffic Control Devices (MUTCD).

Due to the heavy traffic experienced in this area and the limitations this puts on construction, it is assumed approximately 250 linear feet (LF) of pipe can be installed per day. The proposed alignment is approximately 15,320 feet, resulting in approximately 65 days of traffic control. The alignment will have an additional 2,100 LF for tie-in connections, resulting in approximately 70 days of traffic control total.

Trench Dams

It is recommended trench dams be installed with interval spacing as identified in Table 2.

Table 2. Trench Dams Maximum Spacing

Trench Slope (Percent)	Spacing (Feet)
< 5	1,000
5 – 15	500
15 – 25	300
25 – 35	200
35 – 100	100
< 100	50

Right of Way

O'Byrnes Ferry Road has been identified as the location for the proposed alignment as it is the only road on the east side of Lake Tulloch that connects the C Zone to the B4 Zone.

The proposed alignment will be within the public right-of-way on O'Byrnes Ferry Road, beginning at Copper Meadows Drive and ending at Connor Estates Drive. This will require an encroachment permit from Calaveras County before construction.

Utility Conflicts

A preliminary review of the utilities along the proposed alignment identified minimal utility conflicts. There are several utilities that provide service in the project area including Amerigas Propane of Jamestown, Calaveras County Road Department, Calaveras County Water District, Calaveras Telephone Company, Comcast of Northern California, Kamps Propane No. 9, and PG&E Distribution of Modesto. These utilities have been contacted and any conflicts will be taken into consideration during design. The proposed transmission main will be constructed in accordance with Section 64572, Article 4, Chapter 16,

Division 4, Title 22 of the California Code of Regulations (CCR) to ensure water main separation requirements with other underground utility pipelines are satisfied.

Calaveras County Road Department has several culverts along O'Byrnes Ferry Road. The general locations and dimensions of the culverts have been identified. Per CCWD requirements, a minimum of 1-foot of vertical clearance shall be maintained when the proposed alignment crosses these culverts.

The District has a pressurized sewer main with connections on the west side of O'Byrnes Ferry Road, beginning at Copper Meadows Drive and ending at Conner Estates Drive. The sewer main is located on the north side of Conner Estates Drive.

Calaveras Telephone Company has identified that they have underground telecommunication cables and crossings on the west side of O'Byrnes Ferry Road.

Comcast of Northern California does not have utilities along O'Byrnes Ferry Road.

Kamps Propane No. 9 does not have gas pipelines in the roadway on O'Byrnes Ferry Road. However, there are propane tanks on the north end of O'Byrnes Ferry Road with a small section of piping connecting the tanks to the nearby housing sub-division near Copper Meadows Drive.

PG&E has overhead utilities along O'Byrnes Ferry Road, with underground electrical services near the beginning and end of the proposed transmission main at Copper Meadows Drive and Connor Estates Drive, respectively.

Alternatives Analysis

Several factors were considered in determining the recommended intertie project including ability to meet fire flow requirements, PRV station location, and pipeline material type.

Existing Fire Flow Availability

The hydraulic model was used to show the current fire flow availability in Zone B4 when fed from the existing Lake Tulloch pipeline. All nodes within 300 feet of medium residential, commercial, or community center parcels were assigned a 1,500-gpm FF. All other nodes were assigned 1,000-gpm. Figure 3 on the following page, shows the existing system's fire flow capabilities with the existing 10" distribution line under Lake Tulloch. The Figure's legend for color coded nodes is as follows:

- Green nodes are Fire Flows greater than or equal to (≥) 1,500 gpm.
- Yellow nodes are Fire Flows greater than or equal to (≥) 1,000 gpm and less than (<) 1,500 gpm.
- Red nodes are all Fire Flows less than (<) 1,000 gpm.

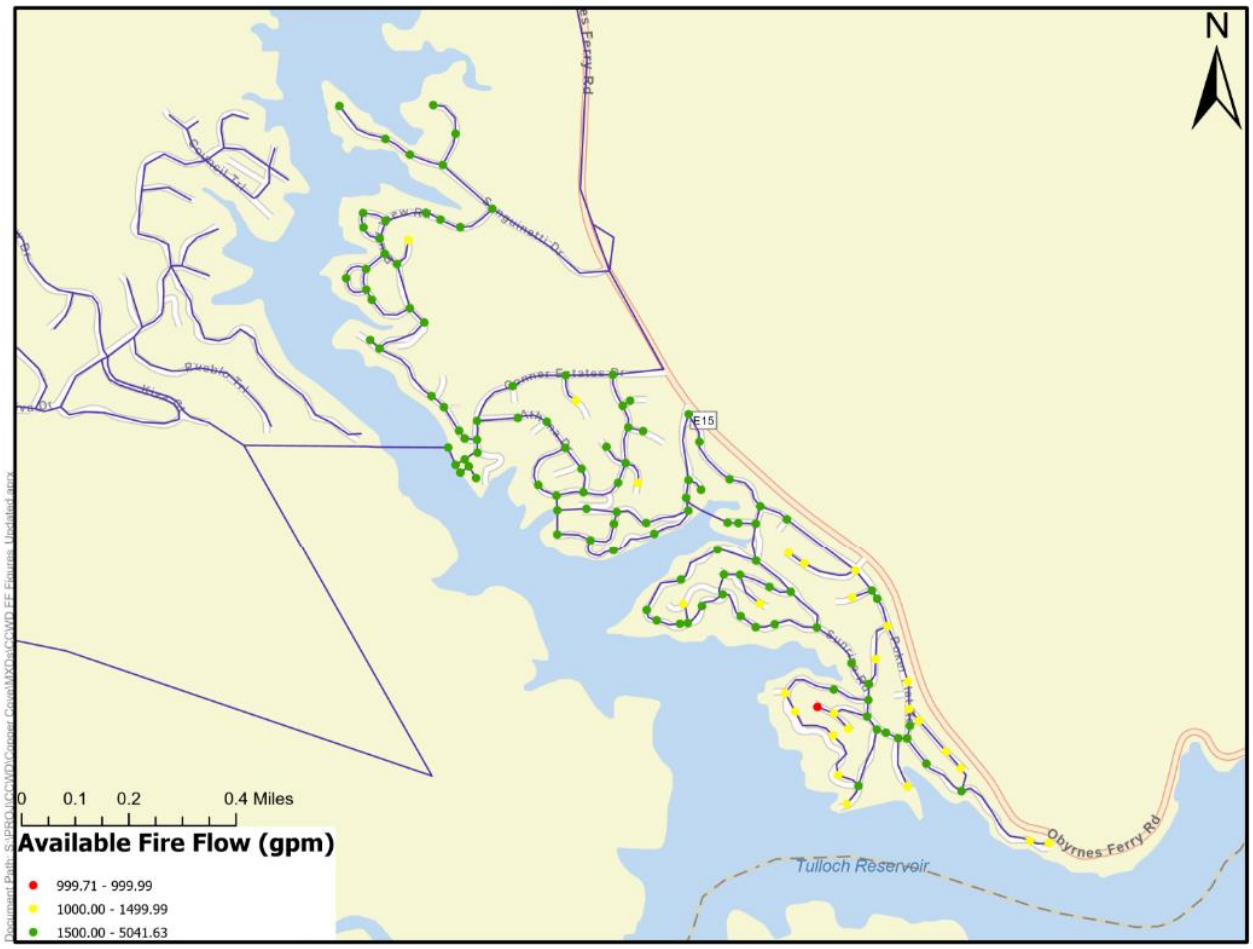


Figure 3. Fire Flow in Existing System

Pressure Reducing Valve Station

The proposed transmission main must include a PRV station to drop the pressure from the C Zone to the appropriate hydraulic grade line to supply the B4 Zone. The District's minimum operating pressure is 40 psi and the B4 Zone has an elevation range of 499 feet to 645 feet, resulting in a minimum hydraulic grade line (HGL) of 737 feet for the B4 Zone. The existing 10-inch main crossing under Lake Tulloch has a PRV station set at 75 psi with a HGL of 740 feet. The new PRV station setting will need to be above the existing PRV station setting to ensure the C Zone is the primary supply for the B4 Zone and the existing 10-inch main will only operate in an emergency condition. Therefore, it is recommended the new PRV station be set at the HGL of 740 feet and the setting at the existing PRV station at Lake Tulloch be modified to 735 feet.

The PRV may be positioned at any point along O'Byrnes Ferry Road and will work efficiently at the desired HGL setting. Two alternative locations were analyzed to place the PRV station on the proposed transmission main.

PRV Station North Location

The North PRV Station, which is located in the right-of-way near the Copperopolis Transfer Station, is shown in Figure 4, just past Cosmic Court. The elevation at the proposed location is 685 feet; therefore, the PRV setting would need to be 23.81 psi to maintain the B4 Zone HGL of 740 feet.

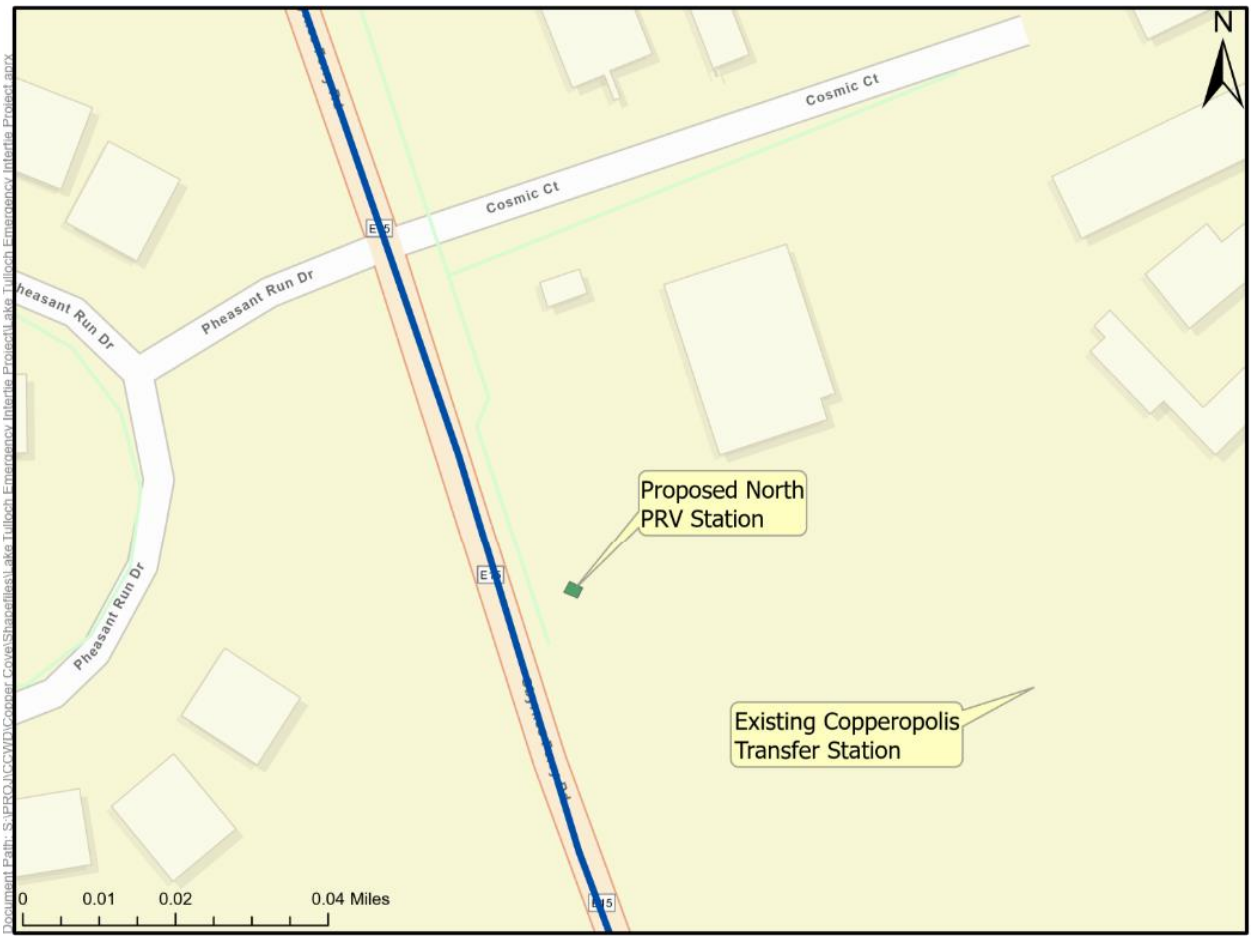


Figure 4. Proposed location for Alternative 1 PRV Station

PRV Station South Location

The South PRV Station is located near the B4 Zone at the intersection of Sanguinetti Drive and O'Byrnes Ferry Road, as shown in Figure 5. The elevation at the proposed location is 580 feet; therefore, the PRV setting would need to be set to 69.26 psi to ensure the B4 Zone HGL of 740 feet.

Figure 5. Proposed location for Alternative 2 PRV Station

Once the two proposed location's HGL's were determined, the hydraulic model was used with various transmission main sizes to decipher the minimum pipe size capable to provide FF for the B4 zone. The Four alternatives modeled were:

- Alternative 1A: a 16" Transmission Main with the PRV Station located at the North Location.
- Alternative 1B: a 12" Transmission Main with the PRV Station located at the North Location.
- Alternative 2A: a 12" Transmission Main with the PRV Station located at the South Location.
- Alternative 2B: a 10" Transmission Main with the PRV Station located at the South Location.

Alternative 1A – 16" Transmission Main

Alternative 1A is a 16" Transmission Main that ties into existing C Zone 12" PVC water main beginning at Copper Meadows Drive. The 16" transmission main follows along the path of the O'Byrnes Ferry Road's East Lane. The PRV station will be at the North location in the right-of-way near the Copperopolis Transfer Station. The transmission main will tie in with the existing 8-inch AC water main at Sanguinetti Drive and

the 10” AC water main at the intersection of Conner Estates Drive and Calypso Beach Drive. Figure 6 illustrates the available FF in the B4 zone from the 16” Transmission Main.

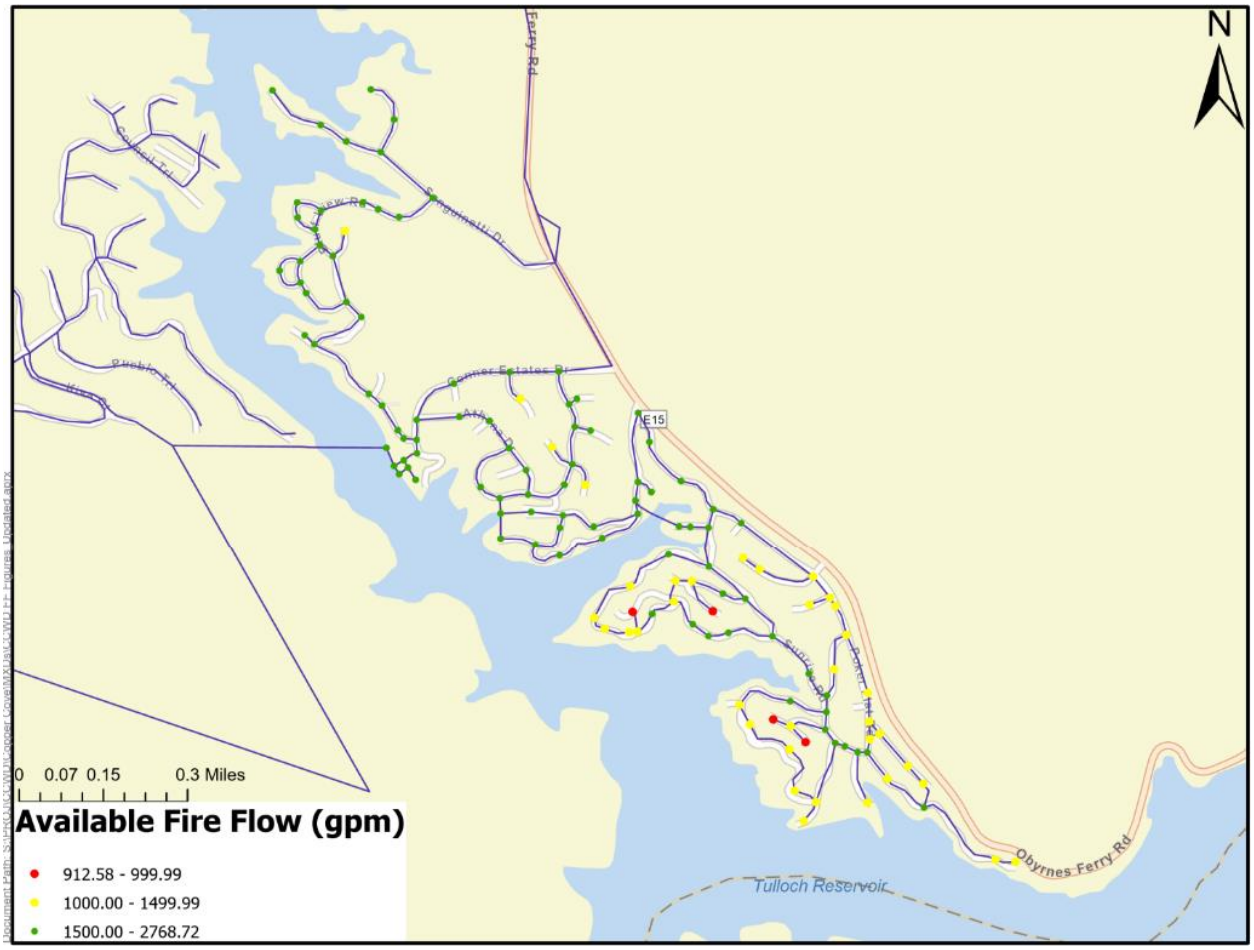


Figure 6. Alternative 1A - 16" Transmission Main

As shown in the figure, many of the Residential and Commercial nodes meet District’s FF requirements making Alternative 1A feasible except for four nodes which are located at dead ends. The estimated cost to Alternative 1A is $8.4 Million. A detailed cost estimate is provided in Appendix C. The hydraulic model results for Alternative 1A are provided in Appendix B.

Alternative 1B – 12” Transmission Main

Alternative 1B is a 12” Transmission Main that ties into existing C Zone 12” PVC water main beginning at Copper Meadows Drive. The 12” transmission main follows along the path of the O’Byrnes Ferry Road’s East Lane. The PRV station will be at the North location in the right-of-way near the Copperopolis Transfer Station. The transmission main will tie in with the existing 8-inch AC water main at Sanguinetti Drive and the 10” AC water main at the intersection of Conner Estates Drive and Calypso Beach Drive. Figure 7 illustrates the available FF in the B4 zone from the 12” Transmission Main.

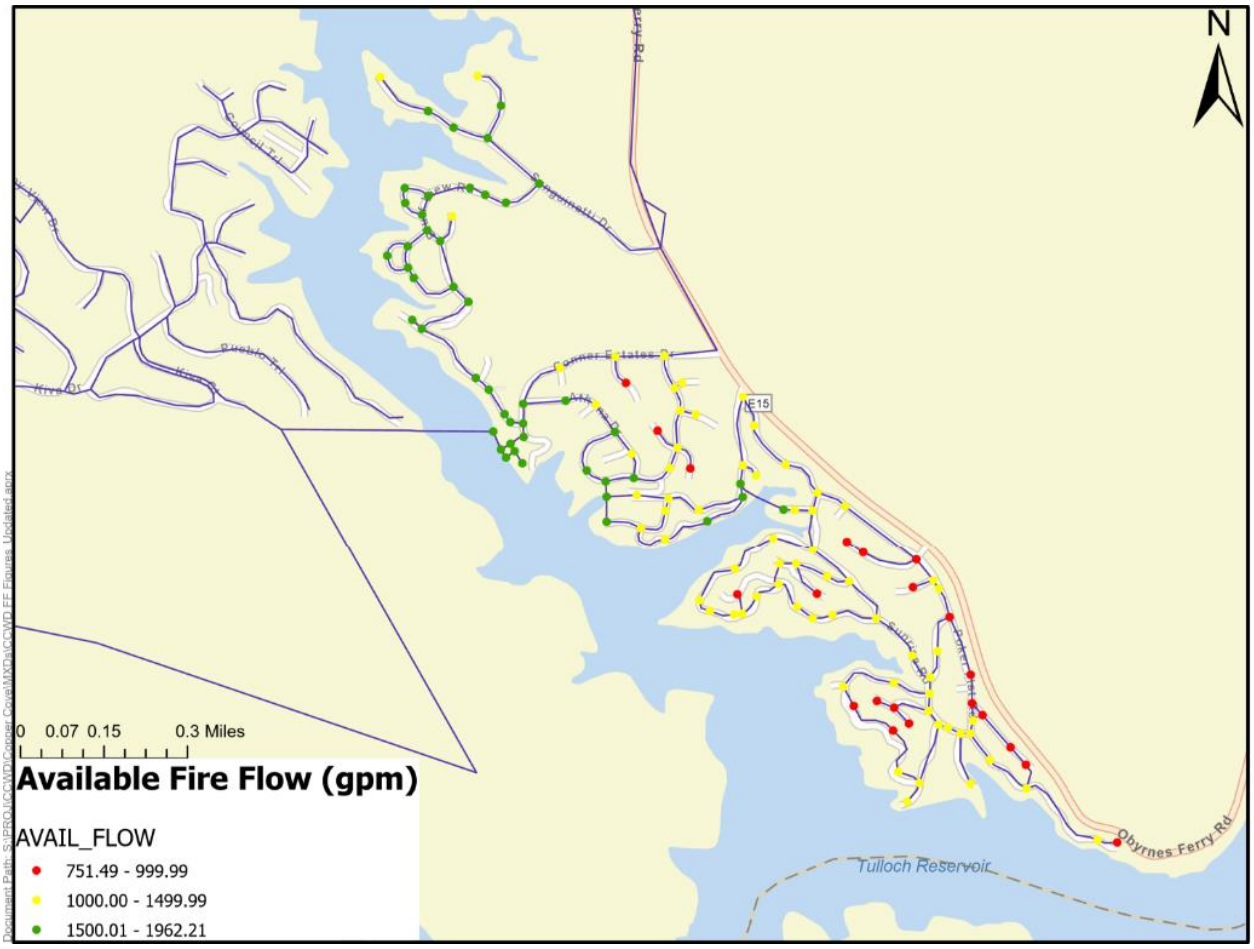


Figure 7. Alternative 1B - 12" Transmission Main

As shown in the figure, many of the Residential and Commercial nodes do not meet District's FF requirements making Alternative 1B not feasible. Therefore, a cost estimate was not developed for Alternative 1B. The hydraulic model results for Alternative 1B are provided in Appendix B.

Alternative 2A - 12" Transmission Main

Alternative 2A is a 12" Transmission Main that ties into existing C Zone 12" PVC water main beginning at Copper Meadows Drive. The 12" transmission main follows along the path of the O'Byrnes Ferry Road's East Lane. The PRV station will be at the South location in the right-of-way near the intersection of Sanguinetti Drive and O'Byrnes Ferry Road. The transmission main will tie in with the existing 8-inch AC water main at Sanguinetti Drive and the 10" AC water main at the intersection of Conner Estates Drive and Calypso Beach Drive. Figure 8 illustrates the available FF in the B4 zone from the 12" Transmission Main.

Figure 8. Alternative 2A - 12" Transmission Main

As shown in the figure, many of the Residential and Commercial nodes meet District's FF requirements with the exception of two nodes located at dead end mains. The estimated cost to Alternative 2A is $7.3 Million. A detailed cost estimate is provided in Appendix C. The hydraulic model results for Alternative 2A are provided in Appendix B.

Alternative 2B - 10" Transmission Main

Alternative 2B is a 10" Transmission Main that ties into existing C Zone 12" PVC water main beginning at Copper Meadows Drive. The 10" transmission main follows along the path of the O'Byrnes Ferry Road's East Lane. The PRV station will be at the South location in the right-of-way near the intersection of Sanguinetti Drive and O'Byrnes Ferry Road. The transmission main will tie in with the existing 8-inch AC water main at Sanguinetti Drive and the 10" AC water main at the intersection of Conner Estates Drive and Calypso Beach Drive. Figure 9 illustrates the available FF in the B4 zone from the 10" Transmission Main.

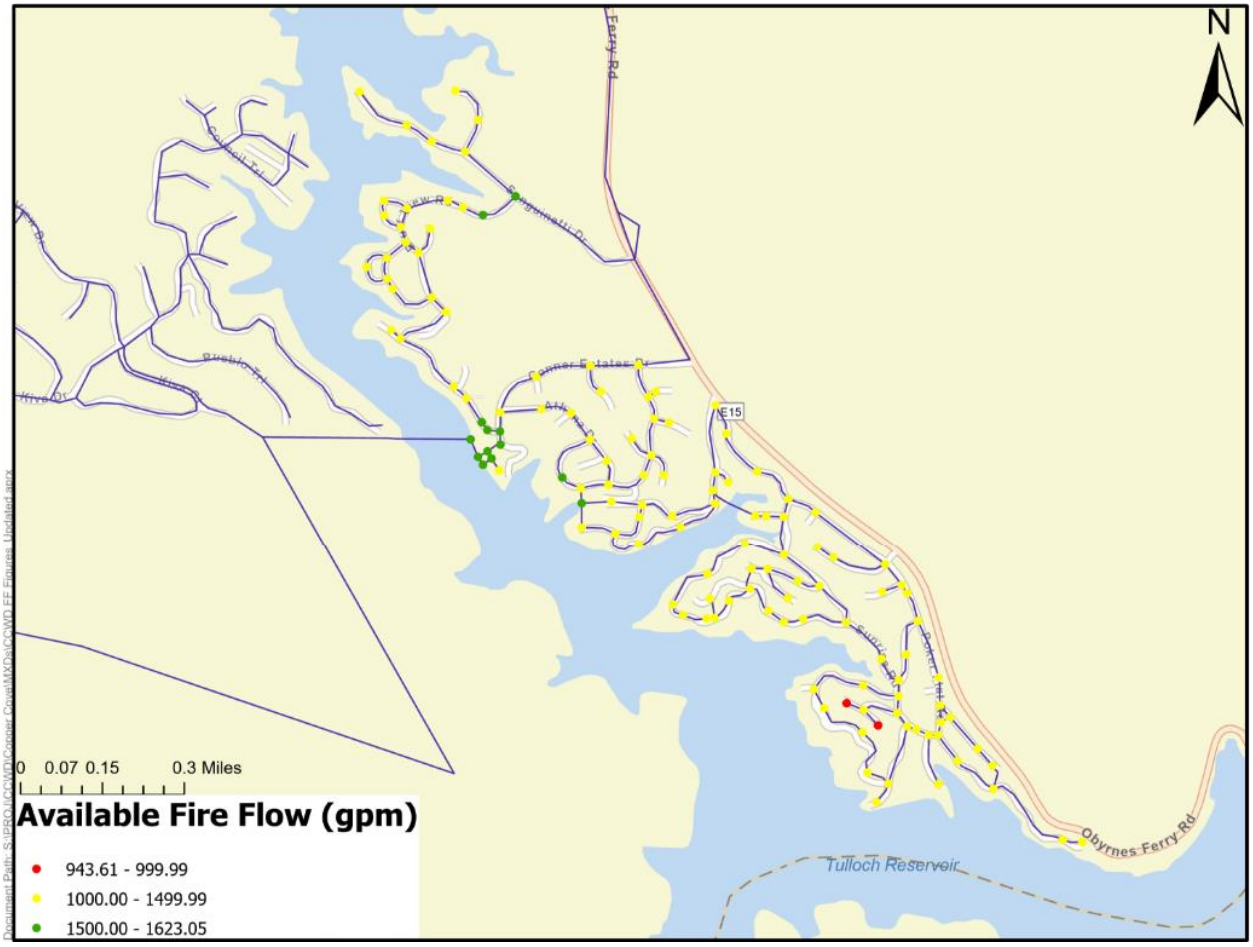


Figure 9. Alternative 2B - 10" Transmission Main

As shown in the figure, many of the nodes do not meet District's FF requirements making Alternative 2B not feasible. Therefore, a cost estimate was not prepared for this alternative. The hydraulic model results for Alternative 2B are provided in Appendix B.

Comparison of Alternatives

When it comes to the location of the PRV, it is generally better to install it at a lower elevation than at a higher elevation. If a PRV was installed at a higher elevation at the desired HGL, the pressure of the fluid would decrease due to head loss during peak flows through the entire length of the transmission main. This alternative will require a larger diameter transmission main to meet desired fire flows.

Installing the PRV at a lower elevation at the desired HGL can accommodate additional head loss in the transmission main allowing for a smaller diameter pipeline to achieve the desired fire flows.

Table 3 provides a comparison of the various advantages and disadvantages for Alternatives 1A and 2A.

Table 3. Summary of Advantages and Disadvantages of Feasible Alternatives

	Alternative 1A – 16" Transmission Main	Alternative 2A – 12" Transmission Main
Advantages	• Meets CCWD's Design Criteria for Fire Flow • Pressures do not exceed District Standards	• Meets CCWD's Design Criteria for Fire Flow • Lower construction cost • Smaller valves and fittings
Disadvantages	• Higher construction cost • Larger valves and fittings • Four Nodes didn't meet minimum 1,000 gpm FF.	• Pressure exceeded District standards of 120 psi. • Two Nodes didn't meet minimum 1,000 gpm FF.

The PRV station will be equipped with two valves, one valve will operate under normal daily flows and the other valve will operate under MDD and FF demands. The PRV station will be designed based on the District's 2021 Standard Drawing W13; a below-grade concrete vault with an approximate footprint of 7 feet by 9 feet with H20 Traffic Rated Access Hatch covers.

It is recommended to locate the PRV station near the intersection of O'Byrnes Ferry Road and Sanguinetti Drive outside the traffic way. Alternative 2A is recommended due to its ability to meet the desired fire flows at a lower construction cost. Future connections off of the transmission main will require PRV stations to maintain desired pressures.

Pipe Material

As identified in the District Standards, the pipe material for pipelines 12 inches and smaller shall be either PVC or DIP. Table 4 provides a comparison of the various advantages and disadvantages for each pipe material.

Table 4. Summary of Advantages and Disadvantages of Pipe Materials

	PVC	DIP
Advantages	• Cost-effective option; approximately $250 per LF for installation	• Accommodates greater deflections – typically 5 degrees. • Higher Pressure Rating of 350 psi
Disadvantages	• Manufacturer typically allows for 1 degree of deflection. • 12" ID is 11.314" for DR 14 and 11.65" for DR 18. • Lower Pressure Rating of 235 and 305 psi	• Higher construction cost; approximately $500 per LF for installation

Constructing the transmission main using PVC is the cost-effective option and will result in reduced construction costs. District standards allow for a maximum of 5 degrees of deflection (combined vertical and horizontal angles) per coupling using mechanical or push-on joints. Manufacturer guidelines for PVC typically allow 1 degree of deflection without joints. Using DIP increases construction costs but allows for

more deflection. The District allows up to 80 percent of the manufacturer's recommendation for maximum allowable angular deflection.

The minimum radius of curvature for 20-foot lengths of PVC pipe is approximately 1,145 feet while DIP has a minimum radius of curvature of 275 feet for 18-foot lengths of pipe. The proposed alignment was assessed to determine if the minimum radius of curvature can be achieved for both pipe materials. The minimum radius of curvature from O'Byrnes Ferry Road was determined to be approximately 1,812 feet, which exceeds the requirements for both pipe materials. Therefore, it is not anticipated additional fittings will be necessary if PVC pipe is selected.

It is recommended the 12-inch transmission main be constructed using PVC with typical manufacturer's standards allowing for 1 degree of deflection. The cost difference between the two pipe materials makes PVC the cost-effective option.

The pressure rating class for the 12-inch pvc pipe for the District is 235 psi (DR 18) and 305 psi (DR 14). This means that the pipe can handle a maximum pressure of 235 psi or 305 psi, depending on the pressure rating class selected.

The modeled system, 2A, has a maximum pressure of 210 psi from the C Zone to the B4 Zone. Test pressure for the system is 1.5 times the operating pressure, or 315 psi. PBI recommends selecting the 12-inch PVC with a pressure class of DR 14, but with a modified test pressure that does not exceed 305 psi.

The estimated cost to install the 12-inch PVC DR 14 transmission main is approximately $7.3 million. A detailed cost estimate is provided in Appendix C.

Alignment Analysis

The proposed alignment for the approximately 15,320-foot transmission main is in the public right-of-way along O'Byrnes Ferry Road, beginning at Copper Meadows Drive and ending at Connor Estates Drive. No alternative alignment has been identified as O'Byrnes Ferry Road is the only road on the east side of Lake Tulloch that connects the B4 Zone and C Zone. Locating the transmission main in the public right-of-way eliminates the need for easements and future coordination with private property owners.

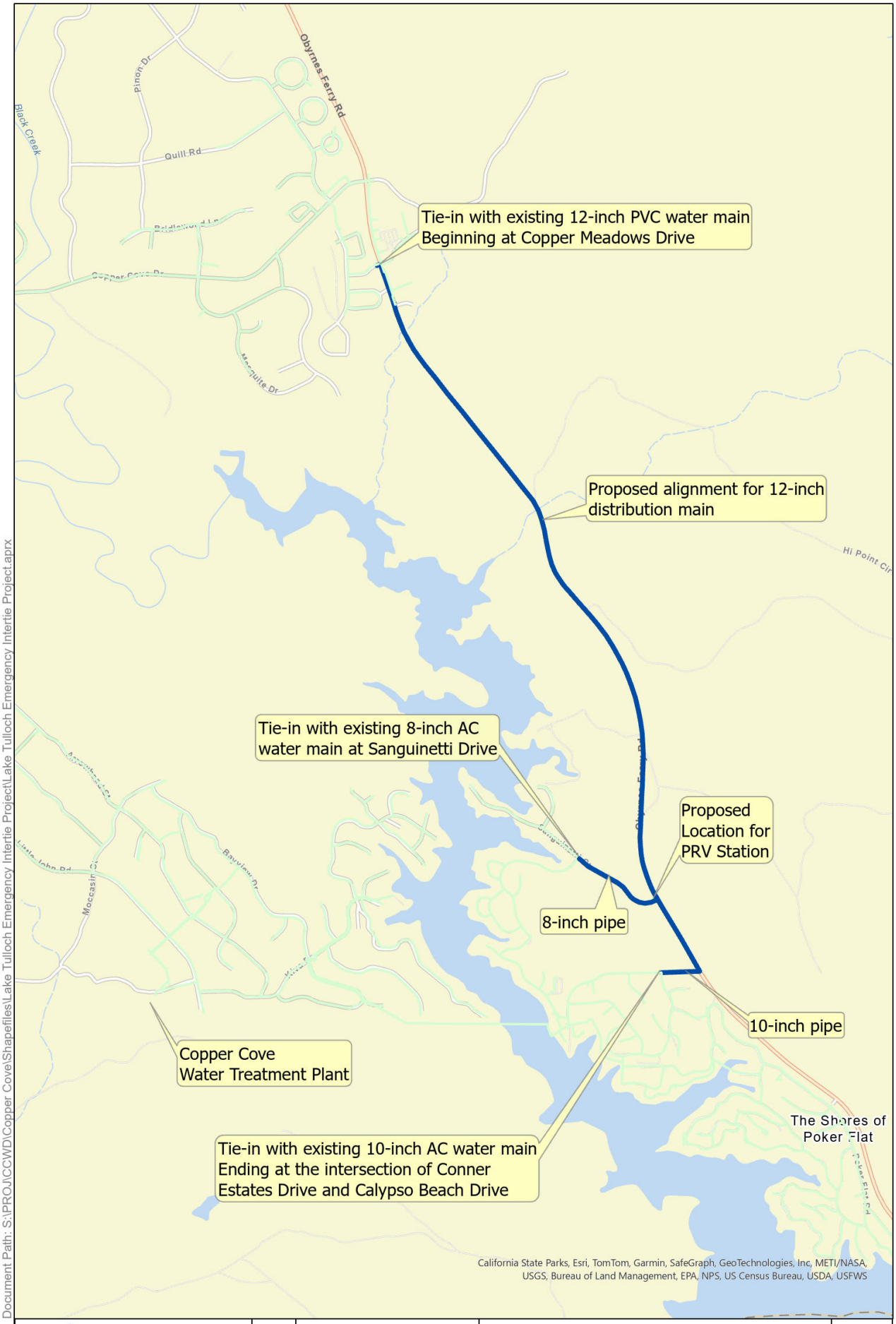
The beginning of the proposed transmission main will tie in with the existing 12-inch PVC water main near Copper Meadows Drive. It is recommended to end the proposed transmission main tie-in with the existing 10-inch AC water main at Conner Estates Drive. Locating the tie-in for the 12-inch transmission main at Connor Estates Drive reduces the amount of trenching and repaving. It is also recommended an additional tie-in to the existing 8-inch AC water main at Sanguinetti Drive be included in the proposed transmission main to meet FF requirements. Figure 10 shows the proposed alignment along O'Byrnes Ferry Road with tie-in locations.

Per County requirements, the entire lane that the pipeline is constructed in will need to be overlayed due to the recent repaving and increased PCI. To reduce extra repaving, the alignment should be limited to one side of the roadway. Due to the pressurized sewer main and underground telecommunication cables present on the west side of O'Byrnes Ferry Road, the location of the proposed transmission main is recommended to be on the east side of the roadway.

The culverts identified by the County along O'Byrnes Ferry Road present potential conflicts and may require a Department of Drinking Water (DDW) variance request. The DDW variance request will be required for any culvert crossing where the minimum clearance requirements cannot be met.

O'Byrnes Ferry Road is a heavily traveled, narrow two-lane roadway surrounded by rocky terrain. The east side of the roadway has stretches where the shoulder has adequate space for the proposed transmission main. The remainder of the roadway is flanked by rocky slopes that make it difficult to construct a pipeline. It is recommended the proposed alignment be constructed on the shoulder of the east side of O'Byrnes Ferry Road, where possible. In areas of the roadway where there is no shoulder, the transmission main will deflect into the roadway. It is assumed approximately 75 percent of the proposed transmission main will be in the roadway and the remaining 25 percent will be in the shoulder.

It is recommended the pipeline be constructed on the east side of O'Byrnes Ferry Road. The proposed alignment will be in the shoulder as often as possible and will deflect to the roadway when there is no shoulder. This location minimizes potential conflict with underground utilities and reduces the amount of repaving required.



Document Path: S:\PROJ\CCWD\Copper Cove\Shapefiles\Lake Tulloch Emergency Intertie Project\Lake Tulloch Emergency Intertie Project.aprx

PBI ENGINEERING CONSULTING™
A Verdantas Company
80 Blue Ravine Rd., Suite 280
Folsom, CA 95630
Phone: (916) 608-2212

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May 2024

CALAVERAS COUNTY WATER DISTRICT

Proposed Alignment along O'Byrnes Ferry Road

FIGURE **10**

Recommendations

The Lake Tulloch Intertie project has been identified to serve as the primary supply to the B4 Zone.

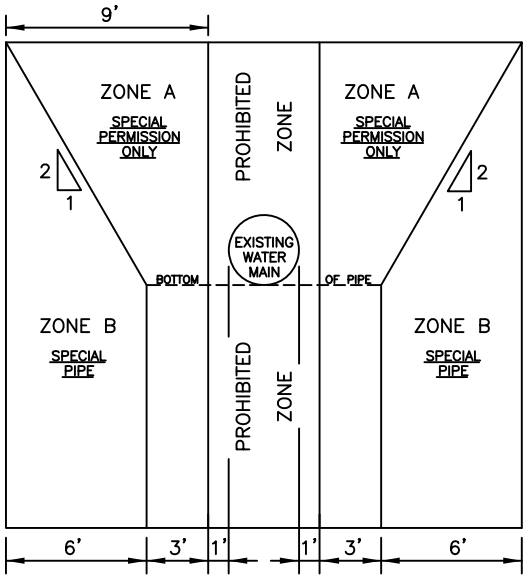
The recommended project includes the construction of approximately 15,320 feet of 12-inch transmission main that supplies the B4 Zone from the C Tanks. The proposed alignment is in the public right-of-way along O'Byrnes Ferry Road, beginning at Copper Meadows Road and ending at Connor Estates Drive. AVV and blowoff valve assemblies shall be installed at the transmission main high-points and low-points, respectively. Gate valves will be installed inline every 2000 feet to isolate the system during an emergency or planned outages. The transmission main shall include one PRV station, which is recommended to be installed near Sanguinetti Drive.

It is recommended the transmission main be constructed using 12" PVC DR 14 pipe to reduce construction costs.

The alignment within the public right-of-way on O'Byrnes Ferry Road is recommended to be constructed on the east side of O'Byrnes Ferry Road. The transmission main shall be located in the shoulder wherever possible and will deflect to the roadway when no shoulder is present. This location minimizes potential conflict with underground utilities and reduces the amount of trenching and repaving.

The estimated cost to install the 15,320 foot 12-inch PVC transmission main along O'Byrnes Ferry Road is approximately $7.3 million.

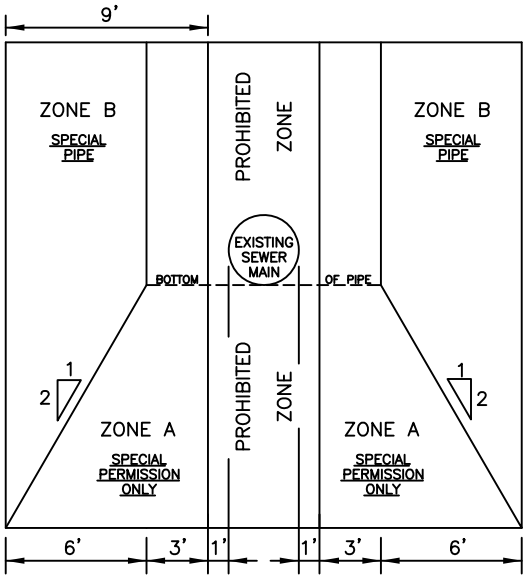
Appendix A



CASE 1 PARALLEL CONSTRUCTION
NEW SEWER - EXISTING WATER

ZONE A: SEWER LINES NOT PERMITTED WITHOUT WRITTEN PERMISSION FROM COUNTY ENVIRONMENTAL HEALTH AND CCWD

ZONE B: NEW SEWER MAIN SHALL BE CONSTRUCTED OF:
PVC PIPE WITH RUBBER RING JOINTS (ASTM D3034)
CAST OR DUCTILE IRON PIPE WITH COMPRESSION JOINTS



CASE 2 PARALLEL CONSTRUCTION
NEW WATER - EXISTING SEWER

ZONE A: WATER LINES NOT PERMITTED WITHOUT WRITTEN PERMISSION FROM COUNTY ENVIRONMENTAL HEALTH AND CCWD

ZONE B: IF EXISTING SEWER MAIN DOES NOT MEET CASE 1 – ZONE B REQUIREMENTS NEW WATER MAIN SHALL BE:
CLASS 200 PVC (DR 14 / AWWA C900-97)
DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING
DIPPED & WRAPPED 1/4" WALL WELDED STEEL PIPE

WATER MAIN SEPARATION:

A. NEW WATER MAINS AND NEW SUPPLY LINES SHALL BE INSTALLED AT LEAST 10 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY ABOVE ANY PARALLEL PIPELINE CONVEYING:
   1 – UNTREATED SEWAGE
   2 – PRIMARY OR SECONDARY TREATED SEWAGE
   3 – DISINFECTED SECONDARY–2.2 OR 23 RECYCLED WATER (AS DEFINED IN SECTIONS 60301.220 & 60301.225*)
   4 – HAZARDOUS FLUIDS SUCH AS FUELS, INDUSTRIAL WASTES AND WASTEWATER SLUDGE

B. NEW WATER MAINS AND NEW SUPPLY LINES SHALL BE INSTALLED AT LEAST 4 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY ABOVE ANY PARALLEL PIPELINE CONVEYING:
   1 – DISINFECTED TERTIARY RECYCLED WATER (AS DEFINED IN SECTION 60301.230*)
   2 – STORM DRAINAGE PIPES OR CATCHMENTS

C. NEW SUPPLY LINES CONVEYING RAW WATER TO BE TREATED FOR DRINKING PURPOSES SHALL BE INSTALLED AT LEAST 4 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY BELOW ANY WATER MAIN

D. IF CROSSING A PIPELINE CONVEYING A FLUID LISTED IN (A) OR (B) ABOVE, A NEW WATER MAIN SHALL BE CONSTRUCTED PERPENDICULAR TO AND AT LEAST ONE FOOT ABOVE THAT PIPELINE. NO CONNECTION JOINTS SHALL BE MADE IN THE WATER MAIN WITHIN EIGHT HORIZONTAL FEET OF SAID FLUID PIPELINE

E. THE VERTICAL SEPARATION SPECIFIED IN (A) (B) & (C) IS REQUIRED ONLY WHEN THE HORIZONTAL DISTANCE BETWEEN A WATER MAIN AND PIPELINE IS ELEVEN FEET OR LESS AS MEASURED FROM THE OUTSIDE EDGE OF EACH PIPE

F. NEW WATER MAINS AND NEW SUPPLY LINES SHALL NOT BE INSTALLED WITHIN 100 FEET HORIZONTALLY OF ANY SANITARY LANDFILL, WASTEWATER DISPOSAL POND, OR HAZARDOUS WASTE DISPOSAL SITE, OR WITHIN 25 FEET OF ANY CESSPOOL, SEPTIC TANK, SEWAGE LEACH FIELD, SEEPAGE PIT OR GROUNDWATER RECHARGE PROJECT SITE.

G. THE MINIMUM SEPARATION DISTANCES SET FORTH IN THIS SECTION SHALL BE MEASURED FROM THE NEAREST OUTSIDE EDGE OF PIPE TO THE NEAREST OUTSIDE EDGE OF PIPE IN ALL CASES

*REFERENCED IN CALIFORNIA ADMINISTRATIVE CODE, TITLE 22

NOTES:

1. THE ABOVE CONSTRUCTION CRITERIA APPLIES TO HOUSE SEWER LATERALS CROSSING ABOVE A WATER MAIN
2. SEWER LINES LARGER THAN 24" DIAMETER AND SEWER LINES WITHIN 25 FEET OF LOW–HEAD WATER MAIN SHALL BE REVIEWED AND APPROVED BY COUNTY ENVIRONMENTAL HEALTH DEPT.
3. IN NO CASE SHALL WATER MAINS AND ANY NON–POTABLE PIPELINE CONVEYING SEWAGE OR ANY OTHER FLUID NOTED ABOVE BE INSTALLED IN THE SAME TRENCH

CALAVERAS COUNTY WATER DISTRICT

GENERAL DETAILS
SEPARATION STANDARDS

DRAWN BY:	SCALE:	CCWD STANDARD DRAWING NO.
CCWD STAFF	NONE	G04
APPROVED BY:	UPDATE:	
CHARLES PALMER	09/2021	

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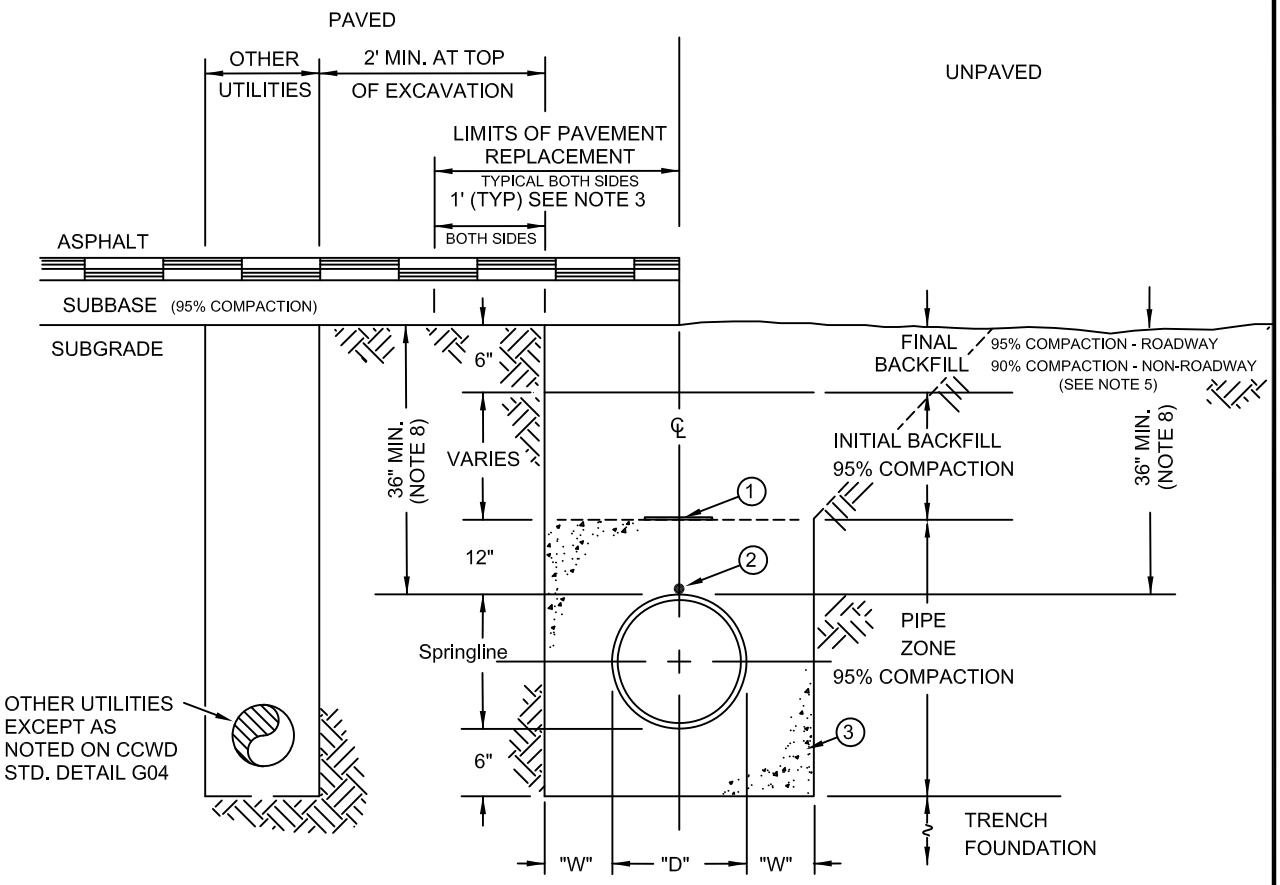

NOTES:

1. FOR EXCAVATIONS THAT WORKERS ENTER/DECEND, PERMITS SHALL BE REQUIRED FOR ALL EXCAVATIONS OVER 5 FEET IN DEPTH AND ANY EXCAVATIONS LESS THAN 5 FEET IN DEPTH IN SOILS THAT HAZARDOUS GROUND MOVEMENT MAY OCCUR.
2. PIPE TO BE LAID WITH LABEL UP ON EACH JOINT.
3. ROAD REPAIR SHALL CONFORM TO ROAD AGENCY PERMIT CONDITIONS AND SPECIFICATIONS. WIDTH OF REPAIR PER COUNTY OR CALTRANS REQUIREMENTS
4. WHEN COUNTY PUBLIC WORKS OR CALTRANS ENCROACHMENT PERMIT CONDITIONS ARE MORE RESTRICTIVE, THEY WILL TAKE PRECEDENCE.
5. EXCEPT FOR TRENCHES CUT IN ROAD SUBGRADE SLOPES AND FILLS, TRENCH WALLS ARE TO BE VERTICAL AND REMAIN WITHIN DESIGNATED LIMITS. ROADWAY INCLUDING AREAS UNDER PAVING, AREAS WITHIN 5-FT OF EDGE OF PAVEMENT, AND ALL SLOPES AND FILLS WITHIN ROADBED'S STRUCTURAL SECTION/SUBGRADE SHALL BE BACKFILLED TO 95% RELATIVE COMPACTION.
6. TRACER WIRE TO BE INCLUDED ON ALL PIPELINES INCLUDING SERVICE LATERALS.
7. SEE DETAIL G05A FOR UNSTABLE CONDITIONS.
8. PRECEDENCE SHALL BE GIVEN TO DEPTH OF COVER SHOWN ON PLAN AND PROFILE SHEETS, AND NOT LESS THAN 36-INCHES MINIMUM COVER.

PIPE ZONE EXCAVATION LIMITS		
D	W (min.)	W (max.)
<10"	6"	9"
≥10"	9"	12"

ITEM #	DESCRIPTION
①	2" WIDE WARNING TAPE (COLOR - MARKING) BLUE - "WATER" GREEN - "SEWER"
②	TRACER WIRE
③	PIPE ZONE MATERIAL

CALAVERAS COUNTY WATER DISTRICT

GENERAL DETAILS
TRENCH SECTION

DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO.
APPROVED BY: CHARLES PALMER	UPDATE: 09/2021	G05

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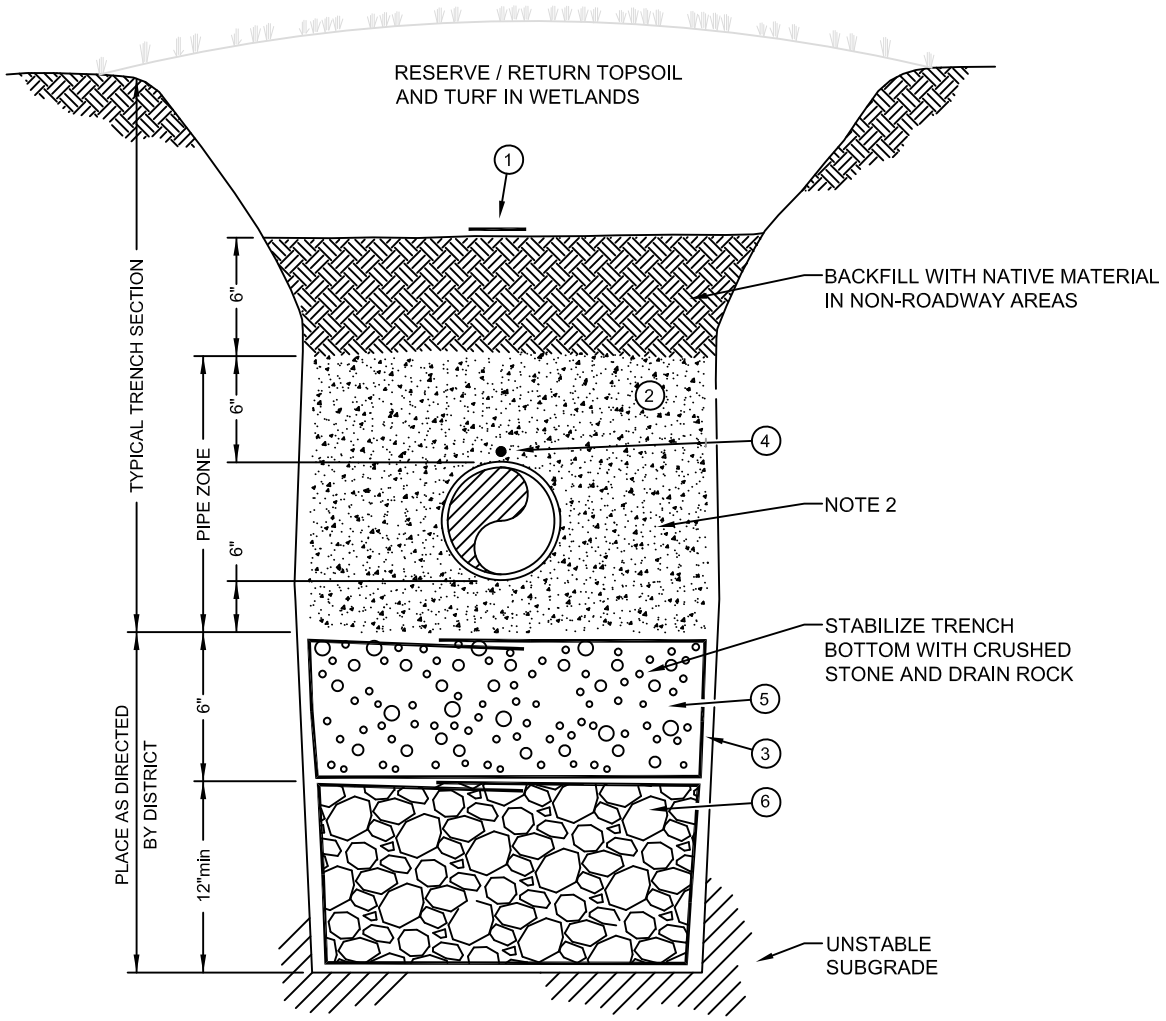

ITEM #	DESCRIPTION
1	WARNING TAPE (SEE DETAIL G05)
2	CALTRANS CLASS 2 (A.B.) AGGR. BASE
3	NONWOVEN GEOTEXTILE CLOTH, MINIMUM 8 oz
4	TRACER WIRE
5	3/4" CRUSHED ROCK
6	1-1/2" DRAIN ROCK

NOTES:

1. CONSTRUCTION SHALL HAVE PRIOR APPROVAL BY THE DISTRICT.
2. ALL EXCAVATION SHALL BE IN CONFORMANCE WITH CAL/OSHA REQUIREMENTS.
3. ELEC. CONDUITS INSTALLED BY CCWD SHALL MEET CURRENT PG&E TRENCH STANDARDS & INCLUDE WARNING TAPE AS SHOWN.

CALAVERAS COUNTY WATER DISTRICT

GENERAL DETAILS
TRENCH SECTION - UNSTABLE SUBGRADE

DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO.
APPROVED BY: CHARLES PALMER	DATE: 09/2021	G05A

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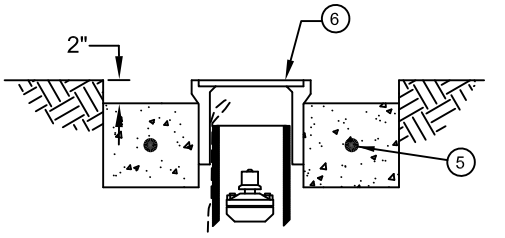
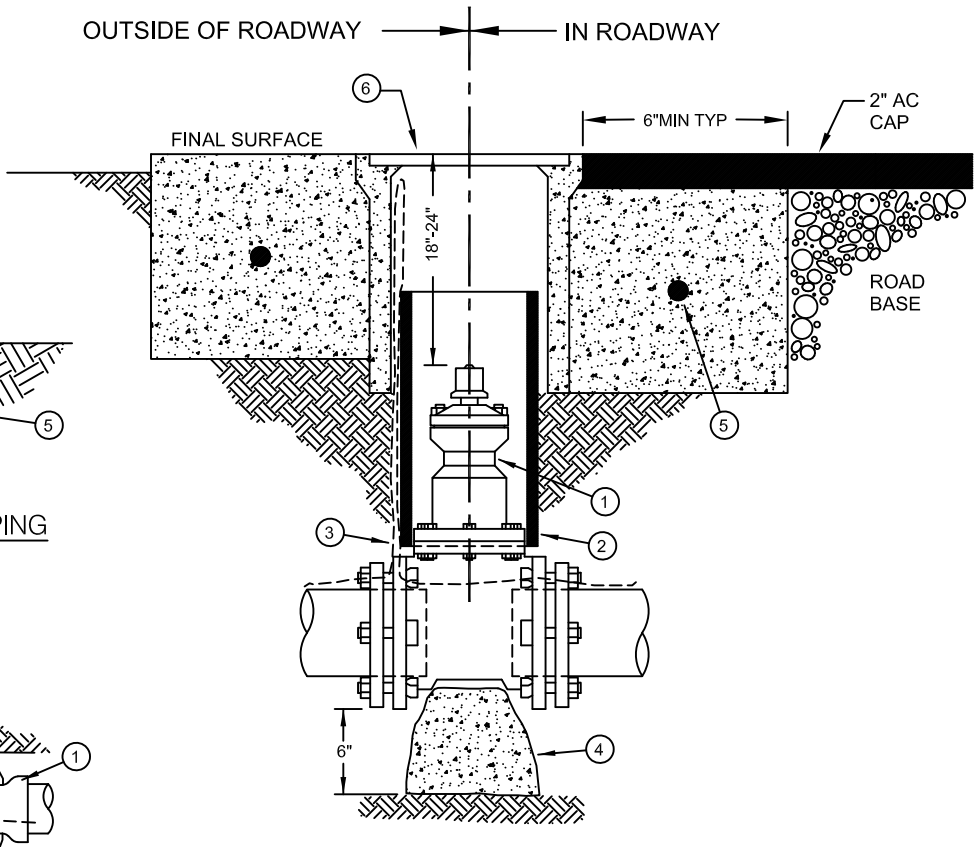
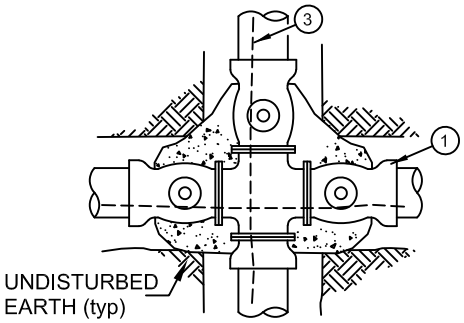


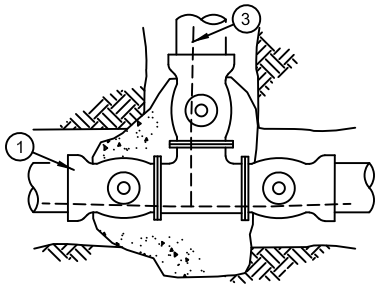
INSTALLATION IN LANDSCAPING



GATE VALVE DETAIL



CROSS INSTALLATION



TEE INSTALLATION

ITEM #	DESCRIPTION
1	GATE VALVE, RESILIENT SEAT
2	8" C900 P.V.C. RISER
3	TRACER WIRE FOR ALL INSTALLATIONS (PER DETAIL W02 & W02A)
4	CONCRETE BLOCK, 3sqft AREA, BOTTOM THRUST AREA, REQUIRED FOR VALVES 8" OR LARGER
5	#4 REBAR HOOP
6	CHRISTY G5 OR APPROVED EQUAL CONCRETE VALVE BOX BODY WITH TRAFFIC TYPE CI COVER MARKED WATER. RECESS BOX 1/4" MAX. FOR SNOW REMOVAL ABOVE 2000'.

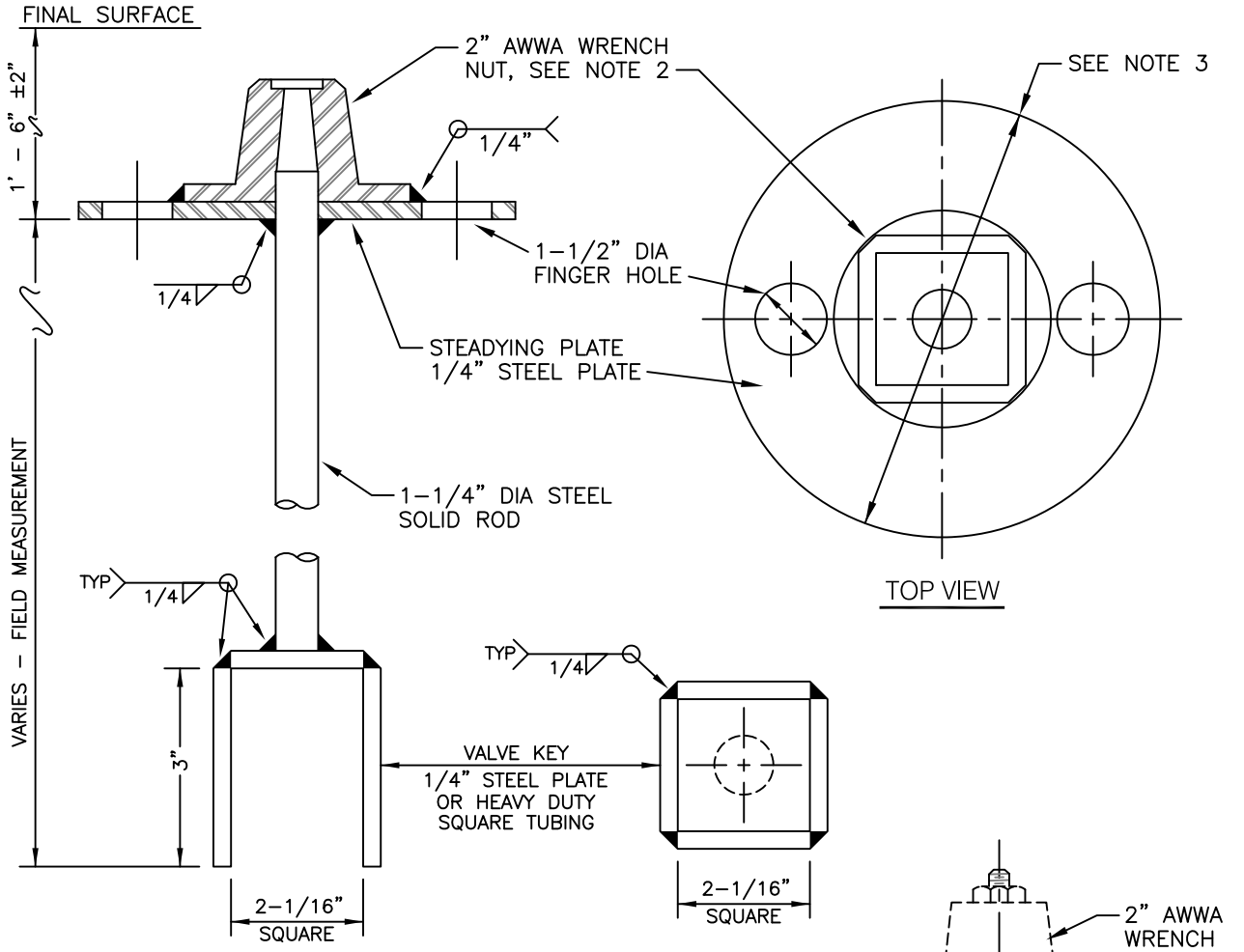
NOTES:

1. ALL GATE VALVES SHALL BE EPOXY COATED, AWWA APPROVED AND FULLY ENCAPSULATED WITH RESILIENT SEAT, MECHANICAL JOINT OR FLANGE.
2. VALVES PLACED FOR FUTURE LINE EXTENSIONS SHALL HAVE A BLIND FLANGE PLACED OVER THE OUTLET.
3. WHEN OPERATING NUT IS GREATER THAN 36" FROM FG, INSTALL STEM EXTENSIONS. (see CCWD W03A)

CALAVERAS COUNTY WATER DISTRICT

WATER DETAILS
GATE VALVE INSTALLATION

DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO.
APPROVED BY: CHARLES PALMER	DATE: 09/2021	W03



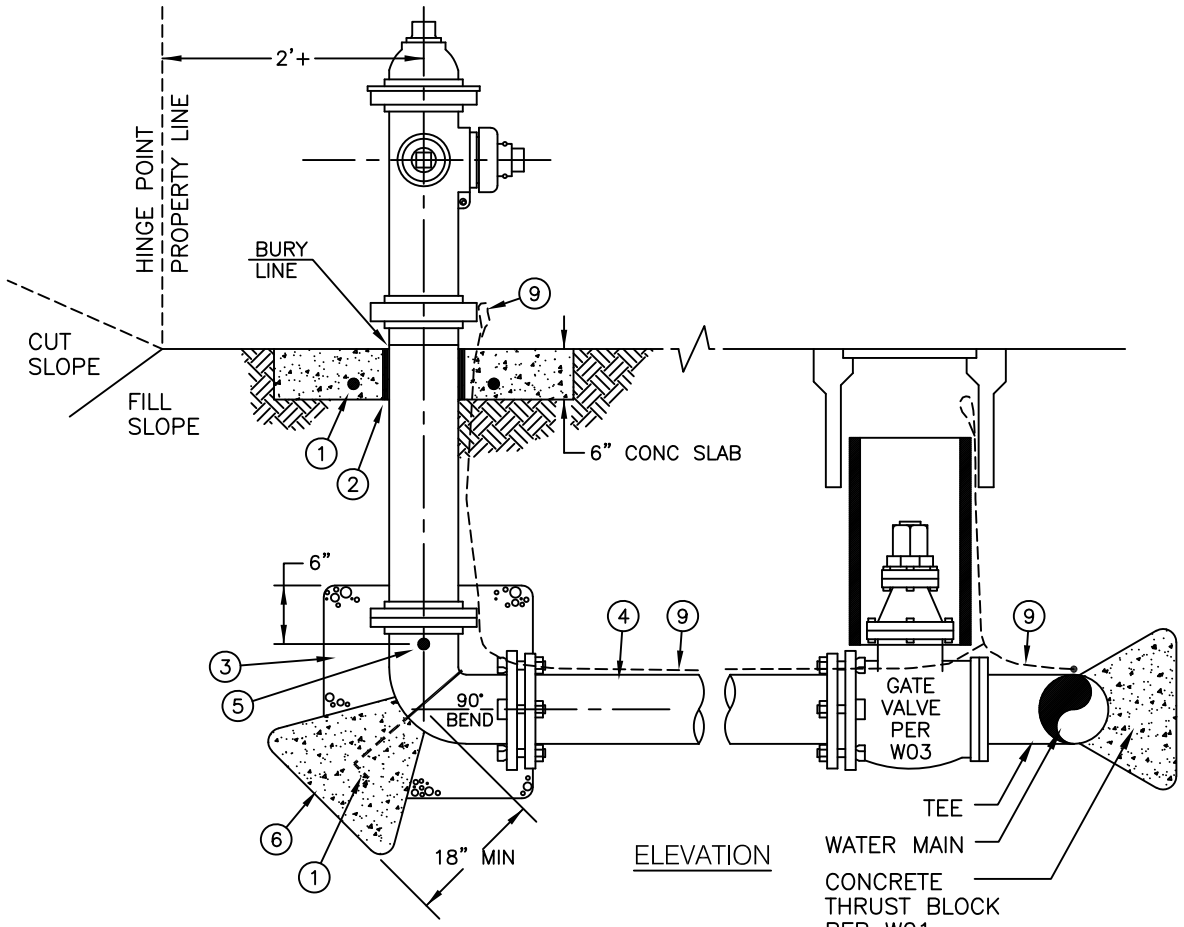
NOTES:

1. AN EXTENSION SHALL BE REQUIRED WHEN THE TRENCH DEPTH IS 36" (in) OR MORE BELOW THE FINAL SURFACE, OR AS SPECIFIED.
2. WRENCH NUT SHALL BE AS SPECIFIED IN AWWA C500, SECTION 20. PEEN TOP OF SHAFT TO SECURE THE NUT, OR ATTACH BY WELDING.
3. STEADYING PLATE DIAMETER SHALL BE EQUAL TO THE INSIDE DIAMETER OF THE VALVE BOX EXTENSION MINUS 3/4" (in).
4. COAT ENTIRE ASSEMBLY IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS.

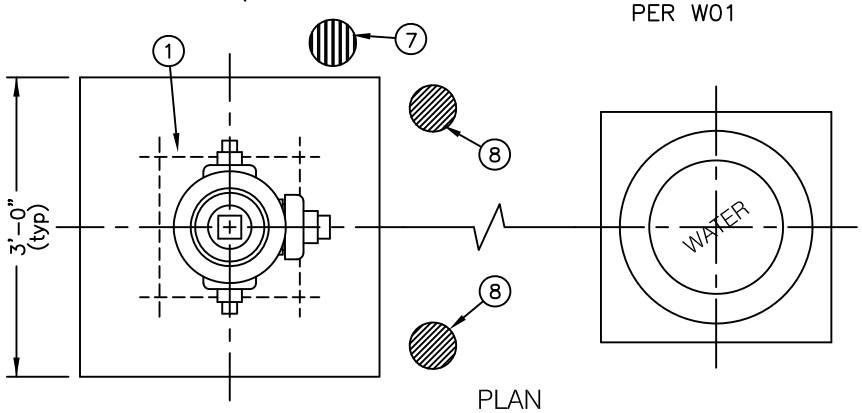
CALAVERAS COUNTY WATER DISTRICT

WATER DETAILS
GATE VALVE EXTENSION INSTALLATION

DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO.
APPROVED BY: CHARLES PALMER	DATE: 09/2021	W03A



ELEVATION



PLAN

ITEM #	DESCRIPTION
1	#4 REBAR
2	PLASTIC WRAP
3	DRAINAGE PIT, APPROX 2.5' sq, 2.5' DEEP FILLED w/ 3/4" CRUSHED DRAIN ROCK
4	6" C-900 P.V.C.
5	HYDRANT DRAIN, REMOVE PLUG WHEN INSTALLING
6	CONCRETE THRUST BLOCK w/#4 REBAR, 6 sqft MIN THRUST AREA
7	PADDLE MARKER W/ SNOW POLE AS REQUIRED ABOVE 2500'
8	GUARD POST AS REQUIRED
9	LOCATOR WIRE FOR ALL INSTALLATIONS (PER DETAIL W02 & W02A)

NOTES:

1. USE TAPPING SLEEVE AND VALVE ON EXISTING MAINS 8" (in) AND LARGER.
2. INSTALL GUARD POSTS & SNOW POLES AS DIRECTED.
3. SEE STD DWG W04A FOR FIRE HYDRANT LOCATIONS.
4. SET CONCRETE PAD TO FIT/MATCH HYDRANT BURY LINE

CALAVERAS COUNTY WATER DISTRICT

WATER DETAILS
TYPICAL FIRE HYDRANT INSTALLATION

DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO. W05
APPROVED: CHARLES PALMER	DATE: 09/2021	

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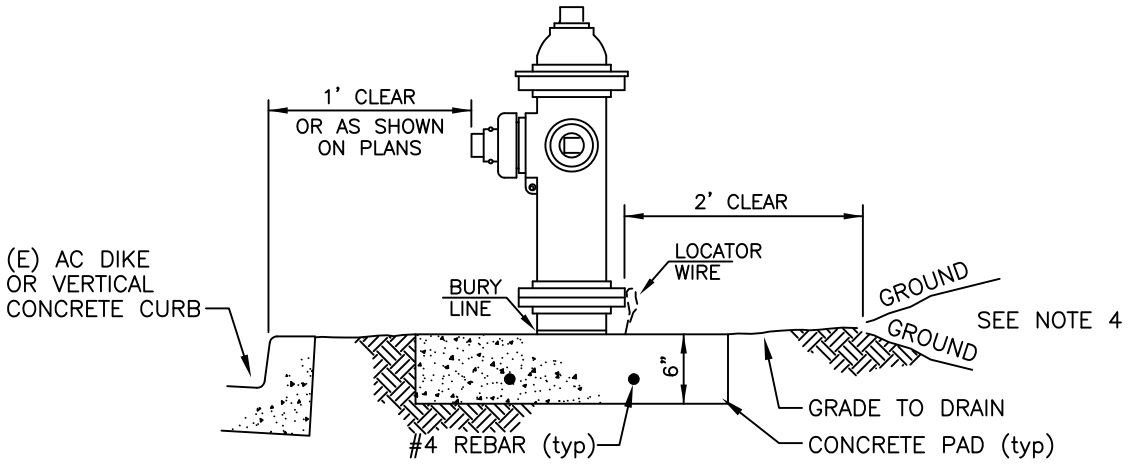
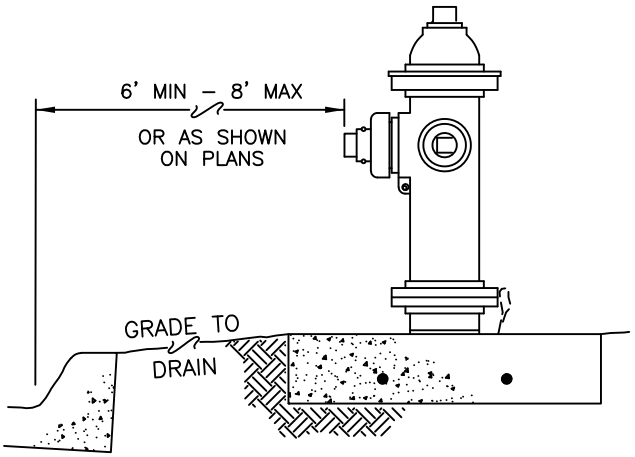
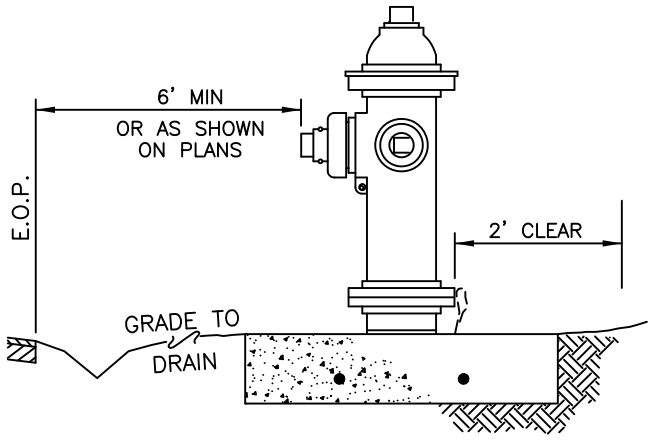


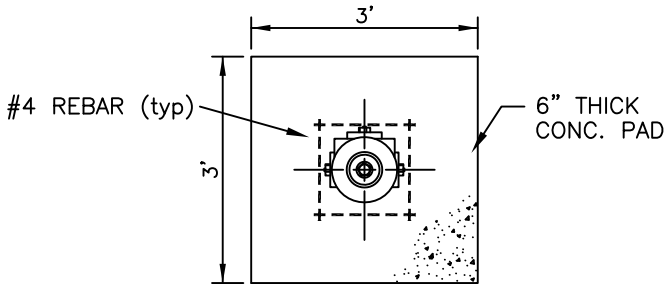
BEHIND VERTICAL CURB & GUTTER



BEHIND ROLLED CURB & GUTTER



WITHOUT CURB & GUTTER



PAD DETAIL

NOTES:

1. THE FIRE HYDRANT IS TO BE PLACED BEHIND THE DRAINAGE DITCH AND NO FURTHER THAN 8' (ft) FROM DRIVEABLE SHOULDER SURFACE, BACK OF CURB, OR PER AGENCY INVOLVED.
2. ALL VALVE BOXES SET IN THE AC OR CONCRETE TO BE FINISHED GRADE MINUS 1/4" (in).
3. FOR TYPICAL INSTALLATION, SEE DETAIL W05.
4. ALTERNATE LOCATIONS & SLOPES GREATER THAN 2:1 IN ANY INSTANCE MUST HAVE DISTRICT ENGINEER'S APPROVAL PRIOR TO INSTALLATION.

CALAVERAS COUNTY WATER DISTRICT

WATER DETAILS
TYPICAL FIRE HYDRANT LOCATION

DRAWN BY:	SCALE:	CCWD STANDARD DRAWING NO.
CCWD STAFF	NONE	W04A
APPROVED BY:	DATE:	
CHARLES PALMER	09/2021	

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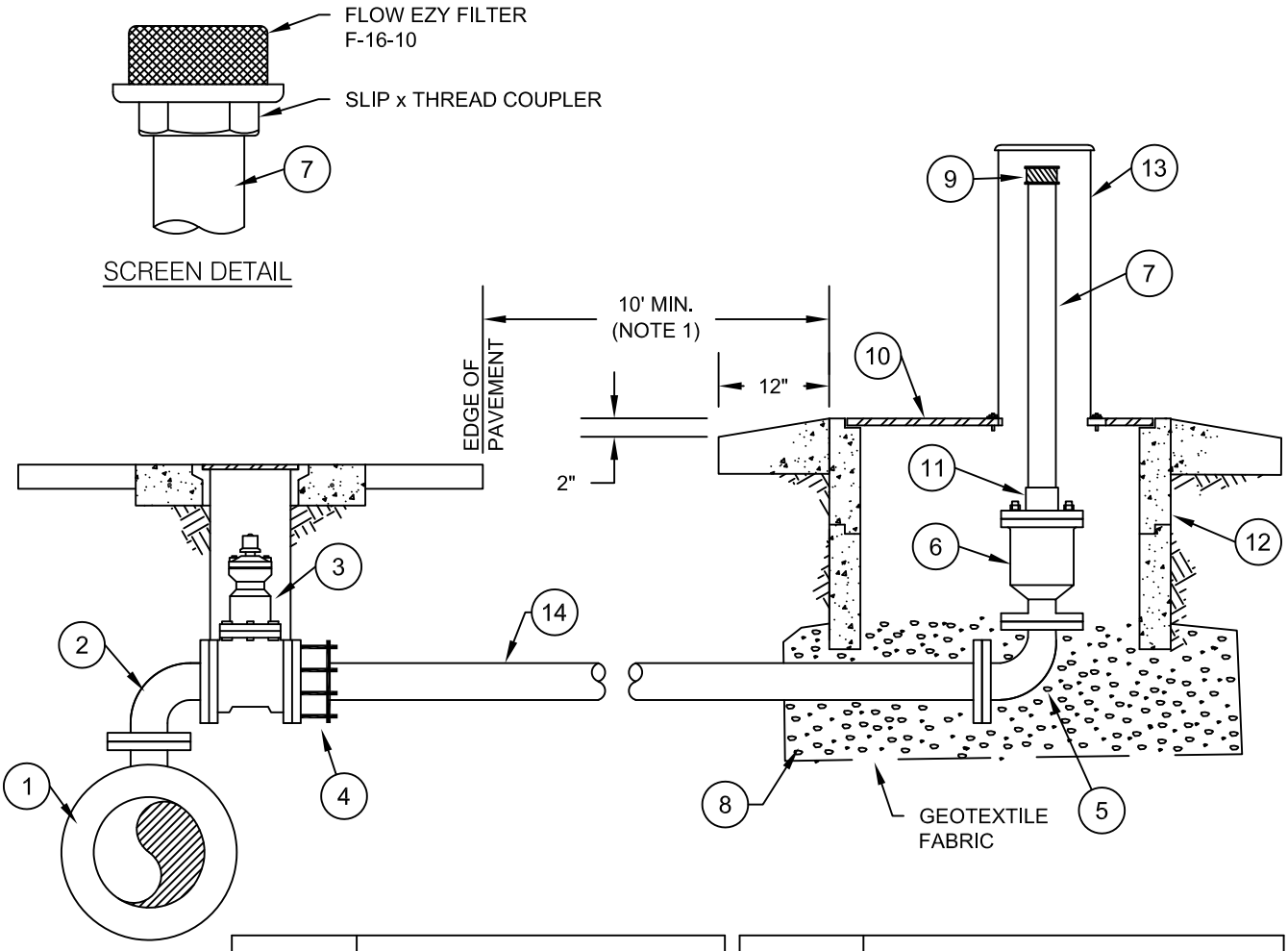


ITEM #	DESCRIPTION
1	12" X 4" DUCTILE IRON TEE
2	4" DUCTILE IRON 90° FLG BEND
3	4" AWWA GATE VALVE (SEE SPECIFICATIONS)
4	4" EBAA MEGA FLANGE OR EQUAL
5	4" X 3" RED 90° EL. SCH40(FUSION EPOXY COATED) CL300 FLG
6	3" AIR/SURGE/ VAC VALVE (SEE SPECIFICATIONS)
7	3" SCH80 PVC (NOTE 3)

ITEM #	DESCRIPTION
8	1/2" CRUSHED ROCK ENCAPSULATED IN GEO-TEXTILE
9	FLOW EZY FILTER SEE SCREEN DETAIL
10	3/16" DIAMOND PLATE 20.25" x 33.25" PLACER WATERWORKS PW/218(1730)
11	3" SCH 80 THREAD X SOLVENT WELD COUPLING
12	JENSEN PRECAST HT1730 TRAFFIC BOX OR EQUAL
13	8"X8"X18" AIR VENT TUBE, PLACER WATERWORKS AV-18
14	4" DIP SPOOL CLASS 250 FLANGED X PLAIN END

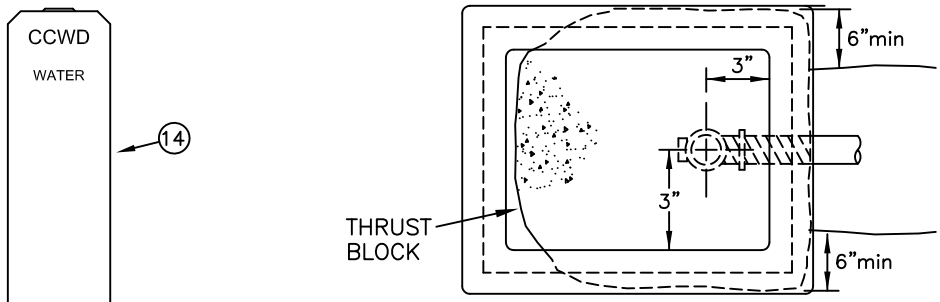
NOTES:

1. AIR VALVE BOX SHALL NOT BE LOCATED IN DRAINAGE DITCH. FINAL PLACEMENT AND LOCATION SHALL BE APPROVED BY ENGINEER TO SUITE ACTUAL FIELD CONDITIONS, TOPOGRAPHY AND GRADE.
2. PIPING INSTALLED PER STANDARD TRENCH DETAIL WITH POLYETHYLENE ENCASEMENT AND TRACER WIRE.
3. PRE-WELD PIPE TO COUPLING BEFORE THREADING INTO TOP OF AIR VALVE; SOLVENT MAY DAMAGE AIR VALVE.

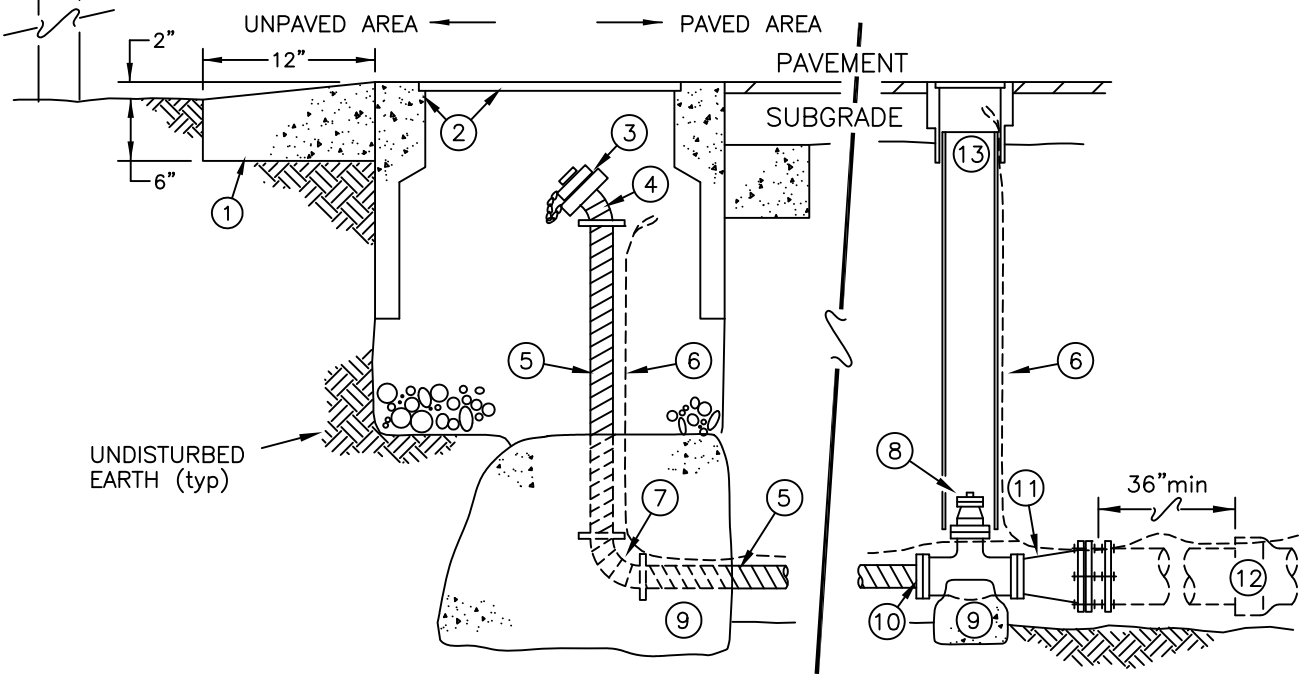
CALAVERAS COUNTY WATER DISTRICT

WATER DETAILS
AIR RELEASE VALVE (HIGH PRESSURE)

DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO.
APPROVED: CHARLES PALMER	DATE: 09/2021	W05



PLAN



ELEVATION

ITEM #	DESCRIPTION
1	6"x6" CONC COLLAR (PAVED) 6"x12" CONC COLLAR (UNPAVED)
2	CHRISTY PRECAST CONC. BOX B30 OR EQUAL w/STEEL COVER MARKED WATER
3	2" NOZZEL CAP, HOSE NOZZEL & CAP CHAIN, MUELLER FAB SERIES OR APPROVED EQUAL
4	2" BRASS 45° ELL, FIPxFIP
5	2" BRASS PIPE
6	LOCATOR WIRE PER W03 & W03A
7	2" BRASS 90° ELL, FIPxFIP

ITEM #	DESCRIPTION
8	4" GATE VALVE, FLxMJ PER W04 & W04A
9	THRUST BLOCKS PER W02 (USE 4" CALC'S)
10	4"x2" REDUCER FLANGE
11	__"x 4" REDUCER, MJxFL
12	8" OR SMALLER MAIN
13	VALVE BOX PER W04
14	PADDLE MARKER PER G11A

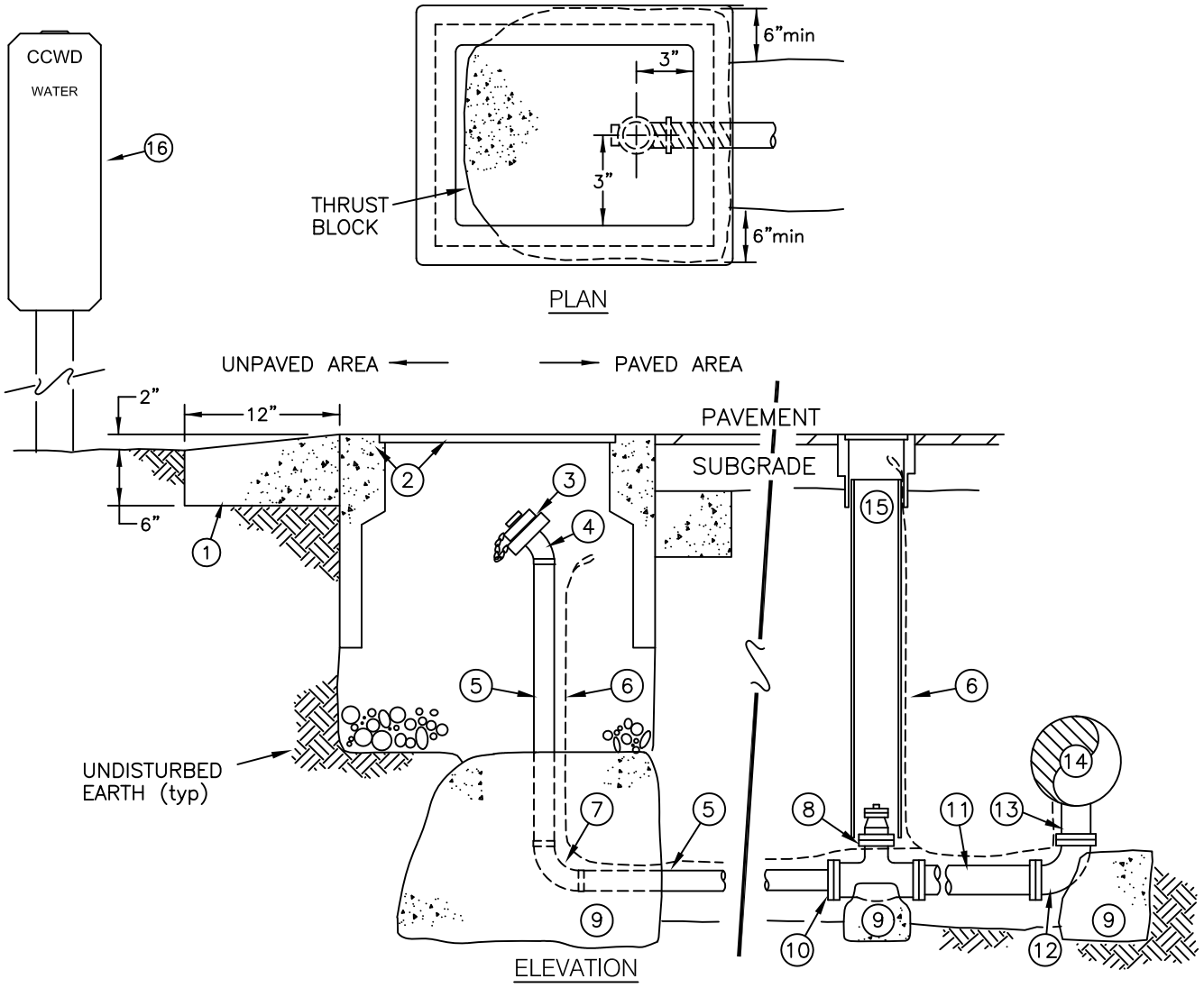
NOTES:

1. 2" BLOW-OFFS TO BE INSTALLED ON 8" AND SMALLER MAINS.
2. DISTRICT ENGINEER APPROVAL REQUIRED FOR BLOW-OFFS LARGER THAN 2".

CALAVERAS COUNTY WATER DISTRICT

WATER DETAILS
2" DEAD-END BLOW-OFF VALVE

DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO.
APPROVED: CHARLES PALMER	DATE: 09/2021	W06



ITEM #	DESCRIPTION
1	6"x6" CONC COLLAR (PAVED) 6"x12" CONC COLLAR (UNPAVED)
2	UTILITY BOX w/STEEL COVER MARKED WATER
3	2" NOZZEL CAP, HOSE NOZZEL & CAP CHAIN, MUELLER FAB SERIES OR APPROVED EQUAL
4	2" BRASS 45° ELL, FIPxFIP
5	2" BRASS PIPE
6	TRACER WIRE
7	2" BRASS 90° ELL, FIPxFIP
8	4" GATE VALVE, FLxFL PER W03 & W03A

ITEM #	DESCRIPTION
9	THRUST BLOCKS PER W02 (USE 4" CALC'S)
10	___"x 2" FLxFIP THREADED REDUCER
11	4" DIP, FLxFL
12	___X 4" DIP 90° BEND, FLxFL
13	___X 4" TEE FLxFL
14	8" OR SMALLER MAIN
15	VALVE BOX PER W03
16	PADDLE MARKER PER G12A

NOTES:

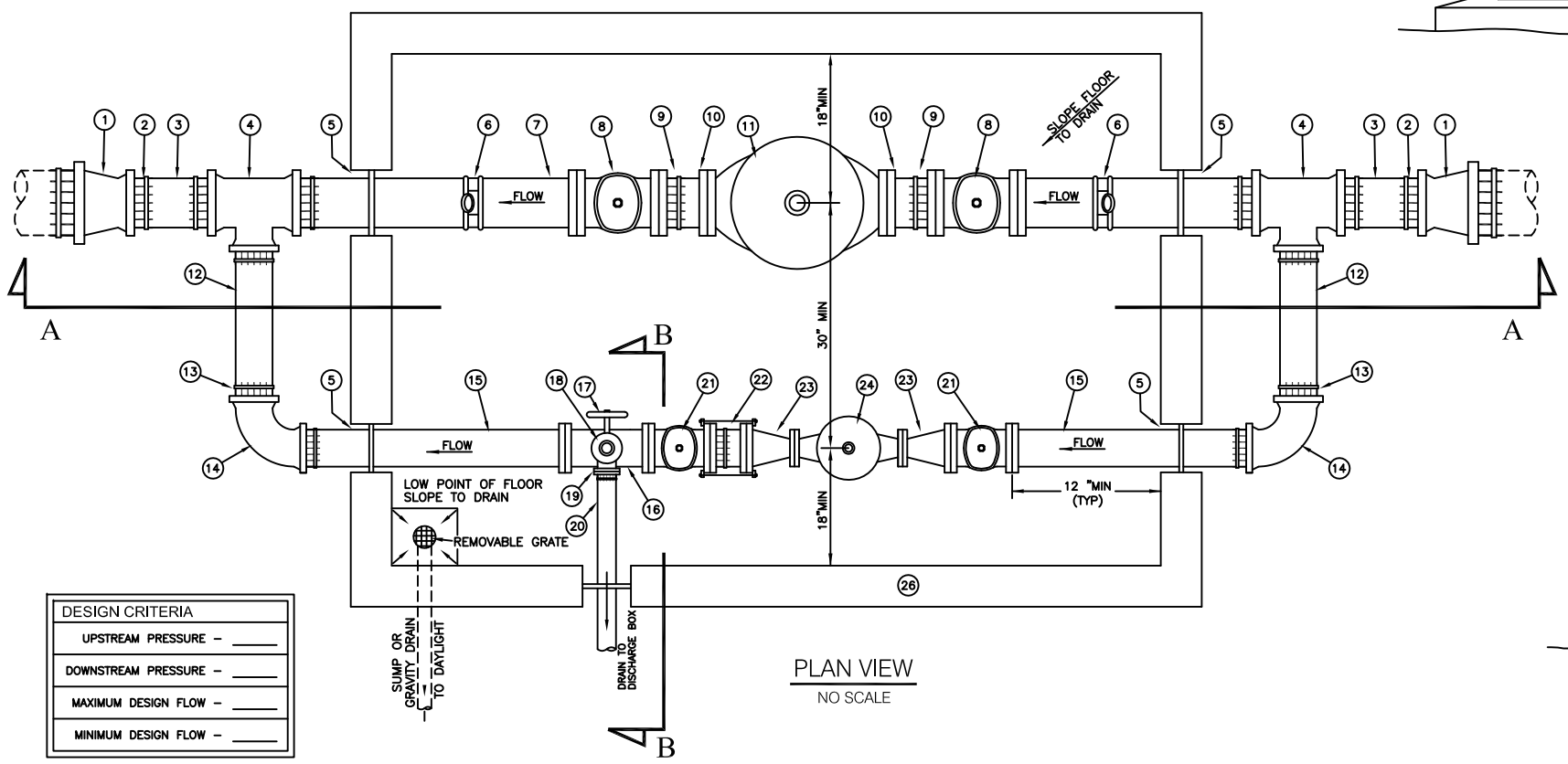
1. 2" BLOW-OFFS TO BE INSTALLED ON 8" AND SMALLER MAINS.
2. DISTRICT ENGINEER APPROVAL REQUIRED FOR BLOW-OFFS LARGER THAN 2".

CALAVERAS COUNTY WATER DISTRICT

WATER DETAILS
2" IN-LINE BLOW-OFF VALVE

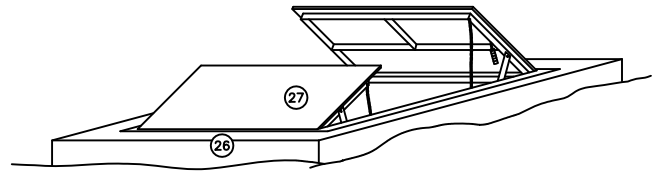
DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO. W06A
APPROVED: CHARLES PALMER	DATE: 09/2021	

F:\CCWD\1-ACAD_dwgs\Details\Nov2007_Working_Stds\FinalPass_Approved\Water\SD_W07A.dwg 20090226.1108

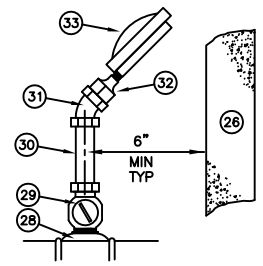


PLAN VIEW
NO SCALE

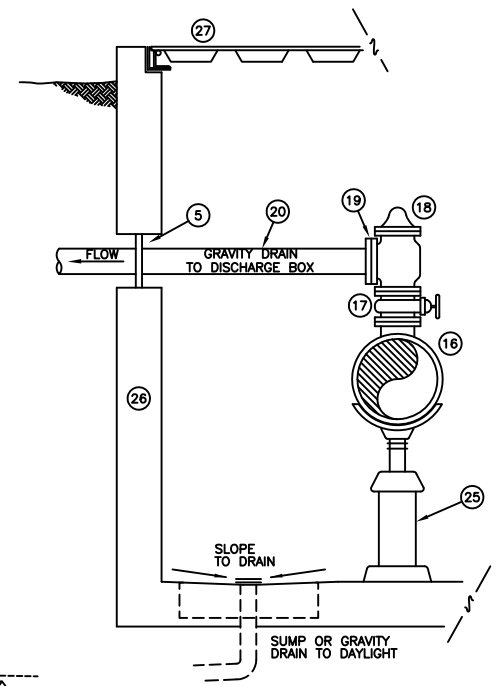
DESIGN CRITERIA
UPSTREAM PRESSURE – _____
DOWNSTREAM PRESSURE – _____
MAXIMUM DESIGN FLOW – _____
MINIMUM DESIGN FLOW – _____



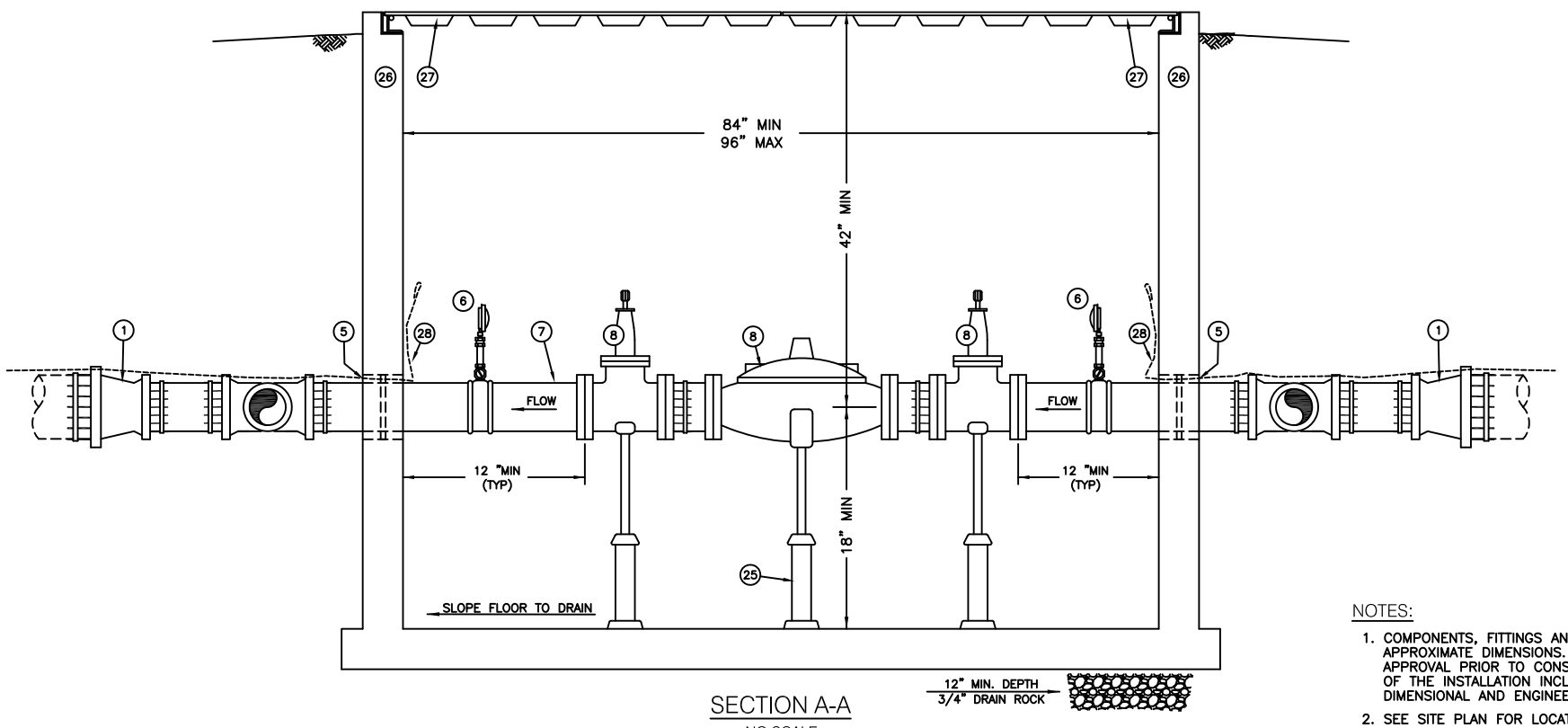
TOP VIEW OF VAULT
NO SCALE



PRESSURE GAGE (6)
NO SCALE



SECTION B-B
NO SCALE



SECTION A-A
NO SCALE

ITEM	DESCRIPTION
1	__" X 6" DUCTILE IRON REDUCER, MJ X MJ (IF REQUIRED)
2	MECHANICAL RESTRAINT GLAND (ROMAC GRIP RING, 350–PSI)
3	6" D.I.P. SPOOL, PLAIN ENDS
4	6" X 6" X 4" DUCTILE IRON TEE, MJ X MJ
5	CORE DRILL OR FORMED HOLES; FILL ANNULAR VOID WITH NON–SHRINK CONSTRUCTION GROUT, SAKRETE, SIKAGROUT, FIVE STAR, OR EUQAL
6	SADDLE, CORP STOP, PRESSURE GAGE ASSEMBLY (SEE DETAIL THIS SHEET)
7	6" D.I.P. SPOOL, FLANGE X PLAIN END, THICKNESS CLASS 53
8	6" AWWA C515 GATE VALVE, FL X FL, AWWA NUT OPERATORS, 350–PSI WORKING PRESSURE RATED, (MUELLER 350 A–2361)
9	6" RESTRAINED FLANGE ADAPTOR (EBAA 2100 MEGAFLANGE, 350–PSI)
10	6" D.I.P. SPOOL, CLASS 250 FLANGED END x PLAIN END
11	6" PRESSURE REDUCING VALVE, FL x FL (CLASS 300), CLA–VAL SERIES 90
12	4" D.I.P. SPOOL, PLAIN ENDS
13	MECHANICAL RESTRAINT GLAND (ROMAC GRIP RING, 350–PSI)
14	4" 90–DEGREE BEND, MJ X MJ
15	4" D.I.P. SPOOL, FLANGE X PLAIN ENDS, THICKNESS CLASS 53
16	4" X 4" X 2" DUCTILE IRON TEE, FLANGED ENDS
17	2" AWWA C515, GATE VALVE, FLANGED, 250–PSI UL/FM RATED WORKING PRESSURE, 375–PSI SEAT TEST, 500–PSI SHELL TEST, HANDWHEEL OPERATOR
18	2" PRESSURE RELIEF VALVE, FL X FL (CLASS 150), CLA–VAL SERIES 50
19	2" CLASS 150, ANSI B16.5, THREADED FLANGE, EPOXY COATED
20	2" SCH.40 STEEL PIPE, EXPOSED PIPE IN VAULT EPOXY PAINTED, PRIOR TO INSTALLING WRAP BURIED PIPE WITH CHASE TAPECOAT TR–GREEN OR EQUAL.
21	4" AWWA C515 GATE VALVE, FL X FL, AWWA NUT OPERATOR, 350–PSIG WORKING PRESSURE RATED (MUELLER 350 A–2361)
22	4" DISMANTLING JOINT, FL X FL (AWWA CLASS E), ROMAC DJ400 (275–PSI)
23	2"X4" FABRICATED FLANGED REDUCER BUTTWELD FITTING, CARBON STEEL CLASS 150 X CLASS 300 RATED FUSION EPOXY COATED PER AWWA C213
24	4" PRESSURE REDUCING VALVE, FL X FL (CLASS 300), CLA–VAL SERIES 90
25	PIPE SUPPORT, HOT DIP GALVANIZED, PLACER WATERWORKS (PW/PS) WITH STANDARD (PW/SDL–S) AND EXTRA LARGE (PW/SDL–X) SADDLES
26	PRECAST CONCRETE VAULT, MINIMUM 6'–0" I.D. X 8'–0" I.D., H20 TRAFFIC
27	MINIMUM 72"x84" DOUBLE LEAF HATCH, HOT DIP GALVANIZED, 1/4" STEEL 2–BAR FRAME, 1/4" STEEL DIAMOND PLATE, STAINLESS STEEL HARDWARE AND SAFETY ARMS, TORSION ASSIST, FOUR 1/2" SECURITY BOLTS, H20 TRAFFIC RATED (OFF STREET) AND H25 TRAFFIC RATED (ON STREET) LOCATIONS.
28	SERVICE SADDLE (MUELLER DR2A, NYLON DUCTILE IRON, DOUBLE STRAP)
29	3/4" CORP. STOP BALL VALVE (MUELLER 300–PSI, F.I.P. OUTLET, AWWA C800)
30	3/4" THREADED PIPE NIPPLE (RED BRASS ASTM B43, SCHEDULE 40)
31	3/4" 45–DEGREE BRASS COUPLING, LEAD FREE, CLASS 250 (MINIMUM)
32	BRASS REDUCER BUSHING, 3/4" MALE TO 1/4" FEMALE NPT REDUCING BUSHINGS (SWAGELOK 12–RB–4 OR EQUAL)
33	BOURDON TUBE PRES. GAGES (WIKA TYPE 213.53DW, LIQUID FILLED), DOWNSTREAM 0–300 PSI / UPSTREAM 0–400 PSI SCALE

NOTES:

1. COMPONENTS, FITTINGS AND OTHER DETAILS SHOWN HEREON, HAVE BEEN DRAWN TO APPROXIMATE DIMENSIONS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE DISTRICT FOR APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS SHALL SHOW COMPLETE DETAILS OF THE INSTALLATION INCLUDING SIZE, LOCATION, MANUFACTURERS NAME, MODEL AND DIMENSIONAL AND ENGINEERING DATA OF ALL COMPONENTS.
2. SEE SITE PLAN FOR LOCATION OF ALIGNMENTS AND OUTLETS.
3. PRESSURE REDUCING VALVES AND ALL UPSTREAM PIPES, FITTINGS, AND VALVES AND OTHER APPURTENANCES SHALL HAVE WORKING PRESSURE RATING OF NOT LESS THAN 350 P.S.I. EXCEPT AS OTHERWISE NOTED.

CALAVERAS COUNTY WATER DISTRICT

PRESSURE REDUCING STATION
6" MAIN / 4" X 2" BYPASS (PRESSURE CLASS 250/300)

DRAWN BY: CCWD STAFF	SCALE: NONE	CCWD STANDARD DRAWING NO. W13
APPROVED: CHARLES PALMER	DATE: 09/2021	

F:\CCWD\1–ACAD_dwgs\Details\Nov2007_Working_Stds\Final_Dec2008\Water\SD_W14.dwg 20090402.1429

Appendix B

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
EXISTING FIRE FLOW AT BUILD OUT

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
104.1	739.77	1,000.00	99.70	5,061.44	20	11.66	
J-29	0.93	66.26	738.83	1,000.00	19.9	999.71	20
J-30	0.88	69.69	738.83	1,000.00	22.22	1,027.34	20
J-33	1.87	76.05	738.86	1,000.00	28.38	1,098.27	20
476	0.97	62.83	738.88	1,000.00	26.65	1,103.04	20
J-34	0.47	60.90	738.88	1,000.00	26.88	1,112.76	20
J-31	0.46	69.02	738.83	1,000.00	29.21	1,127.73	20
J392	2.27	70.80	738.86	1,000.00	30.22	1,139.60	20
J418	1.37	73.12	738.82	1,000.00	33.28	1,181.58	20
J430	1.18	52.80	738.83	1,000.00	28.43	1,195.67	20
J-32	2.03	58.84	738.86	1,000.00	30.31	1,200.26	20
J-26	0.81	62.65	738.82	1,000.00	31.54	1,203.80	20
J426	0.92	64.56	738.82	1,000.00	33.16	1,227.98	20
J420	1.69	78.43	738.82	1,000.00	38.1	1,239.17	20
493	5.35	79.31	738.81	1,500.00	-0.68	1,270.16	20
478	2.07	54.57	738.85	1,000.00	33.08	1,332.94	20
J428	0.70	67.91	738.83	1,000.00	39.54	1,361.19	20
485	2.44	86.63	738.82	1,000.00	47.81	1,366.39	20
482	0.83	63.36	738.83	1,000.00	38.16	1,380.79	20
J422	2.17	88.25	738.82	1,000.00	49.97	1,396.73	20
J-27	6.33	100.48	738.82	1,000.00	55.58	1,400.84	20
J556	1.49	53.97	739.20	1,500.00	15.65	1,401.55	20
487	3.84	100.31	738.82	1,000.00	55.95	1,406.49	20
J432	5.95	88.40	738.81	1,000.00	50.74	1,416.32	20
J486	2.02	40.73	739.26	1,000.00	29.63	1,460.71	20
J396	1.36	67.84	738.84	1,000.00	42.71	1,463.22	20
468	2.97	58.62	738.86	1,000.00	38.15	1,467.42	20
143	1.87	70.79	739.23	1,000.00	45.07	1,476.03	20
J92	1.96	96.24	738.82	1,000.00	59.99	1,536.00	20
J394	0.83	64.10	738.86	1,000.00	43.05	1,557.34	20
491	0.28	74.17	738.82	1,000.00	48.6	1,557.54	20
150	6.30	93.18	739.19	1,000.00	59.81	1,567.20	20
477	0.48	64.28	738.86	1,000.00	43.39	1,567.77	20
J482	1.61	47.27	739.20	1,000.00	34.8	1,599.40	20
J408	1.10	79.53	738.88	1,000.00	53.61	1,625.49	20
J410	2.27	73.48	738.88	1,000.00	50.09	1,628.79	20
J406	0.81	81.68	738.88	1,000.00	55.23	1,638.26	20
474	1.07	82.31	738.88	1,000.00	55.95	1,651.61	20
J424	1.25	84.81	738.82	1,000.00	57.41	1,656.99	20
J416	1.61	99.72	738.82	1,000.00	66.6	1,661.89	20
149	1.59	91.16	739.19	1,000.00	62.19	1,668.68	20
475	0.85	76.54	738.88	1,000.00	52.97	1,673.06	20
473	2.38	79.63	738.88	1,000.00	54.85	1,673.83	20
492	5.27	91.70	738.82	1,000.00	62.56	1,695.80	20
488	0.49	83.44	738.82	1,000.00	57.76	1,702.80	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
EXISTING FIRE FLOW AT BUILD OUT

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
480	0.73	76.21	738.88	1,000.00	53.43	1,703.10	20
J404	1.04	83.33	738.87	1,000.00	58	1,708.24	20
484	0.70	84.04	738.83	1,000.00	58.35	1,710.31	20
486	0.42	87.43	738.83	1,000.00	60.5	1,711.53	20
472	0.78	76.20	738.87	1,000.00	53.64	1,713.74	20
J402	1.30	77.42	738.87	1,000.00	54.69	1,727.81	20
483	0.90	81.48	738.84	1,000.00	57.47	1,741.60	20
J-28	0.57	88.69	738.82	1,000.00	62.42	1,757.88	20
J398	2.73	86.05	738.85	1,000.00	61.08	1,770.73	20
J400	1.74	79.16	738.87	1,000.00	56.69	1,770.98	20
J414	0.65	77.61	738.88	1,000.00	55.81	1,776.04	20
J366	7.91	95.99	739.19	1,000.00	68.03	1,776.84	20
J370	1.06	89.40	739.19	1,000.00	64.3	1,790.55	20
490	0.67	92.30	738.82	1,000.00	65.64	1,793.87	20
489	0.59	92.34	738.82	1,000.00	65.71	1,795.33	20
481	1.06	82.77	738.87	1,000.00	60.11	1,821.89	20
471	1.36	78.81	738.88	1,000.00	58.14	1,859.65	20
J368	3.22	95.71	739.19	1,000.00	70.47	1,878.64	20
467	1.68	74.27	738.89	1,000.00	55.57	1,892.52	20
148	1.73	88.33	739.19	1,000.00	66.3	1,921.47	20
479	2.25	86.55	738.87	1,000.00	65.12	1,953.96	20
466	1.94	75.36	738.90	1,000.00	57.47	1,968.70	20
J-35	0.92	89.16	738.98	1,500.00	47.03	1,995.84	20
J484	2.38	54.95	739.22	1,000.00	44.37	2,056.37	20
J412	1.99	93.01	738.88	1,000.00	71.61	2,060.20	20
J124	6.95	74.36	738.95	1,000.00	57.98	2,060.62	20
J88	0.84	80.87	738.90	1,000.00	62.87	2,071.31	20
J474	6.51	48.86	739.26	1,000.00	40.06	2,078.94	20
J468	0.73	54.34	739.21	1,000.00	44.14	2,085.81	20
J490	3.22	59.06	739.21	1,500.00	36.78	2,089.62	20
465	2.00	82.02	738.91	1,000.00	64.57	2,135.12	20
J466	0.88	56.92	739.20	1,500.00	36.75	2,148.63	20
152	2.11	88.98	739.22	1,000.00	70.71	2,158.12	20
J376	1.49	88.94	739.22	1,000.00	70.8	2,166.00	20
470	1.25	89.83	738.89	1,000.00	70.88	2,171.03	20
J382	2.83	91.44	739.05	1,000.00	72.61	2,173.26	20
J470	0.97	55.63	739.22	1,000.00	45.76	2,177.60	20
146	1.21	80.20	739.21	1,000.00	64.33	2,183.02	20
J390	2.49	82.68	738.93	1,500.00	49.85	2,196.33	20
138	2.41	76.60	739.23	1,000.00	61.78	2,197.56	20
J450	2.70	91.29	739.23	1,000.00	73.19	2,210.28	20
147	4.48	81.80	739.20	1,000.00	65.97	2,224.24	20
J388	0.76	90.26	738.90	1,000.00	72.17	2,242.38	20
J374	1.66	83.28	739.21	1,000.00	67.48	2,252.14	20
142	1.78	81.82	739.23	1,000.00	66.39	2,252.70	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
EXISTING FIRE FLOW AT BUILD OUT

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J372	6.12	84.07	739.21	1,000.00	68.16	2,264.12	20
151	0.70	84.31	739.23	1,000.00	68.5	2,267.35	20
J380	0.83	75.99	739.08	1,000.00	61.94	2,276.22	20
140	0.99	84.31	739.23	1,000.00	68.61	2,277.64	20
J384	2.49	97.83	739.03	1,500.00	60.17	2,278.44	20
137	7.99	78.92	739.24	1,000.00	64.44	2,284.98	20
460	0.90	64.50	739.11	1,000.00	53.11	2,288.87	20
139	1.55	85.34	739.23	1,000.00	69.54	2,289.08	20
145	1.50	84.20	739.22	1,000.00	68.71	2,298.12	20
464	1.16	81.43	738.98	1,500.00	52.21	2,325.28	20
144	0.56	85.77	739.22	1,000.00	70.43	2,341.93	20
462	1.73	81.78	739.08	1,000.00	67.21	2,350.49	20
141	0.47	85.38	739.22	1,000.00	70.24	2,353.09	20
J492	0.92	63.06	739.19	1,500.00	42.98	2,358.68	20
J386	1.19	74.20	739.05	1,500.00	49.02	2,363.25	20
469	1.21	97.47	738.90	1,000.00	79.33	2,367.91	20
136	2.75	84.47	739.28	1,000.00	70.18	2,411.40	20
J472	5.32	59.94	739.24	1,000.00	50.89	2,470.89	20
135	2.40	81.44	739.28	1,000.00	68.28	2,474.85	20
J480	1.05	73.26	739.20	1,000.00	61.7	2,483.52	20
461	0.93	75.17	739.08	1,000.00	63.08	2,501.57	20
J494	12.18	59.43	739.29	1,000.00	51.12	2,599.42	20
J90	0.60	91.89	738.99	1,500.00	63.69	2,601.19	20
459	1.82	95.09	739.12	1,000.00	80.76	2,649.15	20
J436	3.71	75.42	739.34	1,000.00	64.99	2,699.91	20
463	2.03	95.03	739.01	1,500.00	67.77	2,722.15	20
J462	1.78	69.77	739.25	1,500.00	52.8	2,853.50	20
134	4.70	79.15	739.36	1,000.00	69.56	2,960.33	20
J476	0.67	81.19	739.18	1,000.00	71.19	2,980.34	20
J464	1.78	77.83	739.21	1,500.00	59.99	3,021.45	20
132	6.00	96.42	739.62	1,000.00	85.74	3,094.64	20
1	1.10	86.97	739.16	1,000.00	76.88	3,134.03	20
J478	2.23	75.27	739.28	1,500.00	59.31	3,147.48	20
J558	12.58	87.15	739.17	1,500.00	68.07	3,172.73	20
458	1.58	99.93	739.14	1,000.00	89.37	3,372.50	20
J488	4.58	80.22	739.33	1,500.00	66.06	3,562.73	20
J434	0.66	86.05	739.39	1,500.00	70.97	3,587.09	20
129	0.38	88.86	739.40	1,500.00	75.28	3,927.08	20
128	0.69	87.80	739.41	1,500.00	74.99	4,040.46	20
126	4.00	91.62	739.49	1,500.00	79.9	4,393.75	20
131	0.30	94.65	739.63	1,500.00	84.06	4,662.20	20
130	0.33	93.57	739.59	1,500.00	83.11	4,670.21	20
125	0.30	99.85	739.63	1,000.00	94.43	4,772.16	20
124	0.19	99.21	739.63	1,000.00	93.99	4,811.88	20
123	0.40	104.06	739.77	1,000.00	99.7	5,061.44	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 1A - 16" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J-29	0.93	63.74	733.00	1,000.00	12.38	912.18	20
J-30	0.88	67.17	733.00	1,000.00	14.7	941.29	20
476	0.97	60.31	733.05	1,000.00	19.13	988.64	20
J-34	0.47	58.38	733.05	1,000.00	19.36	990.82	20
J-33	1.87	73.53	733.03	1,000.00	20.86	1,011.23	20
J430	1.18	50.28	733.01	1,000.00	20.91	1,019.95	20
J-31	0.46	66.5	733.00	1,000.00	21.69	1,022.29	20
J392	2.27	68.28	733.03	1,000.00	22.7	1,036.22	20
J-32	2.03	56.32	733.03	1,000.00	22.79	1,050.70	20
J-26	0.81	60.13	732.99	1,000.00	24.02	1,065.47	20
J418	1.37	70.6	732.99	1,000.00	25.76	1,074.35	20
J426	0.92	62.04	732.99	1,000.00	25.64	1,089.97	20
J486	2.02	38.23	733.49	1,000.00	23.05	1,121.93	20
478	2.07	52.05	733.02	1,000.00	25.56	1,125.25	20
J420	1.69	75.91	732.99	1,000.00	30.58	1,131.36	20
493	5.35	76.79	732.99	1,500.00	-12.84	1,158.76	20
J556	1.49	51.47	733.42	1,500.00	4.5	1,189.56	20
482	0.83	60.84	733.00	1,000.00	30.64	1,199.79	20
J428	0.70	65.39	733.00	1,000.00	32.03	1,201.60	20
468	2.97	56.1	733.03	1,000.00	30.63	1,239.60	20
485	2.44	84.1	732.99	1,000.00	40.29	1,249.80	20
J482	1.61	44.77	733.42	1,000.00	27.8	1,261.17	20
J422	2.17	85.73	732.99	1,000.00	42.45	1,277.20	20
J396	1.36	65.32	733.02	1,000.00	35.19	1,277.54	20
J432	5.95	85.88	732.99	1,000.00	43.22	1,293.97	20
J-27	6.33	97.96	732.99	1,000.00	48.06	1,299.11	20
487	3.84	97.79	732.99	1,000.00	48.43	1,303.23	20
J394	0.83	61.58	733.03	1,000.00	35.53	1,328.30	20
477	0.48	61.76	733.03	1,000.00	35.87	1,336.27	20
491	0.28	71.65	733.00	1,000.00	41.08	1,368.01	20
J92	1.96	93.72	732.99	1,000.00	52.47	1,403.75	20
J410	2.27	70.96	733.05	1,000.00	42.57	1,419.22	20
J408	1.10	77.01	733.05	1,000.00	46.1	1,436.55	20
J406	0.81	79.16	733.05	1,000.00	47.71	1,452.29	20
475	0.85	74.02	733.05	1,000.00	45.45	1,461.66	20
474	1.07	79.79	733.05	1,000.00	48.43	1,464.15	20
473	2.38	77.11	733.05	1,000.00	47.33	1,472.98	20
J424	1.25	82.29	732.99	1,000.00	49.89	1,474.07	20
143	1.87	68.39	733.66	1,000.00	43.82	1,477.29	20
480	0.73	73.69	733.05	1,000.00	45.91	1,482.06	20
472	0.78	73.68	733.05	1,000.00	46.12	1,489.59	20
J402	1.30	74.9	733.05	1,000.00	47.17	1,504.26	20
488	0.49	80.92	732.99	1,000.00	50.24	1,504.39	20
J404	1.04	80.81	733.05	1,000.00	50.48	1,509.33	20
J416	1.61	97.2	733.00	1,000.00	59.09	1,510.96	20
484	0.70	81.52	733.00	1,000.00	50.83	1,511.98	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 1A - 16" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
492	5.27	89.18	732.99	1,000.00	55.05	1,521.71	20
486	0.42	84.91	733.00	1,000.00	52.98	1,522.19	20
483	0.90	78.96	733.01	1,000.00	49.96	1,527.34	20
J414	0.65	75.09	733.05	1,000.00	48.29	1,539.10	20
J400	1.74	76.64	733.04	1,000.00	49.17	1,541.53	20
J-28	0.57	86.17	732.99	1,000.00	54.91	1,560.34	20
J398	2.73	83.53	733.02	1,000.00	53.56	1,563.65	20
J474	6.51	46.37	733.49	1,000.00	33.48	1,568.44	20
481	1.06	80.25	733.05	1,000.00	52.59	1,590.47	20
490	0.67	89.78	732.99	1,000.00	58.13	1,596.97	20
489	0.59	89.82	732.99	1,000.00	58.19	1,598.16	20
471	1.36	76.29	733.05	1,000.00	50.62	1,602.56	20
467	1.68	71.75	733.06	1,000.00	48.05	1,605.17	20
J468	0.73	51.85	733.46	1,000.00	37.42	1,627.28	20
J484	2.38	52.46	733.48	1,000.00	37.88	1,635.17	20
466	1.94	72.84	733.07	1,000.00	49.95	1,661.26	20
J466	0.88	54.42	733.42	1,500.00	25.59	1,669.72	20
J490	3.22	56.57	733.46	1,500.00	26.18	1,678.31	20
150	6.30	90.93	733.99	1,000.00	62.8	1,693.25	20
479	2.25	84.03	733.04	1,000.00	57.6	1,697.95	20
J470	0.97	53.15	733.48	1,000.00	39.27	1,710.09	20
J124	6.95	71.84	733.12	1,000.00	50.47	1,718.16	20
J-35	0.92	86.64	733.16	1,500.00	34.87	1,738.19	20
J88	0.84	78.35	733.07	1,000.00	55.36	1,755.08	20
460	0.90	61.98	733.28	1,000.00	45.59	1,781.76	20
J412	1.99	90.49	733.06	1,000.00	64.09	1,795.45	20
465	2.00	79.5	733.08	1,000.00	57.05	1,803.15	20
149	1.59	88.91	734.00	1,000.00	65.17	1,832.35	20
J492	0.92	60.55	733.40	1,500.00	31.56	1,834.96	20
J390	2.49	80.16	733.11	1,500.00	37.69	1,846.73	20
470	1.25	87.31	733.06	1,000.00	63.37	1,860.47	20
J380	0.83	73.47	733.26	1,000.00	54.42	1,862.58	20
J382	2.83	88.92	733.23	1,000.00	65.09	1,872.26	20
J386	1.19	71.68	733.22	1,500.00	36.86	1,900.39	20
J494	12.18	56.91	733.46	1,000.00	43.8	1,906.04	20
J388	0.76	87.74	733.07	1,000.00	64.65	1,910.27	20
464	1.16	78.91	733.16	1,500.00	40.05	1,922.16	20
462	1.73	79.26	733.26	1,000.00	59.69	1,943.02	20
J366	7.91	93.74	733.99	1,000.00	71.02	1,962.87	20
J480	1.05	70.74	733.37	1,000.00	54.16	1,964.63	20
J384	2.49	95.31	733.20	1,500.00	48.01	1,967.64	20
J472	5.32	57.47	733.52	1,000.00	45.05	1,983.53	20
461	0.93	72.65	733.26	1,000.00	55.56	1,986.48	20
J370	1.06	87.16	734.00	1,000.00	67.28	2,007.00	20
469	1.21	94.95	733.07	1,000.00	71.81	2,023.79	20
J462	1.78	67.24	733.39	1,500.00	40.23	2,101.07	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 1A - 16" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J368	3.22	93.46	733.99	1,000.00	73.45	2,107.50	20
J90	0.60	89.37	733.17	1,500.00	51.53	2,149.23	20
132	6.00	93.75	733.45	1,000.00	74.12	2,180.61	20
459	1.82	92.57	733.29	1,000.00	73.24	2,199.44	20
148	1.73	86.08	734.00	1,000.00	69.28	2,204.69	20
138	2.41	74.18	733.64	1,000.00	60.19	2,236.88	20
J436	3.71	72.89	733.49	1,000.00	58.92	2,236.90	20
463	2.03	92.51	733.18	1,500.00	55.61	2,240.54	20
J450	2.70	88.88	733.66	1,000.00	71.9	2,263.24	20
152	2.11	86.6	733.72	1,000.00	70.26	2,268.82	20
J464	1.78	75.3	733.37	1,500.00	47.64	2,273.32	20
J376	1.49	86.56	733.71	1,000.00	70.33	2,277.15	20
J478	2.23	72.73	733.41	1,500.00	46.46	2,280.34	20
136	2.75	82	733.56	1,000.00	66.58	2,280.84	20
137	7.99	76.49	733.62	1,000.00	62.37	2,286.43	20
J476	0.67	78.68	733.36	1,000.00	63.79	2,302.93	20
142	1.78	79.42	733.66	1,000.00	65.14	2,325.10	20
135	2.40	78.97	733.56	1,000.00	64.68	2,330.71	20
151	0.70	81.9	733.66	1,000.00	67.18	2,332.13	20
140	0.99	81.9	733.66	1,000.00	67.34	2,348.53	20
134	4.70	76.6	733.47	1,000.00	62.8	2,350.73	20
139	1.55	82.93	733.65	1,000.00	68.2	2,353.53	20
1	1.10	84.45	733.33	1,000.00	69.36	2,418.38	20
J558	12.58	84.63	733.34	1,500.00	55.85	2,442.89	20
141	0.47	82.98	733.67	1,000.00	69.18	2,455.64	20
145	1.50	81.83	733.73	1,000.00	68.41	2,468.18	20
J488	4.58	77.67	733.44	1,500.00	52.58	2,474.11	20
144	0.56	83.39	733.70	1,000.00	69.79	2,484.19	20
146	1.21	77.88	733.86	1,000.00	65.57	2,496.61	20
J374	1.66	80.95	733.82	1,000.00	68.28	2,528.87	20
J434	0.66	83.48	733.46	1,500.00	57.65	2,562.38	20
131	0.30	91.98	733.45	1,500.00	63.94	2,618.69	20
128	0.69	85.22	733.45	1,500.00	59.88	2,636.94	20
458	1.58	97.41	733.31	1,000.00	81.85	2,640.51	20
130	0.33	90.91	733.45	1,500.00	63.77	2,649.97	20
129	0.38	86.28	733.45	1,500.00	60.79	2,650.66	20
J372	6.12	81.78	733.91	1,000.00	70.01	2,665.97	20
126	4.00	89	733.45	1,500.00	62.81	2,671.86	20
125	0.30	97.18	733.45	1,000.00	82.76	2,739.06	20
124	0.19	96.54	733.45	1,000.00	82.24	2,741.28	20
123	0.40	101.33	733.45	1,000.00	86.46	2,759.90	20
147	4.48	79.55	734.01	1,000.00	68.95	2,768.72	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 1B - 12" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J486	2.02	37.43	731.64	1,000.00	10.19	751.49	20
J-29	0.93	62.93	731.14	1,000.00	-0.48	793.68	20
J430	1.18	49.47	731.15	1,000.00	8.05	809.09	20
J-30	0.88	66.37	731.14	1,000.00	1.84	822.76	20
J-34	0.47	57.58	731.19	1,000.00	6.49	830.89	20
476.00	0.97	59.51	731.19	1,000.00	6.27	836.56	20
J-32	2.03	55.51	731.17	1,000.00	9.92	859.81	20
J-31	0.46	65.70	731.14	1,000.00	8.83	877.54	20
478.00	2.07	51.25	731.16	1,000.00	12.7	878.26	20
J-26	0.81	59.32	731.13	1,000.00	11.15	884.06	20
J482	1.61	43.97	731.56	1,000.00	14.93	886.78	20
J-33	1.87	72.72	731.18	1,000.00	7.99	887.81	20
J392	2.27	67.48	731.18	1,000.00	9.84	892.93	20
J426	0.92	61.24	731.14	1,000.00	12.77	907.05	20
J556	1.49	50.66	731.56	1,500.00	-19.12	914.37	20
J418	1.37	69.80	731.13	1,000.00	12.9	924.57	20
468.00	2.97	55.29	731.18	1,000.00	17.77	965.22	20
482.00	0.83	60.04	731.14	1,000.00	17.78	967.94	20
J420	1.69	75.11	731.13	1,000.00	17.71	977.68	20
J428	0.7	64.59	731.14	1,000.00	19.16	989.34	20
493.00	5.35	75.98	731.13	1,500.00	-36.46	999.72	20
J474	6.51	45.56	731.64	1,000.00	20.62	1,022.41	20
J396	1.36	64.51	731.16	1,000.00	22.32	1,034.90	20
J394	0.83	60.78	731.17	1,000.00	22.67	1,043.98	20
477.00	0.48	60.96	731.17	1,000.00	23	1,049.15	20
485.00	2.44	83.30	731.13	1,000.00	27.42	1,079.67	20
J422	2.17	84.93	731.13	1,000.00	29.59	1,102.23	20
J468	0.73	51.05	731.6	1,000.00	24.55	1,106.83	20
491.00	0.28	70.85	731.14	1,000.00	28.22	1,114.62	20
J432	5.95	85.08	731.13	1,000.00	30.35	1,115.10	20
J484	2.38	51.66	731.62	1,000.00	25.02	1,118.14	20
J410	2.27	70.16	731.2	1,000.00	29.7	1,143.37	20
J-27	6.33	97.16	731.13	1,000.00	35.2	1,144.43	20
487.00	3.84	96.99	731.13	1,000.00	35.56	1,146.38	20
J466	0.88	53.61	731.56	1,500.00	1.98	1,150.24	20
J470	0.97	52.34	731.62	1,000.00	26.41	1,151.82	20
143.00	1.87	67.58	731.81	1,000.00	30.95	1,171.22	20
J490	3.22	55.77	731.6	1,500.00	2.56	1,177.77	20
J408	1.1	76.21	731.19	1,000.00	33.23	1,178.42	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 1B - 12" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
475.00	0.85	73.22	731.19	1,000.00	32.58	1,180.60	20
480.00	0.73	72.89	731.19	1,000.00	33.04	1,190.69	20
472.00	0.78	72.88	731.19	1,000.00	33.25	1,194.85	20
J406	0.81	78.36	731.19	1,000.00	34.85	1,195.89	20
473.00	2.38	76.31	731.19	1,000.00	34.47	1,200.91	20
474.00	1.07	78.98	731.19	1,000.00	35.57	1,205.47	20
J92	1.96	92.92	731.13	1,000.00	39.6	1,207.48	20
J402	1.3	74.10	731.19	1,000.00	34.31	1,208.89	20
J424	1.25	81.49	731.14	1,000.00	37.02	1,219.39	20
J414	0.65	74.29	731.19	1,000.00	35.43	1,229.01	20
488.00	0.49	80.12	731.14	1,000.00	37.38	1,232.36	20
J404	1.04	80.00	731.19	1,000.00	37.61	1,236.32	20
J400	1.74	75.84	731.19	1,000.00	36.31	1,237.90	20
483.00	0.9	78.16	731.15	1,000.00	37.09	1,238.64	20
484.00	0.7	80.72	731.14	1,000.00	37.96	1,239.45	20
467.00	1.68	70.95	731.2	1,000.00	35.18	1,247.82	20
486.00	0.42	84.10	731.14	1,000.00	40.11	1,257.73	20
460.00	0.9	61.18	731.43	1,000.00	32.72	1,264.00	20
471.00	1.36	75.49	731.19	1,000.00	37.75	1,269.85	20
J494	12.18	56.10	731.61	1,000.00	30.93	1,270.15	20
492.00	5.27	88.37	731.13	1,000.00	42.18	1,273.13	20
J492	0.92	59.75	731.54	1,500.00	7.94	1,274.61	20
J398	2.73	82.72	731.16	1,000.00	40.7	1,279.05	20
481.00	1.06	79.45	731.19	1,000.00	39.72	1,281.07	20
466.00	1.94	72.03	731.21	1,000.00	37.08	1,282.98	20
J-28	0.57	85.37	731.14	1,000.00	42.04	1,285.19	20
J416	1.61	96.39	731.14	1,000.00	46.22	1,287.76	20
J472	5.32	56.67	731.67	1,000.00	32.19	1,298.65	20
J124	6.95	71.04	731.26	1,000.00	37.6	1,308.73	20
490.00	0.67	88.98	731.14	1,000.00	45.26	1,319.94	20
489.00	0.59	89.02	731.14	1,000.00	45.32	1,320.77	20
479.00	2.25	83.22	731.19	1,000.00	44.74	1,358.15	20
J88	0.84	77.55	731.21	1,000.00	42.49	1,360.69	20
J380	0.83	72.67	731.4	1,000.00	41.56	1,387.42	20
J386	1.19	70.88	731.36	1,500.00	13.24	1,390.73	20
465.00	2	78.69	731.23	1,000.00	44.19	1,392.14	20
150.00	6.3	90.13	732.13	1,000.00	49.93	1,392.70	20
J-35	0.92	85.84	731.3	1,500.00	11.25	1,393.22	20
J480	1.05	69.93	731.51	1,000.00	41.29	1,414.76	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 1B - 12" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J390	2.49	79.35	731.25	1,500.00	14.07	1,418.20	20
461.00	0.93	71.84	731.4	1,000.00	42.7	1,435.48	20
J462	1.78	66.43	731.53	1,500.00	16.61	1,437.99	20
J412	1.99	89.69	731.2	1,000.00	51.23	1,440.00	20
464.00	1.16	78.11	731.3	1,500.00	16.43	1,447.65	20
470.00	1.25	86.51	731.2	1,000.00	50.5	1,460.69	20
462.00	1.73	78.46	731.4	1,000.00	46.82	1,462.65	20
149.00	1.59	88.11	732.14	1,000.00	52.31	1,463.75	20
J382	2.83	88.11	731.37	1,000.00	52.22	1,478.75	20
J388	0.76	86.93	731.21	1,000.00	51.78	1,488.70	20
J436	3.71	72.09	731.63	1,000.00	46.06	1,544.63	20
J370	1.06	86.35	732.14	1,000.00	54.41	1,547.45	20
J478	2.23	71.93	731.56	1,500.00	22.84	1,555.06	20
J384	2.49	94.50	731.34	1,500.00	24.39	1,557.82	20
J366	7.91	92.94	732.13	1,000.00	58.15	1,558.36	20
138.00	2.41	73.38	731.78	1,000.00	47.32	1,558.83	20
J464	1.78	74.50	731.51	1,500.00	24.03	1,574.15	20
469.00	1.21	94.14	731.21	1,000.00	58.94	1,582.29	20
137.00	7.99	75.69	731.76	1,000.00	49.5	1,600.22	20
J476	0.67	77.88	731.51	1,000.00	50.92	1,612.90	20
J90	0.6	88.57	731.31	1,500.00	27.91	1,616.50	20
134.00	4.7	75.80	731.62	1,000.00	49.93	1,619.37	20
J368	3.22	92.66	732.14	1,000.00	60.59	1,630.85	20
135.00	2.4	78.16	731.7	1,000.00	51.82	1,632.85	20
148.00	1.73	85.28	732.14	1,000.00	56.42	1,635.83	20
142.00	1.78	78.61	731.81	1,000.00	52.28	1,636.01	20
136.00	2.75	81.19	731.7	1,000.00	53.71	1,636.77	20
151.00	0.7	81.10	731.8	1,000.00	54.31	1,657.44	20
459.00	1.82	91.77	731.43	1,000.00	60.38	1,662.05	20
140.00	0.99	81.10	731.81	1,000.00	54.47	1,664.17	20
132.00	6	92.94	731.59	1,000.00	61.25	1,664.44	20
152.00	2.11	85.79	731.86	1,000.00	57.39	1,665.76	20
J376	1.49	85.76	731.85	1,000.00	57.46	1,668.78	20
J488	4.58	76.87	731.59	1,500.00	28.96	1,671.04	20
139.00	1.55	82.13	731.8	1,000.00	55.33	1,674.30	20
J450	2.7	88.08	731.8	1,000.00	59.03	1,677.36	20
463.00	2.03	91.70	731.32	1,500.00	31.99	1,678.13	20
146.00	1.21	77.08	732	1,000.00	52.71	1,688.90	20
1.00	1.1	83.65	731.47	1,000.00	56.5	1,702.60	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 1B - 12" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
145.00	1.5	81.03	731.87	1,000.00	55.55	1,710.97	20
141.00	0.47	82.17	731.82	1,000.00	56.32	1,714.01	20
J558	12.58	83.83	731.48	1,500.00	32.24	1,720.76	20
J374	1.66	80.15	731.96	1,000.00	55.41	1,727.26	20
144.00	0.56	82.58	731.85	1,000.00	56.93	1,728.67	20
J434	0.66	82.68	731.6	1,500.00	34.04	1,751.67	20
J372	6.12	80.98	732.05	1,000.00	57.14	1,786.73	20
128.00	0.69	84.42	731.59	1,500.00	36.26	1,792.44	20
147.00	4.48	78.75	732.15	1,000.00	56.09	1,802.31	20
129.00	0.38	85.48	731.59	1,500.00	37.17	1,806.26	20
126.00	4	88.20	731.59	1,500.00	39.2	1,838.48	20
131.00	0.3	91.17	731.59	1,500.00	40.33	1,839.45	20
130.00	0.33	90.11	731.59	1,500.00	40.16	1,843.24	20
458.00	1.58	96.61	731.46	1,000.00	68.99	1,883.86	20
124.00	0.19	95.74	731.59	1,000.00	69.37	1,919.81	20
125.00	0.3	96.38	731.59	1,000.00	69.89	1,923.68	20
123.00	0.4	100.53	731.59	1,000.00	73.59	1,962.21	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 2A - 12" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J-29	0.93	63.89	733.35	1,000.00	15.94	951.42	20
J-30	0.88	67.32	733.35	1,000.00	18.26	980.4	20
476	0.97	60.46	733.4	1,000.00	22.69	1,041.43	20
J-34	0.47	58.53	733.4	1,000.00	22.91	1,047.07	20
J-33	1.87	73.68	733.38	1,000.00	24.41	1,051.95	20
J-31	0.46	66.65	733.35	1,000.00	25.25	1,071.68	20
J392	2.27	68.43	733.38	1,000.00	26.25	1,084.89	20
J430	1.18	50.43	733.36	1,000.00	24.47	1,100.99	20
J-32	2.03	56.47	733.38	1,000.00	26.34	1,120.86	20
J418	1.37	70.75	733.34	1,000.00	29.31	1,125.51	20
J-26	0.81	60.28	733.34	1,000.00	27.57	1,130.87	20
J426	0.92	62.19	733.34	1,000.00	29.19	1,155.78	20
J420	1.69	76.06	733.34	1,000.00	34.13	1,183.78	20
493	5.35	76.94	733.34	1,500.00	-6.25	1,213.28	20
478	2.07	52.20	733.37	1,000.00	29.12	1,223.92	20
J428	0.7	65.54	733.35	1,000.00	35.58	1,280.01	20
482	0.83	60.99	733.35	1,000.00	34.2	1,288.27	20
J556	1.49	51.62	733.77	1,500.00	11.08	1,302.30	20
485	2.44	84.26	733.34	1,000.00	43.84	1,308.32	20
J486	2.02	38.38	733.84	1,000.00	26.61	1,311.51	20
J422	2.17	85.88	733.34	1,000.00	46.01	1,337.59	20
J-27	6.33	98.11	733.34	1,000.00	51.62	1,350.91	20
468	2.97	56.25	733.38	1,000.00	34.19	1,350.97	20
487	3.84	97.94	733.34	1,000.00	51.98	1,355.87	20
J432	5.95	86.03	733.34	1,000.00	46.77	1,355.94	20
J396	1.36	65.47	733.37	1,000.00	38.74	1,370.09	20
J482	1.61	44.92	733.77	1,000.00	31.35	1,441.27	20
J394	0.83	61.73	733.38	1,000.00	39.09	1,442.79	20
477	0.48	61.92	733.38	1,000.00	39.42	1,452.15	20
491	0.28	71.80	733.35	1,000.00	44.63	1,464.42	20
J92	1.96	93.87	733.34	1,000.00	56.02	1,472.31	20
J410	2.27	71.12	733.4	1,000.00	46.12	1,526.49	20
J408	1.1	77.16	733.4	1,000.00	49.65	1,534.03	20
J406	0.81	79.31	733.4	1,000.00	51.27	1,548.60	20
474	1.07	79.94	733.4	1,000.00	51.99	1,561.42	20
J424	1.25	82.44	733.34	1,000.00	53.44	1,568.86	20
475	0.85	74.17	733.4	1,000.00	49	1,569.45	20
473	2.38	77.26	733.4	1,000.00	50.89	1,573.62	20
J416	1.61	97.35	733.35	1,000.00	62.64	1,582.22	20
480	0.73	73.85	733.4	1,000.00	49.46	1,582.82	20
143	1.87	68.54	734.01	1,000.00	47.37	1,584.40	20
472	0.78	73.83	733.4	1,000.00	49.67	1,587.61	20
488	0.49	81.07	733.34	1,000.00	53.79	1,589.94	20
J404	1.04	80.96	733.4	1,000.00	54.03	1,593.12	20
484	0.7	81.67	733.35	1,000.00	54.38	1,594.35	20
J402	1.3	75.05	733.39	1,000.00	50.73	1,595.69	20
492	5.27	89.33	733.34	1,000.00	58.6	1,596.34	20
486	0.42	85.06	733.35	1,000.00	56.53	1,598.18	20
483	0.9	79.11	733.36	1,000.00	53.51	1,606.44	20
J414	0.65	75.24	733.4	1,000.00	51.84	1,616.81	20
J400	1.74	76.79	733.39	1,000.00	52.73	1,617.40	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 2A - 12" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J-28	0.57	86.32	733.34	1,000.00	58.46	1,622.25	20
J398	2.73	83.68	733.37	1,000.00	57.12	1,626.67	20
490	0.67	89.93	733.34	1,000.00	61.68	1,643.97	20
481	1.06	80.40	733.39	1,000.00	56.14	1,644.65	20
489	0.59	89.97	733.34	1,000.00	61.74	1,644.69	20
471	1.36	76.45	733.4	1,000.00	54.17	1,654.23	20
467	1.68	71.90	733.41	1,000.00	51.6	1,658.50	20
J474	6.51	46.52	733.84	1,000.00	37.04	1,666.63	20
J468	0.73	52.00	733.8	1,000.00	40.97	1,681.83	20
J484	2.38	52.61	733.83	1,000.00	41.44	1,685.68	20
466	1.94	72.99	733.42	1,000.00	53.5	1,689.18	20
J466	0.88	54.57	733.77	1,500.00	32.18	1,698.75	20
J490	3.22	56.72	733.8	1,500.00	32.77	1,703.04	20
150	6.3	91.08	734.34	1,000.00	66.35	1,705.67	20
479	2.25	84.18	733.39	1,000.00	61.16	1,707.84	20
J470	0.97	53.30	733.83	1,000.00	42.82	1,715.98	20
J124	6.95	71.99	733.47	1,000.00	54.02	1,721.92	20
J-35	0.92	86.79	733.5	1,500.00	41.45	1,730.51	20
J88	0.84	78.50	733.42	1,000.00	58.91	1,738.83	20
460	0.9	62.13	733.63	1,000.00	49.14	1,747.65	20
J412	1.99	90.65	733.41	1,000.00	67.65	1,764.27	20
465	2	79.65	733.43	1,000.00	60.61	1,764.97	20
J492	0.92	60.70	733.75	1,500.00	38.14	1,769.54	20
149	1.59	89.06	734.35	1,000.00	68.73	1,785.19	20
J390	2.49	80.31	733.46	1,500.00	44.28	1,787.87	20
J380	0.83	73.62	733.6	1,000.00	57.98	1,790.90	20
470	1.25	87.46	733.41	1,000.00	66.92	1,798.26	20
J494	12.18	57.06	733.81	1,000.00	47.35	1,800.47	20
J382	2.83	89.07	733.58	1,000.00	68.64	1,806.65	20
J386	1.19	71.83	733.57	1,500.00	43.44	1,806.77	20
464	1.16	79.06	733.5	1,500.00	46.63	1,823.28	20
J388	0.76	87.89	733.42	1,000.00	68.2	1,824.29	20
J472	5.32	57.62	733.87	1,000.00	48.61	1,824.33	20
J480	1.05	70.89	733.72	1,000.00	57.71	1,834.15	20
462	1.73	79.41	733.6	1,000.00	63.24	1,834.21	20
461	0.93	72.80	733.6	1,000.00	59.12	1,845.22	20
J384	2.49	95.46	733.55	1,500.00	54.59	1,861.53	20
J366	7.91	93.89	734.34	1,000.00	74.57	1,861.83	20
J370	1.06	87.31	734.35	1,000.00	70.83	1,874.79	20
J462	1.78	67.39	733.74	1,500.00	46.81	1,881.92	20
469	1.21	95.10	733.42	1,000.00	75.36	1,888.69	20
J368	3.22	93.61	734.34	1,000.00	77.01	1,932.25	20
J90	0.6	89.52	733.51	1,500.00	58.12	1,940.50	20
J436	3.71	73.04	733.84	1,000.00	62.48	1,945.85	20
138	2.41	74.34	733.99	1,000.00	63.74	1,949.46	20
J478	2.23	72.88	733.76	1,500.00	53.04	1,958.49	20
J464	1.78	75.45	733.72	1,500.00	54.23	1,962.37	20
148	1.73	86.23	734.35	1,000.00	72.84	1,963.54	20
132	6	93.90	733.79	1,000.00	77.67	1,966.63	20
459	1.82	92.73	733.64	1,000.00	76.8	1,969.85	20
137	7.99	76.64	733.97	1,000.00	65.92	1,976.59	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 2A - 12" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J476	0.67	78.83	733.71	1,000.00	67.34	1,981.00	20
136	2.75	82.15	733.91	1,000.00	70.13	1,984.46	20
463	2.03	92.66	733.53	1,500.00	62.2	1,986.76	20
152	2.11	86.75	734.07	1,000.00	73.81	1,990.67	20
J450	2.7	89.03	734.01	1,000.00	75.45	1,993.25	20
J376	1.49	86.71	734.06	1,000.00	73.88	1,993.59	20
142	1.78	79.57	734.01	1,000.00	68.7	1,994.51	20
135	2.4	79.12	733.91	1,000.00	68.24	1,994.95	20
134	4.7	76.75	733.82	1,000.00	66.35	1,995.88	20
151	0.7	82.05	734.01	1,000.00	70.73	2,002.89	20
140	0.99	82.06	734.01	1,000.00	70.89	2,009.11	20
139	1.55	83.08	734	1,000.00	71.75	2,014.01	20
1	1.1	84.60	733.68	1,000.00	72.92	2,037.87	20
J488	4.58	77.82	733.79	1,500.00	59.16	2,038.84	20
146	1.21	78.04	734.21	1,000.00	69.13	2,048.59	20
141	0.47	83.13	734.02	1,000.00	72.74	2,049.81	20
145	1.5	81.98	734.08	1,000.00	71.97	2,051.59	20
J558	12.58	84.78	733.69	1,500.00	62.44	2,054.55	20
144	0.56	83.54	734.05	1,000.00	73.34	2,061.08	20
J374	1.66	81.10	734.17	1,000.00	71.83	2,069.37	20
J434	0.66	83.63	733.81	1,500.00	64.24	2,084.24	20
128	0.69	85.37	733.8	1,500.00	66.46	2,112.55	20
J372	6.12	81.93	734.26	1,000.00	73.56	2,117.39	20
129	0.38	86.43	733.8	1,500.00	67.37	2,119.95	20
131	0.3	92.13	733.8	1,500.00	70.53	2,128.70	20
130	0.33	91.06	733.8	1,500.00	70.36	2,134.99	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 2B - 10" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
J-29	0.93	63.83	733.23	1,000.00	15.11	942.01	20
J-30	0.88	67.27	733.23	1,000.00	17.43	971.03	20
476	0.97	60.41	733.28	1,000.00	21.86	1,022.35	20
J-34	0.47	58.48	733.28	1,000.00	22.09	1,024.08	20
J-33	1.87	73.63	733.26	1,000.00	23.59	1,030.96	20
J-31	0.46	66.60	733.23	1,000.00	24.42	1,037.94	20
J430	1.18	50.38	733.24	1,000.00	23.64	1,041.17	20
J392	2.27	68.38	733.26	1,000.00	25.43	1,045.91	20
J-32	2.03	56.42	733.26	1,000.00	25.52	1,053.89	20
J-26	0.81	60.23	733.22	1,000.00	26.75	1,059.99	20
J418	1.37	70.70	733.22	1,000.00	28.49	1,065.52	20
J426	0.92	62.14	733.22	1,000.00	28.37	1,071.59	20
J486	2.02	38.33	733.72	1,000.00	25.78	1,073.60	20
478	2.07	52.15	733.25	1,000.00	28.29	1,083.06	20
J420	1.69	76.01	733.22	1,000.00	33.31	1,096.21	20
J556	1.49	51.57	733.65	1,500.00	-32.38	1,105.61	20
493	5.35	76.89	733.22	1,500.00	-49.71	1,112.17	20
J482	1.61	44.87	733.65	1,000.00	30.53	1,116.57	20
482	0.83	60.94	733.23	1,000.00	33.37	1,117.05	20
J428	0.7	65.49	733.23	1,000.00	34.76	1,121.83	20
468	2.97	56.20	733.27	1,000.00	33.36	1,127.59	20
J396	1.36	65.42	733.25	1,000.00	37.92	1,152.07	20
485	2.44	84.20	733.22	1,000.00	43.02	1,159.96	20
J394	0.83	61.68	733.26	1,000.00	38.27	1,163.90	20
477	0.48	61.86	733.26	1,000.00	38.6	1,166.59	20
J422	2.17	85.83	733.22	1,000.00	45.18	1,174.20	20
J432	5.95	85.98	733.22	1,000.00	45.95	1,184.15	20
J474	6.51	46.47	733.72	1,000.00	36.21	1,187.46	20
491	0.28	71.75	733.23	1,000.00	43.81	1,193.84	20
J-27	6.33	98.06	733.22	1,000.00	50.79	1,197.32	20
487	3.84	97.89	733.22	1,000.00	51.16	1,198.04	20
J410	2.27	71.06	733.28	1,000.00	45.3	1,212.48	20
J468	0.73	51.95	733.69	1,000.00	40.15	1,213.96	20
J484	2.38	52.56	733.71	1,000.00	40.61	1,219.28	20
J408	1.1	77.11	733.28	1,000.00	48.83	1,228.84	20
143	1.87	68.49	733.89	1,000.00	46.55	1,229.44	20
J466	0.88	54.52	733.65	1,500.00	-11.28	1,231.58	20
475	0.85	74.12	733.28	1,000.00	48.18	1,231.80	20
J470	0.97	53.25	733.71	1,000.00	42	1,233.87	20
480	0.73	73.79	733.28	1,000.00	48.64	1,237.84	20
J406	0.81	79.26	733.28	1,000.00	50.44	1,238.18	20
472	0.78	73.78	733.28	1,000.00	48.85	1,240.28	20
J92	1.96	93.82	733.22	1,000.00	55.2	1,240.49	20
473	2.38	77.21	733.28	1,000.00	50.06	1,242.77	20
J490	3.22	56.67	733.69	1,500.00	-10.69	1,243.75	20
474	1.07	79.89	733.28	1,000.00	51.16	1,243.78	20
J402	1.3	75.00	733.28	1,000.00	49.91	1,248.00	20
J424	1.25	82.39	733.22	1,000.00	52.62	1,251.41	20
J414	0.65	75.19	733.28	1,000.00	51.02	1,259.11	20
488	0.49	81.02	733.23	1,000.00	52.97	1,259.25	20
J404	1.04	80.91	733.28	1,000.00	53.21	1,261.75	20
484	0.7	81.62	733.23	1,000.00	53.56	1,263.33	20
483	0.9	79.06	733.24	1,000.00	52.69	1,263.59	20
J400	1.74	76.74	733.28	1,000.00	51.9	1,264.13	20
467	1.68	71.85	733.29	1,000.00	50.78	1,270.93	20
486	0.42	85.01	733.23	1,000.00	55.71	1,273.31	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 2B - 10" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
460	0.9	62.08	733.52	1,000.00	48.32	1,280.92	20
471	1.36	76.39	733.28	1,000.00	53.35	1,281.82	20
492	5.27	89.28	733.22	1,000.00	57.78	1,283.91	20
J492	0.92	60.65	733.63	1,500.00	-5.32	1,286.05	20
J398	2.73	83.63	733.25	1,000.00	56.29	1,286.85	20
481	1.06	80.35	733.28	1,000.00	55.32	1,287.50	20
J-28	0.57	86.27	733.23	1,000.00	57.64	1,289.34	20
466	1.94	72.94	733.3	1,000.00	52.68	1,289.45	20
J416	1.61	97.30	733.23	1,000.00	61.82	1,290.92	20
J494	12.18	57.01	733.7	1,000.00	46.53	1,291.04	20
J472	5.32	57.57	733.75	1,000.00	47.78	1,299.30	20
J124	6.95	71.94	733.35	1,000.00	53.2	1,305.13	20
490	0.67	89.88	733.23	1,000.00	60.86	1,309.63	20
489	0.59	89.92	733.23	1,000.00	60.92	1,310.09	20
J88	0.84	78.45	733.3	1,000.00	58.09	1,329.71	20
479	2.25	84.13	733.28	1,000.00	60.33	1,330.69	20
J380	0.83	73.57	733.49	1,000.00	57.15	1,341.14	20
J386	1.19	71.78	733.45	1,500.00	-0.02	1,341.90	20
465	2	79.60	733.32	1,000.00	59.78	1,346.61	20
J-35	0.92	86.74	733.39	1,500.00	-2.01	1,349.84	20
J480	1.05	70.84	733.6	1,000.00	56.89	1,352.44	20
150	6.3	91.03	734.22	1,000.00	65.53	1,354.18	20
J390	2.49	80.26	733.34	1,500.00	0.82	1,360.13	20
J462	1.78	67.34	733.62	1,500.00	3.35	1,360.23	20
461	0.93	72.75	733.49	1,000.00	58.29	1,362.74	20
464	1.16	79.01	733.39	1,500.00	3.17	1,372.88	20
J412	1.99	90.59	733.29	1,000.00	66.82	1,376.71	20
462	1.73	79.36	733.49	1,000.00	62.42	1,380.76	20
470	1.25	87.41	733.29	1,000.00	66.1	1,384.97	20
149	1.59	89.01	734.23	1,000.00	67.91	1,389.18	20
J382	2.83	89.02	733.46	1,000.00	67.82	1,396.42	20
J388	0.76	87.84	733.3	1,000.00	67.38	1,398.93	20
J436	3.71	72.99	733.72	1,000.00	61.66	1,411.52	20
J478	2.23	72.83	733.64	1,500.00	9.58	1,414.22	20
138	2.41	74.28	733.87	1,000.00	62.92	1,418.65	20
J464	1.78	75.40	733.6	1,500.00	10.77	1,424.99	20
J370	1.06	87.26	734.23	1,000.00	70.01	1,428.65	20
J384	2.49	95.41	733.43	1,500.00	11.13	1,440.86	20
137	7.99	76.59	733.85	1,000.00	65.1	1,441.85	20
J366	7.91	93.84	734.22	1,000.00	73.75	1,443.78	20
J476	0.67	78.78	733.59	1,000.00	66.52	1,444.75	20
134	4.7	76.70	733.71	1,000.00	65.53	1,447.06	20
469	1.21	95.05	733.3	1,000.00	74.54	1,451.12	20
135	2.4	79.07	733.79	1,000.00	67.41	1,455.10	20
142	1.78	79.52	733.9	1,000.00	67.87	1,457.03	20
J90	0.6	89.47	733.4	1,500.00	14.65	1,460.37	20
136	2.75	82.10	733.79	1,000.00	69.31	1,461.61	20
148	1.73	86.18	734.23	1,000.00	72.01	1,467.45	20
J488	4.58	77.77	733.68	1,500.00	15.7	1,468.31	20
151	0.7	82.00	733.89	1,000.00	69.91	1,468.93	20
140	0.99	82.00	733.89	1,000.00	70.07	1,471.80	20
146	1.21	77.98	734.09	1,000.00	68.3	1,474.91	20
J368	3.22	93.56	734.22	1,000.00	76.18	1,475.69	20
139	1.55	83.03	733.89	1,000.00	70.93	1,477.89	20
152	2.11	86.70	733.95	1,000.00	72.99	1,480.74	20
J376	1.49	86.66	733.94	1,000.00	73.06	1,481.58	20

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX B
LAKE TULLOCH INTERTIE
ALTERNATIVE 2B - 10" PVC TRANSMISSION MAIN

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)
459	1.82	92.67	733.52	1,000.00	75.98	1,486.07	20
J450	2.7	88.98	733.89	1,000.00	74.63	1,489.29	20
1	1.1	84.55	733.56	1,000.00	72.09	1,489.85	20
145	1.5	81.93	733.96	1,000.00	71.14	1,490.42	20
132	6	93.84	733.68	1,000.00	76.85	1,491.67	20
463	2.03	92.61	733.41	1,500.00	18.74	1,492.50	20
141	0.47	83.08	733.9	1,000.00	71.91	1,492.90	20
J374	1.66	81.05	734.05	1,000.00	71.01	1,495.25	20
144	0.56	83.49	733.94	1,000.00	72.52	1,499.44	20
J558	12.58	84.73	733.57	1,500.00	18.98	1,504.30	20
J434	0.66	83.58	733.69	1,500.00	20.78	1,507.11	20
147	4.48	79.65	734.24	1,000.00	71.68	1,521.51	20
J372	6.12	81.88	734.14	1,000.00	72.74	1,521.76	20
128	0.69	85.32	733.68	1,500.00	23	1,525.59	20
129	0.38	86.38	733.68	1,500.00	23.91	1,532.71	20
126	4	89.10	733.68	1,500.00	25.94	1,552.57	20
130	0.33	91.01	733.68	1,500.00	26.9	1,556.11	20
131	0.3	92.08	733.68	1,500.00	27.07	1,556.94	20
458	1.58	97.51	733.54	1,000.00	84.58	1,585.01	20
124	0.19	96.64	733.68	1,000.00	84.97	1,596.53	20
125	0.3	97.28	733.68	1,000.00	85.49	1,599.46	20
123	0.4	101.43	733.68	1,000.00	89.19	1,623.05	20

Appendix C

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX C
LAKE TULLOCH EMERGENCY INTERTIE
12" PVC TRANSMISSION MAIN

ITEM NO	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL ROUNDED
	A. Mobilization and Demobilization				
1	Mobilization & Demobilization (5%)	1	LS	5%	$264,958.50
2	Establish Site Access and Staging Areas/BMP's	1	LS	$20,000.00	$20,000.00
3	Temporary Construction Facilities	1	LS	$10,000.00	$10,000.00
4	Temporary Construction Fencing	1	LS	$5,000.00	$5,000.00
	Mobilization and Demobilization Subtotal				**$299,958.50**
	B. Traffic Control				
5	Traffic Control	70	Day	$6,500.00	$455,000.00
	Traffic Control Subtotal				**$455,000.00**
	C. PVC Distribution Main				
6	12" PVC DR 14	15,320	LF	$250.00	$3,830,000.00
7	10" PVC DR 14	700	LF	$230.00	$161,000.00
8	8" PVC DR 14	1,400	LF	$210.00	$294,000.00
	Tranmission Main Subtotal				**$3,830,000.00**
	D. PRV Station				
9	Pressure Reducing Valves: (1) 6", (1) 4", and (1) 2"	1	LS	$22,900.00	$22,900.00
10	Concrete Vault & Access Hatch	1	LS	$14,200.00	$14,200.00
11	PRV Station GV's: (2) 6", (2) 4", and (1) 2" per CCWD W13	1	LS	$5,000.00	$5,000.00
	PRV Station Subtotal				**$42,100.00**
	E. Inline Valves				
10	12" Gate Valve	8	EA	$6,800.00	$54,400.00
11	10" Gate Valve	1	EA	$3,000.00	$3,000.00
12	8" Gate Valve	2	EA	$2,300.00	$4,600.00
13	3" Air & Vacuum Valve Assembly with 4" GV per CCWD W05	8	EA	$2,700.00	$21,600.00
	Inline Valve Subtotal				**$83,600.00**
	F. Repaving				
14	Asphalt repaving one lane of O'Byrnes Ferry Road	65,325	SF	$10.00	$653,300.00
15	2" Grind and Overlay	156,780	SF	$1.50	$235,170.00
	Repaving Subtotal				**$888,470.00**
	Base Construction Subtotal :				**$5,599,200.00**
	30% Project Contingency :				**$1,679,800.00**
	Estimated Project Cost :				**$7,279,000.00**

COPPER COVE WATER SYSTEM IMPROVEMENTS PROJECT
PHASE 3 PRELIMINARY DESIGN REPORT
APPENDIX C
LAKE TULLOCH EMERGENCY INTERTIE
16" PVC TRANSMISSION MAIN

ITEM NO	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL ROUNDED
	A. Mobilization and Demobilization				
1	Mobilization & Demobilization (5%)	1	LS	5%	$307,338.50
2	Establish Site Access and Staging Areas/BMP's	1	LS	$20,000.00	$20,000.00
3	Temporary Construction Facilities	1	LS	$10,000.00	$10,000.00
4	Temporary Construction Fencing	1	LS	$5,000.00	$5,000.00
	Mobilization and Demobilization Subtotal				**$342,338.50**
	B. Traffic Control				
5	Traffic Control	70	Day	$6,500.00	$455,000.00
	Traffic Control Subtotal				**$455,000.00**
	C. PVC Distribution Main				
6	16" PVC DR 14	15,320	LF	$300.00	$4,596,000.00
7	10" PVC DR 14	700	LF	$230.00	$161,000.00
8	8" PVC DR 14	1,400	LF	$210.00	$294,000.00
	Tranmission Main Subtotal				**$4,596,000.00**
	D. PRV Station				
9	Pressure Reducing Valves: (1) 6", (1) 4", and (1) 2"	1	LS	$22,900.00	$22,900.00
10	Concrete Vault & Access Hatch	1	LS	$14,200.00	$14,200.00
11	PRV Station GV's: (2) 6", (2) 4", and (1) 2" per CCWD W13	1	LS	$5,000.00	$5,000.00
	PRV Station Subtotal				**$42,100.00**
	E. Inline Valves				
10	16" Butterfly Valves	8	EA	$17,000.00	$136,000.00
11	10" Gate Valve	1	EA	$3,000.00	$3,000.00
12	8" Gate Valve	2	EA	$2,300.00	$4,600.00
13	3" Air & Vacuum Valve Assembly with 4" GV per CCWD W05	8	EA	$2,700.00	$21,600.00
	Inline Valve Subtotal				**$165,200.00**
	F. Repaving				
14	Asphalt repaving one lane of O'Byrnes Ferry Road	65,325	SF	$10.00	$653,300.00
15	2" Grind and Overlay	156,780	SF	$1.50	$235,170.00
	Repaving Subtotal				**$888,470.00**
				Base Construction Subtotal :	**$6,489,200.00**
				30% Project Contingency :	**$1,946,800.00**
				Estimated Project Cost :	**$8,436,000.00**

May 20, 2024

Kevin Williams
Calaveras County Water District
120 Toma Court
San Andreas, CA 95249

Subject: Request for Budget Amendment for Copper Cove Water System Improvements – Lake Tulloch Intertie Project

Dear Kevin,

We are pleased to submit to you our amendment request to support the Lake Tulloch Intertie Project. The original proposal only scoped preliminary design for the Lake Tulloch Intertie project, which was completed on May 6, 2024 under Task 5. Approximately 750 domestic water customers on the east side of Lake Tulloch are provided service via a single 10-inch distribution main that crosses underneath the bottom of Lake Tulloch. In the event this distribution main were to fail, the entire community on the east side of Lake Tulloch would be left without a water supply. The Lake Tulloch Intertie will serve as the primary water supply to these customers and the current distribution main as an emergency back-up supply minimizing the risk of a catastrophic failure. This includes 15,300 linear feet of 12-inch transmission main along O'Byrnes Ferry Road from Cosmic Court to Conner Estates Drive. The additional design services for the Lake Tulloch Intertie project that include design and bid support are summarized below:

Task 10 – Environmental/CEQA – Programmatic Approach

10.8 Categorical Exemption for Transmission Main - Dewberry will complete a Notice of Exemption (NOE) form that can be accessed on the Governor's Office of Planning and Research, State Clearinghouse website. Dewberry will also prepare a CE Memorandum to support the NOE, that will address the exemption criteria for installation of the water main. The draft NOE and CE Memorandum will be submitted to the District in electronic format for review and comment. Upon resolution of any comments, Dewberry will prepare the final NOE and CE Memorandum and resubmit to the District. Following the District's approval, Dewberry will file the NOE at the County Clerk's Office and pay the $50 filing fee and submit the NOE to the State Clearinghouse.

Task 15 – Lake Tulloch Intertie Design

15.1 50% Design Documents – PBI will develop 50% design drawings, specifications, and estimate of probable construction cost to support the Lake Tulloch Intertie Project. The contract documents will include up to 23 civil drawings and technical specifications. This task also includes topographic survey performed by PSOMAS and geotechnical investigation performed by Mid Pacific Engineering.

15.2 90% Design Documents – PBI will incorporate the District's comments from the 50% design and develop 90% design documents.

15.3 100% Design Documents – PBI will incorporate the District's comments from the 90% design and develop 100% design documents.

15.4 Bid Set Documents – PBI will incorporate the District's comments from the 100%

design and develop Final design documents.

Deliverables:

- A complete set of plan and profile drawings, tie-in details, and miscellaneous details
- Technical Specifications
- Engineer's probable construction cost estimate
- Response to comments table identifying how each comment was addressed and where each revision is located in the engineering documents
- AutoCAD Civil 3D (2021) .dwg file containing the base map and legend
- One (1) PDF copy of the CAD drawing
- Draft/final geotechnical report

Assumptions:

- Project is CE eleigible
- PBI understand that the District uses the Engineer's Joint Contract Document Committee (EJCDC) boilerplate front end contact documents and bid forms
- The format for the construction cost estimates will be consistent with the bid schedule to be utilized
- Lump sum items on the bid schedule will be broken down as would be required for a contractor for their Schedule of Values
- Bid support and construction services are not included in this scope
- Project Drawings will be 40 scale and furnished to the District in Portable Document Format (PDF) file format for reproduction as both 11"x17" (ANSI C) and 22"x34" (ANSI D) paper size.
- Sheet list includes three (3) general sheets and twenty (20) civil sheets
- Final drawings will be furnished in Autodesk AutoCAD format in addition to PDF file format.
- PBI to provide response to comments to District for each deliverable
- Project horizontal datum shall be NAD 83 California State Plane Zone III and vertical datum shall be NAVD88 and based on nearby found Calaveras County or NGS benchmarks, US Survey Feet.
- Scope includes aerial photography of project limits at scale of 1"=40' with 1-foot contours and aerial mapping
- Rights-of-way withing mapping limits to be included
- The following services are excluded from the survey scope of work of this proposal:
    - Boundary Dispute Resolution
    - Easement resolution or staking of easements
    - Ground Penetrating Radar (GPR) or Subsurface Exploration (These services can be provided upon request)

  - USA Notification
  - Traffic control and Lane Closure
- Geotechnical analysis and reporting to be completed within 4 weeks of field investigation
- Design to be completed within 9 months of notice to proceed

Task 16 – Lake Tulloch Intertie Bid Support Services

16.1 Pre-Bid Meeting - PBI will facilitate and develop agenda and sign-in sheet for pre-bid meeting.

16.2 Bid Addenda (Up to 3) – PBI will prepare written responses to answer bidder's requests for information and to make clarifications and prepare written addenda to address changes and clarifications to the drawings, bid forms, project manual and technical specifications.

16.3 Conformed Documents – PBI will prepare conformed plans and specifications, in response to changes based on addenda prepared for the bid documents.

16.4 Bid Evaluation – PBI will review the bids and make a recommendation for award, addressing any significant discrepancies between the final engineer's opinion of probable construction costs and the lowest responsive, responsible bidder's bid.

Deliverables: Addenda, Conformed Plans and Specifications delivered electronically

Assumptions:

- The District will advertise and circulate the bid documents for public bidding of the project for construction.
- Includes up to 3 bid addenda

The estimated cost of these services is detailed in the Estimated Work Effort and Cost attachment. Services will be provided on a time and materials basis. We look forward to providing continued support for the Project. If you have any questions or desire any additional information, please do not hesitate to contact me at (916) 608-2212.

Sincerely,

Karl Brustad, PE, MBA
Principal

Ashley Smith, PE
Project Manager

Attachments:

Estimated Work Effort and Cost
2024 Standard Rate Schedule

Estimated Work Effort and Cost
Calaveras County Water District - Copper Cove Water System Improvements Amendment Request

Task No.	Task Description	Principal in Charge	Senior Engineer 3 - QA/QC	Project Manager 2	Senior Engineer 1	Staff Engineer 2	Staff Engineer 1	Technician 2	Administrative 4	PBI Labor	Total PBI Labor ($)	PSOMAS (Survey)	Dewberry (Environmental)	MPE (Geotech)	PBI Expenses ($)	Total Cost ($)
	2024 Rates	$275.00	$ 250.00	$ 230.00	$ 210.00	$ 160.00	$ 140.00	$ 120.00	$ 115.00							
Task 10 - Environmental/CEQA																
10.8	Categorical Exemption for Transmission Main	2		4		4				10	$2,110		$6,265		$211	$8,586
	Subtotal Task 10	**2**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**10**	**$2,110**	**$0**	**$6,265**	**$0**	**$211**	**$8,586**
Task 15 - Lake Tulloch Intertie Design																
15.1	50% Design Documents	10	6	22	6	39	57	29		169	$28,270	$86,664		$61,600	$2,827	$179,361
15.2	90% Design Documents	20	17	49	16	89	133	39		363	$61,920				$6,192	$68,112
15.3	100% Design Documents	14	12	30	10	57	75	20		218	$37,870				$3,787	$41,657
15.4	Bid Set	12	10	26	10	49	67	10		184	$32,300				$3,230	$35,530
	Subtotal Task 15	**56**	**45**	**127**	**42**	**234**	**332**	**98**	**0**	**934**	**$160,360**	**$86,664**	**$0**	**$61,600**	**$16,036**	**$324,660**
Task 16 - Lake Tulloch Intertie Bid Support Services																
16.1	Pre-Bid Meeting	4		6	6				2	18	$3,970				$397	$4,367
16.2	Bid Addenda (Up to 3)	4		8	16	24	32	12		96	$16,060				$1,606	$17,666
16.3	Conformed Documents	2	4	4	4	4	8	10	2	38	$6,500				$650	$7,150
16.4	Bid Evaluation	4		4		8				16	$3,300				$330	$3,630
	Subtotal Task 16	**14**	**4**	**22**	**26**	**36**	**40**	**22**	**4**	**168**	**$29,830**	**$0**	**$0**	**$0**	**$2,983**	**$32,813**
	COLUMN TOTALS	**72**	**49**	**153**	**68**	**274**	**372**	**120**	**4**	**1,112**	**$192,300**	**$86,664**	**$6,265**	**$61,600**	**$19,230**	**$366,058**

TOTAL COST	$366,058

PBI ENGINEERING CONSULTING™
a verdantas company

2024 STANDARD RATE SCHEDULE *

Position	Description	Hourly Billing Rate
E9	Principal Engineer	$275
E8	Senior Engineer 3 Project Manager 3	$250
E7	Senior Engineer 2 Project Manager 2	$230
E6	Senior Engineer 1 Project Manager 1	$210
E5	Project Engineer 3	$200
E4	Project Engineer 2	$190
E3	Project Engineer 1	$180
E2	Staff Engineer 2	$160
E1	Staff Engineer 1	$140
T4	Technician 4	$150
T3	Technician 3	$140
T2	Technician 2	$120
T1	Technician 1	$110
A4	Administrative 4	$115
A3	Administrative 3	$100
A2	Administrative 2	$90
A1	Administrative 1	$75

Expenses

- **At cost plus 10% for outside printing, plotting, copying, travel, subconsultants, and outside services and charges**
- **At 5% of Labor for in-house expenses including telephone, computer, and incidental copying and printing**
- **Auto mileage per current Federal Rates**

*** Rates will be modified January 1 of each year.**

80 Blue Ravine Rd, Suite 280, Folsom, CA 95630
916-608-2212
www.pbiengineering.com

Agenda Item

DATE: June 4, 2024

TO: Michael Minkler, General Manager

FROM: Kevin Williams, Senior Civil Engineer

SUBJECT: Discussion Regarding Awarding of Engineering and Design Contract for the Huckleberry Lift Station Improvement Project, CIP#15092

SUMMARY:

The District issued a Request for Proposals (RFP) on March 11, 2024 for design services for the Huckleberry Lift Station Improvement Project. A copy of the RFP is attached which includes a project description and scope of work. The District would like to have the design completed by April 2025, in order to have the Project publicly bid in July 2025. The District plans to solicit proposals for environmental documentation separately once the Pre-Design report is completed.

On the proposal due date May 14, 2024, the District received proposals from six (6) different engineering firms as tabulated below. Staff members including the District Engineer, Director of Operations and Senior Engineer reviewed and evaluated the proposals for considering various criteria such as qualifications and experience, content and presentation of the proposal and approach to work, completeness/variances in the proposed scope of work, allocation of staff hours to each task, general sense of cost effectiveness and value, subconsultant scope and fees, potential scheduling issues and ability to deliver work within allowed timeframe, team organization and focus on key project issues, local representation and proximity to the project and prior performance on other District projects.

RANK	FIRM	FEE
1	Blackwater	$502,856
2	**Lumos and Associates**	**$278,860**
3	PBI, Inc	$408,511
4	Sandis	$314,195
5	WGA	$369,315
6	Coleman	$655,546

Upon review and discussion among staff members, similar determinations were made regarding the top three (3) proposals including Blackwater, Lumos and Associates and PBI. For professional services, the District is not obligated to make an award based on the lowest cost and can consider other criteria in making a selection. The top proposals were further compared concerning firm qualifications and experience, completeness of proposed scope of work and overall value. The top two proposals were very close in rankings and the second firm Lumos and Associates overall cost was substantially less than Blackwater, staff believes that the proposal from Lumos and Associates provides best overall value for the District. Additionally, Lumos and Associates provides in-house electrical engineering, survey, and geotechnical services which provides more efficiency and less remote coordination.

Staff would like recommendation from the Engineering Committee to take the Design Proposal from Lumos and Associates to the full Board for Approval.

Attachments:
1) Request for Proposals, and
2) Lumos Proposal and Fee

REQUEST FOR PROPOSALS

FOR DESIGN AND ENGINEERING SERVICES
FOR THE

HUCKLEBERRY REPLACEMENT PUMP STATION PROJECT

CIP 15092

Receipt of Proposals due before: 4:00 p.m. PST on May 14, 2024

CALAVERAS COUNTY WATER DISTRICT
120 Toma Court
San Andreas, California 95249
(209) 754-3543 • ccwd.org

March 11, 2024

TABLE OF CONTENTS

ATTACHMENTS

EXHIBITS

The **Exhibits** (proposal reference documents) have been assembled in separate Adobe pdf files. Documents listed below.

Proposal Reference Documents	
1.	Professional Service Agreement (PSA).
2.	La Contenta, Phase 2 Huckleberry Lift Station Improvements As-Built Drawings, 1991.

I. PROJECT BACKGROUND

Calaveras County Water District provides wastewater collection and treatment service to the community of La Contenta located in Calaveras County. To provide these services the District operates the Huckleberry Lift Station (LS) which was constructed in 1991. The District has identified the need for the replacement of the existing Huckleberry LS. The District is seeking professional engineering services for the design of the proposed replacement pump station. The requirements of the pump station are described in the section below.

The Huckleberry LS is located at 2502 Huckleberry Ln., Valley Springs, California and is shown in Figure 1, attached at the end of the RFP. Preliminary design drawing and hydraulic calculations are also attached at the end of the RFP.

II. HUCKLEBERRY REPLACEMENT PUMP STATION

Pump Station. Design and construction of a pump station which can efficiently both during low flow conditions and having sufficient capacity for the build-out peak hour flowrate. To accomplish this goal, the station is to be designed with both low-flow and high-flow pumps configured as follows.

1. Two (2) low-flow pumps operated in a lead-lag configuration. Each low flow shall be individually capable of a flowrate of 150 *gpm* (9.5 *l/s*) at 200 (61.0 *m*) of TDH. Pump and motor speed shall be controlled with a VFD.
2. Three (3) high-flow pumps operated in a lead-lag-standby configuration. Each individual pump shall be capable of a flowrate of 700 *gpm* (44.2 *l/s*) at 260.0 *ft* (79.2 *m*) of TDH. Pump and motor speed to be controlled with a VFD.
3. Low and high flow pumps shall be submersible, non-clogging, wastewater duty type rated pump (Flygt®, Hidrostal®, or equivalent) suitable for operation with an alternating current solid state electronic VFD.

Electrical and Instrumentation. Electrical and instrumentation design and construction improvements for the proposed pump station shall be performed in compliance with NFPA 70E, *National Electric Code*, and NFPA 820, *Fire Protection in Wastewater Treatment and Collection Systems.* This work includes:

1. A building housing the electrical service entrance, ATS, MCC, VFD enclosures, and instrumentation cabinet for PLC and HMI. Building shall be constructed of split face masonry or similar.
3. Electrical building environmental controls including room lighting and air handling consisting of ventilation and air conditioning.
4. Relocation of and/or new PG&E pad and transformer.

Emergency Power. A diesel engine emergency generator with concrete foundation, fuel tank, day tank, and secondary containment sized for peak site electrical demand. On-site fuel storage sized for a minimum 24-hours engine/generator operation at peak output.

Foul Air. Design and construction of a foul air containment system utilizing negative air pressure ventilation of the station wetwell and treatment of exhaust foul air.

Flood Control. Design and construction of a flood control barrier, or other system, to protect pump station site from predicted FIRM 200-year recurrence interval high-water level in Cosgrove Creek.

Miscellaneous Site Work. Design and construction of site improvements for the proposed pump station including paving, access gate and security fence, and demolition of existing infrastructure required for construction.

III. PROPOSED PROJECT SCHEDULE

The District anticipates the following project schedule by milestone. Significant construction at the Huckleberry LS should be planned for a timeframe starting in late April and ending in early November due to flowrate conditions related to rainfall.

PROJECT SCHEDULE MILESTONES

Milestone	Date
Design and Engineering Services Selection	
Project RFP	March 11, 2024
Job Walk Appointments	March 25 thru May 3, 2024
Proposal Deadline	May 14, 2024
District Review, Selection, and Staff Recommendation	June 13, 2024
Board Approval and Contract Award (FY 2024-25)	July 10, 2024
Design and Construction	
Final Design Report	October 2024
Final Design and Construction Documents	April 2025
Construction Bid and Award (FY 2025-26, FY 2026-27)	July 2025
Completion of Construction	August 2026
Record Drawings	September 2026

IV. PROJECT APPROACH AND SCOPE OF SERVICES

This Section describes the nature and scope of the engineering services to be provided and tasks to accomplish those services. The District expects the Consultant to work closely with District staff throughout the project by correspondence and regular meetings to accomplish their scope of work.

A. PROJECT MANAGEMENT

Consultant will ensure continuous control of the project in terms of staffing, budget, schedule and scope; promote communication within the project team and document key decisions. Items covered under this task include:

1. Consultant project management of project including communication, scope, schedule, deliverables, and budget.
2. Submittal of progress reports with Consultant invoices.
3. Quality assurance and quality control Implementation.
4. Create and maintain Decision Log of key project decisions.

It is the responsibility of the Consultant's project manager to immediately notify the District Engineer of any District directed task/assignment/request the Consultant believes is beyond contract scope of service. Approval of additional work by the District Engineer is required prior to execution of the work. Costs related to the performance of additional work will not be paid unless first approved by the District Engineer.

Deliverables: Project progress reports and Decision Log throughout length of contract.

B. PROJECT DESIGN REPORT

The project design report will describe the project and project improvements elements/components. At a minimum, the design report shall address the following:

1. Design criteria, preliminary equipment selection including pumps major electrical components, and material selection.
2. Estimated construction probable construction cost.
3. Recommendations concerning methods for reducing costs and/or alternative improvement solutions.
4. Method of construction to allow operation of the existing lift station during construction.
5. Odor control method for wetwell exhaust gas.
6. Preliminary hydraulic calculations.
7. Anticipated electrical loads.
8. Preliminary scaled design concept drawings.

Deliverables: Draft a design report attendance of draft design report review meeting. The final design report shall address District comments, questions, changes, or decisions regarding draft report. Subsequent direction by District concerning project design shall be tracked by Decision Log.

C. TOPOGRAPHIC SURVEY

Design services are to include a topographic site survey of the Huckleberry Lift Station site. Survey shall conform to the North American Datum (NAD83), California Zone 3 and North American Vertical Datum of 1988 (NAVD88). All survey work shall be conducted under the direction of a California licensed land surveyor, or civil engineer licensed in California before January 1, 1982 (license number C33965 or below).

Survey shall include utility easements, edge of paving, driveways, structures, buildings, manholes, vaults, pads, panels, walls, trees, utilities, poles, signs, fences, slopes, curbs, drop inlets, culverts, and other similar structures located at the lift station.

D. GEOTECHNICAL INVESTIGATION

Proposals shall include design and engineering services by a California licensed geotechnical engineer to prepare a project geotechnical study. Study shall include recommended methods of site excavation, allowable temporary and permanent slope design, foundation design, compaction requirements, and passive soil loads.

E. PERMIT AND ENVIRONMENTAL ASSISTANCE

The District plans to address environmental related project impacts with a California Environmental Quality Act (CEQA) mitigated negative declaration (MND). Preparation of the MND will be done by the District, or under a separate consultant contract. Project MND environmental requirements will be incorporated by the Consultant in the final bid ready construction and bid documents. The District does not anticipate the project will require an Environmental Impact Report.

F. PROJECT DESIGN

Drawings. The Consultant shall provide all necessary civil, mechanical, process, electrical, and instrumentation drawings for execution of project construction. This includes standard drawings such as: cover sheet, index of drawings, vicinity and location map, general notes, project notes, standard details, description of symbols, and abbreviations.

Deliverables: Fifty (50) percent, 90 percent 100 percent, and Bid-Ready drawings for incorporation with Project Manual. Drawing submittals shall be furnished to the District in Adobe® Acrobat™ Public Document Format (Adobe pdf) file format for reproduction

as both 11”x17” (ANSI C) and 22”x34” (ANSI D) paper size. Bid-Ready drawings shall also be furnished in Autodesk® AutoCAD™ format.

The 90 percent and 100 percent deliverables shall identify and detail all infrastructure to be constructed. The 100 percent drawings shall represent the final project design. The Consultant shall anticipate revisions to the 100 percent drawing based upon final District comments prior to production of final Bid-Ready set.

Project Manual. The Consultant shall prepare a project manual including front end document, technical specifications, and appendices. The manual’s front-end documents shall be based on the 2018 edition of the *Engineers Joint Contract Documents Committee Standards* (EJCDC®). A copy of the standards will be furnished to the Consultant by the District. The Consultant shall edit the EJCDC® documents adding any project specific and State of California contract requirements. Consultant shall provide a bid schedule, detailed descriptions for each bid item, alternative bid items, if any, and description of sequence of work.

The technical specifications shall be based upon the Consultant’s standards, or if applicable, adapted from District standards. Project Manual appendices shall include CEQA documents, geotechnical study, and other such reports.

Deliverables: Ninety (90) percent 100 percent, and Bid-Ready Project Manual.

G. CONSTRUCTION ASSISTANCE

Construction Bid Services, Addendum, and Conformed Documents. The District shall advertise and conduct the public bid. Distribution of project manual and drawings to bidders and plan holder rooms will be electronic. All correspondence with potential project bidders will be solely conducted by the District including issuing all project addendum and responds to bidder Requests for Information (RFI).

The Consultant shall attend pre-bid job walk and as requested the Consultant shall assist the District prepare addendum and answer RFIs. Addendum may be the result of errors in preparing bid ready drawings and project manual or result of bidders’ questions and comments.

Upon award of construction contract and but prior to subsequent notice to proceed, the Consultant shall furnish the confirmed contract documents.

Construction Engineering. Consultant scope of services during construction shall include review of project shop drawings and submittals, answer of construction RFIs, assistance with engineering aspects of potential construction contract change orders, site and construction meeting upon request.

Record Drawings. The Consultant shall furnish record drawings and deliver in AutoCAD® 2018 format based upon the contractor and District inspector marked-up drawings.

H. BASIS OF COMPENSATION

The Consultant shall be required to enter into the Professional Services Agreement (PSA) provided as **Exhibit 1**. Agreement to the PSA contract terms and conditions, including adjustment in hourly rates, per diem or incidental costs, is required for the term of the contract. Acknowledgement to the PSA contract terms shall be included in a cover letter.

V. ORGANIZATION AND CONTENT OF PROPOSAL

A. SUBMITTAL INSTRUCTIONS

Proposals shall be submitted electronically to Calaveras County Water District no later than 4:00 p.m., May 14, 2024. The Proposal shall assemble as a single Adobe® pdf file. Paginate proposal for two-sided printing at the District office. Paper size is limited to 8-1/2"x11" (ANSI B) with figures, drawing, etc. no greater than 11"x17" (ANSI C).

Proposals attached to email are limited to 50 megabytes in size. Proposal delivery using a file "cloud" sharing site, or similar, is acceptable provided the District receives a HTTP or FTP link and download instructions. The District will notify the Consultant upon receipt and successful download. No hard "printed" copy of proposal is required.

Email proposal, or link for file download to the attention of:

Kevin Williams, P.E.
Senior Civil Engineer
kevinw@ccwd.org
office: (209) 754-3184
cell: (209) 419-3979

B. ORGANIZATION AND CONTENT

Contents of proposal shall be organized in the sections listed in the table below.

PROPOSAL ORGANIZATION

Section	Content	Page Length
Cover Letter	Statement of interest and qualifications including agreement to PSA requirements.	1 to 2
A	Project Overview	1 to 3
B	Understanding and Approach	1 to 4
C	Team Organization	1 to 2
D	Project Schedule	1 to 2
E	Representative Project Experience	1 to 5
F	Labor Estimate	1 to 2
G	Project Team Resumes	as required

Cover Letter. Cover letter shall include both a state of interest and statement of qualification. Acknowledgement and acceptance of the terms and requirements of the District Professional Service Agreement shall also be included.

Project Overview. Provide a narrative description of the project based on the scope of services and proposed schedule presented in this Request for Proposal (RFP). The District will assess your understanding of all aspects of the project based on the overview.

Understanding and Approach. Provide a detailed description of the proposed approach to the project as described in the RFP. The description shall include details to implement the tasks described in the scope of service and any recommended revisions to the list of tasks. The approach should recognize, address, and provide for resolution of all aspects of the project.

Team Organization. The proposed consultant team shall be identified including project manager, and project engineer. Key tasks and the associated personnel shall be identified. The percentage of time devoted to this project for these key personnel shall be stated and guaranteed. A consultant team organization diagram shall be included.

The geographic location of the firm and key personnel shall be identified. Any proposed subcontractors shall be identified; tasks assigned, and experience included similarly to the firm's own project personnel. The successful Consultant should be comfortable working in a structured team setting with District Staff.

Project Schedule. A project schedule for completion of the project shall be submitted with the proposal. All major outputs and meetings shall be included in the schedule. Time shall be allocated for District review, typically three weeks for each deliverable.

Representative Project Experience. Provide a summary of experience of similar projects that the firm and the proposed team have completed. The description of each project should include the year(s) during which the work was performed and a description of process design components. The firm's role in the project should also be described (predesign, design construction management, etc.). Include the name, title, and phone number of the primary contact person at each facility or project location listed.

Staff Labor Estimate. Provide a staff estimate of time for each task to permit the District to determine the level of detail and the number of management, engineering, technical, drafting and support personnel hours envisioned for each task. Estimates of hours for each staff classification shall be provided for each task.

Project Team Resumes. A resume of key team members shall be included. Each resume should include a description of projects in related areas. At minimum, resumes of the Consultant's project manager and those of the engineering staff shall be included.

VI. EVALUATION AND SELECTION CRITERIA

Consultant proposals will be evaluated by District staff members including the District Engineer, Director of Operations, Operations Manager, and General Manager. Proposals will be evaluated by each reviewer with each proposal receiving a weighted score. Each evaluator's weighted score will be tabulated and the firm with the highest combined score will be selected and recommended to the District Board. If two or more proposals are similarly ranked, and no clear decision can be made, the District will request interviews before final selection.

PROPOSAL EVALUATION WEIGHTED CRITERIA TABLE.

Criteria	Evaluator's Score (0 to 5)	Score Weight (Multiplier)	Evaluator's Weighted Score
Project Understanding and Approach		5 *(25%)*	
Project Management		3 *(15%)*	
Project Team and Staff Qualifications		4 *(20%)*	
Related Project Experience		3 *(15%)*	
Schedule and Production Capability		5 *(25%)*	

Maximum weighted score = 100.

*** END OF RFP ***

FIGURE 1

LOCATION MAP

La Contenta Huckleberry Lift Station

Calaveras County Water District / La Contenta Request for Proposals

February 2024

FIGURE 1

PRELIMINARY DRAWINGS

HALF SIZED

DESIGNED BY:	R. GODWIN
DRAFTED BY:	R. GODWIN
CHECKED BY:	
DATE:	2/18/24
SCALE:	1" = 10'-0"
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

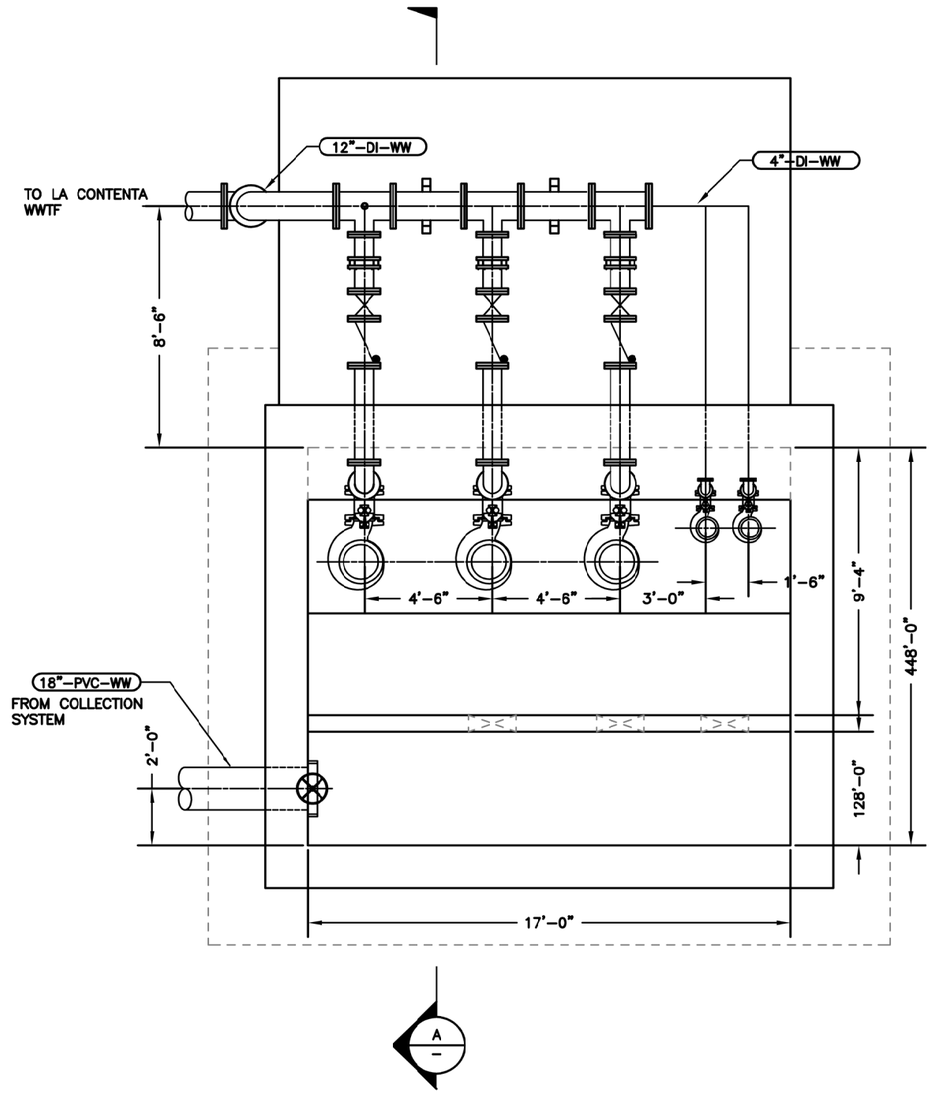
CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

HUCKLEBERRY LIFT STATION IMPROVEMENTS SITE PLAN PHASE 3 IMPROVEMENT PROJECT LA CONTENTA WASTEWATER TREATMENT FACILITY

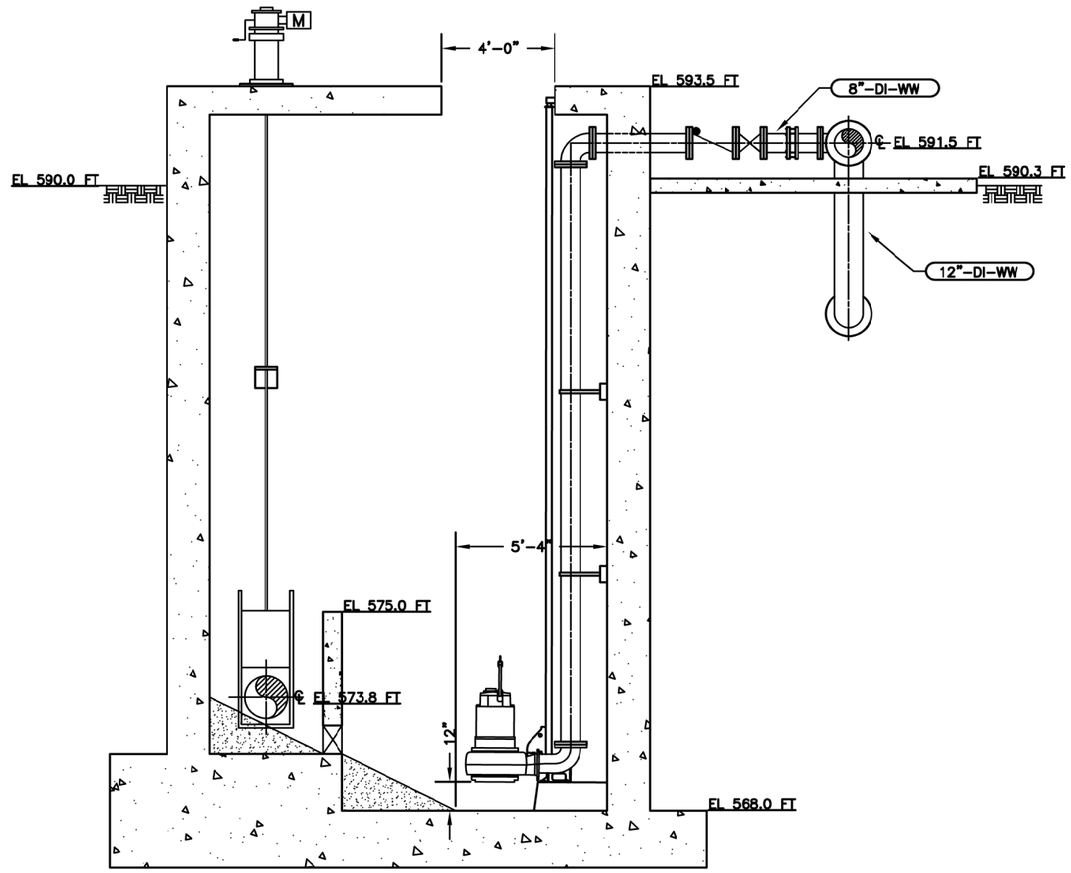
PROJECT NUMBER	15097
DRAWING NUMBER	C111A
SHEET NUMBER	– OF –

C:\Users\Bob Godwin\Documents\Calaveras County Project Files\LA_CONTENTA\15097_CADD_15097\MASTER_COMPOSITE\MASTER\C111A_HUCKLEBERRY_15097.DWG 2/18/24 3:30pm Bob Godwin



HUCKLEBERRY LIFT STATION

SCALE: 3/8" = 1'-0"



SECTION

SCALE: 3/8" = 1' -0"

0 2' 4' 6' 8'

SCALE: 3/8" = 1'-0"

HALF SIZED

DESIGNED BY:	R. GODWIN
DRAFTED BY:	R. GODWIN
CHECKED BY:	
DATE:	2/18/24
SCALE:	AS INDICATED
BAR LENGTH ONE INCH ON SCALED DRAWING	

REVISION:	DESCRIPTION:	DATE:	BY:

CALAVERAS COUNTY WATER DISTRICT

120 TOMA COURT
POST OFFICE BOX 846
SAN ANDREAS, CALIFORNIA 95249
PHONE: (209) 754-3543

PROPOSED HUCKLEBERRY PUMP STATION PLAN AND SECTION PHASE 3 IMPROVEMENT PROJECT LA CONTENTA WASTEWATER TREATMENT FACILITY

15097	
PROJECT NUMBER	C116
DRAWING NUMBER	– OF –
SHEET NUMBER	

PRELIMINARY PUMP STATION AND FORCEMAIN HYDRAULIC CALCULATIONS

Preliminary Design Calculations for the Huckleberry Lift Station

Static Head = El. of FM High Point - Water Level in LS		
El. of Forcemain High Point (ft)	762.00	
Water El. in LS Wetwell (pumps off)	571.50	
High Water El. in LS Wetwell		575.50
Total Static Head (min)		186.50
Total Static Head (max)	190.50	

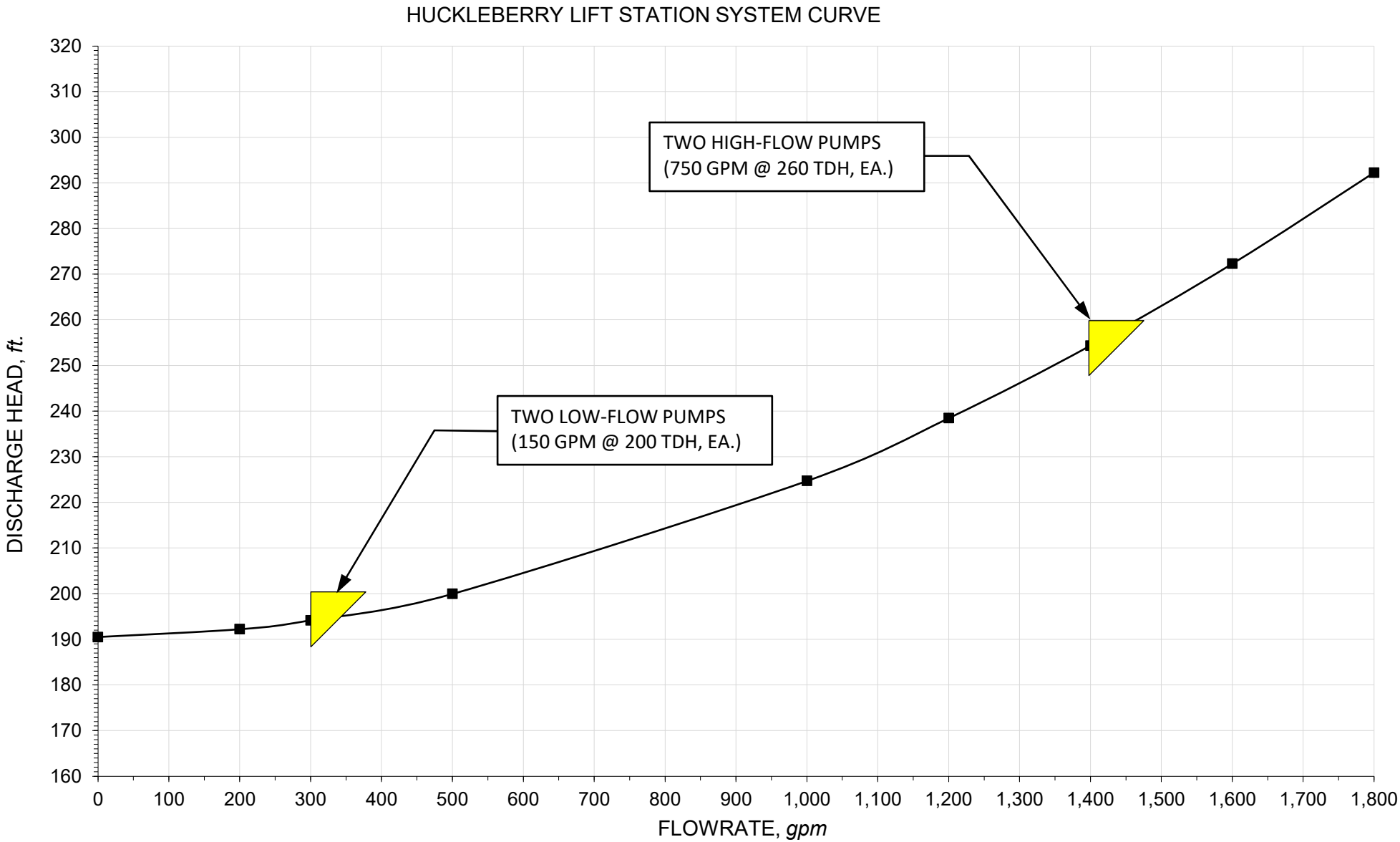
Fitting and Valve Minor Losses, $h_{fv} = (K * v^2) /2g$			
Type of Minor Loss	Quantity	K	Total K
45 Degree Elbow	10	0.25	2.50
Exit	1	1.00	1.00
8"x12" Reducing Tee	1	0.75	0.75
Check Valve	1	1.75	1.75
Gate Valve	5	0.30	1.50
Total			7.50

Minor Losses for 12" Fitting and Valves									
Flow (*gpm*)	0	200	300	500	1,000	1,200	1,400	1,600	1,800
Flow (*cfs*)	0.00	0.45	0.67	1.11	2.23	2.67	3.12	3.57	4.01
Diameter (*in*)	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
K	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
h_l (*ft*)	0.0	0.0	0.1	0.2	0.9	1.3	1.8	2.4	3.0

Dynamic Headloss in 12" Pipeline - Forcemain to the La Contenta WWTF									
Flow (*gpm*)	0	200	300	500	1,000	1,200	1,400	1,600	1,800
Length (*ft*)	11,300	11,300	11,300	11,300	11,300	11,300	11,300	11,300	11,300
Diameter (*in*)	12	12	12	12	12	12	12	12	12
Pipe Friction Coefficient (used)	120	120	120	120	120	120	120	120	120
h_f (*ft*)	0.0	1.7	3.6	9.2	33.3	46.6	62.0	79.4	98.7

Total Headloss									
Flow (*gpm*)	0	200	300	500	1,000	1,200	1,400	1,600	1,800
Maximum TDH (*ft*)	191	192	194	200	225	238	254	272	292

Sheet Stations, *ft*	Accum. Length, *ft*	Crown Elevation, *ft*	Notes
100		568.5	Bottom of wetwell
100	100	581.0	Forcemain A
1500	1,500	585.0	
0	1,500	585.0	Forcemain B
1080	2,580	615.0	
2270	3,770	621.0	
2800	4,300	626.0	
38	4,300	626.0	Forcemain C
670	4,932	687.0	
780	5,042	686.0	
1340	5,602	642.0	
1647	5,909	659.0	
2010	6,272	628.0	
2264	6,526	646.0	
2500	6,762	626.0	
2845	7,107	657.0	
100	7,107	657.0	Forcemain D
360	7,367	632.5	
1300	8,307	692.0	
1398	8,405	704.0	
2370	9,377	762.0	High Point
3000	10,007	711.5	
3350	10,357	741.0	
3760	10,767	706.0	
550	11,317	748.0	Inside treatment plant
TOTAL	**11,300**		


HUCKLEBERRY LIFT STATION SYSTEM CURVE
DISCHARGE HEAD, ft.
320
310
300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
TWO HIGH-FLOW PUMPS
(750 GPM @ 260 TDH, EA.)
TWO LOW-FLOW PUMPS
(150 GPM @ 200 TDH, EA.)
0
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
1,300
1,400
1,500
1,600
1,700
1,800
FLOWRATE, gpm

LUMOS & ASSOCIATES

PREPARED FOR CALAVERAS COUNTY WATER DISTRICT CIP 15092

DESIGN AND ENGINEERING SERVICES FOR THE HUCKLEBERRY REPLACEMENT PUMP STATION PROJECT

San Andreas, California

MAY 14, 2024

LUMOS & ASSOCIATES

Carson City • El Dorado Hills • Fallon • Lake Tahoe • Reno

www.LumosInc.com

El Dorado Hills
3840 El Dorado Hills Boulevard, Suite 301
El Dorado Hills, CA 95762
916.980.8228

May 14, 2024

Kevin Williams
Senior Civil Engineer
Calaveras County Water District
120 Toma Court
San Andreas, California 95249

Subject: Design and Engineering Services for the Huckleberry Replacement Pump Station Project

Dear Mr. Kevin Williams and Members of the Selection Committee:

The Huckleberry Lift Station is one of, if not the most critical wastewater components in the Calaveras County Water District's (District) La Contenta service area. The lift station is located in an environmentally sensitive location next to Cosgrove Creek and is the main source of influent pumping to the La Contenta Wastewater Treatment Facility. The original station is now over 30 years old and requires replacement. Due to its critical nature, the existing lift station must remain in place and operational while the replacement station is constructed. Complicated projects like these require a dedicated team of technical experts that can communicate effectively and implement a winning design strategy for successful construction and operation of the new lift station for decades to come.

Lumos & Associates has assembled a team of such experts to provide the District with a successful replacement of the Huckleberry Lift Station. Our design philosophy, much like our company culture, is based upon collaboration. Our team will engage early and often with District engineering and operations staff to build rapport and earn trust, while establishing the District's priorities and developing the required outcomes that will define success for the project. Lumos previously demonstrated this proven strategy of collaboration on the prior Sheep Ranch Water System Feasibility Project.

Our team will be led by **Aaron Brusatori, P.E.**, as project manager out of our El Dorado Hills office. Aaron has an established rapport with District staff and lives just 35 minutes away from the project site. He will provide boots on the ground involvement, serving as the District's primary point of contact. Leading the design will be **Mara Quiroga, P.E.**, who is a regionally recognized lift station expert. Mara has completed several lift station projects that successfully addressed many of the same operational challenges identified in our Project Overview section, especially the Dakota and Dermody Lift Stations that Mara designed for the City of Reno. I will personally be providing QA/QC of the design process and deliverables, ensuring that Lumos continues to meet and exceed the District's expectations. Survey will be led by **Andrew Chafer, L.S., CFedS**, also hailing from our El Dorado Hills office. With the exception of electrical engineering, all design disciplines are in-house, which provides the District an efficient team and cost effective design. For electrical engineering we are partnering with one of our preferred and trusted design partners — **PK Electrical**.

If you have any questions, please do not hesitate to contact me at 916.980.8228 or via email at jlesperance@LumosInc.com.

Sincerely,

Jonathan Lesperance, P.E.
Engineering Group Manager

Section A | **Project Overview**

Overview

The Huckleberry Lift Station (HLS) is the main lift station for the Calaveras County Water District's (CCWD) La Contenta wastewater system located in Valley Springs, California. All wastewater treated at the existing La Contenta Wastewater Treatment Facility (LCWWTF) is conveyed by the HLS, making HLS one of, if not the most significant facilities within the La Contenta system. Currently, the HLS has several operational challenges and deficiencies as identified in the 2018 La Contenta Wastewater Master Plan (LCWWMP). CCWD wishes to address as many of these challenges as possible with a cost effective and operationally efficient approach via the Huckleberry Replacement Pump Station Project. Our understanding of these challenges, as well as potential opportunities, are described below.

CCWD intends to construct a new submersible lift station located on the existing site under this project. The new lift station will include dual pumping systems for high and low flow scenarios with redundancy. Other project components include the demolition of the existing CMU structure, a new CMU electrical building with electrical utility upgrades, utility and yard piping improvements, flow meter upgrades, and site improvements including flood mitigation.

As a guiding principle, Lumos understands that CCWD staff requires the existing lift station to remain in operation throughout the project duration until the new pump station is operational.

Challenges, Deficiencies, and Opportunities

1 | Flooding & Inflow and Infiltration (I&I)

Flooding is a major concern for the successful operation of HLS. While infrequent, significant precipitation events can lead to overbank flooding in Cosgrove Creek, which borders the western side of the HLS property. The southern portion of the property has been mapped by FEMA as a special flood hazard area (SFHA), including both the 1% annual chance flood hazard (100-year) and the 0.2% annual chance flood hazard (500-year). While the mapped floodplain does not directly encroach on the lift station facility, vegetation and debris within Cosgrove Creek can cause floodwater to back up and extensively inundate the site. CCWD staff have documented instances where the current lift station building was submerged by several inches of floodwater. This occurred during a major rainfall event in January 2017, which was part of one of the wettest winters on record.

I&I is also an operational challenge experienced at the HLS, and the 2018 LCWWMP estimated that I&I may account for as much as 24% of the total annual wastewater flow. CCWD staff presently report that

peak flows to the site are as high as 1,000 GPM (higher than the 655 GPM estimated in the LCWWMP) due to increased I&I in the collection system. While addressing indirect I&I within the collection area is beyond the scope of this project, direct I&I resulting from flood inundation can be mitigated by design modifications to the existing site. Opportunities to mitigate flooding and resultant I&I could include implementation of a flood barrier wall or limited site grading to elevate just the new lift station and electrical building above the anticipated flood level on the site.

2 | Operational and Emergency Storage

Presently the HLS has an operational storage of approximately 3.2K gallons and a total storage of approximately 6.9K gallons, providing 3.7K gallons of emergency storage. Conventional lift station design standards recommend calculating the operational volume, or minimum volume, during periods where inflow is half of the pump capacity. Under current conditions, a single pump has a capacity of 870 GPM, which would result in a recommended operational capacity of 2.1K gallons, assuming six (6) pump starts per hour. With both pumps running at a combined capacity of 1,300 GPM, an operational capacity of 3.2K gallons is recommended, which is achieved by the existing wet well. While CCWD standards preclude the sole reliance on emergency storage at HLS (that is, the station must also be equipped with backup power), an emergency storage volume of up to four (4) hours of peak wet weather flow (PWWF) is an established standard. This would result in an emergency storage volume of 157K gallons at the station's PWWF of 655 GPM, which is neither practical nor feasible at the site. As a result, the project will need to establish a practical emergency storage volume that balances risk, response time, and project cost. One cost saving opportunity that will increase emergency storage at the site is to keep the existing wet well online as standby emergency storage. This also offers the unique opportunity of a convenient location for mobilizing emergency bypass pumps in the event of station failure in the future. Based upon this opportunity, selective demolition of the existing building while leaving the wet well in place warrants additional consideration.

3 | Pulsing to the WWTP

Presently, at a capacity of 870 GPM, the existing 88 HP pumps at HLS are oversized for the average dry weather flow (ADWF) of 0.17 MGD (118 GPM). This results in frequent pump start/stop operations that produce slugs of wastewater being "pulsed" to the LCWWTF. Pulsing can be mitigated with equalization storage facilities. Proposed improvements to the LCWWTF will help to address pulsing issues by adding a redundant treatment pond, but it is also advantageous to address at HLS. Pulsing can be addressed at HLS by better matching a portion of the HLS pumping system to ADWF via smaller capacity pumps. Lumos has identified multiple opportunities to implement better matched pumps in a new wet well to mitigate this issue while not sacrificing emergency capacity and cleansing velocities afforded by larger pumps. The large pumps can be co-located in the new wet well or potentially remain in the existing wet well as a cost saving opportunity.

4 | Oversized Force Main

Currently HLS pumps to LCWWTF via a 12-inch diameter force main. The static lift from HLS to LCWWTF is approximately 190 feet, with the pump duty point operating at a total dynamic head (TDH) of between 200 and 220 feet. This results in an imbalanced system curve, with static lift comprising 85-95% of the TDH. Modern solids handling pumps tend to be high suction energy pumps with large impeller eyes that are prone to operational challenges such as suction and/or discharge circulation when pumping in systems where static head is a major portion of the overall pump TDH. This may be more pronounced with the smaller jockey pumps as minor changes in head pressure could result in drastic shifts in capacities. While there are opportunities to reduce the force main diameter via slip-lining, this is anticipated to be prohibitively costly and beyond the scope of the project. As a result, selection of the most appropriate pumps will be the critical design component of this project, and Lumos excels in selecting specialty pumps for challenging situations, as described in our select project experience for the City of Reno's Dakota and Dermody lift stations.

Similarly, industry standards recommend a flushing velocity of at least two (2) to three (3) feet per second (FPS) for lift station design. This would require a pump flow rate of between 705 and 1060 GPM, respectively. Since cleansing velocities may lead to pulses at the treatment plant, Lumos will collaborate with CCWD operational staff to establish project goals that balance

force main maintenance with minimizing impacts on the LCWWTP. Lumos has addressed this challenge in other lift station designs including the Mark IV Lift Station No. 3 described in our select project experience.

5 | Odor Control

Fortunately, the HLS facility has not had significant odor complaints to date. CCWD recognizes the potential for odor generation at pumping facilities, especially those located within residential areas like the HLS, and wishes to address and mitigate odor potential proactively. Submersible stations offer several opportunities for odor control facilities, including passive and active systems. Lumos understands that CCWD wishes to implement an active odor control system at the new lift station and Lumos will collaboratively explore these opportunities with CCWD staff early in the design process just as we did on the Sheep Ranch Project.

6 | Construction Phasing

HLS is the system's main pump station and conveys all of the flow treated at the LCWWTF. As a result, this facility must remain in place and operational during construction of the new lift station. Lumos understands that proposed improvements, including the new submersible station and electrical building, will be built, tested, and commissioned prior to decommissioning the existing lift station. This will require close coordination with CCWD staff to collaboratively develop a comprehensive construction phasing plan. Fortunately, the existing site and underground utility configuration lend themselves to completing the proposed improvements while avoiding shutdowns and prolonged bypass pumping. Our initial proposed phasing plan is outlined below, based upon our understating and approach to the project at this time:

1. Site grading and flood mitigation
2. Site utilities and improvements
3. New wetwell construction
4. New Electrical structure and tie-in
5. Demolish existing facility

The proposed construction phasing plan involves several key steps to ensure efficient progress and the successful completion of the project. Initially, the focus will be on site grading and flood mitigation measures to prepare the area for construction activities. Following this, attention will shift to the installation of site utilities and improvements necessary for the functioning of the new infrastructure. Subsequently, the construction of the new wet well will commence. Concurrently, a new electrical structure will be constructed and tied into the existing system to support the operational needs of the facility. Finally, once the new infrastructure is in place and operational, the existing building will be demolished to make way for further enhancements and site development. This phased approach ensures a systematic progression of construction activities while minimizing disruptions to ongoing operations.

Conceptual site layout with elevated facilities for flood protection.
Actual scope of site improvements and demolition to be determined in design.

Section B | Understanding and Approach

Lumos takes pride in our collaborative project approach. Lumos has built a constructive culture founded on collaboration. All of our staff receive communication training, including training on understanding personalities and how to most effectively communicate with others. This emphasis allows Lumos to stand out among engineering consultants and continue to deliver successful projects for our Clients. Lumos will initiate the HLS project by convening a kickoff meeting with CCWD staff to outline the project's initial priorities and establish the criteria for achieving a successful outcome, mirroring our approach on the Sheep Ranch Project. We will engage with both engineering and operations personnel to ensure that the project exceeds CCWD design standards while creating a facility that operates efficiently and is easily maintained. Our seasoned project team will facilitate and lead the initial collaboration meetings to build project team rapport, establish roles and responsibilities, set recurring coordination meetings, and chart out the path for a successful completion of the project.

Lumos understands that initial priorities can change during the course of a project. We also understand that CCWD staff are busy and often managing multiple, concurrent projects. Lumos will, therefore, keep a running design decision log that we will regularly share and update with CCWD staff throughout the project. Lumos will lead project coordination meetings at intervals agreed upon with CCWD , and we will revisit and update this log transparently with the project team. We have developed a resume of successful lift station designs by employing this simple, yet effective tool. Specific elements of our approach to address CCWD's expectations and project requirements are detailed below.

Project Management

Lumos' approach to project management is second to none. Our project managers are experienced technical experts and also effective communicators. In addition to communication training, our project managers get comprehensive project management and leadership training, ensuring that CCWD benefits from competent and effective leadership of the design team. Our project manager for this project, **Aaron Brusatori, P.E.**, will serve as the primary link between CCWD staff and the design team. Aaron will be primarily responsible for tracking the project budget, scope, and schedule. He will be the Lumos point of contact for invoicing and providing regular project progress reports.

As a local, Aaron will be quick to respond to site visits and in-person meetings, available throughout the project duration.

Supporting Aaron on this project will be **Jonathan Lesperance, P.E.**, in the role of QA/QC, and **Mara Quiroga, P.E.**, in the role of Design Lead. Jonathan will have the primary responsibility of furnishing quality assurance and control on all design deliverables, ensuring that the work product submitted to CCWD meets or exceeds CCWD's design standards and is consistent with the established project priorities. Jonathan will personally review the design report and design deliverables in accordance with Lumos' established QA/QC process. Mara will have the primary responsibility of directly overseeing and guiding the design team through the process, drawing on her prior experience of designing dozens of lift stations.

Design Report

Lumos believes that the design report is the most critical component of the project as it will establish the direction of the design, identify basis of design equipment including the proposed pumps and major electrical equipment, document adherence to CCWD design standards and criteria, and be the primary tool for communicating the project to other stakeholders beyond the project team. Lumos furnishes design reports for all of its major lift station projects, including those listed in our select project experience in this RFP. As part of the design report, Lumos will develop initial schematic design level drawings, including 3D renderings of the proposed lift station and electrical building. The design report will include a discussion on alternatives evaluated, along with a justification for why the project team selected the preferred alternative. The alternatives discussion will include an evaluation on potential cost savings, and the design report will include an Engineer's Opinion of Probable Construction Cost (OPCC).

The design report will include information established from the topographic survey and the geotechnical investigation (both discussed in detail below). The design report will specifically document how the project team collaboratively addressed and resolved the challenges and opportunities identified in Project Overview section of this proposal, including:

- Establish design criteria, especially for the pumping system, including capacity, redundancy, and pump system operation
- Construction phasing and approach to maintaining

service throughout the project
- Flood mitigation
- Hydraulic calculations to support pump selection, force main analysis, and wet well volume
- Electrical loads and PG&E utility service modifications
- Odor Control
- Electrical building structural components
- Project permitting

Lumos will provide a draft design report for CCWD review. After completion of District review, Lumos will facilitate and lead an in-person review meeting to discuss the report and address review comments. A final stamped report will be provided to CCWD.

Deliverables
Draft Design Report, Meeting Minutes and Attendance from Design Report Review Meeting, Final Stamped Design Report, Updated Decision Log

Topographical Survey

Lumos employs modern technology with conventional survey methodologies, ultimately providing CCWD with the confidence that all topographic deliverables are second to none in accuracy. Our survey project manager, Andrew Chafer, P.L.S., CFedS, is also local to the project, based in our El Dorado Hills office. By offering survey in-house, Lumos reduces the number of subconsultants on the project and has direct control over timing and performance. This is ultimately a benefit to CCWD as it reduces project design costs and risks. A comprehensive site topographic survey, complete with drone collected aerial imagery, reduces the need for subsequent design team site visits and results in cost savings to CCWD.

Topographic Survey. Lumos will prepare a topographic survey map at 1" = 20' scale with 1 foot contour interval accuracy in accordance to National Map Accuracy Standards for the project area. All existing surface improvements, trees greater than 12" dbh defined by species, striping/pavement markings, visible evidence of utilities, inverts of all measurable utilities within the project area (including pipe size, orientation, and material where observable) will be shown. The area to be mapped will be as shown heron as Figure 1. Project datum will be referenced to modified state plane coordinates and NAVD88. Deliverables will include a signed PDF and CAD files, including an Autodesk Civil 3D surface with appropriate breaklines.

Record Boundary Survey. Lumos will review client provided title reports and best available record maps and documents prior to beginning field work. During the field survey portion of this project existing property corners and street monuments will be located within the project area. If an existing boundary is defined on a map of record, a best fit of the boundary will be made based upon found monuments and record mapping. This task will not include any verification or research of existing ownership. There may be areas discovered that could have a material discrepancy in the record to what is found in the field. If this occurs we will present the findings. If the proposed improvements are close to any possible conflicts additional field work and research may be needed and ultimately a Record of Survey may be required. If this happens, we would appreciate the opportunity to provide a proposal for a modification to our scope and fees accordingly. The deliverable for this task will include record boundary delineation within the topographic survey deliverable referenced herein.

Figure 1 | Limits of Topographic Survey

Deliverables
Final topographic and site survey deliverable stamped by a California licensed land surveyor.

Geotechnical Investigation

For the Geotechnical scope of work, we will complete a field investigation that will consist of two (2) subsurface borings, at the proposed site. Exploration depths will be from 25 to 35 feet below ground surface, or practical refusal, whichever comes first. Samples will be collected from the surface, and at intervals of between 2½ and five (5) feet below ground surface. Lumos will provide the drilling and the USA dig clearance.

Lumos will provide sampling of each exploration, classify the encountered soils in accordance with the Unified Soil Classification System (USCS), and conduct laboratory testing on the samples collected. Additionally, we propose to perform engineering analyses and calculations and develop a Geotechnical Investigation Report that will discuss the geologic setting, seismic considerations, exploration and site condition, field and laboratory test data, and our conclusions and recommendations from a Geotechnical perspective. Our Geotechnical Investigation will be prepared by a Registered California Civil Engineer and will specifically include the following services:

Field Investigation will include:

- USA Dig Clearance
- Location of Exploration Borings
- Logging of all Soil Profiles Based on USCS
- Water Table Measurement, if encountered

Laboratory analysis may include:

- Consolidation (ASTM D-2435)
- Atterberg Limits (ASTM D-4318)
- Grain Size Analysis (including Fines content, ASTM C-136)
- Moisture Density Curve (ASTM D-1557)
- Direct Shear (ASTM D-3080)
- Moisture Content and Unit Density (ASTM D-2937)
- Expansion Index (ASTM D-4829)
- Ph/Resistivity/Soluble Sulfates

Report, Recommendations, and Conclusions:

- Exploration Logs
- Soil Types and Classification
- Laboratory Test Results
- Seismic Considerations
- Geotechnical Discussion
- Modulus of Subgrade Reaction (K-Value)
- Shear Strength Parameters of Site Soils
- Lateral Earth Pressures (active, passive, and at rest)
- Foundation Recommendations
- Excavation, Grading, and Compaction Recommendations
- Slope (Temporary and Permanent) Recommendations
- Portland Cement Concrete Recommendations
- Groundwater Level, if encountered

By offering geotechnical services in-house, Lumos reduces the number of subconsultants on the project and has direct control over timing and performance. This is a benefit to CCWD as it reduces project design costs and risks.

Deliverables

Final geotechnical investigation report with construction recommendations, stamped by a California registered professional engineer.

Design

Following completion of the design report, topographical survey, and geotechnical investigation, Lumos will proceed with detailed design of the project improvements. The design will progressively execute on the decisions and direction identified in the design report. Lumos understands that design decisions and criteria can evolve and it may be necessary to change course on the design. Our approach is that a comprehensive and collaborative effort between the design team and CCWD during the design report process is the most effective and efficient way to mitigate future design changes. Lumos takes pride in being flexible during design and will endeavor to accommodate minor changes without requesting a scope modification from CCWD. Should design changes occur that require a modification to the design scope, our project manager Aaron Brusatori, PE, will promptly discuss with CCWD staff and secure direction before proceeding. All design changes, along with change resolution and District approval, will be reflected in the decision log.

Design milestones will include submittals for CCWD at 50%, 90%, and 100% design levels. Lumos anticipates CCWD review at each design milestone and will address review comments in each subsequent design deliverable. Lumos will coordinate with known utilities in the project vicinity early in the process to request record drawings for those utilities that are not visible at the surface. These record drawings will be integrated with the collected information from the site topographic survey and USA Digs clearance for the geotechnical investigation in order to build a comprehensive set of plans that document the best available data for underground utilities. At the 90% design submittal, Lumos include a 90% project manual complete with front end documents, technical specifications, and appendices. Lumos has standardized its public works project front end documents on the EJCDC 2018 documents, consistent with CCWD standards. Our familiarity with these documents provides CCWD with confidence that the contractual documents will be complete, technically accurate, and efficiently prepared. We will collaborate with CCWD on the supplementary conditions (EJCDC C-800), to ensure that District and California specific requirements are incorporated into the project manual.

Lumos anticipates permitting the project at the 90% design threshold, with the following permits being anticipated:

- Calaveras County Building Permit for new electrical building
- Earthwork and Excavation Permit for grading
- PGE coordination for upsized transformer
- No FEMA coordination/permitting are anticipated with fill and construction expected to be outside of currently mapped floodplains
- No EPA or Federal permitting anticipated under this scope of work
- Permit fees are assumed to be paid by CCWD and are excluded from this scope of work

Prior to commencing with subsequent design milestones, Lumos proposes holding a review meeting together with CCWD to discuss comments and their resolution, as well as documenting any new decisions for the project. These review meetings may be held either in person or virtually, or a combination thereof. A final Bid-Ready design submittal that includes CCWD review on the 100% submittal will be provided to for bidding.

Deliverables

50% Design with updated Decision and Comment Logs, and updated Opinion of Probable Construction Cost (OPCC)

90% Design with Project Manual, updated Decision and Comment Logs, and updated OPCC

100% Design with Project Manual, updated Decision and Comment Logs, and updated OPCC

Final Bid-Ready Design and Project Manual with final Decision and Comment Logs, and final OPCC

Bidding

Under the bidding task Lumos attend the pre-bid job walk and furnish addenda and address Requests for Information (RFI) as requested by the District. Lumos' role during bidding is the direct support of CCWD staff on an as requested basis, and we understand that CCWD will take the lead during bidding. Following completion of bidding and the District's award of the construction contract, Lumos will furnish Conformed for Construction Documents including updated Drawings and Project Manual reflecting modifications during the bidding process, if any.

Deliverables

Conformed for Construction Documents

Services During Construction

Lumos' collaborative approach to project delivery extends beyond the design process. We approach construction as an extension of the project design with the awarded Contractor being the newest member of the design team. Acting in a support role to the District throughout construction, the design team will assist CCWD through construction employing our communication skills and detail oriented, solutions-based approach to construction engineering. Our Project Manager, Aaron Brusatori, PE, and the rest of the design team, will be available to support the District throughout construction on items such as submittal and shop drawing reviews, responding to construction RFIs, assistance with reviewing applications for payment or potential construction contract change orders, and attendance at construction meetings as requested by the District. Our in-house construction services team, complete with credentialled inspectors, is also available to assist the District on an as requested basis. Construction management, inspection, and testing are not contemplated in this scope of work, but can be included under an amended scope and fee proposal.

Deliverables

Final record drawings in AutoCAD 2018 format reflecting contractor and District inspector marked-up drawings.

Section C | **Team Organization**

Aaron Brusatori, P.E. | Project Manager | Lumos & Associates

With over 23 years of civil engineering experience, Aaron brings a wealth of planning, design, construction, and administration expertise for public and private infrastructure and land development projects. Previously serving as Community Development Director, Public Works Director, and Road Commissioner for Amador County, his experience managing multiple local projects with coordination between utilities in the foothills, including Amador Water Agency and the City of Angels Camp, makes him an ideal partner. **Aaron's boots-on-the-ground approach, coupled with his local presence and availability throughout the project duration, positions him as the perfect project manager for CCWD, ensuring seamless coordination and execution.**

Education | BS, Civil Engineering, California Polytechnic State University, San Luis Obispo, 2000
Professional Licensure & Certifications | Licensed Civil Engineer in CA #64384

Jonathan Lesperance, P.E. | Group Manager, QA/QC | Lumos & Associates

Jonathan brings over 15 years of extensive design experience in municipal infrastructure projects with an emphasis on wastewater design (including both pressure and gravity sewer lines, lift stations, hydraulic modeling, treatment systems, and master planning). He will provided QA/QC of the design and provide technical mentoring. **Jonathan has completed several successful lift station projects similar to the HLS project. He has also furnished creative, solutions-oriented engineering to CCWD on the Sheep Ranch Water Feasibility Study, demonstrating the capacity of Lumos to solve complex engineering problems.**

Education | BS, Civil Engineering, Arizona State University, 2009
Professional Licensure & Certifications | Licensed Civil Engineer in CA #84438 and NV #22326

Mara Quiroga, P.E. | Senior Engineer | Lumos & Associates

As a Senior Engineer, Mara brings extensive expertise in water and wastewater infrastructure projects, particularly in the design of pump stations and lift stations, having designed nearly 20 lift stations in the past seven years - over a dozen of which she served as the design manager. Her experience spans working with clients like Amador Water Agency, City of Reno, Carson City, Gardnerville Ranchos, and City of Fernley. Mara's strengths lie in lift station replacement and rehabilitation projects, ensuring her designs meet functional requirements while prioritizing longevity and efficiency. Additionally, she possesses proficiency in hydraulic modeling using InfoWater Pro and WaterCAD, leveraging these tools to optimize booster pump station designs and seamless integration with existing water distribution systems.

Education | BS, Civil Engineering, University of Nevada, Reno, 2015
Professional Licensure & Certifications | Licensed Civil Engineer in CA #91948 and NV#26809

Daniel Newton, *P.E. | Senior Engineer | Lumos & Associates

Dan specializes in the design of various infrastructure projects such as water and sewer systems, pump stations, storage tanks, and airport facilities for municipalities and public utility owners. Excelling in hydraulic calculations and skilled in using software like AutoCAD Civil 3D and Autodesk Revit, Dan is adept at acquiring permits and coordinating with stakeholders throughout the project lifecycle. **His experience is highly relevant to CCWD, as he has navigated complex pumping system challenges for multiple clients, bringing a proven track record of developing designs tailored to complex construction phasing and operational challenges, including the Swan Lake Flood Emergency project.**

Education | BS, Geological Engineering, University of Nevada, Reno, 2014, Minor in Hydrogeology
Professional Licensure & Certifications | *Licensed Civil Engineer in NV #28421

Manish Khanal, PE, SE | Senior Structural Engineer | Lumos & Associates

Manish's experience, since joining Lumos & Associates, has expanded to sectors including transportation, geothermal, industrial, commercial, and institutional projects. Manish is the engineer overseeing the structural components of the bridge design for the Truckee River Legacy Trail Phase 4 in Truckee, California. His experience spans transportation, water, and wastewater structures, as well as institutional facilities. Gardnerville Ranchos GID Booster Pump Station and the Tamarack and California Lodges Structural Investigation for the Heavenly Mountain Resort in Lake Tahoe.

Education | MS, Civil Engineering (Structure), University of Huston; BS, Civil Engineering, Trubhuvan University, Nepal
Professional Licensure & Certifications | Licensed Civil Engineer in CA #94298, NV #29054, WA #23004366, HI #PE-20048-S, and TX #138610

Andrew Chafer, L.S., CFedS | Surveying Project Manager | Lumos & Associates

Andrew is our El Dorado Hills Survey Project Manager and has 25 years of surveying experience in both California and Nevada. His background encompasses topographic, boundary and right-of way mapping; construction staking of residential, commercial, institutional and public works projects; deformation monitoring of dams and steel structures; and application of advanced surveying technologies including UAS mapping, aerial & terrestrial LiDAR/3D scanning and InSAR mapping.

Professional Licensure & Certifications | California Professional Land Surveyor #8005, Certified Federal Surveyor #1208, FAA UAS Drone Pilot

Mitch Burns, PE, CEM | Geotechnical Engineering | Lumos & Associates

Mitch has 32 years of geotechnical engineering experience. He has served as a materials technician, special inspector, project engineer, project manager, and department manager. Mitch has authored numerous geotechnical reports for schools, roadways, airports, pipelines, buildings, mines, and site developments across Nevada, and oversees our three materials testing laboratories. He's experienced in slope stability analysis, fault evaluations, and a variety of roadway rehabilitation methods that include pulverizing and reusing existing roadway sections, lime and cement treatments, rock stabilization, geogrids, and geotextile fabrics.

Education | MS, Civil Engineering, University of Nevada, Reno, 1996; BS, Civil Engineering, University of Nevada, Reno, 1992
Professional Licensure & Certifications | California Professional Engineer #72704, Certified Environmental Manager, ACI/ICC/NICET Certified; CPN Nuclear Gauge; CPN Radiation Safety Officer; OSHA Construction Safety; and MSHA

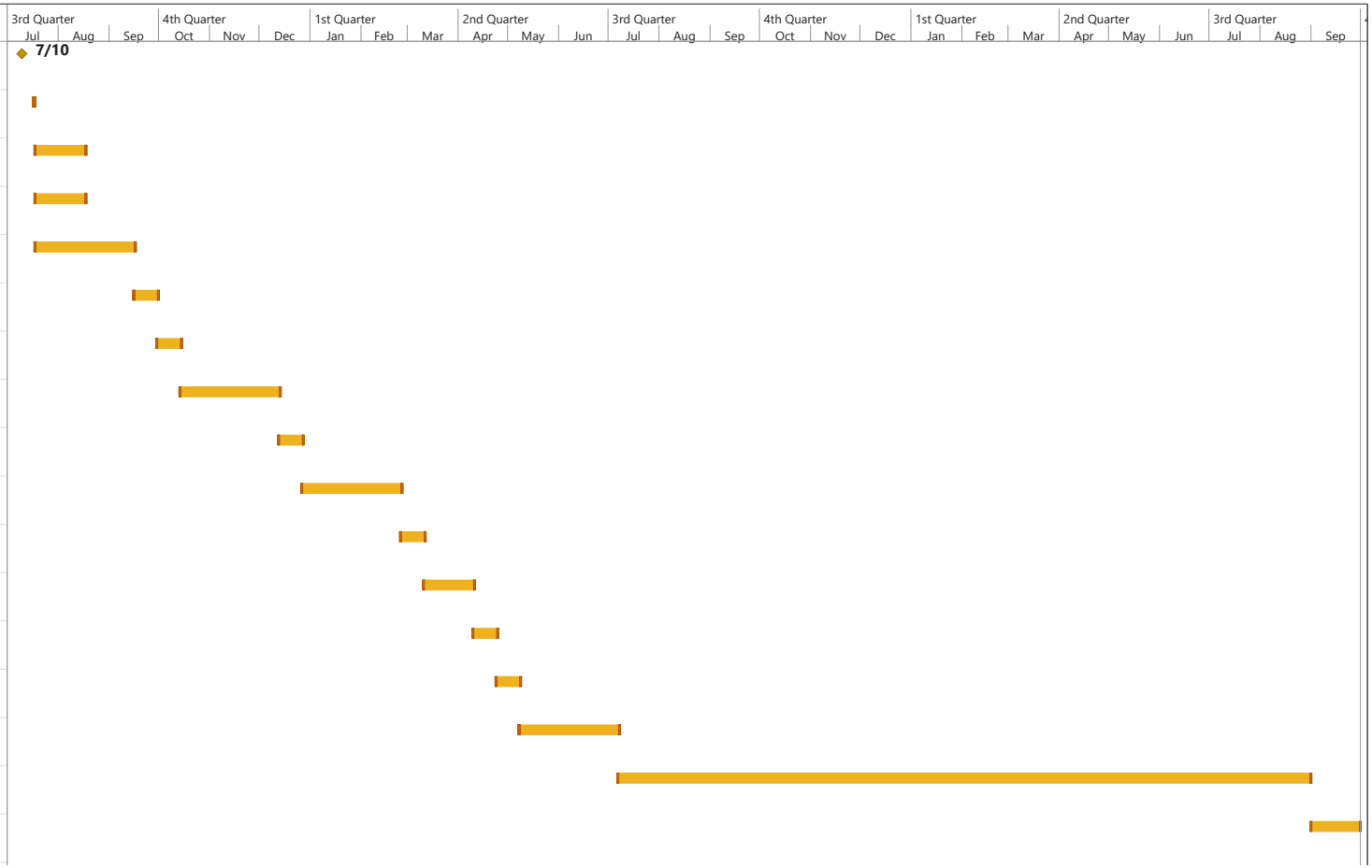
Dugan Hadler, LEED AP, BD+C | Electrical Engineering Lead | PK Electrical

Dugan Hadler has over 25 years of experience that started out on the field as an electrician, foreman and general foreman and then transitioned to electrical designer, estimator and project manager. Dugan has experience with many different project types including commercial, research facilities, industrial, military, utilities and healthcare. He is responsible for designing electrical distribution, lighting, lighting controls, lightning protection, fire alarm systems, HVAC control and communication systems. His most recent relevant experience includes the Orr Ditch Booster Pump Station/Hydroelectric, relocation and replacement of the Huffaker Booster Pump Station, and the Stonegate Pump Station whit at 1,500 sq ft pump station building designed to includes two 100HP pumps with Reduced Voltage Soft Starters, and provisions for two future 300HP pumps to provide multiple operating conditions.

Education | IBEW/NJATC Journeyman Inside Wireman Apprenticeship, 2004
Professional Licensure & Certifications | LEED AP BD+C 10685367

Section D | **Project Schedule**

Task Name	Start	Finish
Notice To Proceed	Wed 7/10/24	Wed 7/10/24
Kickoff Meeting	Wed 7/17/24	Wed 7/17/24
Topographical Survey	Thu 7/18/24	Sat 8/17/24
Geotechnical Investigation	Thu 7/18/24	Sat 8/17/24
Basis of Design Report	Thu 7/18/24	Mon 9/16/24
District Review	Mon 9/16/24	Mon 9/30/24
Final Design Report	Mon 9/30/24	Mon 10/14/24
50% Design	Mon 10/14/24	Fri 12/13/24
District Review	Fri 12/13/24	Fri 12/27/24
90% Design	Fri 12/27/24	Tue 2/25/25
District Review	Tue 2/25/25	Tue 3/11/25
100% Design	Tue 3/11/25	Thu 4/10/25
District Review	Thu 4/10/25	Thu 4/24/25
Bid Ready Documents	Thu 4/24/25	Thu 5/8/25
Bidding	Thu 5/8/25	Mon 7/7/25
Construction	Mon 7/7/25	Mon 8/31/26
Record Drawings and Closeout	Tue 9/1/26	Wed 9/30/26



Section E | Representative Project Experience

City of Reno
North Dakota and Dermody Lift Station Design

Lumos & Associates successfully designed comprehensive rehabilitation and replacement solutions for two aging lift stations in the City of Reno – the Dermody Lift Station and North Dakota Lift Station. These critical infrastructure projects, slated for construction in summer 2024, will revitalize lift stations that were originally constructed in the 1980s and had deteriorated over time.

Lumos' design approach commenced with a thorough alternatives analysis, basis of design report, and detailed cost estimates. The final designs for both lift stations included site grading, surface restoration, and the replacement of key components such as pumps, wet wells, piping connections, controls, electrical systems, mechanical piping, valve and meter vaults, upstream and downstream manholes, and specialized coatings or the use of polymer concrete manholes.

To ensure long-lasting and reliable operations, Lumos conducted buoyancy calculations and incorporated design features to mitigate the impacts of high groundwater levels. Additionally, force main assessments and designs were included to optimize the conveyance systems.

Throughout the design process, Lumos closely collaborated with the City of Reno to ensure compliance with lift station requirements and the preferences of the operations teams. Lift station operators were actively engaged, providing invaluable input to ensure the designs would meet their needs and facilitated seamless integration into their daily operations.

The rehabilitated lift stations will feature submersible pumps housed within new wet wells, complemented by new piping, valve and meter vaults, and force mains. Comprehensive bypass pumping plans were also developed to maintain uninterrupted service during construction.

Lumos is providing construction management services during the construction of the project. These services include facilitating progress meetings, submittal reviews, full-time site inspection, and contractor oversight.

Lumos' approach, which included thorough investigations, design calculations, and close stakeholder coordination, has resulted in robust and operator-friendly lift station solutions that will serve the City of Reno for decades to come.

Dates 12/2022 - 09/2023

Costs $399,753 Design, $2.9M Estimated Construction

Owner Reference Erick Miller, City of Reno, 775.334.2584, millere@reno.gov

Relevant Features to Huckleberry Pump Station

- Rehabilitation/replacement of aging lift stations
- Alternatives analysis of rehab vs. replacement
- Replacing key components like wet wells, pumps, electrical, piping
- Addressing site constraints like high groundwater
- Close coordination with municipal operations staff
- Temporary bypass pumping planning
- Opportunity for Lumos to provide Construction Administration services

Carson City Public Works Riverview Lift Station

The Riverview Lift Station, a critical piece of wastewater infrastructure serving the Riverview residential area in Carson City, Nevada, had fallen into a state of disrepair and operational challenges. Located within the median of 5th Street, approximately 260 feet east of the intersection with Roundup Road, this aging facility consisted of an outdated wet well/dry well configuration with two 15 horsepower alternating pumps. Settlement issues, degraded equipment, and confined space constraints necessitated a comprehensive upgrade.

Carson City retained the services of Lumos & Associates to thoroughly evaluate alternatives and design improvements to revitalize the ailing lift station. After an alternatives analysis, Carson City elected to proceed with a new wet well-style lift station while abandoning the existing dry well structure and repurposing the old wet well as a manhole.

The Lumos design team developed a robust solution centered around a new wet well equipped with dual submersible 7.5 horsepower pumps. To enhance durability and longevity, the wet well incorporates a protective liner coating system. Complementing the wet well are a meter and valve vault, force main connection, and dedicated electrical and control systems.

Careful consideration was given to optimizing the layout and positioning of the new lift station components within the constrained median location. Lumos' design aimed to maximize accessibility for maintenance activities while minimizing disruptions to the surrounding traffic flow along 5th Street.

Throughout the design process, Lumos prioritized close collaboration with Carson City's stakeholders, ensuring the proposed upgrades aligned with the municipality's operational requirements and long-term goals for the Riverview area's wastewater infrastructure.

Lumos' involvement extended beyond the design phase, providing valuable assistance during the bidding process and offering construction administration services. This approach ensured a seamless transition from design to implementation, safeguarding project quality and facilitating a successful lift station upgrade.

Dates 04/2019 - 01/2021

Costs $53,000 Design, $370,000 Construction

Owner Reference Darren Anderson, Carson City Public Works, 775.823.7584, danderson@carson.org

Relevant Features to Huckleberry Pump Station

- Rehab of failing lift station in constrained site
- Abandoning old dry well, new submersible wet well
- Optimizing layout in tight space
- Aligning with municipality's operational needs
- Opportunity for Lumos to provide Construction Administration services

Victory Logistics Development Lift Stations and Force Mains

Lumos & Associates is designing a new sewer lift station and force main system to service Phase 1 of the Victory Logistics ("Mark IV") Industrial Subdivision in Fernley, Nevada. This critical infrastructure will provide wastewater collection and conveyance for the initial 15 subdivided lots spanning nearly 500 acres.

The lift station will be strategically located at the low point of Phase 1 to efficiently receive flows from the on-site gravity sewer network. Key components include a 72-inch wet well with duplex submersible pumps, valve vault, emergency bypass, and provisions for odor control facilities if needed in the future. Wastewater will be pumped through approximately 0.6 miles of force main and discharged at the City of Fernley's East Wastewater Treatment Plant (EWWTP). To accommodate the increased flows, a new headworks facility will be constructed at the EWWTP site.

The proposed lift station design prioritizes operational efficiency, longevity, and compliance with all applicable standards. Detailed analyses have been conducted, including geotechnical investigations, buoyancy calculations, and electrical/control systems design adhering to the latest codes and standards. Sustainable features like corrosion-resistant coatings and a wet well mixer system are incorporated to extend the infrastructure's service life.

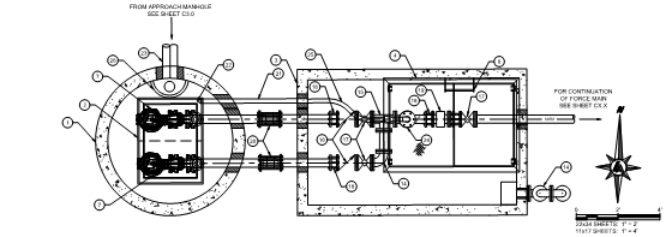
Site amenities and provisions have been carefully considered, such as area lighting, fencing, potable water service, and future expansion space. These elements ensure safe access for operations and maintenance activities, while accommodating potential growth in the future. Lumos & Associates' comprehensive approach ensures a robust and future-proof wastewater infrastructure solution for this key development project.

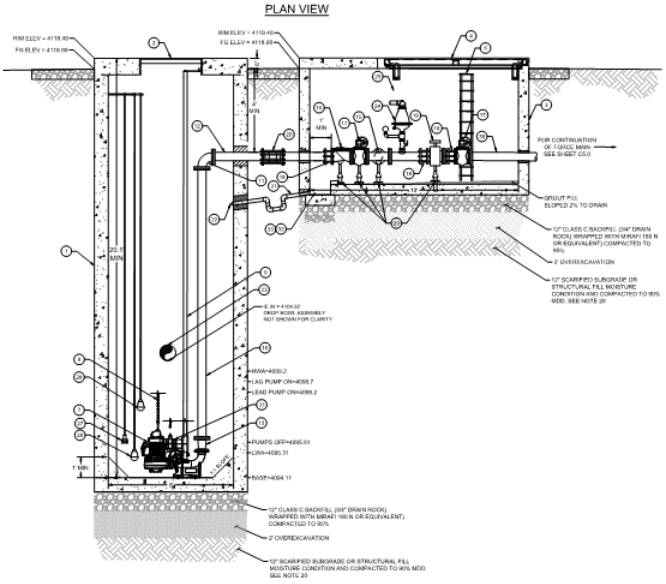
A key challenge during the initial development stages will be managing extremely low flows and long detention times in the wet well. Lumos has developed operational strategies, such as adjustable wet well set points, to mitigate potential issues like odors and septic conditions until more contributing flows come online as the development progresses.

Dates 01/2022 - Ongoing

Costs $253,500 Design, $1.8M Estimated Construction

Owner Reference Scott Barnes, Mark IV Capital, 775.525.9860, sbarnes@markiv.com





Relevant Features to Huckleberry Pump Station

- Submersible Pump
- Large variation of design flows (Due to phased development)
- Odor and Septic Conditions
- Future Design Considerations

Douglas County Barling Lift Station

Lumos & Associates, Inc. was contracted by Douglas County Public Works to complete a preliminary evaluation of three improvement alternatives for the Barling Street Lift Station located in Minden, Nevada. The existing lift station, a Smith & Loveless dry well/ wet well configuration constructed in 1986, was nearing the end of its useful life.

The design alternatives analyzed were:

1. Rehabilitating the existing wet/dry well configuration
2. Converting the existing wet well to a submersible wet well and abandoning the dry well, and
3. Constructing a new wet well, converting the existing wet well to an approach manhole, and abandoning the dry well

Design assumptions were made based on Douglas County standards and industry practices. A design flow of 79 gallons per minute was determined by analyzing the buildout peak flow and upstream Wildgoose Lift Station flow.

After evaluating feasibility, practicality, cost, and expected lifespan, Douglas County opted for Design Alternative 2 - converting the existing wet well into a submersible station and abandoning the dry well. This alternative eliminated the confined space entry concerns of the dry well at a lower cost than full wet well replacement. However, constructability challenges arose due to existing concrete fillets limiting space for submersible pump installation. Options included removing the fillets or filling part of the wet well with grout. The aging wet well condition also raised questions about installing a new epoxy liner. Additional work included a valve vault, force main redirection, and other piping and electrical upgrades.

Dates 08/2022 - 01/2023

Costs $113,813 Design, $630,000 Estimated Construction

Owner Reference Nathan Smith, Douglas County, 775.783.6025, nsmith@douglasnv.us

Relevant Features to Huckleberry Pump Station

- Evaluation and design for rehabilitation/replacement of existing aging lift station
- Analysis of alternatives like rehab wet well/dry well, convert to submersible, or full replacement
- Constructability challenges with retrofitting existing wet well (concrete fillets)
- Assessing remaining useful life of existing wet well structure
- Option of abandoning dry well and converting wet well to submersible
- Supporting components like valve vaults, force main mods, electrical/ controls
- Determining design flows based on buildout and upstream contributions
- Sizing for operational and emergency storage needs
- Coordinating with municipal owner's standards and operations staff

Gardnerville Ranchos GID
Long Valley Booster Pump Station Upgrades & Construction Management

In August 2020, a design was prepared and submitted by Lumos to Nevada Department of Environmental Protection (NDEP) Bureau of Safe Drinking Water (BSDW) for upgrades to the existing Long Valley BPS in Gardnerville Ranchos GID. The design included upsizing the booster pumps in the existing vault and the addition of backup power. However, upon initial review of the project, NDEP denied the project with the requirement that the station be upgraded to an above-grade station in a building to meet current regulation. Following a District-appeal to the denial and additional discussions with NDEP, the District has decided to move forward with the design and construction of an above-grade station.

Building upon the District's existing investment in the initial design work and conceptual site master planning efforts that were completed in 2020, the redefined project scope included the following:

- Addition of a new CMU pump station building, all-weather vehicle access, and security fencing
- The new pump station will house the following items:
  - Replacement of existing 30 horsepower (HP) pumps with 60 HP vertical split case pumps (pumps have already been specified from prior design efforts)
  - Addition of diesel engine generator and automatic transfer switch (previously specified)
  - Addition of variable frequency drives (previously specified)
  - Electrical and controls improvements (a portion of which have been previously specified)
- Associated site improvements

Lumos is providing construction management services during the construction of the project. These services include facilitating progress meetings, submittal reviews, periodic site inspections, and contractor oversight.

Dates 07/2021 - Ongoing

Costs $313,577 Design, $1.9M Estimated Construction

Owner Reference Greg Reed, General Manager GRGID, 775.265.2048, agreed@grgid.com

Relevant Features to Huckleberry Pump Station

- Initial pump/electrical upgrades evolved into new facility/building
- Provisions for backup power
- Electrical and controls upgrades
- New CMU building enclosure
- Opportunity for Lumos to provide Construction Administration services

Section F | **Staff Labor Estimate**

	Aaron Brusatori Project Manager	**Jonathan Lesperance** QA/QC	**Mara Quiroga Dan Newton** Sr. Engineer	**Manish Khanal** Sr. Structural Engineer	**Project Engineer**	**Designer**	**Dugan Hadler** Electrical Engineering	**Andrew Chafer** Surveyor	**Mitch Burns** Geotechnical Engineer	**Total by Task**
Task 1 Project Management	80									**80**
Task 2 Project Design Report		8	40	8	24	32	19			**131**
Task 3 Topographical Survey								57		**57**
Task 4 Geotechnical Investigation									63	**63**
Task 5 50% Design		8	40	40	40	80	31			**239**
Task 6 90% Design		8	40	32	40	80				**200**
Task 7 100% Design		4	24	8	24	40	46			**146**
Task 8 Bid Ready Documents		2	8		8	24	10			**52**
Task 9 Bidding Assistance		2	24		8					**34**
Task 10 Services During Construction		4	24	8	24		18			**78**
Task 11 Record Drawings			8		8	24				**40**
Total Staff Hours	**80**	**36**	**208**	**96**	**176**	**280**	**124**	**57**	**63**	**1120**

LUMOS & ASSOCIATES

COST PROPOSAL

PREPARED FOR CALAVERAS COUNTY WATER DISTRICT CIP 15092

DESIGN AND ENGINEERING SERVICES FOR THE HUCKLEBERRY REPLACEMENT PUMP STATION PROJECT

San Andreas, California

MAY 14, 2024

Cost Proposal

	Aaron Brusatori Project Manager	**Jonathan Lesperance** QA/QC	**Mara Quiroga Dan Newton** Sr. Engineer	**Manish Khanal** Sr. Structural Engineer	**Project Engineer**	**Designer**	**Dugan Hadler** Electrical Engineering	**Andrew Chafer** Surveyor	**Mitch Burns** Geotechnical Engineer	**Total by Task**
Task 1 Project Management	$24,400 (80 hrs)									**$24,400** (80 hrs)
Task 2 Project Design Report		$2,400 (8 hrs)	$9,400 (40 hrs)	$1,880 (8 hrs)	$5,160 (24 hrs)	$6,880 (32 hrs)	$4,250 (19 hrs)			**$30,010** (131 hrs)
Task 3 Topographical Survey								$18,000 (57 hrs)		**$18,000** (57 hrs)
Task 4 Geotechnical Investigation									$25,000 (63 hrs)	**$25,000** (63 hrs)
Task 5 50% Design		$2,400 (8 hrs)	$9,400 (40 hrs)	$9,400 (40 hrs)	$8,600 (40 hrs)	$17,200 (80 hrs)	$10,300 (31 hrs)			**$57,300** (239 hrs)
Task 6 90% Design		$2,400 (8 hrs)	$9,400 (40 hrs)	$7,520 (32 hrs)	$8,600 (40 hrs)	$17,200 (80 hrs)				**$45,120** (200 hrs)
Task 7 100% Design		$1,220 (4 hrs)	$5,640 (24 hrs)	$1,880 (8 hrs)	$5,160 (24 hrs)	$8,600 (40 hrs)	$10,200 (46 hrs)			**$32,700** (146 hrs)
Task 8 Bid Ready Documents		$610 (2 hrs)	$1,880 (8 hrs)		$1,720 (8 hrs)	$5,160 (24 hrs)	$2,200 (10 hrs)			**$11,570** (52 hrs)
Task 9 Bidding Assistance		$610 (2 hrs)	$5,640 (24 hrs)		$1,720 (8 hrs)					**$7,970** (34 hrs)
Task 10 Services During Construction		$1,220 (4 hrs)	$5,640 (24 hrs)	$1,880 (8 hrs)	$5,160 (24 hrs)		$4,050 (18 hrs)			**$17,950** (78 hrs)
Task 11 Record Drawings			$1,880 (8 hrs)		$1,720 (8 hrs)	$5,160 (24 hrs)				**$8,760** (40 hrs)
Total Cost	**$24,400** (80 hrs)	**$10,980** (36 hrs)	**$48,880** (208 hrs)	**$22,560** (96 hrs)	**$37,840** (176 hrs)	**$60,200** (280 hrs)	**$31,000** (124 hrs)	**$18,000** (57 hrs)	**$25,000** (63 hrs)	**$278,860** (1,120 hrs)

Agenda Item

DATE: June 4, 2024

TO: Engineering Committee, Calaveras County Water District
Michael Minkler, General Manager

FROM: Engineering Department

RE: Capital Improvement Project Updates

AMI / AMR Project (CIP 11096)
Mueller Systems is complete, and all meter locations have been revisited and checked. Received the final invoice. Working with USDA to use the balance of grant funds for pressure and flow sensing equipment on all PRV stations, this equipment will be transmitted through the Network Built for AMI meters.

Jenny Lind Water System A-B Water Transmission Pipeline (CIP 11088)
DA Woods has ordered the piping materials for the Project and working on completing the pre-construction submittals. Town hall meeting scheduled to kick-off the construction that will be starting in June.

West Point Water Supply Reliability Improvements (CIP 11106)
Construction work is substantially completed, Staff is working with Gold Electric and Tesco to complete the final electrical punch list items including.

West Point and Wilseyville Wastewater Consolidation Project (CIP 15091)
K.W. Emerson (KWE) completed the sludge drying beds, installation of wet well between sludge basins along with all the site piping, portions of double force mains on sprayfield property. Construction will continue through the summer of 2024 and is projected to be completed by fall of 2024.

Copper Cove Lift Stations 6, 8, 15 & 16 and Lift Stations 12 & 13 Force Main Bypass Project (CIP 15076/15080)
The new wet well has been installed at Lift Station 6 and Mozingo Construction is working on installing the associated piping and vaults. There has been an additional delay with the electrical equipment that was discovered at the last minute prior to final factory testing. We still do not have an answer from the manufacturer Tesco on when this issue will be resolved, they have continued to control the schedule of this Project.

Copper Cove Wastewater Treatment Plant Tertiary Treatment Improvements and Facilities Plan (CIP 15034)

HydroScience is designing the treatment plant and Dewberry completed the environmental field studies and is planning on submitting the fully compiled Administrative Draft EA/Draft FONSI to USACE and CCWD by mid-August. The project schedule indicates that construction would start mid-October 2025. CCWD proposed implementing pre-treatment improvements and recoating the existing filter prior to USACE Increment No. 1 project. USACE is reviewing this pre-install option as part of the local share. Given recent federal funding commitments, CCWD proposes to combine Increments 1 & 2 for environmental documentation and engineering design to reduce the time to deliver overall project improvements.

Copper Cove Wastewater Treatment Plant – Pond 6 Dam and Effluent Storage Reservoir Enlargement Project (CIP 15112)
Project Team determined that the treatment improvements project is separate from dam enlargement project. Funding for dam enlargement (plus pipeline relocations) has been authorized by the US Congress, and is included in the USACE fiscal year workplan.

Copper Cove Water System Improvements Project (CIP 11083C)
T&S construction/Crosno Tank has completed the erection of new Tank B and the coaters are mobilizing to paint the tank. It will take approximately two months to complete the painting before the tank can be filled. Crosno is near complete of the construction of the new Clearwell Tank. Once the new tanks are online rehabilitation of the existing tanks will start.

Copper Cove B-C Transmission Pipeline & Pump Station (CIP 11122)
PBI will be providing the 50% design on June 5th. The final design/bid documents should be ready this summer.

Ebbetts Pass Hunters Raw Water Intake Pumps (CIP 11103)
Publicly posted the 15-day notice for the Award of for Phase 2 Construction Grant. Staff anticipates award coming very soon as we have fulfilled all request. Once received the Bid ready construction documents will be completed by Blackwater and we will publicly bid the construction.

Ebbetts Pass Redwood Tanks Hardening (CIP 11095)
FEMA approved the additional Grant funds in the amount of $739,634.25 to fund this Project completely.

Arnold Wastewater Secondary Clarifier Improvements Project (CIP 15095)
Grant Application was submitted to the Clean Water State Revolving Fund. We received notice that there are no funds available in the current Fiscal Year, but our application will be reviewed for future consideration.

Huckleberry Lift Station (CIP 15092)
Received six proposals from Consultants for the Design.

La Contenta Biolac, Clarifier, and UV Improvements (CIP 15097)
Design Proposals are due May 30th.

Jenny Lind Clearwell #2 Rehabilitation (CIP 11083)
Start of construction to be October 2024.

Agenda Item

DATE: June 6, 2024

TO: Engineering Committee, Calaveras County Water District
Michael Minkler, General Manager

FROM: Engineering Department

RE: Other Updates

Copper Valley Town Square
Staff continue to work with CV Development Partners LLC on key issues and proposed development. These include planned redevelopment of the Copper Valley Square complex. The discussion includes requirements for off-site facility improvements including a permanent sewer force main and new lift station on Little John Road to serve Copper Valley Square (convey sewer to the wastewater plant) as well as rehabilitation of the existing lift station within Town Square. Also, the pre-existing water booster pump station serving the Copperopolis Zone has never been upgraded and is limited to 100-gpm. A new water booster pump station is needed to increase potable water delivery to Copper Town Square. These required off-site improvements are part of the original facilities agreement approved for Copper Town Square.

CCWD issued a letter on July 20, 2023 approving the "Copper Town Square Condominium Project, Preliminary Design Report for Wastewater Permanent Collection System."

CCWD received updated plans for Building 11/12 and Town homes with 4 other proposed projects in Copper Town Square Development on May 23, 2024. Engineering Staff is reviewing the submittals and will proceed with a facilities agreement to address any improvements needed to the system.

CCWD staff has had productive meetings with CV Developers on the progress of design of Force Main and Sewer Pump Stations. CCWD staff has been working with engineering representatives from CV Developers on the Reeds Turnpike Water Pump Station Improvements needed to provide potable water to buildout at Town Square. CV will be petitioning CCWD to obtain financing through the Bond Opportunities for Land Development (BOLD) program to help finance the infrastructure.

Gold Creek Subdivision Unit 3
This project has been dormant due to pending payments from the Developer.

Jenny Lind Elementary School Force Main Project
This project includes a 20,000-ft sewer force main from the Jenny Lind Elementary School to a connection point with CCWD existing sewer system near Vista Del Lago. The project is being funded by the Clean Water State Revolving Fund (CWSRF) and CCWD has entered into a prior Letter Agreement with the School Board. The design phase is complete and under review by the State Architect. Project cannot move forward until the SRF approves a schedule extension.

North Vista Plaza / LGI Homes
LGI Homes (Developer) has submitted an environmental impact technical memorandum highlighting the potential impacts of upsizing the existing 6" sewer gravity main in the Cosgrove Creek area. This study aligns with the previous concerns of potential impacts and extensive environmental work it would require for a successful project. The developer has submitted a memorandum on the 4 options that were developed in previous reports for a sewer lift station and force main to pump sewage from proposed development to Huckleberry Lift Station. District staff is working on reviewing the associated costs with Developer preferred approach of a Lift station and force main along Vista Del Lago road.