

PROFORMA TASK ORDER

COACHELLA VALLEY WATER DISTRICT PROFESSIONAL SERVICES AGREEMENT TASK ORDER NO. 1

This Task Order No. 1 ("Task Order") is entered into this 13 day of August, 2024, by and between Coachella Valley Water District ("CVWD") and West Yost & Associates, Inc. ("Consultant").

RECITALS

A. On or about January 29, 2024, CVWD and Consultant executed that certain Professional Services Agreement ("Agreement").

B. The Agreement provides that the parties would enter into a Task Order to make changes to or authorize certain work set forth in the Scope of Services (as defined in the Agreement). The purpose of this Task Order is to make changes to or authorize work on the terms and conditions set forth herein.

NOW, THEREFORE, the parties hereto hereby agree:

1. Section 1.1 of the Agreement is hereby amended to include those services listed on Exhibit "1" attached hereto and by this reference incorporated herein.

2. Section 2.1 of the Agreement is hereby amended to increase the amount to be paid by CVWD to Consultant as more particularly set forth on Exhibit "1."

3. In the event this Task Order authorizes additional work or confirms work set forth in the Task Order but not authorized, Consultant shall perform the services listed in Paragraph 1 above pursuant to the schedule set forth on Exhibit "1."

4. Consultant acknowledges that the compensation (time and cost) set forth herein comprises the total compensation due for the work defined in this Task Order. The signing of this Task Order acknowledges full mutual accord and satisfaction for the work and that the stated time and/or cost constitute the total equitable adjustment owed the Consultant as a result of the authorized work.

5. Except as amended or supplemented herein or in previous task orders, the terms and conditions of the Agreement shall remain in full force and effect. Notwithstanding the immediately preceding sentence, the Agreement shall be interpreted in a manner consistent with the intent of this Task Order.

IN WITNESS WHEREOF, CVWD and Consultant have caused this Task Order No. 1 to be executed as of the day and year first above written.

"CONSULTANT"

WEST YOST & ASSOCIATES, INC., a
California Corporation

By: _____

Name: Greg Chung

Its: Vice President

"CVWD"

COACHELLA VALLEY WATER DISTRICT, a
public agency

By: _____

Name: J.M. Barrett

Its: General Manager

EXHIBIT "1"

TO

TASK ORDER NO. 1

A. Description of Services Included, Deleted or Authorized.

Task Order No. 1 amends the Professional Services Agreement with West Yost and Associates, Inc. (Consultant) to include the services in the attached proposal *Stannous Chloride Demonstration Testing Proposed Services (Activity 4)*.

B. Increase, Decrease, or Confirmation of Amount to be Paid to Consultant.

Task Order No. 1 increases the amount to be paid to Consultant, on a time and cost basis, to \$1,146,978, as presented in the Project Budget for the attached proposal *Stannous Chloride Demonstration Testing Proposed Services (Activity 4)*, to complete the entirety of the scope of services included herein.

C. Time to Perform Services Listed Herein.

Services included in Task Order No. 1 shall begin immediately upon Consultant receiving notice to proceed from CVWD. All services included in Task Order No. 1 shall be completed on or before November 12, 2025, in accordance with the Schedule presented in the attached proposal *Stannous Chloride Demonstration Testing Proposed Services (Activity 4)*.

July 29, 2024

SENT VIA: EMAIL

Zoe Rodriguez del Rey
Coachella Valley Water District
75515 Hovley Lane East
Palm Street, CA 92211

SUBJECT: Stannous Chloride Demonstration Testing Proposed Services (Activity 4)

Dear Zoe:

West Yost, together with Corona Environmental Consulting and Confluence Engineering Group, are looking forward to continuing to support the Coachella Valley Water District (District/CVWD) with this important project and present the following detailed project scope to provide stannous chloride demonstration testing services for the District. These stand-alone tasks described below are an add-on to the existing contract scope for the *Evaluation of Options to Comply with California's Proposed Hexavalent Chromium Maximum Contaminant Level* and are collectively referred to as Activity 4.

SCOPE OF SERVICES

The following is a list of the recommended tasks to perform the proposed scope of services, each further described below. This scope reflects our team's existing collaborative work with the District as well as our understanding of the work required to carry out the demonstration testing of stannous chloride without filtration. All the scope described below is related to new efforts not previously scoped and include most of the testing activities recommended in the Stannous Chloride Without Filtration Demonstration Plan (Demonstration Plan). As discussed with the District, this scope does not include support for full scale demonstration testing. While the scope of that testing is described in the CVWD ID-8 Stannous Chloride Addition Implementation Plan Amendment already approved by the California Division of Drinking Water (DDW), it is not contemplated to start until the results from the scope described below have been evaluated.

Activity 4 – Demonstration Testing

The following is a list of the key tasks necessary to perform this proposed scope of services, each further described below:

- Task 1. Project Management
- Task 2. Technical Advisory Committee Coordination
- Task 3. Jar Testing
- Task 4. Fill and Dump Testing
- Task 5. Pipe Rig Testing
- Task 6. Distribution System Characterization

- Task 7. Activity 4 Workshops, Board Presentations, and DDW Coordination
- Task 8. Final Report

Task 1. Project Management

Task 1.1. Schedule and Lead Activity 4 Kickoff Meeting with CVWD

Our team will schedule and lead a project kickoff meeting with CVWD. This task is critical, as some early decisions need to be made regarding the project direction. We plan to schedule this meeting as soon as possible after notice to proceed. Following the kickoff workshop, West Yost will prepare and submit meeting minutes. West Yost will regularly maintain an action item and decision tracking log.

Task 1.2. Schedule and Lead Bi-Weekly Coordination and Progress Meetings with CVWD

The project manager will schedule and lead bi-weekly coordination and progress meetings with CVWD. The project manager will invite others from the team as appropriate, based on the activities of the period.

Task 1.3. Project Management

The project manager will develop monthly invoices and reports that summarize progress to date, pending action items, the project budget, areas of concern, and the updated schedule. Quality assurance/quality control (QA/QC) procedures will be implemented from the beginning of the project to meet our rigorous quality standards and provide high-quality work products. The Project Webpage will be updated as necessary throughout the project.

Task 1 Assumptions

- Kickoff Meeting will be held via teleconference
- Bi-weekly coordination and progress meetings will be held via teleconference
- It is assumed the website will be updated up to two times with key project findings and results
- QA/QC hours have been included with individual project tasks

Task 1 Deliverables

- West Yost will provide monthly invoices and progress reports
- West Yost will provide the Kickoff workshop agenda, handouts, presentation materials, and meeting minutes
- West Yost will provide bi-weekly check-in meeting materials and minutes
- West Yost will provide a detailed project schedule with updates, as necessary
- West Yost will provide updates to the project webpage

Task 2. Technical Advisory Committee Coordination

Task 2.1. Technical Advisory Committee Coordination

We anticipate the TAC will be convened for two meetings during the duration of Activity 4. Prior to each meeting, our team will prepare relevant background materials for TAC review. This proactive preparation will enable our team to efficiently capture TAC input across various stages throughout the project.

Task 2 Assumptions

- One TAC meeting will be a half day long and conducted in-person (combined with CVWD workshop), and one will occur via teleconference

- Fee includes additional scope added to up to four TAC member's individual contracts

Task 2 Deliverables

- West Yost will provide meeting agendas, presentations, minutes, and action items
- West Yost will provide a summary of TAC project comments and responses to comments

Task 3. Jar Testing

Over the last several years, CVWD staff have conducted a series of jar tests for stannous chloride-facilitated reduction of Cr6 (stannous treatment) on various water supplies to better understand the dose, kinetics, and potential re-oxidation in the presence of chlorine residual. This task will expand on these efforts to gain further insight and address data gaps related to the performance of stannous treatment under different water quality, blending, and operational scenarios as detailed below.

Task 3.1. Test Plan and Experimental Design

The consultant team will review previous jar test conditions and results to memorialize the previous testing efforts and to modify them appropriately to better ascertain the impact of blending waters of differing chemistries and blending of waters with and without stannous treatment. These blending scenarios may include the Cove system. The consultant team will review source water quality data to finalize the experimental design (e.g., which waters to use in testing, prioritization and sequencing, etc.). Evaporative spotting and disinfection by product (DBP) formation tests will also be conducted for up to two waters. Further testing will be completed to determine the stability of bulk delivered stannous chloride in both 5 percent and 50 percent solutions.

Additional scope has been allotted to develop the approach for and complete jar tests for ferrous facilitated Cr6 reduction which may be used to better understand this treatment approach for reduction coagulation filtration (RCF) at CVWD's water supplies as part of Activity 2. The test plan and experimental design will include prioritized testing to address the existing data gaps. A draft test plan will be provided to CVWD for review and a virtual call will be scheduled to discuss the plan before being finalized.

Task 3.2. Operations and Sampling

CVWD will collect and ship water to the consultant team at Corona's facilities in Colorado where jar testing will be conducted. Samples for laboratory analyses will be shipped off-site to be performed by CVWD or its contract laboratory. Any necessary procedure modifications obtained during initial trials will be captured in the final jar testing standard operating procedure (SOP).

Task 3.3. Data Evaluation and Reporting

The consultant team will develop a data tracking sheet and be responsible for entering jar test analytical and field data into the sheet. The data will be analyzed and interpreted by the consultant team, with key graphics compiled into a running PowerPoint slide deck shared with CVWD. The results will be promptly reviewed and summarized to inform other related tasks. The slide deck will include a list of significant observations and recommendations that will be updated as new information becomes available. A draft technical memorandum (TM) will be prepared to summarize key findings of this task.

Task 3 Assumptions

- Consultant staff will procure the necessary equipment and consumables to conduct the jar tests as per the SOP
- Consultant staff will conduct the jar tests as per the SOP

- Analytical work and costs will be coordinated and paid for by CVWD
- Fee developed assuming up to 8 unique water chemistries will be tested

Task 3 Deliverables

- West Yost will provide a draft and final Jar Test Experimental Design
- West Yost will provide a draft and final Jar Testing SOP
- West Yost will provide a PowerPoint slide deck summarizing preliminary results and observations
- West Yost will provide a draft and final TM with results and findings

Task 4. Fill and Dump Testing

Fill-and-dump testing (F&DT) will be used to fill critical data needs identified in Activity 1 related to the potential impacts of pipe surfaces and legacy deposits/scales on Cr and Sn reactions, including reduction, re-oxidation, accumulation, and release. F&DT will make use of pipes harvested from CVWD's distribution system and will occur after completion of jar testing in Task 3 to build upon the findings (e.g., stannous chloride doses and reaction times), narrow the matrix of waters to be tested, and reduce the overall effort, cost, and duration of F&DT.

Task 4.1. Test Plan and Experimental Design

The consultant team will develop a test plan for the F&DT that defines the specific waters and pipe types and sizes to be used, the individual test phases with schedules, chemical doses, water change-out frequencies, and a sampling and analytical plan that defines the testing's external analytical support needs. A draft test plan will be provided to CVWD for review and a virtual call will be scheduled to discuss the plan before being finalized.

Task 4.2. Fabrication of Test Assembly

The consultant team will design and fabricate fit-for-purpose pipe section assemblies to efficiently conduct the F&DT. The assemblies will include provisions for quiescent water change-outs, continuous gentle mixing, sampling, probe-based monitoring, and provisions to maintain chlorine residual, pH, and temperature.

The consultant team will provide CVWD with a protocol to harvest pipe specimens from its distribution system and ship them to the test location for use in the F&DT. Upon receipt of the pipe specimens, the consultant team will process the pipe to produce sub-sections suitable for use in the F&DT assembly and will provide support for the analysis of baseline scale conditions by a specialized laboratory.

Task 4.3. Operations and Sampling

The consultant team will conduct aspects and phases of the F&DT at Confluence's facility in Seattle, Washington, including the analysis of field-designated water quality parameters. An operational protocol will be developed to guide the day-to-day testing activities. Samples requiring laboratory analyses will be shipped to designated external laboratories. To support testing, CVWD will need to periodically collect, test, and ship specified batches of raw water to the testing facility, as requested. Upon completion of the F&DT, the consultant team will support the provision of pipe sections to a commercial laboratory to evaluate the impact of stannous treatment on pipe scale.

Task 4.4. Data Evaluation and Reporting

The consultant team will analyze the F&DT data produced using statistical methods to identify trends and develop key findings. Data interpretation methods will include comparisons between controls vs. challenge conditions, comparisons to jar tests performed under similar conditions, and comparisons of baseline vs. end-of-testing pipe scale analyses. A draft TM will be prepared to summarize key findings of F&DT, implications for full-scale viability, and the observed risks of stannous treatment. The draft will be provided to CVWD for review and a virtual call will be scheduled to discuss the TM before being finalized.

Task 4 Assumptions

- F&DT will make use of pipes harvested from CVWD's distribution system and will occur after the jar tests in Task 3.
- F&DT will consist of the following serial phases:
 - Phase 0: Acclimation. The purpose is to "heal" the processed pipe sections, acclimate them to the chlorinated waters to be used in subsequent phases, and establish baseline conditions. This phase will also be used to quantify the free chlorine demand and decay (CDD) properties of water/pipe and to determine stannous chloride dose adjustment (if any) to accommodate changes in dissolved oxygen (DO) content of the water batches.
 - Phase 1: Treatment-related tests (short duration). The purpose of this testing is to identify the impacts of pipe walls/scales on: Sn dose, Cr6 response, Cr3 re-oxidation, pipe scale stability, and bulk water quality. The F&DT will include parallel jar tests for direct comparison. This phase will utilize up to two different waters (a subset of the Task 3 jar tests) and up to two different pipe types (cement mortar-lined iron/steel and unlined iron/steel), with the pipe-water combinations that co-occur in the system.
 - Phase 2: Accumulation/release tests (intermediate duration). This phase is comprised of an extended period of fill-and-dump cycles to promote loading/accumulation followed by a series of challenge tests that involve changing sources/blends. The purpose is to identify impacts of pipe walls/scales on potential Sn and Cr accumulation, release, and Cr3 re-oxidation. This phase will utilize one water and both pipe types from Phase 1. Additional waters (including those not requiring Cr6 or stannous treatment) may be used during the challenge test phase.
- For each phase, up to four small pipe sections will be provided per test condition, to support the following: one stannous chloride free control; one stannous chloride treated control; and two stannous chloride treated challenge test pipes.
- The F&DT is expected to last about 6 months upon receipt of pipe samples.
- The F&DT will be conducted at Confluence's facility in Seattle, WA. CVWD will be responsible for harvesting and the costs of shipping pipe specimens (per the protocol provided by the consultant team) and periodically shipping batches of raw water from selected wells to this location.
- CVWD will designate which analytical laboratories will be used for parameters that require external analyses, set up contracts as needed, pay invoices directly, and provide data reports to the consultant team. The laboratories will be responsible for shipping the appropriate bottles and coolers to the testing location to accommodate the sampling needs.

Task 4 Deliverables

- West Yost will provide a draft and final testing plan for F&DT
- West Yost will provide a protocol for pipe harvesting and shipping
- West Yost will provide a draft and final TM to present F&DT conditions and findings

Task 5. Pipe Rig Testing

Task 5.1. Pipe Rig Testing Plan

This task accounts for the finalization of the pipe rig design, as well as the development of pipe rig testing SOPs required for the execution of the Pipe Rig Study Protocol delivered as part of Activity 1. At the onset of this task, a testing site will need to be selected by CVWD to assist in finalizing the pipe rig design including the individual pipe materials and maximum total flow discharge that can be accommodated during the testing. The testing plan will have accompanying SOPs that will include the following items, along with a site-specific health and safety plan:

- Stannous chloride and chlorine stock dilutions
- Chemical feed/dose rates
- Frequency and duration of stagnation periods
- Maintenance and sampling of ancillary premise plumbing and bag or cartridge filter type components
- Sampling frequency, location, volumes, and Chain of Custody details
- Pipe harvesting and handling procedures

Task 5.2. Pipe Rig Fabrication

The consultant team will design and fabricate a purpose-built pilot test rig that can be used to test the objectives outlined in the Pipe Rig Study Protocol. The test rig will include sufficient automation, controls and data acquisition to minimize operational oversight while providing confidence in the test conditions and subsequent results. It is assumed the majority of the components of the test rig will be procured, programmed and pre-assembled at the consultant's facility by the consultant team and then shipped to the project site for final assembly. On-site commissioning and startup of the pipe rig will be conducted by the consultant team.

Task 5.3. Pipe Rig Operations

Consultant staff will be on-site 2 days per week for the operation and sampling of the Pipe Rig. Consultant staff will have primary responsibility for operation of the Pipe Rig with support as necessary from CVWD operations staff.

Task 5.4. Pipe Rig Data Evaluation and Reporting

The consultant team will analyze the data produced using statistical methods to identify trends and develop key findings including the comparison of pipe sections with and without the application of stannous chloride. A draft pipe rig testing TM will be prepared to summarize key findings and implications for full-scale viability and risks of stannous treatment. The draft will be provided to CVWD for review and a virtual call will be scheduled to discuss the TM before being finalized.

Task 5 Assumptions

- The assumed duration of pipe rig testing is 6-8 months (including construction and startup)
- CVWD will operate the selected well as much as possible to best facilitate the testing program
- CVWD will be responsible for providing the raw water connection to the pipe rig inclusive of all required back flow prevention
- CVWD will provide adequate electrical supply at the testing site

- CVWD staff will assist with on-site fabrication of the pipe rig. It is assumed that at the end of this project the pipe rig will remain on-site.
- CVWD will confirm the discharge volumes are acceptable and determine an appropriate discharge management strategy
- Consultant team staff will perform routine operations of the pipe rig including sampling, monitoring, and filling of chemical storage and feed tanks, as needed assumed to require 12 hours on-site per week for the 6 months duration of testing.
- All analytical costs and laboratory coordination will be borne by CVWD
- Costs for any additional site security measures determined to be necessary are not included in this proposal

Task 5 Deliverables

- West Yost will provide a draft and final Pipe Rig Testing Plan
- West Yost will provide Pipe Rig Testing SOP
- West Yost will provide a PowerPoint slide deck summarizing preliminary results
- West Yost will provide draft and final TM with results and findings

Task 6. Distribution System Characterization

This task serves two key objectives:

1. Identification of preferred pipe sampling locations to support pipe harvesting needs for Tasks 4 and 5; and
2. Establishing baseline distribution system conditions and risks to inform distribution system preparation needs for eventual Cr6 treatment and/or non-treatment strategies.

Regarding the second objective, the implementation of Cr6 treatment (even if it involves a process other than stannous treatment) will change water chemistry within the distribution system. As legacy pipe deposits/scales re-equilibrate to changes in chemistry, deposit/scale destabilization could occur and cause water quality upsets at customer taps. Similarly, implementation of non-treatment strategies could cause hydraulic changes capable of mobilizing legacy deposits. To determine release risks and identify appropriate preventive strategies (regardless of the treatment and/or non-treatment strategies implemented), it is necessary to characterize legacy deposits in CVWD's distribution systems. These objectives are best achieved through a combination of controlled unidirectional flushing (UDF), swabbing, and pipe sampling activities. The UDF and swabbing trials, while critical to support this task, are not needed for the immediate purpose of conducting bench and pilot tests.

Task 6.1. System Assessment

At the onset of this task, the consultant team will conduct a virtual meeting to introduce CVWD staff/crews to the key activities involved, needs and responsibilities, and to address questions.

The consultant team will coordinate with CVWD on a desktop evaluation of deposit/scale accumulation risk factors to assess spatial accumulation risks and identify preferred locations for pipe harvesting and main cleaning activities. This evaluation will utilize system records, institutional knowledge and utility observations, water quality, pipe installation and maintenance histories, and customer complaint patterns. The findings will be documented in a brief TM with candidate pipe (and main cleaning) locations identified.

As part of this task, CVWD should ascertain the presence or absence of internal lining for cast iron (CAS) and steel pipe (SP) in its distribution system. This is needed for multiple purposes, including site selection for main cleaning trials, pipe sampling/harvesting locations, and the selection of pipe types and locations for the Task 4 F&DT tests.

Task 6.2. Main Cleaning Trials

This task specifically supports the second objective listed above; as such, it could be deferred to a future activity if desired.

The consultant team will coordinate with CVWD to plan and conduct controlled main cleaning trials involving sequential UDF and foam swabbing at select locations. Input from CVWD Operations will be key to identify locations suitable for the cleaning trials. These trials will quantify hydraulically mobile (UDF) and hydraulically immobile (swabbing) accumulation on various pipe types in the ID-8 and Cove Community systems. To guide the work, the consultant team will provide an operations protocol and be on-site to support implementation of the fieldwork.

Task 6.3. Pipe Sampling and Deposit Analysis

The consultant team will provide CVWD with a pipe sampling protocol for its use in collection, processing, and analysis of pipe samples to examine native scales/deposits. Pipe samples can include both dedicated pipe extractions (e.g., pipe taps, pipe sections harvested for F&DT tests, etc.) as well as “opportunity samples” that may arise over time (e.g., during main repair or replacement projects, pipe taps, etc.). The protocol will include qualitative and lab-based quantitative characterization methods.

The information obtained from this effort will support baseline pipe scale characterization in support of the F&DT, pipe rig pilot testing, and potential future full-scale demonstration testing in ID-8.

Task 6.4. Data Evaluation and Reporting

The consultant team will analyze the data obtained from main cleaning trials and pipe sampling efforts to characterize contaminant-specific accumulation, mobility, scale composition, and mineralogy. Results will be summarized in a brief TM that will highlight key findings and risks. A draft will be provided to CVWD for review and a virtual call will be scheduled to discuss the TM before being finalized.

Task 6 Assumptions

- UDF-swabbing trials will be planned and conducted at up to six sites (allocated between different pipe types) in the ID-8 and Cove Community systems. A member of the consultant team will provide on-site support to CVWD crews to conduct the trials, which are expected to require three days
- CVWD will procure the necessary equipment and supplies to conduct main cleaning trials
- CVWD will field-verify localized asset location and functionality prior to the main cleaning trials
- CVWD will ascertain the presence/absence of internal lining for cast iron (CAS) and steel pipe (SP)
- Pipe samples will be collected and processed by CVWD per the protocol provided, with harvested deposits analyzed by the CVWD laboratory and/or a designated commercial laboratory

Task 6 Deliverables

- West Yost will provide a TM with recommended locations for main cleaning trials
- West Yost will provide operations protocol for main cleaning trials
- West Yost will provide pipe sampling protocol

Task 7. Activity 4 workshops, Board Presentations, and DDW Coordination

Task 7.1. CVWD Workshops

The consultant team will lead two in-person workshops with CVWD as part of Activity 4.

Task 7.2. CVWD Board Presentations

The consultant team will support CVWD in up to two presentations to its Board of Directors as part of Activity 4.

Task 7.3. DDW Coordination

The consultant team will coordinate with DDW and participate up to in two remote meetings with DDW for the duration of Activity 4.

Task 7 Assumptions

- Consultant and Technical Advisory team will attend two CVWD board presentations via teleconference (or can be combined with other in-person workshops)
- We plan for one in-person half-day workshop and one three-hour teleconference with CVWD. The in-person workshop will be combined with the in-person TAC workshop to reduce project costs and create project synergies
- Consultant team will attend up to two teleconference meetings with DDW

Task 7 Deliverables

- West Yost will provide an agenda, minutes, presentation materials, and action items documented from workshop, meetings, and presentations

Task 8. Final Report

Task 8.1. Prepare Final Report

The consultant team will prepare draft and final versions of a Final Report summarizing the results of all the testing described in this scope of work. The summary will include recommendations on next steps and whether stannous chloride without filtration is recommended for full-scale trial or not. A final version of the Report will incorporate CVWD comments.

Task 8 Assumptions

- CVWD will provide a single set of final report comments

Task 8 Deliverables

- West Yost will provide a final report (draft and final)

PROJECT BUDGET

The proposed level of effort and budget for each of the tasks described above is shown in detail in Attachment B and summarized in Table 1. The associated logistics are summarized in Attachment C. Our team will perform the scope of services described above on a time-and-expenses basis, at the billing rates set forth in the attached 2024 Billing Rate Schedule, with a not-to-exceed budget of \$1,146,978. Preliminary results obtained from testing conducted in the earlier months of the project will be assessed and could correspond to a reduction of the overall project scope and subsequent reduction

of budget expended. Any additional services not included in this scope of services will be performed only after receiving written authorization and a corresponding budget augmentation.

Table 1. Estimated Budget					
Task	West Yost, dollars	Confluence^(a,b), dollars	Corona^(a,b), dollars	TAC^(a), dollars	Total, dollars
Task 1. Project Management	46,354	30,362	33,033	-	109,749
Task 2. Technical Advisory Committee Coordination	8,944	5,224	6,017	15,750	35,934
Task 3. Jar Testing	18,326	25,400	58,086	-	101,812
Task 4. Fill and Dump Testing	18,312	188,850	7,707	-	214,869
Task 5. Pipe Rig Testing	152,434	168,610	144,816	-	465,860
Task 6. Distribution System Characterization	14,587	56,202	7,707	-	78,496
Task 7. Activity 4 Workshops, Board Presentations, and DDW Coordination	40,530	19,732	29,610	-	89,872
Task 8. Final Report	18,455	10,449	21,483	-	50,387
Total Project Budget	\$317,942	\$504,829	\$308,459	\$15,750	\$1,146,978
(a) Includes subconsultant markup of 5 percent.					
(b) Includes Equipment and Shipping costs					

SCHEDULE

West Yost anticipates completing the entire scope of services described above within 15 months after receiving notice to proceed. Preliminary results obtained from testing conducted in the earlier months of the project will be assessed and could correspond to a shortening of the overall project schedule. A Gantt schedule is shown in Attachment D.

Thank you for providing West Yost, Corona Environmental Consulting and Confluence Engineering Group the opportunity to be of continued service to the District. We look forward to working with you on this important project. Please call if you have any questions or require additional information.

Sincerely,



Ben Klayman
Project Manager



Greg Chung
Vice President

Attachment(s): Attachment A. West Yost 2024 Billing Rate Schedule
Attachment B. Fee Worksheet
Attachment C. Logistics Worksheets
Attachment D. Project Schedule



Attachment A

West Yost 2024 Billing Rate Schedule

2024 Billing Rate Schedule

(Effective January 1, 2024, through December 31, 2024)*



POSITIONS	LABOR CHARGES (DOLLARS PER HOUR)
ENGINEERING	
Principal/Vice President	\$355
Engineer/Scientist/Geologist Manager I / II	\$335 / \$351
Principal Engineer/Scientist/Geologist I / II	\$302 / \$322
Senior Engineer/Scientist/Geologist I / II	\$272 / \$286
Associate Engineer/Scientist/Geologist I / II	\$226 / \$243
Engineer/Scientist/Geologist I / II	\$176 / \$205
Engineering Aide	\$106
Field Monitoring Services	\$131
Administrative I / II / III / IV	\$97 / \$121 / \$145 / \$160
ENGINEERING TECHNOLOGY	
Engineering Tech Manager I / II	\$349 / \$351
Principal Tech Specialist I / II	\$320 / \$331
Senior Tech Specialist I / II	\$293 / \$306
Senior GIS Analyst	\$265
GIS Analyst	\$251
Technical Specialist I / II / III / IV	\$187 / \$213 / \$239 / \$267
Technical Analyst I / II	\$134 / \$160
Technical Analyst Intern	\$108
Cross-Connection Control Specialist I / II / III / IV	\$140 / \$151 / \$170 / \$189
CAD Manager	\$211
CAD Designer I / II	\$164 / \$185
CONSTRUCTION MANAGEMENT	
Senior Construction Manager	\$338
Construction Manager I / II / III / IV	\$201 / \$215 / \$228 / \$289
Resident Inspector (Prevailing Wage Groups 4 / 3 / 2 / 1)	\$181 / \$201 / \$224 / \$232
Apprentice Inspector	\$164
CM Administrative I / II	\$87 / \$118
Field Services	\$232

- Hourly rates include charges for technology and communication, such as general and CAD computer software, telephone calls, routine in-house copies/prints, postage, miscellaneous supplies, and other incidental project expenses.
- Outside services, such as vendor reproductions, prints, and shipping; major West Yost reproduction efforts; as well as engineering supplies, etc., will be billed at the actual cost plus 15%.
- The Federal Mileage Rate will be used for mileage charges and will be based on the Federal Mileage Rate applicable to when the mileage costs were incurred. Travel other than mileage will be billed at cost.
- Subconsultants will be billed at actual cost plus 10%.
- Expert witness services, research, technical review, analysis, preparation, and meetings will be billed at 150% of standard hourly rates. Expert witness testimony and depositions will be billed at 200% of standard hourly rates.
- A finance charge of 1.5% per month (an annual rate of 18%) on the unpaid balance will be added to invoice amounts if not paid within 45 days from the date of the invoice.

2024 Billing Rate Schedule

(Effective January 1, 2024, through December 31, 2024)*

Equipment Charges

EQUIPMENT	BILLING RATES
2" Purge Pump & Control Box	\$300 / day
Aquacalc / Pygmy or AA Flow Meter	\$28 / day
Emergency SCADA System	\$35 / day
Field Vehicles (Groundwater)	\$1.02 / mile
Gas Detector	\$80 / day
Generator	\$60 / day
Hydrant Pressure Gauge	\$10 / day
Hydrant Pressure Recorder, Impulse (Transient)	\$55 / day
Hydrant Pressure Recorder, Standard	\$40 / day
Low Flow Pump Back Pack	\$135 / day
Low Flow Pump Controller	\$200 / day
Powers Water Level Meter	\$32 / day
Precision Water Level Meter 300ft	\$30 / day
Precision Water Level Meter 500ft	\$40 / day
Precision Water Level Meter 700ft	\$45 / day
QED Sample Pro Bladder Pump	\$65 / day
Storage Tank	\$20 / day
Sump Pump	\$24 / day
Transducer Communications Cable	\$10 / day
Transducer Components (per installation)	\$23 / day
Trimble GPS – Geo 7x	\$220 / day
Tube Length Counter	\$22 / day
Turbidity Meter	\$30 / day
Turbidity Meter (2100Q Portable)	\$35 / day
Vehicle (Construction Management)	\$10 / hour
Water Flow Probe Meter	\$20 / day
Water Quality Meter	\$50 / day
Water Quality Multimeter	\$185 / day
Well Sounder	\$30 / day

Attachment B

Fee Worksheet

West Yost Associates	Chung P \$355	Klayman PE/PS/PG I \$302	Sanchez SE/SS/SG II \$286	Schaefer SE/SS/SG I \$272	Cook FMS \$131	Cook ESG I \$176	Garrison TS I \$187	Staff ADM II \$121	Banyai/Malone P \$355	Labor		Sub. CEG	Sub. COR	Sub. TAC	Costs		
	PROJECT: CVWD Cr6 Compliance Evaluation Activity 4									Hours	Fee				Sub. w/ markup 5%	Other Direct	Total Costs
Task 1	Project Management																
1.01 Activity 4 Kickoff Meeting	0	4	0	16				8		28	\$ 6,528	\$ 4,963	\$ 4,380		\$ 9,810		\$ 16,338
1.02 Bi-weekly progress calls		12	12	26						50	\$ 14,128	\$ 7,197	\$ 22,640		\$ 31,329		\$ 45,457
1.03 Project Management	2	32	40				8	8	4	94	\$ 25,698	\$ 16,756	\$ 4,440		\$ 22,256		\$ 47,954
Subtotal, Task 1 (hours)	2	48	52	42	0	0	8	16	4	172							
Subtotal, Task 1 (\$)	\$ 710	\$ 14,496	\$ 14,872	\$ 11,424			\$ 1,496	\$ 1,936	\$ 1,420		\$ 46,354	\$ 28,916	\$ 31,460		\$ 63,395		\$ 109,749
Task 2	Coordinate Technical Advisory Committee																
2.01 Coordinate Technical Advisory Committee		8		24						32	\$ 8,944	\$ 4,975	\$ 5,730	\$ 15,000	\$ 26,990		\$ 35,934
Subtotal, Task 2 (hours)	0	8	0	24	0	0	0	0	0	32							
Subtotal, Task 2 (\$)		\$ 2,416		\$ 6,528							\$ 8,944	\$ 4,975	\$ 5,730	\$ 15,000	\$ 26,990		\$ 35,934
Task 3	Jar Testing																
3.01 Test Plan and Experimental Design		8		16				4	2	30	\$ 7,962	\$ 14,776	\$ 16,220		\$ 32,546		\$ 40,508
3.02 Operations and Sampling		2		4						6	\$ 1,692	\$ 2,488	\$ 22,880		\$ 26,636		\$ 28,328
3.03 Data Evaluation and Reporting		8		16				4	4	32	\$ 8,672	\$ 6,926	\$ 16,220		\$ 24,303		\$ 32,975
Subtotal, Task 3 (hours)	0	18	0	36	0	0	0	8	6	68							
Subtotal, Task 3 (\$)		\$ 5,436		\$ 9,792				\$ 968	\$ 2,130		\$ 18,326	\$ 24,190	\$ 55,320		\$ 83,486		\$ 101,812
Task 4	Fill and Dump Testing																
4.01 Test Plan and Experimental Design	1	4		16				4	2	27	\$ 7,109	\$ 13,012	\$ 3,670		\$ 17,516		\$ 24,625
4.02 Test Assembly Fabrication		2		4				0	0	6	\$ 1,692	\$ 29,481			\$ 30,955		\$ 32,647
4.03 Operations and Sampling		2		4				0	0	6	\$ 1,692	\$ 96,413			\$ 101,234		\$ 102,926
4.04 Data Evaluation and Reporting	1	4		16				4	4	29	\$ 7,819	\$ 40,951	\$ 3,670		\$ 46,852		\$ 54,671
Subtotal, Task 4 (hours)	2	12	0	40	0	0	0	8	6	68							
Subtotal, Task 4 (\$)	\$ 710	\$ 3,624		\$ 10,880				\$ 968	\$ 2,130		\$ 18,312	\$ 179,857	\$ 7,340		\$ 196,557		\$ 214,869
Task 5	Pipe Rig Testing																
5.01 Pipe Rig Testing Plan and Experimental Design	1	8		16	0	8		4	4	41	\$ 10,435	\$ 20,950	\$ 28,960		\$ 52,406		\$ 62,841
5.02 Pipe Rig Fabrication and Commissioning	0	16		24	32	0		0	0	72	\$ 15,552	\$ 116,838	\$ 45,480		\$ 170,434	\$ 1,000	\$ 186,986
5.03 Pipe Rig Operations and Sampling	0	16		36	624	0			0	676	\$ 96,368	\$ 4,293	\$ 40,300		\$ 46,823	\$ 6,000	\$ 149,191
5.04 Pipe Rig Data Evaluation and Reporting	1	8		40	0	40		8	4	101	\$ 23,079	\$ 18,500	\$ 23,180		\$ 43,764		\$ 66,843
Subtotal, Task 5 (hours)	2	48	0	116	656	48	0	12	8	890							
Subtotal, Task 5 (\$)	\$ 710	\$ 14,496		\$ 31,552	\$ 85,936	\$ 8,448		\$ 1,452	\$ 2,840		\$ 145,434	\$ 160,581	\$ 137,920		\$ 313,426	\$ 7,000	\$ 465,860
Task 6	Distribution System Characterization																
6.01 System Assessment	0	4		8					0	12	\$ 3,384	\$ 10,196	\$ 3,670		\$ 14,559		\$ 17,943
6.02 Main Cleaning Trials	0	2		8					0	10	\$ 2,780	\$ 23,092			\$ 24,247		\$ 27,027
6.03 Pipe Sampling and Deposit Analysis	0	2		8					0	10	\$ 2,780	\$ 7,538			\$ 7,915		\$ 10,695
6.04 Data Evaluation and Reporting	1	4		8				4	4	21	\$ 5,643	\$ 12,700	\$ 3,670		\$ 17,189		\$ 22,832
Subtotal, Task 6 (hours)	1	12	0	32	0	0	0	4	4	53							
Subtotal, Task 6 (\$)	\$ 355	\$ 3,624		\$ 8,704				\$ 484	\$ 1,420		\$ 14,587	\$ 53,526	\$ 7,340		\$ 63,909		\$ 78,496
Task 7																	
7.01 Workshops	1	24		40			8	4	2	79	\$ 21,173	\$ 16,926	\$ 24,240		\$ 43,224	\$ 4,000	\$ 68,397
7.02 Board Presentations	1	8		8			8	4	2	31	\$ 7,637						\$ 7,637
7.03 DDW Coordination		8		16			0	2	2	28	\$ 7,720	\$ 1,866	\$ 3,960		\$ 6,117		\$ 13,837
Subtotal, Task 7 (hours)	2	40	0	64	0	0	16	10	6	138							
Subtotal, Task 7 (\$)	\$ 710	\$ 12,080		\$ 17,408			\$ 2,992	\$ 1,210	\$ 2,130		\$ 36,530	\$ 18,792	\$ 28,200		\$ 49,342	\$ 4,000	\$ 89,872
Task 8	Prepare Final																
8.01 Prepare Draft and Final Final Report	1	16		40	0			8	4	69	\$ 18,455	\$ 9,951	\$ 20,460		\$ 31,932		\$ 50,387
Subtotal, Task 8 (hours)	1	16	0	40	0	0	0	8	4	69							
Subtotal, Task 8 (\$)	\$ 355	\$ 4,832		\$ 10,880				\$ 968	\$ 1,420		\$ 18,455	\$ 9,951	\$ 20,460		\$ 31,932		\$ 50,387
TOTAL (hours)	10	202	52	394	656	48	24	66	38	1,490							
TOTAL (\$)	\$ 3,550	\$ 61,004	\$ 14,872	\$ 107,168	\$ 85,936	\$ 8,448	\$ 4,488	\$ 7,986	\$ 13,490		\$ 306,942	\$ 480,788	\$ 293,770	\$ 15,000	\$ 829,036	\$ 11,000	\$ 1,146,978



Attachment C

Logistics Worksheets

Raw Water Collection and Shipments

CVWD will need to periodically ship raw source water to offsite test locations in totes/drums. The project team will coordinate with CVWD in advance of each shipping event to request the volume and source of raw water. For each event, CVWD will need to conduct onsite sampling/testing for key water quality parameters at the time of water collection. The complete list of parameters will be defined by the consultant team in advance, likely to include: metals, pH, temperature, dissolved oxygen, alkalinity, bromide, total organic carbon, and dissolved silicon. CVWD will need to provide the results of this testing to the consultant team.

Jar Testing

CVWD will ship 10 gallons each of eight (8) water samples to Corona's laboratory in Colorado. The eight samples should all arrive as a single shipment or closely timed individual shipments. Jar testing will begin once all eight water samples are received at Corona's laboratory.

Fill-and-Dump Testing

It is assumed that raw water can be stored at the test location in plastic drums/totes for up to 2 months without meaningful water quality decay. For the anticipated 6-month duration of fill-and-dump testing, there may need to be up to 3 separate shipping events. Confluence will coordinate with CVWD in advance of each event to request the volume and source of raw water. A preliminary schedule is as follows:

- At start of test: approx. 55 gallons each of two different test waters
- After 2 months (approx. start of Phase 2a): approx. 100 gallons of one test water
- After 4 months: approx. 55 gallons of one test water and 15 gallons of a second water used for blending

Sample/Cooler Shipments

The designated laboratories will need to ship coolers with ice packs, adequate number and type of sample-ready bottles, and chain-of-custody paperwork to the offsite test locations for fill-and-dump testing (by Confluence) and jar testing (by Corona) to accommodate sampling needs. See "Activity 4 Estimated Sample Counts for Lab Parameters" for totals. A specific schedule of cooler/bottle deliveries will be developed with CVWD and the participating lab(s) early in the project.

Confluence and Corona will each need to regularly ship filled sample bottles and coolers back to the designated laboratories for analysis within designated holding times for various constituents. A specific schedule of sample deliveries will be developed with CVWD and the participating lab(s) early in the project.

Costs for shipping by the consultant (\$6k) are included in the cost proposal.

Pipe Harvesting and Shipping

CVWD will need to harvest, photograph, process, and ship harvested pipe samples in accordance with a protocol to be provided by the consultant team in Task 6. Harvested pipes will be used in the pilot rig (galvanized, PVC, and copper), offsite fill-and-dump testing (cement-mortar lined iron/steel), and for distribution system solids scale analysis by a designated laboratory. It is anticipated that up to 24 samples could be submitted for solids scale analysis (inclusive of pre- and post- fill-and-dump test pipes, pre- and post -pilot rig pipes, and pipes used for distribution system characterization). Solids scale analyses could include elemental composition, scanning electron microscopy with energy dispersive spectroscopy (SEM/EDS), x-ray diffraction (XRD), and/or other methods based on consultation with the TAC.

For budgetary purposes CVWD should assume \$1,500 per sample which is not included in the consultant's cost proposal.

Equipment Required for Testing

Jar Testing

General laboratory costs associated with consumables are included in the cost proposal for jar testing.

Fill-and-Dump Testing

Equipment costs (\$7k) for the fill and dump testing are included in the cost proposal.

Pipe Rig Testing

The consultant team will pre-fabricate the pilot skid offsite, ship it to the site, and send a technician to the site to re-assemble and commission the pilot skid with CVWD.

Costs for equipment purchase to construct the pipe rig (\$60k) and shipping (\$5k) are included in the cost proposal. The following is a preliminary list of support needs that will need to be provided by CVWD (i.e., these items are *not* included in the consultant team's scope or budget):

- Permitting of water disposal, if required
- Provision of temperature control inside building used to house pilot skid

Other Logistical Considerations for Pipe Rig Testing

- CVWD will need to provide the consultant team with allowable pilot skid dimensions (max. length x width x height) based on the available space for its placement inside the building
- CVWD will need to provide dimensions for the door access related to moving the pilot skid inside the gated area and building. This will impact the degree to which the skid needs to be disassembled and re-assembled inside.

Assumptions Worksheet for Fill-and-Dump Testing

Table C-1 outlines the assumptions and logistical considerations for fill-and-dump testing. Information provided includes the test conditions (e.g., duration of testing, pipe types), volumes of water required for each phase of testing, labor to perform testing, and number of analytical samples.

Estimated Sample Count for Analytical Measurements

Table C-2 summarizes the estimated analytical methods and sample counts for anticipated parameters that will be tested in Jar Testing (Task 3), Fill and Dump Testing (Task 4), Pipe Rig Testing (Task 5), and Pipe Scale and Deposit Analysis (Task 6).

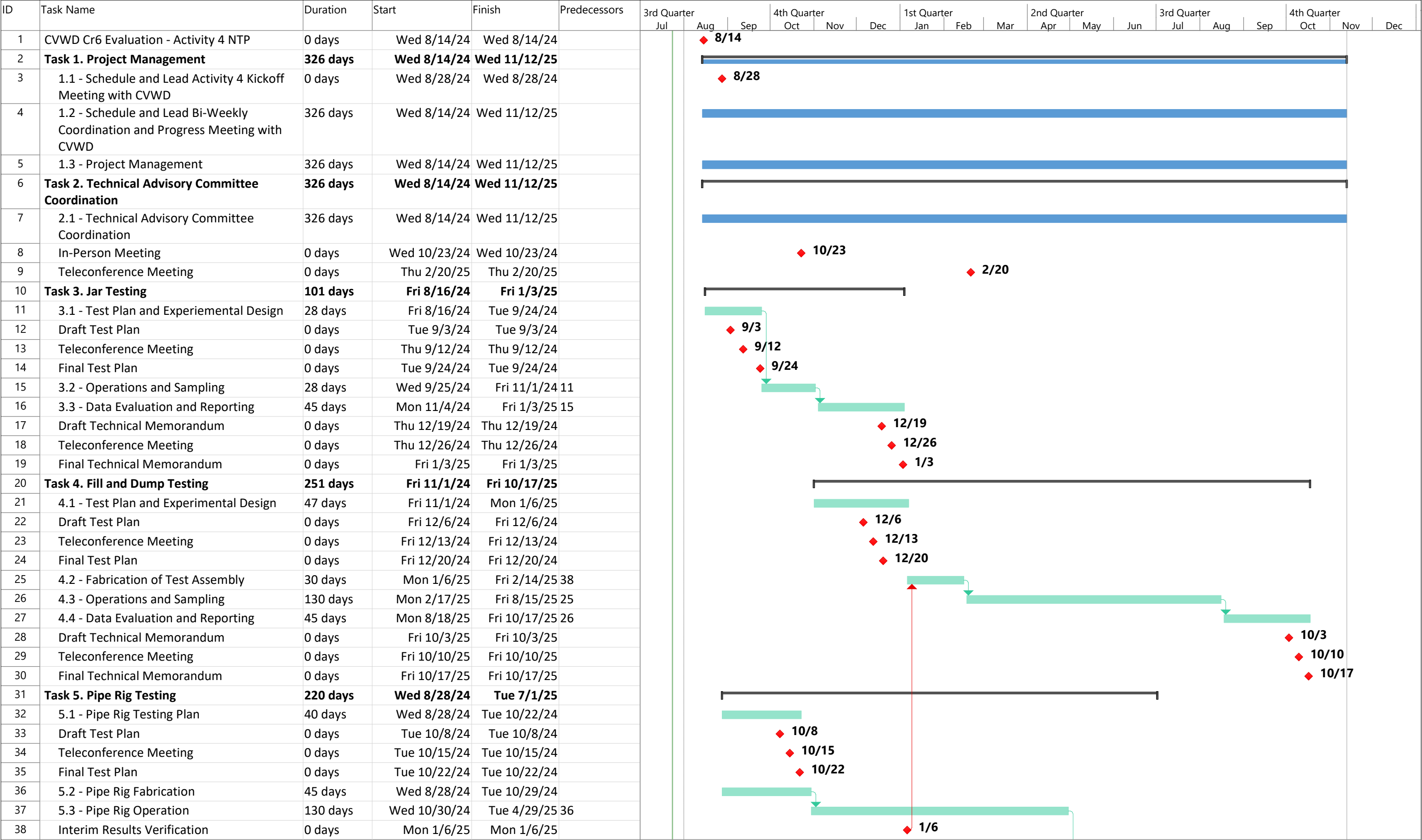
Table C-1. Summary of Fill and Dump Testing Logistics					
Phase	0	1	2a	2b	Totals
Purpose	Baseline	Sn Treatment	Loading & Accumulation	Challenge	
Test Conditions					
Duration (weeks)	4	4	14	4	26
# of Dump/Fill per Week	2	2	3	1	N/A
# of Waters	2	2	1	1	N/A
# of Pipe Types	1	1	1	1	N/A
Total # of Pipe Sections	8	8	4	4	N/A
Total Pipe Volume (L)	22	22	11	11	N/A
Total # of Glass Jars	0	4	0	2	N/A
Total Glass Jar Volume (L)	0	4	0	2	N/A
Total Pipe+Glass Jar Vol (L)	22	26	11	13	N/A
Waters					
Test Water #1 - gal/week	6	7	9	3	N/A
Test Water #2 - gal/week	6	7	N/A	N/A	N/A
Blend Water - gal/week	N/A	N/A	N/A	3	N/A
Test Water #1 - gal/phase	23	28	123	14	188
Test Water #2 - gal/phase	23	28	N/A	N/A	51
Blend Water - gal/phase	N/A	N/A	N/A	14	14
Labor					
Sample/Dump per Pipe/Jar (min)	20	20	20	20	N/A
Fill per Pipe/Jar (min)	10	10	10	10	N/A
Other (hour/week)	4	4	4	7	N/A
Labor Hours/week	12	16	10	10	N/A
Labor Hours by phase	48	64	140	40	292
Laboratory Samples					
Sample Event Timing	1x per week	Each dump&fill	1x per week	Each dump&fill	N/A
# of Metals Sampling Events	4	8	14	4	N/A
"Total Metals": Samples per Event	8	12	4	6	N/A
"Total Metals": # of Samples	32	96	56	24	N/A
"Other" Sample Event Timing	once, at end	twice	twice	twice	N/A
"Other Parameters": # of Samples	8	24	8	12	52

Table C-2. Estimated Sample Counts							
Parameter	Units	Method	Task 3: Jar Testing	Task 4: Fill & Dump	Task 5: Pipe Rig	Task 6: Pipe Deposits	Total Sample Count
Onside and Field Testing							
pH	pH	SM 4500-H	These parameters will be measured onsite using field-based instruments and methods.				n/a
Temperature	degrees C	EPA 170.1					
Turbidity	NTU	EPA 180.1					
Free Cl2 Residual	mg/L as Cl2	Hach 8021					
Redox Potential (ORP)	mV	SM 2580					
Hexavalent Chromium	ug/L	Hach 8023					
DO	–	–					
TDS/Conductivity	–	–					
Apparent Color	–	–					
Laboratory and External Testing							
Tin, total	mg/L	EPA 200.7	48	208	960	0	1216
Tin, < 0.45-um filtered	mg/L	EPA 200.7	8	52	0	0	60
Tin, < 0.1-um filtered	mg/L	EPA 200.7	8	52	0	0	60
Chromium, total	ug/L	EPA 200.8	48	208	960	30	1246
Chromium, < 0.45-µm filtered	ug/L	EPA 200.8	8	52	0	0	60
Chromium, < 0.1-µm filtered	ug/L	EPA 200.8	8	52	0	0	60
Hexavalent Chromium	ug/L	EPA 218.6	48	208	960	30	1246
Arsenic, total	ug/L	EPA 200.8	48	208	192	30	478
Iron, total	ug/L	EPA 200.8	48	208	192	30	478
Manganese, total	ug/L	EPA 200.8	48	208	192	30	478
Alkalinity, total	mg/L as CaCO3	SM 2320B	16	52	16	0	84
Bromide	mg/L	–	16	52	16	0	84
Silica, total recoverable	mg/L as SiO2	–	16	52	16	0	84
NO2+NO3	mg/L as N	–	16	52	16	0	84
Sulfate	mg/L	–	16	52	16	0	84
TOC	mg/L	–	16	52	16	0	84
THM4/HAA5	ug/L	–	12	0	0	0	12
Solids scale	n/a	Various	0	0	0	24	24



Attachment D

Project Schedule



ID	Task Name	Duration	Start	Finish	Predecessors	3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
						Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
39	5.4 - Pipe Rig Data Evaluation and Reporting	45 days	Wed 4/30/25	Tue 7/1/25	37																		
40	Draft Technical Memorandum	0 days	Tue 6/17/25	Tue 6/17/25																			
41	Teleconference Meeting	0 days	Tue 6/24/25	Tue 6/24/25																			
42	Final Technical Memorandum	0 days	Tue 7/1/25	Tue 7/1/25																			
43	Task 6. Distribution System Characterization	124 days	Mon 9/23/24	Thu 3/13/25																			
44	6.1 - System Assessment	30 days	Mon 9/23/24	Fri 11/1/24																			
45	6.2 - Main Cleaning Trials	28 days	Thu 12/26/24	Mon 2/3/25																			
46	6.3 - Pipe Sampling and Deposit Analysis	28 days	Mon 11/4/24	Wed 12/11/24																			
47	6.4 - Data Evaluation and Reporting	28 days	Tue 2/4/25	Thu 3/13/25	45																		
48	Draft Technical Memorandum	0 days	Thu 2/27/25	Thu 2/27/25																			
49	Teleconference Meeting	0 days	Thu 3/6/25	Thu 3/6/25																			
50	Final Technical Memorandum	0 days	Thu 3/13/25	Thu 3/13/25																			
51	Task 7. Activity 4 workshops, Board presentations, and DDW Coordination	326 days	Wed 8/14/24	Wed 11/12/25																			
52	7.1 - CVWD Workshops	326 days	Wed 8/14/24	Wed 11/12/25																			
53	In-Person Workshop #1	0 days	Wed 10/23/24	Wed 10/23/24																			
54	In-Person Workshop #2	0 days	Wed 1/22/25	Wed 1/22/25																			
55	7.2 - CVWD Board Presentations	326 days	Wed 8/14/24	Wed 11/12/25																			
56	Board Presentation #1	0 days	Tue 1/14/25	Tue 1/14/25																			
57	Board Presentation #2	0 days	Tue 7/29/25	Tue 7/29/25																			
58	7.3 - DDW Coordination	326 days	Wed 8/14/24	Wed 11/12/25																			
59	Teleconference Meeting #1	0 days	Tue 2/4/25	Tue 2/4/25																			
60	Teleconference Meeting #2	0 days	Wed 4/16/25	Wed 4/16/25																			
61	Task 8. Final Report	43 days	Mon 9/15/25	Wed 11/12/25																			
62	8.1 Prepare Final Report	43 days	Mon 9/15/25	Wed 11/12/25																			
63	Draft Final Report	0 days	Wed 10/29/25	Wed 10/29/25																			
64	Teleconference Meeting	0 days	Wed 11/5/25	Wed 11/5/25																			
65	Final Report	0 days	Wed 11/12/25	Wed 11/12/25																			