



**AMENDMENT NO. 4 TO
CONSULTANT SERVICES AGREEMENT**

**Water System Upgrades Program
Project No. PW3-925-4631**

Council Date: November 7, 2024

THIS AMENDMENT NO. Four ("Amendment No. 4") to the professional services agreement dated October 24, 2023 (the "Agreement") is made by and between the City of Chandler, an Arizona municipal corporation, ("City") and **Hazen and Sawyer, P.C., a New York professional corporation** ("Consultant"), on this ____ day of _____, 2024 ("Effective Date" by Clerk). (City and Consultant may individually be referred to as "Party" and collectively referred to as "Parties").

RECITALS

- A. The Parties entered into the Agreement for: **Consultant Services** ("Services") for the **Water System Upgrades Program** project.
- B. The Parties have determined that it is necessary and desirable for the Consultant to perform additional services for the City under the terms and conditions set forth in this Amendment No. 4 and the Agreement.

AGREEMENT

NOW, THEREFORE, in consideration of the premises and mutual promises contained in the Agreement and this Amendment No. 4, the Parties agree to amend and modify the Agreement as follows.

SECTION I - CONSULTANT'S SERVICES

The Consultant's Services are modified as described in the Exhibit "A" attached to and made part of this amendment by reference.

SECTION II – PERIOD OF SERVICE

The Period of Service is increased by 514 calendar days for a revised total of 964 calendar days.

SECTION III – PAYMENT OF COMPENSATION AND FEES

The Fees are increased by \$11,598,345 and will be payable in accordance with Exhibit B attached to and made part of this amendment by reference, for a revised total not to exceed \$12,629,215.

SECTION IV – CONFLICT AMONG DOCUMENTS

The Agreement, this amendment, and any previous amendments constitute the complete agreement between the Parties concerning the subject matter of the Agreement and replace any prior oral or written communications between the Parties. If a conflict or ambiguity arises between the Agreement and this amendment, the instrument in the following order prevails and controls: (1) this amendment; (2) any previous Amendments from most recent to oldest; and (3) the Agreement.

SIGNATURE PAGE TO FOLLOW

IN WITNESS WHEREOF, the Parties hereto have caused this Amendment No. 4 to be duly executed. Each Party warrants and represents that its respective signatories whose signatures appear below have been and are on the date of signature duly authorized to execute this Amendment No. 4.

"CITY" CITY OF CHANDLER

"CONSULTANT"
Hazen and Sawyer, P.C.

MAYOR

RECOMMENDED BY:

Jeremy Abbott
Public Works and Utilities Assistant
Director

APPROVED AS TO FORM:

City Attorney

JNB

ATTEST:

City Clerk

Seal

Curtis Courter

October 11, 2024

Signature

Date

Curtis Courter

Print Name

Vice President

Title

ccourter@hazenandsawyer.com

Signer Email Address

Amendment No. 4 (cont.)
Project No. PW3-925-4631

These changes result in the following adjustments of Agreement amount and/or time:

Amendment authorized by Owner name: Danny Sargent		Date: 10/9/2024
Consultant email: ccourter@hazenandsawyer.com		
Original Agreement amount:	\$695,720	
Previous Amendment(s) total:	\$335,150	
Last Agreement amount approved by Council:	\$845,400	
This Amendment:	\$11,598,345	
This Amendment + previous Amendment(s) not approved by Council total:	\$11,783,815	
Revised Agreement total:	\$12,629,215	
Council Approval Required (yes indicates approval required)	Yes	No
Amendment(s) total over \$100,000:	☒	☐
Amendment(s) total causes Agreement to exceed \$100,000:	☒	☐
Agreement Time		
Agreement time prior to this Amendment (including previous amendments):	<u>450</u> Calendar Days	
Net change resulting from this Amendment:	<u>514</u> Calendar Days	
Revised Agreement time (including this Amendment):	<u>964</u> Calendar Days	
Council Approval (if applicable)		
Council Approval Date: <u>2/22/2024</u> Item No. 27		

cc: Project Manager, Consultant, Owner, File

EXHIBIT A SCOPE OF WORK

Project Description

The City of Chandler (City) has hired Hazen and Sawyer (Consultant) to serve as Program Manager for the Water System Upgrades Program. This Program consists of the planning, design, and construction phases.

During the planning phase, several improvement projects for the Pecos Surface Water Treatment Plant (SWTP) were identified and recommended for meeting the program objective to reliably operate the plant at 60MGD capacity while also addressing the water quality challenges with respect to high total organic carbon in the finished water. The project team decided to move forward with the top 5 priority projects, listed below and numbered by Facility as shown in Appendix A and described in the Strategic Execution Plan developed as part of planning phase of the Program.

- **42.1 Filters 9-12 Rehab:** Design for this project is currently underway per Amendment 3. This scope amendment includes Construction Management (CM) services for this project, which is planned for construction from November 2024 – May 2025.
- **43.1 Post Filter GAC Contactors:** This project involves the construction of new concrete GAC contactors with a nominal capacity of 30 mgd, influent pump station, ancillary components, site improvements, yard piping connections, and a new electrical building. Preliminary and detailed design for this system is included in this scope.
- **86.1 Chlorine Dioxide:** A new Chlorine Dioxide facility will include, but not be limited, to chlorine dioxide generator equipment, storage tanks for necessary chemicals, ancillary mechanical equipment, electrical equipment, and a building to house the equipment. Site improvements and yard piping connections will be included. Design and a pilot project to verify efficacy are included in this scope.
- **65.1A EQ Pumps:** This project includes the replacement and improvement of the recycle pumps located within Equalization Basin Nos. 1 and 2 and related piping improvements. Preliminary and detailed design for this project is included in this scope.
- **75.1D Dewatering Building:** This project includes the preliminary and final design of a new dewatering facility, which includes mechanical dewatering equipment housed within a pre-fabricated building, ancillary mechanical equipment (e.g. feed pumps, polymer pumps, dry solids conveyance system), electrical equipment, HVAC, plumbing, and site and yard piping improvements and connections.

This project will utilize the Construction Manager at Risk (CMAR) delivery method. There are 3 Guaranteed Maximum Price (GMP) packages anticipated as shown in list below. The final number of GMPs will be determined in coordination with the CMAR.

- GMP 1: Construction of 42.1 Filters 9-12 Rehab
- GMP 2: Long Lead Package

- **GMP 3: Balance of Construction**

This scope covers design services for the entire project and Program Management services, Permitting and Construction Management services through GMP 2.

The Consultant will perform the following tasks as part of this scope:

- Task 1: Program Management (Through GMP 2 – Long Lead Package)
- Task 2: Preliminary Design
- Task 3: Detailed Design
- Task 4: Permitting (Through GMP 2 – Long Lead Package)
- Task 5: CMAR Coordination During Design (Through GMP 2 – Long Lead Package)
- Task 6: GMP 1 (Filters 9-12) CM Services

1. Program Management (Through Completion of GMP2)

As Program Manager, the Consultant will oversee the design and CM services as outlined in this scope and serve as the City Project Manager for the CMAR. These services include but are not limited to contractor/vendor solicitations, selections, negotiation, contract preparation, pre-submittal meetings, overall schedule and budget tracking, coordinating design reviews, permitting, overseeing construction, providing inspections, startup support and commissioning. The current scope for Task 1 defines the details of activities leading up to GMP 2 anticipated in July/August 2025. The City will issue future amendments for the period beyond GMP2.

1.1 Program Management and Coordination Activities

Consultant will perform Program Management and related coordination activities, including monitoring and tracking schedule, budgets for Program tasks. Consultant will provide on-site presence of the Program Manager (PM) and/or Deputy Program Manager (DPM) for the duration of the project for minimum 6 hours a day, 5 days a week, excluding weekends and City holidays.

1.2 Program Execution Plan Update

Consultant will update the Program Execution Plan for the project scope herein and distribute to all project team members. This work plan will include the project purpose and objectives, scope of work, detailed project delivery schedule, deliverables, budget, organizational chart and team contact information, document management system and the communication plan. A CAD/BIM execution plan will also be developed and included as an appendix to the Program Execution Plan. Consultant will update the plan with any major changes as the project progresses.

1.3 Project Kickoff Meeting and Progress Meetings

Consultant will conduct an initial project kick-off meeting/chartering session with the stakeholders at the City's offices and the CMAR to review the project goals, objectives, scope of work, project schedule, and roles and responsibilities. Meeting minutes will be prepared and distributed to document the meeting.

Consultant will conduct regular progress meetings with stakeholders at the City and CMAR to review the development of the project. Progress meetings will occur biweekly. Meetings may be combined with other design and coordination meetings identified in Tasks 2-5. Key takeaways and action items lists will be prepared and distributed to document the meeting.

Team conference calls and e-mail exchanges will be conducted as needed with the City to support communication throughout the project to facilitate efficient delivery of the task elements. In addition, PM and/or DPM will be in-person at Chandler offices coordinating and conducting meetings with City staff and the Consultant team as necessary.

1.4 Progress Reports

Consultant will prepare and distribute monthly progress reports to the City throughout the course of the project. The progress reports will summarize the work that has been completed during the preceding month and any key action items for the City in the upcoming month. These reports will be delivered as part of the monthly invoice packet.

1.5 Quality Control

Consultant will institute and comply with the Design Quality Control Plan for the project.

Design Quality Control Plan will follow Consultant's standard quality program that is implemented at all stages of project execution. The program is divided into two parts: quality assurance and quality control.

- Quality Assurance (QA) - Actively monitored QA requirements establish project-related policies, procedures, standards, training, guidelines, and systems to ensure high quality deliverables.
- Quality Control (QC) - The QC program includes project-specific requirements and features a review of processes and deliverables by experts outside of the core team.

Consultant's Project Manager and Regional QC Manager will enforce QA/QC requirements and ensure the implementation of the Project QC Program. Quality Control reviews will be performed ahead of each milestone deliverable by subject matter experts in each discipline that are employed by the firm, but that are not part of the core project team. QC comments and design team responses will be documented and made available to the City upon request.

QAQC hours are included in the individual tasks within Tasks 2-7.

Task 1 Assumptions:

- Progress meetings will be 1 hour long and will be held biweekly or combined with project milestone meetings; all meetings will have a virtual option.
- Duration = 9 months from NTP
- City will provide a desk/office for PM and DPM at the City's offices.

Task 1 Deliverables:

- Meeting agenda and key takeaway notes with action items for each progress meeting
- Project execution plan update including project schedule with major tasks and key milestones
- Monthly progress reports along with invoice

2. Preliminary Design

The preliminary design task includes investigations to define design criteria, Preliminary Design Report development, and 30% schematic (preliminary) design development. Preliminary design tasks listed under Task 2 will be performed for the following projects, as described in the introduction, unless otherwise noted in individual tasks.

- 43.1 Post-Filter GAC Contactors
- 86.1 Chlorine Dioxide
- 65.1A EQ pumps
- 75.1D Dewatering Building

2.1 Data Review and Site Visits

Consultant will review existing documentation relevant to the design, including the following:

- Existing as-builts and reports
- City policies, regulations, standards, design manuals and requirements
- Investigate existing conditions and verify accuracy of drawings or other information furnished by City.

Up to (2) site visits are assumed for investigation of field conditions.

Labor hours for this task are included in design tasks (Task 2.4 and Task 3).

2.2 Geotechnical Investigation

Consultant will perform geotechnical investigation through a sub-consultant, which includes the drilling and sampling of soil and pavement borings to determine subsoil conditions. Consultant will also coordinate with the geotechnical subconsultant to establish geotechnical design data for construction of new facilities identified in this scope. Geotechnical investigation is limited to the areas shown in the drawing index site plan in Exhibit B. A draft Geotechnical Report will be provided to the City and CMAR for review. Any comments received will be addressed and incorporated into the final Geotechnical Report.

Labor hours related to coordination and management of geotechnical subconsultant included in design tasks (Task 2.4 and Task 3).

2.3 Chlorine Dioxide (ClO₂) Pilot

For project 86.1 Chlorine Dioxide, a pilot will be performed to develop a cost/benefit analysis of implementation of chlorine dioxide (ClO₂). Bench testing indicated that ClO₂ may be an effective preoxidant to reduce TTHM formation in conjunction with the Post-Filter GAC Contactors, and may reduce GAC operation and maintenance costs by reducing media change out frequency. Pilot testing will inform the decision to implement chlorine dioxide at full scale. However, preliminary (30%) design of ClO₂ system is included in Task 2.5 and detailed design is included in Task 3.

2.3.1 Pilot Set up and Coordination

ClO₂ pilot set up includes a 4-column pilot skid system with feed pumps and with a chlorine dioxide feed. Estimated material cost for the pilot skid is included in the fee. Consultant will procure materials and assemble the skids with assistance from plant operations staff. Consultant will coordinate pilot system set up and develop a pilot plan.

2.3.2 Pilot Monitoring

Consultant will check pilot 5 days a week for the duration of the pilot to monitor operation and collect data in accordance with the pilot plan. Assumes a maximum of 10 hours per week for one person to monitor and check pilot. Pilot is anticipated to operate for one year.

2.3.3 Data Analysis and Reporting

Consultant will analyze up to one year of operational data and present results to the City. This analysis will be used to determine whether to proceed with detailed design and construction of 86.1 Chlorine Dioxide system. Results will be documented in a technical memorandum.

2.4 30% Design

Consultant will prepare design submittal milestones in accordance with the Interim Design Submittals list provided in Appendix B. The Schematic 30% Design will include the items noted for the 30% submittal in Appendix B.

2.4.1 Preliminary Design Report (PDR)

Consultant will prepare a draft and final Preliminary Design Report (PDR) documenting the preliminary design for the projects identified for Task 2. The preliminary design includes development of process and equipment design criteria and sizing and will form the basis of design for preparing the detailed design documents. The PDR will include the following:

- Documentation of design criteria and preliminary schematics for treatment processes and ancillary facilities, including civil, mechanical, architectural, structural, electrical, instrumentation and controls (I&C), HVAC, fire protection, and plumbing preliminary design criteria.

- Process flow diagrams, preliminary hydraulic profile, and preliminary schematics for the treatment processes.
- Drainage report and preliminary Grading and Drainage plan (report to be included as an addendum to the PDR)
- Permitting matrix with requirements and timelines for Maricopa County Environmental Services Department (MCESD) and City permits.

2.4.2 30% Design Documents

The 30% design documents will establish the design scheme and includes preparation of working drawings. The 30% design documents will include the following:

- Consultant will develop the drawing basefile from a topographic survey to be performed by the CMAR. It is assumed that CMAR will coordinate and perform the survey following Hazen's CAD survey requirements.
- Prepare 30% design drawings in accordance with the Interim Design Submittals list in Appendix B. Cover sheet to be provided by City.
- Submit to City's Project Manager and CMAR for comment electronic drawing set in pdf format with structural calculations if applicable.
- Preliminary drawing list and Technical Specification table of contents.
- List of long lead equipment to be identified by the CMAR contractor.
- Draft technical specifications for select long lead items.

2.4.3 Design Workshop and Comment Review

Consultant will conduct a design workshop and address City and CMAR design review comments as described below:

- Conduct a workshop with City and its representatives (including CMAR contractor). Staff will collaborate with designers to verify plans and mutually finalize design concepts that will be carried forward to the Long Lead Package and 60% design.
- The final schematic design will incorporate City's and CMAR's comments. This will be used as the design basis for Long Lead Package and rest of the design.

Task 2 Assumptions

- Drawings will be developed using Hazen's drafting and CADD standards. Cover page will use the City's standard cover page. Drawings will use the City's standard cover sheet and be in accordance with the City's Engineering Design Standards Manual.
- Technical Specifications will be prepared using the Division 1 through 50 format.
- Level of effort for this design phase has been developed based on the preliminary drawing list shown in Appendix C.
- DOC and TOC samples collected for the ClO₂ pilot will be analyzed by the City's lab.
- All deliverables to be submitted electronically in PDF format unless otherwise noted.

Task 2 Deliverables

- CIO2 Pilot Plan
- CIO2 Pilot Results Technical Memorandum
- Draft and Final Geotechnical Report
- Draft and Final Preliminary Design Report
- 30% Design Drawings in 11 x 17 format
- 30% Technical Specifications

3. Detailed Design

Detailed design tasks listed under this task assume the following projects are included, as described in the introduction, unless otherwise noted in individual tasks.

- 43.1 Post-Filter GAC Contactors
- 86.1 Chlorine Dioxide
- 65.1A EQ pumps
- 75.1D Dewatering Building

Adjustments for any changes in the project list included for detailed design and construction will be addressed in a scope amendment.

3.1 Long Lead Package

Based on the approved 30% Design Documents and any adjustments authorized by City in the program, schedule or construction budget, Consultant will prepare, for approval by City, a long lead design package for the CMAR to prepare GMP 2 for procurement of long lead equipment. Long lead package will include technical specifications and design drawings required for suppliers to provide submittal packages for procurement. Long lead package includes the following:

- Prepare technical specification for long lead items identified by the CMAR contractor and Consultant.
- Prepare technical specifications referencing and in accordance with City General Conditions.
- Perform code reviews and implement requirements into the long lead design documents.
- Submit the design drawings and technical specifications electronically in pdf format to CMAR and City for review. Include original redline drawings and comments received from 30% review along with a review summary indicating action taken for items included in long lead package.
- Conduct workshop with City and CMAR contractor to review and address comments.
- Prepare final, stamped long lead drawings and specification package incorporating any comments from the City and CMAR for long lead equipment procurement.

Task 3.1 Deliverables

- Draft Long lead drawings
- Draft Long lead specifications

- Long Lead Design Review Meeting & Workshop presentation slides
- Comment resolution log in Bluebeam Studio
- Final long lead drawings
- Final long lead specifications

3.2 60% Design

Based on the approved 30% Design Documents, Consultant will prepare sixty percent (60%) design documents in accordance with the Interim Design Submittals list in Appendix B, with the following elements:

- Prepare plans, elevations, sections, schedules and notes as required to address civil, architectural, structural, mechanical, electrical, instrumentation and controls, HVAC, fire, plumbing and special systems.
- Perform code reviews and implement requirements into the design documents.
- Prepare technical specifications referencing and in accordance with City General Conditions.
- Submit the design drawings and technical specifications electronically in pdf format to City's Project Manager and CMAR for review. Include original redline drawings and comments received from 30% design and Long Lead package along with a review summary indicating action taken.
- Conduct workshop with City and CMAR contractor to review and address comments.

Task 3.2 Deliverables

- 60% design drawings
- 60% technical specifications
- 60% Design Review Meeting & Workshop presentation slides
- Comment resolution log in Bluebeam Studio

3.3 90% Design

Based on the approved 60% Design Documents, Consultant will develop ninety percent (90%) design documents in accordance with the Interim Design Submittals list in Appendix B, with the following elements:

- Prepare drawings and technical specifications as required to be able to construct the project in its entirety.
- Submit the design drawings and technical specifications electronically in pdf format to City and CMAR for review. Include original redline drawings and comments received from previous review along with a review summary indicating action taken.
- Conduct workshop with City and CMAR contractor to review and address comments.
- Update the PDR (described in Task 2.4.1) with any changes from 30% to 90% design for MCESD permitting.
- Prepare stamped drawings, technical specifications, and reports for permitting agencies in accordance with the requirements identified in Task 4.

Task 3.3 Deliverables

- 90% design drawings
- 90% technical specifications
- 90% Design Review Meeting & Workshop presentation slides
- Comment resolution log in Bluebeam Studio
- Prepare Agency Review design documents

3.4 Final Construction Documents 100% Design

Based on City Development Services and MCESD comments, Consultant will prepare Construction Documents consisting of drawings and technical specifications setting forth in detail the requirements for the construction of the Project.

- Prepare plans, elevations, sections, schedules, notes and technical specifications as required to be able to construct the project in its entirety.
- Provide City of Chandler and CMAR with a copy the CAD drawing files and 3D models.
- Submit the design drawings and technical specifications electronically in pdf format to City and CMAR for review. Include original redline drawings and comments received from previous review along with a review summary indicating action taken.

Task 3.4 Deliverables

- 100% stamped design drawings
- 100% technical specifications
- Comment resolution log in Bluebeam Studio

Task 3 Assumptions

- 65.1A EQ pumps will proceed in detailed design with option A, which assumes no connection installed between EQ basins 1 and 2. If the EQ basin connection is added after the 30% cost model is completed, then additional effort to update the design for different pump sizing will be included in a separate amendment.
- 75.1D Dewatering Building will proceed in detailed design with Option D, which is the option presented at the 8/7/2024 meeting on Liquids Treatment CIPs assuming 3 volute screw presses and a 50' x 100' pre-engineered metal building.
- All deliverables to be submitted electronically in PDF format unless otherwise noted.

4. Permitting (Through Completion of GMP2)

Consultant will coordinate and facilitate initial communication with the regulatory agencies to define and confirm submittal requirements, process, durations, and fees, as described in the tasks below. Permits anticipated include the following:

- MCESD Approval to Construct (ATC)

- MCESD Approval of Construction (AOC) permits
- City of Chandler Development Services Building Permits
- City of Chandler Development Services Civil Plan Review & Pre-Technical Review

Labor hours for this task are included in design tasks (Task 2.4 and Task 3).

Services related to obtaining the permits are not included in this scope. These services will be included in a later scope amendment.

4.1 MCESD Permit

Consultant will conduct pre application meeting with MCESD to define and confirm submittal requirements, process, durations, and fees for the projects outlined in Task 2. Results of the meeting will be documented in the PDR.

Hazen will pay for the MCEST ATC/AOC fee. An allowance is included for ATC/AOC fees (See Task 8)

4.2 Chandler Development Services

Consultant will coordinate with Development Services to define and confirm submittal requirements, process, durations, and fees for the projects outlined in Task 2. Results of the meeting will be documented in the PDR.

City is responsible for all fees and cost associated with Chandler Development Services permit applications, review, and final permits.

5. CMAR Coordination During Design (Through Completion of GMP2)

CMAR services for the Consultant included in this scope are only through completion of GMP 2 for long lead items anticipated in July/August 2025. Additional CMAR coordination and CM services after GMP 2 will be incorporated as an amendment with the submission of GMP 2.

5.1 Monthly Invoice and Progress Report Review

Acting as the City's project manager, Consultant will review monthly invoices and progress reports from the CMAR and process those invoices for payment using the City's standard processes. Assumes monthly invoices and progress reports through August 2025.

5.2 Cost Model Reviews

Consultant will review and provide comments on CMAR cost models at the milestones noted below. Cost models to include construction cost estimate and schedule.

- 30% / Baseline

- Long lead
- 60% (not included in this scope; will include in future scope amendment)
- 90% (not included in this scope; will include in future scope amendment)

When the 30% cost model is completed, a project prioritization workshop will be held to confirm which projects will move forward to detailed design. Any changes to this scope of work identified at that time will be incorporated as an amendment with the submission of GMP 2.

5.3 GMP Reviews

Consultant will review two Guaranteed Maximum Price (GMPs) prepared by the CMAR, as listed below.

- GMP 1: Construction of 42.1 Filters 9-12 Rehab
- GMP 2: Long Lead Procurement Package

Consultant will provide comments and attend one comment resolution meeting for each GMP.

5.4 Detailed Project Schedule

Review preliminary construction schedule and phasing plans, long lead recommendations and analysis, and equipment plan and provide comments.

5.5 Design Coordination and Meetings

Collaboration meetings between the Designer and CMAR will be held as needed, and may include:

- Value Engineering review meetings
- Construction document rolling reviews
- GMP review/negotiation meetings
- Utility Coordination Meetings

Design reviews will include input from CMAR on constructability, procurement and schedule impacts of design.

It is assumed that CMAR coordination meetings may be held biweekly through August 2025 (GMP 2) in hybrid or virtual format and will be 1 hour in length. Any changes identified during Designer/CMAR meetings will be brought to the City for review in either a meeting or email format.

5.5.1 Maintenance of Plant Operations (MOPOs) Assistance

The Maintenance of Plant Operations (MOPO) is a plan or series of plans that describe how to maintain operation of existing facilities during construction and start-up of new facilities. Consultant will coordinate with the CMAR to identify a draft MOPO list during preliminary design to be included in the PDR. During development of long lead design, Hazen will identify design elements that may be required from the list of MOPOs identified at 30% design.

The CMAR will develop specific MOPO activities and identify potential design impacts during detailed design. Consultant will coordinate with CMAR on MOPO development, which includes the following activities:

- Assist CMAR in developing draft MOPOs with input from the City's operation and maintenance staff, including MOPO durations, constraints and shared responsibilities.
- Consider possible impacts to the design from the draft MOPO
- Incorporate MOPO requirements into the drawings and specifications
- Participate in a site walk-through with CMAR and the City's operation and maintenance staff.
- Review MOPOs prepared by the CMAR and incorporate in the specifications.

6. GMP 1 (Filters 9-12) CM Services

Consultant will provide Construction Management Services for GMP 1: 42.1 Filters 9-12 Rehab.

6.1 Pre-Construction Assistance

6.1.1 Pre-construction Assistance

These services are covered under Task 5.

6.2 Construction Management

6.2.1 Weekly Construction Meetings

Consultant must conduct weekly construction meetings. Each meeting includes agenda and minutes; Request for Information (RFI); Shop Drawing; Request for Information (RFI); Field Directive (FD); Material Certification; and Allowance Logs. Consultant assumes 16 weekly meetings will be held.

6.2.2 CPM Schedule

Consultant will review and evaluate Contractor's initial CPM schedule and provide recommendations for acceptance.

Consultant will review Contractor's monthly CPM schedule updates submitted with each payment application, identify CPM tasks that are behind schedule that may affect critical path items, project substantial and final completion dates and initiate correspondence to City regarding those tasks. Consultant assumes one draft and one final review of updated CPM schedule.

6.2.3 Requests for Information (RFI)

Consultant will review, evaluate, and respond to Contractor Requests for Information (RFI's); and prepare and maintain a submittal log of all RFI's. Consultant assumes five RFI responses.

6.2.4 Shop Drawing Submittals

Consultant will review, evaluate, and respond to Contractor shop drawing submittals; and prepare and maintain a submittal log of all shop drawing submittals. Consultant assumes 8 shop drawing submittals, including re-submittals.

6.2.5 Requests for Proposal (RFP)

Consultant will prepare Requests for Proposal (RFP) documents detailing requested additional work tasks; review and evaluate Contractor RFP responses (cost derivations) with approval recommendations; and prepare and maintain a submittal log list of all RFP's. Consultant assumes two RFPs.

6.2.6 Field Directive (FD)

Consultant will prepare Field Directive (FD) documents detailing requested additional work tasks; review and evaluate Contractor FD responses with approval recommendations; and prepare and maintain a submittal log list of all FD's. Consultant assumes a maximum of two FD's.

6.2.7 Contractor Payment Applications

Consultant will review and evaluate Contractor monthly payment applications and make recommendation for payment; maintain a weekly record of constructed pay quantities and compile monthly totals; and coordinate payment application with the City quantity report and the inspectors' daily logs. Consultant assumes six payment applications, with one draft and one final review for each.

6.3 Construction Inspection

6.3.1 Inspection Services

Consultant will provide weekly construction inspection to verify materials and installations conform to construction documents; prepare inspection reports at each visit documenting Contractor construction activities and progress during field inspection visits; and perform special inspections with reports as required. Consultant assumes 3 visits per week for 4 hours each for up to 5 months.

Consultant will provide a special inspection to identify structural deficiencies requiring repair after filter media is removed and prior to structural rehab activities. Consultant assumes 1 full day site visit.

Consultant will review and verify Contractor's Quality Control material test type and frequencies are consistent with City and MAG; review and evaluate Contractor's QC test schedule and provide recommendations on acceptance; and review and evaluate all Contractor sampling, test, and inspection results for conformance with construction documents.

6.3.2 Project Closeout

Consultant will secure Approval of Construction (AOC) from MCESD. The Consultant will review all Approval to Construct Permit Stipulations and prepare all required documentation and will submit on behalf of the City to MCESD.

Consultant will compile non-conformance list prior to Substantial Completion; schedule and conduct Substantial Completion inspection; prepare Substantial Completion punch list generated from Substantial Completion inspection; track items on punch list and note completed items; make recommendation to the City for issuance of Contractor Substantial Completion; and complete and distribute Substantial Completion certificates.

Consultant will schedule and conduct Final Completion inspection; make recommendations to the City for issuance of Contractor Final Completion; and complete and distribute Final Completion certificates.

Consultant will provide all documents in an electronic version that matches the City's filing system, so it can be imported into City's files.

Consultant will participate in a meeting with City staff and Designer to review request for information log to discuss lessons learned during the course of construction.

Consultant will coordinate with the Contractor for the submission of required warranties, guarantees, lien releases and other similar documents as required by the contract for construction. Consultant will advise the City as to the acceptability and compliance of these documents with the contract for construction. Consultant will provide to the Owner an organized set of project documents and records.

6.4 Testing And Startup

6.4.1 Equipment Testing and Facility Startup

Startup planning meetings shall be conducted by Consultant in order to facilitate completion and communication of the start-up plan. The Consultant will review Contractor's start up plan which include facility and performance demonstration plan. The Consultant will provide one day for witness field performance tests required to confirm that individual components and systems operate as specified in startup plan. Consultant will provide up to one day of witness polymer system functional testing in the field after equipment installation to verify system performance in accordance with the specifications. The Contractor will perform testing under the witness of the Consultant. A report will be issued for the testing based on data presented by the Contractor.

Consultant will provide up to one day of field witnessed pump testing after pump installation to verify pump performance is in accordance with specifications. Contractor will perform testing under the witness of Consultant. Consultant will provide a report on the testing based on field witness test observations, and data provided by Contractor.

Consultant will prepare a performance testing plan and Approval to Commence Operations (ATCO) application to submit to MCESD for approval to initiate performance testing while sending filtered water

to distribution. The Consultant will review all Approval to Construct Permit Stipulations and prepare all required documentation and will submit on behalf of the City to MCESD.

Upon completion of start-up, Consultant will review functional and performance test results submitted by Contractor and advise City if the facility is functioning in accordance with contract documents.

As part of the Start Up plan, the Consultant will receive and review disinfection plan and procedures including review and approval of independent testing agency for performing water quality sampling and testing. Consultant will witness disinfection performance. Upon receiving water quality test results from the Contractor, the Consultant will review and advise the City on the acceptance and water quality is met based upon the conformance of bacterial limitations for public drinking water.

6.5 Record Drawings

6.5.1 Record Drawings

Consultant will review and monitor Contractor's weekly updates on red-line drawing set.

Consultant will coordinate the Contractor's submittal of construction red lines of drawings, specifications and other record documents in preparation for finalizing record drawings and will transmit these to the Owner. The Consultant will meet with the Contractor to discuss the preparation and submittal of record drawings. Provide resident engineer stamp/certification on record drawings cover sheet. Ensure all required signatures on the cover sheet.

Provide and deliver record drawings in digital pdf format to the City as required for as-built submittal process to City construction manager for submittal to Development Services.

Electronic files (pdf and AutoCAD format) will be transmitted to the City. Based on experience of similar work and drawing count, up to four hours of CAD technician labor is anticipated for each sheet. An As-Built Certification note will be included on each drawing that contain as-built changes that will state: "I certify that the "as-built" information shown hereon was obtained under my direct supervision and is correct and complete to the best of my knowledge and belief." This note will be sealed by a Registered Professional Engineer in Arizona. The following note will be included in the title block for each drawing: "This drawing was originally sealed on referenced date by referenced PE, a registered Professional Engineer in Arizona."

Consultant will coordinate and provide documents to Development Services for Building Permit if required.

6.5.2 Assumptions, Clarifications, and Exclusions

- Application fees for City reviews and permits will be paid by City.
- The Owner's Allowance will only be utilized with prior written approval from the City representative.
- The Direct Expense Allowance will be used for normal reimbursable expenses on the project. Items must be billed at cost and backup must be provided with pay applications.

7. Other Direct Costs (ODC)

This task is for expenses related to the project, such as travel and shipping.

8. Allowances

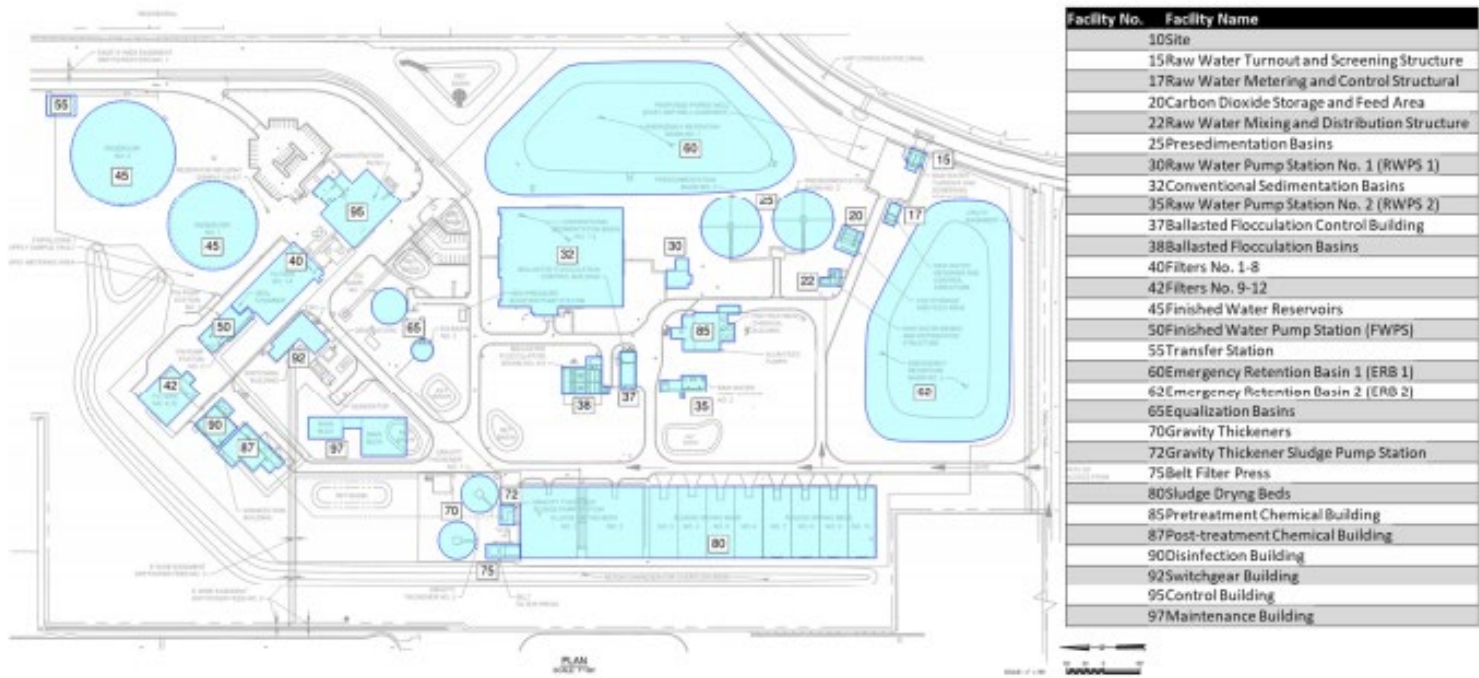
8.1 Owner's Allowance

Owner's allowance for any changes to scope. Consultant will request written authorization from the City to utilize the funds. The associated scope will be included in the authorization request.

8.2 MCESD Permit Fees

Allowance is included for up to (2) ATC/AOC applications. If additional permitting submissions are required, associated fees will be included in a scope amendment.

Appendix A
CIP Project Numbering



Facility Numbering

CIP No.	Project Name	Project Description	Justification/Driver
42.1	Filter 9-12 Rehab	- Structural rehab (crack injection, waterproof coating) - GAC media replacement - Polymer pump & injection	Achieve 50 year useful life of filters; filters 13-16 not needed
43.1	Post Filter GAC Contactors	- Install 10 new concrete GAC contactors - New GAC contactor feed and backwash pumps - New electrical building	Achieve Water Quality goals for TOC & TTHM
86.1	Chlorine Dioxide (Final decision will depend on Pilot results)	- New building with chlorine dioxide feed system 1 duty + 1 standby generator 2-10,000 gal sodium chlorite tanks 1x hydrochloric acid tank 2 chlorine dioxide storage tanks and feed pumps	Achieve TTHM water quality goals in summer (to be confirmed with testing)
65.1A	EQ Pumps	- Replace EQ basin 1 and 2 pumps with 3 pump configuration - Assumed no connection of EQ basins	Steadier recycle flows to operated 60 mgd + 4 mgd recycle
75.1D	Dewatering Building	- New 50' x 100' metal dewatering building with (3) volute screw press - Includes electrical room, dewatering polymer pumps and thickened solids pumps - Solids conveyor system, roll-off bins, yard piping	Required to operate at maximum 60 mgd flow and anticipated worst case water quality condition

Appendix B Interim Design Submittals

Hazen *Guideline for Interim Design Submittals*

Key: X = Initial Preparation
 U = Update

GENERAL REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Specification Requirements						
Table of Contents	X		U		U	
Major Mechanical Equipment Specifications	X		U		U	
Technical Specifications (Div 01)			X		U	
Technical Specifications (Site/Civil)			X		U	
Technical Specifications (Structural)			X		U	
Technical Specifications (Architectural)			X		U	
Technical Specifications (Mechanical)			X		U	
Technical Specifications (Odor Control)			X		U	
Technical Specifications (HVAC/Plumbing)			X		U	
Technical Specifications (Fire Suppression)			X		U	
Technical Specifications (Electrical)			X		U	
Technical Specifications (Instrumentation)			X		U	
Bidding and Contract Requirements					X	
Spec Items Required for Interdiscipline Coordination						
Piping Schedule (with Design Pressures, Heat Tracing Requirements)	X		U		U	
Valve Schedule (with Electrical and I&C Req'ts for motorized valves, gates)			X		U	
Functional Descriptions	X		U		U	
Input/Output Schedules			X		U	
Instrument Schedules			X		U	
Maintenance of Plant Operations (MOPO), construction sequencing	X		U		U	
General Drawing Requirements						
Cover Sheet with Location Maps	X		U		U	
Confirm Official Project Name	X		U		U	
Identify Owner Contract Numbering Requirements	X		U		U	
Scale	X		U		U	
North Arrows	X		U		U	
Plans Oriented to North where possible	X		U		U	
Level of Notation Appropriate to Submittal Milestone	X		U		U	
Level of Dimensioning Appropriate to Submittal Milestone	X		U		U	
Reference Elevation on Each Section	X		U		U	
Standard Details			X		U	

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Guideline for Interim Design Submittals

Key: X = Initial Preparation
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SITE / CIVIL DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify State Erosion Control and Stormwater Requirements	X					
Identify Local Erosion Control and Stormwater Requirements	X					
Identify Local Planning/Zoning Requirements (setbacks, buffers, etc.)	X					
Identify State DOT Requirements (driveway permits, R-O-W)	X					
Identify all Existing Easements	X					
Identify Wetland/Stream Encroachments	X					
Confirm adequate survey info available	X					
Confirm horizontal and vertical control	X					
Confirm proper survey datum used	X					
Locate 100-yr floodplain / floodway	X					
Interdiscipline Coordination						
Coordinate with Mechanical, Electrical on piping, ductbank, and facilities layouts	X		U		U	
Identify Anticipated Major Erosion and Sediment Control features (Basins, Ponds)			X			
Coordinate Parking Requirements with Architectural, Mechanical (incl ADA)			X		U	
Coordinate Final Grade and Flood Elevations with Structural	X		U		U	
Coordinate Dewatering Requirements with Structural			X		U	
Coordinate Downspout Locations with Architectural, Electrical			X		U	
Coordinate confined space identification with Architectural, Mechanical, Electrical	X		U		U	
Drawing Requirements						
Horizontal and Vertical Control Information	X		U		U	
Right-of-Ways	X		U		U	
Setbacks / Buffers	X		U		U	
100-Yr Floodplain and Floodway	X		U		U	
Existing Easements	X		U		U	
Existing Facilities	X		U		U	
Existing Roads	X		U		U	
Existing Grading	X		U		U	
Existing Stormwater Facilities	X		U		U	
Proposed Stormwater Control Measures (SCM)	X		U		U	
Proposed Facilities	X		U		U	
Proposed Roads	X		U		U	
			X		U	
Proposed Yard Piping	X		U		U	
Proposed Yard Piping Plan and Profile (if required)			X		U	
Storm Drain Plan and Profile			X		U	
Proposed Grading	X		U		U	
Demolition Plans			X		U	
Erosion Control Measures (Major Ponds, etc.)			X		U	
Erosion Control Measures (Remaining Measures)					X	
Staking Data					X	
Landscaping and Irrigation Plans					X	
Contractor Staging Areas					X	
Project Specific Details					X	
Standard Details			X		U	

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Guideline for Interim Design Submittals

Key: X = Initial Preparation
U = Update

PROCESS / MECHANICAL DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify Applicable Process/Treatment Codes and Regulations	X					
Identify Special Requirements of Funding Agencies (Grants/Loans)	X					
Determine if Air Quality Permit is Required	X					
Determine if Odor Control is Required	X					
Identify Utility Requirements (e.g., Natural Gas, PW)	X					
Develop/Document Process Design Criteria	X		U		U	
Finalize Process Modeling Calculations	X					
Hydraulic Profile Calculations	X		U		U	
Identify Piping Systems that Require Analysis for Support and Thrust Restraint			X		U	
Perform Piping System Surge Analyses	X		U			
Establish Process for Developing Pipe and Valve Schedules (e.g., Revit, other)	X		U		U	
Identify Owner Reqts for Equipment/Valve/Instrument Tagging Protocol	X		U		U	
Complete Technical Memoranda	X					
Preliminary Equipment Selection and Sizing Calculations	X					
Identify Owner Preferences/Philosophy for Redundancy and Future Expansion	X		U		U	
Identify Client Philosophy for Equipment Removal (Cranes, etc.)	X					
Identify MOPO Issues	X		U		U	
Finalize Design Calculations for Project Record					X	
Interdiscipline Coordination						
Provide Cutsheets of Major Equipment for Interdiscipline Coordination	X		U		U	
Coordinate Electric Load List with Electrical, HVAC, and Plumbing	X		U		U	
Coordinate Motor Controllers (e.g. VFD) with Electrical	X		U		U	
Coordinate with Civil, Electrical on piping, ductbank, facilities layouts	X		U		U	
Coordinate NFPA Req'ts with Electrical, HVAC, Architectural, Fire	X		U		U	
Coordinate Demolition within Existing Structures with Structural	X		U		U	
Coordinate Pipe Support and Restraint Design with Structural	X		U		U	
Coordinate with Structural on Weights and Loads for Major Equipment	X		U		U	
Coordinate Crane/Equipment Lifting Req'ts with Structural, HVAC, Electrical	X		U		U	
Coordinate Wall/Roof Op'ngs/Penetrations with HVAC, Structural, Architectural			X		U	
Coordinate Heat Tracing Requirements with Electrical			X		U	
Coordinate Parking Req'ts with Civil, Architectural			X		U	
Coordinate Instrumentation Req'ts for P&IDs with Instrumentation	X		U		U	
Coordinate Functional Descriptions with Instrumentation	X		U		U	
Coordinate with Instrumentation on Instrument Ranges			X		U	
Coordinate Pile Locations with Piping and Ductbanks Under Structures			X		U	
Coordinate Requirements for Windows in Doors with Architectural, Electrical					X	
Coordinate Equipment/Valve/Instrument Tagging with Instrumentation	X		U		U	
Coordinate Odor Control Req'ts with HVAC	X		U		U	
Coordinate confined space identification with Architectural, Civil, Electrical	X		U		U	
Drawing Requirements						
Liquid Train Process Flow Diagram	X		U		U	
Solids Train Process Flow Diagram	X		U		U	
Chemical Feed System Schematics (if no P&IDs)	X		U		U	
Determine if Isometrics will be developed	X		U		U	
Hydraulic Profile	X		U		U	
Existing Yard Piping	X		U		U	
Proposed Yard Piping (Major Process Piping)	X		U		U	
Proposed Yard Piping (Secondary Piping)			X		U	
Pipe Profiles (if Req'd)					X	
Facility Plans (including tag number+physical location of field instruments, MOVs)	X		U		U	
Facility Sections (Primary)	X		U		U	
Facility Sections (Secondary)			X		U	
Demolition Plans			X		U	
Standard Details			X		U	
Pipe Support Details			X		U	
Project Specific Details					X	

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Guideline for Interim Design Submittals

Key: X = Initial Preparation
U = Update

STRUCTURAL DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify Applicable Codes	X					
Coordinate Geotechnical Investigation	X					
Identify Special Dewatering Requirements			X			
Interdiscipline Coordination						
Review Preliminary Layouts for Type and Feasibility of Foundations	X		U		U	
Review Wall Thicknesses in Preliminary Layouts	X		U		U	
Review Column Locations and Sizes in Preliminary Layouts	X		U		U	
Coordinate Demolition within Existing Structures with Mechanical	X		U		U	
Coordinate Final Grade and Flood Elevations with Civil	X		U		U	
Coordinate Equipment Weights/Loads with Mechanical			X		U	
Coordinate Wall/Roof Op'ngs/Penetrations with Mechanical, HVAC, Architectural			X		U	
Coordinate Pipe Support and Restraint Design with Mechanical			X		U	
Coordinate Beam Depths with Interior Piping			X		U	
Coordinate Dewatering Requirements with Civil			X		U	
Coordinate Seismic Requirements with all Disciplines - 01350			X		U	
Coordinate Pile Locations with Piping and Ductbanks Under Structures			X		U	
Coordinate with Electrical Regarding Large Conduits embedded in slabs, walls, etc.			X		U	
Coordinate with Electrical Regarding Penetrations Through Footings			X		U	
Coordinate with Electrical Regarding Ductbank Routing Between Piles			X		U	
Coordinate Crane/Equipment Lifting Req'ts with Mechanical, HVAC, Electrical	X		U		U	
Drawing Requirements						
General Notes			X		U	
Facility Plans			X		U	
Facility Sections (Primary) (No Reinforcing Shown at 60%)			X		U	
Facility Sections (Secondary)					X	
Pile Location Plans					X	
Beam & Column Schedules					X	
Standard Details			X		U	
Project Specific Details					X	
Steel Framing Elevations and Details			X		U	
Demolition Plans			X		U	
Special Inspections Requirements					X	

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Guideline for Interim Design Submittals

Key: X = Initial Preparation
U = Update

ARCHITECTURAL DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify Applicable Building Codes	X					
Identify Local Planning/Building Requirements	X					
Identify Local Noise Ordinances	X					
Identify Owner Architectural Preferences						
Wall Construction	X					
Roofing Systems	X					
Architectural Treatments to Match Existing Facilities	X					
Door Materials of Construction			X			
Interior Finishes and Coatings			X			
Identify Confined Spaces	X		U		U	
Interdiscipline Coordination						
Verify Egress Requirements	X		U			
Coordinate Roof/Wall Op'ngs/Penetrations with Structural, Mechanical, HVAC			X		U	
Coordinate Downspout Locations with Site Civil and Electrical			X		U	
Coordinate Overhead Door Operators with Electrical			X		U	
Coordinate Building Lighting Fixtures with Electrical					X	
Coordinate Requirements for Windows in Doors with Electrical, Mechanical					X	
Coordinate Ceiling Tile Layout with Electrical, HVAC					X	
Coordinate with Electrical for Exterior Lighting and Overflow Scuppers			X		U	
Coordinate Parking Req'ts with Civil, Mechanical			X		U	
Coordinate NFPA 820 Requirements with Mechanical, Electrical, HVAC, Fire	X		U		U	
Coordinate confined space identification with Mechanical, Civil, Electrical	X		U		U	
Drawing Requirements						
Code Summary Sheets			X		U	
Facility Plans			X		U	
Roof Plans			X		U	
Exterior Elevations			X		U	
Interior Elevations (if Req'd)			X		U	
Standard Details			X		U	
Wall Sections and Details					X	
Finish Schedules					X	
Project Specific Details					X	

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Guideline for Interim Design Submittals

Key: X = Initial Preparation
U = Update

ELECTRICAL DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify Applicable Codes	X					
Coordinate with Electrical Utility	X		U		U	
Confirm basic power distribution plan	X					
Identify Owner Preferences						
Selector Switch / Pushbutton Nomenclature	X					
Telephone System Requirements	X					
Fire Alarm Requirements	X					
Site Lighting Preferences	X					
Building Lighting Preferences	X					
Identify Lightning Protection Requirements			X		U	
Interdiscipline Coordination						
Review Facility Electrical Room Sizes	X		U			
Coordinate Electrical Load List with Mechanical, HVAC, Plumbing	X		U		U	
Provide Cutsheets of Equipment for Interdiscipline Coordination			X		U	
Coordinate NFPA 820 Requirements with Mechanical, HVAC, Arch, Fire	X		U		U	
Coordinate Instrument Wiring and Network Cabling Requirements with I&C			X		U	
Coordinate with Structural Regarding Conduits embedded in slabs, walls, etc.			X		U	
Coordinate with Structural Regarding Penetrations Through Footings			X		U	
Coordinate with Structural Regarding Ductbank Routing Between Piles			X		U	
Coordinate Heat Tracing Requirements with Mechanical			X		U	
Coordinate with Mechanical, Civil on piping, ductbank, and facilities layouts	X		U		U	
Coordinate with Architectural for Exterior Lighting and Overflow Scouppers			X		U	
Coordinate with Instrumentation on Instrument List and I/O Schedule			X		U	
Coordinate with Civil, Mechanical on piping, ductbank, and facilities layouts	X		U		U	
Coordinate Downspout Locations with Civil and Architectural			X		U	
Coordinate Overhead Door Operators with Architectural			X		U	
Coordinate Building Lighting Fixtures with Architectural					X	
Coordinate Requirements for Windows in Doors with Architectural, Mechanical					X	
Coordinate Ceiling Tile Layout with Architectural, HVAC					X	
Coordinate Motor Controllers (e.g. VFD) with Mechanical	X		U		U	
Coordinate Crane/Equipment Lifting Reqs with Structural, HVAC, Mechanical	X		U		U	
Coordinate Pile Locations with Piping and Ductbanks Under Structures			X		U	
Coordinate confined space identification with Architectural, Mechanical, Civil	X		U		U	
Drawing Requirements						
General Notes, Legend, and Symbols	X		X		U	
Overall Plant Electrical Single Line Diagram	X		X		U	
Overall Site Plan	X		X		U	
Site Plans - Existing (including all ductbank)			X		U	
Site Plans - Proposed	X		U		U	
Site Plans - Demolition			X		U	
Ductbank Schedules			X		U	
Facility Single Line Diagrams			X		U	
Facility Lighting Plans			X		U	
Facility Power Plans			X		U	
Facility Demolition Plans			X		U	
Grounding Plans			X		U	
Single Line Diagrams	X		U		U	
Electrical Equipment Elevations - Switchgear, MCCs			X		U	
Panel Schedules			X		U	
Riser Diagrams					X	
Control One Line Diagrams					X	
Elementary Control Schematics					X	
Conduit and Wire Schedules					X	
Project Specific Details					X	
Standard Details			X		U	

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Guideline for Interim Design Submittals

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INSTRUMENTATION DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify Existing Control System Architecture, Redundancy, Cybersecurity Req'ts	X					
Identify Owner Control Philosophy						
Level of Automation	X					
Selector Switch / Pushbutton Nomenclature	X					
Status Indication Light Colors	X					
Establish Equipment, Valve, and Instrument Tagging Protocol	X					
Interdiscipline Coordination						
Coordinate Instrumentation Requirements for P&IDs with Mechanical	X		U		U	
Coordinate Functional Descriptions with Mechanical	X		U		U	
Coordinate Instrument Wiring and Network Cabling Requirements with Electrical			X		U	
Coordinate with Mechanical on Instrument Ranges			X		U	
Coordinate with Electrical on Instrument List and I/O Schedule			X		U	
Coordinate Equipment/Valve/Instrument Tagging with Mechanical	X		U		U	
Drawing Requirements						
Symbols and Legends	X		U		U	
Process and Instrumentation Diagrams (P&IDs)	X		U		U	
Control System Architecture	X		U		U	
Standard Details			X		U	
Project Specific Details					X	

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Guideline for Interim Design Submittals

Key: X = Initial Preparation
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HVAC DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify Applicable Codes	X					
Identify Local Planning/Building Requirements	X					
Identify Requirements for Radon Mitigation	X					
Interdiscipline Coordination						
Review Facility Electrical Room Sizes for HVAC Requirements	X		U		U	
Coordinate NFPA 820 Requirements with Mech, Elec, Arch, Fire	X		U		U	
Coordinate Wall/Roof Op'ngs/Penetrations with Mechanical, Structural, Architectural			X		U	
Provide Cutsheets of Equipment for Interdiscipline Coordination			X		U	
Coordinate Roof/Wall Openings with Structural, Mechanical, Architectural			X		U	
Coordinate Ceiling Tile Layout with Architectural, Electrical					X	
Coordinate Crane/Equipment Lifting Req'ts with Structural, Electrical, Mechanical	X		U		U	
Coordinate Electric Load List with Electrical, Mechanical, Plumbing	X		U		U	
Coordinate Odor Control Req'ts with Mechanical	X		U		U	
Drawing Requirements						
General Mechanical Notes	X		U		U	
Facility Plans (General Arrangement for 30% Submittal)	X		U		U	
Facility Sections and Details			X		U	
Schedules	X		U		X	
Standard Details			X		U	
Project Specific Details					X	
Flow Control Diagrams	X		U		U	
Equipment Control Diagrams/Risers			X		U	

Hazen *Guideline for Interim Design Submittals*

Key: X = Initial Preparation
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PLUMBING DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify Applicable Plumbing Codes	X					
Contact Building Inspections Dept for Local requirements	X					
Interdiscipline Coordination						
Coordinate with Architectural on Plumbing Fixture Locations, etc.			X		U	
Coordinate with Yard Piping for PW and Drain Connections			X		U	
Coordinate Water Heaters, Eye Wash, Tepid Water Systems, etc. with Electrical			X		U	
Coordinate with Architectural, Structural, Fire, Electrical if fire pump/tank is req'd	X		U		U	
Coordinate Electric Load List with Electrical, Mechanical, HVAC	X		U		U	
Drawing Requirements						
General Plumbing Notes			X		U	
Facility Plans	X		U		U	
Riser Diagrams and Isometrics			X		U	
Schedules			X		U	
Standard Details			X		U	
Project Specific Details					X	

Hazen *Guideline for Interim Design Submittals*

Key: X = Initial Preparation
U = Update

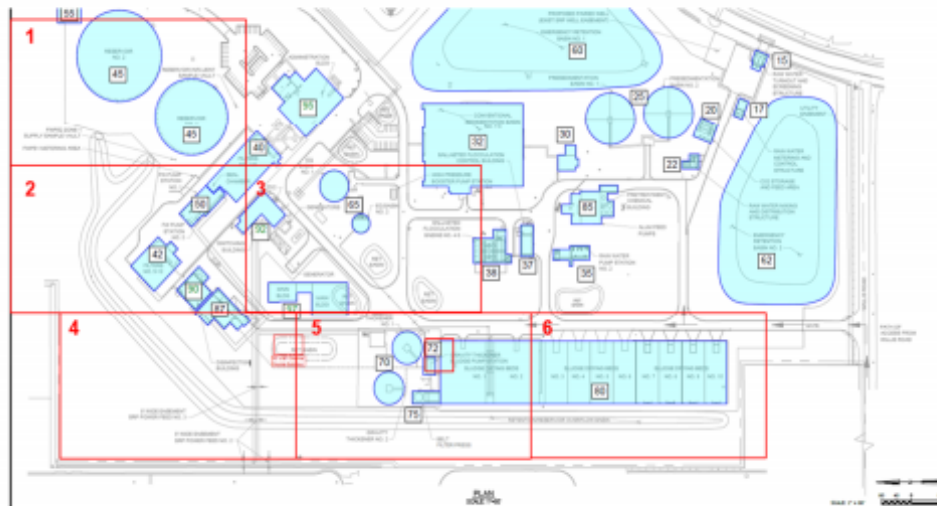
FIRE SUPPRESSION DISCIPLINE REQUIREMENTS	30% SUBMITTAL		60% SUBMITTAL		90% SUBMITTAL	
	Reqd	Complete	Reqd	Complete	Reqd	Complete
Responsibilities						
Identify applicable fire suppression codes	X					
Contact Authority Having Jurisdiction (AHJ) for local requirements	X					
Determine type of sprinkler (water or chemical)	X					
Obtain flow/pressure test	X					
Determine if fire pump or fire tank is required; coordinate with Plumbing	X					
Interdiscipline Coordination						
Coordinate with Arch, Stru, Plum, Elec if fire pump/tank is req'd	X		U		U	
Coordinate NFPA 820 Requirements with Mech, Elec, HVAC, Arch	X		U		U	
Drawing Requirements						
General Fire Suppression Notes			X		U	
Facility Plans (Schematic)			X		U	
Riser Diagrams and Isometrics			X		U	
Schedules	X		U		U	
Standard Details			X		U	
Project Specific Details					X	

Appendix C

Preliminary Drawing List

Chandler Pecos Facility - Site Plan

review CIPs to capture where yard piping tie-ins are and where regrading needs performed



Sheet No.	Discipline	No.	Dwg. No.	Sheet Name
001	G	001	G-001	Title Sheet
002	G	002	G-002	Vicinity/Location Map
003	G	003	G-003	Index of Drawings 1
004	G	004	G-004	Index of Drawings 2
005	G	005	G-005	General Construction Notes
006	G	006	G-006	Abbreviations and Legend
007	G	007	G-007	Site Area Plan
008	G	008	G-008	Process Flow Diagram - Proposed Advanced Water Treatment
009	G	009	G-009	Process Flow Diagram - Proposed Residuals
010	G	010	G-010	Process Flow Diagram - Proposed Solids
011	G	011	G-011	Hydraulic Profile - Process
012	G	012	G-012	Hydraulic Profile - Residuals
013	G	013	G-013	Sample and Analyzer Diagram Sheet 1
014	G	014	G-014	Design Criteria 1 - Liquids
015	G	015	G-015	Design Criteria 2 - Solids
016	G	016	G-016	Temporary Utilities
017	C	001	C-001	Notes, Abbreviations and Legend
018	C	002	C-002	Site Preparation - Existing Conditions, Clearance and Demolition Plan
019	C	003	C-003	Survey Control and Overall Site Plan
020	C	004	C-004	Site Grading
021	C	005	C-005	Site Grading Area 1
022	C	006	C-006	Site Grading Area 1a

Sheet No.	Discipline	No.	Dwg. No.	Sheet Name
023	C	007	C-007	Site Grading Area 2
024	C	008	C-008	Site Grading Area 3
025	C	009	C-009	Site Grading Area 4
026	C	010	C-010	Site Grading Area 5
027	C	011	C-011	Site Grading Area 6
028	C	012	C-012	Site Grading Area 7
029	C	013	C-013	Site Erosion Control
030	C	014	C-014	Erosion Control Area 1
031	C	015	C-015	Erosion Control Area 1a
032	C	016	C-016	Erosion Control Area 2
033	C	017	C-017	Erosion Control Area 3
034	C	018	C-018	Erosion Control Area 4
035	C	019	C-019	Erosion Control Area 5
036	C	020	C-020	Erosion Control Area 6
037	C	021	C-021	Erosion Control Area 7
038	C	022	C-022	Site Paving
039	C	023	C-023	Site Paving Area 1
040	C	024	C-024	Site Paving Area 1a
041	C	025	C-025	Site Paving Area 2
042	C	026	C-026	Site Paving Area 3
043	C	027	C-027	Site Paving Area 4
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046	C	030	C-030	Site Paving Area 7
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048	C	032	C-032	Yard Piping Area 1
049	C	033	C-033	Yard Piping Area 1a
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051	C	035	C-035	Yard Piping Area 3
052	C	036	C-036	Yard Piping Area 4
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062	C	046	C-046	Stormwater Channel Grading
063	C	047	C-047	Stormwater Channel Grading Area 1
064	C	048	C-048	Stormwater Channel Grading Area 2
065	C	049	C-049	Stormwater Channel Grading Area 4
066	C	050	C-050	Stormwater Channel Grading Area 5
067	C	051	C-051	Stormwater Channel Grading Area 6
068	C	052	C-052	Stormwater Channel Area 1
069	C	053	C-053	Stormwater Channel Area 2
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078	C	062	C-062	Stormwater Channel Cross Sections Sheet 1
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093	A	004	A-004	Door and Window Schedule
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104	A	104	A43-104	PF GAC Facility Intermediate and Stair Plan Sheet 1
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106	A	106	A43-106	PF GAC Facility Top Plan Sheet 1
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108	A	108	A43-108	PF GAC Facility Roof Plan Sheet 1
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110	A	110	A43-110	PF GAC Facility Life Safety Plans
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129	A	201	A87-201	Chlorine Dioxide Building Roof Plan
130	A	202	A87-202	Chlorine Dioxide Building Life Safety Plan
131	A	203	A87-203	Chlorine Dioxide Building Details 1
132	A	204	A87-204	Chlorine Dioxide Roof Details 1
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139	A	211	A87-211	Chlorine Dioxide Facility Details 1
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149	A	308	A43-308	Dewatering Facility Interior Details 1
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196	S	205	S86-205	Chlorine Dioxide Facility Section Sheet 3 (Chlorine Dioxide Room 2 NE)
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198	S	207	S86-207	Chlorine Dioxide Facility Section Sheet 5 (Hydrochloric Acid Room 3 SW)
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206	S	215	S86-215	Chlorine Dioxide Facility Stair Plans and Sections
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208	S	300	S43-300	Dewatering Facility Foundation Plan
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217	S	309	S75-309	Dewatering Facility Beam Schedule, Section and Details
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220	S	312	S75-312	Dewatering Roll Off Bin Area Details 1
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227	S	003	SD-03	Structural Details Sheet 3
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234	M	102	M43-102	PF GAC Facility Mechanical Bottom Plan Sheet 2
235	M	103	M43-103	PF GAC Facility Mechanical Intermediate Plan Sheet 1
236	M	104	M43-104	PF GAC Facility Mechanical Intermediate Plan Sheet 2
237	M	105	M43-105	PF GAC Facility Mechanical Top Plan Sheet 1
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241	M	109	M43-109	PF GAC Facility Section Sheet 3
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243	M	111	M43-111	PF GAC Facility Section Sheet 5
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248	M	116	M43-116	PF GAC Facility Section Sheet 10
249	M	117	M43-117	PF GAC Facility Detail Sheet 1
250	M	118	M43-118	PF GAC Facility Detail Sheet 2
251	M	119	M43-119	PF GAC Facility Detail Sheet 3
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256	M	200	M87-200	Chlorine Dioxide Facility Perspective View
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258	M	202	M87-202	Chlorine Dioxide Facility Section Sheet 1 (Chlorine Dioxide Room 1 NW)
259	M	203	M87-203	Chlorine Dioxide Facility Section Sheet 3 (Chlorine Dioxide Room 2 NE)
260	M	204	M87-204	Chlorine Dioxide Facility Section Sheet 5 (Hydrochloric Acid Room 3 SW)
261	M	205	M87-205	Chlorine Dioxide Facility Section Sheet 6 (Sodium Chlorite Room 4 SE)
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263	M	207	M87-207	Chlorine Dioxide Facility Isometrics Sheet 1
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265	M	209	M87-209	Chlorine Dioxide Facility Isometrics Sheet 3
266	M	210	M87-210	Chlorine Dioxide Facility Isometrics Sheet 4
267	M	211	M87-211	Chlorine Dioxide Facility Detail Sheet 1
268	M	212	M87-212	Chlorine Dioxide Facility Detail Sheet 2
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274	M	303	M75-303	Dewatering Facility Section Sheet 2
275	M	304	M75-304	Dewatering Facility Section Sheet 3
276	M	305	M75-305	Dewatering Facility Section Sheet 4
277	M	306	M75-306	Dewatering Facility Detail Sheet 1
278	M	307	M75-307	Dewatering Facility Detail Sheet 2
279	M	308	M75-308	Dewatering Facility Detail Sheet 3
280	M	309	M75-309	Dewatering Facility Detail Sheet 4
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286	M	403	M75-403	EQ Basin Pumps Detail Sheet 1
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288	M	405	M95-500	Yard Piping Connection Mechanical Plan View
289	M	406	M95-501	Yard Piping Connection Section Sheet 1
290	M	407	M95-502	Yard Piping Connection Detail Sheet 1
291	M	001	MD-01	Process Mechanical Standard Details Sheet 1
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297	H	002	H-002	Schedules, Air Flow, Sequence of Operations
298	H	003	H-003	Schedules, Heaters, Air Handling Units and Fans
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300	H	101	H43-101	PF GAC General Arrangement Sheet
301	H	102	H43-102	PF GAC Facility Intermediate Plan
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319	H	305	H75-305	Building Air Schematics
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321	H	001	HD-01	HVAC Standard Details Sheet 1
322	H	002	HD-02	HVAC Standard Details Sheet 2
323	H	003	HD-03	HVAC Standard Details Sheet 3
324	P	001	P-001	Plumbing Legend, Abbreviations, Notes
325	P	002	P-002	Plumbing Schedule
326	P	100	P43-100	PF GAC General Plumbing Arrangement Sheet
327	P	101	P43-101	PF GAC Facility Riser Diagram - Waste and Vent
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329	P	103	P43-103	PF GAC Facility Roof Drains
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332	P	200	P87-200	Chlorine Dioxide Facility Riser Diagram - Waste and Vent
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335	P	203	P87-203	Chlorine Dioxide Facility Sections Sheet 1
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338	P	300	P75-300	Dewatering Facility Riser Diagram - Waste and Vent
339	P	301	P75-301	Dewatering Facility Plan View - Waste and Vent
340	P	302	P75-302	Dewatering Facility Roof Drains
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344	P	306	P95-500	WQ Lab Connection Plan View
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346	P	001	PD-01	Plumbing Standard Details Sheet 1
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349	F	300	FD75-300	Dewatering Facility Fire Protection Plan
350	F	001	FD-01	Fire Protection Details
351	E	001	E-001	Legend and Symbols
352	E	002	E-002	Notes and Abbreviations
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357	E	007	E-007	Yard Electrical Area 4
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360	E	010	E-007	Power Distribution Single Line Diagram
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365	E	015	E-012	Electrical Schedules 5

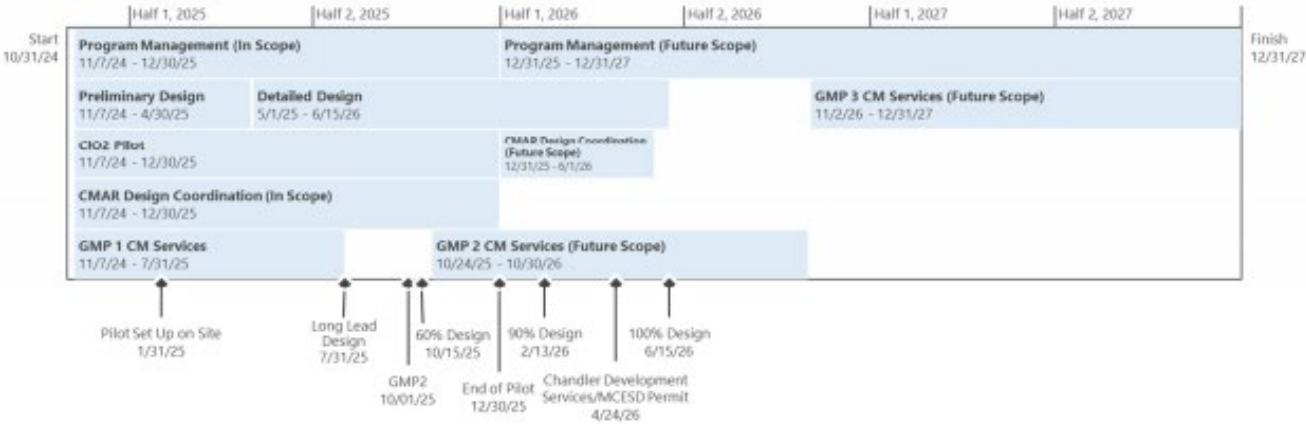
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367	E	101	E43-101	PF GAC Facility Bottom and Grounding Plan Sheet 1
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369	E	103	E43-103	PF GAC Facility Top Power Plan Sheet 1
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371	E	105	E43-105	PF GAC Facility Top Lighting Plan Sheet 1
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373	E	107	E43-107	PF GAC Facility Enlarged Power and Lighting Plan - Electrical Room
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375	E	109	E43-109	PF GAC Facility Intermediate Power and Lighting Plan - Pump Room
376	E	110	E43-110	PF GAC Facility Roof Power Plan
377	E	111	E43-111	PF GAC Facility Single Line Diagram
378	E	112	E43-112	PF GAC Facility Panel Schedules and Riser Diagram 1
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380	E	114	E43-114	PF GAC Facility Control One Line Diagram Sheet 1
381	E	115	E43-115	PF GAC Facility Elementary Control Schematics
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385	E	200	E87-200	Chlorine Dioxide Facility Electrical Arrangement Sheet
386	E	201	E87-201	Chlorine Dioxide Facility Grounding Plan
387	E	202	E87-202	Chlorine Dioxide Facility Top Power and Lighting Plan
388	E	203	E87-203	Chlorine Dioxide Facility Enlarged Power and Lighting Plan - Electrical Room
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390	E	205	E87-205	Chlorine Dioxide Facility Intermediate Power and Lighting Plan - Pump Room
391	E	206	E87-206	Chlorine Dioxide Facility Roof Power Plan
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393	E	208	E87-208	Chlorine Dioxide Facility Panel Schedules and Riser Diagram 1
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395	E	210	E87-210	Chlorine Dioxide Facility Control One Line Diagram Sheet 1
396	E	211	E87-211	Chlorine Dioxide Facility Elementary Control Schematics
397	E	212	E87-212	Chlorine Dioxide Facility Conduit and Wire Schedules Sheet 1
398	E	213	E87-213	Chlorine Dioxide Facility Conduit and Wire Schedules Sheet 2
399	E	300	E75-300	Dewatering Facility Electrical Arrangement Sheet
400	E	301	E75-301	Dewatering Facility Grounding Plan
401	E	302	E75-302	Dewatering Facility Top Power and Lighting Plan
402	E	303	E75-303	Dewatering Facility Enlarged Power and Lighting Plan - Electrical Room
403	E	304	E75-304	Dewatering Facility Enlarged Power and Lighting Plan - Pipe Gallery
404	E	305	E75-305	Dewatering Facility Intermediate Power and Lighting Plan - Pump Room
405	E	306	E75-306	Dewatering Facility Roof Power Plan
406	E	307	E75-307	Dewatering Facility Single Line Diagram
407	E	308	E75-308	Dewatering Facility Panel Schedules and Riser Diagram 1
408	E	309	E75-309	Dewatering Facility Panel Schedules and Riser Diagram 2
409	E	310	E75-310	Dewatering Facility Control One Line Diagram Sheet 1
410	E	311	E75-311	Dewatering Facility Elementary Control Schematics
411	E	312	E75-312	Dewatering Facility Conduit and Wire Schedules Sheet 1

Sheet No.	Discipline	No.	Dwg. No.	Sheet Name
412	E	313	E75-313	Dewatering Facility Conduit and Wire Schedules Sheet 2
413	E	400	E65-400	EQ Basin Pumps Grounding Plan
414	E	401	E65-401	EQ Basin Pumps Top Power Plan
415	E	402	E65-402	EQ Basin Pumps Electrical Service
416	E	403	E65-403	EQ Basin Pumps Single Line Diagram
417	E	404	E65-404	EQ Basin Pumps Control One Line Diagram Sheet 1
418	E	405	E65-405	EQ Basin Pumps Elementary Control Schematics
419	E	406	E65-406	EQ Basin Pumps Conduit and Wire Schedules Sheet 1
420	E	407	E65-500	Sampling Connection Electrical Service
421	E	408	E65-501	Sampling Connection Single Line Diagram
422	E	409	E65-502	Sampling Connection Control One Line Diagram Sheet 1
423	E	410	E65-503	Sampling Connection Elementary Control Schematics
424	E	411	E65-504	Sampling Connection Conduit and Wire Schedules Sheet 1
425	E	001	ED-001	Standard Details 1
426	E	002	ED-002	Standard Details 2
427	E	003	ED-003	Standard Details 3
428	E	004	ED-004	Standard Details 4
429	I	001	I-001	Legend and Symbols Sheet 1
430	I	002	I-002	Legend and Symbols Sheet 2
431	I	003	I-003	SCADA Architecture Overview
432	I	100	I43-100	P&ID PF GAC Facility Control Panel Detail and Layout
433	I	101	I43-101	P&ID PF GAC Facility Influent and Backwash Pump Station
434	I	102	I43-102	P&ID PF GAC Facility Treatment Sheet 1
435	I	103	I43-103	P&ID PF GAC Facility Treatment Sheet 2
436	I	104	I43-104	P&ID PF GAC Facility Treatment Sheet 3
437	I	105	I43-105	P&ID PF GAC Facility Treatment Sheet 4
438	I	106	I43-106	P&ID PF GAC Facility Treatment Sheet 5
439	I	107	I43-103	Individual GAC Contactors 1 and 2
440	I	108	I43-104	Individual GAC Contactors 3 and 4
441	I	109	I43-105	Individual GAC Contactors 5 and 6
442	I	110	I43-106	Individual GAC Contactors 7 and 8
443	I	111	I43-107	Individual GAC Contactors 9 and 10
444	I	200	I86-200	P&ID Chlorine Dioxide Tanks and Scrubber Sheet 1
445	I	201	I86-201	P&ID Chlorine Dioxide Tanks and Scrubber Sheet 2
446	I	202	I86-202	P&ID Chlorine Dioxide Pump Systems
447	I	203	I86-203	P&ID Chlorine Dioxide Fill, Drain, Wash and Control Sheet
448	I	204	I86-204	P&ID Chlorine Dioxide Generation Equipment (redrawn vendor sheet)
449	I	205	I86-205	P&ID Hydrochloric Acid Tank and Scrubber
450	I	206	I86-206	P&ID Hydrochloric Acid System
451	I	207	I86-207	P&ID Sodium Chlorite Tanks
452	I	208	I86-208	P&ID Sodium Chlorite System
453	I	209	I86-209	P&ID Facility MCP / Control Room Details
454	I	210	I75-300	P&ID Dewatering Facility Gravity Thickener Polymer Pump System 1
455	I	211	I75-301	P&ID Dewatering Facility Gravity Thickener Polymer Pump System 2
456	I	212	I75-302	P&ID Dewatering Facility Thickened Solids Pump System 1
457	I	213	I75-303	P&ID Dewatering Facility Thickened Solids Pump System 2
458	I	214	I75-304	P&ID Dewatering Facility Thickened Solids Pump System 3
459	I	215	I75-305	P&ID Dewatering Facility Thickened Solids Pump System 4
460	I	216	I75-306	P&ID Dewatering Facility Polymer Pump System 1

Sheet No.	Discipline	No.	Dwg. No.	Sheet Name
461	I	217	I75-307	P&ID Dewatering Facility Polymer Pump System 2
462	I	218	I75-308	P&ID Dewatering Facility Polymer Pump System 3
463	I	219	I75-309	P&ID Dewatering Facility Polymer Pump System 4
464	I	220	I75-310	P&ID Dewatering Facility Press Sheet 1
465	I	221	I75-311	P&ID Dewatering Facility Conveyors (Screw, Transfer and Distribution)
466	I	222	I75-312	P&ID Dewatering Facility Press Support Systems
467	I	223	I75-313	P&ID Dewatering Facility MCP / Control Room Details
468	I	224	I65-400	EQ Basin Pumps Sheet 1
469	I	225	I65-401	EQ Basin Pumps Sheet 2
470	I	226	I95-500	Details Sheet 1
471	I	227	I95-501	Details Sheet 2
472	I	226	ID-001	Sample Panel Details
473	I	227	ID-002	Sample Panel Details
474	I	228	ID-003	Example Wiring Diagrams
475	I	229	ID-004	Example Wiring Diagrams
476	I	230	ID-005	Standard Details 1
477	I	231	ID-006	Standard Details 2
478	I	232	ID-007	Standard Details 3
479	I	233	ID-008	Standard Details 4

Appendix D: Schedule

Schedule Summary with Key Milestones



Detailed Schedule

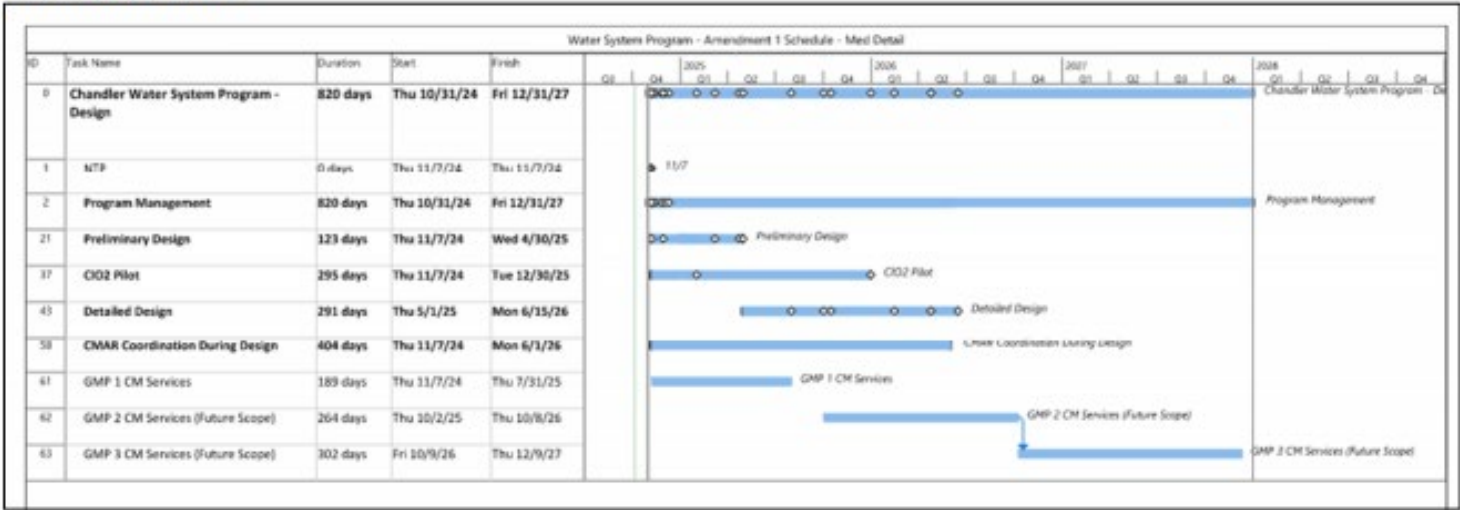


EXHIBIT B

FEE SCHEDULE

Lump Sum Cost Per Task		
<u>TASK DESCRIPTION</u>		<u>SUBTOTAL</u>
Task 1 Program Management (thru GMP2)		\$ 632,000.00
Project Management/Project Execution Plan/Meeting	\$ 632,000.00	
Task 2 Preliminary Design		\$ 3,759,550.00
2.1 Data Review & Site Visits	\$ -	
2.2 Geotechnical	\$ 20,000.00	
2.3 CIO2 Pilot	\$ 275,550.00	
2.4 30% Design	\$ 3,464,000.00	
Task 3 Detailed Design		\$ 6,734,615.00
3.1 Long Lead Package	\$ 1,073,585.00	
3.2 60% Design Submittal	\$ 2,993,660.00	
3.3 90% Design Submittal	\$ 2,276,990.00	
3.4 100% Design Submittal	\$ 390,380.00	
Task 4 Permitting (thru GMP2)		\$ -
4.1 MCESD Permit	\$ -	
4.2 Chandler Development Services Permit	\$ -	
Task 5 CMAR Coordination During Design (thru GMP2)		\$ 235,000.00
5.1 CMAR Management	\$ 25,000.00	
5.2 Cost Model Reviews	\$ 50,000.00	
5.3 GMP Reviews	\$ 10,000.00	
5.4 Schedule Reviews	\$ 25,000.00	
5.5 Coordination Meetings	\$ 36,000.00	
5.5.1 Design Reviews/MOPO	\$ 89,000.00	
Task 6 GMP 1 CM Services		\$ 176,180.00
6.1 Preconstruction Assistance	\$ -	
6.2 Construction Management	\$ 52,280.00	
6.3 Construction Inspection	\$ 96,700.00	
6.4 Testing and Start Up	\$ 10,080.00	
6.5 Record Drawings	\$ 17,120.00	
Task 7 Other Direct Costs (ODC)		\$ 30,000.00
Task 8 Allowances		\$ 31,000.00
TOTAL COST:		\$ 11,598,345.00

