

April 30, 2025

Mr. Castulo Estrada
Utilities Director
Coachella Water Authority

RE: Hexavalent Chromium Compliance Project Updated Scope and Fee Estimate

Dear Castulo,

Corona Environmental Consulting, LLC (Corona), in collaboration with Water Works Engineers, LLC (WWE), has prepared the following updated scope of work and fee estimate to outline the tasks and corresponding schedule that will prepare Coachella Water Authority (CWA) to achieve compliance with California State Water Resources Control Board's upcoming Cr(VI) maximum contaminant level (MCL) of 10 µg/L. This updated scope and fee estimate provides additional details beyond the November 4, 2024, contract between CWA and Corona regarding "Testing and Evaluation of an Alternative Treatment Process for Removal of Chromium (Cr-6) from Groundwater and Water System Planning". It supplements the November 4, 2024, contract and Exhibit A Scope of Services by including all work completed to date and necessary from this point forward to complete preliminary (30%) design by the end of 2025. To accomplish the updated scope, the updated fee estimate increases the November 4, 2024, contract amount of \$200,000.00 to \$655,001.00.

All six of CWA's currently active wells (Well 11, Well 12, Well 16, Well 17, Well 18, and Well 19) will require Cr(VI) treatment to meet system and demands, as will Well 20, which is intended to be drilled and developed within the coming year. Based on prior efforts completed by CWA and current understanding of Cr(VI) treatment across the Coachella Valley, Reduction Coagulation Filtration (RCF) is anticipated to be the most likely selected full-scale Cr(VI) treatment process. This proposed effort will see CWA through preliminary (30%) design for these wellsites and will consist of a water system evaluation, the development of a Cr(VI) treatment alternatives analysis, pilot testing, permitting support, and preliminary design through collaboration with WWE. Finally, as the project funding has been obtained through the Department of Water Resources (DWR), funding agreement requirements such as annual progress reports, technical memoranda, and work plan submittals have been included in the enclosed scope of work.

Task 1. Project Management and Communication

This task includes the general project management functions for the 2025 calendar year required to maintain the project schedule, budget, and quality control to ensure the success of the overall project. This task also incorporates time for regular bi-weekly progress updates between CWA and Corona staff to provide project updates, review project deliverables, and allows for meaningful communication and feedback throughout the project. Included in this task is the labor associated with site visits, as well as the development of annual progress reports to be submitted to DWR as part of the funding agreement. Note that the in-person project kick-off meeting and site visits have already been completed, and the bi-weekly progress meetings have commenced under the current open-ended agreement.

Deliverables

- Bi-weekly progress meeting agendas and meeting minutes
- Annual progress reports submitted to DWR (Task A.2)

Task 2. Water System Evaluation

A water system evaluation will be completed to identify CWA's most effective path forward for Cr(VI) compliance. This evaluation will include a review of well-specific water quality, production, and site details (e.g., land availability, existing sewer access, sewer capacity, and consolidation options), as well as current and future system demands. To facilitate this evaluation, Corona issued an information request on December 19, 2025, which has largely been fulfilled at the time of the scope submittal. Additional monthly water quality sampling has also been requested and is set to begin this month. A summary of this evaluation will be incorporated into the Cr(VI) Treatment Technology Evaluation Technical Memorandum to be submitted to DWR as part of the funding agreement and will be discussed during bi-weekly updates with CWA. Review of the background information provided by CWA, including water quality and production, has begun under the current open-ended agreement.

Deliverables

- Water system evaluation summary incorporated into the Cr(VI) Treatment Technology Evaluation Technical Memorandum submitted to DWR

Task 3. Treatment Technology Evaluation

This evaluation will summarize the work required for CWA to achieve Cr(VI) compliance at their impacted wellsites, while accounting for the considerable efforts already expended to comply with previous iterations of the MCL. Based upon those efforts and the current understanding of Cr(VI) treatment across the Coachella Valley, it is anticipated that RCF treatment will most likely be selected for full-scale implementation. The evaluation to validate this expectation will include an overview of available Cr(VI) treatment technologies based on current industry knowledge and site-specific water quality and production for the impacted wells. This study will also provide preliminary treatment performance estimates and Class 5 conceptual-level cost estimates (as defined by the Association for the Advancement of Cost Engineering (AACE) International) for each wellsite. A decision matrix, including qualitative and quantitative considerations, will be developed to help identify the most appropriate Cr(VI) treatment technology for the impacted wells.

The following technologies are considered as a best available technology (BAT) by the California Division of Drinking Water (DDW) and have been identified by DWR for preliminary analysis. As such, Treatment Technology Evaluation will include:

- Weak Base Anion Exchange (WBA-IX)
- Strong Base Anion Exchange (SBA-IX)
 - Non-regenerable
 - On-site regenerable
 - Off-site regenerable
- Reduction Coagulation Filtration (RCF)
- Reverse Osmosis

This treatment technology evaluation will be presented and discussed with CWA staff to select the most appropriate treatment technology for each impacted well. This evaluation will then be submitted as a technical memorandum which will be provided to DWR as part of the funding agreement.

The application of stannous chloride (SnCl_2) without filtration has yet to be considered as a best available technology (BAT) by DDW as significant downstream impact uncertainties remain. Accordingly, a separate stannous chloride evaluation will be developed at DWR's request to determine whether this treatment is

appropriate for further consideration. This will include and a summary of the outcomes of recent SnCl_2 pipe rig studies completed by California Water Service and Coachella Valley Water District, the remaining risks and uncertainties, and the required next steps that would be required for full-scale applications. This evaluation will be presented and discussed with CWA staff and summarized in a technical memorandum to DWR. Corona has commenced the development of conceptual-level cost estimates including soliciting capital costs from treatment vendors and modelling operation and maintenance costs.

Treatment vendor solicitation of capital costs, modelling of O&M costs, and the drafting of the Stannous Chloride Evaluation Technical Memorandum have all begun under the current open-ended agreement.

Deliverables

- Stannous Chloride Evaluation Technical Memorandum submitted to DWR (Task C.1)
- Workshop with CWA to discuss Treatment Technology Evaluation
- Draft Cr(VI) Treatment Technology Evaluation Technical Memorandum
- Final Cr(VI) Treatment Technology Evaluation Technical Memorandum submitted to DWR (Task C.2)

Task 4. RCF Bench-scale Testing

Bench-scale testing will be completed for all impacted wells, to confirm the ferrous doses and reduction times identified in the 2017 *Coachella Water Authority Stannous Chloride and Ferrous Chloride Testing for Hexavalent Chromium Treatment*. Additional testing will be completed for Well 11, which was not included in the 2017 testing, and Well 20 once it is drilled and developed. These results will be used to confirm previous RCF treatment recommendations, forecast future performance and identify the minimum ferrous dose and contact time required to achieve CWA finished water Cr(VI) goals for Wells 11 and 20. Initial pilot testing conditions will also be selected based on these results. The development of the bench-scale testing and raw water collection protocols, and handling of bench-scale testing logistics such as analytical laboratory and chemical supplier coordination has begun under the current open-ended agreement.

Deliverables

- RCF Bench-scale testing matrix for discussion with CWA

Task 5. RCF Pilot Testing

Pilot-scale testing of the RCF Cr(VI) treatment process will be conducted for a representative CWA well to first verify the selected treatment process performance and then identify opportunities for site footprint, capital costs, and operational cost savings. Pilot testing will also be used to advise backwash wastewater management for RCF treatment and inform full-scale design of both water and wastewater infrastructure needs. This RCF test matrix may include the evaluation of operational conditions such as hydraulic loading rates, ferrous reduction times, and backwash recycling.

The specific pilot testing objectives will be informed by the selected treatment technologies from Task 3, CWA's goals and the individual site and discharge requirements. The Task 4 bench-scale testing results will also direct pilot-scale objectives and testing requirements based on each well's Cr(VI) reduction performance. The site for pilot testing will be selected based on its representativeness of the system, site access, site safety, and pilot discharge availability.

Pilot testing is anticipated to be completed over a 12-week period, inclusive of pilot landing and teardown. Corona staff will be onsite for the pilot commission and decommission and will collect samples and

complete routine maintenance a minimum of two days a week. It is assumed that CWA staff will be available to collect analytical laboratory samples the remaining days of the work week. Pilot results will be summarized for discussion during the project's bi-weekly meeting to allow opportunities to change pilot operations informed by these results. Bench-scale and pilot-scale results will be summarized in a technical memorandum for incorporation into preliminary design decision.

Deliverables

- Pilot Test Plan submitted to DWR (Task C.4)
- Draft Pilot Testing Report, including bench-scale testing results
- Final Pilot Testing Report submitted to DWR (Task C.4)

Task 6. Permitting Support

Corona will provide permitting support by identifying and supporting CWA to obtain the environmental and regulatory permits that will be required for the selected treatment technology for each wellsite. This may include treatment residual management and disposal, and DDW treatment approval and permitting. As per the DWR funding agreement, all applicable California Environmental Quality Act (CEQA) documentation and copies or permits will be submitted to the Department. As Corona does not provide CEQA documentation services, this will need to be completed and submitted by CWA. Corona will also provide support for Cr(VI) compliance requirements such as Cr(VI) monitoring obligations, the development of the compliance plan for submittal to DDW, updates to the Consumer Confidence Report, and developing language for public notice.

Deliverables

- Copies of permits submitted to DWR (Task B)
- Cr(VI) Compliance Plan submitted to DDW

Task 7. Preliminary Design Report

A preliminary 30% design report (PDR) will be developed for up to two treatment technologies or two site configurations for each impacted wellsite based on the results of Task 3. Note the inclusion of Well 20 in the PDR to be submitted in the 2025 calendar year is contingent on it well being drilled and developed sufficiently prior to the submittal. If Well 20 is developed after the submittal of the PDR, the Well 20 analysis and design will be appended to the document. The PDR will include the following information for each impacted wellsite:

- Raw water quality, treated water quality goals, flow rates, and utilization summary
- Treatment design parameters based on bench- and pilot-scale testing results, equipment/media/chemical suppliers and treatment experience
- Treatment residuals management, including the potential for backwash recycling and wastewater processing and solids handling as necessary for the selected treatment.
- Site and yard piping layouts:
 - Zoning requirements such as setback and height limitations
 - Site sewer and storm drain connections, as needed
 - Layout figures (scaled plan, equipment layout, and yard piping)
- Treatment equipment:
 - Review and summary of existing and future pump curves, as available
 - Headloss estimate imposed by the new process and the related O&M implications

- General electrical panel and motor control center upgrade estimates
- Well pump and electrical upgrade requirements
- 20-year net present value cost estimates
 - Capital cost estimates
 - Annual O&M cost estimates, such as additional energy consumption, chemical, and maintenance costs.

Corona will prepare and deliver the PDR with support from WWE. WWE scope specifics are attached for reference. A draft PDR will be issued for review by CWA prior to incorporating these comments into the final PDR for submittal to DWR. This submittal marks the final deliverable to DWR as part of the funding agreement.

Deliverables

- Draft Preliminary Design Report
- Final Preliminary Design Report submitted to DWR (Task C.3)

Schedule

The intent of the schedule summarized below is to allow for CWA to achieve Cr(VI) compliance ahead of the October 1, 2027, deadline for systems with 1,000-9,999 service connections while also meeting DWR deliverable timelines. This scope of work includes proposed services for the 2025 calendar year. Continued services and additional tasks are expected to continue beyond 2025 and will be submitted in future task orders to best support CWA through to compliance.



Budget

The proposed budget for this scope of work is \$655,001 inclusive of labor and other direct costs (ODCs) to be billed monthly on a time and materials basis (Table 1). This includes \$57,530 for project management and communication, \$64,580 to evaluate the system and treatment technologies, \$191,730 for bench- and pilot scale testing, \$33,260 for permitting support and finally, \$134,427 for preliminary design, inclusive of WWE's services. The billing rates presented in Table 1 are reflective of 2025 rates and are effective through December 31, 2025.

Given the project schedule limitations and uncertainties surrounding source waters and waste management options, a 15% contingency has been included to allow Corona the ability to address items that may be out of scope in a timely matter, upon approval by CWA. This contingency is also expected to be used to support CWA in developing a request for proposal and/or securing a design engineering firm to continue the design and construction of the selected treatment processes following the submittal of PDR. The ODCs will be reimbursable with a 10% mark-up including travel for staff site visits and pilot testing, pilot equipment and materials, along with laboratory fees and water shipment for bench-scale testing. Analytical costs as part of the bench-scale and pilot-scale testing will be billed directly to CWA by their chosen analytical laboratory; however, have been estimated in the table for reference. Subcontractor costs for WWE will have a 5% mark-up.

We appreciate the opportunity to continue serving your community. Please do not hesitate to reach out if you should have any question or wish to discuss this further (office: 303.317.5823; cell: 720.626.4706; Email: cgorman@coronaenv.com).

Very truly yours,



Chad Seidel
President
Corona Environmental Consulting, LLC



Craig Gorman
Principal
Corona Environmental Consulting, LLC

Attachments

- WWE (subconsultant) scope

Table 1: Proposed budget.

Task	Task Description	Partner \$370	Principal \$355	Senior \$255	Associate \$220	Professional \$190	Admin \$125	Subtotal Hours	Subtotal Costs
1	Project Management	38	38	92	24		16	208	\$57,530
2	Water System Evaluation	2	4	20	32			58	\$14,220
3	Treatment Technology Evaluation	6	24	44		152		226	\$50,360
4	Bench-scale Testing	2	8	26	72	32		140	\$31,970
5	Pilot Testing	8	48	144	72	464		736	\$159,760
6	Permitting Support	32		84				116	\$33,260
7	Preliminary Design Report	8	26	40		88		162	\$38,590
Labor Total		96	148	450	200	736	16	1,646	\$385,690
Contingency (15%)									\$57,854
ODC Travel									\$40,900
ODC Bench-scale Testing									\$2,100
ODC Pilot-scale Testing									\$72,800
ODC Subcontractors									\$95,657
<i>ODC Bench-scale Analytical (estimated - not included in total)</i>									\$20,000
<i>ODC Pilot-scale Analytical (estimated - not included in total)</i>									\$111,000
Proposed Total									\$655,001