REQUEST FOR PROPOSALS

PROGRESSIVE DESIGN-BUILD SERVICES ADVANCED WATER TREATMENT AND CAPACITY UPGRADES

Proposal Number 2024-WP-11

February 2024

CLAYTON COUNTY WATER AUTHORITY
1600 Battle Creek Road
Morrow, Georgia 30260

Site Visit Registration Deadline: Wednesday, February 21, 2024, at 12:00 p.m. (local time)
Mandatory Virtual Pre-Proposal Meeting: Tuesday, February 27, 2024, at 11:00 a.m. (local time)
Proposal Submittal Deadline and Proposal Opening: Friday, April 12, 2024, at 11:00 a.m. (local time)

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Contents

Attachments

Section 1. Background

1.1 Introduction

This Request for Proposals (RFP) for progressive design-build services for the design and construction of the Advanced Water Treatment and Capacity Upgrade ("Project") is issued by the Clayton County Water Authority ("Owner") to invite the submittal of Proposals according to the requirements set forth in this RFP.

To meet its future potable water needs, the Owner plans to add a new water production plant (New Hicks WPP) adjacent to the existing Terry R. Hicks (Existing Hicks) WPP that will initially replace the J.W. Smith (Smith) WPP and provide additional treatment capacity to meet current system demands. Additionally, to prepare for compliance with new federal regulations, the Owner plans to add advanced treatment processes capable of removing per- and poly-fluoroalkyl substances (PFAS) at the Hicks WPP site (to treat water from both New Hicks and Existing Hicks WPPs) and at the existing W.J. Hooper (Hooper) WPP to comply with regulations that are planned to be promulgated by USEPA in 2024.

Eventually, New Hicks WPP and advanced treatment processes constructed adjacent to Existing Hicks WPP will need to be expanded to replace the treatment capacity provided by the Existing Hicks WPP and ultimately be expanded to provide treatment capacity to meet projected increases in water demands through 2050 and beyond. The selected Design-Builder will be required to plan for these future expansions and include key infrastructure in the design and construction of the new WPP to allow future treatment capacity to be easily added.

The Project will meet the Owner's objectives of ensuring adequate treatment capacity and complying with drinking water regulations and water quality goals. Potential project components are listed below; however, CCWA is amenable to alternative phasing plans and other solutions to meet goals, as long as near-term demand is met, and long-term anticipated demand is accommodated for in design. Potential project components include: construction of a new WPP facility (finished water capacity) adjacent to the Existing Hicks WPP on the Owner's property; construction of advanced water treatment processes with 30 million gallons per day (mgd) finished water capacity adjacent to Existing Hicks WPP to remove PFAS from finished water from both New Hicks and Existing Hicks WPPs; construction of a 20-mgd advanced water treatment processes with 20-mgd finished water capacity at the Hooper WPP to remove PFAS from finished water; and modifications to the Smith Raw Water Pump Station (RWPS) and existing transmission mains, if necessary, to pump raw water from Smith Reservoir to the New Hicks and Existing Hicks WPPs.

Modifications will also be required at the New Hicks WPP, Existing Hicks WPP, and Hooper WPP for intermediate transfer pumping of water to the new PFAS treatment processes and to provide finished water pumping from the new PFAS treatment processes into CCWA's existing distribution system network. Depending on the PFAS technology selected by the Owner upon completion of the selected Design-Builder's alternatives evaluations, the Project will include new treatment facilities to remove PFAS from any waste streams generated by the selected technologies. These planned improvements are further described in the Project Planning Document (Exhibit A of the Agreement).

The Project will include the planning, evaluation, design, construction, commissioning, and startup necessary to place the Project in full operation according to contract requirements. The Project is to be designed and constructed using the progressive design-build delivery method, as follows:

- Phase 1A Services: Prepare an Initial Design Report to represent approximately 15 percent complete design, including performing all Existing Site and Facilities Conditions Review and Verification and Pilot Testing, as described in Exhibit C (Scope of Design-Builder Services) of the Agreement, and prepare a Phase 1B Proposal for consideration by Owner;
- Phase 1B Services: Prepare design to 60-percent complete, as described in Exhibit C of the Agreement, and prepare a Phase 2 Proposal including a Guaranteed Maximum Price (GMP), or lump sum price proposal if requested by the Owner, for consideration by the Owner; and
- Phase 2 Services: Complete design, construction, and post-construction tasks, including performance testing (as required), startup commissioning, and operator training and support.

The Proposals will be reviewed and evaluated using the selection process described in Section 6 (Proposal Evaluation and Selection). The capitalized terms in this RFP have the meanings as first used in the text of this RFP or as defined in Attachment A (Definition of Terms).

At completion of the evaluation process described herein, the Owner will select a Proposer to award the Progressive Design-Build Agreement (see Attachment B – Progressive Design-Build Agreement) ("Agreement"). The award of the Agreement will be made by the Owner's Board of Directors (Board) after considering the recommendation by the Owner's staff.

This RFP is subject to revision after the date of issuance via written addenda. Any such addendum will be posted on the Owner's website and will be distributed directly to potential Proposers who have registered with the Owner as described herein. It is each Proposer's responsibility to obtain all RFP addenda prior to submitting a Proposal.

In no event will the Owner be liable for any costs incurred by any Proposer or any other party in developing or submitting a Proposal, including but not limited to preparation, copying, postage, delivery fees, and expenses associated with any site tours, demonstrations, or presentations. Notwithstanding anything herein to the contrary, the Owner assumes no obligation by issuing this RFP or any Attachments.

1.2 RFP Organization

This RFP consists of seven Sections and five Attachments:

- Section 1: Background
- Section 2: Project Overview
- Section 3: Progressive Design-Build Services
- Section 4: Procurement Process
- Section 5: Proposal Submission Requirements
- Section 6: Proposal Evaluation and Selection
- Section 7: Conditions for Proposers
- Attachment A: Definition of Terms
- Attachment B: Progressive Design-Build Agreement
- Attachment C: Forms for Affirmation of Compliance
- Attachment D: Form of Bid Bond
- Attachment E: Fee and Rate Proposal Form
- Attachment F: WIFIA Compliance Notice
- Attachment G: Proposal Submission Package Label

The contents of the RFP Attachments take priority over any conflicting statements in the RFP Sections.

Certain project background documents are being made available as Exhibit A of the Agreement (Project Planning Documents). The Owner is providing these documents only for the purpose of obtaining Proposals for the Project and does not confer a license or grant for any other use. The extent to which the selected Design-Builder may rely on such background documents is set forth in the Agreement.

1.3 Owner's Objectives

The Owner's objectives for the Project are as follows:

1. Construct infrastructure to meet capacity goals outlined in Exhibit A – Project Planning Document Table 3-1, which could include:
    - A New Hicks WPP adjacent to Existing Hicks WPP with provisions for future expansions.
    - Modifications to the Smith RWPS or HSPS to efficiently pump raw water from the Smith Reservoir to Existing and New Hicks WPPs with consideration given to converting one of the Huie holding ponds to a raw water reservoir prior to introduction into these WPPs.
    - Any other solutions that meet capacity goals outlined in Exhibit A – Project Planning Document Table 3-1.
2. Construct infrastructure to meet water quality goals, which could include:
    - A new 30 mgd (finished water capacity) advanced water treatment facility to effectively remove PFAS compounds from the New Hicks WPP and Existing Hicks WPP.
    - A new 20 mgd (finished water capacity) advanced water treatment facility to effectively remove PFAS compounds from the Hooper WPP.
3. Select PFAS treatment technology and construct additional treatment facilities to effectively remove PFAS compounds from waste streams generated from new treatment processes.
4. For membrane alternatives, optimize the amount of finished water throughput (permeate) while meeting CCWA's finished water quality goals.
5. Evaluate and perform pilot testing of alternative treatment processes capable of removing regulated PFAS compounds to meet required maximum contaminant levels (MCL) and maximum contaminant level goals (MCLG) as proposed in USEPA's PFAS Regulation, March 14, 2023, or as finalized prior to the selected Design-Builder's Notice to Proceed. Select the most appropriate treatment technology for each WPP to meet CCWA's finished water quality goals.
6. Design new facilities to meet all drinking water regulations and achieve the Owner's other water quality goals at the points of entry into the distribution system and throughout the distribution system.
7. Meet the regulatory deadline established by USEPA for the completion of new treatment processes (and other systems to make these processes fully functional) to remove PFAS compounds.

8. Develop a design for the Project with a total final Project Budget of less than $450 million, which includes all CCWA's project costs in addition to the cost of the Design-Builder's scope.

9. Meet funding requirements of all grants and loans that will be used for the Project.

10. Provide high-quality new facilities and equipment that will be sustainable and will operate reliably under the design standards outlined in Exhibit B of the Agreement (Project Technical Requirements) and those standards developed during the design.

11. Minimize life cycle costs.

12. Achieve the scheduled completion to meet all milestones based on durations as established in the Agreement for the design and construction of the Project.

13. Achieve an optimal balance of risk allocation between the Owner and the Design-Builder.

14. Implement an effective safety program incorporating best industry practices. Maintain a safe working environment for Consultants, Contractors, CCWA staff, and visitors during design and construction.

15. Promote a fair share of subcontract, materials, equipment, and service awards to disadvantaged, minority, and women-owned businesses for equipment, supplies, construction, and services.

16. Exceed the stated goals for disadvantaged business entities (DBE), including minority and female business enterprise and the Owner's Small Local Business Enterprise (SLBE) participation. These requirements and goals are as stated in Exhibit D of the Agreement (Supplemental General Conditions for Federally Assisted State Revolving Fund Construction Contracts and for the Water Infrastructure Finance and Innovation Act (WIFIA).

17. Provide new facilities that are easy to operate and maintain.

18. Minimize impact on operations and maintenance of existing facilities during construction.

19. Reuse existing assets where feasible.

By selecting the progressive design-build delivery method for the Project, the Owner is committed to working in close collaboration with the selected Design-Builder during the preconstruction phases 1A and 1B to develop the Project's design to achieve the Project objectives and, thereafter, to obtain a mutually agreeable GMP or, if requested by Owner, a lump-sum price for delivery of the Project. As set forth in Exhibit A of the Agreement (Project Planning Document) and Exhibit B of the Agreement (Project Technical Requirements), certain technical requirements and standards will apply to the Project's design.

Section 2. Project Overview

2.1 Project Scope

The Project scope, design standards, and performance requirements are described in more detail in several Exhibits to the Agreement (Exhibit A – Project Planning Document, Exhibit B – Project Technical Requirements, and Exhibit C – Scope of Design-Builder Services).

2.2 Project Budget and Funding

The cost for design and construction of the Project is currently budgeted at approximately $450 million. Such budget includes Owner's other Project costs that are not part of Exhibit C – Scope of Design-Builder Services, including but not limited to professional advisory services, property or access rights, certain governmental approvals, taxes, etc. The Owner expects to use funds from the Drinking Water State Revolving Fund ("DWSRF Loan") and the Emerging Contaminants in Small or Disadvantaged Communities Grant ("EC Grant"), both administered by the Georgia Environmental Finance Authority ("GEFA"), from funds under the Water Infrastructure Finance and Innovation Act ("WIFIA"), and from other sources to provide funding for the Project.

At each phase of the Project, the selected Design-Builder will comply with all applicable state and federal requirements imposed by each funding source. The selected Design-Builder perform the Work to ensure that the maximum amount of the Owner's costs are eligible for reimbursement from or funded by the funding sources identified in this Section 2.2. The selected Design-Builder will develop and present a plan to the Owner to identify applicable requirements and demonstrate compliance with such requirements. Without limitation, the following requirements apply to the following funding sources:

2.2.1 Drinking Water State Revolving Fund & Emerging Contaminants Grant

At this time, the Owner expects to receive funding from the DWSRF Loan and EC Grant for design and engineering costs associated with the Project. Without limitation, the following requirements will apply to funds received from the DWSRF Loan and EC Grant:

- Georgia Department of Natural Resources, Environmental Protection Division's State Environmental Review Projects, dated January 2004, or as may be amended or replaced;
- GEFA Supplemental General Conditions for Federally Assisted State Revolving Loan Fund Construction Contracts, dated December 7, 2022, or as may be amended or replaced;
- GEFA's American Iron and Steel Special Conditions and Information, dated April 11, 2014, or as may be amended or replaced; and
- GEFA's Build America, Buy America Act Special Conditions and Information for Federally Assisted State Revolving Loan Fund Construction Contracts, as may be amended or replaced.

Disadvantaged Business Enterprise (DBE): GEFA-funded projects have a project goal of a minimum of 4 percent Women Business Enterprise (WBE) and 4 percent Minority Business Enterprise (MBE) participation, as applied to the total value of the construction component of Phase 2 Services of the agreed-upon GMP or lump sum price.

In addition to the foregoing, the selected Design-Builder must comply with all other requirements set forth in Exhibit D of the Agreement.

2.2.2 Water Infrastructure Finance and Innovation Act Funding

Design Builder must comply with the requirements for WIFIA funding, including those requirements set forth in RFP Attachment F and Exhibit D of the Agreement. WIFIA-funded projects have a project goal of a minimum of 6.9 percent for Women Business Enterprise (WBE) and 21.2 percent for Minority Business Enterprise (MBE) participation, as applied to the value of the construction component of the Phase 2 Contract Price.

2.3 Small Local Business Enterprise Participation

Owner is committed to the development and support of Small Local Business Enterprises (SLBEs), and to providing the maximum opportunity to compete for subcontracts and be utilized by the selected Design-Builder for this Project (see https://www.ccwa.us/smalllocal-business-program/ for more information). Owner has a project goal of a minimum of 1 percent SLBE participation, as applied to Phase 2 Contract Price.

Owner requires that the selected Design-Builder demonstrate a good faith effort in the Phase 2 Proposal by reporting the number of CCWA-Certified SLBE Firms contacted to achieve this goal. The Proposal shall include the Proposer's plan for meeting and exceeding the SLBE participation goals and shall include a summary of the Proposer's planning and actual goal achievement on past projects (see Section 5.3.4).

2.4 Project Schedule

As indicated in Section 4, it is anticipated that the Agreement will be awarded at the July 2024 CCWA Board of Directors meeting, with execution of the Agreement and a Notice to Proceed with Phase 1A Services to be issued shortly thereafter. Contract Times for completion of Phase 1B and Phase 2 will commence to run upon issuance of the Notice to Proceed with Phase 1B Services and Notice to Proceed with Phase 2 Services, respectively. To meet the timeline for compliance with the United States Environmental Protection Agency's anticipated National Primary Drinking Water Regulation regarding maximum contaminant limits for PFAS in drinking water, the Contract Times will be as follows:

- Completion of Phase 1A Services – 9 months after Notice to Proceed with Phase 1A Services
- Completion of Phase 1B Services – 12 months after Notice to Proceed with Phase 1B Services (number of days to be submitted as part of the Phase 1B Proposal)
- Substantial Completion of Phase 2 Services – 33 months after Notice to Proceed with Phase 2 Services (number of days to be submitted as part of the Phase 2 Proposal, but shall be prior to the regulatory deadline established by USEPA in the final PFAS Rule).
- Final Completion of Phase 2 Services – 36 months after Notice to Proceed with Phase 2 Services (number of days to be submitted as part of the Phase 2 Proposal, but shall be prior to the regulatory deadline established by USEPA in the final PFAS Rule).

Section 3. Progressive Design-Build Services

3.1 General

As noted in Section 1 and more fully described in Attachment B (Progressive Design-Build Agreement and its Exhibits), the selected Design-Builder will provide services in three distinct phases, as follows:

3.1.1 Phase 1A

Phase 1A Services generally consist of alternatives analysis and preliminary engineering, site investigations, as well as preparation, in close collaboration with the Owner, of a proposed price and schedule for Phase 1B Services. The proposed Phase 1B price and schedule would be based on the Project's design (developed to a 15-percent level of completion as defined in the Agreement) and the Owner's Project schedule, and it would include supporting documentation for the proposed Phase 1B Contract Price.

Phase 1A Services are set forth in the Agreement and, without limitation, include the following:

- Develop the execution plan, including schedule for the Project.
- Perform engineering studies and site investigations (such as surveys, subsurface investigations, any testing and analyses, etc.) to support design and cost estimating.
- Develop, perform, and evaluate pilot testing of alternative treatment processes capable of removing USEPA-regulated PFAS compounds to meet the USEPA's anticipated PFAS regulations.
- Produce initial design reports.
- Prepare a project cost model and provide detailed cost estimates as the design and design alternatives are advanced.
- Identify and perform activities required to meet funding requirements.
- Identify permitting requirements and initiate certain permitting activities.

3.1.2 Phase 1B

Phase 1B Services generally consist of the design development, as well as preparation, in close collaboration with the Owner, of a proposed price and schedule for Phase 2 Services. The estimated Phase 2 Contract Price and schedule would be based on the Project's design (developed to a 60-percent level of completion as defined in the Agreement), a proposed GMP or lump-sum price, and the Owner's Project schedule, and it would include supporting documentation, such as detailed open-book costing for the estimated Phase 2 Contract Price and proposed GMP or lump-sum price.

Phase 1B Services will be as established by the Phase 1B Contract Price Amendment, and may include the following:

- Completion of pilot studies begun under Phase 1A, as necessary.
- Update the Project schedule.

- Develop the engineering design (including preparing and submitting intermediate design review packages) and value-engineering activities in coordination with Owner.
- Maintain and update the project cost model and provide detailed cost estimates as the design and design alternatives are advanced.
- Submit and negotiate a GMP or, if directed by Owner, a lump-sum price to complete the construction services during Phase 2.
- Perform activities required to meet funding requirements.
- Update Project permitting requirements and perform certain permitting activities.

3.1.3 Phase 2

Phase 2 Services will be as established by the Phase 2 Contract Price Amendment, and will include, without limitation, the Project's final design, construction, and performance testing, along with the following:

- Complete the 100-percent design.
- Procure equipment and hire subcontractors.
- Secure necessary permits.
- Construct the Project.
- Conduct start-up testing and commissioning,
- Provide operator training.
- Provide warranty coverage.

3.2 Roles and Responsibilities

The roles and responsibilities of the Owner and the selected Design-Builder are more fully described in the Agreement. Such roles and responsibilities are summarized as follows:

Owner: The Owner will cooperate with the selected Design-Builder and will fulfill its responsibilities in a timely manner to facilitate the Design-Builder's timely and efficient performance of services. Owner responsibilities include:

- Review submissions and provide comments to Design-Builder.
- Furnish existing studies and available data and information regarding the Project, including record drawings, preliminary studies, environmental impact assessments, etc.
- Provide information and provide additional studies that may be necessary to complete the Project (or engage Design-Builder to perform such studies via an Amendment to the Agreement).
- Provide access to the Project Site and any necessary easements.
- Obtain certain governmental approvals and permits and assist Design-Builder in obtaining other governmental approvals and permits.
- Provide necessary data and input for Project start-up testing.

Design-Builder: The selected Design-Builder will cooperate and coordinate with the Owner and will provide, in a timely manner, Phase 1A Services, Phase 1B Services, and Phase 2 Services necessary to complete the Project scope specified in the Agreement. Design-Builder responsibilities include, but are not limited to:

- Develop a thorough understanding of the Owner's objectives and requirements.
- Prepare design and construction documents in conformity with the Owner's objectives and requirements.
- Supervise subcontractors and Design-Builder personnel.
- Obtain certain governmental approvals and permits and assist Owner in obtaining other governmental approvals and permits.
- Construct the Project in conformance with the Agreement.
- Maintain site security.
- Conduct performance testing.
- Implement quality-management procedures.
- Implement health and safety practices.

Section 4. Procurement Process

4.1 Acknowledgement of RFP

Each potential Proposer will provide the Owner, within three days of receipt of this RFP, an acknowledgement that it has received the RFP and is a potential Proposer. Such acknowledgement shall identify and provide full contact information (including email address) for the Proposer Contact, who shall be the Proposer's single point of contact for the receipt of any future documents, notices, and addenda associated with this RFP. Such acknowledgement must be electronically transmitted to the Owner Contact via the email address provided in Section 4.2. Acknowledgement of the RFP does not create an obligation by a potential Proposer to submit a proposal, but failure to acknowledge may result in the potential Proposer not receiving updated information and not being able to submit a proposal.

4.2 Communications and Owner Contact

All communications, questions, or comments shall be submitted by email and shall specifically reference this RFP. All communication should be directed to the Owner Contact at the following email address:

CCWA_Procurement@ccwa.us

Any oral communication from the Owner Contact or other individuals is non-binding. Except for the formal meetings and interactions described in this RFP, no in-person, telephone, email, messaging, or other contact by a Proposer with Owner's staff, Owner's Board members, or any of Owner's representatives or public officials concerning the Project during the procurement process is allowed. A violation of this provision may result in disqualification of Proposer.

Note that any questions submitted to Owner about this RFP will be answered so that all Proposers will receive the question and answer, without a reference to the name of the submitting Proposer. Proposers who submit questions must draft the questions so as not to unintentionally identify themselves.

4.3 Procurement Schedule

The current procurement schedule is as follows:

Release of the RFP	Wednesday, February 7, 2024
Mandatory Pre-Proposal Meeting	11:00 a.m., Tuesday, February 27, 2024
Deadline to Register for Site Visits	12:00 p.m., Wednesday, February 21, 2024
Project Site Visits as assigned by Owner	Monday, March 4 through Friday March 8, 2024
Deadline for Questions and Comments	11:00 a.m., Monday, March 11, 2024
Final Addendum Issued	11:00 a.m., Friday, March 29, 2024
Proposal Submission Deadline and Proposal Opening	11:00 a.m., Friday, April 12, 2024
Proposer Interviews as assigned by Owner	Monday, June 3, 2024 through Friday, June 7, 2024
Recommended Design-Builder Selection to Owner's Board of Directors for Consideration of Approval	Thursday, July 11, 2024
Notice to Proceed for Phase 1A Services	October 2024

All times in the Procurement Schedule are local times. The Owner reserves the right to adjust this schedule.

4.4 Pre-Proposal Meeting and Site Visit

The Owner will conduct a Pre-Proposal Meeting for Proposers interested in responding to this RFP. Attendance at this meeting is mandatory; Owner reserves the right to disqualify a non-participating Proposer. The meeting will be held via Microsoft Teams on **Tuesday, February 27, 2024, at 11:00 a.m., local time**. At this meeting, the Owner will offer information about the Project and the procurement process. The link for this virtual meeting invitation is contained in the legal advertisement for the RFP. The legal advertisement may be viewed on the Owner's website at:

https://www.ccwa.us/procurement

Prospective Proposers who wish to visit the Project site and meet with the Owner to discuss the Project shall register with the Owner via email at CCWA_Procurement@ccwa.us no later than **12:00 p.m., local time, on Wednesday , February 21, 2024**. Proposers will be limited to 12 Participants for their assigned site visit. A list of proposed attendees shall be submitted with the site visit request.

Following the registration deadline, Owner will assign each registered Proposer a date and one four-hour time slot for the visits, which will occur March 4, 2024 through March 8, 2024. Each Proposer will be notified via their email contact of their assigned day and time slot and will receive further instructions at that time. Site visits will begin at the Terry R. Hicks WPP site located at 1693 Freeman Road, Jonesboro, Georgia 30226 and will continue to the Hooper WPP at 70 Oakdale Drive Stockbridge, GA 30281, Smith WPP located at 82 Northbridge Road, Hampton, GA 30228, and Smith Reservoir RWPS at 12500 Panhandle Road, Hampton, Clayton County, GA 30228 (33°24'52.79"N, 84°22'21.48"W, located approximately 0.3 miles south of Lakeford Drive); with the Owner during the assigned time slot.

4.5 Proposer Interviews

The Owner will conduct an interview with each Proposer according to the Procurement Schedule shown above, as adjusted if necessary. Interview procedures and an interview schedule will be issued to Proposers at a later date.

Section 5. Proposal Submission Requirements

5.1 Submittal Place and Deadline

Proposals must be submitted to:

CCWA Procurement
CCWA Headquarters Office
1600 Battle Creek Road
Morrow, Georgia 30260

Proposals must be received by the Owner no later than **11:00 a.m., local time, Friday April 12, 2024**, unless a postponement is authorized and announced in writing by the Owner. Only the names of the proposing firms will be read aloud immediately after the submittal deadline via a virtual meeting link that is contained in the legal advertisement for this RFP. All other information will remain confidential until after award of the Agreement. (See Section 7.4 concerning proprietary information and confidentiality).

Ten (10) paper documents (one (1) original with original signatures and nine (9) identical copies) of the Proposal, as well as one electronic version on a USB flash drive in PDF format (one single electronic file with each section of the proposal bookmarked), must be provided with the Proposal. One paper copy of the completed Fee and Rate Proposal Form (form is attached to this RFP as Attachment E) and its attachments, clearly labeled as "Fee and Rate Proposal," must be included in the package in a separate, sealed envelope and should not be included on the USB flash drive with the PDF copy of the Proposal.

Proposal items must be submitted in a sealed package. Each sealed package containing the Proposal items must be plainly marked on the outside as:

Proposal for
Advanced Water Treatment and Capacity Upgrades
RFP No. 2024-WP-11

The package should bear on the outside the name and street address of the Proposer.

Each Proposer assumes full responsibility for timely delivery of its Proposal at the required location. Any Proposals received after the submittal deadline will be deemed non-responsive.

The Owner may reject any or all Proposals. Any Proposal may be withdrawn by the Proposer prior to the above-scheduled time for submission of Proposals or authorized postponement thereof. The Proposal must be signed by an individual authorized to bind the Proposer. The Proposal shall contain a statement that the Proposal will remain valid for a period of at least one hundred twenty (120) days from the proposal opening. A proposal may be withdrawn in accordance with the provisions of O.C.G.A. § 36-91-52. If the Owner is unable to award the Agreement within the time specified, the time may be extended by mutual agreement between the Owner and the Proposer.

In accordance with the provisions of O.C.G.A. § 36-91-21(c)(2), the Owner reserves the right, in its discretion, to offer all responsible Proposers, found by the Owner to have submitted proposals reasonably susceptible of being selected for award, an opportunity for discussion, negotiation, and revision, which shall occur after submission of Proposals but prior to any award.

5.2 Submission Format

The Proposal must not exceed forty-five (45) total, single-sided pages (most or all 8½ x 11 inches with 1-inch or greater margins), excluding the transmittal letter, index or table of contents, front and back covers, title pages/separation tabs, fee and rate proposal, and appendices. A maximum of ten (10) of the total pages may be single-sided 11 x 17-inch tri-fold format. Eleven-point font or larger must be used in Proposal Parts 1 – 6. Font smaller than eleven-point can be used on graphics, charts, tables, and photo/figure captions.

5.3 Submission Content

The content requirements set forth in this RFP represent the minimum content requirements for the Proposal. The Proposal should be tabbed in the format as shown below. The Proposal, however, should not contain standard marketing or other general materials. It is the Proposer's responsibility to modify such materials so that only directly relevant information is included in the Proposal.

The Proposal must include the following information in the order listed:

- Transmittal Letter
- Part 1 – Executive Summary
- Part 2 – Experience and Capabilities
- Part 3 – Project Approach
- Part 4 – Project Concepts
- Part 5 – Project Implementation and Project Schedule
- Part 6 – Fee and Rate Proposal
- Appendix A – Forms for Affirmation of Compliance
    - Statement of Non-Collusion
    - Georgia Security and Immigration Compliance Act of 2006 Form (for the Proposer and any subconsultants or subcontractors known at the time of Proposal submittal)
    - Certification of Absence of Conflict of Interest
    - Acknowledgement of Addenda
    - Certification by Proposed Prime Contractor or Subcontractor Regarding Equal Employment Opportunity (form applies to the Proposer and any subconsultants or subcontractors known at the time of Proposal submittal)
    - Certification by Proposed Prime Contractor or Subcontractor Regarding Debarment, Suspension, and Other Responsible Matters (form applies to the Proposer and any subcontractors known at the time of Proposal submittal)
- Appendix B – Resumes
- Appendix C – Supporting Documentation of the Proposal
    - Evidence of Proposer's and proposed Key Subcontractors' licensing
    - Surety letter regarding bonding capacity of Proposer
    - Insurance agent letter regarding insurance eligibility of Proposer
    - Discussion of any adverse circumstances
    - Critical path method (CPM) schedule
    - Any other supporting documentation required by this RFP
- Appendix D – Bid Bond

5.3.1 Transmittal Letter

Proposers must submit a transmittal letter (maximum three pages) on the Proposer's letterhead. It must be signed by a representative of the Proposer who is authorized to sign such material and to commit the Proposer to the obligations contained in the Proposal. The transmittal letter must include the name, address, phone number, and email address for the Proposer's point of contact and must specify who would be the Proposer's signatory to any contract documents executed with the Owner. The transmittal letter may include other information deemed relevant by the Proposer. The transmittal letter must briefly describe the organization of the Proposer's team including:

- The identification of the lead firm or firms and any other partners, subconsultants, or Key Subcontractors known at the time of submitting the Proposal.
- General information about the Proposer, such as lines of business and service offerings, locations of home and other offices, number of employees (professional and non-professional), years in business, and firm licensing.
- Identification of how the Proposer's legal structure is organized (i.e., corporation, limited liability company, general partnership, limited partnership, or other form of legal entity). If the Proposer is a joint venture, it must comply with Section 7.9 hereof. If the legal structure of the Proposer is not yet formed, identify how it is expected to be organized.
- Where the Proposer intends to maintain its offices for the Project and where the majority of the design work will be performed.

The transmittal letter must refer to Appendix A of the Proposal based on the forms in RFP Attachment C (Forms for Affirmation of Compliance) and any other forms required to be submitted with the Proposal.

5.3.2 Part 1 – Executive Summary

The executive summary must include a concise overview of the key elements of the Proposal. The executive summary shall not be used to convey additional information not found elsewhere in the Proposal.

5.3.3 Part 2 – Experience and Capabilities

5.3.3.1 Proposer Team Experience

Proposers shall provide the technical experience and qualifications of the Proposer, Key Subcontractors, any additional Project Team members with key experience related to the Project, and individual Project Team members related to the planning, design, construction, acceptance, commissioning, obtaining of regulatory permits and approvals, and training of Owner staff in the operation and maintenance of the Project. The Proposal must describe the performance history and experience of the Project Team on similar projects.

Similar project experience should be demonstrated for the following at a minimum: alternative project delivery (preferably progressive design build); large treatment plants (preferably water treatment), including both greenfield construction and modifications to existing plants; and evaluation and implementation of PFAS removal technologies, including nanofiltration and reverse osmosis membranes and adsorption technologies.

The performance history and the experience of the Project Team is important to demonstrate; however, the experience of the individual firms included on the Project Team will also be considered and scored based on relevance to the Project. The proposed individual Key Personnel will be evaluated for experience, expertise, and reputation in previous work and on work similar to the Project. This evaluation will be based on the corporate experience and capabilities of the Project Team as well as the experience and capabilities of Key Personnel. Provide details of the experience on which members of the Project Team worked together. Legal matters will be evaluated.

Reference Projects:

The Proposer shall submit descriptions of five (5) reference projects to demonstrate relevant experience. Reference projects shall not include any projects currently underway or completed with Clayton County Water Authority.

Each project description shall contain at least the following information:

- Description of the project showing relevance to this Project
- Name of owner
- Owner reference and contact information for a reference that is knowledgeable of the Proposer's work and is available to be contacted
- Delivery method (e.g., design-bid-build, progressive design-build, construction manager at risk, design-build, etc.)
- Lead contractor firm name
- Lead design engineering firm name
- Contract value (initial contract value plus any change orders that increased contract value and why)
- Year started and year completed (initial contract duration and final contract duration at completion)
- DBE participation plan and actual participation results
- Firms that participated in the project and are included in this Proposal, along with a clear description of the project role and responsibility of each
- Key personnel that participated in the project and are included in this Proposal, along with a clear description of the project role and responsibility of each

In addition to the project descriptions, provide a Reference Projects summary table that includes all the required information above.

Additional Projects:

Additional project experience may be provided in this section (in addition to the five required reference projects) if it clearly demonstrates the depth of relevant experience of the Project Team. Provide a table (or add to the Reference Projects summary table) that summarizes all relevant additional projects currently underway or completed by the lead firms in the past five years at a water or wastewater treatment facility in the United States that have a constructed value over $100 million. At a minimum, include in the table:

- Name and brief description of the project
- Delivery method (e.g., design-bid-build, progressive design-build, construction manager at risk, design-build, etc.)

- Lead contractor firm name
- Lead design engineering firm name
- Proposed Key Personnel on the Project Team that were involved in the project and his or her specific role on the Project
- Initial estimated construction cost (preliminary design estimate) and final construction cost (or current construction cost estimate if project is not yet complete)
- Initial (planned) and final schedule (or current scheduled completion date for on-going work)

Safety

Provide a summary description of the Proposer's corporate safety program and include safety statistics or records indicating categories of accidents and their incidence or frequency rates for the past five years. The following safety records must be provided for the Proposer for the current and past five years:

- The experience modification rate (EMR) calculated by the National Council on Compensation Insurance or similar rating bureau. (The EMR is also referred to as the experience modification rating, experience modification factor, experience modifier or X-mod.)
- The days-away-from-work injury incidence rate. A day-away-from-work injury is an injury that prevents an employee from returning to his or her next regularly scheduled shift. The incidence rate is calculated by multiplying the number of days-away-from-work injuries for the particular year by 200,000 and then dividing the product by the person-hours worked for that year.

Safety information is required to be submitted for each firm comprising any proposed joint venture team.

Demonstrated safety records on prior construction and the summary descriptions provided in the proposal response will be evaluated.

5.3.3.2 Project Team, Key Personnel, and Organization

Describe the composition, organization, and management of the proposed Project Team. As applicable, identify the owners of the Proposer (e.g., shareholders, members, partners, and the like) who hold a voting, capital, or equity interest of 10 percent or more. Describe the Proposer's approach to work seamlessly as one entity and highlight past project collaborations that the proposed Key Personnel have completed together. Describe the Proposer's approach to managing Key Personnel. Key information should be provided in separate subsections, as follows:

Project Team:

- Identify any other firms known at the time of Proposal submittal (such as subconsultants and Key Subcontractors) included on the Project Team along with the Proposer and describe the scope of the Proposer's and each firms' services and responsibilities throughout the Project. Describe the past working relationships of the firms on the Project Team in similar roles as proposed for this Project and their past working relationships with the Proposer.
- Clearly identify the firms that will perform the engineering design and the construction. For Phase 2 Services, include a list of any Key Subcontractors and their Project responsibilities known at this time.

- Provide evidence of required licensing for the Design-Builder and other firms on the Design-Builder's Project Team in Appendix C of the Proposal.

- Describe the Design-Builder's approach to the management of subcontractors and subconsultants.

Key Personnel:

- Identify all Key Personnel (and their firm affiliations) on the Project Team and describe their specific responsibilities throughout the Project. Clearly identify the collaborative delivery experience (number of projects, size and scope of projects, and role on those projects) of each person identified as Key Personnel.

- Indicate the commitment of all Key Personnel in terms of an estimated percentage of time throughout the Project.

- Provide resumes for all Key Personnel in Appendix B of the Proposal – Resumes. Limit resumes to two pages per individual and include:

    - Academic and professional qualifications
    - Professional registration
    - Total years of relevant experience and years with current firm
    - Experience as is relevant to the Project and to the individual's specified role on the Project

Organization Chart:

- Provide at least two organization charts showing:

    - Reporting relationships and responsibilities of the Proposer and any other firms
    - Reporting relationships and responsibilities of all Key Personnel (along with their firm affiliations)

The Proposer's proposed Key Personnel will be incorporated into the Agreement in Exhibit G – Key Design and Supervisory Personnel. Any change in the firms or Key Personnel included in the Proposal requires Owner approval as set forth in the Agreement.

5.3.3.3 Proposer Capability

The Proposal must provide a brief description of the following information pertaining to factors or events that have the potential to adversely impact the Proposer's capability to perform its contractual commitments. Detailed explanations, if needed, and supporting information may be provided in Appendix C of the Proposal as indicated below.

- **Material adverse changes in financial position.** Describe any material historical, existing, or anticipated changes in financial position, including mergers, acquisitions, takeovers, joint ventures, bankruptcies, divestitures, or any material changes in the mode of conducting business.

- **Legal proceedings and judgments.** List and briefly describe any pending or past (within five years) legal proceedings or judgments, or any contingent liability that could adversely affect the financial position or ability of the Proposer to perform contractual commitments to Owner. If no

such proceedings or judgments are listed, provide a sworn statement to that effect from the Proposer's General Counsel or equivalent position.

- **Completion of contracts.** Within the past five years, (i) has the Proposer failed to complete any contract, (ii) have any of the Proposer's contracts been terminated for convenience, or (iii) have any of the Proposer's contracts been terminated for cause or due to alleged poor performance or default by the Proposer? At any time, for a design-build project or a project based on a negotiated GMP, have you ever failed to reach agreement with an owner for the design phase, construction phase, or a GMP. If so, describe the circumstances of the off-ramping. Has the Proposer been assessed liquidated damages for late completion of any project within the past five years? If so, describe the circumstances.
- **Violation of laws.** Has the Proposer ever been convicted of any criminal conduct or been found in violation of any federal, state, or local statute, regulation, or court order, including but not limited to violations concerning antitrust, public contracting, employment discrimination, or prevailing wages? If so, describe the circumstances.
- **Payment and performance bonds.** In Appendix C of the Proposal, provide a letter from the Proposer's surety to provide evidence of the ability of the Proposer to provide payment and performance bonds of at least $450 million for this Project. The surety must be authorized by law to do business in the State of Georgia and must have an A.M. Best Company Rating of A- or better. The surety must also be listed in the U.S. Department of Treasury's Circular 570.
- **Insurance.** In Appendix C of the Proposal, provide a letter or Certificates of Insurance from the Proposer's insurance company stating Proposer's ability to acquire and provide the insurance coverage required by the Exhibit E of the Agreement (Insurance Requirements).

If any of the above questions is answered in a manner that indicates that any of these unfavorable factors or events are present, it is the Proposer's responsibility to: (1) describe in detail the unfavorable factor or event; and (2) provide sufficient information to demonstrate that the unfavorable factor or event will not adversely impact the Proposer's ability to perform any contractual commitments to Owner. Include these responses in Appendix C of the Proposal. The answers to these questions and any associated discussion shall be provided in the form of a written certification that is signed by an officer or duly authorized official of the Proposer (including evidence of authorization if not provided elsewhere in the Proposal).

The Proposer must notify the Owner of any changes occurring after submission of the Proposal and before the selection process is completed (and in the case of the selected Design-Builder, before execution of the Agreement).

5.3.4 Part 3 – Project Approach

Provide a conceptual description of the Proposer's approach for managing and performing its services during Phase 1A, Phase 1B, and Phase 2 that will satisfy the Owner's objectives for this Project. The following items should be addressed:

- Collaboration and Communication: Discuss how a collaborative relationship with the Owner would be established during the performance of Phase 1A Services and Phase 1B Services for alternatives evaluations, design development, scheduling, and cost estimating, and in Phase 2 Services. Describe the plan for coordination and communication with Owner staff and internally among Project Team members, as well as how the design team will interact with the

Owner and how those communications will enhance the success of the project. Include a brief explanation of the approach to external communication with those outside of the Owner (regulatory, permitting authorities, etc.). To demonstrate a clear understanding of critical decisions to be made during Phase 1A and 1B Services, provide a list of proposed key Technical Workshops to be held during each phase with Owner, including topics to be discussed in each meeting. Include each proposed workshop on the Project Schedule (Part 5 – Project Implementation and Project Schedule of this RFP).

- Leadership Approach: Describe how the Project Manager, Principal-in-Charge, and organizational structure outlined in Part 2 support efficient service delivery within the Design-Build Team, major subconsultants and Key Subcontractors.
- Any proposed Changes to Exhibit C of the Agreement (Scope of Design-Builder Services): Discuss any proposed changes to the Scope of Design-Builder Services, as outlined in Exhibit C of the Agreement, and how these proposed changes would enhance the execution of the Work.
- Design and Construction Interface: Discuss how design and construction processes will interface (including how value engineering and constructability issues will be addressed).
- Critical Work Components: Identify the work components critical to the Project's success and how these components would be achieved. Discuss Proposer's vision of key risk factors and how key risk factors will be identified and managed throughout Phase 1A, Phase 1B, and Phase 2 of the Project.
- Issue Resolution: Describe the methods for identifying and resolving issues. Include any description of organization, structure, or processes used for internal (Proposer and Owner) or external (regulatory, other) issue resolutions.
- Cost Development: Provide a description of cost model development during the development of design and leading up to formal cost estimate submittals, including the use of an open book cost estimation process, iterative design impacts to cost analysis, and establishment of the proposed Phase 1B Contract Price and estimated Phase 2 Contract Price (including the amount of cost contingency).
- Schedule Management: Discuss the proposed process for maintaining adherence to the GMP and schedule during construction of the Project.
- Start-Up Approach and Transition to Operation: Describe how the Proposer would transition through the completion of installation, functional testing, start-up and testing, training, and Owner acceptance for the various equipment systems at the various Project locations (e.g., Smith RWPS, Hooper WPP, Hicks WPP, New WPP). Include a discussion of how the Proposer proposes to incorporate start-up and testing planning and execution, as required in Exhibit C of the Agreement (Scope of Design-Builder Services), into the Proposer's overall start-up and operations transition plan.
- Quality Management: Describe the plans, actions, and procedures that will be incorporated into the Proposer's Quality Management Plan, and which will ensure quality, accuracy, and integrity of work throughout Phase 1A, Phase 1B, and Phase 2 of the Project.
- Tools: Describe the types of management, software, technology, or other tools that will be used and how these will provide cost, schedule, quality, or other efficiencies.

- Disadvantaged Business Enterprise and Small Local Business Enterprise Participation Plan: Proposers should identify the specific methods and processes that will be utilized to engage in the required good faith efforts to achieve, at a minimum, the goals for DBE and SLBE participation during the Project. Identify the specific trades the Proposer anticipates utilizing to achieve the goals. Identify the specific products, materials, or equipment and the potential DBE and SLBE suppliers, if known at this time. Identify the proposed efforts to comply with all requirements for DBE participation and engagement (see Section 2.2) and SLBE participation and engagement (see Section 2.3.)
- Include a description of the Proposer's past efforts to develop plans for DBE participation and actual history of goal achievement on past projects, as evidence of the Proposer's ability to plan and implement successful DBE participation program.

5.3.5 Part 4 – Project Concepts

Proposers shall discuss their understanding of the Project requirements as provided in the Owner's Goals and Objectives, Exhibit A (Project Planning Documents), and Exhibit C (Scope of Design-Builder Services). In Part 4 of the Proposal, Proposer should present preliminary concepts to address these requirements as well as the following:

- The Project Technical Requirements (Exhibit B), including alternative solutions.
- Evaluation, Piloting, and Selection of PFAS Removal Technologies: Describe the proposed approach to evaluate PFAS removal technologies, including pilot testing to select the most appropriate systems to meet the Owner's goals and objectives.
- Maintenance of plant operations (MOPO) at Hicks, Hooper, and Smith WPPs, including maintaining finished water flows to meet system water demands
- Operator access, safety, and operability
- Site development and layout, including provisions for future treatment capacity expansions
- Leveraging use of existing assets to reduce overall construction cost
- Sustainability in design, construction, and operations and maintenance.

5.3.6 Part 5 – Project Implementation and Project Schedule

Proposer shall discuss any implementation issues that it foresees not already covered in Parts 3 or 4 of the Proposal.

The Proposer shall provide and discuss a Project CPM schedule that presents the major activities necessary to implement the Project and includes the project durations identified in Section 2 of this RFP. The schedule should be based on the Proposer's design-build approach discussed in Part 3 and the Proposer's proposed comprehensive management plan. The schedule should commence with the Notice to Proceed with Phase 1A Services and extend to Final Completion of the Project. The schedule shall clearly distinguish between Phase 1A, Phase 1B, and Phase 2 activities.

The Proposer should indicate start and finish dates for proposed activities, key interim milestones, and other time-critical points in the schedule. The proposed schedule shall include all proposed major activities for completing the Project, including ordering and delivery of equipment requiring long lead

times (as best as can be determined at the time of Proposal submission), and shall identify the interrelationship between tasks, including the critical path. Major activities identified shall also include, but not be limited to, Phase 1A and 1B scope tasks (including piloting), construction, operation and maintenance, and training periods.

In addition, Proposers shall identify the expected durations for obtaining government approvals and the dates when receipt of governmental approvals is anticipated. Proposers shall identify specific Owner responsibilities, anticipated Owner actions, and suggested Owner review periods during Phases 1A and 1B. A minimum of 15 working days shall be included for Owner reviews of design submittals. The Project schedule shall clearly identify any float built into the schedule.

The Proposer's demonstrated understanding of the Project's time constraints and milestones and of the interaction and sequencing of construction tasks will be evaluated. The Proposal should address how resource levels will be addressed to meet the critical path. The Proposal should provide evidence of the Proposer's ability to secure all labor, materials, and equipment within the proposed schedule. Inclusion of tie-ins to and temporary shutdowns of existing facilities are important considerations.

Significant elements of the schedule and its implementation should be discussed in Part 5. The CPM schedule itself may be placed in Appendix C of the Proposal.

5.3.7 Part 6 – Fee and Rate Proposal

The Proposer must complete RFP Attachment E (Fee and Rate Proposal Form) with all required pricing information and include it in the Proposal package in a separate, sealed envelope. The envelope will be opened after all Proposals are reviewed and scored as described in Section 6 of this RFP. After opening, the completed Fee and Rate Proposal Form and attached information will be included as Proposal Part 7 – Fee and Rate Proposal.

Phase 1A Services

The scope of Phase 1A Services for which pricing is required is defined in Exhibit C of the Agreement (Scope of Design-Builder Services).

Proposers shall attach to the Fee and Rate Proposal Form:

- Labor Category and Rate Table
- Work Breakdown Structure (aligning with Exhibit C), and
- Estimated Hours by Labor Category and task and major subtasks.

The proposed Phase 1A Contract Price must include the Allowance Value for pilot testing, as stated in Attachment E (Fee and Rate Proposal).

Phase 1B Services

The scope of Phase 1B Services for which pricing is required is defined in Attachment A of Exhibit C of the Agreement (Scope of Design-Builder Services). Proposers shall submit a preliminary estimate for Phase 1B Services that includes:

- Lump Sum, Fixed Price (including all costs, overhead and profit) amount

- Labor Category and Rate Table, with annual escalation
- Work Breakdown Structure (aligning with Exhibit C)
- Estimated Hours by Labor Category and task and major subtasks
- Estimated Sheet Count by Discipline
- List of Assumptions
- List of Deliverables

The preliminary estimate for Phase 1B services shall be included in the sealed envelope with the Fee and Rate Proposal.

Phase 2 Services

Provide a description of General Conditions Costs, including the planned project team and time-commitment to the Project.

During Phase 2 of the Project, the Owner will provide certain insurance coverage, subject to limitations and conditions set forth in Exhibit E of the Agreement (including the OCIP Policies and OCIP Manual), through an Owner-Controlled Insurance Program. As provided in Section 2.2 of Exhibit E of the Agreement, Proposals must not include cost of insurance that will be provided through the OCIP.

Please be advised that the Owner is not interested in proposed fees or rates that provide excessive discounts from the Proposer's anticipated actual costs for the requested services. If Owner determines (in its sole discretion) that the fees and rates included in a Proposal are unacceptably below industry norms or that a Proposer's fees and rates are substantially or unacceptably below other Proposals, the Owner may (at its sole discretion) declare the Proposal to be non-responsive or the Proposer to be non-responsible, or may seek additional detailed information from that Proposer concerning the cost basis for its fee and rate proposal.

5.3.8 Appendices

5.3.8.1 Appendix A – Forms for Affirmation of Compliance

The Proposer must complete, execute, and include in Appendix A of the Proposal the following forms:

- Statement of Non-Collusion
- Georgia Security and Immigration Compliance Act of 2006 Form (for the Proposer and any subconsultants or subcontractors known at the time of Proposal submittal)
- Certification of Absence of Conflict of Interest
- Acknowledgement of Addenda. This acknowledgement must be appropriately completed. Failure to acknowledge any addenda may result in the Proposal being declared non-responsive.
- Certification by Proposed Prime Contractor or Subcontractor Regarding Equal Employment Opportunity (form is included in Exhibit D of the Agreement and applies to the Proposer and any Subcontractors known at the time of Proposal submittal)

- Certification by Proposed Prime Contractor or Subcontractor Regarding Debarment, Suspension, and Other Responsible Matters (form is included in Exhibit D of the Agreement and applies to the Proposer and any Subcontractors known at the time of Proposal submittal)

A failure by a Proposer to submit these items may result in the Proposal being declared non-responsive.

5.3.8.2 Appendix B – Resumes

This appendix shall include the resumes of Key Personnel as described in Part 2 of the Proposal. Each resume shall be limited to two (2) pages.

5.3.8.3 Appendix C – Supporting Documentation

This appendix shall include all supporting documentation as requested previously in this Section 5 of the RFP.

5.3.8.4 Appendix D – Bid Bond

Proposers shall include in Appendix D of the Proposal a properly completed and signed Bid Bond, using the form contained in Attachment D to this RFP, together with a valid and properly executed Power of Attorney from the surety. The Bid Bond shall be provided using the exact form included in Attachment D to this RFP. The Bid Bond shall be in an amount not less than 5 percent of the proposed Phase 1A Contract Price, as presented by the Proposer in Part 7 of the Proposal. The attorney-in-fact who executes the Bid Bond on behalf of the surety shall affix to the Bid Bond a current, certified, and valid power of attorney.

The surety must be satisfactory to the Owner and must be licensed to do business in the state of Georgia as approved by the State Insurance Commissioner's Office. A letter from the surety stating that it is licensed to conduct business in the state of Georgia must accompany the Bid Bond. No other form of bid security will be accepted. The Owner shall have the right to retain the Bid Bond of each Proposer until the earliest of the following events has occurred: (a) the Agreement has been executed and a satisfactory Payment Bond and Performance Bond have been furnished, or (b) one hundred twenty (120) days after Proposal opening, or (c) all Proposals have been rejected.

A failure by a Proposer to submit a Bid Bond shall result in the Proposal being declared non-responsive.

Section 6. Proposal Evaluation and Selection

6.1 General

The Owner's Evaluation Committee (Committee) will review and evaluate the Proposals according to the requirements and criteria outlined in this Section 6. During the Proposal evaluation process, written questions or requests for clarification may be submitted to one or more Proposers regarding its Proposal or related matters. Failure to respond in a timely manner to any such questions or requests may be grounds for elimination of the Proposer from further consideration. In addition, the Owner will require that all Proposers participate in interviews.

6.2 Responsiveness

Each Proposal will be reviewed to determine whether it is responsive to the RFP. Failure to comply with the requirements of this RFP may result in a Proposal being deemed as non-responsive. At its sole discretion, however, the Committee may waive any such failure to meet a requirement of this RFP and may request clarification or additional information to remedy a failure.

6.3 Comparative Evaluation Criteria

The Committee will evaluate and rank the responsive Proposals by applying the weighted comparative evaluation criteria set forth below:

Proposal Part	Criteria	Weight, %
1	Executive Summary	--
2	Experience and Capabilities	30
3	Project Approach	15
4	Project Concepts	30
5	Project Implementation and Project Schedule	15
6	Fee and Rate Proposal (to be provided in a sealed envelope)	10

In ranking the proposals, the Committee will use a 100-point scale whereby the maximum points awarded for each of the evaluation criteria will be based on the percentage weight set forth above. The Committee will complete the review and rank the Proposals before opening the sealed envelope containing the Fee and Rate Proposal.

6.4 Fee and Rate Proposal

The Proposer's lump-sum stipulated price for Phase 1A Services (Phase 1A Contract Price), Preliminary Proposal for Phase 1B Services, and Phase 2 rates for General Conditions Percent and the Design-Builder's Fee will be scored separately from the Committee's evaluation of other evaluation criteria.

The sealed Fee and Rate Proposal envelopes will be opened and scored only following completion of all other evaluation and scoring by the Committee. The cost evaluation will consider the following components:

- Phase 1A: Phase 1A Contract Price (lump-sum price)
- Phase 1B: Preliminary estimate for Phase 1B Services
- Phase 2: General Conditions Percent
- Phase 2: Design-Builder's Fee

The proposed Phase 1A Contract Price must include the Allowance Value for pilot testing, as stated in Attachment E (Fee and Rate Proposal).

6.5 Ranking

In ranking the proposals, the Committee will add the points from each criterion (price and non-price evaluation points) to calculate the Proposer's total points. Proposers will be ranked according to final points awarded.

6.6 Selection

After the evaluation process is complete, the Committee will make a recommendation to the Owner's Board for award of the Agreement to the top-ranked Proposer. Subject to approval by the Board, the approved Proposer will be given a written notice of award, and the process to execute the Agreement will begin. After execution of the Agreement, the Owner will issue the Notice to Proceed with Phase 1A Services.

Section 7. Conditions for Proposers

7.1 Owner Authority

Owner is a political subdivision of the state of Georgia and a public utility in the state of Georgia created by an act of the General Assembly of the state of Georgia (Ga. L. 1955, p. 3344), as amended. The Clayton County Water Authority is governed by a Board of Directors.

7.2 Ineligible Firms and Individuals

Hazen and Sawyer is serving in an advisory capacity to the Owner for this Project and is therefore not eligible to assist or participate with any Proposer that submits a Proposal for the Project.

7.3 Conflict of Interest

The following laws mandate the public disclosure of certain information concerning persons doing business or seeking to do business with the Owner, including affiliations and business and financial relationships such persons may have with Owner officers.

- O.C.G.A. § 36-80-28 imposes rules concerning conflicts and potential conflicts of interest for certain consultants and contractors to local governments. See the Certification of Absence of Conflict of Interest to be provided in Appendix A of the Proposal.
- Clayton County Code Section 70-63 and 70-67 impose restrictions on conflicts and potential conflicts of interest involving public officials and employees with private interests.
- Other laws, rules, and regulations prohibit conflicts and potential conflicts of interest, as well as the appearance of such conflicts.

7.4 Proprietary Information

Information submitted by the Proposer in the procurement process shall be subject to disclosure after award in accordance with the Georgia Open Records Act. Proprietary information must be identified and be accompanied by a signed affidavit outlining the redacted information. Entire Proposals may not be deemed proprietary. Proposers are encouraged to review the Georgia Open Records Act, O.C.G.A. §§ 50-18-70 through 50-18-77. Proposers are responsible for compliance with Georgia law concerning non-disclosure of any portion of their proposals.

7.5 Rights of the Owner

In connection with this procurement process, including the receipt and evaluation of Proposals and award of the Agreement, Owner reserves to itself (at its sole discretion and without assuming any liability therefor) all rights available to it under applicable law, including without limitation, with or without cause and with or without notice, the right to:

- Cancel, withdraw, postpone, or extend this RFP, in whole or in part, at any time prior to the execution of the Agreement.
- Modify the procurement schedule.

- Waive deficiencies, informalities, and irregularities in a Proposal and accept and review a non-conforming Proposal.
- Suspend and terminate the procurement process or terminate evaluations of Proposals received.
- Permit corrections to data submitted with any Proposal.
- Hold meetings and interviews, and conduct discussions and correspondence, with one or more of the Proposers to seek an improved understanding of any information contained in a Proposal.
- Seek or obtain, from any source, data that has the potential to improve the understanding and evaluation of the Proposals.
- Seek clarification from any Proposer to fully understand information provided in the Proposal and to help evaluate and rank the Proposers.
- Declare as non-responsive a Proposal containing exceptions, additions, qualifications, or conditions not called for in the RFP or otherwise not acceptable to the Owner.
- Conduct an independent investigation of any information, including prior experience, included in a Proposal by contacting project references, accessing public information, contacting independent parties, or any other means.
- Request additional information from a Proposer during the evaluation of its Proposal.

7.6 Obligation to Keep Project Team Intact

Proposers are advised that all firms and Key Personnel identified in the Proposal shall remain on the Project Team for the duration of the procurement process and, as set forth in the Agreement, for the duration of the Project. (The anticipated dates for award of the Agreement and for completion of the Project are set forth in Sections 2.4 and 4.3 of this RFP.) If extraordinary circumstances require a change, the Proposer must submit the proposed change in writing to the Owner, who, in its sole discretion, will determine whether to authorize a change, recognizing that certain circumstances (such as termination of employment) may occur that are beyond the Proposer's control. Unauthorized changes to the Project Team at any time during the procurement process may result in the Proposer being deemed non-responsive. These requirements, and designated Key Personnel, will be made part of the Agreement.

7.7 Addenda

If any revisions to the RFP or procurement process become necessary or desirable (at the Owner's sole discretion), the Owner may issue written addenda. The Owner will transmit addenda to those Proposers who have registered with the Owner per the provisions of Section 4.1 and will post all addenda on the Owner Project website at the following address: https://www.ccwa.us/procurement. **It is the Proposer's responsibility to obtain all addenda prior to submitting its Proposal.** Proposer shall acknowledge receipt of all addenda on the form provided in Attachment C and include it in Appendix A of the Proposal.

7.8 Payment and Performance Bonds

Proposers are advised that payment and performance bonds are required to be provided by the selected Design-Builder **upon execution of the Agreement as outlined in Article 11 of the Agreement.**

7.9 Joint Ventures

If the Proposer requests the Owner to consider the qualifications of, and other information concerning, the owners, partners, or members of any joint venture, then Proposer must provide the following in its Proposal: (i) identity of all owners, partners, or members with an interest in the joint venture, along with the percentage of interest; and (ii) for each such owner, partner, or member, provide all information responsive to the following: RFP Section 2, Appendix A, and Appendix B.

If the selected Design-Builder is a joint venture, then each owner, partner, or member of the joint venture must execute the Agreement. Additionally, the Agreement will be modified (i) to indicate each such owner, partner, or member is jointly and severally bound by the Agreement and liable for all obligations of the selected Design-Builder and (ii) to indicate that any single owner, partner, or member of the joint venture may bind the selected Design-Builder, and Owner may rely on representations from any one of them.

7.10 Protests

In the event that, after the acceptance of a Proposal by the Owner's Board of Directors, any unsuccessful Proposer wishes to contest such action, a written "Notice of Contest" must be filed with the Owner's Chief Executive Officer no later than close of business on the fifth business day after the selection of successful Proposer by the Board. Failure to timely file such notice shall forever preclude the filing of a contest of the award or any civil action in the courts of the State of Georgia or of the United States.

Attachment A
Definition of Terms

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Attachment A

Definition of Terms

The definitions of some of the capitalized terms used in this RFP are provided below. Unless defined below, most capitalized terms are defined in General Conditions to Contract, which is attached to the Agreement (Attachment B to the RFP).

Agreement – The draft form of Progressive Design-Build Agreement for Guaranteed Maximum Price Design and Construction Services between the Clayton County Water Authority and the Design-Builder, all of its exhibits and attachments, which is attached to the RFP as Attachment B. It is also referred to as **Draft Progressive Design-Build Agreement**.

Design-Builder – The entity that, if selected, will enter into the Agreement with the Owner.

Key Personnel – The individuals, employed by Design-Builder or other firms included on the Project Team, who would fill certain key roles in the delivery of the Project and related services by the Design-Builder, including at a minimum the following positions: project manager, safety manager, design manager, design discipline lead planners, engineers and architects, construction project manager, and lead construction field manager or superintendent.

Key Subcontractors – Firms that will provide electrical, HVAC, instrumentation and controls, SCADA integration, or perform or supply more than 5% of the estimated contract value.

Owner – Clayton County Water Authority

Owner's Advisor – Hazen and Sawyer

Project – Advanced Water Treatment and Capacity Upgrades

Project Team – The Design-Builder, Key Personnel, and any additional firms (such as subcontractors and subconsultants) included in the Proposal.

Proposer – The entity responding to this RFP by submitting the Proposal.

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Attachment B
Draft Progressive Design-Build Agreement

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Progressive Design-Build Agreement for Guaranteed Maximum Price Design and Construction Services between the Clayton County Water Authority and the Design-Builder

Advanced Water Treatment and Capacity Upgrades

CLAYTON COUNTY WATER AUTHORITY
1600 Battle Creek Road
Morrow, Georgia 30260

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Contents

Attachments and Exhibits

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Progressive Design-Build Agreement for Guaranteed Maximum Price Design and Construction Services between the Clayton County Water Authority and the Design-Builder

This **AGREEMENT** is made as of the _____ day of _____ in the year of 2024, by and between the following parties, for services in connection with the Project identified below:

OWNER:

Clayton County Water Authority
1600 Battle Creek Road
Morrow Georgia 30260

DESIGN-BUILDER:

PROJECT:

Advanced Water Treatment and Capacity Upgrades

In consideration of the mutual covenants and obligations contained herein, Owner and Design-Builder agree as set forth herein.

Article 1
General

1.1 Design-Builder will perform all Work required by the Contract Documents, including Work set forth in Exhibit C (Scope of Design-Builder Services). For such Work, Design-Builder will be paid the Contract Price as set forth in the Contract Documents.

1.2 Definitions. Except as otherwise expressly provided or unless the context otherwise requires, the terms, words and phrases used in this Agreement shall have the meanings given them in General Conditions of the Contract Between Owner and Design-Builder attached hereto ("General Conditions").

1.3 Design Services. Design-Builder shall, consistent with applicable state licensing laws, provide design services, including architectural, engineering, and other design professional services required by this

Agreement. Such design services shall be provided through qualified, licensed design professionals who are either (i) employed by Design-Builder, or (ii) procured by Design-Builder from independent firms authorized by law to provide such services. Nothing in this Agreement is intended to create any legal or contractual relationship between Owner and any independent design professional; however, nothing in this sentence shall relieve, eliminate, or diminish any legal duty owed by an independent design professional to Owner.

1.4 The Project will be funded by Georgia's Drinking Water State Revolving Fund ("SRF") Loan Program through the Georgia Environmental Finance Authority ("GEFA"); by the Emerging Contaminants in Small or Disadvantaged Communities Grant ("EC Grant"); and by a loan under the Water Infrastructure Finance and Innovation Act ("WIFIA"), administered by the U.S. Environmental Protection Agency ("USEPA"). Accordingly, Design-Builder will comply, and will assist Owner in complying, with all applicable Legal Requirements of the GEFA; all applicable requirements of the SRF Loan Agreement between GEFA and Owner, and the EC Grant agreement; and all applicable Legal Requirements of the WIFIA Program; and all applicable requirements of the WIFIA Loan Agreement. Moreover, Design-Builder will ensure all Work complies with Legal Requirements of GEFA, the Georgia Environmental Protection Division, and the USEPA. As part of the Phase 1A Services and Phase 1B Services, Design-Builder will assist Owner in identifying any additional sources of funding for the Project, and Design-Builder will perform its design services so that the maximum amount of costs are reimbursed or funded through state and federal sources, including the sources identified in this Section 1.4. If Owner selects alternative or additional funding sources, the requirements of such funding sources will constitute Legal Requirements. Design-Builder will comply with, and will ensure its Subcontractors, Sub-Subcontractors, and Design Consultants comply with, the obligations and requirements set forth in Exhibit D, which unless otherwise provided in the Contract Documents, is incorporated herein solely to establish such requirements and obligations. Where the documents in Exhibit D refer to "contractor" or "prime contractor," such terms shall be construed to mean Design-Builder. Where the documents in Exhibit D refer to "purchaser" or "borrower," such terms shall mean Owner.

Article 2
Design-Builder's Services and Responsibilities

2.1 General Services.

2.1.1 Owner has provided Design-Builder with Owner's Project Criteria in the Project Planning Document (Exhibit A of the Agreement), the Project Technical Requirements (Exhibit B of the Agreement), and the Scope of Design-Builder Services (Exhibit C of the Agreement) describing Owner's requirements and objectives for the Project.

2.1.2 If Owner's Project Criteria have not been developed prior to the execution of this Agreement, as part of Phase 1A Services, Design-Builder will assist Owner in developing Owner's Project Criteria. If Owner has developed Owner's Project Criteria prior to executing this Agreement, Design-Builder shall review and prepare a written evaluation of such criteria, including recommendations to Owner for different and innovative approaches to the design and construction of the Project. The parties shall meet to discuss Design-Builder's written

evaluation of Owner's Project Criteria and agree upon what revisions, if any, should be made to such criteria.

2.2 Phased Services.

2.2.1 Phase 1A Services. Design-Builder shall perform the services of preliminary design, design, pricing, pilot testing, and other services based on Owner's Project Criteria, as may be revised in accordance with Section 2.1 hereof, as set forth in the Contract Documents and Exhibit C (collectively, “Phase 1A Services”). Design-Builder shall perform Phase 1A Services to the level of completion required for Design-Builder and Owner to establish the Phase 1B Contract Price, as set forth in Section 2.3 and Exhibit C.

2.2.2 Phase 1B Services. Design-Builder shall perform the services of design, pricing, and other services for the Project based on Owner's Project Criteria (including completion of pilot testing commenced under Phase 1A, as required), as may be revised in accordance with Section 2.1, as set forth in the Contract Documents and Exhibit C (collectively, “Phase 1B Services”). Design-Builder shall perform Phase 1B Services to the level of completion required for Design-Builder and Owner to establish the Phase 2 Contract Price, as set forth in Section 2.4. Design-Builder will provide all pricing information from Subcontractors, Sub-Subcontractors, and Design Consultants as such information is received.

2.2.3 Phase 2 Services. Design-Builder shall perform all “Phase 2 Services,” which shall consist of the completion of design services for the Project; the procurement of all materials and equipment for the Project; the performance of construction services for the Project; the start-up, testing, and commissioning of the Project; the provision of warranty services; and the completion all other Work necessary to achieve Final Completion of the Project – all as set forth in the Contract Documents and Exhibit C, as such Contract Documents may be modified by the Phase 2 Contract Price Amendment.

2.3 Phase 1B Proposal. When the Phase 1A Services are sufficiently complete as determined by Owner, Design-Builder shall submit a proposal to Owner (the "Phase 1B Proposal") for the performance of Phase 1B Services.

2.3.1 The Phase 1B Proposal shall include the following unless the parties mutually agree otherwise in writing:

2.3.1.1 The proposed Phase 1B Contract Price, which shall be a proposed lump-sum price for the performance of Phase 1B Services;

2.3.1.2 The design, completed as per Exhibit C, prepared in conformity with the Contract Documents and Owner’s Project Criteria;

2.3.1.3 A list of the assumptions and clarifications made by Design-Builder in the preparation of the design and the Phase 1B Proposal;

2.3.1.4 The proposed Phase 1B Scheduled Completion Date upon which the Phase 1B Proposal (including the proposed Phase 1B Contract Price) is based, which schedule shall comply with Exhibit C;

2.3.1.5 If applicable, a statement of Additional Services which may be performed but which are not included in the Phase 1B Proposal, and which, if performed, would be the basis for an increase in the Contract Price or Contract Times as provided in the Contract Documents; and

2.3.1.6 The time limit, not less than forty-five (45) days after Owner's receipt of the Phase 1B Proposal, for review of the Phase 1B Proposal, and for execution of the Phase 1B Contract Price Amendment, not less than thirty (30) days thereafter.

2.3.2 Review and Adjustment to Phase 1B Proposal.

2.3.2.1 After submission of the Phase 1B Proposal, Design-Builder and Owner shall meet to discuss and review the Phase 1B Proposal. If Owner has any comments regarding the Phase 1B Proposal, or finds any inconsistencies or inaccuracies in the information presented, it shall promptly give written notice to Design-Builder of such comments or findings; however, Owner assumes no obligation to find any inconsistencies or inaccuracies. If appropriate, Design-Builder shall, upon receipt of Owner's notice, make appropriate adjustments to the Phase 1B Proposal.

2.3.2.2 Acceptance of Phase 1B Proposal. If Owner accepts the Phase 1B Proposal, as may be modified by Design-Builder, the Phase 1B Contract Price and its basis shall be set forth in an amendment to this Agreement and executed by the parties, and consented to by Design-Builder's surety or sureties ("Phase 1B Contract Price Amendment"). Once the parties and Design-Builder's surety or sureties have executed the Phase 1B Contract Price Amendment and Owner has issued a Notice to Proceed with Phase 1B Services, Design-Builder shall perform the Phase 1B Services, all as further described in the Contract Documents and the Phase 1B Contract Price Amendment, as they may be revised only as provided herein. Design-Builder shall obtain the consent of its surety or sureties to the proposed Phase 1B Contract Price Amendment agreed upon by the parties.

2.3.2.3 Failure to Accept the Phase 1B Proposal. If Owner rejects the Phase 1B Proposal, or fails to notify Design-Builder in writing on or before the date specified in the Phase 1B Proposal that it accepts the Phase 1B Proposal, the Phase 1B Proposal shall be deemed withdrawn and of no effect. In such event, Owner and Design-Builder shall meet and confer as to how the Project will proceed, with Owner having the following options:

- Owner may suggest modifications to the Phase 1B Proposal, whereupon, if such modifications are accepted in writing by Design-Builder, the Phase 1B Proposal shall be deemed modified, in which case, Owner may accept the modified Phase 1B Proposal in accordance with Section 2.3.2.2; or

- Owner may terminate this Agreement for convenience in accordance with Article 9 hereof.

If Owner declines to exercise any of the options under Section 2.3.2.3 within the time set forth herein, then if Design-Builder provides Owner with ten (10) days' written notice, this Agreement shall be deemed terminated for convenience as provided in Section 9.1 hereof.

2.4 Phase 2 Proposal. When the Phase 1B Services are sufficiently complete as determined by Owner, Design-Builder shall submit a proposal to Owner (the "Phase 2 Proposal") for the completion of all remaining Work, including all design and construction, for the Project for the Phase 2 Contract Price, with the Phase 1A Contract Price, Phase 1B Contract Price, and Phase 2 Contract Price collectively subject to a guaranteed maximum price ("GMP"), as described in Article 7 hereof.

2.4.1 The Phase 2 Proposal shall include the following unless the parties mutually agree otherwise in writing:

2.4.1.1 The estimated Phase 2 Contract Price, as defined in Section 7.1.3, which shall include the sum of:

- The estimated Cost of the Work as defined in Section 7.3 hereof, inclusive of any Design-Builder's Contingency used as provided in Section 7.4.2;
- The Design-Builder's Fee as defined in Section 7.2.1 hereof; and
- The General Conditions Amount, as defined in Section 7.2.2;

2.4.1.2 A proposed GMP, which if accepted by Owner in the Phase 2 Contract Price Amendment, will be the GMP as provided in Section 7.4;

2.4.1.3 The design, completed to 60 percent, prepared in conformity with the Contract Documents and Owner's Project Criteria;

2.4.1.4 The proposed Basis of Design Documents;

2.4.1.5 A list of the assumptions and clarifications made by Design-Builder in the preparation of the design and Phase 2 Proposal (including the estimated Phase 2 Contract Price), but only if such assumptions and clarifications are specifically identified as part of the Basis of Design Documents;

2.4.1.6 The Scheduled Substantial Completion Date upon which the Phase 2 Proposal is based, to the extent said date has not already been established under Section 6.2.1 hereof, and a schedule upon which the Scheduled Substantial Completion Date is based, which schedules shall comply with the Contract Documents and Exhibit C;

2.4.1.7 If applicable and if approved in writing and in advance by Owner, a list of Allowance Items and Allowance Values, and a statement of their bases;

2.4.1.8 If applicable, a schedule of alternate prices;

2.4.1.9 If applicable, a schedule of unit prices;

2.4.1.10 If applicable, a statement of Additional Services which may be performed but which are not included in the Phase 2 Proposal, and which, if performed, would be the basis

for an increase in the Contract Price or Contract Times as provided in the Contract Documents;

2.4.1.11 The time limit, not less than forty-five (45) days after Owner's receipt of the Phase 2 Proposal, for review of the Phase 2 Proposal, and for execution of the Phase 2 Contract Price Amendment, not less than thirty (30) days thereafter;

2.4.1.12 An Owner's permit list, a list detailing the permits and governmental approvals that Owner will bear responsibility to obtain, unless Exhibit C requires Design-Builder to obtain such permits; and

2.4.1.13 Only if specifically requested by Owner, in addition to the estimated Phase 2 Contract Price described in Section 2.4.1.1, a proposed Phase 2 Contract Price as a lump-sum price.

2.4.1.14 Details on the proposed performance standards and performance guaranties, as set forth in Exhibit C.

2.4.2 Review and Adjustment to Phase 2 Proposal.

2.4.2.1 After submission of the Phase 2 Proposal, Design-Builder and Owner shall meet to discuss and review the Phase 2 Proposal. If Owner has any comments regarding the Phase 2 Proposal, or finds any inconsistencies or inaccuracies in the information presented, it shall promptly give written notice to Design-Builder of such comments or findings; however, Owner assumes no obligation to find any inconsistencies or inaccuracies. If appropriate, Design-Builder shall, upon receipt of Owner's notice, make appropriate adjustments to the Phase 2 Proposal.

2.4.2.2 Acceptance of Phase 2 Proposal. If Owner accepts the Phase 2 Proposal, as may have been modified by Design-Builder, the Contract Price and the GMP and its basis shall be set forth in an amendment to this Agreement and executed by the parties, and consented to by Design-Builder's surety or sureties ("Phase 2 Contract Price Amendment"). Once the parties and Design-Builder's surety or sureties have executed the Phase 2 Contract Price Amendment and Owner has issued a Notice to Proceed with Phase 2 Services, Design-Builder shall perform the Phase 2 Services, all as further described in the Contract Documents and the Phase 2 Contract Price Amendment, as they may be revised only as provided herein. Design-Builder shall obtain the consent of its surety or sureties to the proposed Phase 2 Contract Price Amendment agreed upon by the parties.

2.4.2.3 Failure to Accept the Phase 2 Proposal. If Owner rejects the Phase 2 Proposal, or fails to notify Design-Builder in writing on or before the date specified in the Phase 2 Proposal that it accepts the Phase 2 Proposal, the Phase 2 Proposal shall be deemed withdrawn and of no effect. In such event, Owner and Design-Builder shall meet and confer as to how the Project will proceed, with Owner having the following options:

- Owner may suggest modifications to the Phase 2 Proposal, whereupon, if such modifications are accepted in writing by Design-Builder, the Phase

2 Proposal shall be deemed modified, in which case, Owner may accept the modified Phase 2 Proposal in accordance with Section 2.4.2.2 above;

- Owner may terminate this Agreement for convenience in accordance with Article 9 hereof.

If Owner declines to exercise any of the options under Section 2.4.2.3 within the time set forth herein, then if Design-Builder provides Owner with ten (10) days' written notice, then this Agreement shall be deemed terminated for convenience as provided in Section 9.1 hereof.

2.5 Early Works Proposals. Design-Builder may submit to Owner one or more proposals to perform portions of the Work, including procurement of any equipment or materials, earlier than execution of the Phase 2 Contract Price Amendment (each an "Early Works Proposal"). Any Early Works Proposal will contain the same information required of the Phase 2 Proposal, but solely with respect to the scope of Work specified in the Early Works Proposal. However, with respect to Design-Builder compensation therefor, Design-Builder may propose a lump-sum price for the designated scope of Work stated in the Early Works Proposal.

The procedure for review and rejection or approval of any Early Works Proposal will conform to the same procedures provided in Section 2.4 hereof. Owner's review, negotiation, and acceptance or rejection of any Early Works Proposal will be in its sole and complete discretion, and Owner may reject any Early Works Proposal for any reason or no reason.

If Owner accepts any Early Works Proposal, the parties will execute an amendment setting forth the scope of Work to be provided thereunder, the guaranteed maximum price or lump-sum price to be paid therefor (each an "Early Works Contract Price"), and any other terms upon which the parties may agree ("Early Works Amendment"). If the Early Works Amendment establishes a guaranteed maximum price, then Design-Builder will be reimbursed for Cost of the Work, as defined herein, solely for the Work specified therein; provided that in no event will such reimbursement exceed the guaranteed maximum price set forth therein. If the Early Works Amendment establishes a lump-sum price for the Work performed thereunder, it will further specify the basis, procedures, and timing for payment of such lump-sum price. The Early Works Contract Price is the full, complete, and sole compensation due Design-Builder for all Work performed under the respective Early Works Amendment.

With respect to all Work under an Early Works Amendment, Design-Builder shall comply with all requirements, including but not limited to all insurance requirements set forth in Exhibit E, applicable to such Work as if performed under the Phase 2 Contract Price Amendment, and Owner shall possess all rights as to such Work as if performed under the Phase 2 Contract Price Amendment.

If the parties execute the Phase 2 Contract Price Amendment, each Early Works Amendment shall be incorporated into, but shall not contradict or vary, the Phase 2 Contract Price Amendment, and Owner shall receive a credit toward the GMP for all payments made on all Early Works Amendments.

Article 3
Contract Documents

3.1 The Contract Documents consist of the following, along with the documents incorporated therein:

3.1.1 This Agreement;

3.1.2 The General Conditions of Contract;

3.1.3 The Phase 1B Contract Price Amendment referenced in Section 2.3.2.2 herein, and the Phase 2 Contract Price Amendment referenced in Section 2.4.2.2 herein;

3.1.4 All Change Orders to this Agreement executed and issued in accordance with the Contract Documents, and any written amendment that is executed by Design-Builder and authorized and executed by Owner in accordance with applicable law;

3.1.5 Construction Documents prepared and approved by Owner in a writing that specifically expresses Owner's approval for the identified Construction Document, in accordance with Section 2.4 of the General Conditions;

3.1.6 The following documents: All exhibits identified in Section 12.2.

3.2 No other documents constitute Contract Documents.

3.3 Design-Builder acknowledges and agrees that Owner is a political subdivision of the State of Georgia and is a public utility created by an act of the General Assembly of the State of Georgia (Ga. L. 1955, p. 3344), as amended. As such, Owner is entitled to the protection of sovereign immunity. Design-Builder specifically acknowledges the constitutional and contractual requirements that changes, modifications, and waivers of or to this Agreement and any Contract Documents must be in writing and specifically executed by Owner as set forth in the Contract Documents and as required by law. Accordingly, Design-Builder acknowledges the constitutional prohibition of claims against Owner based solely upon oral statements, course of conduct, customs of the trade, quasi-contract, unjust enrichment, quantum meruit, or O.C.G.A. § 13-4-4 (mutual departure from contract terms).

Article 4
Interpretation and Intent

4.1 Design-Builder, at the time of acceptance of each of the Phase 1B Proposal and Phase 2 Proposal by Owner in accordance with Sections 2.3.2.2 and 2.4.2.2, respectively, shall carefully review all the Contract Documents, including the various documents comprising the Basis of Design Documents for any conflicts or ambiguities. Prior to execution of the Phase 1B Contract Price Amendment and Phase 2 Contract Price Amendment, Design-Builder and Owner will discuss and attempt to resolve any conflicts or ambiguities identified by Design-Builder. Any review of the Contract Documents by Owner, including the reviews provided in this section, will not relieve, eliminate, or diminish Design-Builder's obligations under the Contract Documents, including but not limited to the development of Construct

ion Documents in accordance the terms of the Contract Documents and consistent with any professional duty owed by Design-Builder or any Design Consultant.

4.2 The Contract Documents are intended to require Design-Builder to complete the Work, the Project, and all obligations required by the Contract Documents within the Contract Times for the Contract Price. The Contract Documents are intended to be complementary and interpreted in harmony so as to avoid conflict, with words and phrases interpreted in a manner consistent with their common and plain meaning. In the event inconsistencies, conflicts, or ambiguities exist between or among the Contract Documents, Section 12.3 hereof sets forth the priority of the various Contract Documents. References to an article or section shall include paragraphs, subsections, and subparts of such article or section. The terms defined in the Contract Documents will have the meanings indicated that are applicable to both the singular and plural, and to the masculine and feminine, thereof.

4.3 The Contract Documents form the entire agreement between Owner and Design-Builder and are incorporated herein. The parties disclaim any reliance on oral representations or other agreements, and no oral representations or other agreements have been made.

Article 5
Ownership of Work Product

5.1 Work Product. All drawings, specifications, and other documents and electronic data, including such documents identified in the General Conditions, furnished by Design-Builder to Owner under this Agreement ("Work Product") are deemed to be instruments of service, and Design-Builder assigns and transfers to Owner all ownership and property interests therein, including but not limited to any intellectual property rights, copyrights, and patents, subject to the provisions set forth in Section 5.2.

5.2 If Owner terminates this Agreement for its convenience under Article 9, or if Design-Builder properly terminates this Agreement in accordance with Section 11.4 of the General Conditions, then Design-Builder shall not be liable for damages to Owner caused by Owner's use of Work Product to the extent such damages are a direct result of said Work Product being incomplete due to such termination.

Article 6
Contract Time

6.1 Date of Commencement. Phase 1A Services shall commence upon Design-Builder's receipt of Owner's Notice to Proceed with Phase 1A Services. Phase 1B Services shall commence upon Design-Builder's receipt of Owner's Notice to Proceed with Phase 1B Services. Phase 2 Services shall commence upon Design-Builder's receipt of Owner's Notice to Proceed with Phase 2 Services.

6.2 Substantial Completion, Interim Milestones, and Final Completion.

6.2.1 Unless modified by the Phase 2 Contract Price Amendment, Substantial Completion of the entire Work shall be achieved no later than one thousand (1,000) calendar days after the date

of Owner's Notice to Proceed with Phase 2 Services ("Scheduled Substantial Completion Date").

6.2.2 Interim Milestones Dates include:

- Phase 1A: Completion of Initial Design Report (IDR) provided in Exhibit C and all other Phase 1 Services: two hundred seventy (270) days after Owner's Notice to Proceed with Phase 1A Services ("Phase 1A Scheduled Completion Date");
- Phase 1B: Completion of all Phase 1B Services will be set by the Phase 1B Contract Price Amendment ("Phase 1B Scheduled Completion Date");
- Any other Milestone Dates will be set by the Phase 1B Contract Price Amendment or Phase 2 Contract Price Amendment.

6.2.3 Final Completion of the Work or identified portions of the Work shall be achieved within ninety (90) days after Substantial Completion ("Final Completion Deadline"). Final Completion is the date when all Work is complete pursuant to the definition of Final Completion set forth in Section 1.1.15 of the General Conditions.

6.2.4 All of the dates set forth in this Article 6 (collectively, "Contract Times") shall be subject to adjustment in strict accordance with Article 9 of the General Conditions.

6.3 Time is of the Essence. Owner and Design-Builder mutually agree that time is of the essence with respect to Design-Builder's completion of the Work and all other obligations by the deadlines for Substantial Completion, Final Completion, any other Contract Times, and any other deadline or milestone set forth in Section 6.2 hereof and elsewhere in the Contract Documents.

6.4 Liquidated Damages. Design-Builder understands that if Substantial Completion is not attained by the Scheduled Substantial Completion Date, Owner will suffer damages which are difficult to determine and accurately specify. Design-Builder agrees that if Substantial Completion is not achieved by the Scheduled Substantial Completion Date, Design-Builder shall pay Owner the sum of Ten Thousand Dollars ($10,000.00) as liquidated damages, and not as a penalty, for each calendar day that Substantial Completion extends beyond the Scheduled Substantial Completion Date. The parties agree that such amount is a reasonable pre-estimate of such damages.

6.5 Design-Builder understands that if Final Completion is not achieved by the Final Completion Deadline, Owner will suffer damages which are difficult to determine and accurately specify. Design-Builder agrees that if Final Completion is not achieved by the Final Completion Deadline, Design-Builder shall pay to Owner the sum of Two Thousand Dollars ($2,000.00) as liquidated damages, and not as a penalty, for each calendar day that Final Completion is delayed beyond the Final Completion Deadline. The parties agree that such amount is a reasonable pre-estimate of such damages.

6.6 Any liquidated damages assessed pursuant to this Agreement shall be in lieu of damages caused by any delay in achieving Substantial Completion or Final Completion, as applicable. Any liquidated damages assessed hereunder may be deducted and withheld from any payment otherwise due Design-Builder.

Article 7
Contract Price

7.1 Contract Price.

7.1.1 For Phase 1A Services, Owner shall pay Design-Builder, in accordance with Article 6 of the General Conditions, the lump sum of _____ Dollars ($_____) ("Phase 1A Contract Price"), subject to adjustments authorized in the Contract Documents. The Phase 1A Contract Price includes all sales, use, consumer, and other taxes mandated by applicable Legal Requirements.

7.1.2 For Phase 1B Services, Owner shall pay Design-Builder, in accordance with Article 6 of the General Conditions, the lump-sum price set forth in the Phase 1B Contract Price Amendment ("Phase 1B Contract Price"), subject to adjustments provided in the Contract Documents. The Phase 1B Contract Price includes all sales, use, consumer, and other taxes mandated by applicable Legal Requirements.

7.1.3 For Phase 2 Services, Owner shall pay Design-Builder, in accordance with Article 6 of the General Conditions, a contract price equal to the Design-Builder's Fee; plus the General Conditions Amount; plus the Cost of the Work – with the sum of the foregoing being referred to as the "Phase 2 Contract Price." The sum of the Phase 1A Contract Price, Phase 1B Contract Price, and Phase 2 Contract Price are, together, subject to the GMP established by the Phase 2 Contract Price Amendment, as provided in Section 7.4.

7.1.4 The Phase 1A Contract Price, Phase 1B Contract Price, and Phase 2 Contract Price – and until execution of the Phase 2 Contract Price Amendment, any Early Works Contract Prices – are referred to herein jointly as the "Contract Price." The Phase 1A Contract Price is the full, complete, and sole compensation due Design-Builder for all Phase 1A Services and all benefits provided to Owner thereby. The Phase 1B Contract Price is the full, complete, and sole compensation due Design-Builder for all Phase 1B Services and all benefits provided to Owner thereby. The Phase 2 Contract Price is the full, complete, and sole compensation due Design-Builder for all Phase 2 Services and all benefits provided to Owner thereby. The Contract Price shall not exceed the GMP. Any cost or expense that would otherwise cause the Contract Price to exceed the GMP will be paid and satisfied by Design-Builder without any reimbursement from Owner and will not qualify as Cost of the Work.

7.2 Design-Builder's Fee and General Conditions Amount.

7.2.1 Design-Builder's Fee shall be _____ percent (__%) of the Cost of the Work (including Direct Costs and Indirect Costs).

7.2.2 The General Conditions Amount shall be: _____ percent (___%) ("General Conditions Percent") of the Direct Costs of the Cost of the Work, excluding Indirect Costs. Notwithstanding anything to the contrary herein, Cost of the Work shall not include any General Conditions Costs (as defined in Section 7.3.2.5).

7.3 Cost of the Work.

7.3.1 The term "Cost of the Work" shall mean costs reasonably incurred by Design-Builder in the proper performance of the Work. The Cost of the Work shall include only the following:

7.3.1.1 Direct Costs, which include the following:

7.3.1.1.1 Wages of direct employees of Design-Builder performing the Work at the Site or, with Owner's written agreement (in its sole discretion), at locations off the Site, excluding any supervisory and administrative personnel identified in Section 2.9.2.4 of Exhibit C. However, the costs for those employees of Design-Builder performing design services (excluding Phase 1A Services and Phase 1B Services) shall, if set forth in the Phase 2 Contract Price Amendment, be calculated on the basis of agreed-upon rates for design professionals performing such services (but such rates shall not include any markup for overhead or profit).

7.3.1.1.2 Costs incurred by Design-Builder for employee benefits, premiums, taxes, contributions and assessments required by the Legal Requirements, collective bargaining agreements, or which are customarily paid by Design-Builder, to the extent such costs are based on wages and salaries paid to employees of Design-Builder covered under Section 7.3.1.1.1. In lieu of the foregoing, if provided by the Phase 2 Contract Price Amendment, a multiplier set forth therein to be applied to the wages and salaries of the employees of Design-Builder covered under Section 7.3.1.1.1.

7.3.1.1.3 Payments properly made by Design-Builder to Subcontractors and Design Consultants for performance of portions of the Work, including any insurance specifically procured for the Project by Subcontractors and Design Consultants, but only if such amounts are paid pursuant to written contracts binding on Design-Builder.

7.3.1.1.4 Costs of transportation, inspection, testing, and handling of materials, equipment, and supplies incorporated or reasonably used in completing the Work, but excluding any costs of storage facilities.

7.3.1.1.5 Costs less salvage value of materials, supplies, machinery, and equipment not customarily owned by the workers that are not fully consumed in the performance of the Work and which remain the property of Design-Builder, including the costs of transporting, inspecting, testing, handling, installing, maintaining, dismantling, and removing such items.

7.3.1.1.6 Costs of removal of debris and waste from the Site, but only if directly related to construction activities.

7.3.1.1.7 Rental charges and the costs of transportation, installation, minor repairs and replacements of machinery and equipment that are provided by Design-Builder at the Site, whether rented from Design-Builder or others, and incurred in the performance of the Work, but only to the extent such charges and costs are no more than the fair rental value or market value in the area of the Site.

7.3.1.1.8 All fuel and utility costs incurred in the performance of the Work, except any utility costs incurred for the Site office.

7.3.1.1.9 Sales, use, or similar taxes, tariffs, or duties incurred in the performance of the Work, but not including any taxes imposed or based on the taxable income of Design-Builder.

7.3.1.1.10 Costs for permits, tests, and inspections incurred by Design-Builder as a requirement of the Contract Documents.

7.3.1.1.11 Deposits which are lost, except to the extent caused by the negligence or breach hereof by Design-Builder or anyone for whose acts Design-Builder is responsible.

7.3.1.1.12 Costs incurred in preventing damage, injury, or loss in case of an emergency affecting the safety of persons and property on Site. Such costs include only those costs directly related to construction activities.

7.3.1.1.13 Only if approved in writing by Owner, in its sole discretion, other costs reasonably and properly incurred in the performance of the Work to the extent approved in writing by Owner.

7.3.1.2 Indirect Costs, which include the following:

7.3.1.2.1 Premiums for insurance and bonds required by this Agreement, but only to the extent such insurance or bonds relate to Phase 2 Services. Such costs may include bonds and insurance procured by Design-Builder insuring the performance of Subcontractors hired by Design-Builder (i.e., subcontractor bonds or subcontractor default insurance).

7.3.2 Non-Reimbursable Costs. The following shall be excluded from the Cost of the Work:

7.3.2.1 Compensation for Design-Builder's personnel stationed at Design-Builder's principal or branch offices, except as provided for in Section 7.3.1.1.1.

7.3.2.2 Overhead and general expenses, except as explicitly provided for in Section 7.3.1 hereof, or which may be recoverable for changes to the Work.

7.3.2.3 The cost of Design-Builder's capital used in the performance of the Work.

7.3.2.4 Costs that would cause the Contract Price, as adjusted in accordance with the Contract Documents, to exceed the GMP.

7.3.2.5 General Conditions Costs, which include all project overhead costs, including but not limited to the costs identified in Section 2.9.2.4 of Exhibit C. Notwithstanding any provision of Section 7.3.1, no cost identified in Section 2.9.2.4 of Exhibit C shall be considered Cost of the Work.

7.3.2.6 Payments made by Design-Builder to Subcontractors and Design Consultants for costs that, if incurred directly by Design-Builder, would not be Cost of the Work hereunder.

7.3.2.7 Any cost for which Design-Builder is reimbursed or for which Design-Builder receives proceeds from insurance, including any insurance required hereunder, or which Design-Builder would have received if it procured the insurance required hereunder.

7.3.2.8 Any cost that initially qualified as Cost of the Work but which, due to changes in circumstances or passage of time, no longer qualifies as Cost of the Work (in which case, such costs must be reimbursed to Owner).

7.3.2.9 Any payment made directly or indirectly to any Related Person, unless such payment is approved in writing by Owner (in its sole discretion) before Design-Builder provides Work associated with such cost. With the request for Owner's written consent, Design-Builder will provide quotes for the Work provided thereby from at least three entities that are not Related Parties. "Related Party" means a parent, subsidiary, affiliate, or other entity having common ownership or management with Design-Builder or its direct owners; any entity in which any owner in, or management employee of, Design-Builder owns any interest in excess of ten percent in the aggregate (other than entities traded on a public exchange); or any person or entity which has the right to control the business or affairs of the Design-Builder or its direct owners. The term "Related Party" includes any member of the immediate family of any person identified in this section. Any cost under this section will not constitute Cost of the Work to the extent it exceeds the market-based price of such Work.

7.3.2.10 Any cost associated with Work that is included in any unit price or lump sum as set forth in the Phase 2 Contract Price Amendment or any Change Order, in which case, such unit price or lump sum will be deemed to include all direct or indirect costs associated with such Work, including but not limited to all labor, materials, equipment, transportation, taxes, insurance, design fees, overhead, and Design-Builder's Fee associated with such Work.

7.3.2.11 Any cost associated with Phase 1A Services and Phase 1B Services.

7.3.2.12 Unless otherwise provided in Exhibit E (Insurance Requirements), any deductible or self-insured retention payment under any policy of insurance procured by Design-Builder.

7.3.2.13 Any cost that is not supported by proper cost documentation as required by Section 8.6.

7.3.2.14 Notwithstanding anything to the contrary herein, all costs incurred (i) that result from the negligence or breach of any provision or obligation of the Contract Documents by Design-Builder or its Subcontractors, Sub-Subcontractors, or Design Consultants, or anyone for whom Design-Builder is responsible hereunder (including but not limited to defective Work or deficient design and any cost incurred under Section 2.10 of the General Conditions to correct defective work) or (ii) that could have been avoided by the proper performance of all obligations of the Contract Documents by Design-Builder.

7.4 The Guaranteed Maximum Price.

7.4.1 Design-Builder guarantees that all amounts due from Owner under the Contract Documents will not exceed the GMP established by the Phase 2 Contract Price Amendment. Notwithstanding anything to the contrary in the Contract Documents, the GMP limits the aggregate amount payable for sums due hereunder for Work (including Phase 1A Services, Phase 1B Services, any Early Works Amendments, and Phase 2 Services), including but not limited to Phase 1A Contract Price, Phase 1B Contract Price, and Phase 2 Contract Price (including but not limited to Cost of the Work, General Conditions Amount, and Design-Builder's Fee). Any amount of Cost of the Work, or any other amount due from Owner

hereunder, in excess of the GMP shall be borne and paid by the Design-Builder without reimbursement by Owner. Any documents or information used as a basis for the GMP shall be identified in the Phase 2 Contract Price Amendment. Design-Builder does not guarantee any specific line item provided as part of the GMP, and Design-Builder has the sole discretion to apply payment due to overruns in one line item to savings due to underruns in any other line item. Design-Builder agrees, however, that it will be responsible for paying all costs of completing the Work which exceed the GMP, as may be adjusted only in accordance with the Contract Documents.

7.4.2 If established by the Phase 2 Contract Price Amendment, the GMP will include a Contingency, in the amount provided in the Phase 2 Contract Price Amendment, that is available for Design-Builder's use for unanticipated costs it has incurred that are not the basis for a Change Order under the Contract Documents. However, no amount will be available for use from the Contingency without written approval from Owner. Such costs may include but are not limited to: (a) trade buy-out differentials; (b) overtime or acceleration; (c) escalation of materials; or (d) Subcontractor defaults. However, no amount of the Contingency is available for costs resulting from defective work, deficient services, negligence, or breach of any provision of the Contract Documents by Design-Builder or anyone for whose acts Design-Builder is responsible. Design-Builder shall provide Owner written notice of all anticipated charges against the Contingency, and shall provide Owner, as part of the monthly status report required by Section 2.1.2 of the General Conditions, an accounting of the Contingency, including all reasonably foreseen uses or potential uses of the Contingency in the upcoming three (3) months. Design-Builder agrees that with respect to any expenditure from the Contingency relating to a Subcontractor default or an event for which insurance or bond may provide reimbursement, Design-Builder will in good faith exercise reasonable steps to obtain performance from the Subcontractor and recovery from any surety or insurance company. Design-Builder agrees that if Design-Builder is subsequently reimbursed for said costs, then said recovery will be credited back to the Contingency. Unless otherwise provided by the Phase 2 Contract Price Amendment, Design-Builder will not be entitled to any unexpended amount of the Contingency.

7.5 Allowance Items and Allowance Values.

7.5.1 Any Allowance Items, as well as their corresponding Allowance Values, will be set forth in the Phase 2 Contract Price Amendment.

7.5.2 Design-Builder has proposed, and Owner has accepted, the Allowance Items and Allowance Values based on design information available to determine that the Allowance Values constitute reasonable estimates for the Allowance Items. Design-Builder and Owner will continue working closely together during the preparation of the design to develop Construction Documents consistent with the Allowance Values. Design-Builder provides no guarantee that the Allowance Item in question can be performed for the Allowance Value.

7.5.3 No work shall be performed on any Allowance Item without Design-Builder first obtaining in writing advance authorization to proceed from Owner. Owner agrees that if Design-Builder is not provided written authorization to proceed by the date set forth in the Project schedule previously approved by Owner, due to no fault of Design-Builder, Design-Builder may be

entitled to an adjustment of the Contract Times and Contract Price as provided in the Contract Documents.

7.5.4 The Allowance Value includes the direct cost of labor, materials, equipment, transportation, taxes, and insurance associated with the applicable Allowance Item. All other costs, including design fees, Design-Builder's overall project management and General Conditions Costs, overhead and fee, are deemed to be included in the original Contract Price, and are not subject to adjustment notwithstanding the actual amount of the Allowance Item.

7.5.5 Whenever the Cost of the Work, plus associated General Conditions Amount and associated Design-Builder's Fee, for an Allowance Item is more than or less than the stated Allowance Value, the Contract Price shall be adjusted accordingly by Change Order, subject to Section 7.5.4. The amount of the Change Order shall reflect the difference between Cost of the Work incurred by Design-Builder, plus associated General Conditions Amount and associated Design-Builder's Fee, for the particular Allowance Item and the Allowance Value.

Article 8
Procedure for Payment

8.1 Payment for Phase 1A Services, Phase 1B Services, and Phase 2 Services. The parties will comply with the procedures set forth in this Article 8 for payment of the Contract Price.

8.2 Contract Price Progress Payments.

8.2.1 Unless Owner designates, in writing, another due date, Design-Builder shall submit to Owner on the 20th day of each month, beginning with the first month after the date of Owner's Notice to Proceed with Phase 1A Services, Design-Builder's Application for Payment in accordance with Article 6 of the General Conditions.

8.2.2 Owner shall make payment within thirty (30) days after Owner's receipt of each properly submitted and accurate Application for Payment in accordance with Article 6 of the General Conditions, but in each case less the total of payments previously made, and less amounts properly withheld under Section 6.3 of the General Conditions.

8.3 Retainage on Progress Payments.

8.3.1 Prior to Substantial Completion, Owner will retain from progress payments five percent (5%) of the approved value of each Application for Payment. At its discretion, Owner may release retainage for Subcontractors as each Subcontractor completes its scope of work. In addition, Owner may decline to withhold or may discontinue withholding retainage associated with design services. However, in all events, Owner may start or restart withholding retainage if the progress of the Work appears, in Owner's opinion, to be inadequate for timely completion.

8.3.2 Upon Substantial Completion, and upon a determination by Owner that the Work is reasonably satisfactory, Owner will pay the retainage to Design-Builder within thirty (30) days

after Design-Builder submits an Application for Payment in compliance with Section 8.2 hereof and Article 6 of the General Conditions. However, to the extent any items of Work remaining incomplete, an amount equal to 200 percent of the value of such incomplete Work, as determined by Owner, shall be withheld until such items are satisfactorily completed. The released retainage shall be shared by Design-Builder and Subcontractors as their interests may appear.

8.3.3 If under the applicable Legal Requirements, Owner is required to pay interest on the retainage to Design-Builder, it will pay such interest at the time of Final Payment under Section 8.4.

8.4 Final Payment. When Design-Builder has satisfied the requirements for Final Payment set forth in Section 6.7 of the General Conditions, Design-Builder shall submit its Final Application for Payment to Owner in accordance with Section 6.7 of the General Conditions. Owner shall make payment on Design-Builder's properly submitted and accurate Final Application for Payment (less any amount the parties may have agreed to set aside for warranty work) within thirty (30) days after Owner's receipt of the properly submitted and accurate Final Application for Payment in accordance with Article 6 of the General Conditions.

8.5 Interest. Payments due and unpaid by Owner to Design-Builder, whether progress payments or Final Payment, shall bear interest commencing five (5) days after payment is due at the rate of seven percent (7%) per annum until paid.

8.6 Recordkeeping and Finance Controls. Design-Builder acknowledges that this Agreement is to be administered on an "open book" arrangement relative to Cost of the Work. Design-Builder shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management, using accounting and control systems in accordance with generally accepted accounting principles and as may be provided in the Contract Documents. Design-Builder will obtain and maintain all documents and information necessary to substantiate all Cost of the Work. During the performance of the Work and for a period of three (3) years after Final Payment, Owner and Owner's accountants shall be afforded access to, and the right to audit from time to time, upon reasonable notice, Design-Builder's records, books, correspondence, receipts, subcontracts, purchase orders, vouchers, memoranda, and other data relating to the Work, all of which Design-Builder shall preserve for a period of three (3) years after Final Payment. Such inspection shall take place at Design-Builder's offices during normal business hours unless another location and time is agreed to by the parties. Any multipliers or markups agreed to by the Owner and Design-Builder as part of this Agreement are subject to audit only to confirm that such multiplier or markup has been charged in accordance with this Agreement, but the composition of such multiplier or markup is not subject to audit. Any lump sum agreed to by the Owner and Design-Builder as part of this Agreement is not subject to audit, except to ensure that no costs associated with work under any lump-sum price are not included as Costs of the Work. Design-Builder will, by written contract provisions, require its Subcontractors, Sub-Subcontractors, and Design Consultants to maintain documents to the same extent and in the same manner as Design-Builder under this section. If any Legal Requirement requires Design-Builder or its Subcontractors, Sub-Subcontractors, or Design Consultants to maintain documents and data referenced in this section for a longer time, such documents and data will be maintained and subject to audit for such extended time. Notwithstanding anything to the contrary herein, Design-Builder will comply with all provisions of O.C.G.A. §§ 50-18-70 through 50-18-77 (relating to public records).

Article 9
Termination for Convenience

9.1 Upon ten (10) days' written notice to Design-Builder, Owner may, for its convenience and without cause, elect to terminate this Agreement. In such event, Owner shall pay Design-Builder the amount required hereunder for the following:

9.1.1 All Work executed as of Design-Builder's receipt of such notice; and

9.1.2 The reasonable costs and expenses attributable to such termination, including demobilization costs and amounts due in settlement of terminated contracts with Subcontractors and Design Consultants. However, nothing in Section 9.1 authorizes the recovery of consequential damages, which are waived by Section 10.5 of the General Conditions.

Article 10
Representatives of the Parties

10.1 Owner's Representatives.

10.1.1 Owner designates the individual listed below as its Senior Representative ("Owner Senior Representative"), which individual has the authority and responsibility for avoiding and resolving disputes under Section 10.2 of the General Conditions: *Keisha Thorpe, Chief Operations Officer, 1600 Battle Creek Road, Morrow, GA 30260, 770.305.4867*

10.1.2 Owner designates the individual listed below as its Owner's Representative, which individual has the authority and responsibility set forth in Section 3.4 of the General Conditions: *Kelly Taylor, Engineering Director, 1600 Battle Creek Road, Morrow, GA 30260, 678.422.2824*

10.2 Design-Builder's Representatives.

10.2.1 Design-Builder designates the individual listed below as its Senior Representative ("Design-Builder's Senior Representative"), which individual has the authority and responsibility for avoiding and resolving disputes under Section 10.2 of the General Conditions:

_____

10.2.2 Design-Builder designates the individuals listed below as its Design-Builder's Representative, which individual has the authority and responsibility set forth in Section 2.1.1 of the General Conditions:

_____

10.2.3 The parties agree that as a material inducement for Owner's execution of this Agreement and, if applicable, the Phase 1B Contract Price and Phase 2 Contract Price Amendment, Design-Builder will dedicate the Key Design and Supervisory Personnel set forth in Exhibit G to the Agreement. Design-Builder will not change its Key Design and Supervisory Personnel, or

materially modify their responsibilities for the Project, without Owner's express written consent.

Article 11
Bonds and Insurance

11.1 Insurance. Design-Builder and Owner shall procure the insurance coverages set forth in Exhibit E (Insurance Requirements) and in accordance with Article 5 of the General Conditions. Design-Builder shall comply, and will ensure compliance by its Subcontractors, Sub-Subcontractors, Design Consultants, and any other person or entity providing the Work, with the Owner-Controlled Insurance Program requirements set forth in Exhibit E.

11.2 Bonds and Other Performance Security. Within 5 days after Design-Builder's execution hereof, Design-Builder shall provide the performance bond and payment bond. Upon execution of the Agreement, the initial penal sum of the bonds will be the Phase 1A Contract Price. Upon execution of the Phase 1B Contract Price Amendment, the penal sum of the bonds will be the sum of the Phase 1A Contract Price and the Phase 1B Contract Price. Upon execution of the Phase 2 Contract Price Amendment, the penal sum of the bonds will be the GMP. As provided in O.C.G.A. §§ 36-91-70 and 36-91-90, such penal sum will automatically increase without any action on the part of the surety or sureties, Design-Builder, or Owner. At any time after execution of this Agreement, Owner may request Design-Builder to obtain from its surety or sureties reasonable assurance that they consent to any increase in the Contract Price or GMP, and upon such request, Design-Builder will obtain such assurance.

The bonds will be substantially in the form of Exhibit H and will be issued by a surety or sureties authorized by law to do business in Georgia pursuant to a current certificate of authority to transact surety business by the Georgia Commissioner of Insurance. Such surety or sureties will be on the United States Department of Treasury's list of approved bond sureties. At a minimum, such bonds will satisfy the requirements of the Georgia Local Government Public Works Construction Law, O.C.G.A., Title 36, Chapter 91, Article 3.

11.3 Within 5 days after Design-Builder's execution hereof, Design-Builder will provide written affirmation, in a form satisfactory to Owner, from its surety or sureties that issued the bonds under Section 11.2 hereof that, (i) upon execution of the Phase 1B Contract Price Amendment, the penal sum of such bonds will be the sum of the Phase 1A Contract Price and the Phase 1B Contract Price, and (ii) upon execution of the Phase 2 Contract Price Amendment, the penal sum of such bonds will automatically increase to the GMP set forth therein.

Article 12
Other Provisions

12.1 Other provisions, if any, are as follows: None

12.2 Listing of Exhibits and documents incorporated herein:

- Exhibit A, Project Planning Document
- Exhibit B, Project Technical Requirements
- Exhibit C, Scope of Design-Builder Services
- Exhibit D, GEFA and WIFIA Documents
    - Georgia Department of Natural Resources, Environmental Protection Division's State Environmental Review Process, dated January 2004
    - GEFA Supplemental General Conditions for Federally Assisted State Revolving Loan Fund Construction Contracts, dated December 7, 2022
    - GEFA's American Iron and Steel Special Conditions and Information, dated April 11, 2014
    - GEFA's Build America, Buy America Act Special Conditions and Information for Federally Assisted State Revolving Loan Fund Construction Contracts
    - WIFIA Borrower Guide to Federal Requirements
    - WIFIA Program Handbook
    - WIFIA Contract Compliance Requirements
    - Emerging Contaminants Grant Compliance Requirements
- Exhibit E, Insurance Requirements
- Exhibit F, Form of Contract Price Amendments
- Exhibit G, Key Design & Supervisory Personnel
- Exhibit H, Form of Performance and Payment Bonds
- Exhibit I, Form of Waiver of Liens and Bond Claims
- Exhibit J, Form of Consent of Surety to Final Payment

12.3 Order of Precedence. In the event of any conflict, discrepancy, or inconsistency among any of the Contract Documents, the following hierarchy shall control:

- Amendments, addenda, or other modifications to the Contract Documents (including Change Orders, the Phase 1B Contract Price Amendment, the Phase 2 Contract Price Amendment, and each incorporated exhibit of the foregoing) duly signed and issued after the signing of this Agreement and effected in accordance with the terms hereof, with those of a later date having precedence over those of an earlier date;

- the terms and conditions of this Agreement;
- the General Conditions of the Contract;
- Exhibits C through J to this Agreement;
- the Construction Documents;
- Exhibits A and B to this Agreement;
- any other Contract Documents;

12.4 Other Interpretation Rules. As between drawings on the one hand, and the specifications on the other hand, the requirements of the specifications shall govern. As between figures given on drawings and the scaled measurements, the figures shall govern.

In executing this Agreement, Owner and Design-Builder each individually represents that it has the necessary approvals to execute this Agreement. Design-Builder executes this Agreement under seal.

OWNER:	**DESIGN-BUILDER:**
Clayton County Water Authority	**TBD**
(Signature)	*(Signature)* *(Seal)*
H. Bernard Franks	
(Printed Name)	*(Printed Name)*
Chief Executive Officer	
(Title)	*(Title)*
Date:	Date:
Attest	Attest

Attachments and Exhibits

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General Conditions of the Contract

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General Conditions of Contract Between Owner and Design-Builder

Advanced Water Treatment and Capacity Upgrades

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Contents

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Article 1
General

1.1 Basic Definitions

1.1.1 *Agreement* refers to that certain "Progressive Design-Build Agreement for Guaranteed Maximum Price Design and Construction Services between the Clayton County Water Authority and the Design-Builder," dated _____.

1.1.2 *Basis of Design Documents* are as follows: Before execution of the Phase 2 Contract Price Amendment, the Basis of Design Documents are those documents specifically identified as Owner's Project Criteria. On and after execution of the Phase 2 Contract Price Amendment, the Basis of Design Documents include only those documents explicitly identified in the Phase 2 Contract Price Amendment as Basis of Design Documents. On and after execution of the Phase 2 Contract Price Amendment, no document that is not explicitly referenced as a Basis of Design Document in the Phase 2 Contract Price Amendment will constitute one of the Basis of Design Documents.

1.1.3 *Contract Documents* shall mean those documents set forth in Article 3 of the Agreement.

1.1.4 *Contract Times* is defined in Section 6.2.4 of the Agreement.

1.1.5 *Contract Price* is defined in Section 7.1.4 of the Agreement.

1.1.6 *Construction Documents* are the drawings and specifications to be prepared or assembled by the Design-Builder consistent with the Basis of Design Documents unless a deviation from the Basis of Design Documents is specifically set forth in a Change Order executed by both the Owner and Design-Builder, as part of the design review process contemplated by Section 2.4 of these General Conditions of Contract. Notwithstanding the foregoing, no document is a Construction Document unless it is expressly adopted by a Change Order or the Phase 2 Contract Price Amendment.

1.1.7 *Cost of the Work* is defined in Section 7.3 of the Agreement.

1.1.8 *Day* or *Days* shall mean calendar days unless otherwise specifically noted in the Contract Documents.

1.1.9 *Design Consultant* is a qualified, licensed design professional who is not an employee of Design-Builder, but who is retained by Design-Builder or employed or retained by anyone under contract with Design-Builder, at any tier, to furnish design services required under the Contract Documents.

1.1.10 *Differing Site Conditions* is defined in Section 4.2.1 herein.

1.1.11 *Direct Costs* is defined in Section 7.3.1.1 of the Agreement.

1.1.12 *Early Works Amendment* is defined in Section 2.5 of the Agreement.

1.1.13 *Early Works Proposal* is defined in Section 2.5 of the Agreement.

1.1.14 *Early Works Contract Price* is defined in Section 2.5 of the Agreement.

1.1.15 *Final Completion* is the date on which all Work is complete in accordance with the Contract Documents, including but not limited to any items identified in the punch list prepared under Section 6.6.1 and the submission of all documents set forth in Section 6.7.2. Final Completion

occurs no earlier than the date Design-Builder has satisfied all requirements of Section 6.7 hereof and all requirements for Contract Closeout as set forth in Section 3.18 of Exhibit C.

1.1.16 *Final Completion Deadline* is defined in Section 6.2.3 of the Agreement.

1.1.17 *Force Majeure Events* are those events that are beyond the control of Design-Builder, including the events of war, floods, labor disputes, earthquakes, epidemics, adverse weather conditions not reasonably anticipated, and other acts of God.

1.1.18 *General Conditions of Contract* or *General Conditions* refers to this DBIA Document No. 535, Standard Form of General Conditions of Contract Between Owner and Design-Builder (2010 Edition), as modified.

1.1.19 *Guaranteed Maximum Price* or *GMP* is defined in Section 2.4 and Article 7 of the Agreement.

1.1.20 *Hazardous Conditions* are any materials, wastes, substances, and chemicals deemed to be hazardous under applicable Legal Requirements, or the handling, storage, remediation, or disposal of which are regulated or governed by applicable Legal Requirements.

1.1.21 *Indirect Costs* is defined in Section 7.3.1.2 of the Agreement.

1.1.22 *Interim Milestone Dates* is defined in Section 6.2.2 of the Agreement.

1.1.23 *Legal Requirements* are all applicable federal, state and local laws, codes, ordinances, rules, regulations, orders, and decrees of any governmental or quasi-governmental entity having jurisdiction over the Project or Project Site, the practices involved in the Project or Project Site, or any Work. Legal Requirements include, without limitation, those requirements set forth in Section 2.5 hereof.

1.1.24 *Owner's Project Criteria* are those criteria developed by or for Owner to describe Owner's program requirements and objectives for the Project, including use, space, price, time, site, and expandability requirements, as well as submittal requirements and other requirements governing Design-Builder's performance of the Work. Owner's Project Criteria may include conceptual documents, design criteria, design performance specifications, design specifications, and LEED® or other sustainable design criteria, and other Project-specific technical materials and requirements. Unless otherwise specified by Owner in writing, Owner's Project Criteria include Project Planning Document (Exhibit A of the Agreement), the Project Technical Requirements (Exhibit B of the Agreement), and the Scope of Design-Builder Services (Exhibit C of the Agreement).

1.1.25 *Phase 1A Scheduled Completion Date* is defined in Section 6.2.2 of the Agreement.

1.1.26 *Phase 1A Services* is defined in Section 2.2.1 of the Agreement.

1.1.27 *Phase 1B Proposal* means that proposal developed by Design-Builder in accordance with Section 2.3 of the Agreement.

1.1.28 *Phase 1B Scheduled Completion Date* is defined in Section 6.2.2 of the Agreement.

1.1.29 *Phase 1B Services* is defined in Section 2.2.2 of the Agreement.

1.1.30 *Phase 2 Services* is defined in Section 2.2.3 of the Agreement.

1.1.31 Phase 2 Proposal means that proposal developed by Design-Builder in accordance with Section 2.4 of the Agreement.

1.1.32 *Scheduled Substantial Completion Date* is defined in Section 6.2.1 of the Agreement.

1.1.33 *Site* or *Project Site* are the property or premises on which the Project is located.

1.1.34 *Sub-Subcontractor* is any person or entity retained by a Subcontractor, or who is in privity with a Subcontractor at any tier, as an independent contractor to perform any portion of the Work and shall include materialmen and suppliers.

1.1.35 *Subcontractor* is any person or entity retained by Design-Builder as an independent contractor to perform a portion of the Work and shall include materialmen and suppliers.

1.1.36 *Substantial Completion* or *Substantially Complete* means the date on which the Work is sufficiently complete in accordance with the Contract Documents so that Owner can occupy and use the Project for its intended purposes. Additionally, *Substantial Completion* will not occur until all conditions set forth in Section 6.6 hereof are satisfied.

1.1.37 *Work* is comprised of all Design-Builder's design, construction, and other services required by the Contract Documents, including procuring and furnishing all materials, equipment, services, and labor required by or reasonably inferable from the Contract Documents. *Work* includes, without limitation, Phase 1A Services, Phase 1B Services, and Phase 2 Services, as such terms are defined in Section 2.2 of the Agreement, and any work o**r** services performed under an Early Works Amendment.

Article 2
Design-Builder's Services and Responsibilities

2.1 General Services.

2.1.1 Design-Builder will perform all Work required by the Contract Documents, including Work set forth in Exhibit C (Scope of Design-Builder Services), which Work includes Phase 1A Services, Phase 1B Services, and Phase 2 Services. Design-Builder's Representative shall supervise the Work, will be reasonably available to Owner, shall have the necessary expertise and experience required to supervise the Work. Design-Builder's Representative shall communicate regularly with Owner and shall be vested with the authority to act on behalf of Design-Builder. Design-Builder's Representative may be replaced only with the mutual agreement of Owner and Design-Builder.

2.1.2 Design-Builder shall provide Owner with a monthly status report detailing the progress of the Work, including (i) whether the Work is proceeding according to schedule, (ii) whether discrepancies, conflicts, or ambiguities exist in the Contract Documents that require resolution, (iii) whether health and safety issues exist in connection with the Work; (iv) status of the contingency account to the extent provided for in the Agreement; and (v) other items that require resolution to avoid delay. The monthly status report will also comply with all requirements of Exhibit C, which may require additional periodic reports.

2.1.3 Design-Builder shall prepare and submit schedules for the execution of the Work for Owner's review, response, and approval. Such schedules will comply with all requirements of the Contract Documents, including Exhibit C, and will be provided to Owner within the time required thereby. The schedules shall indicate the dates for the start and completion of the various stages of Work, including the dates when Owner information and approvals are requested (but no earlier than the review times set forth in Exhibit C). The schedules shall be revised as required by conditions and progress of the Work, but such revisions shall not relieve Design-Builder of its obligations to complete the Work within the Contract Times. Owner's

review or approval of, and responses to, the schedules (i) shall not relieve or diminish Design-Builder's responsibility for complete and exclusive control over the means, methods, sequences, and techniques for executing the Work, (ii) shall not relieve or diminish Design-Builder's obligation to complete the Work within the Contract Times, (iii) will not result in modification or consent to modification of any Contract Times. Contract Times will be modified solely by Change Orders executed in accordance with Article 9 hereof. As used in the Contract Documents, the term "schedule" includes the Phase 1A Services Schedule, Phase 1B Services Schedule, and Phase 2 Services Schedule.

2.2 Design Services.

2.2.1 Design-Builder shall, consistent with applicable state licensing laws and other Legal Requirements, provide through qualified, licensed design professionals employed by Design-Builder, or procured from qualified, independent licensed Design Consultants, the necessary design services, including architectural, engineering, and other design services, for the preparation of the required drawings, specifications, and other design submittals required by the Contract Documents or necessary to permit Design-Builder to complete the Work consistent with the Contract Documents. Nothing in the Contract Documents is intended or deemed to create any legal or contractual relationship between Owner and any Design Consultant.

2.2.2 Design services will be performed in Phase 1A and Phase 1B and, to the extent provided in the Contract Documents, Phase 2. The requirements of this Article 2 related to design services apply to design services performed in Phase 1A, Phase 1B, and Phase 2.

2.3 Standard of Care for Design Services.

2.3.1 The standard of care for all design services of the Work shall be, at a minimum, the care and skill ordinarily used by members of the design profession practicing under similar conditions at the same time and locality of the Project. Nothing in Section 2.3 hereof will diminish any standard of care set forth in the Contract Documents.

2.4 Design Development Services.

2.4.1 Unless otherwise declined in writing by Owner, Design-Builder will provide interim design submissions for Owner's review, which interim design submissions may include design criteria, drawings, diagrams, and specifications setting forth the proposed Project requirements. Interim design submissions shall be consistent with Owner's Project Criteria. On or about the time of the scheduled submissions, and at the times set forth in Exhibit C, Design-Builder and Owner shall meet and confer about the submissions, with Design-Builder identifying during such meetings, among other things, the evolution of the design and any requested changes to the Basis of Design Documents, or, if applicable, previously submitted design submissions. Proposed changes to the Basis of Design Documents, including those that are deemed minor changes under Section 9.3.1, shall be processed in accordance with Article 9. Minutes of the meetings, including a full listing of all changes, will be maintained by Design-Builder and provided to Owner and all attendees for review. Following the design review meeting, Owner shall review and respond to the interim design submissions and meeting minutes in a time that is consistent with the turnaround times set forth in Exhibit C. If Owner states any objection or requires any revision to such interim design submissions or minutes, Design-Builder will revise them accordingly and resubmit them to Owner for a subsequent review. No changes to the Basis of Design Documents or prior design submissions are allowed without Owner's prior written approval. No proposed design submission will become a

Construction Document unless such design submission is adopted by Owner by the Phase 2 Contract Price Amendment or by Change Order.

2.4.2 Design-Builder shall submit proposed Construction Documents to Owner setting forth in detail drawings and specifications describing the proposed requirements for construction of the Work. The proposed Construction Documents shall be consistent with the latest set of interim design submissions, as such submissions may have been modified in a design review meeting and recorded in the meeting minutes. In addition to other meetings required by Exhibit C, the parties shall have a design review meeting to discuss, and Owner shall review and provide comments on, the proposed Construction Documents in accordance with the procedures set forth in Section 2.4.1 above. No proposed Construction Documents will become Construction Documents unless and until such documents are adopted by the Phase 2 Contract Price Amendment or by Change Order. Once so approved, no changes to the Construction Documents are allowed without a Change Order. Design-Builder shall perform all construction Work in accordance with the approved Construction Documents and shall submit one complete set of approved Construction Documents to Owner prior to commencement of construction Work.

2.4.3 Owner's review or approval of, or comments or responses to, interim design submissions (e.g., Initial Design Report, 30-Percent Design Completion Documents, and 60-Percent Design Completion Documents), meeting minutes, and the proposed and approved Construction Documents is for the purpose of establishing a conformed set of proposed Contract Documents that will be adopted by the Phase 1B Contract Price Amendment, Phase 2 Contract Price Amendment, or by Change Order. Notwithstanding anything to the contrary in the Contract Documents, Owner's involvement in the development of the design (e.g., design review meetings or design decisions) – as well as Owner's review or approval of, or comments or responses to, any interim design submissions, meeting minutes, or proposed or adopted Construction Documents – shall not be deemed to transfer any design responsibility or obligations from Design-Builder to Owner, and will not relieve Design-Builder of its obligation to provide a set of Construction Documents in accordance with the Contract Documents and all applicable Legal Requirements. Notwithstanding any decision of Owner or consensus between Owner and Design-Builder as to any design concept, Design-Builder will independently verify that the resulting interim design submissions and the proposed and approved Construction Documents conform to all requirements of the Contract Documents and, as a minimum, Design-Builder's standard of care set forth in Section 2.3 hereof. If Design-Builder determines any such decision or consensus would cause any interim design submission or proposed or approved Construction Document to deviate from any Contract Documents or Design-Builder's standard of care, Design-Builder will immediately notify Owner in writing.

Owner's review or approval of, or comment on, any cost report or cost information (e.g., Cost Estimate or Cost Model provided for in Exhibit C, or any information included in such cost reports) will not give rise to any increase in the Contract Price or GMP, or an adjustment in the Contract Times, if actual costs are greater than Design-Builder's estimate.

Notwithstanding anything to the contrary in any Contract Document, Design-Builder will not rely on, and hereby disclaims any reliance on, any approval, response, or comment (or lack of any comment) by Owner on any design submission, meeting minutes, proposed or approved Construction Document, schedule, cost estimate, cost model, or similar documents. Design-

Builder will exercise its own independent judgment in assessing any document submitted to or provided by Owner.

2.4.4 To the extent not prohibited by the Contract Documents or Legal Requirements, Design-Builder may prepare interim design submissions and proposed Construction Documents for a portion of the Work to permit construction to proceed on that portion of the Work prior to completion of the Construction Documents for the entire Work. However, no construction may proceed thereon before Owner issues a Notice to Proceed with Phase 2 Services unless and until (i) the parties execute a Change Order authorizing such Work to proceed (such as an Early Works Amendment) and (ii) Owner provides written notice to Design-Builder specifically authorizing such Work to proceed.

2.5 Legal Requirements.

2.5.1 Design-Builder shall perform the Work in accordance with all Legal Requirements and shall provide all notices applicable to the Work as required by the Legal Requirements.

2.5.2 The Contract Price and Contract Times shall be adjusted to compensate Design-Builder for the effects of any changes in the Legal Requirements enacted after the date of the Agreement affecting the performance of the Work, or if the parties execute a Phase 1B Contract Price Amendment or Phase 2 Contract Price Amendment, after the date of the Phase 1B Contract Price Amendment or Phase 2 Contract Price Amendment, respectively.

2.5.3 The Legal Requirements include, without limitation, all laws, rules, regulations, and requirements set forth in Section 1.4 of the Agreement, including but not limited to the requirements set forth in Exhibit D of the Agreement. Design-Builder will design and construct the Project, and provide all other Work, so that the maximum amount of costs are recovered or funded through federal or state grants or, if not available through grants, through federal or state loans.

2.5.3.1 In the event of any conflict of Legal Requirements, Design-Builder will notify Owner in writing and will advise Owner of the course of action that will result in the maximum amount recoverable through state or federal grants and loans.

2.5.3.2 As used in the Contract Documents, “Legal Requirements” will include any requirements of the Georgia Environmental Finance Authority or U.S. Environmental Protection Agency to enable Owner to qualify for and obtain funding through the funding sources set forth in Section 1.4 of the Agreement, whether such requirements are set forth in statutes, regulations, rules, policies, or guidance documents (including but not limited to the Georgia’s Drinking Water State Revolving Loan State Environmental Review Process) established by the Georgia Environmental Finance Authority, Georgia Environmental Protection Division, or the U.S. Environmental Protection Agency.

2.5.3.3 As used in the Georgia Environmental Finance Authority’s Supplemental General Conditions and American Iron and Steel Special Conditions, the term “Prime Contractor” will refer to Design-Builder.

2.6 Government Approvals and Permits.

2.6.1 Except as identified in an Owner’s Permit List attached as an exhibit to the Phase 2 Contract Price Amendment, Design-Builder shall obtain and pay for all necessary permits, approvals, licenses, government charges, and inspection fees required for the prosecution of the Work by any governmental or quasi-governmental entity having jurisdiction over the Project.

2.6.2 Design-Builder shall provide reasonable assistance to Owner in obtaining permits on the Owner's Permit List as well as all approvals and licenses that are Owner's responsibility.

2.7 Design-Builder's Phase 2 Services.

2.7.1 Unless otherwise provided in the Contract Documents to be the responsibility of Owner or a separate contractor, Design-Builder shall provide the supervision, labor, inspection, testing, start-up, material, equipment, machinery, temporary utilities, and other temporary facilities necessary to permit Design-Builder to complete construction of the Project consistent with the Contract Documents.

2.7.2 Design-Builder shall perform all construction activities efficiently and with the requisite expertise, skill, and competence to satisfy the requirements of the Contract Documents. Design-Builder shall at all times exercise complete and exclusive control over the means, methods, sequences, and techniques of the Work.

2.7.3 Design-Builder shall employ only Subcontractors who are duly licensed and qualified to perform the Work consistent with the Contract Documents. Owner may reasonably object to Design-Builder's selection of any Subcontractor. In such case, the Contract Price or Contract Times shall be adjusted to the extent that Owner's decision impacts the Cost of the Work or time of performance, subject to the requirements and conditions of Article 10 and the notice provisions of Section 10.1 hereof. To the extent Owner identifies preapproved Subcontractors for a particular scope of Work in the Phase 2 Contract Price Amendment, Design-Builder may not substitute another Subcontractor to provide such Work without Owner's written consent. For each scope of work performed by a Subcontractor, unless Owner provides written consent otherwise, Design-Builder will provide at least three quotes or bids.

2.7.4 Design-Builder assumes responsibility to Owner for the proper performance of the Work of Subcontractors, Sub-Subcontractors, and Design Consultants and any acts and omissions in connection with such performance. Nothing in the Contract Documents is intended or deemed to create any legal or contractual relationship (or any rights of a third-party beneficiary) between Owner and any Subcontractor, Sub-Subcontractor, or Design Consultant. Owner's selection or procurement of, or involvement with, the Owner-Controlled Insurance Program ("OCIP") creates no rights between Owner, on the one hand, and Design-Builder and any third parties, on the other. Design-Builder and its Subcontractors, Sub-Subcontractors, or Design Consultants, along with each of their employees and agents, shall have no claim against the Owner for any policy or related document, provision, decision, action or inaction, or coverage or lack of coverage arising out of or related to the OCIP.

2.7.5 Design-Builder shall coordinate the activities of all Subcontractors, Sub-Subcontractors, and Design Consultants. Subject to the requirements of Section 2.7.7 hereof, if Owner performs other work on the Project or at the Project Site with separate contractors under Owner's control, Design-Builder agrees to reasonably cooperate and coordinate its activities with such separate contractors so that the Project and the work of the separate contractors can be completed in an orderly and coordinated manner without unreasonable disruption or delay.

2.7.6 Design-Builder shall keep the Project Site reasonably free from debris, trash and construction wastes to permit Design-Builder to perform its construction services efficiently, safely and without interfering with the use of adjacent areas or facilities. Upon Substantial Completion of the Work, or a portion of the Work, Design-Builder shall remove all debris, trash, construction wastes, materials, equipment, machinery, and tools arising from the Work or applicable portions thereof to permit Owner to occupy the Project or a portion of the Project

for its intended use. Such partial occupancy or use shall not constitute, or be asserted as evidence of, Substantial Completion or Final Completion.

2.7.7 Design-Builder is aware that the Project Site is adjacent to pump stations, treatment plants, and associated facilities in operation, and is aware that other construction projects may occur concurrently with the Project. Design-Builder will perform all Work in a manner that does not interfere or affect operation of such existing facilities or such concurrent construction projects and will coordinate with Owner to limit any unavoidable disturbance thereto. Design-Builder will consult with and inquire of Owner concerning any known or expected construction projects adjacent to the Project or on the Project Site. Design-Builder will schedule its Work to account for the conditions identified in this section, and acknowledges that no adjustment in the Contract Price, GMP, or the Contract Times.

2.7.8 Design-Builder also will comply with the requirements concerning Phase 2 in Exhibit C.

2.7.9 Design-Builder will design and construct the Project so that it will satisfy all performance standards and guarantees and so that the Project will meet the performance guaranties adopted by the Phase 2 Contract Price Amendment.

2.7.10 All of Design-Builder's requirements and obligations set forth herein as applicable to Phase 2 Services shall apply to the Work set forth in any Early Works Amendment.

2.8 Design-Builder's Responsibility for Project Safety.

2.8.1 As a material obligation, Design-Builder will perform the Work in a safe manner so as to prevent damage, injury, or loss to (i) all individuals at the Project Site, whether working or visiting, (ii) the Work, including materials and equipment incorporated into the Work or stored on the Project Site or off of the Project Site, and (iii) all other property at the Project Site or adjacent thereto. Design-Builder will remedy any damage to property caused by the Work. Design-Builder assumes responsibility for implementing and monitoring all safety precautions and programs related to the performance of the Work. Design-Builder shall, prior to commencing construction, designate a Safety Representative with the necessary qualifications and experience to supervise the implementation and monitoring of all safety precautions and programs related to the Work. Unless otherwise required by the Contract Documents, Design-Builder's Safety Representative shall be an individual stationed at the Project Site who may have responsibilities on the Project in addition to safety. The Safety Representative shall make routine daily inspections of the Project Site and shall hold weekly safety meetings with Design-Builder's personnel, Subcontractors, Sub-Subcontractors, and others as applicable.

2.8.2 Design-Builder, Subcontractors, and Sub-Subcontractors shall comply with all Legal Requirements relating to safety, as well as any Owner-specific safety requirements set forth in the Contract Documents, provided that such Owner-specific requirements do not violate any applicable Legal Requirement. Design-Builder will immediately report in writing any safety-related injury, loss, damage, or accident arising from the Work to Owner's Representative and, to the extent mandated by Legal Requirements, to all governmental or quasi-governmental authorities having jurisdiction over safety-related matters involving the Project or the Work.

2.8.3 Design-Builder's responsibility for safety under Section 2.8 hereof will not relieve Subcontractors and Sub-Subcontractors of their own contractual and legal obligations and responsibility for (i) complying with all Legal Requirements, including those related to health

and safety matters, and (ii) taking all necessary measures to implement and monitor all safety precautions and programs to guard against injuries, losses, damages or accidents resulting from their performance of the Work.

2.9 Design-Builder's Warranty.

2.9.1 Design-Builder warrants to Owner that the construction, including all materials and equipment furnished as part of the construction, shall be new unless otherwise specified in the Contract Documents; of good quality; in conformance with the Contract Documents; and free of defects in materials and workmanship. Design-Builder's warranty obligation excludes defects caused by abuse, alterations after Substantial Completion, or failure to maintain the Work after Substantial Completion in a commercially reasonable manner. Nothing in this warranty is intended to limit any manufacturer's warranty that provides Owner with warranty rights greater than set forth in this section or the Contract Documents. Design-Builder will provide Owner with all manufacturers' warranties no later than Substantial Completion. Nothing in this warranty limits or diminishes any other warranty established by or set forth in the Contract Documents.

2.10 Correction of Defective Work.

2.10.1 Design-Builder agrees to correct any Work that is found to be not in conformance with the Contract Documents, including that part of the Work subject to Section 2.9 hereof, within a period of one year from the date of Substantial Completion of the Work, or within such longer period to the extent required by any specific warranty included in or required by the Contract Documents.

2.10.2 Design-Builder shall, within seven (7) days after receipt of written notice from Owner that the Work is not in conformance with the Contract Documents, take meaningful steps to commence correction of such nonconforming Work, including the correction, removal, or replacement of the nonconforming Work and any damage caused to other parts of the Work affected by the nonconforming Work. If Design-Builder fails to commence the necessary steps within such seven (7) day period, Owner, in addition to any other remedies, may commence correction of such nonconforming Work with its own forces. If Owner performs such corrective Work, Design-Builder shall be responsible for all costs and damages incurred by Owner in performing such correction. If the nonconforming Work creates an emergency requiring an immediate response, the seven-day notice identified herein shall be deemed inapplicable.

2.10.3 The one-year period referenced in Section 2.10 hereof applies only to Design-Builder's obligation to correct nonconforming Work and is not intended to constitute a period of limitations for Owner's rights to damages arising from any nonconforming Work or any other rights or remedies Owner may have regarding Design-Builder's other obligations under the Contract Documents.

Article 3
Owner's Services and Responsibilities

3.1 Duty to Cooperate.

3.1.1 Owner shall, throughout the performance of the Work, cooperate with Design-Builder and perform its obligations in the time required hereunder.

3.1.2 Owner shall provide reviews and approvals of interim design submissions and Construction Documents within the turnaround times set forth in Exhibit C.

3.1.3 Owner shall give Design-Builder timely notice of any Work that Owner knows to be defective or not in compliance with the Contract Documents.

3.2 Furnishing of Services and Information.

3.2.1 Subject to Section 3.2.3, Owner shall provide the following to the extent such documents exist at the time of execution of the Agreement:

3.2.1.1 Surveys describing the property, boundaries, topography and reference points for use during construction, including existing service and utility lines;

3.2.1.2 Temporary and permanent easements, zoning and other requirements and encumbrances affecting land use, or necessary to permit the proper design and construction of the Project and enable Design-Builder to perform the Work;

3.2.1.3 A legal description of the Project Site;

3.2.1.4 To the extent available, record drawings of any existing structures at the Project Site; and

3.2.1.5 To the extent available, environmental studies, reports and impact statements describing the environmental conditions, including Hazardous Conditions, at the Project Site.

3.2.2 Owner is responsible for securing rights and executing all agreements with adjacent property owners that are necessary to enable Design-Builder to perform the Work. Design-Builder shall identify all such rights during Phase 1A or Phase 1B at such time that will provide Owner ample time to procure such agreements.

3.2.3 Owner makes no representation or warranty of any nature to Design-Builder concerning any information provided under Article 3 hereof, any information contained in Owner's Project Criteria, information or documents provided with or in connection with the Request for Proposals, or any other document or information provided by Owner. By the execution of the Agreement, Design-Builder acknowledges and represents that it has received, reviewed, and carefully examined such documents and information, has independently verified them and found them to be complete and accurate, and has not, does not, and will not rely upon any representation by the Owner.

3.3 Financial Information.

3.3.1 Design-Builder shall cooperate with the reasonable requirements of Owner's lenders or other funding sources, including but not limited to GEFA, Georgia Environmental Protection Division, and the U.S. EPA.

3.4 Owner's Representative.

3.4.1 Owner's Representative shall be responsible for providing Owner-supplied information and approvals in a timely manner to permit Design-Builder to fulfill Owner's obligations under the Contract Documents. Owner's Representative shall also provide Design-Builder with notices described in Section 3.1.3. Owner's Representative shall communicate regularly with Design-Builder and shall be vested with the authority to act on behalf of Owner as to matters that do not require amendment of the Contract Documents. No observation or inspection by Owner will relieve, eliminate, or diminish Design-Builder's obligations under the Contract Documents, including but not limited to the obligation to perform all Work in accordance with the Contract Documents.

3.4.2 Design-Builder specifically acknowledges the constitutional, statutory, and contractual requirements that changes, modifications, and waivers to the Contract Documents must be in writing and executed by Owner in the manner set forth in the Contract Documents and in governing laws and ordinances. Accordingly, Design-Builder expressly acknowledges that Owner's Representative possesses no authority to bind Owner.

3.5 Governmental Approvals and Permits.

3.5.1 Owner shall obtain and pay for all permits, approvals, licenses, government charges, and inspection fees set forth in the Owner's Permit List.

3.5.2 Owner shall provide reasonable assistance to Design-Builder in obtaining permits in Owner's Permit List, as well as governmental approvals and licenses that are Design-Builder's responsibility.

3.6 Owner's Separate Contractors.

3.6.1 Owner is responsible for all work performed on the Project or at the Project Site by separate contractors under Owner's control. Owner shall contractually require its separate contractors to cooperate with, and coordinate their activities so as not to interfere with, Design-Builder to enable Design-Builder to timely complete the Work consistent with the Contract Documents. Nothing in this section will relieve Design-Builder of its obligations under Section 2.7.7 hereof and other provisions of the Contract Documents.

Article 4
Hazardous Conditions and Differing Site Conditions

4.1 Hazardous Conditions.

4.1.1 Unless otherwise expressly provided in the Contract Documents to be part of the Work, Design-Builder is not responsible for any Hazardous Conditions encountered at the Project Site. Upon encountering any Hazardous Conditions, Design-Builder will stop Work immediately in the affected area and promptly notify Owner orally and in writing and, if required by Legal Requirements, all governmental or quasi-governmental entities with jurisdiction over the Project or Project Site as to Hazardous Conditions.

4.1.2 Upon receiving notice of the presence of suspected Hazardous Conditions, Owner shall take the necessary measures required to ensure that the Hazardous Conditions are remediated or rendered harmless.

4.1.3 Design-Builder shall be obligated to resume Work at the affected area of the Project only after Owner provides written certification that (i) the Hazardous Conditions have been removed or rendered harmless and (ii) all necessary approvals have been obtained from all governmental and quasi-governmental entities having jurisdiction over the Project or Project Site as to Hazardous Conditions.

4.1.4 Design-Builder will be entitled, in accordance with and subject to these General Conditions of Contract (including the provisions of Section 10.1), to an adjustment in its Contract Price or Contract Times to the extent Design-Builder's cost or time of performance has been adversely impacted by the presence of Hazardous Conditions.

4.1.5 Notwithstanding the preceding provisions of Section 4.1 hereof, Owner is not responsible for Hazardous Conditions introduced to the Project Site by Design-Builder, Subcontractors, Sub-Subcontractors, or anyone for whose acts they may be liable. To the fullest extent permitted by law, Design-Builder shall indemnify, defend, and hold harmless Owner and Owner's officers, directors, employees, and agents from and against all claims, losses, damages, liabilities, and expenses, including attorney fees and expenses, along with any penalties, costs, or fees charged by any governmental entity, including but not limited to clean-up fees and remediation costs, arising out of or resulting from Hazardous Conditions introduced to the Project Site by Design-Builder, Subcontractors, Sub-Subcontractors, or anyone for whose acts they may be liable.

4.2 Differing Site Conditions.

4.2.1 Concealed or latent physical conditions or subsurface conditions at the Project Site that (i) materially differ from the conditions indicated in the Contract Documents or (ii) are of an unusual nature, differing materially from the conditions ordinarily encountered and generally recognized as inherent in the Work are collectively referred to herein as "Differing Site Conditions." Design-Builder acknowledges, warrants, and represents that it has visited the Project Site and has taken into consideration all conditions that might affect the Work, and that it has reviewed all Contract Documents (including Construction Documents) before submission or execution by Design-Builder, and has correlated personal observations and field measurements with the requirements and conditions of the Contract Documents and Construction Documents. Accordingly, no condition that was observed or should have been observed by Design-Builder, exercising reasonable diligence, in such efforts will constitute a Differing Site Condition. If Design-Builder encounters a Differing Site Condition, then subject to the requirements and conditions set forth in Article 10, Design-Builder will be entitled to an adjustment in the Contract Price or Contract Times to the extent Design-Builder's cost or time of performance are adversely impacted by the Differing Site Condition.

4.2.2 As an additional condition to an adjustment in Contract Price or Contract Times granted by Section 4.2.1 herein, Design-Builder shall provide prompt written notice to Owner of such condition, but no later than five (5) days after such condition has been encountered or discovered, or should have been discovered, or before the Differing Site Condition has been substantially disturbed or altered, whichever occurs first. The notice requirement in this section is in addition to any other notice provision hereof (including but not limited to Sections 8.3 and 10.1 hereof).

Article 5
Insurance and Bonds

5.1 Design-Builder's Insurance Requirements.

5.1.1 Design-Builder is responsible for procuring and maintaining insurance as set forth in Exhibit E to the Agreement. Coverage shall be secured from insurance companies eligible to do business in Georgia in accordance with state law and with a minimum rating set forth in Exhibit E of the Agreement.

5.1.2 Design-Builder's insurance shall specifically delete any design-build exclusion or similar exclusions that could eliminate or compromise coverages because of the design-build delivery of the Project.

5.1.3 Design-Builder will comply with, and will ensure its Subcontractors, Sub-Subcontractors, and Design Consultants, as applicable, comply with, all other requirements of Exhibit E, including but not limited to compliance with the OCIP Policies and OCIP Manual.

5.2 Bonds and Other Performance Security.

5.2.1 Design-Builder will provide bonds as set forth in the Agreement.

Article 6
Payment

6.1 Schedule of Values.

6.1.1 Within ten (10) days after execution of the Agreement for Phase 1A Services, execution of the Phase 1B Contract Price Amendment, execution of the Phase 2 Contract Price Amendment, and execution of an Early Works Amendment for Work designated thereunder, Design-Builder shall submit for Owner's review and approval a schedule of values for all of the Work. The schedule of values will (i) subdivide the Work into its respective parts, with the level of detail satisfactory to Owner, (ii) include values for all items comprising the Work, and (iii) serve as the basis for monthly progress payments made to Design-Builder throughout the Work. During Phase 1A and Phase 1B, the schedule of values will reflect Work associated with Phase 1A and Phase 1B Services, respectively; during Phase 2, the schedule of values will reflect Work associated with Phase 2 Services; and for any Work under an Early Works Amendment, the schedule of values will reflect Work designated therein.

6.1.2 Owner will timely review and comment on the schedule of values, and if the schedule of values satisfactorily addresses all of Owner's comments, Owner will approve it so as not to delay the submission of the Design-Builder's first Application for Payment. Owner and Design-Builder shall timely resolve any differences so as not to delay the Design-Builder's submission of its first Application for Payment.

6.2 Monthly Progress Payments.

6.2.1 On or before the date established in the Agreement, Design-Builder shall submit for Owner's review and approval its Application for Payment requesting payment for all Work performed as of the date of the Application for Payment. The Application for Payment shall be accompanied by all supporting documentation required by the Contract Documents, including but not limited to documentation required by Section 8.6 of the Agreement and all receipts or other vouchers showing payments for materials and labor and payments to Subcontractors and, if applicable, Design Consultants. Except as otherwise specifically provided in the Contract Documents, (i) for Phase 1A Services, Phase 1B Services, and other Work compensated by a lump-sum price, the basis for payment of each line item in the schedule of values will be the percentage of completion of the Work within such line item, and (ii) for Phase 2 Services, the basis for payment for each line item in the schedule of values will be the Cost of the Work incurred to date for the Work within such line item; however, no amount paid therefor shall exceed the percentage of completion of such line item.

6.2.2 The Application for Payment may request payment for equipment and materials not yet incorporated into the Project only if Owner determines (in its sole discretion) that (i) the equipment and materials are suitably stored at either the Project Site or another acceptable location, (ii) the equipment and materials are protected by suitable insurance, and (iii) upon

payment, Owner will receive the equipment and materials free and clear of all liens and encumbrances.

6.2.3 Design-Builder will advise Owner if advance-payment discounts are available from any Subcontractor or Sub-Subcontractor. Only if Owner elects in writing to not take advantage of such discount, Design-Builder may make early payment to qualify for the discount, and in such case, such discount shall accrue one hundred percent to Design-Builder. If Owner makes such election, and if Design-Builder advances payment to Design-Builder specifically to receive the discount, then Design-Builder may include in its Application for Payment the full undiscounted cost of the item for which payment is sought; provided, however, that this provision does not apply to any discount offered by a Related Party (as defined in the Agreement).

6.2.4 The Application for Payment shall constitute Design-Builder's representation that the Work covered thereby has been performed consistent with the Contract Documents; has progressed to the point indicated therein, whether by percentage of completion or by Cost of the Work incurred, as applicable; and that title to all Work will pass to Owner free and clear of all claims, liens, encumbrances, and security interests upon the incorporation of the Work into the Project or upon Design-Builder's receipt of payment, whichever occurs earlier.

6.2.5 With each Application for Payment other than for Final Payment, Design-Builder will provide, as a condition to payment therefor, a fully executed Waiver and Release of Lien and Payment Bond Rights Upon Interim Payment as set forth in Exhibit I.

6.3 Withholding of Payments.

6.3.1 On or before the date established in the Agreement, Owner shall pay Design-Builder all amounts then due. If Owner determines that Design-Builder is not entitled to all or part of an Application for Payment, or any prior Application for Payment or resulting payment was not proper, for any reason set forth in the Contract Documents (including but not limited to reasons set forth in Section 6.3 hereof), it will notify Design-Builder in writing. The notice shall indicate the specific amounts Owner intends to withhold, the reasons and contractual basis for the withholding, and if applicable, the measures Design-Builder must take to rectify Owner's concerns. If the parties cannot resolve such Owner's concerns, Design-Builder may pursue its rights under the Contract Documents, including those under Article 10 hereof.

6.3.2 Owner shall pay Design-Builder all undisputed amounts in an Application for Payment within the times required by the Agreement.

6.3.3 Owner may withhold payment, or nullify the whole or part of any previously approved Application for Payment, to such extent necessary to protect Owner from loss on account of any one or more of the following: (i) defective, deficient, or nonconforming Work; (ii) failure of Design-Builder to make payments due to Subcontractors, Sub-Subcontractors, or Design Consultants; (iii) reasonable evidence that third parties may assert claims against Owner due to negligence or breach by Design-Builder or others for whom Design-Builder is responsible; (iv) failure to maintain the schedule, (v) prior payment of amounts categorized as Cost of the Work when such costs did not constitute or no longer constitute Cost of the Work, including but not limited to costs excluded by Section 7.3.2 of the Agreement, or (vi) any other reason Owner may withhold, reduce, deduct, recoup, or setoff, or demand return of, payment under the Contract Documents or as permitted by law. When the grounds for withholding payment are remedied (if applicable), payment shall be made for amounts withheld because of them, less any resulting damages incurred by Owner.

6.3.4 If Design-Builder incurs any liability to Owner under the Contract Documents, Owner may withhold, recoup, or setoff such amount against any amount Owner would otherwise be obligated to pay Design-Builder.

6.3.5 Neither payment by Owner nor occupancy, in full or in part, of the Project by Owner will constitute an acceptance of the Work not in conformance with the Contract Documents.

6.4 Interest.

6.4.1 All payments due and unpaid shall bear interest at the rate set forth in the Agreement.

6.5 Design-Builder's Payment Obligations.

6.5.1 Design-Builder will pay Design Consultants and Subcontractors, in accordance with its contractual obligations to such parties, all the amounts Design-Builder has received from Owner on account of their work. Design-Builder will impose similar requirements on Design Consultants and Subcontractors to pay those parties with whom they have contracted. Design-Builder will indemnify and defend Owner against any claims for payment or construction liens as set forth in Section 7.2 hereof.

6.6 Substantial Completion.

6.6.1 Design-Builder shall notify Owner when it believes the Work, or to the extent permitted in the Contract Documents, a portion of the Work, is Substantially Complete. Within five (5) days after Owner's receipt of Design-Builder's notice, or such longer period as Owner may reasonably require, Owner and Design-Builder will jointly inspect such Work to verify that it is Substantially Complete in accordance with the requirements of the Contract Documents. If such Work is Substantially Complete, Owner shall prepare and issue a Certificate of Substantial Completion that will set forth the date of Substantial Completion of the Work or, if applicable, portion thereof. If Design-Builder provides such notice when Substantial Completion has not occurred, then Design-Builder will be liable to Owner for all costs incurred by Owner resulting from therefrom, including but not limited to additional amounts owed to Owner's consultants, advisors, and representatives. In addition, costs incurred by Design-Builder associated with such premature notice of Substantial Completion (including but not limited to any costs of re-performing tests, commissioning, and other Project close-out processes set forth in Section 3.18 and 3.19 of Exhibit C) will not qualify as Cost of the Work.

6.6.2 Retainage will be released as provided in the Agreement.

6.6.3 Owner, at its option, may use a portion of the Work which has been determined to be Substantially Complete and, if so, will issue a Certificate of Substantial Completion for the portion of Work. Owner's use of a portion of the Work, or determination that such portion is Substantially Complete, will not constitute Substantial Completion of the Project as required by Section 6.6 (including specifically Section 6.6.7).

6.6.4 As an additional condition to Substantial Completion, all testing, commissioning, and start-up requirements set forth in Exhibit C (including but not limited to Section 3.19 therein) must have been completed and the Independent Certifier shall have verified to Owner that all such requirements have been satisfied and that all tests have passed.

6.6.5 As an additional condition to Substantial Completion, Design-Builder must have completed all training requirements, provided all operation and maintenance manuals, delivered all warranties, and provided all Record Documents (as defined in Exhibit C).

6.6.6 As an additional condition to Substantial Completion, Design-Builder must demonstrate that all premiums for insurance coverage that extends beyond Substantial Completion and Final Completion have been paid in full as required by Exhibit E.

6.6.7 Substantial Completion will occur no earlier than the date when all Work has been completed with the exception of minor Work that can be completed by the Final Completion Deadline and without interfering with Owner's use and operation of the entire Project at full capacity.

6.6.8 Owner may require Design-Builder to obtain the consent of its surety, using a form substantially similar to the form set forth in Exhibit J of the Agreement, for any payment made in connection with Substantial Completion or any payment that releases any retainage.

6.7 Final Payment.

6.7.1 When Design-Builder has achieved Final Completion, then after receipt of a Final Application for Payment from Design-Builder, Owner shall make Final Payment by the time required in the Agreement. The Final Application for Payment will include the same information and documents required for Applications for Payment for Monthly Progress Payments under Section 6.2 hereof.

6.7.2 At the time of submission of its Final Application for Payment, Design-Builder shall provide, as a condition to entitlement to Final Payment, the following information:

6.7.2.1 An affidavit that there are no claims, obligations, or liens outstanding or unsatisfied for labor, services, material, equipment, taxes, or other items performed, furnished, or incurred for or in connection with the Work that will in any way affect Owner's interests;

6.7.2.2 A general release executed by Design-Builder waiving, upon receipt of Final Payment by Design-Builder, all claims, except those claims previously made in writing to Owner and remaining unsettled at the time of Final Payment, which outstanding claims will be identified explicitly in such release;

6.7.2.3 Consent of Design-Builder's surety to Final Payment, using the form set forth in Exhibit J of the Agreement;

6.7.2.4 All operating manuals, warranties, and other deliverables required by the Contract Documents;

6.7.2.5 Certificates of insurance confirming that required coverages will remain in effect consistent with the requirements of the Contract Documents;

6.7.2.6 A fully executed Waiver and Release of Lien and Payment Bond Rights Upon Final Payment as set forth in Exhibit I of the Agreement.

6.7.3 Deficiencies in the Work discovered after Substantial Completion but before Final Completion, whether or not such deficiencies would have been included on the punchlist if discovered earlier, shall be corrected by Design-Builder as provided in Sections 2.9 and 2.10 herein. For such deficiencies, Owner shall be entitled to withhold from the Final Payment the amount set forth in Section 8.3.2 of the Agreement. Nothing in this section will limit or reduce Owner's rights under other sections of the Contract Document or other rights provided by law.

Article 7
Indemnification

7.1 Patent and Copyright Infringement.

7.1.1 Design-Builder shall defend any action or proceeding brought against Owner based on any claim that the Work, or any part thereof, or the operation or use of the Work or any part thereof, constitutes infringement of any patent or copyright, under U.S. or foreign law, now or hereafter issued. Owner shall give prompt written notice to Design-Builder of any such action or proceeding and will reasonably provide authority, information, and assistance in the defense of same. Design-Builder shall indemnify and hold harmless Owner from and against all damages, costs, and expenses, including but not limited to attorneys' fees, incurred b y Owner or awarded against Owner in any such action or proceeding. Design-Builder agrees to keep Owner informed of all developments in the defense of such actions.

7.1.2 If Owner is enjoined from the operation or use of the Work, or any part thereof, as the result of any patent or copyright suit, claim, or proceeding, Design-Builder shall at its sole expense take reasonable steps to procure the right to operate or use the Work. If Design-Builder cannot so procure such right within a reasonable time, Design-Builder shall promptly, at Design-Builder's option and at Design-Builder's expense, (i) modify the Work so as to avoid infringement of any such patent or copyright or (ii) replace said Work with Work that does not infringe or violate any such patent or copyright.

7.1.3 Sections 7.1.1 and 7.1.2 above shall not apply to the extent any suit, claim, or proceeding based on infringement or violation of a patent or copyright arising from modifications to the Work by Owner or its agents after Final Completion of the Work.

7.2 Payment Claim Indemnification.

7.2.1 Except to the extent caused by Owner's breach its contractual obligation to make payments to Design-Builder, Design-Builder shall indemnify, defend, and hold harmless Owner from any claims or liens brought against Owner or against the Project as a result of the failure of Design-Builder, or those for whose acts it is responsible, to pay for any services, materials, labor, equipment, taxes, or other items or obligations furnished or incurred for or in connection with the Work. Within three (3) days of receiving written notice from Owner that such a claim or lien has been filed or asserted, Design-Builder shall commence to take the steps necessary to discharge said claim or lien, including, if directed by Owner, the furnishing of a lien-discharge bond. If Design-Builder fails to do so, Owner will have the right to discharge the claim or lien and recover all costs and expenses incurred, including attorneys' fees, from Design-Builder.

7.3 Design-Builder's General Indemnification.

7.3.1 Design-Builder, to the fullest extent permitted by law, shall indemnify, hold harmless, and defend Owner, its officers, directors, and employees from and against claims, losses, damages, and liabilities, including attorney fees and expenses, for bodily injury, sickness, or death, and property damage or destruction, to the extent resulting from the negligent acts or omissions of, or breach of any provision of the Contract Documents by, Design-Builder, Design Consultants, Subcontractors, Sub-Subcontractors, anyone employed directly or indirectly by any of them, or anyone for whose acts any of them may be liable.

7.3.2 If an employee of Design-Builder, Design Consultants, Subcontractors, anyone employed directly or indirectly by any of them, or anyone for whose acts any of them may be liable has asserted or filed a claim against Owner, its officers, directors, employees, or agents, then Design-Builder's indemnity obligation set forth in Section 7.3.1 shall not be limited by any limitation on the amount of damages, compensation, or benefits payable by or for Design-Builder, Design Consultants, Subcontractors, or Sub-Subcontractors, or other entity under any employee benefit acts, including workers' compensation or disability acts.

7.3.3 Notwithstanding anything to the contrary in the Contract Documents, Design-Builder's obligation to indemnify, defend, or hold harmless any person or entity shall not be construed to require any obligation that would be prohibited by O.C.G.A. § 13-8-2.

7.3.4 Notwithstanding anything to the contrary in the Contract Documents, any obligation of Design-Builder to indemnify, defend, or hold harmless Owner, required by the Contract Documents, shall be deemed to include, in addition to Owner, each member of Owner's Board of Directors and Owner's employees. All such indemnitees are express and intended third-party beneficiaries of the Agreement.

Article 8
Time

8.1 Obligation to Achieve the Contract Times.

8.1.1 Design-Builder will commence performance of the Work and achieve and satisfy all milestones and deadlines set forth in Article 6 of the Agreement, as may be amended or established by the Phase 1B Contract Price Amendment or the Phase 2 Contract Price Amendment, including but not limited to the Phase 1A Scheduled Completion Date, Phase 1B Scheduled Completion Date, Scheduled Substantial Completion Date, and the Final Completion Deadline.

8.2 Delays to the Work.

8.2.1 If Design-Builder is delayed in the performance of the Work then on the critical path due to acts, omissions, conditions, events, or circumstances beyond its control and due to no fault of its own or those for whom Design-Builder is responsible (including but not limited to Subcontractors, Sub-Subcontractors, and Design Consultants) or as a result of Force Majeure Events (collectively, "Delay Events"), then the affected Contract Times shall be reasonably extended by Change Order. Unless a Delay Event is caused solely by the breach of the Contract Documents by Owner, such extension of the affected Contract Times shall be Design-Builder's sole and exclusive remedy for the Delay Event. If a Delay Event is caused solely by a breach of the Contract Documents by Owner, then Design-Builder will be entitled to, as its exclusive remedy and subject to conditions to and limitations on such remedies as provided in the Contract Documents: (i) a reasonable extension of affected Contract Times and (ii) an equitable increase in the GMP and the affected Contract Price, without any duplication. During Phase 1A or Phase 1B, such equitable increase in Contract Price is limited to the Phase 1A Contract Price or Phase 1B Contract Price, respectively. During Phase 2 or, if earlier, while any Work under an Early Works Amendment is performed, such equitable increase in Contract Price is limited to the incremental increase in the Cost of the Work, plus the increased General Conditions Amount resulting from such increase but no increase in Design-Builder's Fee, that result solely from such Delay Event. In each phase, the equitable increase in Contract Price is

subject to the requirements of Section 9.4 herein. Without limiting or affecting any other requirement or condition thereto, any extension of Contract Times or increase in Contract Price or GMP provided for herein is subject to the notice provisions of Section 10.1.

8.2.2 Weather: Design-Builder represents and warrants that it has anticipated and included in its schedule and pricing (including the GMP and Contract Price for each phase) the Anticipated Weather Days set forth in the Phase 2 Contract Price Amendment, or if not include therein, the Anticipated Weather Days will be the number days each month that weather should be reasonably expected to interfere with the Work anticipated at such time. If otherwise permitted under Section 8.2.1, an extension of the affected Contract Times is permitted for adverse weather conditions only to the extent, during any month, adverse weather conditions actually impacted the Work on the critical path more days than the Anticipated Weather Days for such month.

8.3 Extensions of Contract Times.

8.3.1 If any provision of the Contract Documents requires an extension of Contract Times (including but not limited to Section 8.2), subject to all other conditions thereto, the amount of the extension will be determined based on, and will be limited to, the number of days the Work was affected at a time when such Work was on the critical path of the Project. Notwithstanding anything to the contrary in the Contract Documents, in determining the critical path, Owner will not be bound by any schedule submitted by Design-Builder or reviewed or approved by Owner. To the extent Design-Builder is entitled to an increase in the Contract Price or GMP associated with a Delay Event, the requirements and limitations of Section 8.3 apply to determine the extent of the associated delay.

8.3.2 As additional conditions to entitlement for an extension of any Contract Times granted by the Contract Documents (along with any associated increase in the Contract Price or GMP authorized by Section 8.2 herein), Design-Builder must demonstrate that (i) the delay (including a Delay Event) extended the critical path of Work; (ii) Design-Builder has taken all reasonable actions to mitigate the effects of such delay events; (iii) the fault or negligence of Design-Builder (or its Subcontractors, Sub-Subcontractors, or Design Consultants) did not contribute to such delay; and (iv) Design-Builder has provided the required notice within the time required by the Contract Documents (including but not limited to Section 10.1 hereof).

Article 9
Changes to the Contract Price and Time

9.1 Change Orders.

9.1.1 Without invalidating the Agreement, Owner may order and direct changes in the Work, without notice to Design-Builder's surety or sureties, as provided in Article 9 hereof. A Change Order is a written instrument issued after execution of the Agreement signed by Owner and Design-Builder, stating their agreement upon all of the following:

9.1.1.1 The scope of the change in the Work or modification of the Contract Documents;

9.1.1.2 The amount of the adjustment to the Contract Price or GMP, if any; and

9.1.1.3 The extent of the adjustment to the Contract Times, if any.

9.1.2 All changes in the Work authorized by applicable Change Order shall be performed under the applicable conditions of the Contract Documents as modified by terms of the Change Order. Except for minor changes in the Work under Section 9.3, no changes will be made to the Work without a Change Order or Work Change Directive, as set forth in Article 9 hereof. If Design-Builder makes any change to the Work without a Change Order or Work Change Directive, then (i) it will not be entitled to, and hereby waives, any right to an adjustment in the Contract Price, GMP, or Contract Times, and (ii) in addition to all other remedies for breach provided by the Contract Documents, Owner may, in its sole discretion, direct Design-Builder to bring the Work into compliance as provided in Section 2.10 herein, and in such event, the cost thereof will not constitute Cost of the Work.

9.1.3 If Owner requests, in writing, a proposal for a change in the Work from Design-Builder, then Design-Builder will provide a proposal for such change in the Work, which will include the proposed increase in Contract Times and GMP, along with a proposed Change Order to be reviewed and, if accepted, executed by Owner. If requested by Owner, Design-Builder will include an itemized cost breakdown of the associated cost increases and decreases, along with all documents associated with such costs (e.g., quotes from Subcontractors and Sub-Subcontractors). If requested by Owner, Design-Builder may propose a lump sum for the proposed change.

Design-Builder will provide such proposal promptly to prevent any delay in the Work. If Owner requests, in writing, a proposal for a change in the Work, and such request indicates Owner will reimburse Design-Builder for costs incurred in developing the proposal, and if Owner subsequently elects not to proceed with the change, then the parties will execute a Change Order to reimburse Design-Builder for reasonable costs incurred for estimating services, design services, and other services involved in the preparation of proposed revisions to the Contract Documents.

9.1.4 Design-Builder's execution of a Change Order will be conclusive evidence of Design-Builder's agreement to the changes in the Work or Contract Documents stated, to any adjustment in Contract Price or GMP, and to any adjustment to the Contract Times. By executing a Change Order, Design-Builder waives and releases any claim against Owner for additional Contract Times or an increase in Contract Price or GMP for matters relating to or arising out of or resulting from the Work included within or affected by the Change Order, except as explicitly stated in the Change Order.

9.1.5 If a Change Order does not specify the adjustments set forth in Sections 9.1.1.2 or 9.1.1.3, or if the specified adjustments are blank, then Design-Builder will be entitled to no adjustment in Contract Price, GMP, or Contract Times.

9.2 Work Change Directives.

9.2.1 A Work Change Directive is a written order prepared and signed by Owner directing a change in the Work prior to agreement on an adjustment in the Contract Price or GMP or the Contract Times. Work Change Directives may modify, increase, or decrease the scope of Work.

9.2.2 Owner and Design-Builder shall attempt to negotiate adjustments to the Contract Price or GMP or the Contract Times, as applicable, for the Work Change Directive. If the parties reach an agreement, the parties shall prepare and execute an appropriate Change Order reflecting the terms of the agreement. If the parties cannot reach an agreement, Design-Builder will perform the Work Change Directive and, subject to the requirements and limitations of Article 10, will receive (i) subject to Section 8.3, an adjustment in Contract Times and (ii) as provided

in Section 9.4.1, an adjustment in the Contract Price or GMP. No adjustment in Contract Times or Contract Price or GMP will be permitted for any Work Change Directive to the extent any change in the Work is caused by or associated with a breach by Design-Builder of any provision of the Contract Documents

9.3 Minor Changes in the Work.

9.3.1 Minor changes in the Work do not involve an adjustment in the Contract Price, GMP, or Contract Times and do not materially and adversely affect the Work, including the design, quality, performance, or workmanship required by the Contract Documents. Design-Builder may make minor changes in the Work consistent with the intent of the Contract Documents, but Design-Builder shall promptly inform Owner, in writing, of any such changes and record such changes on the documents maintained by Design-Builder. Design-Builder shall not make any minor change in the Work that affects any performance standard or criteria set forth in the Project Technical Requirements (Exhibit B) or Scope of Design-Builder Services (Exhibit C).

9.4 GMP Adjustments.

9.4.1 The increase or decrease in Guaranteed Maximum Price resulting from a Change Order or Work Change Directive shall be determined by one or more of the following methods:

9.4.1.1 Any method provided for in the Change Order;

9.4.1.2 Unit prices set forth in the Agreement or as subsequently agreed to, in writing, between the parties;

9.4.1.3 A mutually accepted lump sum, properly itemized and supported by sufficient substantiating data to permit evaluation by Owner, provided that such lump sum is authorized by Change Order;

9.4.1.4 Costs, fees, and any other markups, if any, set forth in the Agreement; or

9.4.1.5 If an increase or decrease cannot be agreed to as set forth in Sections 9.4.1.1 through 9.4.1.4 and Owner issues a Work Change Directive, then the net increase in the Cost of the Work resulting from the Work Change Directive.

9.4.2 If Owner and Design-Builder disagree upon whether Design-Builder is entitled to be paid for any services required by Owner, or if there are any other disagreements over the scope of Work or proposed changes to the Work, Owner and Design-Builder shall resolve the disagreement pursuant to Article 10 hereof. As part of the negotiation process, Design-Builder shall furnish Owner with a good faith estimate of the Cost of the Work to perform the disputed services in accordance with Owner's interpretations. If the parties are unable to agree, and Owner directs Design-Builder to perform the services in accordance with Owner's interpretations, then Design-Builder shall proceed to perform the disputed services, conditioned upon Owner issuing a written order to Design-Builder (i) directing Design-Builder to proceed and (ii) specifying Owner's interpretation of the services that are to be performed.

9.5 Emergencies.

9.5.1 In any emergency affecting the safety of persons or property, Design-Builder shall act, at its discretion, to prevent threatened damage, injury, or loss. Any change in the Contract Price, GMP, or Contract Times on account of emergency work shall be determined as provided in Article 9 hereof.

Article 10
Contract Adjustments and Disputes

10.1 Requests for Contract Adjustments and Relief.

10.1.1 Notwithstanding anything to the contrary in the Contract Documents, if Design-Builder asserts a claim for relief against Owner, as a condition precedent to any remedy or recovery on such claim, it shall provide written notice to Owner of the basis for its claim for relief within the time provided in Section 10.1. In addition to any earlier notice required for such claim under any other provision of the Contract Documents, Design-Builder will provide such written notice no later than five (5) days after the occurrence of the event or condition giving rise to the claim, or after Design-Builder reasonably should have observed or discovered such event or condition, whichever is earlier. Such notice shall (i) include sufficient information to advise Owner of the occurrence, event, or condition giving rise to the claim for relief, the specific contractual adjustment or relief requested, and the basis of such request; (ii) shall be hand delivered or sent via certified mail (return receipt requested) to each one of Owner's Representatives identified in Section 10.1 of the Agreement; and (iii) be clearly marked as a claim, with the heading or subject line that identifies the notice as a "Claim." Failure to provide the notice required, within the time required, under this section will constitute a waiver, release, and discharge of any claim, and any remedy or recovery for such claim.

10.1.2 In addition to all other requirements and conditions set forth in the Contract Documents, any claim for an adjustment in Contract Times shall comply with all requirements and conditions of Sections 8.2 and 8.3 hereof. For such a claim, the notice required by Section 10.1 will also include the number of days claimed, the cause of any delay (e.g., Delay Event), the affected schedule activities, and information to demonstrate critical path was extended.

10.1.3 In addition to all other requirements and conditions set forth in the Contract Documents, any claim for an adjustment in the GMP or Contract Price shall comply with Section 9.4 hereof. For such a claim, the notice required by Section 10.1 will also include the amount claimed, the basis for calculating the amount, and all documentation to support entitlement to and calculation of the amount claimed.

10.1.4 Design-Builder will update the information provided under this Section 10.1 on a monthly and at any time requested by Owner. With regard to any claim for relief, whether valid or waived hereunder, Design-Builder will provide all information and documentation reasonably requested by Owner concerning entitlement to relief or quantity of such claim.

10.2 Dispute Avoidance and Resolution.

10.2.1 The parties are fully committed to working with each other throughout the Project and agree to communicate regularly with each other at all reasonable times so as to avoid or minimize disputes or disagreements. If disputes or disagreements arise, Design-Builder and Owner each will endeavor to resolving such disputes or disagreements in an amicable, professional, and expeditious manner so as to avoid unnecessary losses, delays, and disruptions to the Work.

10.2.2 Design-Builder and Owner will first attempt to resolve disputes or disagreements at the field level through discussions between Design-Builder's Representative and Owner's Representative, which shall conclude within fourteen (14) days of the written notice provided for in Section 10.1.1 unless the Owner and Design-Builder mutually agree otherwise in writing.

10.2.3 If a dispute or disagreement cannot be resolved through Design-Builder's Representative and Owner's Representative, Design-Builder's Senior Representative and Owner's Senior Representative, upon the written request of either party, shall meet as soon as is convenient, but in no case later than thirty (30) days after such a request is made, to attempt to resolve such dispute or disagreement. Five (5) days' prior to any meetings between the Senior Representatives, the parties will exchange relevant, non-privileged information that will assist the parties in resolving their dispute or disagreement.

10.2.4 If after meeting, the Senior Representatives determine that the dispute or disagreement cannot be resolved on terms satisfactory to both parties, the parties shall submit, within thirty (30) days of the conclusion of the meeting of Senior Representatives, the dispute or disagreement to non-binding mediation. The mediation shall be conducted by a mutually agreeable impartial mediator, or if the parties cannot so agree, a mediator designated by the American Arbitration Association ("AAA") pursuant to its Construction Industry Mediation Rules. The mediation will be governed by and conducted pursuant to a mediation agreement negotiated by the parties or, if the parties cannot so agree, by procedures established by the mediator. Unless otherwise mutually agreed by the Owner and Design-Builder and consistent with the mediator's schedule, the mediation shall commence within ninety (90) days after the submission of the dispute to mediation.

10.2.5 If at any stage of dispute resolution, the parties reach a resolution of a dispute or disagreement, then the parties will memorialize such resolution by a Change Order or other written amendment executed by both parties.

10.3 Litigation.

10.3.1 Any claims, disputes, or controversies between the parties arising out of or relating to the Agreement, or the breach thereof, which have not been resolved in accordance with the procedures set forth in Section 10.2 above, shall be decided by litigation in the Superior Court of Clayton County. Design-Builder waives any objections to venue in such court.

10.4 Duty to Continue Performance.

10.4.1 Notwithstanding anything to the contrary in the Contract Documents, Design-Builder shall continue to perform the Work, and Owner shall continue to satisfy its payment obligations not in dispute, pending the final resolution of any dispute or disagreement between Design-Builder and Owner.

10.5 Consequential Damages.

10.5.1 NOTWITHSTANDING ANYTHING IN THE CONTRACT DOCUMENTS TO THE CONTRARY (EXCEPT AS SET FORTH IN SECTION 10.5.2 AND SECTION 10.5.3), NEITHER DESIGN-BUILDER NOR OWNER SHALL BE LIABLE TO THE OTHER FOR ANY CONSEQUENTIAL LOSSES OR DAMAGES, WHETHER ARISING IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, OR OTHERWISE, INCLUDING BUT NOT LIMITED TO LOSSES OF USE, PROFITS, BUSINESS, REPUTATION, OR FINANCING.

10.5.2 The consequential damages limitation set forth in Section 10.5.1 will not affect the payment of liquidated damages set forth in Section 6.4 of the Agreement, which both parties recognize has been established, in part, to reimburse Owner for damages that might otherwise be deemed to be consequential.

10.5.3 The consequential damages limitation set forth in Section 10.5.1 does not apply to claims against Design-Builder to the extent covered by insurance required to be procured by Design-Builder under the Contract Documents or to any claims against Design-Builder for indemnification under Article 7.

Article 11
Stop Work and Termination for Cause

11.1 Owner's Right to Stop Work.

11.1.1 Owner may, without cause and for its convenience, order Design-Builder in writing to stop and suspend the Work. Such suspension shall not exceed sixty (60) consecutive days or, in the aggregate, more than ninety (90) days during any phase of the Project.

11.1.2 Subject to the limitations on such adjustments contained Article 9, Design-Builder is entitled to seek an adjustment of the Contract Price, GMP, or Contract Times if its cost or time required to perform the Work has been adversely impacted by any suspension or stoppage of the Work by Owner under Section 11.1.1.

11.2 Owner's Right to Perform and Terminate for Cause or Suspend for Cause.

11.2.1 If Design-Builder fails to (i) provide a sufficient number of skilled workers, (ii) supply the materials required by the Contract Documents, (iii) comply with applicable Legal Requirements, (iv) timely pay, without cause, Design Consultants or Subcontractors, (v) prosecute the Work with promptness and diligence to ensure that the Work is completed by the Contract Times, as such times may be adjusted as provided by the Contract Documents, or (vi) perform or comply with any obligation under the Contract Documents, then Owner, in addition to any other rights and remedies provided in the Contract Documents or by law, shall have the rights set forth in Section 11.2 hereof.

11.2.2 Upon the occurrence of any event, condition, or breach set forth in Section 11.2.1, Owner may provide written notice to Design-Builder that it intends to terminate the Agreement unless, within seven (7) days after Design-Builder's receipt of such notice, (i) such occurrence is cured, or (ii) Design-Builder commences and diligently pursues the cure of such occurrence, and such occurrence is cured within thirty (30) days or such longer time as Owner designates in the notice. However, no such notice is required if Design-Builder fails to comply with any Legal Requirements or if Owner previously has sent notice of a similar occurrence. If Design-Builder fails to satisfy the requirements of such notice – or if the occurrence cannot be cured – within such time, then Owner may terminate the Agreement for default by providing written notice to Design-Builder thereof. Design-Builder's cure of such occurrence will not affect Owner's remedies or right to recover for any damages resulting from such occurrence.

11.2.3 Upon declaring the Agreement terminated pursuant to Section 11.2.2, Owner may enter upon the premises and take possession, for the purpose of completing the Work, of all materials, equipment, scaffolds, tools, appliances, and other items thereon, which have been purchased or provided for the performance of the Work, all of which Design-Builder hereby transfers, assigns, and sets over to Owner for such purpose, and to employ any persons or entities to complete the Work and provide all of the required labor, services, materials, equipment and other items. In the event of termination pursuant to Section 11.2.2, Design-Builder shall not be entitled to receive any further payments under the Contract Documents until the Work

shall be finally completed in accordance with the Contract Documents. At such time, if the unpaid balance of the Contract Price (up to the GMP) exceeds the cost and expense incurred by Owner in completing the Work, then such excess shall be paid by Owner to Design-Builder. In determining the unpaid Contract Price under this section, Design-Builder will be entitled only to the Contract Price associated with Work performed prior to its default. If Owner's cost and expense of completing the Work exceeds the unpaid balance of the Contract Price (up to the GMP), then Design-Builder shall be obligated to pay the difference to Owner within ten (10) days after demand therefor. Owner's "cost and expense," as used in this section, shall include not only the cost of completing the Work, but also all losses, damages, costs, and expense, including attorneys' fees and expenses, incurred by Owner resulting from the event, condition, or breach set forth in Section 11.2.1; in connection with the reprocurement of Work; or in defending against claims arising from Design-Builder's default, subject to the waiver of consequential damages set forth in Section 10.5 hereof.

11.2.4 If Owner improperly terminates the Agreement for cause, the termination for cause will be converted to a termination for convenience in accordance with the provisions of Article 9 of the Agreement.

11.2.5 For any reason identified in Section 11.2.1 or based on its observation that such reason may have occurred, Owner may suspend the Work by providing written notice thereof and the reason in Section 11.2.1 for the suspension. The suspension will last until Owner determines that the event, condition, or breach is cured. If it is subsequently determined that the reason for the suspension was invalid, then subject to the conditions and requirements of Section 10.1 hereof, Design-Builder may seek an adjustment in Contract Times for the suspension and an adjustment in the GMP or Contract Price for any additional Cost of the Work resulting from such delay, but only to the extent any portion of the suspension resulted from the invalid reason. If the reason for the suspension is subsequently determined to be valid, then Design-Builder will be entitled to no adjustment in Contract Times or GMP.

11.3 No Right to Stop Work.

11.3.1 During the pendency of any dispute, including any dispute concerning payment, without prejudice to any remedies provided in the Contract Documents, Design-Builder shall continue to perform the Work and all other obligations under the Contract Documents.

11.4 Design-Builder's Right to Terminate for Cause.

11.4.1 Design-Builder may terminate the Agreement for cause for the following reasons:

11.4.1.1 The Work has been stopped for sixty (60) consecutive days, or more than ninety (90) days during any phase of the Project, because of court order, any governmental authority having jurisdiction over the Work, or orders by Owner under Section 11.1.1 hereof, but only if such stoppages are not due to the acts or omissions of Design-Builder or anyone for whose acts Design-Builder may be responsible.

11.4.1.2 Owner's failure to provide Design-Builder with any information, permits or approvals that are Owner's responsibility under the Contract Documents that result in the Work being stopped for sixty (60) consecutive days, or more than ninety (90) days during any phase of the Project, even though Owner has not ordered Design-Builder in writing to stop and suspend the Work pursuant to Section 11.1.1 hereof.

11.4.2 Upon the occurrence of an event set forth in Section 11.4.1 above, Design-Builder shall, as a condition to termination under Section 11.4, provide written notice to Owner that it intends

to terminate the Agreement unless the occurrence cited is cured, or commenced to be cured, within thirty (30) days after Owner's receipt of such notice. If Owner fails to cure, or fails to reasonably commence to cure, such occurrence, then Design-Builder may give a second written notice to Owner of its intent to terminate within an additional seven-day period. If Owner, within such seven-day period, fails to cure, or reasonably commence to cure, such occurrence, then Design-Builder may declare the Agreement terminated for default by providing written notice to Owner of such declaration. In such case, Design-Builder shall be entitled to recover in the same manner as if Owner had terminated the Agreement for its convenience under Article 9 of the Agreement.

11.5 Bankruptcy of Owner or Design-Builder.

11.5.1 If either Owner or Design-Builder institutes or has instituted against it a case under the United States Bankruptcy Code (such party being referred to as the "Bankrupt Party"), such event may impair or frustrate the Bankrupt Party's ability to perform its obligations under the Contract Documents. Accordingly, should such event occur:

11.5.1.1 The Bankrupt Party, its trustee or other successor, shall furnish, upon request of the non-Bankrupt Party, adequate assurance of the ability of the Bankrupt Party to perform all future material obligations under the Contract Documents, which assurances shall be provided within ten (10) days after receiving notice of the request; and

11.5.1.2 The Bankrupt Party shall file an appropriate action within the bankruptcy court to seek assumption or rejection of the Agreement within sixty (60) days of the institution of the bankruptcy filing and shall diligently prosecute such action.

If the Bankrupt Party fails to comply with its foregoing obligations, the non-Bankrupt Party shall be entitled to request the bankruptcy court to reject the Agreement, declare the Agreement terminated and pursue any other recourse available to the non-Bankrupt Party under Article 11 hereof.

11.5.2 The rights and remedies under Section 11.5.1 above shall not be deemed to limit the ability of the non-Bankrupt Party to seek any other rights and remedies provided by the Contract Documents or by law or equity, including its ability to seek relief from any automatic stays under the United States Bankruptcy Code or the right of Design-Builder to stop Work under any applicable provision of these General Conditions of Contract. In addition, nothing in the Contract Documents limits, impairs, or restricts Owner's rights under the performance bond.

Article 12
Electronic Data

12.1 Electronic Data.

12.1.1 The parties recognize that Contract Documents, including drawings, specifications, and three-dimensional modeling (such as Building Information Models) and other Work Product may be transmitted among Owner, Design-Builder, and others in electronic media as an alternative to paper hardcopies (collectively "Electronic Data").

12.2 Transmission of Electronic Data.

12.2.1 Owner and Design-Builder shall agree upon the software and the format for the transmission of Electronic Data. Design-Builder shall be responsible for securing the legal rights to access

the agreed-upon format, including, if necessary, obtaining appropriately licensed copies of the applicable software or electronic program to display, interpret and generate the Electronic Data.

12.2.2 Neither party makes any representations or warranties to the other with respect to the functionality of the software or computer program associated with the electronic transmission of Work Product. Unless specifically set forth in the Agreement, ownership of the Electronic Data does not include ownership of the software or computer program with which it is associated, transmitted, generated, or interpreted.

12.2.3 By transmitting Work Product in electronic form, the transmitting party does not transfer or assign its rights in the Work Product. The rights in the Electronic Data shall be as set forth in Article 5 of the Agreement. Under no circumstances shall the transfer of ownership of Electronic Data be deemed to be a sale by the transmitting party of tangible goods.

12.2.4 Nothing in Article 12 hereof affects Design-Builder's obligations under Section 7.1.

12.3 Electronic Data Protocol.

12.3.1 The parties acknowledge that Electronic Data may be altered or corrupted, intentionally or otherwise, due to occurrences beyond their reasonable control or knowledge, including but not limited to compatibility issues with user software, manipulation by the recipient, errors in transcription or transmission, machine error, environmental factors, and operator error. Consequently, the parties understand that there is some level of risk in the use of Electronic Data for the communication of design and construction information. Design-Builder shall require its Subcontractors, Sub-Subcontractors, and Design Consultants to agree, to the protocols, terms and conditions set forth in Section 12.3.

12.3.2 Electronic Data will be transmitted in the format agreed upon in Section 12.2.1 above, including file conventions and document properties, unless a prior agreement is made in advance in writing.

12.3.3 Electronic Data represents the information at a particular point in time and is subject to change. Therefore, the parties shall agree upon protocols for notification by the author to the recipient of any changes which may thereafter be made to the Electronic Data, which protocol shall also address the duty, if any, to update such information, data or other information contained in the electronic media if such information changes prior to Final Completion of the Project.

12.3.4 The transmitting party specifically disclaims all warranties, expressed or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose, with respect to the media transmitting the Electronic Data.

12.3.5 Nothing in Article 12 hereof reduces, diminishes, or affects Design-Builder's obligations under the Contract Documents to ensure the Construction Documents comply with all requirements of the Contract Documents and the applicable standard of care. Transmission of the Electronic Data via electronic means shall not invalidate or negate any duties or obligations pursuant to the Contract Documents or the applicable standard of care with respect to the creation of the Electronic Data or the transmission of same, unless such data is materially changed or altered after it is transmitted to the receiving party and the transmitting party did not participate in such change or alteration.

Article 13
Miscellaneous

13.1 Assignment.

13.1.1 Design-Builder shall not, without the written consent of Owner, assign, transfer, or sublet any portion or part of the Agreement or Contract Document, or delegate the obligations under the Contract Documents. Any such attempted assignment, transfer, subletting, or delegation will be void and of no force or effect.

13.2 Successorship.

13.2.1 Design-Builder and Owner intend that the provisions of the Contract Documents are binding upon the parties their and successors and assigns.

13.3 Governing Law.

13.3.1 The Agreement and all Contract Documents shall be governed by the laws of State of Georgia, without giving effect to rules governing conflicts of law.

13.3.2 Certain records of the Project and the Work are subject to the Georgia Open Records Act, O.C.G.A. § 50-18-70 *et seq*.

13.4 Severability and Entire Agreement.

13.4.1 If any provision or any part of a provision of the Contract Documents shall be finally determined to be invalid, illegal, or otherwise unenforceable pursuant to any applicable Legal Requirements, such determination shall not impair or otherwise affect the validity, legality, or enforceability of the remaining provisions or parts of the provision of the Contract Documents, which shall remain in full force and effect as if the unenforceable provision or part were deleted.

13.4.2 The Agreement supersedes all prior negotiations, discussions, statements, and agreements between Owner and Design-Builder and constitutes the full, complete, and entire agreement between Owner and Design-Builder concerning the subject matter thereof.

13.5 No Waiver.

13.5.1 The failure of either Design-Builder or Owner to insist, in any one or more instances, on the performance of any of the obligations required of the other under the Contract Documents shall not constitute or be construed as a waiver or relinquishment of such obligation or right with respect to future performance.

13.6 Headings.

13.6.1 The headings used in the Contract Documents are for ease of reference only and shall not be construed to limit or alter the meaning of any provision.

13.7 Notice.

13.7.1 Whenever the Contract Documents require that notice be provided to the other party, notice will be deemed to have been validly given (i) if delivered in person to the individual intended to receive such notice; (ii) four (4) days after being sent by registered or certified mail, postage prepaid, to the address indicated in the Agreement; or by electronic mail, by the time frame

stated in the email-generated confirmation that notice was received by the email of the intended recipient.

13.8 Amendments.

13.8.1 The Contract Documents may not be changed, altered, or amended in any way except in writing signed by a duly authorized representative of each party.

13.8.2 No changes or amendments to the Contract Documents are permitted by verbal or oral statements, by course of conduct of the parties, or by custom of the trade.

13.9 Other Provisions

13.9.1 Design-Builder is an independent contractor of Owner. Nothing contained in the Contract Documents shall be construed to create a partnership, joint venture, or agency relationship between Owner and Design-Builder. Design-Builder owes Owner the duties of good faith, trust, confidence, and candor, and must exercise a high standard of care in managing money and property of Owner in connection with the Project. Design-Builder shall perform the Work in the most economical manner that is consistent with the Owner's objectives and the Contract Documents.

13.9.2 Design-Builder affirms its compliance with Illegal Immigration Reform and Enforcement Act of 2011 and specifically those provisions codified at O.C.G.A. § 13-10-90 *et. seq*. Design-Builder warrants that it has registered with and uses the federal work authorization program commonly known as "E-Verify." Design-Builder further agrees that it will contract for the physical performance of services required by the Contract Documents only with Subcontractors that present an affidavit as required by O.C.G.A. § 13-10-91. Design-Builder warrants that it will include a similar provision in all contracts entered into with Subcontractors for the physical performance of services for the Project.

13.9.3 Owner's rights and remedies provided for in the Contract Documents shall be cumulative and shall be in addition to every other right or remedy provided for in the Contract Documents, at law, or in equity, or by statute or otherwise. The exercise or beginning of the exercise of any one or more of the rights or remedies shall not preclude the simultaneous or later exercise of any other rights or remedies. Owner's rights and remedies hereunder shall survive any termination.

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Exhibit A – Project Planning Document

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CLAYTON COUNTY Water AUTHORITY

Advanced Water Treatment and Capacity Upgrades Project Planning Document

February 2024

Job no 32457-043

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Table of Contents

List of Tables

List of Figures

List of Appendices

List of Acronyms

Abbreviation	Definition	Abbreviation	Definition
~	approximately	**mgd**	millions of gallons per day
'-"	feet-inches	**Mn**	Manganese
ADD	Average Annual Daily Demand	**min**	minute
ACH	aluminum chlorohydrate	**mg/L**	milligrams per liter
BOD	Biochemical Oxygen Demand	**mJ**	millijoule
BV	bed volume	**mL**	milliliter
°C	degrees Celsius	**MOR**	Monthly Operating Report
C/C_o	Measured Concentration/Initial Concentration	**MSL**	Mean Sea Level
$CaCO_3$	calcium carbonate	**N**	Nitrogen
CATEX	Categorical Exclusion	**ND**	non-detect
CCWA	Clayton County Water Authority	**NF**	nanofiltration
CEC	contaminates of emerging concern	**ng/L**	nanograms per liter
CFR	Code of Federal Regulations	**No.**	Number
ClO_2	chlorine dioxide	**NPDES**	National Pollutant Discharge Elimination System
cm	centimeter	**NTU**	Nephelometric Turbidity Unit
CTW	Constructed Treatment Wetlands	**P**	Phosphorus
EBCT	Empty Bed Contact Time	**PAC**	powdered activated carbon
EPD	Georgia Environmental Protection Department	**PFAS**	per- and poly-fluoroalkyl substances (defined in Table 2-4)
Fe	iron	**POE**	point of entry
Fl	fluoride	**psig**	pounds per square inch, gauge
Fluoro-sorb	Fluoro-sorb® 200 adsorbent	**ppd**	pounds per day
ft	feet	**ppt**	parts per trillion
GAC	granular activated carbon	**RAA**	running annual average
GEFA	Georgia Environmental Finance Authority	**RSSCT**	Rapid Small-Scale Column Test
gpm	gallons per minute	**RWPS**	Raw Water Pump Station
HI	Hazard Index	**RO**	reverse osmosis

Abbreviation	Definition	Abbreviation	Definition
hp	horsepower	**SWD**	side water depth
HSP	High Service Pump	**T&O**	taste and odor
HSPS	High Service Pump Station	**TCEP**	tris-2-chloroethylphosphate
IPR	Indirect potable reuse	**TDH**	total dynamic head
IX	ion exchange	**TP**	Total Phosphorus
kg/day	kilograms per day	**µg/L**	micrograms per liter
LRAA	Locational Running Annual Average	**USEPA**	United States Environmental Protection Agency
LWD	length, width, depth	**WIFIA**	Water Infrastructure Finance and Innovation Act
MCL	Maximum Contaminant Level	**WPP**	Water Production Plant
MCLG	Maximum Contaminant Level Goal	**WRF**	Water Reclamation Facility
MDD	Maximum Annual Daily Demand	**YN**	Yoon-Nelson
MG	million gallon		

1. Introduction

1.1 Report Purpose

The purpose of this Project Planning Document is to provide an overview of drinking water treatment facilities and other infrastructure owned by Clayton County Water Authority (CCWA) that are relevant to the Advanced Water Treatment and Capacity Upgrades project (Project). This document is part of the Owner's Project Criteria as defined in the Progressive Design-Build Agreement (Agreement).

This document includes a summary of historical water quality and finished water treatment goals (**Section 2**), a summary of planned treatment capacities and a summary of existing treatment processes (**Section 3**), facility design considerations (**Section 4**), and a listing of additional resources that are available to prospective teams (**Section 5**).

Proposers should consider the information in this Project Planning Document, the Scope of Design-Builder Services (Exhibit C of the Agreement), and Project Technical Requirements (Exhibit B of the Agreement) along with all other information included with the Request for Proposals (RFP). The selected Design-Builder will be responsible for validating all information contained in these documents, as well as performing alternatives analyses, finalizing all design criteria, preparing preliminary design documents, finalizing the design, and constructing the Project as described in the Agreement.

1.2 CCWA's Water Treatment Facilities

CCWA owns and operates three water production plants (WPPs) that supply drinking water to Clayton County and portions of neighboring utilities. These plants are summarized below, and the treatment processes of each are detailed in Section 3.2.

The J.W. Smith WPP, hereafter referred to as **Smith WPP**, is a conventional treatment plant located at the southern end of Clayton County (**Figure 1-1**). Smith WPP was constructed in 1985 as a 6 million gallons per day [mgd] capacity treatment plant and was expanded to its current capacity (12 mgd) in 1989. Since that time, Smith WPP has undergone several large improvements, including the addition of ultraviolet (UV) disinfection in 2002 and other major rehabilitations and replacements in 2012. While it accounts for 28 percent of the overall capacity of CCWA's 3 WPPs, Smith WPP supplies on average 30 percent of the water provided to customers.

The Terry R. Hicks WPP, hereafter referred to as **Existing Hicks WPP**, is a 10-mgd conventional treatment plant located in the southern half of Clayton County, approximately 6 miles northeast of Smith WPP. It was constructed in 1999 and has had two major upgrades since that time, the addition of UV disinfection in 2002 and a new solids dewatering facility in 2005. Existing Hicks WPP accounts for 24 percent of the permitted capacity of the three WPPs, and currently supplies an average of 21 percent of the water provided to customers.

The W.J. Hooper WPP, hereafter referred to as **Hooper WPP**, is CCWA's largest treatment plant (20 mgd capacity), and is located in Henry County, east of Clayton. The Hooper WPP was constructed in 1956 and was expanded in 1963, 1971, and 1978. Hooper has undergone multiple capital improvement projects since this time, the most recent of which include new pump stations and processes in 2004 and residuals

handling improvements in 2001 and 2023. Hooper is permitted to supply almost half (48 percent) of CCWA's permitted capacity, and currently supplies an average of 49 percent of the water provided to customers.

1.3 CCWA's Water System

Figure 1-1 summarizes the water cycle in CCWA's system and shows the permitted water treatment capacities and permitted wastewater discharges.

The Smith WPP is located in the Flint River Basin and treats raw water from the Smith Reservoir. Smith Reservoir is filled from its upstream drainage area, including the Shoal Creek Reservoir, and from treated effluent from CCWA's Panhandle Wetlands. Storage in Smith Reservoir can be augmented by pumping raw water from the Flint River, contingent on a specified minimum flow being maintained downstream.

The Existing Hicks WPP is located in the Ocmulgee River Basin and treats raw water from both Smith Reservoir (up to 5 mgd allowable from this source) and from Blalock Reservoir (up to 10 mgd allowable from this source). Blalock Reservoir is filled from upstream drainage areas, Shamrock Reservoir, Pates Creek headwaters, and treated effluent from CCWA's Huie Wetlands.

The Hooper WPP is located downstream from the Hicks WPP, in the Ocmulgee River Basin, and is permitted to treat up to 20 mgd of raw water from the Hooper Reservoir. The Hooper Reservoir is filled from its upstream drainage area, which includes Blalock Reservoir's drainage area, as well as drainage from Little Cotton Indian Creek. CCWA controls the amount of flow released from Blalock Reservoir downstream to the Hooper Reservoir.

Each of the three WPPs pump water through a transmission main to ground storage tanks in the system. Hooper WPP is the only plant that supplies treated water to customers prior to a ground storage tank. Hooper WPP pumps treated water to both the Jonesboro and Morrow ground storage tanks; repump stations (RPSs) at these locations distribute water throughout the system. Existing Hicks WPP and Smith WPP pump treated water to ground storage tanks serving Noah's Ark RPS which distributes water throughout the system. For the reasons above, the two entry points to the CCWA distribution system (and therefore the two regulatory points) are: Hooper WPP and Noah's Ark ground storage tanks. However, the Noah's Ark RPS is planned to be decommissioned at the completion of this Project.

As previously mentioned, and as shown in **Figure 1-1**, two of CCWA's source water reservoirs are partially supplied by wastewater effluent via two constructed treatment wetland systems. Because of this indirect reuse system, the safe yield of CCWA's reservoirs is highly dependent on system demand, a significant portion of which is returned to the system as treated wastewater. CCWA recently developed a mass-balance model in OASIS to estimate overall system safe yield based on projected future demand. **Table 1-1** shows the preliminary estimated safe yield (average day), compared to currently permitted withdrawals (maximum day). While the existing withdrawal permits are sufficient to meet current demand, projected future demand will require an increase in overall raw water need from CCWA's reservoirs. Using results from the OASIS model, CCWA plans to propose updated withdrawal permits to the EPD in the future to meet future demand (not included within the scope of the Advanced Water Treatment and Capacity Upgrades project). These projected demands are further discussed in Section 3.

Table 1-1: Projected Reservoir Safe Yields

Facility	Current Permitted Maximum Withdrawal (Maximum Day, MGD)	2035 System Safe Yield [a] (ADD, MGD)
Smith Reservoir	17.0	24.5
Hooper Reservoir	22.0	27.5[b]
Blalock Reservoir	10.0	
Groundwater Wells	0.4	0.4
Total	**49.4**	**52.4**

[a] Based on a projected annual average day demand of 35 MGD; groundwater safe yield is assumed to be equal to the current permitted withdrawal.

[b] Combined safe yield of Blalock and Hooper Reservoirs (which are connected by Pates Creek).

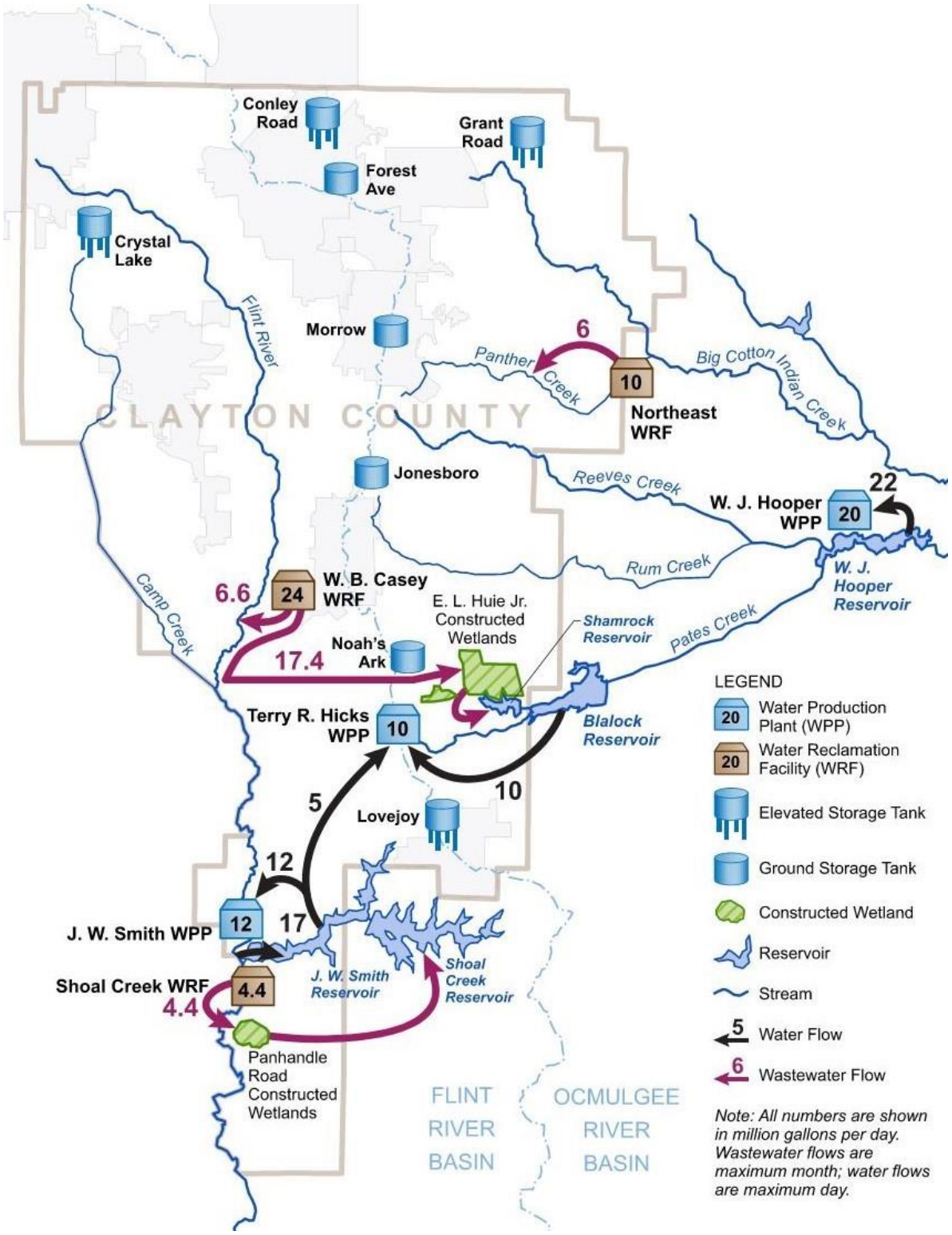


Figure 1-1: CCWA Water Cycle

1.4 Project Background

To meet its future potable water needs, CCWA plans to add a new WPP ("**New Hicks WPP**") adjacent to Existing Hicks WPP that will initially replace the Smith WPP and provide additional treatment capacity to meet current system demand. Additionally, CCWA plans to add advanced treatment processes capable of removing per- and poly-fluoroalkyl substances (PFAS) at the New Hicks WPP (to treat water from both the Existing Hicks WPP and New Hicks WPP) and at the Hooper WPP to comply with an anticipated National Primary Drinking Water Regulation regarding maximum contaminant limits for PFAS in drinking water that the USEPA plans to promulgate in 2024. CCWA plans to use a progressive design/build (PDB) delivery model for the design and construction of these improvements.

Eventually, the New Hicks WPP and advanced treatment processes constructed adjacent to Existing Hicks WPP will need to be expanded to replace the treatment capacity provided by the Existing Hicks WPP. Ultimately, it will need to be expanded to provide treatment capacity to meet projected increases in water demand through the Year 2050 and beyond. The selected Design-Builder will be required to include key infrastructure in the design and construction of the New Hicks WPP that will allow CCWA to easily add treatment capacity in the future.

The Project will meet the Owner's objectives of ensuring adequate treatment capacity and complying with drinking water regulations and water quality goals. Potential project components are included in Section 1.5; however, CCWA is amenable to alternative phasing plans and approaches to meet the Owner's Objectives, as long as near-term demand is met and long-term anticipated demand is accommodated for in design.

Additional Project Technical Requirements are described in Exhibit B of the Agreement. The scope of the selected Design-Builder is further described in Exhibit C of the Agreement (Scope of Design-Builder Services).

1.5 Owner's Objectives

As provided in RFP Section 1.3, CCWA's objectives for the Project are to ensure adequate treatment capacity and compliance with drinking water regulations and water quality goals. CCWA is amenable to alternative phasing plans and approaches to meet these objectives. Goals for delivery of the Project are as follows:

1. Construct infrastructure to meet capacity goals outlined in **Table 3-1**, which could include:
    - A New Hicks WPP adjacent to Existing Hicks WPP with provisions for future expansions.
    - Modifications to the Smith RWPS or HSPS to efficiently pump raw water from the Smith Reservoir to Existing and New Hicks WPPs with consideration given to converting one of the Huie holding ponds to a raw water reservoir prior to introduction into these WPPs.
    - Any other solutions that meet capacity goals outlined in **Table 3-1**.
2. Construct infrastructure to meet water quality goals, which could include:
    - A new 30 mgd (finished water capacity) advanced water treatment facility to effectively remove PFAS compounds from the New Hicks WPP and Existing Hicks WPP.

- A new 20 mgd (finished water capacity) advanced water treatment facility to effectively remove PFAS compounds from the Hooper WPP.

3. Select PFAS treatment technology and construct additional treatment facilities to effectively remove PFAS compounds from waste streams generated from new treatment processes.

4. For membrane alternatives, optimize the amount of finished water throughput (permeate) while meeting CCWA's finished water quality goals.

5. Evaluate and perform pilot testing of alternative treatment processes capable of removing regulated PFAS compounds to meet required maximum contaminant levels (MCL) and maximum contaminant level goals (MCLG) as proposed in USEPA's PFAS Regulation, March 14, 2023, or as finalized prior to the selected Design-Builder's Notice to Proceed. Select the most appropriate treatment technology for each WPP to meet CCWA's finished water quality goals.

6. Design new facilities to meet all drinking water regulations and achieve the Owner's other water quality goals at the points of entry into the distribution system and throughout the distribution system.

7. Meet the regulatory deadline established by USEPA for the completion of new treatment processes (and other systems to make these processes fully functional) to remove PFAS compounds.

8. Develop a design for the Project with a total final Project Budget of less than $450 million, which includes all CCWA's project costs in addition to the cost of the Design-Builder's scope.

9. Meet funding requirements of all grants and loans that will be used for the Project.

10. Provide high-quality new facilities and equipment that will be sustainable and will operate reliably under the design standards outlined in Exhibit B of the Agreement (Project Technical Requirements) and those standards developed during the design.

11. Minimize life cycle costs.

12. Achieve the scheduled completion to meet all milestones based on durations as established in the Agreement for the design and construction of the Project.

13. Achieve an optimal balance of risk allocation between the Owner and the Design-Builder.

14. Implement an effective safety program incorporating best industry practices. Maintain a safe working environment for Consultants, Contractors, CCWA staff, and visitors during design and construction.

15. Promote a fair share of subcontract, materials, equipment, and service awards to disadvantaged, minority, and women-owned businesses for equipment, supplies, construction, and services.

16. Exceed the stated goals for disadvantaged business entities (DBE), including minority and female business enterprise and the Owner's Small Local Business Enterprise (SLBE) participation. These requirements and goals are as stated in Exhibit D of the Agreement

(Supplemental General Conditions for Federally Assisted State Revolving Fund Construction Contracts) and for Water Infrastructure Finance and Innovation Act (WIFIA).

17. Provide new facilities that are easy to operate and maintain.
18. Minimize impact on operations and maintenance of existing facilities during construction.
19. Reuse existing assets where feasible.

2. Water Quality

This section summarizes historical water quality data and trends for CCWA's three WPPs. This is followed by a summary of CCWA's finished water quality goals and General NPDES permit.

2.1 Historical Water Quality and WPP Flows

Table 2-1, **Table 2-2**, and **Table 2-3** summarize the historical raw and finished water quality (January 1, 2002 – October 31, 2023) observed at each WPP. Data for the Smith WPP is available through April 30, 2023; data for the Existing Hicks WPP is available through September 30, 2023; and data for the Hooper WWP is available through October 31, 2023. The monthly operating reports (MORs) for each WPP used to develop these tables will be made available to the selected Design-Builder.

The range of raw water data presented in these tables can be considered by Proposers for the initial basis of design, i.e., expected influent raw water quality to identify new or modified treatment processes to achieve all finished water goals. These tables show the historic effectiveness of existing processes in achieving the stated finished water goals.

The selected Design-Builder should review with CCWA the range of historical raw water quality and PFAS data presented in these tables to assess whether future raw water quality conditions may change and therefore affect the design for the Project. The selected Design-Builder should consider potential combinations of raw water sources (Blalock and Smith Reservoirs) when developing the design for New Hicks WPP and PFAS treatment for Existing and New Hicks WPPs.

Table 2-1: Existing Hicks WPP Historical Water Quality

Existing Hicks WPP Raw Water	Minimum	Average 2002-2023	Average 2002-2019	Average 2020-2023	90th Percentile	Maximum
Raw Water Flow to WPP (mgd)	1.82	6.19	6.09	6.66	8.28	9.92
pH	6.04	7.17	7.14	7.32	7.59	9.58
Alkalinity (mg/L as $CaCO_3$)	6.58	33.14	32.57	35.85	54.00	84.00
Temperature (°C)	4.00	20.30	20.22	20.68	28.80	32.80
Fe (mg/L)	ND	0.29	0.29	0.28	0.48	1.77
Mn (mg/L)	ND	0.08	0.08	0.09	0.15	1.21
Daily Turbidity** (NTU)	0.61	5.22	5.34	4.61	9.04	58.30
Existing Hicks WPP Finished Water	**Minimum**	**Average 2002-2023**	**Average 2002-2019**	**Average 2020-2023**	**90th Percentile**	**Maximum**
Water Pumped to Distribution (mgd)	1.00	5.53	5.49	5.73	7.37	9.90
Daily pH*	6.47	7.34	7.34	7.33	7.49	8.32
Fe (mg/L)	ND	0.01	0.01	0.02	0.03	0.16
Mn (mg/L)	ND	0.01	0.01	0.01	0.02	0.14
Fluoride (mg/L)	ND	0.79	0.83	0.60	0.98	1.45
Minimum Free Chlorine Available (mg/L)	0.26	1.77	1.80	1.59	2.15	2.59
Chlorite (mg/L) [if ClO_2 used]	ND	0.24	0.24	0.24	0.42	0.95
Chlorine Dioxide (mg/L) [if ClO_2 used]	ND	0.04	0.03	0.11	0.10	0.69
Peak Hourly Flow (mgd)	1.03	7.83	7.77	8.16	9.75	15.37
Free Chlorine Available at Peak Hourly Flow (mg/L)	0.62	1.93	1.97	1.74	2.32	3.36

* Average of the minimum and maximum reported daily pH from the finished water.

** Average of the minimum and maximum reported daily turbidity.

Table 2-2: Hooper WPP Historical Water Quality

Hooper WPP Raw Water	Minimum	Average 2002-2023	Average 2002-2019	Average 2020-2023	90th Percentile	Maximum
Raw Water Flow to WPP (mgd)	1.46	14.51	14.31	15.42	17.43	20.02
pH	6.20	7.20	7.16	7.40	7.64	8.91
Alkalinity (mg/L as $CaCO_3$)	13.00	41.66	42.31	38.61	62.00	108.00
Temperature (°C)	4.00	19.74	19.43	21.21	27.00	36.00
Fe (mg/L)	0.07	0.94	0.94	0.91	1.34	3.55
Mn (mg/L)	0.05	0.30	0.31	0.25	0.45	2.10
Daily Turbidity** (NTU)	3.00	18.85	19.61	15.30	31.50	299.00
Hooper WPP Finished Water	**Minimum**	**Average 2002-2023**	**Average 2002-2019**	**Average 2020-2023**	**90th Percentile**	**Maximum**
Water Pumped to Distribution (mgd)	2.32	13.09	12.92	13.88	15.57	18.34
Daily pH*	6.75	7.35	7.34	7.38	7.48	8.65
Fe (mg/L)	ND	0.03	0.04	0.01	0.08	0.30
Mn (mg/L)	ND	0.01	0.01	0.01	0.02	0.09
Fluoride (mg/L)	ND	0.84	0.87	0.72	1.00	1.34
Minimum Free Chlorine Available (mg/L)	0.35	1.79	1.79	1.76	2.06	2.48
Chlorite (mg/L) [if ClO_2 used]	ND	0.57	0.60	0.47	0.76	1.16
Chlorine Dioxide (mg/L) [if ClO_2 used]	ND	0.04	0.04	0.07	0.10	0.71
Peak Hourly Flow (mgd)	6.87	15.07	15.06	15.12	17.21	26.27
Free Chlorine Available at Peak Hourly Flow (mg/L)	0.35	1.94	1.96	1.85	2.26	3.33

* Average of the minimum and maximum reported daily pH from the finished water.

** Average of the minimum and maximum reported daily turbidity.

Table 2-3: Smith WPP Historical Water Quality

Smith WPP Raw Water	Minimum	Average 2002-2023	Average 2002-2019	Average 2020-2023	90th Percentile	Maximum
Raw Water Flow to WPP (mgd)	0.20	7.72	7.66	8.03	10.50	12.01
pH	5.86	6.93	6.91	7.08	7.20	7.92
Alkalinity (mg/L as $CaCO_3$)	10.00	22.18	22.26	21.75	26.00	34.00
Temperature (°C)	0.23	19.64	19.76	19.02	29.00	39.50
Fe (mg/L)	ND	0.22	0.23	0.19	0.43	2.22
Mn (mg/L)	ND	0.08	0.08	0.08	0.14	1.89
Daily Turbidity** (NTU)	0.38	3.50	3.53	3.32	6.55	25.15
Smith WPP Finished Water	**Minimum**	**Average 2002-2023**	**Average 2002-2019**	**Average 2020-2023**	**90th Percentile**	**Maximum**
Water Pumped to Distribution (mgd)	1.35	6.85	6.80	7.14	9.36	13.60
Daily pH*	6.60	7.33	7.34	7.25	7.45	7.95
Fe (mg/L)	ND	0.01	0.01	0.01	0.02	0.13
Mn (mg/L)	ND	0.02	0.02	0.01	0.03	0.85
Fluoride (mg/L)	ND	0.78	0.83	0.51	1.03	1.89
Minimum Free Chlorine Available (mg/L)	0.70	1.79	1.82	1.63	2.20	2.62
Chlorite (mg/L) [if ClO_2 used]	ND	0.37	0.39	0.23	0.55	1.00
Chlorine Dioxide (mg/L) [if ClO_2 used]	ND	0.03	0.02	0.08	0.09	0.73
Peak Hourly Flow (mgd)	3.90	9.49	9.63	8.71	11.10	12.38
Free Chlorine Available at Peak Hourly Flow (mg/L)	0.41	1.92	1.96	1.67	2.31	3.01

* Average of the minimum and maximum reported daily pH from the finished water.

** Average of the minimum and maximum reported daily turbidity.

2.1.2 WPP Production Flows

Figure 2-1 presents the quantity of finished water pumped into the distribution system from each of the three WPPs (2013-2023). The Existing Hicks WPP and Smith WPP flows were consistent over the period reviewed, averaging approximately 5.5 mgd and 6.9 mgd, respectively. The flows from Hooper WPP averaged 13.1 mgd for the period reviewed. Of note, Hooper WPP experienced a taste and odor event in November 2017, leading to a temporary plant shutdown that limited the ability to pump water into the distribution system from the Morrow and Jonesboro Repump Stations.

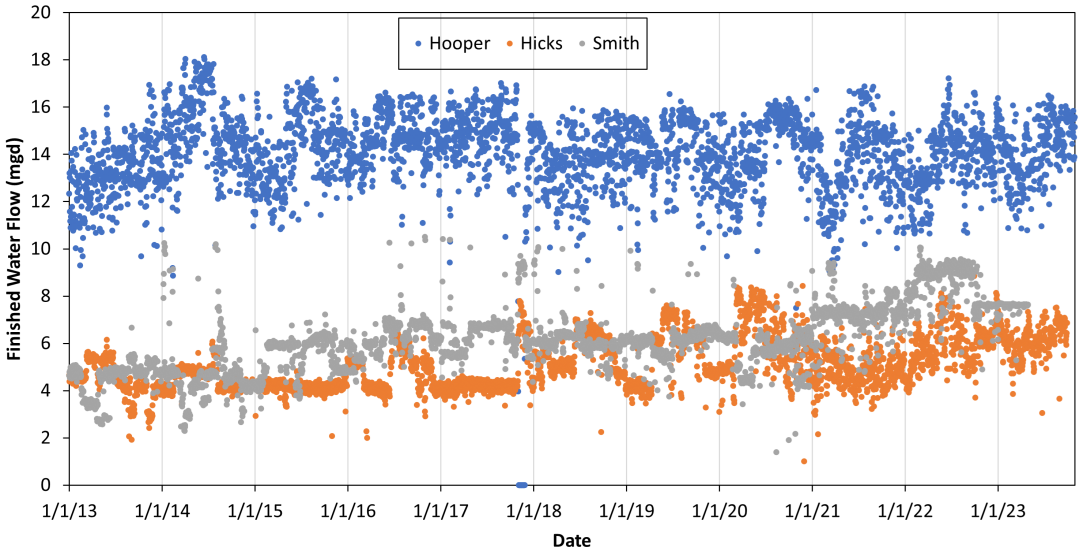


Figure 2-1: CCWA WPPs – Finished Water Pumped to Distribution

2.1.3 Raw Water Turbidity

On average, raw water turbidity levels have typically been <30 NTU at the three WPPs with the Existing Hicks WPP and Smith WPP experiencing the lowest levels as shown in **Figure 2-2**. Raw water turbidity has been more variable at the Hooper WPP than the other WPPs.

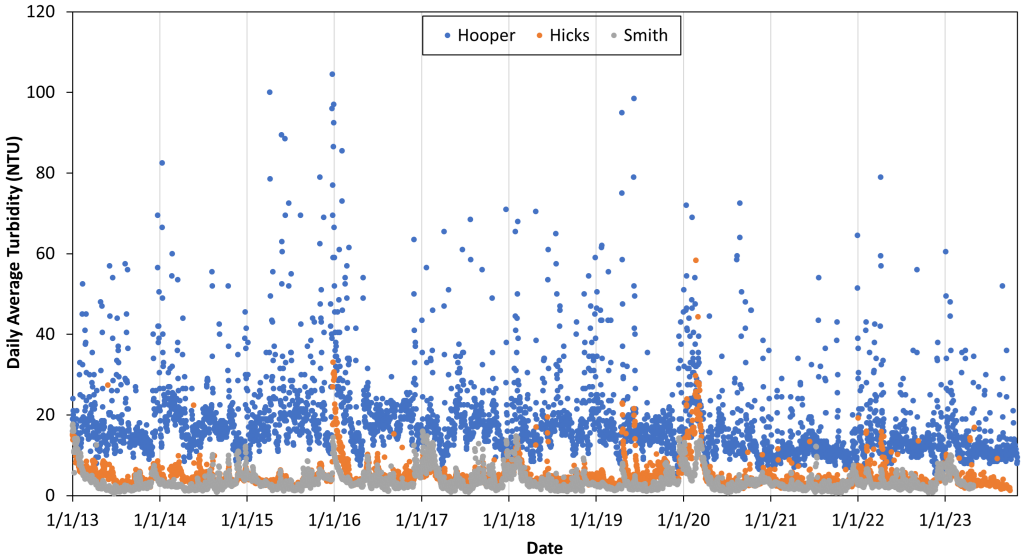


Figure 2-2: CCWA WPPs – Raw Water Turbidity

2.1.4 Raw Water pH

Average daily raw water pH levels at the Existing Hicks WPP, Hooper WPP, and Smith WPP were approximately 7.2. See the summary of 2013 to 2023 data in **Figure 2-3.**

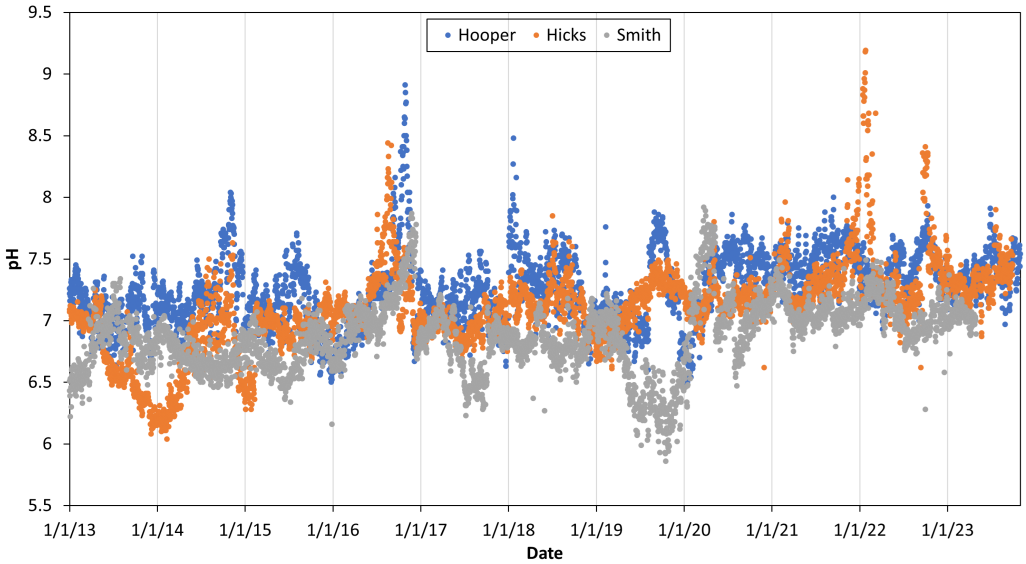


Figure 2-3: CCWA WPPs – Raw Water pH

2.1.5 Raw Water Iron, Manganese, and Alkalinity

Figure 2-4, **Figure 2-5**, and **Figure 2-6** show the historical raw water iron, manganese, and alkalinity values at all three WPPs, respectively. The raw water at the Existing Hicks WPP and Smith WPP is relatively low in iron, manganese, and alkalinity concentrations, though the Existing Hicks WPP raw water alkalinity has been similar to Hooper's raw water alkalinity over the past five years. This is because raw water from the Blalock Reservoir was used more frequently during this time to supplement raw water from the Smith Reservoir.

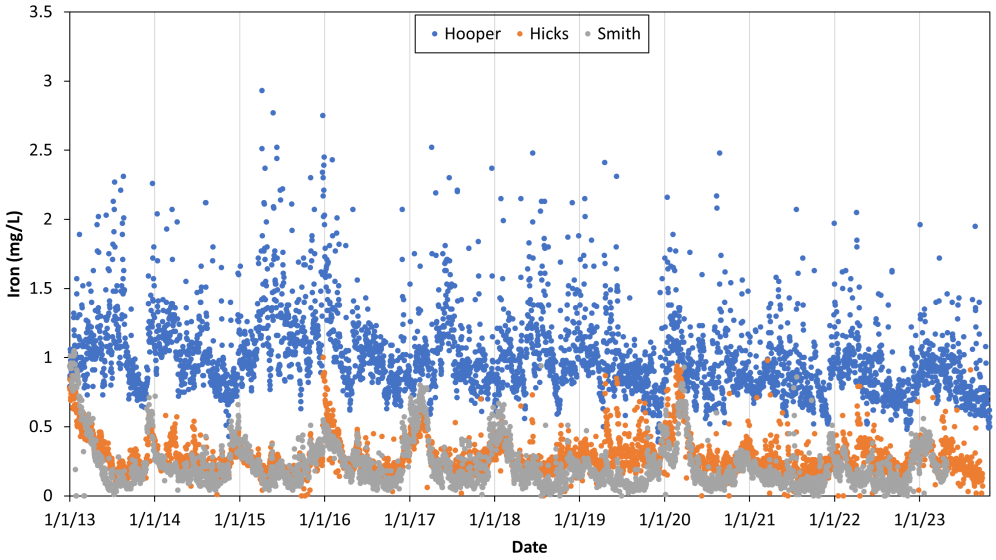


Figure 2-4: CCWA WPPs – Raw Water Iron

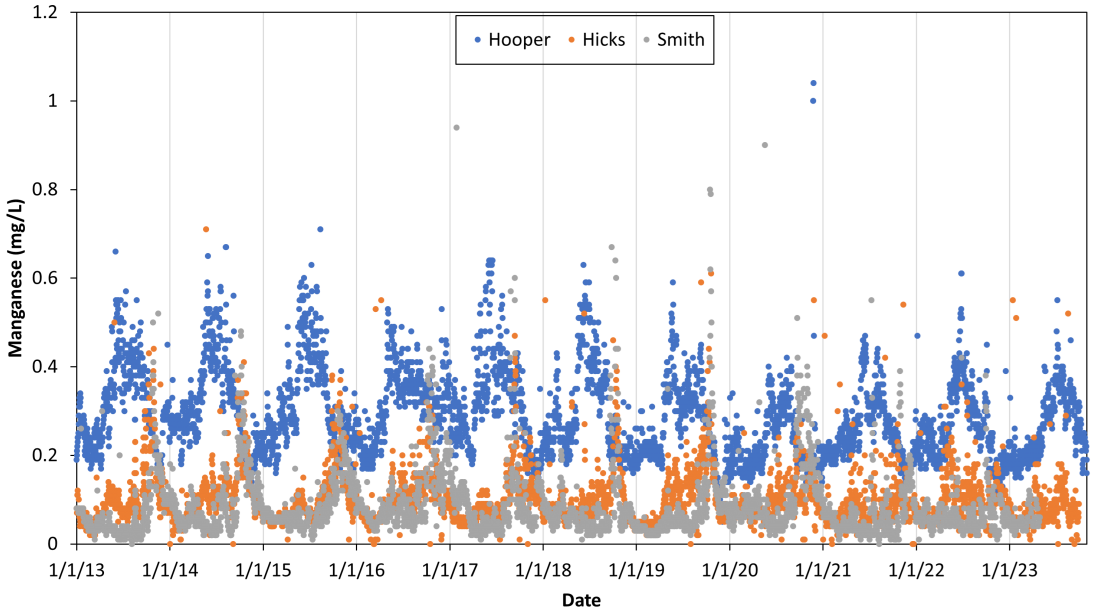


Figure 2-5: CCWA WPPs – Raw Water Manganese

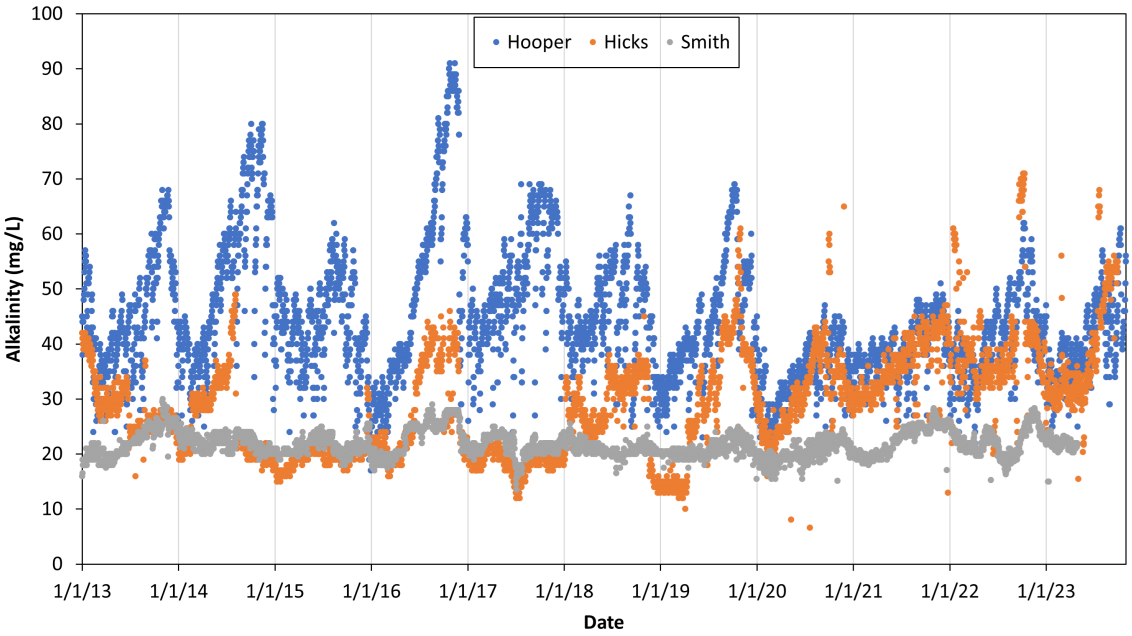


Figure 2-6: CCWA WPPs – Raw Water Alkalinity

2.1.6 Finished Water pH

From 2002-2023, average daily finished water pH values at the Hicks, Hooper, and Smith WPPs were 7.34, 7.35, and 7.33, respectively. **Figure 2-7**, **Figure 2-8**, and **Figure 2-9** show finished water pH data from 2013 to 2023.

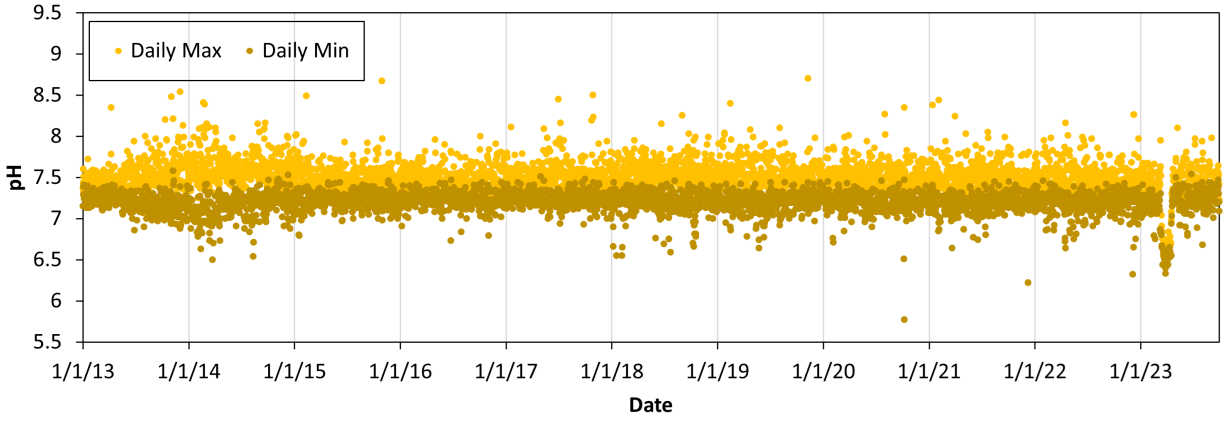


Figure 2-7: Existing Hicks WPP – Finished Water pH

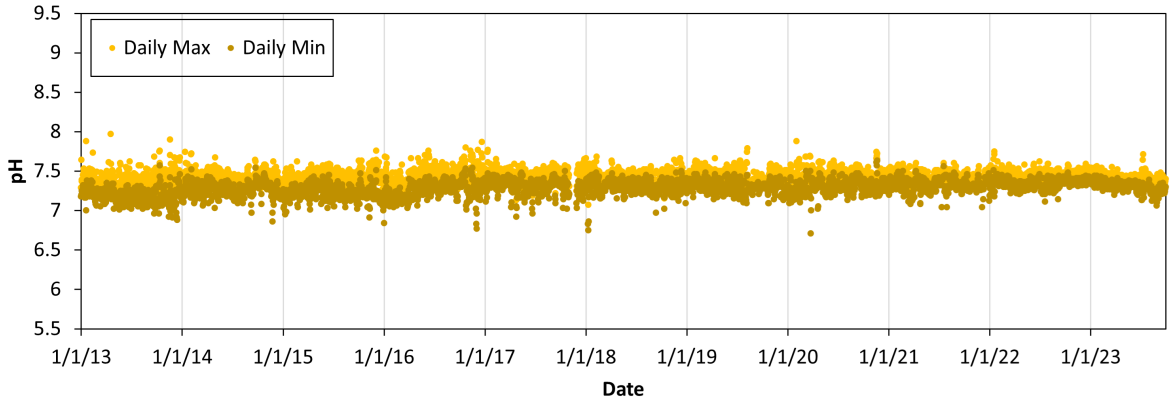


Figure 2-8: Hooper WPP – Finished Water pH

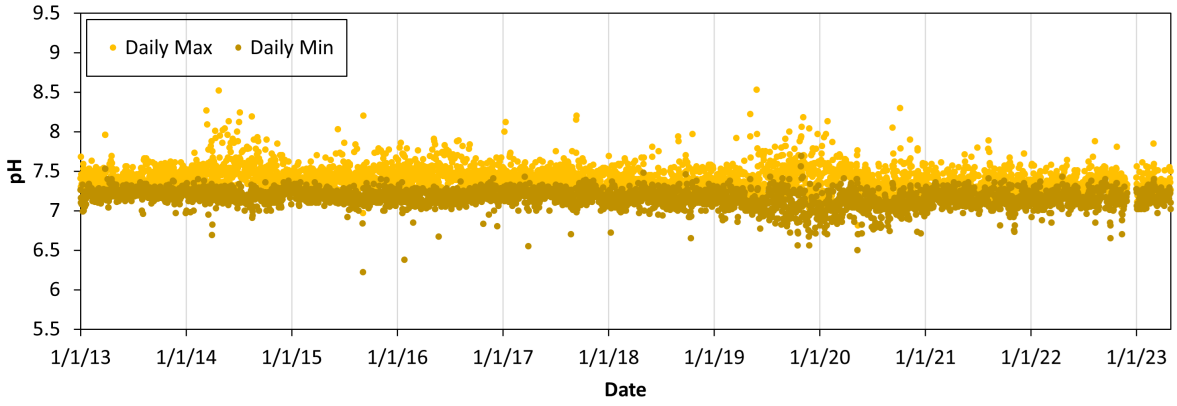


Figure 2-9: Smith WPP – Finished Water pH

2.1.7 Finished Water Iron and Manganese

As shown in **Figure 2-10** and **Figure 2-11**, finished water iron and manganese levels at all three WPPs have typically been below their respective MCLG – 0.3 mg/L for iron and 0.05 mg/L for manganese.

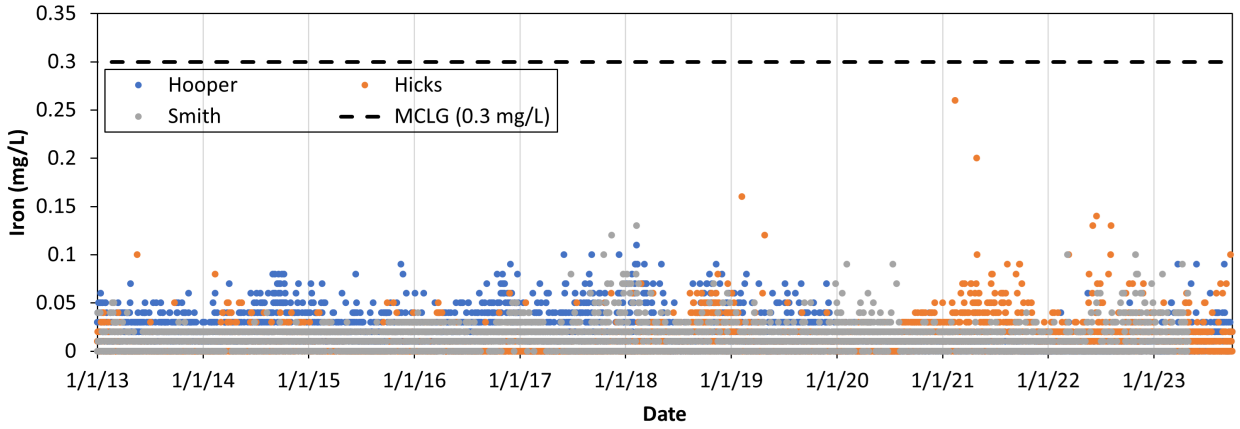


Figure 2-10: CCWA WPPs – Finished Water Iron

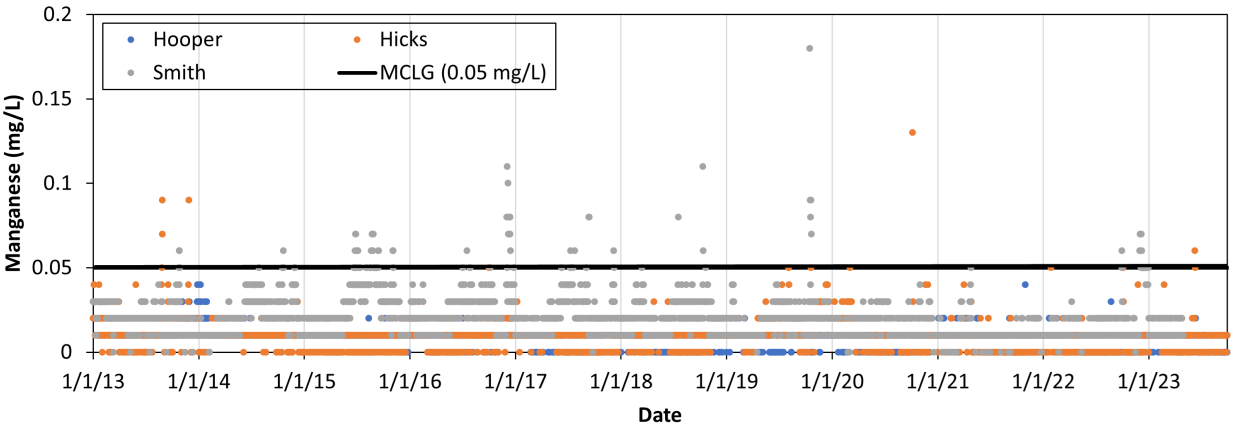


Figure 2-11: CCWA WPPs – Finished Water Manganese

2.1.8 Finished Water Chlorine, Chlorine Dioxide, and Chlorite

Figure 2-12, **Figure 2-13**, and **Figure 2-14** show the historical finished water chlorine, chlorine dioxide, and chlorite concentrations for the three WPPs.

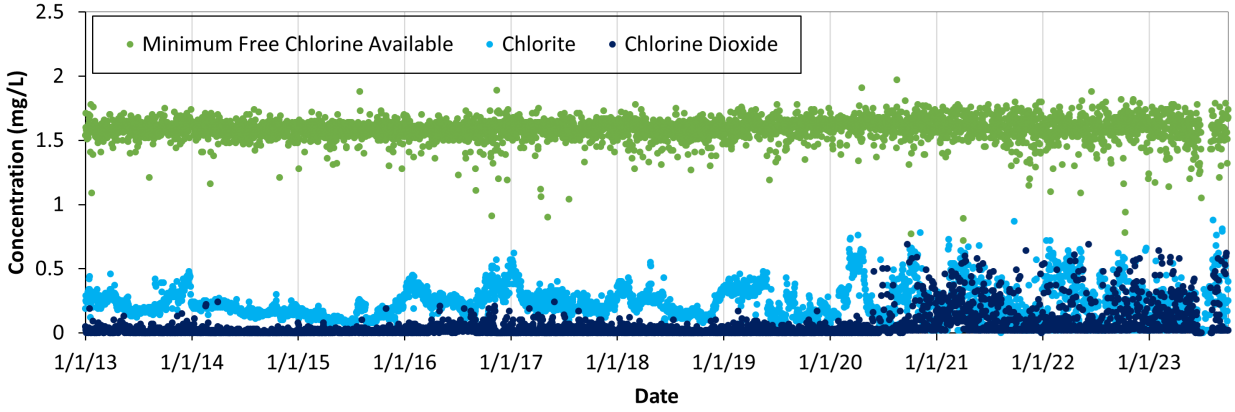


Figure 2-12: Existing Hicks WPP – Finished Water Chlorine, Chlorine Dioxide, and Chlorite

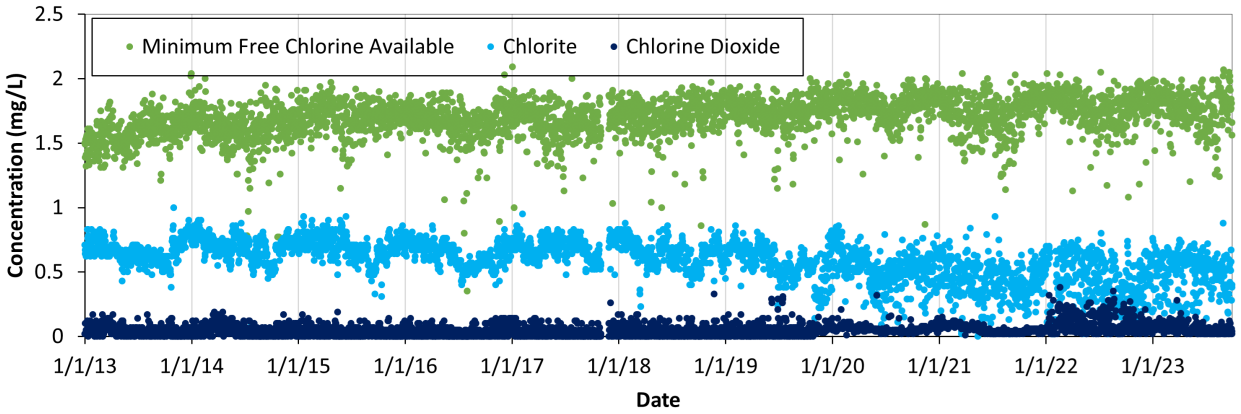


Figure 2-13: Hooper WPP – Finished Water Chlorine, Chlorine Dioxide, and Chlorite

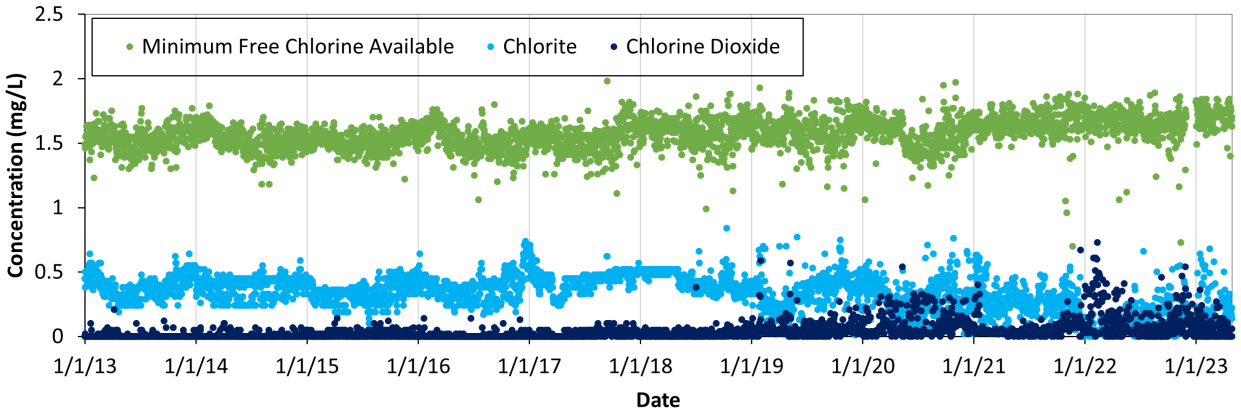


Figure 2-14: Smith WPP – Finished Water Chlorine, Chlorine Dioxide, and Chlorite

2.2 Historical PFAS Data and Treatment Goals

2.2.1 Historical Data

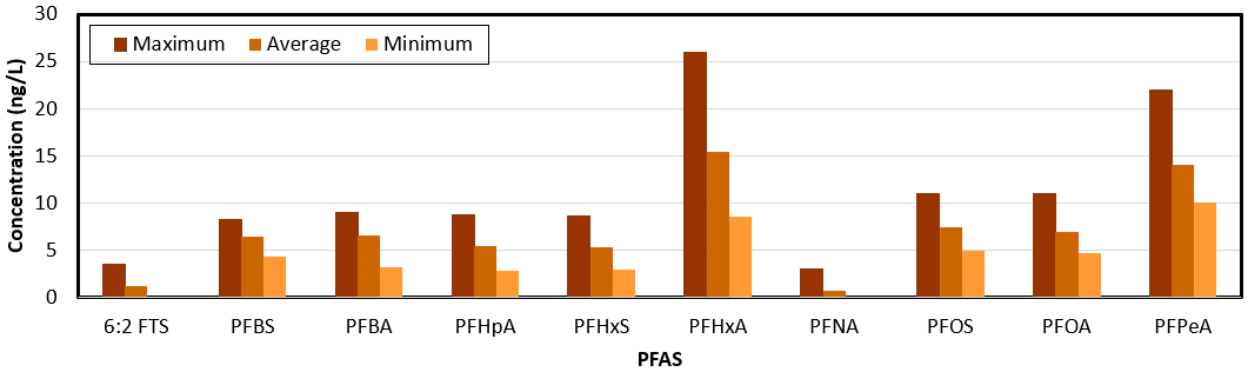
In response to recent studies and a change to USEPA National Primary Drinking Water Standards, CCWA collected data on PFAS concentrations in their finished water. Fifteen PFAS samples were collected quarterly between March 2020 and October 2023. Average PFAS concentrations across the samples are summarized in **Table 2-4**. "ND" refers to non-detect, or less than the equipment's limit of detection or laboratory-stated minimum reporting level. PFAS compounds that returned at least one detected value in these 15 samples have their minimum and maximum values in parentheses. The two entry points to the CCWA distribution system are Hooper WPP (directly into the system and through Morrow and Jonesboro ground storage tanks) and Noah's Ark ground storage tanks (which distributes finished water from both the Existing Hicks and Smith WPPs).

Table 2-4: Average PFAS Concentrations (ng/L)

PFAS	Existing Hicks WPP	Hooper WPP	Smith WPP	Noah's Ark Tank
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OudS/F-53B Minor)	ND	ND	ND	ND
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	ND	ND	ND
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	ND	ND	ND
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND *(ND – 3.50)*	ND	3.13 *(ND – 5.10)*	2.57 *(ND – 4.50)*
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS/F-53B Major)	ND	ND	ND	ND
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	ND	ND	ND
N-ethyl Perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND
N-methyl Perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	ND	ND	ND
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	ND	ND	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	ND	ND	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	6.47 *(4.30 – 8.30)*	5.50 *(3.70 – 6.90)*	5.85 *(4.10 – 7.50)*	6.80 *(5.70 – 7.70)*
Perfluorobutanoic acid (PFBA)	6.59 *(3.20 – 9.00)*	4.93 *(2.60 – 6.20)*	5.87 *(3.50 – 8.10)*	6.33 *(3.10 – 8.40)*
Perfluorodecanoic acid (PFDA)	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)	5.49 *(2.80 – 8.70)*	3.84 *(ND – 6.00)*	4.34 *(2.60 – 8.60)*	5.01 *(3.90 – 6.10)*
Perfluorohexanesulfonic acid (PFHxS)	5.30 *(3.00 – 8.60)*	3.26 *(2.30 – 4.50)*	5.51 *(2.30 – 10.00)*	5.60 *(4.00 – 6.60)*
Perfluorohexanoic acid (PFHxA)	15.37 *(8.60 – 26.00)*	11.45 *(6.00 – 16.00)*	10.33 *(5.40 – 17.00)*	13.36 *(9.50 – 18.00)*
Perfluorononanoic acid (PFNA)	ND *(ND – 3.00)*	ND *(ND – 2.00)*	ND *(ND – 2.40)*	ND *(ND – 2.20)*
Perfluorooctanesulfonic acid (PFOS)	7.46 *(4.90 – 11.00)*	5.91 *(4.50 – 8.00)*	6.77 *(2.90 – 13.00)*	7.13 *(4.70 – 9.00)*
Perfluorooctanoic acid (PFOA)	6.93 *(4.70 – 11.00)*	5.85 *(4.10 – 7.40)*	5.04 *(3.50 – 7.90)*	6.09 *(4.80 – 7.70)*
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	14.00 *(10.00 – 22.00)*	9.84 *(7.30 – 14.00)*	11.23 *(8.10 – 14.00)*	12.67 *(9.80 – 18.00)*
Perfluorotetradecanoic acid (PFTeDA)	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND

ND = non-detect
(Value – Value) = minimum and maximum detected value during sampling period, respectively

Figure 2-15, **Figure 2-16**, **Figure 2-17**, and **Figure 2-18** illustrate the quarterly sampling data (March 2020 – October 2023) from **Table 2-4.**



for those PFAS compounds that had at least one detectable value.

Figure 2-15: Existing Hicks WPP – Range of Observed PFAS Concentrations

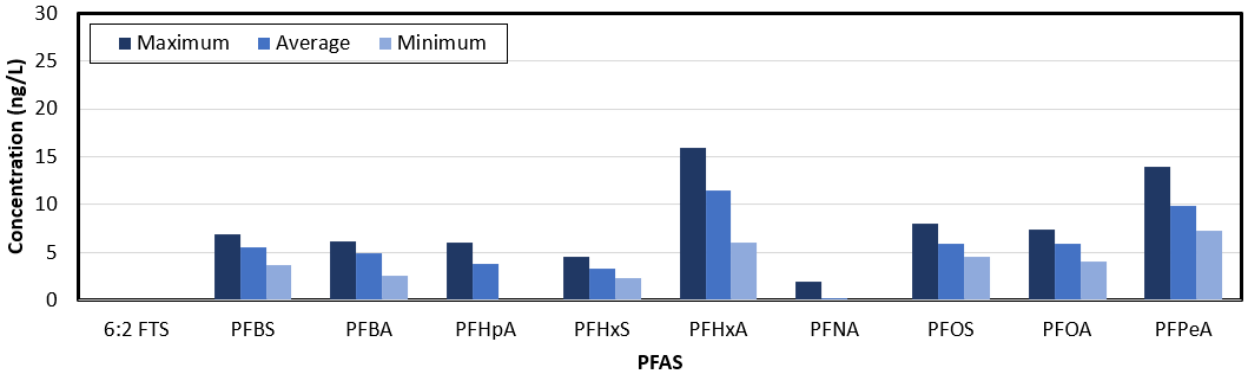


Figure 2-16: Hooper WPP – Range of Observed PFAS Concentrations

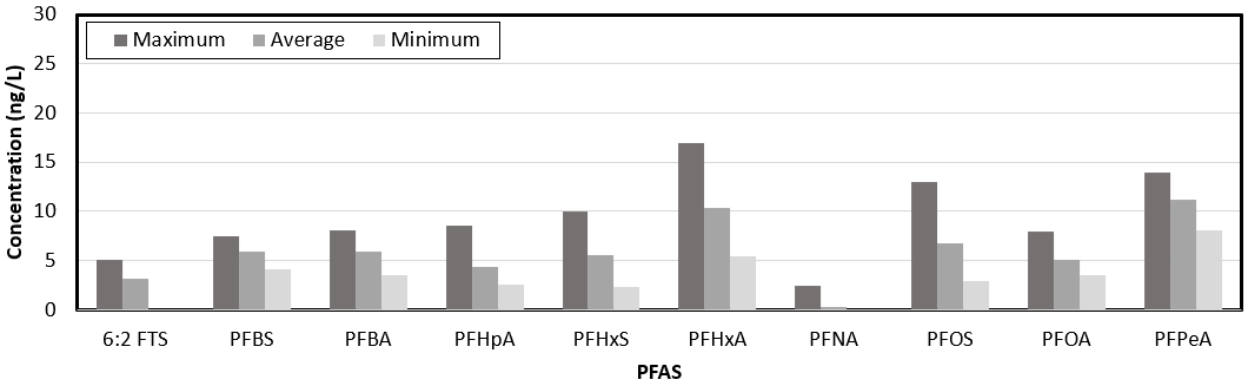


Figure 2-17: Smith WPP – Range of Observed PFAS Concentrations

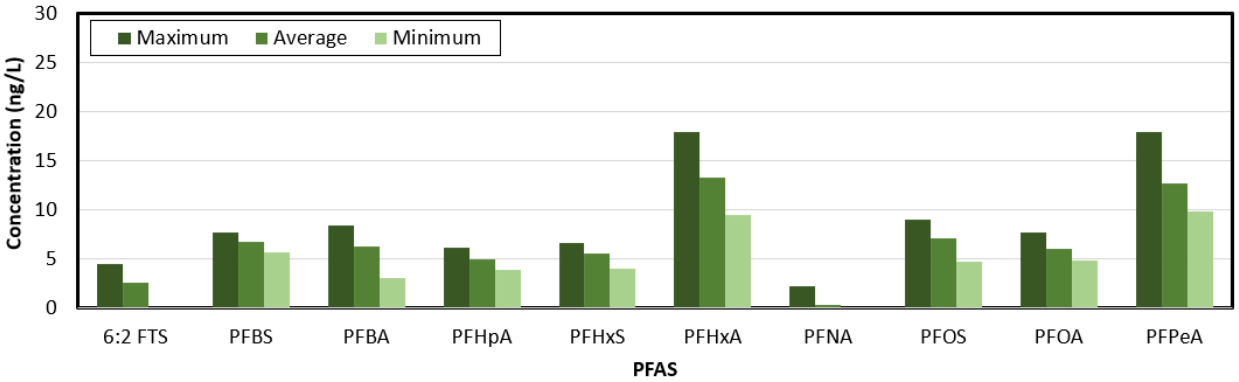


Figure 2-18: Noah's Ark Tanks – Range of Observed PFAS Concentrations

2.2.2 PFAS Treatment Goals

On March 14, 2023, USEPA released the pre-publication version of its proposed National Primary Drinking Water Standards for six types of PFAS. As part of this proposal, MCL values were established for both PFOA and PFOS at 4.0 ng/L (or parts per trillion [ppt]). MCLG values were established for both species at 0.0 ng/L (or ppt). In addition, a maximum hazard index (HI) was included for PFHxS, PFNA, HFPO-DA (GenX), and PFBS, which is calculated using the following formula (1 ppt= 1 ng/L):

$$Hazard\ Index\ (HI) = \frac{PFHxS}{9.0\ ppt} + \frac{PFNA}{10\ ppt} + \frac{GenX}{10\ ppt} + \frac{PFBS}{2{,}000\ ppt}$$

If the calculated HI exceeds 1.0, then it is a violation of the proposed MCL.

The new drinking water standards for PFOS, PFOA, and the HI will be based upon a running annual average (RAA) of quarterly samples. To simulate this calculation for a single year's set of data, the average of observed values from quarterly samples collected by CCWA on 1/3/2023, 3/27/2023, 6/22/2023, and 10/4/2023 was calculated and summarized in **Table 2-5.** The RAA for each WPP for PFOS and PFOA exceeded the proposed MCL of 4.0 ng/L, as well as the proposed MCLG of zero for both compounds. The calculated HI values are below the proposed MCL of 1.0.

Table 2-5: WPP and Noah's Ark Tank PFAS and Calculated HI

PFAS Standard	MCL	MCLG	Existing Hicks WPP	Smith WPP	Noah's Ark Tank	Hooper WPP
PFOS (ng/L)	4.0	0	7.50	7.25	7.48	5.10
PFOA (ng/L)	4.0	0	6.65	5.23	5.98	5.43
HI	1.0	1.0	0.64	0.67	0.66	0.10

Table 2-4 can be used as the initial basis of design to identify new or modified treatment processes to meet the proposed MCLG of zero ng/L. During Phase 1A Services, the selected Design-Builder should review the range of historical PFAS water quality data presented in this table with CCWA to assess whether future water raw water quality conditions may change, and different values should be used as the basis of design for the Project. In developing the design for the New Hicks WPP and PFAS treatment at both New and Existing Hicks WPPs, the potential combinations of raw water sources (Blalock and Smith Reservoirs) will need to be considered.

2.3 Rapid Small-Scale Column Testing

2.3.1 Methodology

CCWA acquired the services of Battelle Memorial Institute (Battelle) to conduct bench-scale rapid small-scale column testing (RSSCT) using surface water from the three WPPs and reverse osmosis (RO)-concentrate using Existing Hicks WPP source water to compare PFAS removal using granular activated carbon (GAC), ion exchange (IX) from resins, and Colloid Environmental Technologies Company's (CETCO's) Fluoro-sorb® 200 adsorbent (Fluoro-sorb). Battelle's *Rapid Small-Scale Column Testing (RSSCT) for Clayton County Water Authority* report ('Battelle Report', December 2023) is provided in Appendix C of this document.

Table 2-6 summarizes the adsorbent media used in the RSSCTs, including two IX resins, two GAC adsorbents, and Fluoro-sorb. **Table 2-7** summarizes the water sources used in each of the tests.

Table 2-6: Adsorbent Technologies Tested by Battelle

Product	Media Type	Media Material	Media Size Provided by the Vendor (mesh)	Ground and Sieved Particle Size (mesh)
Calgon Filtrasorb 400-1	GAC	Bituminous GAC	12x40	100x140
Evoqua UCl240LD				
Cetco Fluro-Sorb® 200	Novel Adsorbent	Modified Clay	20x40	
CalRes 2301	IX	Single Use	N/A	
Evoqua PSR2+				

Table 2-7: Summary of RSSCT Column Media Packing

Round	Source	Media				
		Calgon F400-1	Evoqua UC1240LD	Calgon CalRes 2301 (macro-porous)	Evoqua PSR2+ (gel)	CETCO Fluoro-Sorb (surface modified clay)
1	Hooper Post UV	X	X	X	X	X
2A	Smith Finished Water	X		X	X	
2B	Hicks RO Reject (100% Blalock) Feasibility Testing	X				X

Round	Source	Media				
		Calgon F400-1	Evoqua UC1240LD	Calgon CalRes 2301 (macro-porous)	Evoqua PSR2+ (gel)	CETCO Fluoro-Sorb (surface modified clay)
3A	Hicks Finished Water	X		X	X	
3B	Hicks RO Reject (100%Blalock) Testing	X		X	X	X

2.3.2 PFAS Results

The goal of Battelle's RSSCT was to evaluate the technologies' abilities to meet USEPA's draft MCL. To assess PFAS removal performance for the media types, CCWA estimated the volume of water treated to reach 60% of the influent concentration (C/Co = 60%) of various PFAS species, based on the assumption that 60% breakthrough is the target exhaustion of the lead bed in a lead-lag system prior to removal.

These results are summarized in **Table 2-8** for PFOA, which was found to be the limiting species for all media types.

Table 2-8: Adsorbent Media Type per Water Source

Media Name	Plant	Bed Volumes [a]	Full Scale Days of Operation [a]	Full-Scale Months of Operation [a]
Calgon F400-1 (GAC)	Hicks WPP	25,700	175	5.5
	Smith WPP	61,100	420	13.5
	Hooper WPP	44,800	310	10
	Hicks WPP RO Reject	<8,000	55[b]	1.8
Evoqua UC124OLD (GAC)	Hooper WPP	24,100	165	5.5
Evoqua PSR2+ (IX)	Hicks WPP	251,000	345	11
	Smith WPP	343,100	475	15.5
	Hooper WPP	198,600	275	9
	Hicks WPP RO Reject	<25,000	35[b]	1.2
Calgon CalRes 2301 (IX)	Hicks WPP	204,100	280	9
	Smith WPP	268,400	370	12
	Hooper WPP	254,200	350	11.5
	Hicks WPP RO Reject	27,700	35[b]	1.2
Fluoro-sorb (FS)	Hooper WPP	182,220	249	8
	Hicks WPP RO Reject	29,100	40[b]	1.3

[a] Bed volumes and days/months of operation are based on 60% breakthrough of PFOA.
[b] Assumes GAC is operated at an EBCT of 10 minutes, yielding 144 BVs per day and Fluoro-sorb is operated at an EBCT of 2 minutes, yielded 720 BVs per day.

Media Name	Plant	Bed Volumes [a]	Full Scale Days of Operation [a]	Full-Scale Months of Operation [a]

Source: CCWA

2.3.3 Contaminants of Emerging Concern Results

A selection of contaminants of emerging concern (CECs) were also tested during RSSCT operations. The CEC testing was performed on water from Hooper WPP, post-UV treatment, and on Hicks WPP RO reject. **Figure 2-19** and **Figure 2-20** show the CEC breakthrough at the last sampling event prior to the projected media changeout for Hooper WPP post-UV and Hicks WPP RO Reject, respectively.

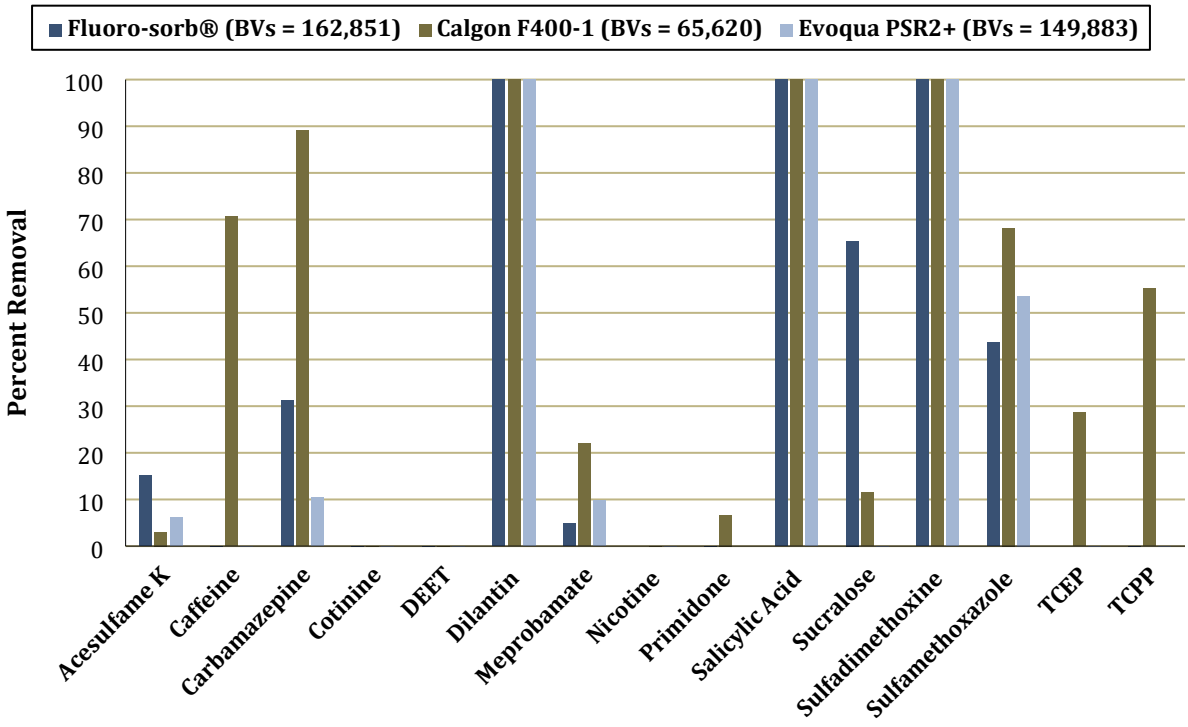


Figure 2-19: Percent Removal of CECs Detected in Hooper WPP Post UV Water

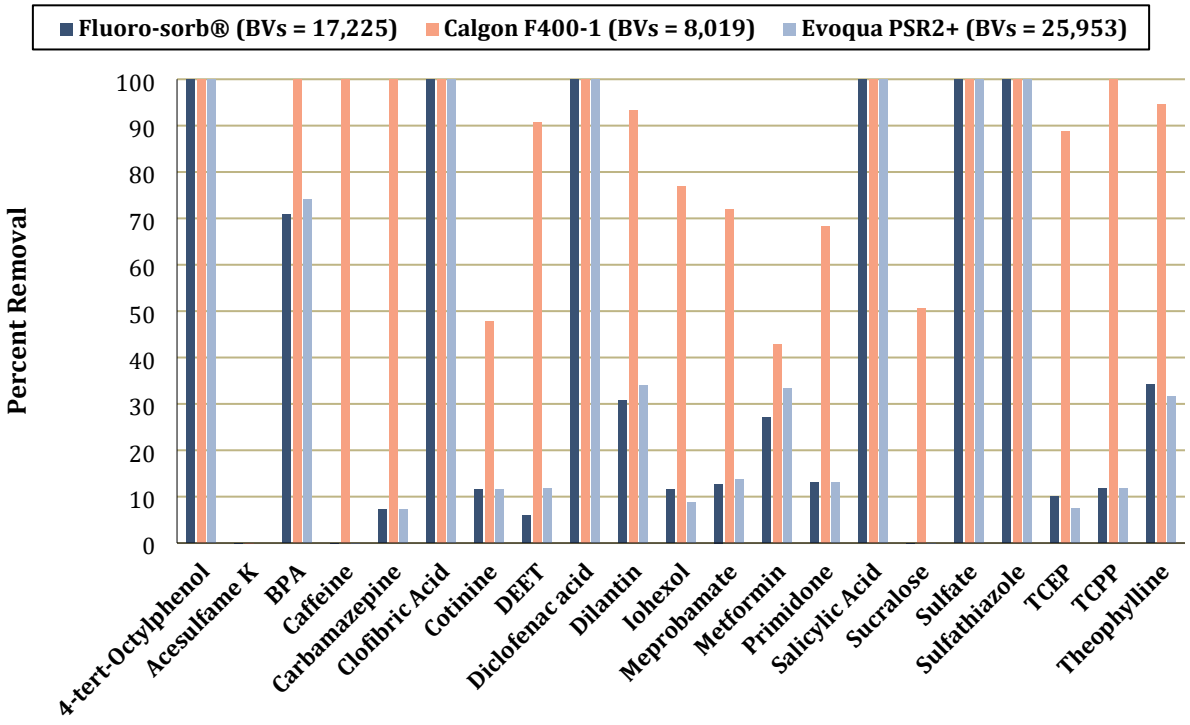


Figure 2-20: Percent Removal of CECs Detected in Hicks WPP RO Reject Water

2.3.4 Technology Comparison

Table 2-9 summarizes some of the advantages and disadvantages of each PFAS treatment technology that was evaluated during the RSSCT. The advantages and disadvantages of most importance to CCWA are shown in bold in the table. Based on the results of the RSSCT, and on current knowledge, CCWA considers GAC and NF/RO to be the best candidates for primary PFAS treatment, to meet its water quality goals. Of the technologies tested, CCWA believes these provide the most future flexibility to adapt to a changing regulatory environment and best minimize the risk of pricing instability and media availability. CCWA understands that PFAS technologies are quickly adapting and that further evaluation and experience brought by the selected Design-Builder will inform the final Project design. Additionally, the technologies included in the RSSCT, as well as others not evaluated by Batelle, could be feasible candidates for RO reject water, should RO be selected.

Table 2-9: PFAS Treatment Technology Comparison

Treatment Technology	Advantages	Disadvantages
GAC	• Well established and accepted PFAS removal process with well demonstrated performance. • Long-chain and sulfonic acid PFAS removal efficiencies greater than short-chain and carboxylic acid PFAS. • Consumed/spent GAC media can be thermally reactivated and reused. • **Vessels and ancillary systems can accommodate media change from GAC to IX** .	• Spent media must be periodically reactivated, or replaced and disposed of. • Other dissolved organic compounds can compete with PFAS for adsorption capacity. • Less effective with carboxylic acid and short-chain PFAS removal. • Requires larger overall footprint than IX systems.

Treatment Technology	Advantages	Disadvantages
	• **Removes T&O and CECs.** • **Media can be reactivated and reused.**	• **Commodity pricing with limited historical price volatility. PFAS may change this dynamic.**
IX	• Anionic resins show excellent results for long-chain removal; some resins show capacity for short-chain PFAS. • System costs can be similar to or lower than activated carbon, but performance depends on site-specific water chemistry and specific resins used. • Requires smaller overall footprint than GAC systems due to shorter media contact times required.	• Spent media must be replaced and disposed of; regeneration is not a current commercially viable option due to complexity of the regenerant solution required. • **Can switch from one IX media to another but not to GAC or FS without decreasing capacity or adding vessels.** • **Proven for groundwater applications, not for surface water** • Removal efficiencies depend on many factors, including influent PFAS concentrations and feed water ionic strength, resin characteristics, process resin media contact times. • Resins are typically proprietary, which can limit supplier availability and lead to price volatility. • **Does not remove T&O and CECs.**
Fluoro-sorb (FS)	• Influent TOC does not largely compete with PFAS adsorption. • Effective at removing regulated and other target PFAS.	• **Limited full-scale applications to date.** • Spent media must be replaced and disposed of. • Media is proprietary which can limit supplier availability and increase costs. • Requires larger overall footprint than IX systems. • **Does not remove T&O and CECs.**
NF/RO	• **Effective for removing all target PFAS**. • Can be used for multi-contaminant removal. • Systems can be highly automated to allow for remote operation. • **Removes T&O and CECs**.	• High capital and operating cost (high transmembrane pressures and associated pumping requirements). • Concentrated contaminant and brine solution reject streams present waste handling and disposal challenges. • High levels of pretreatment are required to avoid membrane fouling. • More complex operations require more highly trained and attentive operators with solid water chemistry background.

Source: CCWA

2.4 Other Finished Water Quality Goals

CCWA is an integrated indirect potable reuse (IPR) utility with flow from the Huie Constructed Treatment Wetlands (CTW) flowing back into the drinking water reservoirs. Because CCWA is an IPR facility, it also faces water quality challenges associated with pathogens and CECs such as acesulfame K, carbamezapine, tris-2-chloroethylphosphate (TCEP), and 1,4-dioxane, to name a few. As part of the implementation of new PFAS removal technology, CCWA would like the selected Design-Builder to consider addressing other water quality concerns such as CECs and taste and odor (T&O) with advanced treatment.

Beyond PFAS treatment goals, CCWA has established other finished water quality goals as summarized in **Table 2-9**. These goals were established to further optimize water quality beyond what is required by current regulations.

Table 2-10: Finished Water Quality Goals

Parameter	Goal	Comment
Settled Water Turbidity (conventional treatment)	< 1.0 NTU 95% of time (when raw water turbidity is ≤10 NTU)	Partnership for Safe Water Phase IV Performance Standards
Filtered Water Turbidity for Individual Filters (conventional treatment)	< 0.1 NTU in 95% of samples	Partnership for Safe Water Phase IV Performance Standards
TTHMs	<60 µg/L LRAA	75% of regulated value but on an individual sample basis (not the LRAA)
HAA5	<45 µg/L LRAA	75% of regulated value but on an individual sample basis (not the LRAA)
pH (finished water)	pH of 7.3 ±0.2 at POE into distribution system	Optimal Corrosion Control Treatment Guidance Manual (USEPA, 2016)
pH (distribution system)	±0.3 compared to pH at POE for all parts of distribution system	Optimal Corrosion Control Treatment Guidance Manual (USEPA, 2016)
Taste and Odor (MIB/Geosmin)	4.5 ±0.5 ng/L	CCWA Goal
Iron	0.3	MLCG
Manganese	0.02 mg/L	CCWA Goal
Free Chlorine at POE	1.50 – 2.00 mg/L	CCWA Goal
Free Chlorine in Distribution System	>0.20 mg/L at all locations	EPD requirement
TOC (Total Organic Carbon) Removal Through WPP Upstream of PFAS Treatment Process	45% removal of raw water TOC (measured at filter effluent upstream of PFAS treatment)	CCWA Goal to meet TOC removal requirements and reduce cost of PFAS treatment or PFAS waste stream
Phosphate	1.30 mg/L as PO_4	CCWA Goal at POE to achieve 1.0 mg/L as PO_4 at all points in distribution system

LRAA = Locational Running Annual Average; POE= Point of Entry

CCWA is obligated to meet all water quality standards set by the USEPA and Georgia EPD.

2.5 NPDES Permit Considerations

Table 2-11 summarizes the General National Pollutant Discharge Elimination System (NPDES) Permit. The Hooper WPP washwater holding tank discharges supernatant into the Hooper Reservoir, under this General NPDES permit. Any additional flows added to the holding tank will need to consider these permit requirements.

Table 2-11: Pollutant Limitations from a Sample of General NPDES Permits

Pollutant	Monthly Average Limit	Daily Maximum Limit
Aluminum (mg/L)	0.75 – 1	1.5 – 10
Iron (mg/L)	1 – 5	2 – 10

Pollutant	Monthly Average Limit	Daily Maximum Limit
Manganese (mg/L)	0.0043 – 1	0.019 – 1
pH	6.0 – 9.0	
Total Residual Chlorine (mg/L)	0.03 – 1	0.02 – 1
TSS (mg/L)	15 – 30	20 – 60

Table 2-12 summarizes NPDES Permit No. 0038423 which details the Huie CTW discharge requirements. Utilization of Huie CTW storage ponds for Existing and New Hicks WPP raw water reservoir, discharge location for advanced treatment treated reject water, additional residual handling flow from the New Hicks WWP, and any other additional flow may impact CCWA's ability to maintain these discharge requirements.

Table 2-12: Huie Constructed Treatment Wetlands Discharge Requirements

Parameter	Monthly Average Limit[1]	Weekly Average Limit[1]
Flow (mgd)[2]	17.4	21.8
Five-Day BOD	10.0 (660)	15.0 (825)
TSS	15 (989)	22.5 (1,237)
Ammonia, as N: May-October	0.5 (33.0)	0.75 (41.2)
Ammonia, as N: November-April	1.4 (92.3)	2.1 (115.4)
TP, as P if TP_{BRD}<0.15 mg/L and 56 ppd (monthly average)	0.75 (49)	1.13(62)
TP, as P if TP_{BRD}>0.15 mg/L or 56 ppd (monthly average)	0.38 (25)	0.57 (31)
Fecal Coliform Bacteria (#/100 mL)	100	200

1. Units are in mg/L (kg/day) unless otherwise noted.
2. Limitations apply to the discharge from the W.F. Casey WRRF to the Huie Ponds. Pond outfalls must be reported.

TP: Total Phosphorus

TP_{BRD}: Total Phosphorus measured at the discharge of Blalock Reservoir

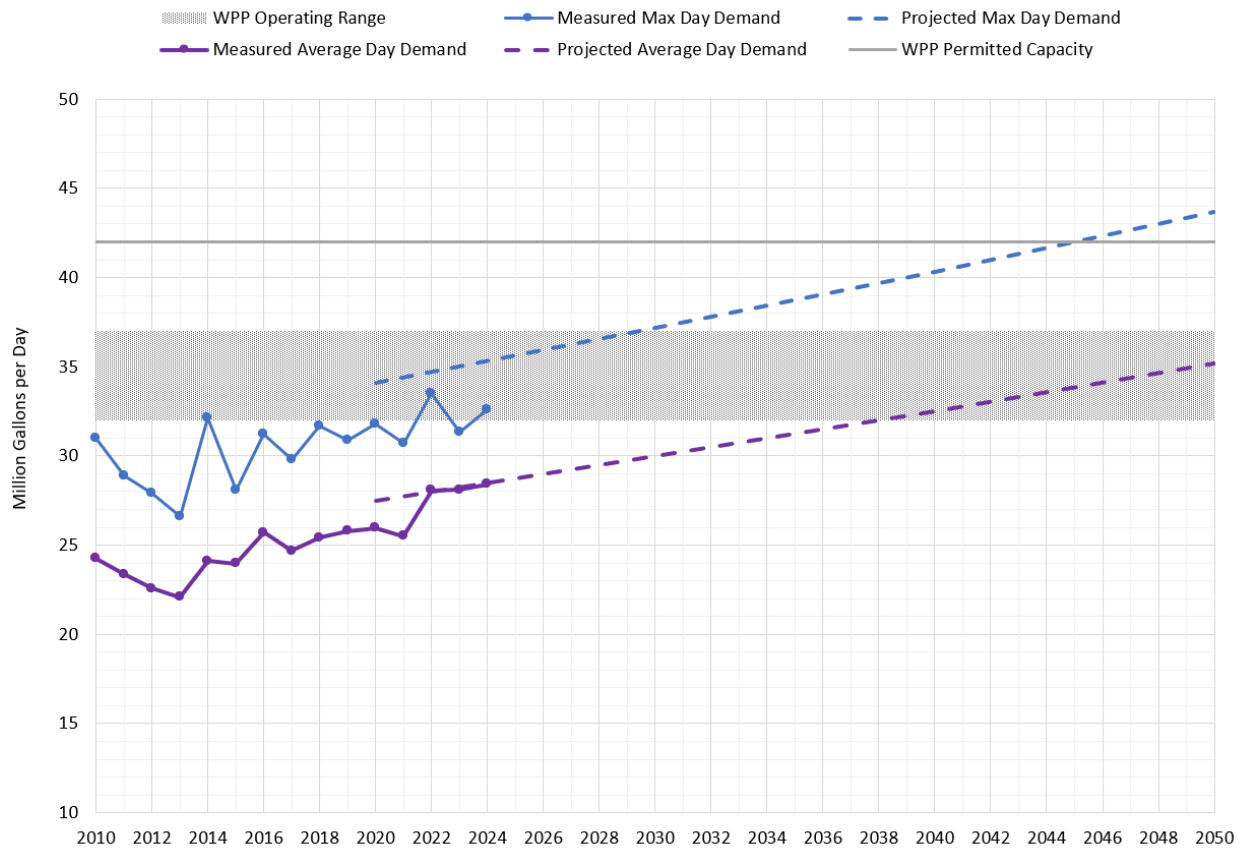
3. Planned Capacity and Existing Treatment Processes

3.1 Phasing and Capacity

CCWA continuously tracks current water demand and projected future demand and applies these to capital plans for plant expansions and upgrades. When planning for future improvements, CCWA considers the permitted capacity of its plants in addition to the actual WPP "operating range" (i.e., the range of total water that can feasibly be distributed to customers during the worst conditions up to the best conditions). CCWA considers the total "firm capacity" of its three WPPs to be the low end of the operating range (i.e., 32 mgd), since this is the total demand that could reliably be met each day of the year.

Recent water demand is well below the total WPP permitted capacity of 42 mgd; however, demand has exceeded the low end of the total WPP operating range (**Figure 3-1**).

Based on future demand projections, plus an allowance to provide up to 3 mgd to wholesale customers (the amount currently contracted), CCWA has developed a preliminary phasing plan to ensure that infrastructure is in place to meet projected demand at least 10 years before these demands are reached **(Table 3-1**). CCWA's preliminary phasing plan allows for overall firm capacity upgrades across approximately four capital projects. While **Table 3-1** summarizes a prescriptive plan to meet projected demand, CCWA is amenable to alternative phasing plans, as long as near-term demand is met and long-term anticipated demands are accommodated for in design.



Notes:

- The Current Firm Capacity shown in Table 3-1 represents the low end of the WPP Operating Range shown in this figure.
- The projected future demand between 2030 and 2040 is based on the Georgia Water Resources Management Plan (MNGWPD, 2022) and are extrapolated outside that range.
- Projected future demand does not include wholesale water customers. CCWA is currently contracted to provide up to 3 mgd wholesale water and includes this in future planning.
- 2024 demand includes data through 1/24/2024.

Figure 3-1: Current and Projected ADD and MDD for CCWA

Table 3-1: Finished Water Treatment Capacity Requirements

Facility	Flow (mgd)				WPP Finished Water Capacity (mgd)			
	Min Day	Annual Average Day	Max Day	Current Firm Capacity	Adv. Water Treatment & Capacity Upgrade	Hooper Expansion	New Hicks WPP Expansion 1	New Hicks WPP Expansion 2
	2022	2022	2022	2023	~ 2029	~2032	~2040	~2050
Existing Hicks WPP	3.7	5.9	8.8	6	6	6	0	0
New Hicks WPP	-	-	-	-	20	20	30	40
Smith WPP	4.9	8.4	10.1	10	0	0	0	0
Hooper WPP	10.7	13.8	17.2	16	16	20	20	20
TOTAL	**23.9**	**28.1**	**33.5**	**32**	**42**	**46**	**50**	**60**
Projected Demand in +10 Years					**40 – 43**	**41 – 44**	**44 – 47**	**47 – 50**
Advanced Treatment Hicks Site					**30+r**	**30+r**	**30+r**	**40+r**
Advanced Treatment Hooper WPP					**20+r**	**20+r**	**20+r**	**20+r**

Notes:
- Annual minimum, average, and maximum flows are provided for sizing new equipment and processes (e.g., turndown capability, number of units, etc.).
- Smith WPP will not be decommissioned until the New Hicks WPP is fully operational.
- r: Reject water produced from nanofiltration or reverse osmosis.
- Expansion of Hicks WPP and Hooper WPP must account for additional treatment capacity to meet the WPP Finished Water Capacities specified.

3.2 Existing Treatment Processes

An overview of the Clayton County Water System is included in **Appendix A: Clayton County Water System**. Hydraulic profiles of each WPP, based on record drawings, are included in **Appendix B: Existing Plant Hydraulic Profiles**. Copies of the record drawings for all three WPPs will be made available to the selected Design-Builder.

3.2.1 Existing Hicks WPP

Figure 3-2 shows the process flow diagram for the Existing Hicks WPP. The existing processes are briefly described below.

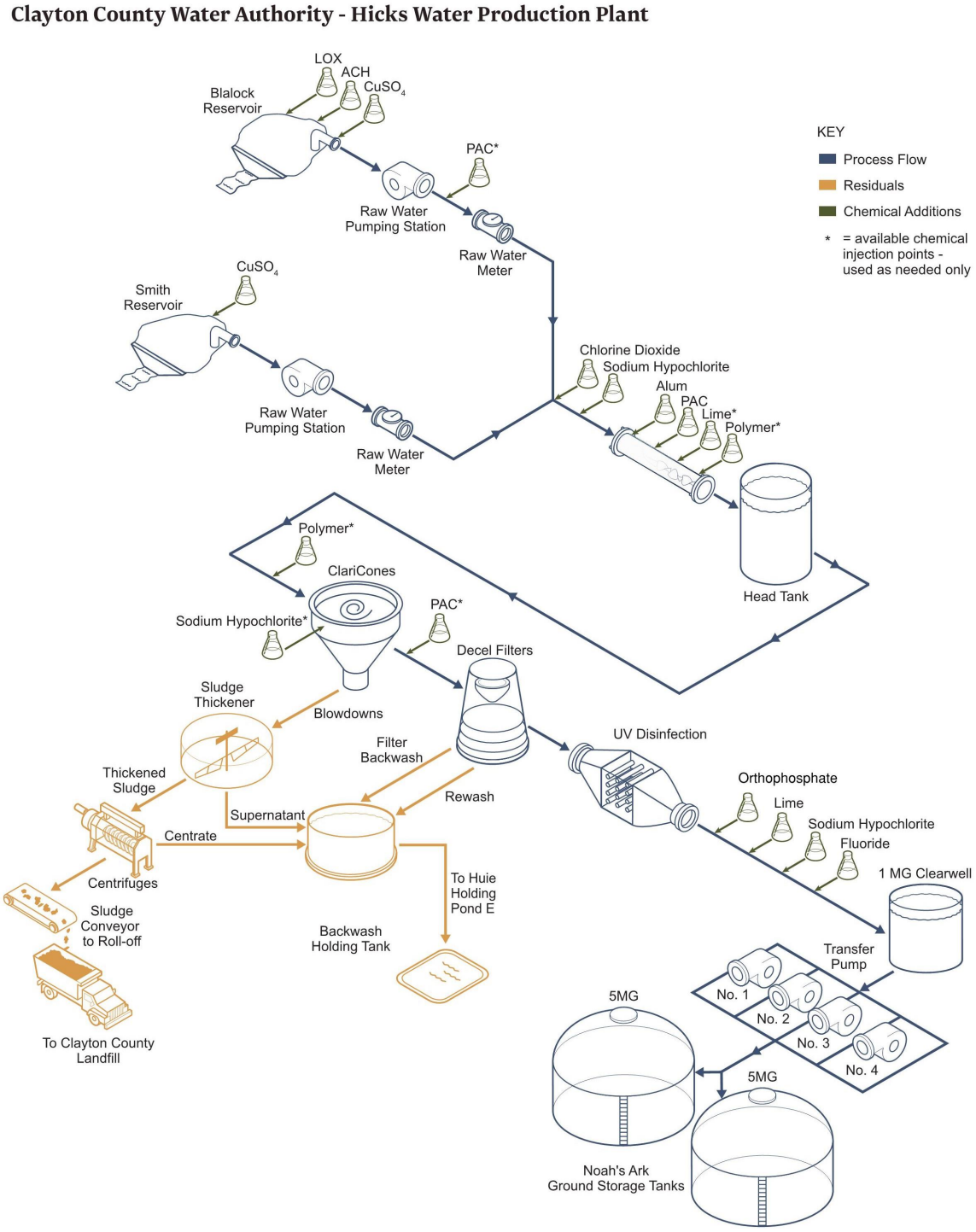


Figure 3-2: Existing Hicks WPP – Process Flow Diagram

3.2.1.1 Raw Water Supply and Flow Measurement

Raw water can be obtained from the Smith Reservoir by being pumped from the Smith RWPS through a 30-inch diameter ductile iron pipe (DIP), approximately 36,000 linear feet (LF) long. Raw water also can

be obtained from the Blalock Reservoir through a 30-inch pipe approximately 21,000 LF in length. A summary of the raw water pumping systems at each reservoir is presented in **Table 3-2** and **Table 3-3**.

Table 3-2: Smith Reservoir – Raw Water Pumps Summary

Pump Designation	Model	Power (hp)	Drive Type	Duty Point
SRWP-1	Flygt CP 3312/630	280	Constant Speed	3,850 gpm @ 180 ft TDH
SRWP-2	Flygt CP 3241/455	185	Constant Speed	1,950 gpm @ 161 ft TDH
SRWP-3	Flygt CP 3241/455	185	Constant Speed	1,950 gpm @ 161 ft TDH

Table 3-3: Blalock Reservoir – Raw Water Pumps Summary

Pump Designation	Model	Impeller Size (mm)	Power (hp)	Drive Type	Duty Point
BRWP-1	Peerless 16HXB	1st stage: 10.6 x 12 2nd stage: 11.1 x 12.4	200	Variable Speed	3,500 gpm @ 186 ft TDH
BRWP-2	Peerless 14MC	1st stage: 9.18 x 9.93 2nd stage: 10.25 x 10.88	125	Variable Speed	1,800 gpm @ 195 ft TDH
BRWP-3	Peerless 14MC	1st stage: 9.18 x 9.93 2nd stage: 10.25 x 10.88	125	Variable Speed	1,800 gpm @ 195 ft TDH

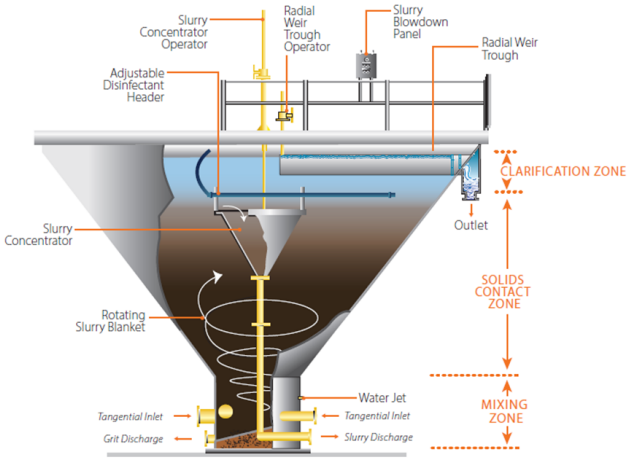
Location Map

Raw water pumped from each reservoir is individually metered at the Existing Hicks WPP before blending at the wye connecting both raw water mains upstream of the treatment train.

Chlorine dioxide and sodium hypochlorite dose points are provided just downstream of where raw water is blended. Alum, powdered activated carbon (PAC), and lime are dosed just upstream of a head tank at an existing spool piece that was previously fitted with an in-line mechanical mixer that has since been removed. Chemically dosed water then flows to a head tank that provides head for the water to flow through the plant by gravity.

Raw Water Flow Meters at Existing Hicks WPP

3.2.1.2 ClariCones



Water exits the head tank and is split into four CBI Walker ClariCones. Under normal operating conditions, the plant operates all four of the units in parallel. Each ClariCone provides rapid mix, flocculation, and sedimentation functions in a single unit. Clarified water flows by gravity from the top of the ClariCone over a radial weir trough to the filters. Sludge is removed through an in-vessel slurry concentrator that is vertically adjusted to control the sludge blanket depth; sludge is then discharged via blowdown lines located at the ClariCone base. See **Table 3-4**.

Table 3-4: Existing Hicks WPP – ClariCone Summary

Parameter	Value
Number of Units	4
Bottom EL (ft MSL)	894.83
Top EL (ft MSL)	932.33
WSE (ft MSL)	931.50
Operating Height (ft)	28.0
Top Diameter (ft)	51.5
Bottom Diameter (ft)	10.5
Surface Area (ft^2)	2,086
Surface Overflow Rate, at 10 mgd (gpm/ft^2)	0.83
Detention Time, at 10 mgd (min)	104

3.2.1.3 Filters

Water flows from the radial weir trough located at the top of the ClariCones to eight tapered-bed, dual media gravity filters. The filter areas increase with depth and are constant rate, variable head units, i.e., as the filters trap particles, the water level above the filter media increases. After passing through the filter media, filter effluent flows over a control weir to the UV light disinfection system. See **Table 3-5**.

Table 3-5: Existing Hicks WPP – Filter Summary

Parameter	Value
Number of Units	8
Diameter (ft)	20
Side Water Depth (SWD) (ft)	12
Sand Depth (in)	30
Anthracite Depth (in)	18
Surface Area (ft^2)	315
Surface Overflow Rate, at 10 mgd (gpm/ft^2)	2.76
Detention Time, at 10 mgd (min)	33

3.2.1.4 UV Disinfection System

The UV disinfection system consists of three reactors originally installed in 2002 between the filters and the clearwell. The UV equipment is approaching the end of its useful life; as of February 2024, the system is currently being replaced with a medium pressure Trojan UVSwift™ 4L24 UV system. The new system will consist of two, 24-inch diameter medium pressure reactors, each containing four medium pressure lamps. A summary of the UV system design criteria is presented in **Table 3-6**.

Table 3-6: Existing Hicks WPP – UV Disinfection System Summary

Parameter	Value
Disinfection Requirement	2.5-log Cryptosporidium Credit
Design UV Dose (mJ/cm^2)	8.5
Design Flow (mgd)	15
Average Flow (mgd)	10
Number of MP UV Reactors	2
Number of Lamps per Reactor	4
Reactor Model	Trojan UVSwift™ 4L24
UV Transmittance	90%
UV Reactor Maximum Hydraulic Capacity (mgd)	25
Headloss at Design Flow through each Reactor (in)	7
Total Connected Load (kW)	77

Source: (UV Rehabilitation and Upgrade Alternatives Evaluation, Jacobs 2020)

Post-chemical addition points for sodium hypochlorite, liquid lime, orthophosphate, and sodium fluorosilicate (fluoride) are located on the 30-inch finished water main downstream of the UV discharge header prior to where water enters the clearwell.

3.2.1.5 Clearwell and High Service Pump Station

Water from the UV system flows to a rectangular 1.3-MG clearwell and high service pump station that pumps to the Noah's Ark storage tanks. Four constant-speed pumps – two with a rated capacity of 5 mgd each and two with a rated capacity of 2.5 mgd each – are installed in the high-service pump station with space for a future fifth pump. Design criteria for the clearwells and high service pumps are found in **Table 3-7** and **Table 3-8,** respectively.

Table 3-7: Existing Hicks WPP – Clearwell Summary

Parameter	Value
Influent Weir Elevation (ft MSL)	917.50
Length (ft)	109
Width (ft)	109
Bottom EL (ft MSL)	897.08
SWD (ft)	17
Detention Time (10 mgd, 50% full) (min)	93
Available CT (10 mgd, 50% full) (mg-min/L)	59

Table 3-8: Existing Hicks WPP – High Service Pumps Summary

Pump Designation	Model	Impeller Size (mm)	Power (hp)	Duty Point
FWTP-1	Peerless 16HXB	1st stage: 10.6 x 12 2nd stage: 11.1 x 12.4	200	3,500 gpm @ 186 ft TDH
FWTP-2	Peerless 16HXB	1st stage: 10.6 x 12 2nd stage: 11.1 x 12.4	200	3,500 gpm @ 186 ft TDH
FWTP-3	Peerless 14MC	1st stage: 9.18 x 9.9.3 2nd stage: 10.25 x 10.88	125	1,800 gpm @ 195 ft TDH
FWTP-4	Peerless 14MC	1st stage: 9.18 x 9.9.3 2nd stage: 10.25 x 10.88	125	1,800 gpm @ 195 ft TDH

3.2.1.6 Residuals

Residuals handling facility upgrades were performed in 2005 and included a new dewatering building housing two sludge centrifuges (1 duty/1 standby) and a common sludge distribution conveyor. See **Table 3-9.**

Table 3-9: Existing Hicks WPP – Centrifuge Summary

Parameter	Value
Manufacturer	Andritz
No. of Units	2
Maximum Feed Density (lb/gal)	10.0
Feed Solids Concentration	1-3%
Solids Capture	95%
Maximum Hydraulic Loading Rate (gpm)	38
Maximum Solids Loading Rate (lb/hr)	285

Residuals from filter backwashes are sent to a backwash holding tank; ClariCone blowdowns are sent to an onsite thickener. See **Table 3-10**.

Table 3-10: Existing Hicks WPP – Thickener and Backwash Holding Tank Summary

Parameter	Thickener	Backwash Holding Tank
Bottom EL (ft MSL)	900.00	892.00
Top EL (ft MSL)	924.67	912.00
Weir EL (ft MSL)	922.67	908.00
Height (ft)	25	20
SWD (ft)	23	16
Diameter (ft)	40	50
Surface Area (ft^2)	1,258	1,966

Thickened sludge is pumped to the centrifuges, and dewatered sludge is discharged via the sludge distribution conveyor into a trailer and then hauled to the Clayton County Landfill. Thickener and centrifuge supernatant flows to the backwash holding tank which pumps to the Huie CTW Holding Pond E located opposite the WPP on the north side of Freeman Road.

3.2.1.7 Chemical Facilities

Table 3-11 summarizes the chemicals currently fed at the Existing Hicks WPP.

Table 3-11: Existing Hicks WPP – Chemical Feed Systems Summary

Chemical	Purpose	Feed Points
Alum	Coagulant	Spool piece upstream of head tank
Liquid Lime	pH adjustment	Spool piece upstream of head tank Prior to clearwells
Polymer	Dewatering process	Centrifuges
Phosphoric Acid	Corrosion inhibitor	Prior to clearwell
Sodium Hypochlorite (bulk)	Disinfection	Upstream of spool piece ClariCones Prior to clearwell
Chlorine Dioxide	Pre-oxidant	Upstream of spool piece
Sodium Fluorosilicate	Fluoridation	Prior to clearwell
PAC	TOC removal; T&O control	Upstream of raw water meter pit Spool piece upstream of head tank Filter influent

Historical chemical feed rates are included on the MORs that will be provided to the selected Design-Builder.

Alum

Alum is stored in one 8,500-gal bulk storage tank in the chemical bay next to the first floor of the Process Building. Two peristaltic metering pumps (1 duty, 1 spare) dose alum directly from this tank to the spool piece upstream of the head tank.

Liquid Lime

The Existing Hicks WPP uses the Burnett's Cal-Flo liquid lime slurry system storage and feed equipment. The system is installed in a containment area located between the high service pump station and the process building. It consists of a bulk tank and a feed tank. One pedestal driven centrifugal pump transfers liquid lime from the bulk tank to the feed tank. Two diaphragm pumps deliver liquid lime from this tank to the feed points located at the spool piece upstream of the head tank and the 30-inch pipe prior to the clearwell.

Polymer

Polymer is delivered to the WPP in 55-gal drums and then stored in the Residuals Building. One diaphragm metering pump delivers neat polymer to the centrifuges directly from the drums.

Phosphoric Acid

Phosphoric acid (36%) is stored in one 7,500-gal bulk storage tank located in the containment area north of the lime slurry system. Chemicals from this tank are transferred to a 160-gal day tank in the UV building. Two centrifugal pumps (1 duty, 1 standby) dose phosphoric acid to the injection point downstream of the UV system.

Sodium Hypochlorite

Bulk sodium hypochlorite is stored in two 6,000-gal storage tanks in a covered containment area next to the chemical bay. Four diaphragm metering pumps dose sodium hypochlorite to the pre and post injection points; two diaphragm metering pumps dose sodium hypochlorite to the ClariCones.

Chlorine Dioxide

Chlorine dioxide is generated on site by mixing Purate (sodium chlorate and hydrogen peroxide) and sulfuric acid through a generator and fed directly to the injection point upstream of the head tank. The system is in the chemical bay next to the sodium hypochlorite containment area.

Sodium Fluorosilicate

The fluoride feed system uses a dry product (sodium fluorosilicate) and consists of a hopper and screw feeder. Sodium fluorosilicate is stored in 50-lb bags which are added as needed to the feed hopper, and the screw feeder set to the required feed rate. The dry product mixes with carrying water and is delivered to the injection point on the 30-inch pipe prior to filtered water entering the clearwell. The system is in the Process Building.

PAC

The PAC system consists of a hopper and screw feeder and is in the Process Building. PAC is stored in Supersacks which are added to the hopper as needed. PAC mixes with process water used to deliver PAC slurry to injection points upstream of the raw water meter pit before the head tank and at the influent to the filters. In addition, PAC is fed into the raw water line from the Blalock Reservoir to the Existing Hicks WPP.

3.2.2 Smith WPP

Figure 3-3.shows the process flow diagram for the Smith WPP. Because modifications are not being made to the WPP and the WPP will be decommissioned after completion of this Project, the WPP processes at Smith WPP are not described in this section.

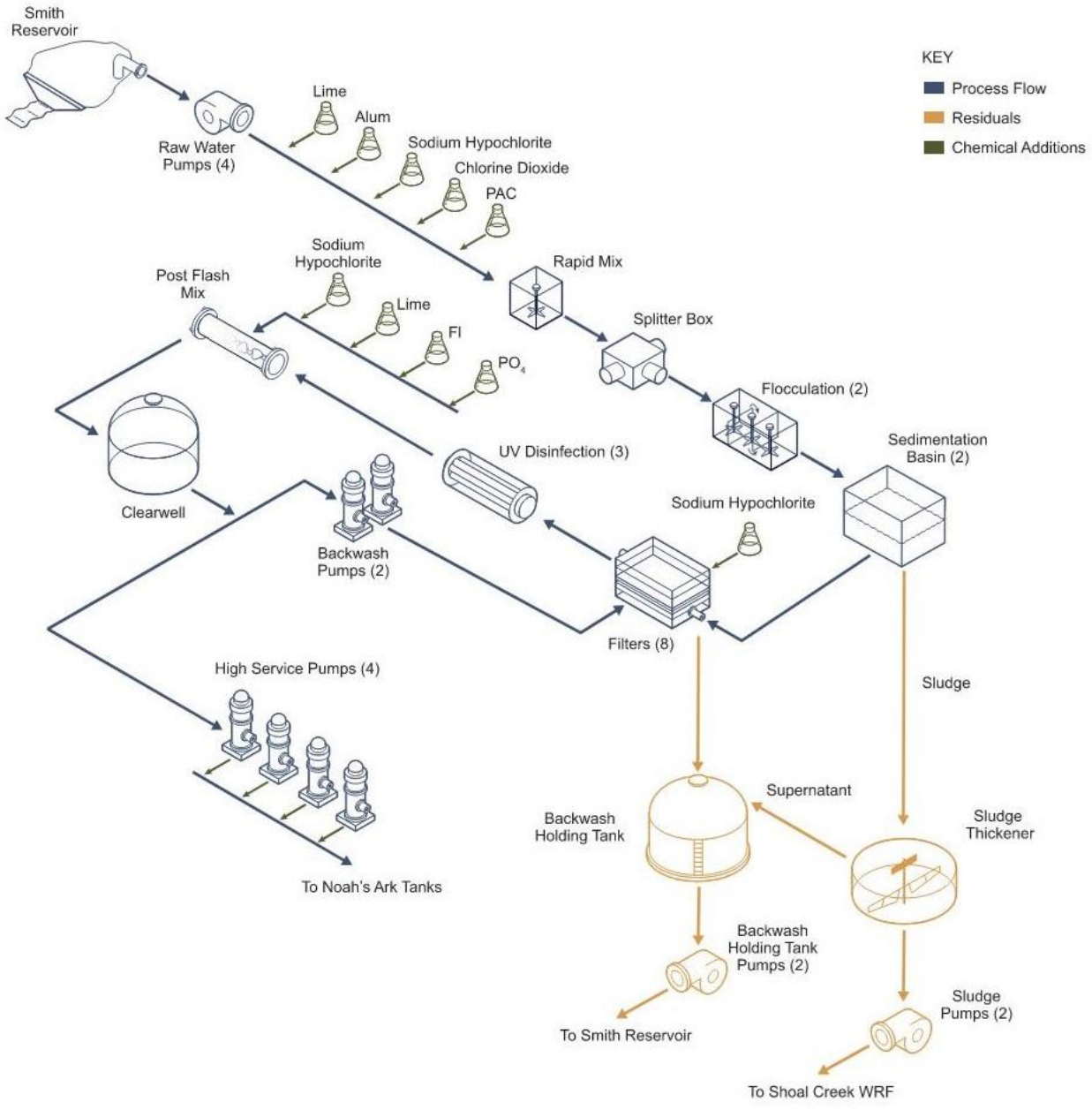


Figure 3-3: Smith WPP – Process Flow Diagram

3.2.3 Smith WPP HSPS

Smith WPP's HSPS abuts the plant's 2-MG clearwell and pulls flow directly from the clearwell. **Table 3-12** summarizes the four high service pumps (HSPs) in this pump station. All four pumps were replaced in 2023-2024. Flow from the four pumps manifolds into a 24-inch DIP and is measured by an 18-inch venturi flow meter before discharging to Noah's Ark storage tanks.

Table 3-12: Smith WPP – HSPS Summary

Pump Designation	Model	Power (hp)	Duty Point
HSP-1	Patterson 17 JMC	400	2,780 gpm @ 375 ft TDH
HSP-2	Patterson 17 JMC	400	2,780 gpm @ 375 ft TDH
HSP-3	Patterson 17 JMC	400	2,780 gpm @ 375 ft TDH
HSP-4	Patterson 17 JMC	400	2,780 gpm @ 375 ft TDH

3.2.4 Smith Reservoir RWPS

The Smith RWPS is on Panhandle Road. This pump station discharges flow into a 30-inch raw water transmission main that conveys raw water to the Existing Hicks WPP. The pump station consists of three individual circular precast concrete wet wells each with a non-clog submersible pump. Each wet well has a dedicated 30-inch suction line pulling from Smith Reservoir. The three individual discharge lines manifold into a 30-inch ductile iron pipe that travels approximately 6.8 miles to Existing Hicks WPP. A flow control valve at Existing Hicks WPP controls flow from the pump station before entering the head tank at Existing Hicks WPP. A summary of the raw water pumps is provided in **Table 3-13.**

Smith Reservoir RWPS

Table 3-13: Smith Reservoir – Raw Water Pumps to Existing Hicks WPP Summary

Pump Designation	Model	Power (hp)	Duty Point
SRWP-1	Flygt Model CP 3312/630	280	3,850 gpm @ 180 ft TDH
SRWP-2	Flygt Model CP 3241/455	185	1,950 gpm @ 161 ft TDH
SRWP-3	Flygt Model CP 3241/455	185	1,950 gpm @ 161 ft TDH

3.2.6 Hooper WPP

Figure 3-4 shows the process flow diagram for the Hooper WPP. The existing processes are briefly described below.

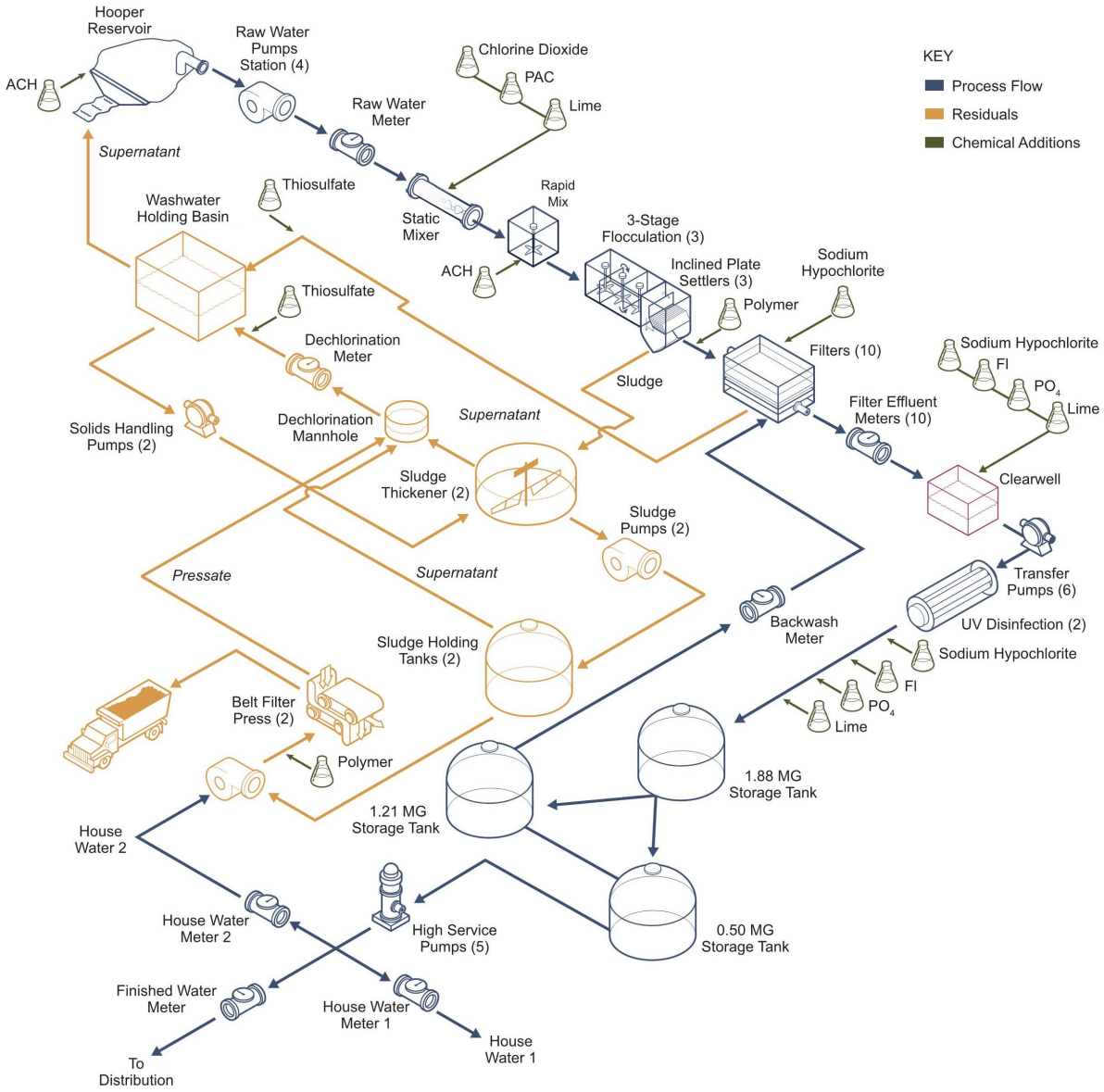


Figure 3-4: Hooper WPP – Process Flow Diagram

3.2.6.2 Raw Water Intake

The Hooper Reservoir is the sole source of water for the Hooper WPP. This intake has two manually cleaned coarse screens where two 36-inch pipes are installed to move water into two independent wet wells, each serving two vertical turbine pumps. **Table 3-14** summarizes the design criteria of these pumps. The pumps discharge into two 30-inch pipes that manifold into a 36-inch main that conveys raw water to the rapid mix basin. A 30-inch venturi meter located in the raw water vault measures flow before rapid mix. A static mixer adds chlorine dioxide (comprised of Purate and sulfuric acid), liquid lime, and PAC before rapid mix. Aluminum chlorohydrate (ACH) is added to the reservoir as needed.

Table 3-14: Hooper WPP – Raw Water Pumps Summary

Raw Water Pumps	Number of Units	Drive Type	Power (hp)	Duty Point
RW No. 1-4	4	Variable Speed	200	5,950 gpm @ 80 ft TDH

3.2.6.3 Rapid Mix

Table 3-15 summarizes the rapid mix basin design criteria. This tank also acts as a splitter box for the three flocculation basins.

Table 3-15: Hooper WPP – Rapid Mix Basin Summary

Parameter	Value
Basin Dimensions	11’-0” x 11’-0” x 11’-0”
Theoretical Detention Time, at 20 mgd (sec)	43
Mixer Type	Variable speed mechanical mixer
Number of Mixers	1

3.2.6.4 Flocculation Basins

Flow travels from the rapid mix basin to three flocculation basins. Each basin has three stages of mixing. **Table 3-16** summarizes the design criteria for the flocculation basins.

Table 3-16: Hooper WPP – Flocculation Basins Summary

Parameter	Value
Number of Basins	3
Basin Dimensions (LWD)	21’-6” x 21’-6” x 20’-0”
Theoretical Detention Time, at 6.67 mgd (min)	14.9 min
Mixer Type	Variable speed mechanical mixer
Number of Mixers per basin	3

3.2.6.5 Sedimentation Basins

Flow from each flocculation basin discharges into a dedicated sedimentation basin. **Table 3-17** and **Table 3-18** provide a summary of the design criteria for the Sedimentation Basins. Flow travels across the basin and through inclined plate settlers where troughs collect settled water and then manifold into a common trench that conveys water to the filters. Sludge is directed to a sump by a rotating truss arm at the bottom of each basin. The collected sludge is pumped to gravity thickeners.

Table 3-17: Hooper WPP – Sedimentation Basins Summary

Parameter	Value
Number of Basins	3
Basin Dimensions	66’-6” x 66’-6” x 18’-0”
Theoretical Detention Time, at 6.67 mgd (min)	129

Table 3-18: Hooper WPP – Plate Settler Summary

Parameter	Value
Design Flow per basin (mgd)	11
Plate Loading Rate (gpm/ft^2)	0.30
Plate Angle	55°
Plate Dimensions (LW) (ft)	9.5 x 4.5
Plate Settlers per Cartridge	57
Plate Cartridges per Basin	8
Material of Construction	304 SS

Flocculant aid polymer may be added to the settled water prior to filtration.

3.2.6.6 Filters

Flow from the sedimentation basins flows to 10 gravity media filters. Each filter is equipped with Leopold underdrains with IMS caps and a surface wash system. A venturi rate-of-flow meter and valve control flow out of each filter. The control valve position is either set to maintain a flow through the filter or maintain a level in the filter. The operator can also set the valve positions manually at the local controller. Surface washing and backwash water flow to the filters from the finished water storage tanks. **Table 3-19** summarizes the design criteria for the filters.

Table 3-19: Hooper WPP – Filters Summary

Parameter	Value
Number of Filters	10
Filter Dimensions (LWD)	20'-0" x 18'-0" x 10'-0"
Maximum Permitted Filtration Rate (gpm/ft^2)	4.3
Sand Depth (in)	12
Anthracite Depth (in)	18
Average Run Time (hours)	72
Backwash Trigger - NTU	>0.15
Backwash Trigger - Filter Headloss (ft)	3.5

3.2.6.7 Transfer Pump Station

Filtered water flows into a common wet well where six vertical turbine transfer pumps discharge water through the UV disinfection system. In this wet well, sodium hypochlorite, fluoride, phosphoric acid, and liquid lime may be added. **Table 3-20** summarizes the design criteria for the transfer pumps.

Table 3-20: Hooper WPP – Transfer Pumps Summary

Transfer Pumps	Number of Units	Drive Type	Power (hp)	Duty Point
TP No. 1-2	2	Variable Speed Drive	60	2,800 gpm @ 61.37 ft TDH
TP No. 3-4	2	Constant Speed	60	2,800 gpm @ 61.37 ft TDH
TP No. 5-6	2	Constant Speed	125	6,400 gpm @ 60 ft TDH

3.2.6.8 UV Disinfection System

The transfer pumps discharge into a 42-inch pipe that conveys water to the UV disinfection system. **Table 3-21** summarizes the UV system design criteria. Sodium hypochlorite, fluoride, phosphoric acid, and liquid lime can be added following UV treatment.

Table 3-21: Hooper WPP – UV Disinfection System Summary

Parameter	Value
Disinfection Requirement	2.5-log Cryptosporidium Credit
Design UV Dose (mJ/cm^2)	8.5
Design Flow (mgd)	15
Average Flow (mgd)	10
Number of MP UV reactors	2
Number of lamps per reactor	4

Parameter	Value
Reactor Model	Trojan UVSwift™ 4L24
UV Transmittance	90%
UV Reactor Maximum Hydraulic Capacity (mgd)	25
Headloss at Design Flow through each Reactor (in)	7
Total Connected Load (kW)	77

3.2.6.9 Finished Water Tanks

Flow from the two UV units combines into a 42-inch pipe that conveys water to finished water tanks. A bypass line also exists that allows filter effluent to bypass the UV system and flow directly to the finished water tanks.

There are three finished water storage tanks, as summarized in **Table 3-22**. All water from the UV system typically passes through the 1.88-MG tank first and then flows through 30-inch pipes to either the 0.5-MG or 1.21-MG tank. There is a 24-inch pipe connecting the 1.21-MG and 0.5-MG tank; all tanks are hydraulically equalized during normal operation. Water from the 1.21-MG and 0.5-MG tanks flows through a 30-inch pipe to the high service pumps. The 1.21-MG tank provides washwater for the filters.

Table 3-22: Hooper WPP – Finished Water Tanks Summary

Tank Capacity (MG)	Side Water Depth (ft)	Diameter (ft)	Material
0.50	~32.0	~51.58	Steel
1.21	~32.0	~80.25	Steel
1.88	32.0	100.00	Pre-stressed Concrete

3.2.6.10 High Service Pumps

Water enters the high service pump station from the finished water storage tanks. **Table 3-23** summarizes the design criteria for the high service pumps.

Table 3-23: Hooper WPP – High Service Pumps Summary

	Pumps 351-P1 and -P2	Pumps 351-P3, -P4, and -P5
Number of Units	2	3
Year Installed	2004	2004
Pump Type	Vertical Turbine Can Pump	Vertical Turbine Can Pump
Motor Type	Constant Speed	Constant Speed
Manufacturer	Flowserve	Flowserve
Pump Model	16ENH/17PKL	18ENY/H

	Pumps 351-P1 and -P2	Pumps 351-P3, -P4, and -P5
RPM	1790	1790
Design Flow (gpm)	3,470	5,550
Design Head (ft TDH)	488	488

The discharge pipes from the high service pumps manifold into a single 42-inch pipe that leaves the site and fills the tanks at Jonesboro and Morrow Repumping stations. A surge tank of approximately 13,000 gallons is connected to the 42-inch pipe before it leaves the site.

3.2.6.11 Chemical Feed Systems

Table 3-24 summarizes the chemicals used and feed points at the Hooper WPP.

Table 3-24: Hooper WPP – Chemical Feed Systems Summary

Chemical	Purpose	Feed Points
Aluminum Chlorohydrate	Coagulant	Hooper Reservoir, Into Rapid Mix Basin
Chlorine Dioxide	Pre-oxidant	Upstream of Rapid Mix
PAC	Taste and Odor Removal	Upstream of Rapid Mix
Sodium Hypochlorite (bulk)	Disinfection	Filters, Upstream of Finished Water Storage
Sodium Fluorosilicate	Fluoridation	Filters, Upstream of Finished Water Storage
Phosphoric Acid	Corrosion inhibitor	Filters, Upstream of Finished Water Storage
Thiosulfate	Dechlorination	Sludge Thickener Supernatant
Liquid Lime	pH adjustment	Rapid Mix, Filters, Upstream of Finished Water Storage
Polymer	Flocculant aid; dewatering aid	Filter influent channel, Dewatering

<u>Aluminum Chlorohydrate</u>

ACH is stored in two 12,000-gallon bulk storage tanks in the chemical bay next to the first floor of the chemical feed building. Two transfer pumps send the coagulant to a pair of day tanks. Three peristaltic feed pumps dose ACH from these tanks to the rapid mix basin.

<u>Chlorine Dioxide</u>

Chlorine dioxide is generated on site by mixing Purate (sodium chlorate and hydrogen peroxide) and sulfuric acid through a generator and fed directly to the injection point upstream of the rapid mix. The system is on the second floor of the chemical feed facility. Purate is stored in one 5,000-gallon bulk tank in the chemical bay area and is transferred to a 350-gallon day tank located on the second floor using two transfer pumps (1 duty/ 1 standby). Sulfuric acid is stored in one 5,000-gallon bulk tank in the

chemical bay area and is transferred to a 350-gallon day tank located on the second floor using two transfer pumps (1 duty/1 standby). Each chemical is fed to the chlorine dioxide generator utilizing a dedicated diaphragm metering pump.

PAC

The PAC system consists of a hopper and screw feeder in the chemical feed building. PAC is stored in Supersacks which are added to the hopper as needed. PAC mixes with process water to deliver PAC slurry to injection points upstream of the rapid mix basin.

Sodium Hypochlorite

Sodium hypochlorite (12.5%) is stored in two 12,000-gallon and one 6,500-gallon bulk storage tanks in a covered containment area next to the chemical feed building. Hypochlorite is fed directly by three peristaltic pumps to the filters, and/or to the clearwell below the administration building, and/or in the advanced disinfection building.

Sodium Fluorosilicate

The fluoride feed system consists of a dry chemical hopper screw feed system with slurry tank. Sodium fluorosilicate is stored in 50-lb sacks on pallets which are added to the hopper as needed. There are two fluoride injection points: into the clearwell below the administration building and/or in the advanced disinfection building.

Phosphoric Acid

Phosphoric acid (36%) is stored in one 5,000-gallon bulk storage tank located near the chemical feed building. Chemicals from this tank are transferred to a 350-gallon day tank using two transfer pumps. Two centrifugal pumps (1 duty, 1 standby) dose phosphoric acid to the injection point downstream of the UV system and/or to the clearwell below the administration building.

Liquid Lime

The Hooper WPP uses Burnett's Cal-Flo liquid lime system. The system is installed in a containment area located next to the main clarification facilities. It consists of a 12,000-gallon bulk tank and a 12,000-gallon feed tank. One centrifugal pump transfers liquid lime from the bulk tank to the feed tank. Three diaphragm pumps deliver liquid lime from this tank to the feed point upstream of the rapid mix structure and/or downstream from the UV system.

Polymer

Polymer is delivered to the WPP in 500-gallon totes and then stored in the chemical feed building. A transfer pump delivers polymer to a 350-gallon day tank, which a feeder draws from, along with process water, to convey the polymer to the filter influent channel. Polymer may also be dosed in the solids handling building to assist in dewatering.

Dechlorination

Sodium thiosulfate (30%) is delivered to the WPP in 350-gallon totes and then stored in the dechlorination building south of the rapid mix structure. Two chemical pump skids utilizing peristaltic pumps feed thiosulfate to two injection points. The first is the 24-inch filter backwash pipe upstream of the washwater holding basin. The second is into the 30-inch filter overflow discharge pipe into the washwater holding basin when applicable.

Residual Handling

Solids collected from the sedimentation basin flow by gravity into a splitter box that directs flow to two circular gravity thickeners. The thickeners have an internal diameter of 30'-0" with a 15'-0" SWD. Supernatant from the thickeners flows through 6-inch pipes into a manhole where a 24-inch pipe carries flow to a washwater holding tank. The flow is measured by a magnetic flow meter. Thiosulfate is added for dechlorination before entering the holding tank. Backwash from the filter basin also discharges into the manhole upstream of the thiosulfate injection and flow meter. Settled solids from the holding tank are collected and discharged back into the thickener splitter box. Supernatant from the holding basin discharges into Hooper Reservoir.

Settled solids in the thickeners are pumped to two belt filter presses. Dewatered solids are conveyed into trucks for off-site disposal. The supernatant from the belt filter press discharges into the manhole upstream of the washwater holding tank.

4. Facility Design Considerations

The selected Design-Builder will construct a New Hicks WPP on available Hicks WPP property owned by CCWA. The Design-Builder will select advanced treatment technologies to remove PFAS from both New and Existing Hicks WPPs and the Hooper WPP. The Design-Builder will make necessary improvements to Smith WPP's RWPS and/or high service pump station (HSPS) to ensure adequate water is provided to the New Hicks WPP.

This section details design considerations the selected Design-Builder will make during Phase 1A of this project before moving forward with Phase 1B. This section should not be considered a list of all considerations to be made; the Design-Builder holds ultimate responsibility for providing a complete project that meets the needs of CCWA discussed during Phase 1A of design. Section 3.04 Exhibit B of the RFP details technical considerations that need to be made for the various WPP improvements.

4.1 Existing and New Hicks WPPs

The New Hicks WPP and advanced treatment facility detailed in Section 1: Introduction will be constructed in the general area depicted in **Figure 4-1**. The new PFAS treatment processes will be installed to treat flow from both the Existing and New Hicks WPP. Potential PFAS treatment technologies include nanofiltration, reverse osmosis membranes, or adsorption technologies. Treatment of reject water from these membranes will also be required to remove PFAS. The selected Design-Builder will evaluate these PFAS technologies during Phase 1A.

Treated water from the Existing and New Hicks WPP will need to be pumped to the new PFAS treatment facilities before being pumped to the distribution system. Noah's Ark RPS will be decommissioned when this project is complete; the new HSPS will need to consider the change in discharge system conditions.

The final location of all new facilities will be determined based upon the selected Design-Builder's evaluations and recommendations presented to CCWA for consideration during Phase 1A.

In the future, the Existing Hicks WPP will be decommissioned and the New WPP will be further expanded to make up for the Existing Hicks WPP capacity plus additional capacity to meet increased demand (see **Table 3-1**).

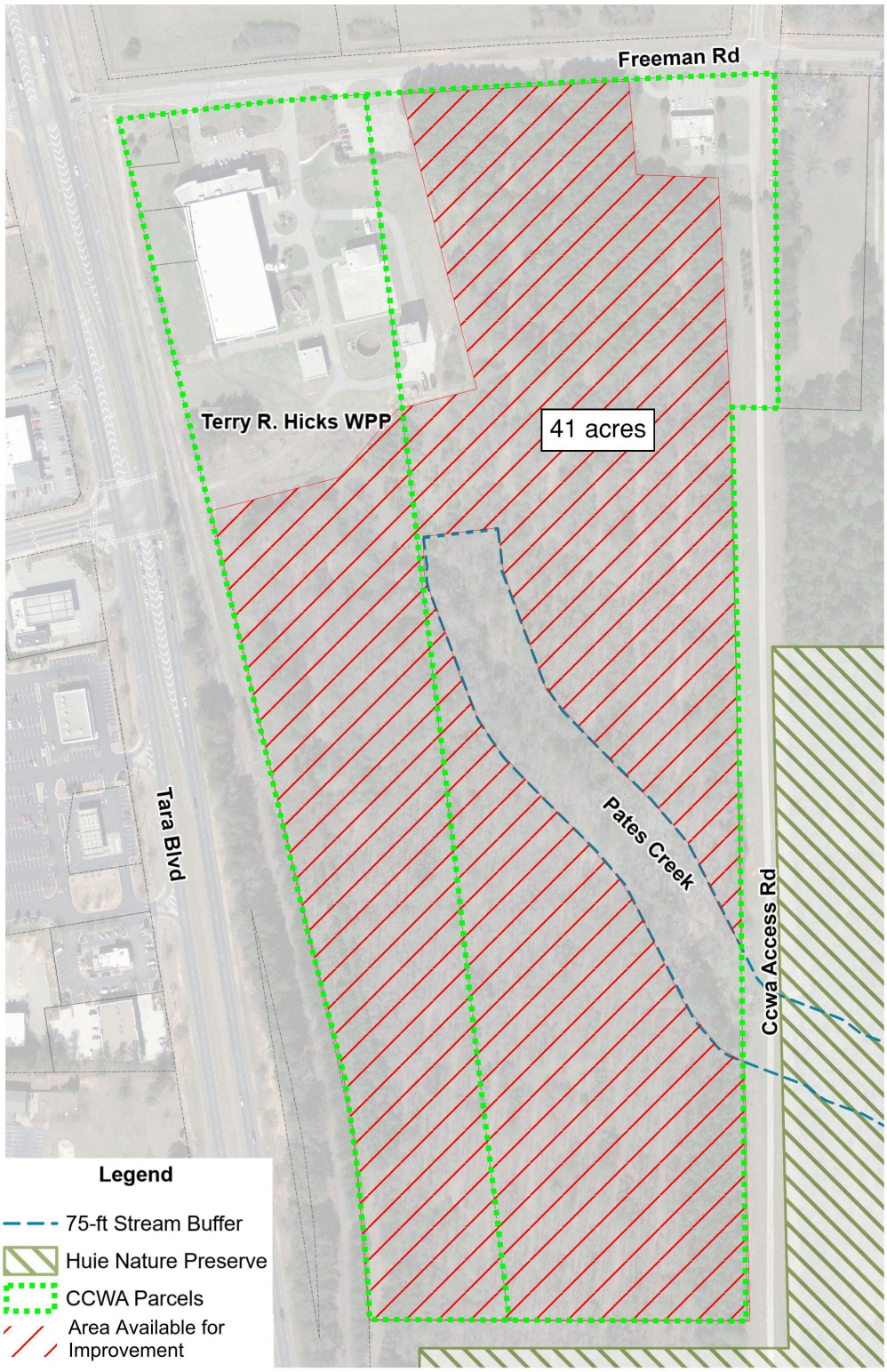


Figure 4-1: Existing and New Hicks WPP Facilities Site Map

4.1.1 Design Considerations

The selected Design-Builder will need to consider a variety of topics to develop a robust design for the New Hicks WPP and modified processes at the Existing Hicks WPP to meet all CCWA's Project goals and objectives. These topics include, but not are limited to, the following:

- Perform pilot testing for selected technologies considered for PFAS removal (see Exhibit C Part 2.3.5). Utilize results to determine which technology is most applicable for CCWA's needs at both the Existing and New Hicks WPPs. Pilot testing procedures must meet all regulatory requirements and be sufficient to get approval from EPD for the selected alternative.
- Consider converting Huie CTW Pond E to a raw water reservoir prior to raw water entering the New and Existing Hicks WPPs. For this option, cleaning out of existing residuals in Pond E will be required along with other modifications to manage and control flows within the pond system. Coordinate with CCWA's wetlands operations.
- Consider using Huie CTW Pond C for backwash discharged from the new WPP/existing WPP. Consider a high rate settling process to remove solids upstream of discharging backwash water into the pond. Coordinate with CCWA's wetlands operations.
- Optimize the number and size of treatment trains for the initial capacity of the new WPP and future expansions to provide the ability to split flows proportionally between trains. Install piping stub-outs for future trains.
- Identify the types and dosages of chemicals to be added to raw water, e.g., oxidation of iron and manganese, taste and odor control, coagulation for turbidity and TOC removal, pH adjustment, settled water, e.g., oxidation of iron and manganese, filtered water, e.g., disinfection, pH adjustment, finished water, e.g., fluoride, orthophosphate, disinfection, pH adjustment, as well as any new treatment process, e.g., membrane cleaning.
- Determine if UV disinfection is required for the new WPP. Determine if the UV disinfection system at Existing Hicks WPP can be reused in the New Hicks WPP, if required.
- For all chemicals, determine the appropriate number and size of bulk storage tanks, day tanks, and feed pumps to provide redundancy. Include a spare chemical feed line to each application point with provisions for leak containment, heat tracing, remote leak detection, etc.
- Identify a location for a new chemical building that will provide safe access for delivery trucks.
- Evaluate various types of rapid mixing systems including mechanical mixers (vertical turbine type) and static mixers to provide optimal mixing conditions across the range of flows expected (current and future) and for the types of coagulant chemicals being considered.
- Identify appropriate treatment technology to meet stated water quality objectives related to PFAS (treated water PFAS = 0 ng/L). Technologies identified should not be limited to a single subset membrane and media technology.
- Identify the appropriate treatment technology to remove PFAS from reject water if membranes are selected as the primary PFAS treatment technology.

- Identify the most efficient way to transfer treated water (prior to post-filter chemical addition) to the new PFAS treatment system.
- Optimize the number and size of PFAS treatment trains for initial plant capacity and future expansions.
- Determine if finished water needs to be remineralized before it is pumped into the distribution system.
- Provide post-PFAS treatment finished water pumping to distribution system, considering number and sizes of pumps and variable speed control requirements. Consider future buildout requirements at the New Hicks WPP as part of this evaluation.

The selected Design-Builder will also need to consider the following in developing the design of the Project:

- Identify all necessary permits to construct the new WPP and meet the requirements of all funding sources.
- Identify all General and Georgia NPDES permits to discharge supernatant flows from residual treatment into Huie CTW Ponds, wetlands, and/or Waters of the State, as necessary.
- Consider using existing dewatering equipment to dewater residuals collected from filter backwash water or sludge removed from basins.
- Identify a method for providing standby power for the entire new WPP treatment capacity (initial capacity with provisions to be expanded when plant is expanded).
- Identify/reserve space on the WPP property for potential installation of up to four future 5-MG finished water storage tanks (near the new high service pump station being constructed as part of this Project).
- Identify site security needed, such as controlled access gate, fencing, security cameras, etc.
- Provide architectural programming services to configure administration spaces needed as part of a new control building/filter building.

The topics presented in this section, among others, will need to be evaluated by the selected Design-Builder and included in preliminary design workshops held with CCWA during Phase 1A. Results from each workshop should be memorialized in a technical memorandum that includes an overview of options evaluated, results, and recommendations that will be carried forth into the detailed design. The final design criteria developed through these evaluations will become part of the Initial Design Report (IDR) prepared by the Design-Builder in Phase 1A of the Project.

4.2 Smith WPP

The existing Smith WPP will remain in operation throughout construction of the Project and for an undetermined period after construction is complete. No modifications are planned for the Smith WPP treatment processes as part of this Project.

4.2.1 Smith Reservoir RWPS and Smith WPP HSPS

As part of this Project, the Smith Reservoir RWPS and/or the Smith WPP HSPS will need to be modified to provide additional pumping capacity to supply raw water to both Existing and New Hicks WPPs (or Holding Pond E as described below) through the existing 30-inch raw water main. The 24-inch finished water main may be utilized once New Hicks WPP start-up is complete. The Design-Builder will need to determine if additional raw water conveyance is required.

Smith Reservoir RWPS

The selected Design-Builder should evaluate the possibility of routing raw water from the Blalock Reservoir and Smith Reservoir into Pond E at the Huie CTW Ponds site located just north of the Existing Hicks WPP (see **Figure 4-2**). This may allow for a more consistent raw water quality entering the Existing and New Hicks WPPs regardless of what reservoir is being used for supply. The Design-Builder should determine if water from this pond can flow by gravity through the entire treatment process until being repumped to the new PFAS treatment facility. The Design-Builder must consider the amount of usable volume in the pond over all flow conditions. The Design-Builder must also consider supplying the Existing and New Hicks WPPs if the pond is temporarily taken out of service (direct pumping from Smith RWPS and/or Blalock). Coordination with Georgia Safe Dams may be required.

Figure 4-2: Existing Hicks WPP and Huie CTW Ponds

4.2.2 Raw Water Conveyance Hydraulic Analysis

Smith Reservoir currently feeds both Smith WPP and the Smith Reservoir RWPS. Once the New Hicks WPP startup is complete, CCWA will decommission the Smith WPP and the Smith Reservoir RWPS will be the only demand on the reservoir. A conceptual level hydraulic analysis was performed on the existing 30-inch raw water main from the RWPS to Huie CTW Pond E. The analysis assumed the existing raw water pumps were replaced, new 24-inch pump discharge piping and valves were installed on the individual pump discharge lines, and flow discharged over the top of Huie CTW Pond E embankment. The existing 30-inch raw water transmission main was modeled based on the pipe's as-built drawings which show the high point of the main (crown 946.75 ft MSL) approximately 4.8 miles from the RWPS. The water surface elevation in Smith Reservoir was assumed to be 801.00 ft MSL.

Once Smith WPP is decommissioned, the existing 24-inch finished water main from the Smith WPP HSPS to the Noah's Ark Ground Storage Tanks will be available to provide additional capacity to Huie CTW Pond E. A conceptual level hydraulic analysis was performed on the existing 24-inch main from Smith WPP to Huie CTW Pond E. The 24-inch finished water main was modelled based on the pipe's as-bult drawing. The drawings were plan-view only and did not include a profile of the pipe. The high point of the main was determined based on available GIS data and determined to be about 4.9 miles from the Finished Water PS. The main would travel about 6.9 miles before it would need to be modified to discharge into Huie CTW Pond E. For this scenario, the Design-Builder will need to consider how to ensure continued operation of the Smith WPP until the New Hicks WPP is constructed and fully functional.

Table 4-1 summarizes the range of flows the modified pump stations may produce based on maximum system pressures. Alternatively, the existing mains could be modified to combine flow from one of the pump stations and increase the capacity to a desired maximum pressure range. **Table 4-1** includes a range of flows the modified Smith Reservoir RWPS may pump if piping was modified to split flow between the 24-inch main and 30-inch main to Huie CTW Pond E. See the location of the mains and the possible connection point summarized in **Figure 4-3** (provided by CCWA).

Table 4-1: Conceptual RWPS Capacities from Smith Reservoir

Maximum System Pressure (psig)	Smith Reservoir RWPS 30-inch Main (mgd)	Smith WPP HSPS 24-inch Main (mgd)	Combined Mains (mgd)
100	11.3 - 12.5	5.1 - 5.7	17.1 - 18.9
150	18.8 - 20.8	10.2 - 11.2	28.5 - 31.5
200	24.3 - 26.9	13.6 - 15.0	36.9 - 40.7

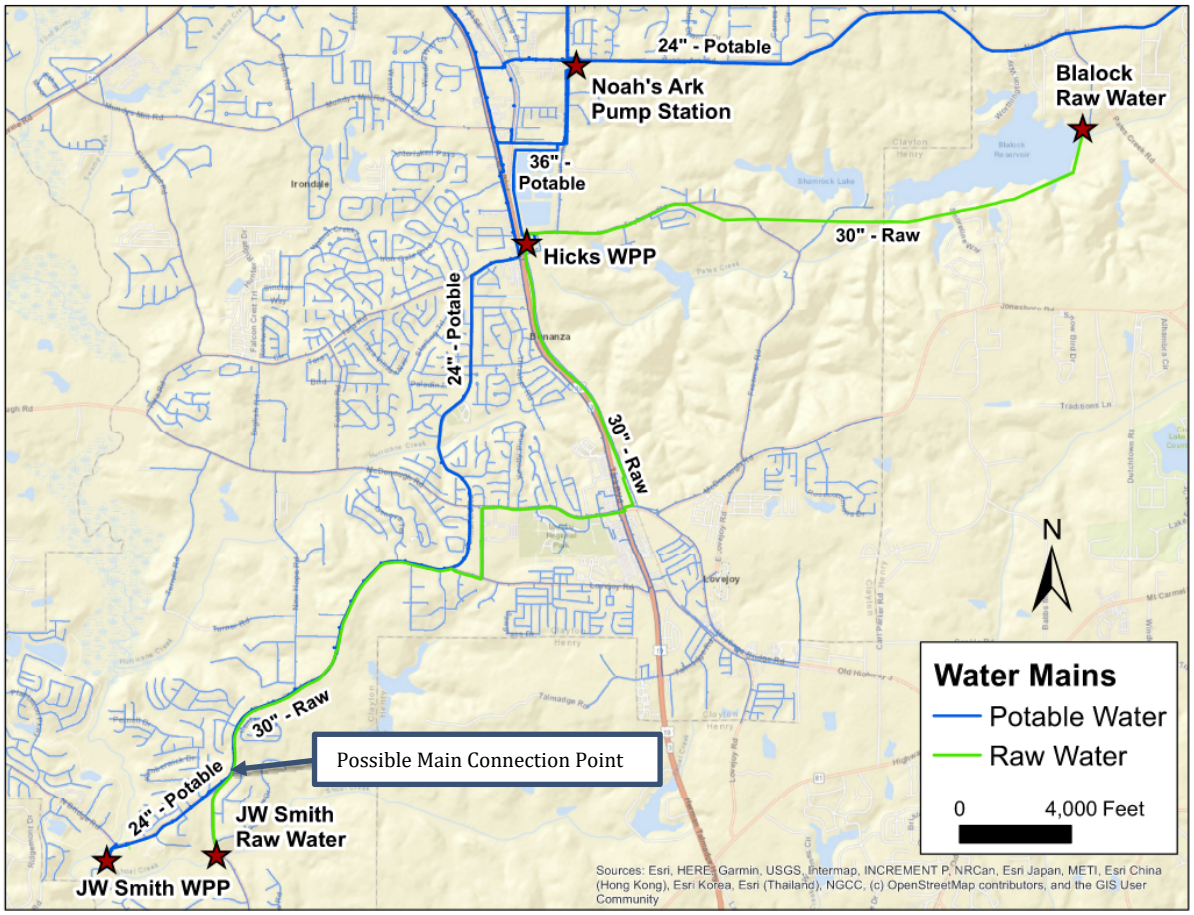


Figure 4-3: Smith WPP Finished Water Main and Smith Reservoir RWPS Main

4.2.3 Design Considerations

The selected Design-Builder will need to consider a variety of topics to develop a robust design for the Smith RWPS and conveyance to the Existing and New Hicks WPPs to achieve CCWA's Project goals and objectives. These topics include, but not are limited to, the following:

- Provide reliable raw water pumping capacity from Smith Reservoir to the Existing and New Hicks WPPs (or Pond E) considering number and sizes of pumps and variable speed control requirements.
- Consider future buildout requirements at the New Hicks WPP in developing the recommended number of pumps and pumping capacities.

The topics presented in this section will be evaluated by the selected Design-Builder and included in preliminary design workshops held with CCWA during Phase 1A. Results from each workshop should be memorialized in a technical memorandum that includes an overview of options evaluated, results, and recommendations that will be carried forth into detailed design. The final design criteria developed through these evaluations will become part of the Initial Design Report (IDR) prepared by the selected Design-Builder in Phase 1A of the Project.

4.3 Hooper WPP

The existing Hooper WPP will remain in operation throughout construction of the Project. As part of this Project, new PFAS treatment processes will be installed downstream of both the existing gravity media filters and UV treatment and before water enters existing finished water storage tanks. Potential PFAS treatment technologies include reverse osmosis, nanofiltration, or adsorption technologies. The selected Design-Builder will evaluate these technologies during Phase 1A of the Project. Figure 4-4 displays the property CCWA owns surrounding Hooper WPP.

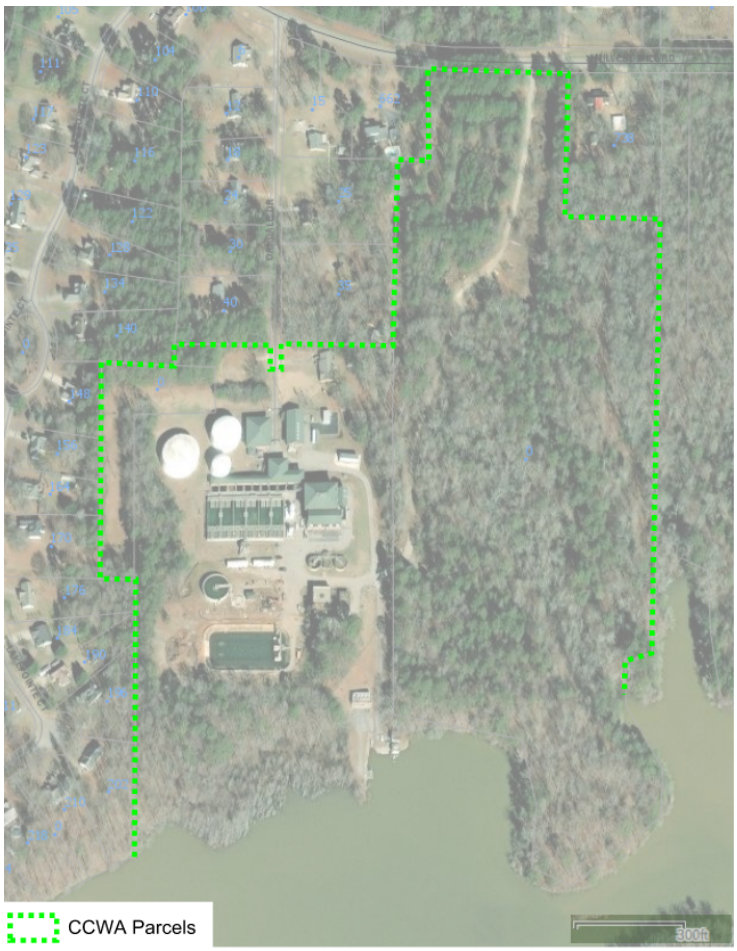


Figure 4-4: Hooper WPP – CCWA Property

The following modifications are anticipated to the Hooper WPP treatment processes:

- Piping from the existing facilities to finished water storage tanks
- New Transfer Pump Station to PFAS treatment
- Yard piping connecting PFAS treatment to existing facilities
- New PFAS treatment process

The final location of all new facilities will be determined based upon the selected Design-Builder's evaluations and recommendations presented to CCWA for consideration during Phase 1A.

4.3.1 Design Considerations

The selected Design-Builder will need to consider a variety of topics to develop a robust design for the Hooper WPP to achieve CCWA's Project goals and objectives. These topics include, but not are limited to, the following:

- Perform pilot testing for selected technologies considered for PFAS removal (see Exhibit C Part 2.3.5). Utilize results to determine which technology is most applicable for CCWA needs at Hooper WPP. Pilot testing procedures must meet all regulatory requirements and be sufficient to get approval from EPD for the selected alternative.

- Identify the types and dosages of chemicals to be added at new chemical application points within the WPP process train, e.g., downstream of the new PFAS treatment system, as well as for any new treatment process, e.g., membrane cleaning.
- For all new or modified chemical systems, determine the appropriate number and size of bulk storage tanks, day tanks, and feed pumps to provide redundancy. Include spare chemical feed line to each new application point with provisions for leak containment, heat tracing, remote leak detection, etc.
- Identify locations for any new chemical systems to be installed that provide safe access for delivery trucks.
- Identify appropriate treatment technology to meet stated water quality objectives related to PFAS (treated water PFAS = 0 ng/L) using historical data to determine the maximum PFAS species' concentrations and raw water quality parameters for the selected technology. Technologies identified should not be limited to a single subset membrane and media technology.
- Identify the appropriate treatment technology to remove PFAS from reject water if membranes are selected as the primary PFAS treatment technology.
- Identify the most efficient way to transfer treated water (prior to post-chemical addition) to the new PFAS treatment system.
- Optimize the number and size of PFAS treatment trains for initial plant capacity and future expansions.
- Develop a summary of anticipated costs to construct and operate GAC (Granular Activated Carbon) contactor vessels vs. GAC pressure vessels and advantages/disadvantages of both options.
- Determine if finished water needs to be remineralized before it is pumped into the distribution system.
- Provide finished water pumping after PFAS treatment to the distribution system, considering number and sizes of pumps and variable speed control requirements. Consider future buildout requirements at the WPP as part of this evaluation.
- Identify all necessary permits to construct the new WPP and meet the requirements of all funding sources.
- Identify all General and Georgia NPDES permits to discharge supernatant flows from residual treatment, wetlands, and/or Waters of the State, as necessary.
- Consider using existing dewatering equipment to dewater residuals collected from filter backwash water or sludge removed from basins.

The topics presented in this section, among others, will need to be evaluated by the selected Design-Builder and included in preliminary design workshops held with CCWA during Phase 1A. Results from each workshop should be memorialized in a technical memorandum that includes an overview of

options evaluated, results, and recommendations that will be carried forth into detailed design. The final design criteria developed through these evaluations will become part of the Initial Design Report (IDR) prepared by the selected Design-Builder in Phase 1A of the Project.

4.4 Maintenance of Plant Operations

The continuous and reliable operation of all three WPPs is of utmost importance during construction of the new and modified facilities that are part of this Project. The selected Design-Builder will be responsible for developing a Maintenance of Plant Operations (MOPO) Plan. The Design-Builder will meet with CCWA Operation Staff to ensure required production is maintained throughout the duration of the Project.

4.5 Discipline Design Criteria

Exhibit B, Project Technical Requirements, includes the design guidelines for the support disciplines. The selected Design-Builder will develop proposed design criteria for each discipline and present the information to CCWA for consideration during the Phase 1A workshops. The final design criteria will be included in the Initial Design Report prepared by the selected Design-Builder.

4.5.1 Permitting Activities

The selected Design-Builder will be responsible for preparing all documents necessary to obtain permits required to construct the new and modified facilities, including permits from EPD and other environmental permits required for project construction. Permit applications may be required for the US Army Corps of Engineers (USACE) Section 404 Permit, Georgia Department of Transportation (GDOT) Utility Facility Encroachment Permit (commonly referred to as GUPS permit), pipeline licenses and maintenance right of entry permits through RailPros, and variances/easements for work encroaching private property or Water of the State's buffers.

The selected Design-Builder will conduct all due diligence efforts necessary to determine development requirements associated with the properties' zoning. The Design-Builder will lead all efforts to rezone a property if necessary to complete the Project.

The selected Design-Builder should expect to complete all tasks and facilitate agency coordination to obtain the environmental permits. Activities assumed to be necessary include, but are not limited to, the following:

- Delineation of environmental features
- Endangered/threatened species surveys
- FEMA review/coordination
- Development of a Stormwater Management Plan
- Cumulative impacts assessment
- Historic/archaeological coordination/surveys
- Preparation of applications
- Payment of application fees

Project permits will need to consider the various scope items associated with each site and meet the requirements of each individual permitting agency.

The selected Design-Builder's project schedule must account for time required to apply for and receive the permits with an understanding that many permits will require the approval of multiple cross-cutting agencies and/or public comment period(s).

4.5.1.1 Building and Land Disturbance Permitting Activities

The selected Design-Builder will be responsible for acquiring all permits required by Clayton County including, but not limited to, a Building Permit through the Clayton County Community Development Department and a Land Disturbance Permit through the Transportation and Development Department. Individual submittals will be required for each property Work will occur.

The selected Design-Builder will be responsible for all stormwater-related activities required for the Project development, construction, and permitting. The Design-Builder should expect to complete all tasks associated with stormwater management and land development and to facilitate permitting activities including the ones outlined above. The Design-Builder must comply with other Federal, State, or local ordinances and regulations relating to stormwater management, erosion control, and land development. Activities assumed to be necessary include, but are not limited to, the following:

- Preparation of stormwater management plans, stormwater pollution prevention plans, and erosion control and sediment plans.
- Siting, design, and implementation of engineered controls, stormwater control measures and best management practices for the mitigation of impacts and natural resource protection.
- Implementation of limitations on built upon area and impervious density or disturbance to riparian buffers, analysis of impacts to upstream and downstream properties and infrastructure, development of operation and maintenance plans and execution of agreements for controls, measures, and practices, and recordation of required restrictions and limitations.

4.5.2 Permitting Associated with Funding

This project will utilize funding from the Georgia Environmental Finance Authority (GEFA) and WIFIA. The selected Design-Builder will adhere to all additional requirements set by these two agencies including, but not limited to, GEFA Supplemental General Conditions for Federally Assisted State Revolving Fund Construction Contracts, GEFA American Iron and Steel Special Conditions and Information, Davis-Bacon Act, and the National Environmental Policy Act (NEPA).

As part of the WIFIA, the USEPA must review the environmental impacts of the project and make an independent determination under NEPA. The selected Design-Builder will assist CCWA in collecting existing and developing all environmental assessments, consultations, and documentation to support the WIFIA program's review of environmental impacts and mitigation measures as part of the application process. The selected Design-Builder will coordinate with all cross-cutting authorities to ensure documentation is complete for WIFIA's review. Portions of the Project are subject to Categorial Exclusion (CATEX) as defined by 40 CFR 6.204. The selected Design-Builder will assist CCWA in developing documents to apply for CATEX.

5. Additional Resources

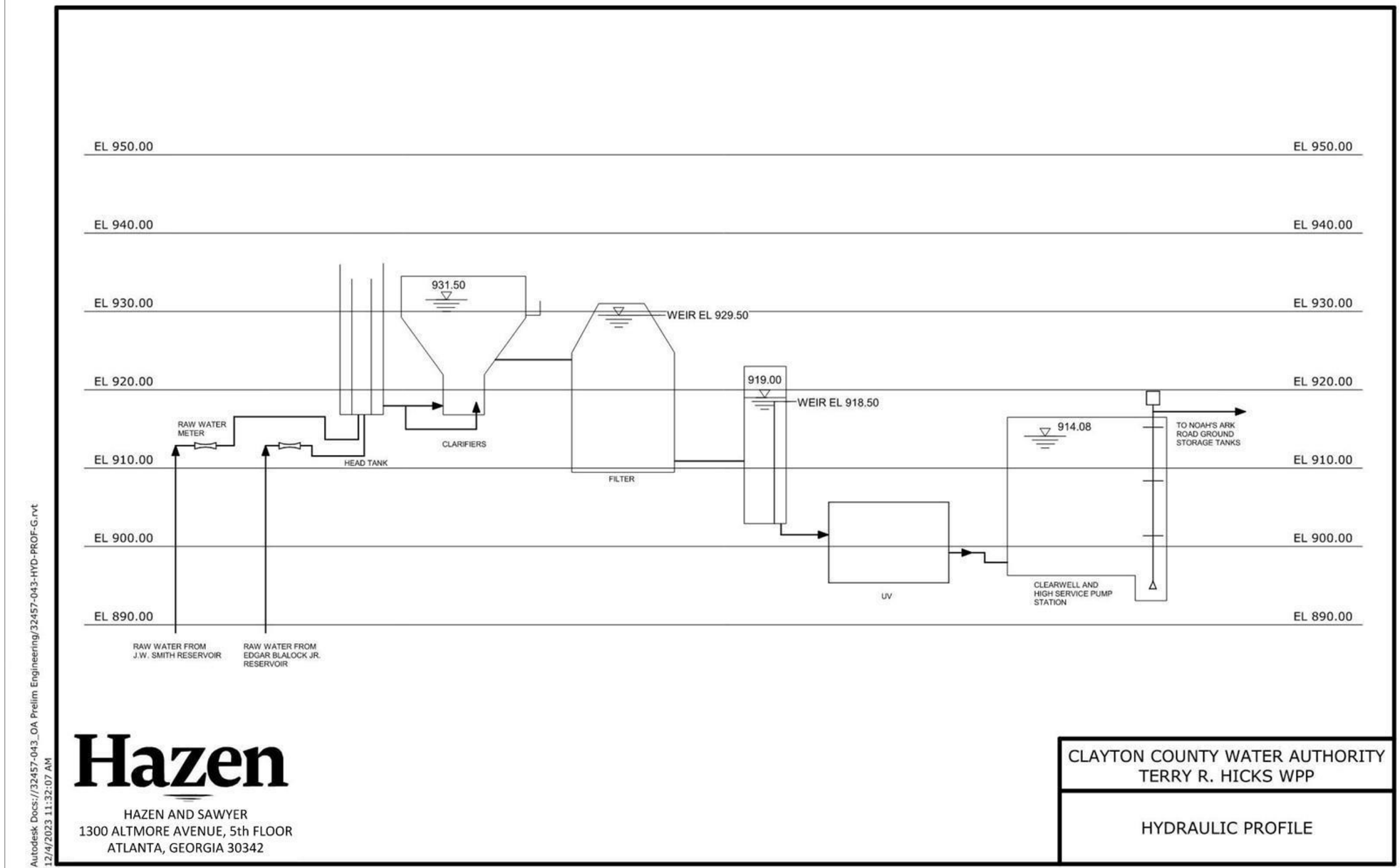
The following reports are available upon request:

- Terry R. Hicks WPP Capacity Evaluation Technical Memorandum, Hazen and Sawyer, August 2021
- Existing Hicks WPP Water Quality Data, 2002-2023
- Existing Hicks WPP Chemical Usage Data, 2020-2023
- Smith WPP Water Quality Data, 2002-2023
- Hooper WPP Water Quality Data, 2002-2023
- Quarterly PFAS Sampling Data, 2020-2023
- Huie Constructed Treatment Wetlands NPDES Permit No. GA0038423

Appendix A: Clayton County Water System


CCWA Water System
Raw
Transmission
Process
Elevated Storage Tank
Ground Storage Tank
Repump Station
Flint River Basin
Ogmulgee River Basin
FULTON CO.
DEKALB CO.
Hartsfield-Jackson Atlanta International Airport
CLAYTON COUNTY
Out-of-service
CONLEY RD.
Out-of-service
GRANT RD.
Out-of-service
FOREST AVE.
Forest Park
Forest Pkwy
Panola Rd.
Ellenwood
W.J. HOOPER WPP 20 MGD
Oakdale Dr.
CRYSTAL LAKE
MORROW RPS
Morrow Rd.
Morrow
S Lee St.
Shirley Dr.
FROM HOOPER WPP
JONESORO RPS
Jonesboro
Stockbridge
Millers Mill Rd.
Lake Spivey
Pates Creek
Tara Blvd.
Noah's Ark Rd.
NOAH'S ARK RPS
W.J. Hooper Reservoir
Blalock Reservoir
Shamrock Reservoir
Flint River
Old Morrow Rd.
TO MORROW RPS
Southlake Pkwy
FROM MORROW RPS
Mt. Zion Blvd.
DIST. SYS.
FROM HOOPER WPP
Out-of-service
LOVEJOY
Lovejoy
FAYETTE CO.
J.W. Smith Reservoir
J.W. SMITH WPP 12 MGD
Hampton Rd.
FROM RESERVOIR
10 MGD TERRY R. HICKS WPP
TO NOAH'S ARK RPS
Freeman Rd.
FROM J.W. SMITH RESERVOIR
FROM BLALOCK RESERVOIR
Industrial Blvd.
Dixon
FROM SMITH WPP
FROM HICKS WPP
HENRY CO.
Eastern Continental Divide
SPALDING CO.
0 MILES 2
Published: February 2024

Appendix B: Existing Plant Hydraulic Profiles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RAW WATER METER
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CLARIFIERS
FILTER
UV
CLEARWELL AND HIGH SERVICE PUMP STATION
TO NOAH'S ARK ROAD GROUND STORAGE TANKS
RAW WATER FROM J.W. SMITH RESERVOIR
RAW WATER FROM EDGAR BLALOCK JR. RESERVOIR
Hazen
HAZEN AND SAWYER
1300 ALTMORE AVENUE, 5th FLOOR
ATLANTA, GEORGIA 30342
CLAYTON COUNTY WATER AUTHORITY
TERRY R. HICKS WPP
HYDRAULIC PROFILE
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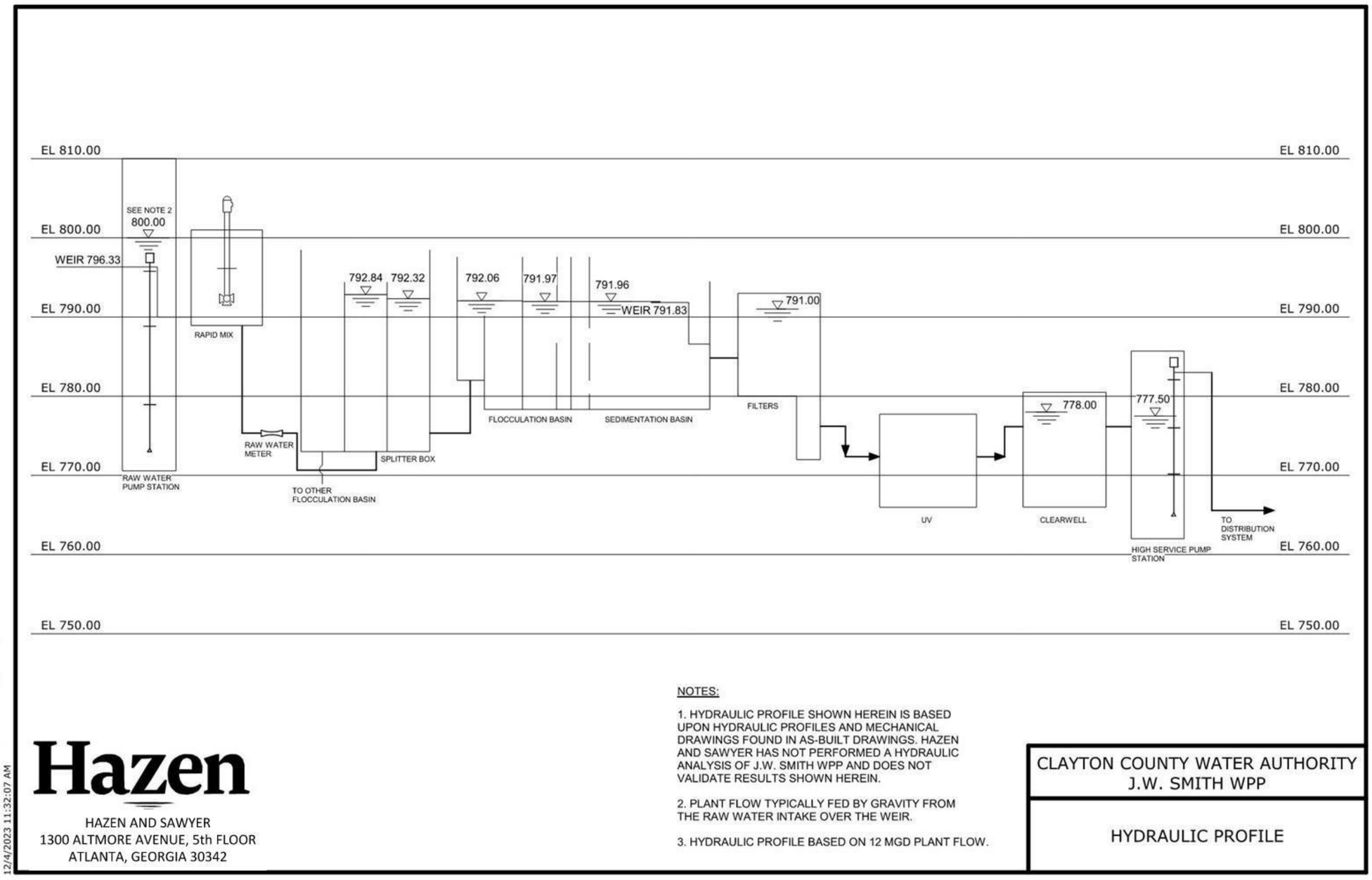

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Hazen

HAZEN AND SAWYER
1300 ALTMORE AVENUE, 5th FLOOR
ATLANTA, GEORGIA 30342

NOTES:

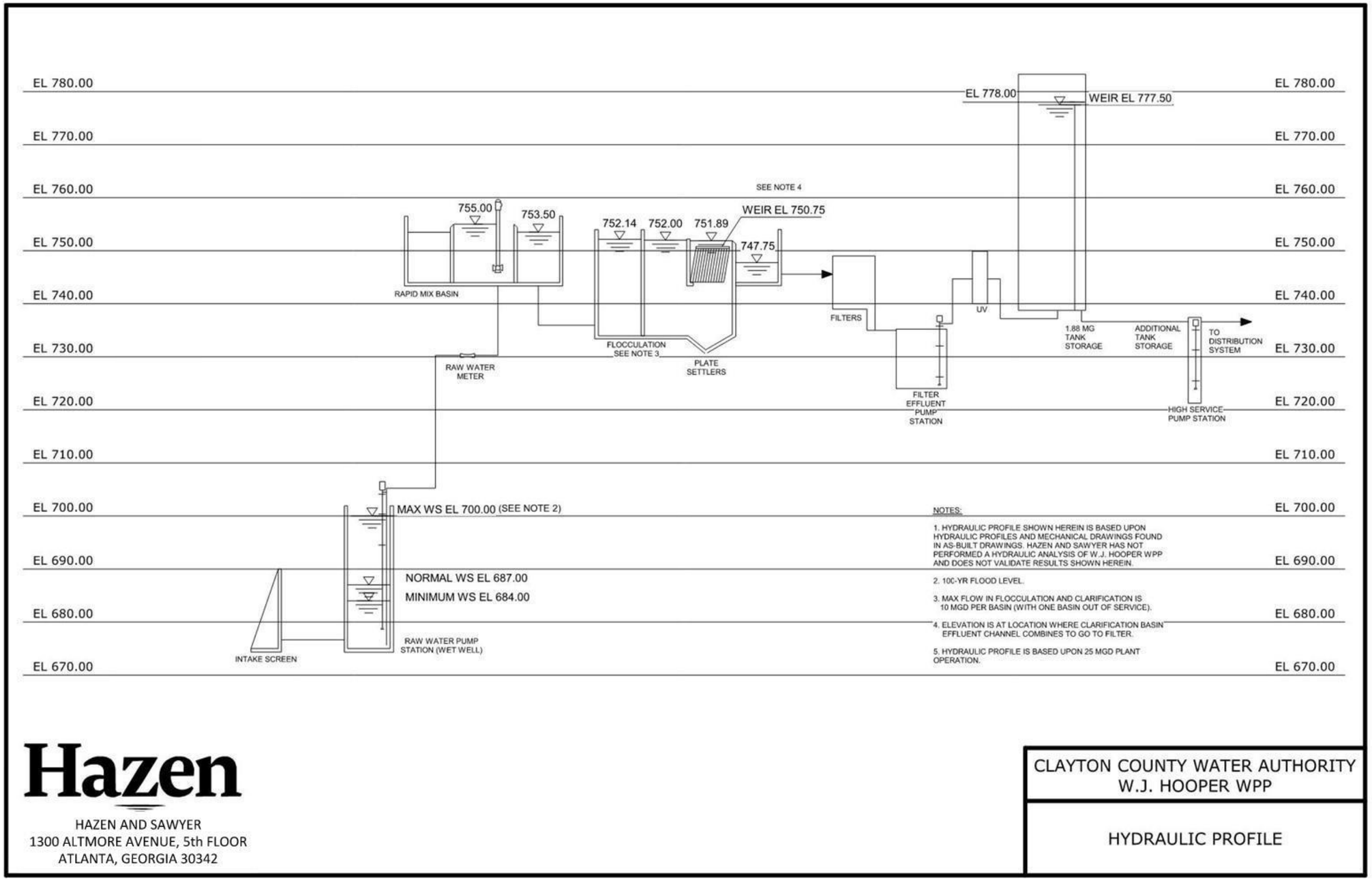
1. HYDRAULIC PROFILE SHOWN HEREIN IS BASED UPON HYDRAULIC PROFILES AND MECHANICAL DRAWINGS FOUND IN AS-BUILT DRAWINGS. HAZEN AND SAWYER HAS NOT PERFORMED A HYDRAULIC ANALYSIS OF J.W. SMITH WPP AND DOES NOT VALIDATE RESULTS SHOWN HEREIN.

2. PLANT FLOW TYPICALLY FED BY GRAVITY FROM THE RAW WATER INTAKE OVER THE WEIR.

3. HYDRAULIC PROFILE BASED ON 12 MGD PLANT FLOW.

CLAYTON COUNTY WATER AUTHORITY
J.W. SMITH WPP

HYDRAULIC PROFILE



Hazen

HAZEN AND SAWYER
1300 ALTMORE AVENUE, 5th FLOOR
ATLANTA, GEORGIA 30342

CLAYTON COUNTY WATER AUTHORITY
W.J. HOOPER WPP

HYDRAULIC PROFILE

Appendix C: Battelle Rapid Small-Scale Column Testing (RSSCT) for Clayton County Water Authority

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Final Report

Rapid Small-Scale Column Testing (RSSCT) for Clayton County Water Authority

Prepared for: Clayton County Water Authority

Prepared Under Contract Number: CNTR000000000000902
Professional Service Agreement Number 148040264

Prepared by:
Battelle
505 King Avenue
Columbus, Ohio 43201

December 2023

BATTELLE

Section 1.0 Introduction

Clayton County Water Authority (CCWA) owns and operates three water production plants (WPPs): Hooper WPP, Smith WPP, and Hicks WPP. CCWA is planning to add advanced treatment to its WPPs to treat per- and polyfluoroalkyl substance (PFAS)-impacted reservoir water. As such, media selection is a critical component of the design. CCWA funded this study to assess the performance of various adsorbents for PFAS removal in reservoir water.

Bench-scale rapid small-scale column testing (RSSCT) was completed by Battelle Memorial Institute (Battelle) located in Columbus, Ohio. A work plan detailing test activities was prepared. Battelle conducted the RSSCT studies and pretreatment of water for select source waters for comparison with untreated water. Summary tables of the results were prepared in Excel and submitted to the client as a deliverable.

Section 2.0 Objective

The objective of this study was to conduct bench-scale RSSCTs using PFAS-impacted surface water from each WPP and reverse osmosis (RO) concentrated Hicks water to compare PFAS removal using granular activated carbon (GAC), ion exchange (IX) resins, and Fluoro-Sorb® (FS). In addition, prior to the Hicks RO RSSCT, a feasibility test was performed to determine if an RSSCT could be conducted using the concentrated RO water. The results of this testing will be used to select media for field-scale pilot testing of the selected technologies.

Section 3.0 Study Description

Three rounds of RSSCTs were performed. A total of 17 columns were constructed including RSSCTs and RO feasibility testing. Columns were packed with Calgon F400-1, Evoqua UC1240LD, Calgon CalRes 2301, Evoqua PSR2+, and FS media. Prior to RSSCT, a pre-filter saturation evaluation was performed with respect to perfluorooctanesulfonic acid (PFOS). Inline filters were installed for each column on the discharge side of the pumps and saturated for the duration determined from the pre-filter saturation evaluation.

The study was conducted in three rounds:

- Round 1, Hooper included 2 GAC: F400-1 and UC1240LD, 2 IX: CalRes 2301, and Evoqua PSR2+, and 1 novel media: FS,
- Round 2A, Smith included 1 GAC: F400-1, and 2 IX: CalRes 2301, and Evoqua PSR2,
- Round 2B, Hicks RO concentrate feasibility test, included 1 GAC: F400-1, and 1 novel media: FS,
- Round 3A, Hicks included 1 GAC: F400-1, and 2 IX: CalRes 2301, and Evoqua PSR2, and
- Round 3B, Hicks RO concentrate, included 1 GAC: F400-1, 2 IX: CalRes 2301, and Evoqua PSR2+, and 1 novel media: FS.

Effluent water samples from the columns were collected over the duration of the test to determine PFAS breakthrough curves. In addition, total organic carbon (TOC) and pH were monitored for all columns. Contaminants of emerging concern (CECs) were collected for the Round 1 RSSCT (Hooper) and Round 3B Hicks RO. This report details the methodology and results of the RSSCTs.

Section 4.0 Materials and Methods

This section includes discussion on bulk sample delivery, grinding, sieving, and washing of media, column construction, pre-filter saturation evaluation, column packing, RO concentrate preparation and feasibility testing, RO concentrate preparation for Round 3B RSSCT, daily column maintenance, and influent and effluent sample collection and shipment.

4.1 Bulk Sample Delivery

Finished water was collected from each of the three WPPs. Water was collected in 300 gallon, high-density polyethylene (HDPE) totes. Sampling was conducted using existing sample taps on the finished water effluent line at each facility. The sample was conveyed to the tote using new 2-inch diameter HDPE tubing. A total of nine totes were shipped to Battelle:

- Hooper, 2 totes (one full and one filled with 100 gallons)
- Smith, 1 full tote
- Hicks, 6 full totes

Bulk sampling was completed by CCWA staff. Each tote was labeled including the sample location, time, and date. The shipping waybill provided by Pilot Air freight was affixed to each tote. The client coordinated with Pilot Air freight service to ship the totes to Battelle.

Five totes were shipped in March 2023 (Figure 4-1a) and four additional Hicks totes were shipped in July 2023 (Figure 4-1b). The four additional totes were delivered to generate Hicks RO concentrate for the RSSCT. The totes were equilibrated in the temperature-controlled room before RSSCT (Figure 4-1c). After arrival of the bulk water samples, a sampling schedule was prepared detailing daily activities for the duration for each round.

(a)

(b)

(c)

Figures 4-1. (a) Delivery of Five Totes in May 2023; (b) Delivery of Four Additional Hicks Totes in July 2023; (c) Storage of Totes in the Laboratory

4.2 Grinding, Sieving, and Washing Media

Battelle received samples of sorbent media from sorbent media vendors for the RSCCT. At Battelle, the GAC and FS media were ground, sieved, and washed. The IX media was washed with acid and base prior to grinding and sieving. All media were ground and sieved to the mesh sizes listed in Table 4-1.

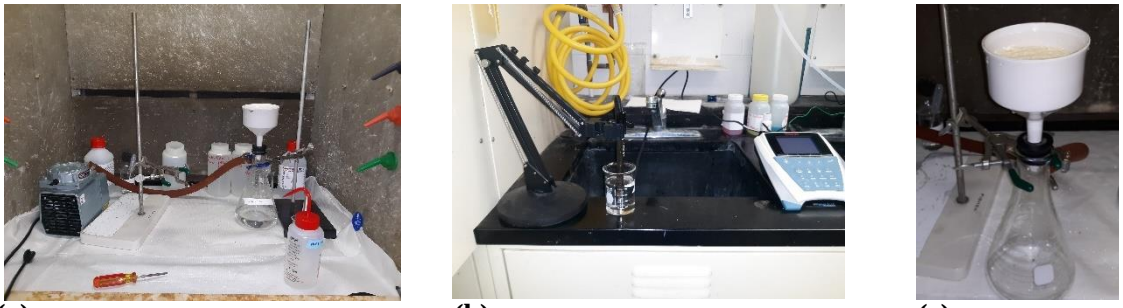
Table 4-1. Summary of Adsorbent Media

Product	Media Type	Media Material	Media Size Provided by the Vendor (mesh)	Ground and Sieved Particle Size (mesh)
Calgon Filtrasorb 400-1	GAC	Bituminous GAC	12x40	100x140
Evoqua UC1240LD				
Cetco Fluoro-Sorb® 200	Novel Adsorbent	Modified Clay	20x40	
CalRes 2301	IX	Single Use	NA	
Evoqua PSR2+				

NA: Not available

The pre-grinding acid and base wash setup for the IX media is shown in Figure 4-2a. The procedure included the following steps:

- Acid and base soil washing of the IX resins involved placing the resin in a funnel, then rinsing it with PFAS-free water.
- A vacuum pump was used to drain the water from the resin.
- The baseline pH of the rinsate was measured using a calibrated probe Figure 4-2b.
- After rinsing, a pipette was used to moisten the resin with one molar (M) hydrochloric acid (HCl).
- The vacuum pump was turned on to drain the HCL solution from the resin.
- The resin was then wetted with 1 M sodium hydroxide (NaOH).
- The vacuum pump was turned on to drain the NaOH from the resin.
- Additional HCL was added to the resin.
- The resin was then washed repeatedly with PFAS-free water and drained using the vacuum pump.
- The resin was rinsed with PFAS-free water until the pH of the rinsate measured approximately the same as the baseline value.
- The post-rinsed resin (Figure 4-2c) was transferred into a watch glass, placed into an oven, and dried for 1 hour at 105 degree Celsius (°C).



(a) **(b)** **(c)**

Figure 4-2. (a) IX Acid and Base Washing Setup; (b) pH Measurement of Rinsate; (c) Post-Rinsed IX Resin

The media were ground using a food-grade blender and sieved using a sieve shaker (Fritsch) in a fume hood (Figure 4-3a). After sieving, the media were washed to remove fines following the procedure described in the Activated Carbon Wet-Sieving Protocol (Redding, 2006). The media on the surface of the mesh sieve were washed into a Pyrex® tray using a squirt bottle containing PFAS-free deionized (DI) water. The contents of the Pyrex® tray were allowed to settle for several minutes and then any floating material was poured off (Figure 4-3b). The media were washed at least six times (until 10% reduction in fines were observed on the surface) by using the squirt bottle to mix the tray contents and pouring off any floating material. After fines removal, the media were air dried in a fume hood for 24 hours. The dried media were then stored in labeled 50-mL falcon tubes.

(a) **(b)**

Figure 4-3. (a) Blender and Sieve Shaker; (b) IX Resin Post Grinding Fines Removal

4.3 Column Construction

A total of 17 columns were set up for up-flow operation in a temperature-controlled room (maintained at 20 ± 2°C). Fifteen columns were set up for RSSCTs and two columns for the RO feasibility test. Materials that adsorb PFAS were not used for the RSSCT. The columns (Flex-Column®, Kimble, constructed of a borosilicate glass barrel, with removable polypropylene caps at the column outlets and with a 20-micron [µm] porosity HDPE frit at the base of the column) had Luer-Lok™ ends to connect tubing. The columns were secured to ring stands with clamps. For each column, the inlet tubing (1/4-inch outer diameter [OD]) was secured to a stainless steel tube with zip-ties and placed in a reservoir (55-gallon drum) and connected to the suction side of each dedicated Digital Gear Pump (Cole Parmer, Micro Pump GA Series). The influent tubing (1/8-inch OD) was connected from the discharge side of the pump to an inline filter (Cytiva Polycap AS 75 Capsule Filter, 0.2 µm, female national pipe thread [FNPT] inlet and outlet, 75 mm). The discharge tubing from the filter was connected to a shut-off valve. The shut-off valve was connected to a needle valve. The needle valve was plumbed at the base of the column to control the flowrate and a flowmeter with a range of up to 10 milliliter per minute (mL/min) was connected at the top of the column (Figures 4-4a, b, and c).

Before packing, the columns and tubing were flushed with methanol followed by PFAS-free DI water. The effluent tubing from each column was placed through a hole in the lid of a 5-gallon bucket that was placed in secondary containment. For each column, inline filters, pumps, effluent lines, feed tubing, and effluent buckets were labeled with the media and source type.

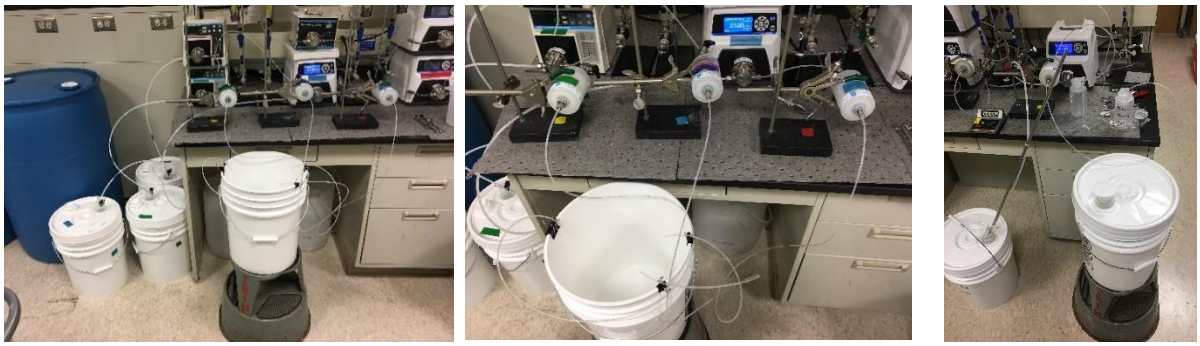
(a) **(b)** **(c)**

Figure 4-4. (a) and (b) Round 1 and 2 Column Setup; (c) Round 3 Column Setup

4.4 Pre-filter Saturation Evaluation

Prior to RSSCTs, a pre-filter was set up for each source water to evaluate PFAS saturation. Each pre-filter was connected to the discharge side of a pump (Figures 4-5a, b, and c). The effluent line was connected into an empty bucket. Five gallons of raw water were transferred from each tote into a bucket, which served as the inlet for the evaluation. Inlet tubing was placed in the feed bucket and connected to the suction side of a dedicated pump. The pump was turned on and the flowrate was adjusted to the minimum RSSCT design flowrate (4.3 mL/min). All tubing, pumps, and inline filters were color-coded and labeled with the source water.

The pre-filter saturation evaluation duration was 24 hours for Hooper, Smith, and Hicks source waters and 48 hours for Hicks RO concentrate. PFAS samples were collected from the raw water and effluent. For Hooper, Smith and Hicks, effluent samples were collected after 4, 12, and 24 hours. For Hicks RO, effluent samples were collected after 12, 36, and 48 hours. In addition, the water quality analyses presented in Table 4-2 were measured in the raw and final effluent samples. PFAS samples were shipped to Battelle's Analytical Services Laboratory, Norwell, MA. The water quality analyses were shipped to Eurofins Laboratory, South Bend, IN. PFAS samples were analyzed at 5-day rush turnaround time (TAT) and the other parameters at regular TAT.



(a) **(b)** **(c)**

Figure 4-5. (a) and (b) Pre-filtration Saturation Evaluation for Hooper, Smith, and Hicks; (c) Pre-filtration Saturation Setup for Hicks RO

Table 4-2. Summary of Pre-filter Saturation Sampling

Analyte	Method	Laboratory	Raw Water	Effluent
pH	pH Meter	Battelle Columbus	1	1[(a)]
PFAS	EPA method 533	Battelle Norwell	1	3[(b)]
TOC	SM 5310C	Eurofins	1	1[(a)]
CECs[(c)]	Pharmaceuticals and personal care products (PPCP) Method L220/L221 and LCMS_PPCP_NEG-Full List and LCMS_PPCP_POS-Local Method			
Nitrate	EPA 300.0		1	1[(a)]
Sulfate				
Chloride				

(a) Effluent samples collected after 24 and 48 hours for Hooper/Smith/Hicks and Hicks RO concentrate, respectively.
(b) For Hooper, Smith, and Hicks effluent PFAS samples were collected at 4, 12, and 24 hours. For Hicks RO concentrate effluent PFAS samples were collected at 12, 36, and 48 hours.
(c) For Hooper and Hicks RO, the CEC methods were PPCP Method L220/L221 and LCMS_PPCP_NEG-Full List/LCMS_PPCP_POS-Local, respectively.

After review of the results (discussed in Section 5), the inline filters were saturated for 24 and 48 hours for Rounds 1 and 2 (Hooper and Smith) and Round 3 (Hicks and Hicks RO), respectively, prior to RSSCTs.

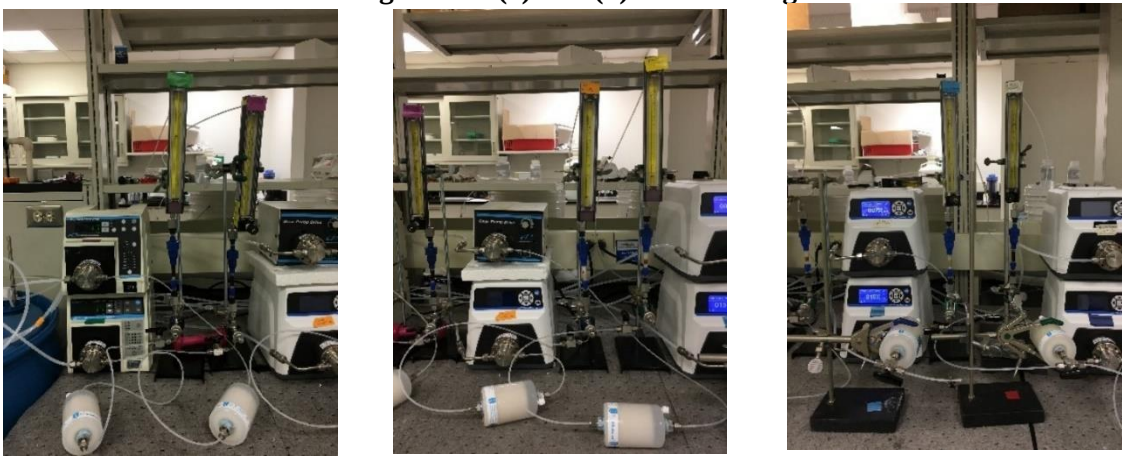
4.5 Column Packing

All of the columns were wet packed with PFAS-free DI water added to keep the media submerged during the process (Figures 4-6a and b). The types of media packed for each round are shown in Table 4-3. A small amount of 2-mm-diameter glass beads and a layer of glass wool were added at the base of each column. The ground, sieved, and washed media were added to the columns to the target bed depth using a disposable HDPE spatula. During media addition, each column was gently tapped to settle the media. The weight of media added to each column was measured on a bench-top analytical balance (Mettler Toledo) and recorded in the laboratory notebook. After settling, the bed height of media in each column

was also recorded. A layer of glass wool and glass beads (6 mm) was added at the top of each column. The top end cap was then closed and connected to the effluent line. The media was wetted in place with PFAS-DI water in the column for a minimum of 48 hours prior to commencing RSSCT. The columns after packing are presented in Figures 4-7a, b, and c. The column parameters for all rounds are presented in Appendix A (Table A-1).

(a) **(b)**

Figure 4-6. (a) and (b) Wet Packing



(a) **(b)** **(c)**

Figure 4-7. (a) Initial GAC; (b) Initial IX; (c) Initial FS

Table 4-3. Summary of RSSCT Column Media Packing

Round	Source	Media				
		Calgon F400-1	Evoqua UC1240LD	Calgon CalRes 2301 (macro-porous)	Evoqua PSR2+ (gel)	CETCO Fluoro-Sorb (surface modified clay)
1	Hooper Post UV	X	X	X	X	X
2A	Smith Finished Water	X		X	X	
2B	Hicks RO Reject (100% Blalock) Feasibility Testing	X				X
3A	Hicks Finished Water	X		X	X	
3B	Hicks RO Reject (100% Blalock) Testing	X		X	X	X

4.6 RO Concentrate Preparation and Feasibility Testing

For the RO concentrate feasibility test during Round 2B, two columns were packed, one with F400-1 and one with FS. They were operated for up to 4 days to determine if the Hicks RO concentrate would cause any plugging issues in the columns. Previous RSSCTs demonstrated that column plugging usually occurred within 72 hours of operation. A total of approximately 15 gallons of concentrate were required for the feasibility test. The column parameters for the RO concentrate feasibility testing are presented in Appendix A (Table A-1).

RO Concentrate Preparation. For RO processing, 100 gallons of Hicks water was reduced to a minimum of 15 gallons (85% recovery). The RO setup consisted of a skid-mounted RO system, 300-gallon tote containing the feed, and 55-gallon drums to collect the permeate (Figures 4-8a and b). The skid-mounted RO system includes six 2.5-inch x 40-inch RO pressure vessels (containing fiberglass membranes), and RO and booster pumps (Figure 4-8c). The system pressures and flowrates are measured by pressure gauges and rotameters. The RO has a maximum feed flowrate of 6 gallons per minute (gpm) with a permeate and reject flow of 2 and 4 gpm, respectively.

New RO membranes were installed in the pressure vessels and new 3/8-inch HDPE tubing was connected at the inlet, permeate, and reject sides of the system. In addition, the RO was flushed with 30 gallons of DI water. After flushing, compressed air was used to purge the system of DI water.

A pump was used to transfer 100 gallons of Hicks water into a tote. The RO was operated in recirculation mode to prepare the concentrate. The RO reject tubing was clamped into the top of the feed tote. The permeate tubing was clamped into an empty drum. The RO pump was turned on and the variable flow drive (VFD) was adjusted to approximately 40 pounds per square inch (psi), the pressure where the total flowrate was approximately 3 gpm. The permeate and reject rotameters were at 1 and 2 gpm, respectively. A total of two drums were used to store permeate generated during the RO processing. The RO processing began on April 21, 2023, when 12 gallons of concentrate was prepared. On April 24, an additional 5 gallons of concentrate were prepared to produce the required volume for the RO feasibility test. The additional concentrate was prepared by transferring 33 gallons of Hicks water into a 55-galllon drum and operating the RO in recirculation mode until the feed was concentrated to 5 gallons. The RO was operated until 85% recovery was achieved, which was indicated by the graduations on the tote (Figure 4-9a) or using a drum level indicator. The RO concentrate, a total of 17 gallons was transferred into a 55-galllon drum. RO processing parameters are listed in Table 4-4.

(a) (b) (c)

Figure 4-8. (a) and (b) RO Setup; (c) Skid Mounted RO System

RO Feasibility Test. The RO feasibility test operated for 3 days, and no effluent samples were collected. Observations were recorded and photographs were taken during the test. The setup consisted of a common reservoir, dedicated pumps, and inline filters for each column (Figure 4-9b). Feed tubing was placed in a common reservoir. The Hicks RO concentrate was pumped through an inline filter prior to flowing into the columns; however, the inline filter was not saturated with RO concentrate prior to the

test. Throughout the feasibility test, no plugging issues were observed, the columns flowed close to their target values. Toward the end of the test, the inline filters turned slightly yellow in color (Figure 4-9c). After reviewing the feasibility test results, RSSCT was initiated using Hicks RO concentrate. In July 2023, four additional Hicks totes were delivered to Battelle to generate RO concentrate for the Round 3B RSSCT.



(a) **(b)** **(c)**

Figure 4-9. (a) 100 Gallons of Hicks Water in Tote (b) RO Feasibility Test Setup; (c) Inline Filters

Table 4-4. RO Concentrate Parameters for Feasibility Testing

Time	System Pressure (psi)	Reject Flowrate (gpm)	Permeate Flowrate (gpm)	Total Flowrate (gpm)	Feed Tank Concentrate Volume (gal)
4/21/2023					
10:20 AM	0	0	0	0	100
10:41 AM	41.2	1.8	1	2.8	79
11:00 AM	39.6	1.8	1	2.8	60
11:31 AM	39.9	1.6	1	2.6	29
11:48 AM	40	2	1	3	12
4/24/2023					
2:00 PM	0	0	0	0	33
2:28 PM	40	2	1	3	5

4.7 RO Concentrate Preparation for Round 3B RSSCT

For preparation of the Hicks RO concentrate, approximately 1,200 gallons (4 full totes) of raw Hicks water was reduced to a target minimum volume of 175 gallons (85% recovery). The target volume was determined based on the volume required to saturate the inline filters for 48 hours and to perform the RSSCTs. The RO setup consisted of a skid-mounted RO system, 300 gallon totes, and a tank scale (Figures 4-10a and b).

Prior to RO operation, the accuracy of the tank scale was verified using 50 pound weights. The scale measurements were read on a digital display. Also, the associated hoses were flushed with DI water. The full tote and support frame were placed on top of the scale using a forklift. RO membranes were installed in the pressure vessels and new 3/8-inch HDPE tubing was connected at the inlet, permeate, and reject sides of the system. In addition, the RO was flushed with 30 gallons of DI water. After flushing, compressed air was used to purge the system of DI water.

The RO was operated in recirculation mode to prepare the concentrate. The RO reject tubing was clamped into the top of the feed tote. The permeate tubing was clamped into an empty tote. The RO processing was performed from August 7 to 10, 2023. The RO pump was turned on and the VFD was adjusted to approximately 40 psi, the pressure where the total flowrate was approximately 3 gpm. The

permeate and reject rotameters were at 1 and 2 gpm, respectively. A total of four totes were used to store permeate generated during the RO processing. The RO processing took approximately 4.5 hours per tote. The RO was operated until 85% recovery was achieved for each tote, which was indicated by the tank scale reading and graduations on the tote. RO processing parameters are listed in Table 4-5. A total of 192 gals of concentrate was generated (84.3% recovery). The RO concentrate was transferred into one tote for the RSSCT (Figure 4-10c). The concentrate was slightly yellow in color in comparison to the raw Hicks water.

(a) **(b)** **(c)**

Figure 4-10. (a) and (b) RO Setup; (c) RO Concentrate Feed Tote

Table 4-5. RO Concentrate Parameters for Hicks RO RSSCT

Start Date/Time	End Date/Time	Initial Tote Water Volume (gals)	Reject Flowrate (gpm)	Permeate Flowrate (gpm)	Total Flowrate (gpm)	System Pressure (psi)	Final Tote Concentrate Volume (gals)
Tote 2 of 4							
8/7/23 9:52 AM	8/7/23 3:13 PM	308	2	1	3	40.1	31
Tote 1 of 4							
8/8/23 7:00 AM	8/7/23 11:45 AM	303	2	1	3	42.4	70
Tote 4 of 4							
8/8/23 12:20 PM	8/8/23 4:45 PM	312	2	1	3	44.0	47
Tote 2 of 4							
8/10/23 9:45 AM	8/10/23 2:00 PM	297	2	1	3	46.3	44

4.8 Daily Column Maintenance

After filter saturation and packing the columns, the saturated filters were plumbed inline to each column. The pumps were turned on and the filtered water was pumped up-flow through the columns. The needle valves on each column were adjusted to the target flowrate. The flowrate was checked using the flowmeters and confirmed using a graduated cylinder and stopwatch to maintain within ±5% of the target design flowrate for the duration of the RSSCTs. The flowrate, room temperature, and throughput (measured gravimetrically, Mettler Toledo) from each column were recorded daily. After measuring the throughput, the effluent was poured into the empty bulk sample drums and marked as waste.

Totes were stored in the temperature-controlled room where the columns were set up Figure 4-11(a). For water transfer into the common reservoir, 3/8-inch OD HDPE tubing was connected to a pump (Viking F32 Series, maximum flowrate of 2 gpm) with Baldor motor (0.75 horsepower) as shown in Figures 4-11b. Before transfer, the water in the drums was stirred using a pre-cleaned stainless steel rod. Feed was pumped at approximately 1 gpm. A different pump was used to transfer the Hicks water into the feed drum to avoid cross-contamination.

(a) **(b)**

Figure 4-11. (a) Hicks and Hicks RO Concentrate Feed Totes (b) Transfer Water from Totes to Common Reservoir

4.9 Influent and Effluent Sample Collection and Shipment

Effluent sample collection involved first making sure the columns were flowing at the target flowrates, removing the effluent lines from the bucket, and placing them in pre-labeled sample containers. A summary of the effluent sampling, the analyte methods, and associated laboratories are presented in Table 4-6. PFAS was analyzed at Battelle Norwell at 28 day TAT. The other parameters were analyzed at a commercial laboratory at normal TAT.

For Rounds 1 and 3B, influent PFAS samples were collected at five points throughout the study (Days 1, 5, 10, 17, and 22) from the discharge side of the FS inline filter using a three-way sample valve (Figure 4-11a). For Rounds 2A and 3A, influent samples were collected at five points throughout the study (Days 1, 5, 10, 17, and 20) from the discharge side of the F400-1 inline filter.

Effluent CEC samples were collected at five sampling events from the F400-1 (Day 1, 5, 10, 17, and 20), PSR2+ (Day 1, 3, 7, 11, 15), and FS (Day 1, 5, 10, 17 and 22) columns for Hooper (Round 1) and Hicks RO (Round 3B) concentrate sources. During Hooper sampling, 4 liter amber containers were used to collect the CEC samples. The CEC method (PPCP Method L220/L221) required two 1-liter containers for the positive and negative compounds, respectively. For the Hicks RO CEC sampling, Eurofins changed to another CEC method (LCMS_PPCP_NEG-Full List/LCMS_PPCP_POS-Local Method) that required two 40-mL volatile organic aromatics (VOAs) for the positive and negative compounds, respectively.

(a) **(b)**

Figure 4-11. (a) Influent Sampling (b) Hooper Effluent CEC Sampling

Table 4-6. Summary of Effluent Sampling

Analyte	Method	Laboratory	Effluent Sample Frequency per Column
pH	pH Meter	Battelle Columbus	3[(a)]
PFAS	EPA method 533	Battelle Norwell	10[(b)]
TOC	SM 5310C	Eurofins	5[(c)]
CECs	PPCP Method L220/L221 and LCMS_PPCP_NEG-Full List/LCMS_PPCP_POS-Local Method		

(a) Prior to measurement, the pH meter was calibrated (3-point calibration using pH 4, 7, and 10 buffer solutions).
(b) Nine total samples including one duplicate.
(c) CECs were collected on one GAC (Calgon F400-1), one IX (PSR2+) and FS for Hooper and Hicks RO concentrate.

At the completion of the study, staff from Battelle's Hazardous Waste Operations picked up the waste-filled totes and drums for disposal.

Section 5.0 Results

The test parameters including media tested, source water, column parameters, flowrate, and total bed volumes processed are presented in Appendix A (Table A-1). The results tables including the data for PFAS, TOC, CECs, and pH monitored during the study were delivered to the client as an Excel spreadsheet and are presented in this section and Appendix A (A-2 to A-24).

The main observations on the study execution are summarized below:

Pre-filter Saturation Evaluation

- The Rounds (R) 1 (Hooper), R2A (Smith), and R3A (Hicks) pre-filter saturation evaluation were performed in April 2023. The R3B (Hicks RO) evaluation was performed in August 2023. Pre-filter and post-filter water quality results are presented in Tables 5-1 to 5-4. TOC and anions were included for all rounds and CECs for R1 and R3B. Raw and effluent PFAS results are presented in Tables 5-5 to 5-8.

- For all sources, the pre-filters were saturated at the minimum design flowrate, 4.3 mL/min. The R1, R2A, and R3A effluent samples were collected after 4, 12, and 24 hours. The R3B effluent samples were collected after 12, 36, and 48 hours. For the R1, R2A, R3A, and R3B pre-filter saturation evaluation, the PFOS level in the final effluent sample was 9.6, 81.9, 62.0, and 69.0% of the raw level, respectively. The pre-filter saturation period was increased from 24 to 48 hours for the R3B test after review of the R1 through R3A results that showed the saturation evaluation period for PFOS needed to be longer.

- After reviewing the pre-filter saturation evaluation results, the inline filters for R1/R2A and R3A/R3B were saturated for 24 hours and 48 hours, respectively, prior to RSSCTs. The pre-filter saturation parameters are presented in Table 5-9. The filters were saturated at close to their target saturation volumes and flowrates. The filters were saturated bypassing the columns. After saturation, they were connected inline before the columns.

- For R2A and R3A, both the raw water and post-saturated effluent samples showed similar levels of all PFAS except PFOS; however, for R1 the PFHxS was 43.7% of the raw level after 24 hours of saturation. For R3B, the PFDA and PFDoA were 80 and 3.7% of the raw level after 48 hours of saturation, respectively.

- Post-filter pH values for R1, R2A, and R3B were slightly higher than the raw water. For R3A, the pH of the raw and final effluent was similar at 7.590 and 7.515, respectively. For all rounds, water quality parameters (TOC and anions) showed similar levels in both raw water and post-saturated effluent samples, whereas sulfate and chloride levels in the final effluent sample for R3B were much lower than the raw levels.

- For R1, the CECs were analyzed using PPCP Method L220/L221; however, for R3B, Eurofins changed to another CEC method, LCMS_PPCP_NEG-Full List/LCMS_PPCP_POS-Local Method. The CEC method used for R1 had overall lower detection limits than the R3B method; however, the R3B method had a greater list of positive and negative compounds. For R1, the number of positive and negative compounds reported was 38 and 19, respectively. For R3B, the number of positive and negative compounds reported was 49 and 34, respectively.

- The CEC levels for both negative and positive compounds in the raw and final effluents for R1 and 3B were similar, respectively. Commonly detected positive CEC compounds were caffeine, carbamazepine, cotinine, N,N-diethyl-meta-toluamide (DEET), meprobamate, metformin, primidone, sulfamethoxazole, tris (2-chloroethyl) phosphate (TCEP), tris (2-chloroisopropyl) phosphate (TCPP), and nicotine. Commonly detected negative CEC compounds were acesulfame K, bisphenol A (BPA), dilantin, iohexol, salicylic acid, sucralose, and theophylline. Sucralose (negative compound) had the highest concentration in the R1 and R3B raw water at 6.1 and 99 µg/L, respectively.

- For R3A and R3B, the pH and TOC were higher in the RO concentrated water in comparison to the raw water at 8.244 and 7.592 and 11.6 and 3.06 mg/L, respectively.

RO Feasibility Test (Round 2B)

- For the RO concentrate feasibility test, two columns were packed: one with F400-1 and one with FS. For RO processing, 100 gallons of Hicks water was reduced to approximately 15 gallons (85% recovery) using a skid-mounted RO system run in recirculation mode. The RO feasibility column test operated for 3 days, and no effluent samples were collected. Throughout the feasibility test, no plugging issues were observed, the columns flowed close to their target values. After reviewing the feasibility test results, RSSCT was initiated using Hicks RO concentrate.

RSSCTs (Rounds 1, 2A, 3A, and 3B)

- The RSSCT parameters are tabulated in Table A-1 including average flowrate, total number of bed volumes, actual empty bed contact time (EBCT), and duration. All columns operated within 5% of their target flowrates. The R1/R2A and R3A/R3B RSSCTs were performed from May to June and from August to September 2023, respectively.

- For R1 and R3B, influent PFAS samples were collected at five points throughout the study (Days 1, 5, 10, 17, and 22) from FS. For R2A and R3A, influent samples were collected at five points throughout the study (Days 1, 5, 10, 17, and 20) from F400-1. The influent PFAS results including the average influent are presented in Tables A-2 to A-5. For all rounds the influent PFAS levels were consistent for all sampling points.

- **CECs.** Effluent CEC results are presented for R1 in Tables A-6 (positive compounds) and A-7 (negative compounds) and for R3B in Tables A-8 (positive compounds) and A-9 (negative compounds). For both rounds, effluent CEC samples were collected at five sampling events from the F400-1 (Day 1, 5, 10, 17, and 20), PSR2+ (Day 1, 3, 7, 11, 15), and FS (Day 1, 5, 10, 17 and 22) columns. For R1 and R3B, the F400-1 Day 1 effluent had lower levels of CECs than the later sampling points. For both source waters, the GAC showed delayed breakthrough for most of the CECs; however, CEC breakthrough occurred after Day 5. For R1 and R3B, the effluent from the PSR2+ and FS columns had similar CEC levels for all sampling events.

- **PFAS.** For R1, F400-1 and UC1240LD performed similarly, where the PFOS level was 1.05 and 1.48 ng/L, respectively, at Day 15 (after processing approximately 130,000 bed volumes [BVs]). Breakthrough occurred prior to Day 15 for all the other PFAS for both GACs. Columns packed with IX resins (CalRes and PSR2+) and FS media performed better than the GAC media. PSR2+ and CalRes showed similar performance. On Day 15 (after processing approximately 330,000 BVs), the PFOS and PFOA levels were non-detect and around 4 ng/L, respectively, for both IX resins. FS was the best performing media with PFBS, PFHpA, PFOS, and PFOA levels at 1.54, 2.28, 0.92 (U), and 1.27 ng/L, respectively, after 22 days and greater than 355,000 BVs of processing. However, short chain perfluorinated carboxylates (PFCAs), PFBA and PFPeA showed breakthrough by Day 1 or Day 2 for all the sorbents. Although PFHxA also showed breakthrough by Day 2 in both GAC columns, breakthrough was greater than 5 days in both resins, and complete breakthrough was greater than Day 17 in FS column.

- For R2A, PSR2+ performed the best in comparison to CalRes and F400-1. The PSR2+ resin did not show any breakthrough of PFAS after processing greater than 368,000 BVs with non-detect PFBS, PFOS, and PFOA levels at 0.46 (U), 0.92 (U), and 3.92 (J) ng/L, respectively. GAC showed a breakthrough of shorter chain PFCAs by Day 3, while both resins showed breakthrough of shorter chain PFCAs by Day 7.

- For R3A, PSR2+ performed the best in comparison to CalRes and F400-1. For PSR2+, the PFBS, PFOS, and PFOA levels were 1.78 (J), 0.54 (J), and 6.49 ng/L, respectively, after processing greater than 330,000 BVs. GAC showed breakthrough of PFBA by Day 1. While both resins showed a breakthrough of shorter chain PFPeA and PFHxAs by Day 3, PSR2+ showed PFHxA breakthrough by Day 7.

- For R3B, RO processing involved concentrating four totes with 1,220 gallons of Hicks water to a final concentrate volume of 192 gallons (84.3% recovery). The Hicks RO influent had PFAS levels that were approximately an order of magnitude higher than the raw Hicks water. The pH and TOC for the Hicks RO concentrate was higher than the raw water. The pH of the Hicks and Hicks RO was around 7.7 and 8.1, respectively. The TOC for the Hicks and Hicks RO was around 3.0 and 8.5, respectively.

- For R3B, columns packed with IX resin and FS media performed better than the GAC media. PSR2+ and CalRes both performed similarly. For PSR2+, the PFBS, PFHxS, and PFOS levels were 32.31, 16.94, and 39.00 ng/L after processing greater than 330,000 BVs. FS was the best performing media for treatment of PFOS at non-detect levels (0.73 U ng/L) after 22 days and greater than 349,000 BVs of processing. GAC, CalRes, and FS showed breakthrough of shorter chain PFCAs by Day 2. Although PSR2+ also showed breakthrough of PFBA on Day 1, breakthrough of PFPeA and PFHxA occurred after Day 5, showing better performance than other sorbents.

Table 5-1. CCWA Round 1 (Hooper) Pre-filtration Baseline and Post-filtration Results (April 2023)

Analyte/Method	Raw Water Results	24 Hr Post-Filter Influent Results
pH	7.520	7.693
Total Organic Carbon (TOC) (mg/L), EPA 5310C	2.08	4.96
Sulfate (mg/L), EPA 300.0	27	27
Chloride (mg/L), EPA 300.0	27	27
Nitrite as N (mg/L)	<0.0042	<0.0042
Nitrate Nitrite as N (mg/L)	0.69	0.72
Nitrate as N (mg/L)	0.69	0.72
Pharmaceutically Active Compounds (Positive), Method L220, µg/L		
Acetaminophen	<0.00049	<0.00049
Antipyrine	<0.000069	<0.000069
Atenolol	<0.00030	<0.00030
Azithromycin	<0.0020	<0.0020
Caffeine	**0.0099 (J)**	**0.011 (J)**
Carbadox	<0.0040	<0.0040
Carbamazepine	**0.0077**	**0.0038**
Cotinine	**0.0083**	**0.0092**
DEET	**0.0042**	**0.0068**
Dexamethasone	<0.00089	<0.00089
Diazepam	<0.00049	<0.00049
Diltiazem	<0.000030	<0.000030
Erythromycin	<0.00030	<0.00030
Fluoxetine	<0.00020	<0.00020
Iopromide	<0.020	<0.020
Lincomycin	<0.000030	<0.000030
Meprobamate	**0.0082**	**0.0085**
Monensin	<0.00049	<0.00049
Narasin	<0.00069	<0.00069
Oleandomycin	<0.00030	<0.00030
Paraxanthine	<0.0030	<0.0030
Primidone	**0.015**	**0.015**
Roxithromycin	<0.00030	<0.00030
Salinomycin	<0.000069	<0.000069
Sulfadiazine	<0.00030	<0.00030
Sulfadimethoxine	**0.000062 (J)**	**0.000095 (J)**
Sulfamethazine	<0.000059	<0.000059
Sulfamethizole	<0.000099	<0.000099
Sulfamethoxazole	**0.0011**	**0.0015**
Sulfasalazine	<0.0020	<0.0020
Sulfathiazole	<0.00020	<0.00020
TCEP (Tris(2-chloroethyl)phosphate)	**0.021**	**0.021**
TCPP (Tris(2-chloroisopropyl)phosphate)	**0.19**	**0.19**
Theobromine	<0.030	<0.030
Trimethoprim	<0.00020	<0.00020
Tylosin	<0.00059	<0.00059
Virginiamycin M1	<0.00040	<0.00040
Nicotine	**0.0028 (J)**	**0.0037 (J)**

Table 5-1. CCWA Round 1 (Hooper) Pre-filtration Baseline and Post-filtration Results (April 2023) Continued

Analyte/Method	Raw Water Results	24 Hr Post-Filter Influent Results
Pharmaceutically Active Compounds (Negative), Method L221, µg/L		
Acesulfame K	**0.33**	**0.38**
Bezafibrate	<0.00049	<0.00049
Chloramphenicol	<0.0049	<0.0049
Chlorotetracycline	<0.049	<0.049
Clofibric Acid	<0.00049	<0.00049
Diclofenac acid	<0.00049	<0.00049
Dilantin	**0.0031**	**0.0044**
Gemfibrozil	<0.00049	<0.00049
Ibuprofen	<0.049	<0.049
Levothyroxine	<0.0020	<0.0020
Naproxen	<0.0020	<0.0020
Penicillin G	<0.0020	<0.0020
Penicillin V	<0.0020	<0.0020
Prednisone	<0.0020	<0.0020
Salicylic Acid	**0.052**	**<0.049**
Sucralose	**6.1**	**5.8**
Theophylline	<0.0049	<0.0049
Triclocarban	<0.00049	<0.00049
Triclosan	<0.049	<0.049

Table 5-2. CCWA Round 2 (Smith) Pre-filtration Baseline and Post-Filtration Results (April 2023)

Analyte/Method	Raw Water Results	24 Hr Post-Filter Influent Results
pH	7.369	7.540
Total Organic Carbon (TOC) (mg/L), EPA 5310C	1.77	2.25
Sulfate (mg/L), EPA 300.0	NA	22
Chloride (mg/L), EPA 300.0	NA	10
Nitrite as N (mg/L), EPA 353.2	<0.0042	<0.0042
Nitrate Nitrite as N (mg/L), EPA 353.2	<0.038	<0.038
Nitrate as N (mg/L), SM Nitrate by calc	<0.10	<0.10

NA: Not Available, the laboratory received the sample, but did not log it in for analysis.

Table 5-3. CCWA Round 3A (Hicks) Pre-filtration Baseline and Post-Filtration Results (April 2023)

Analyte	Method	Raw Water Results	24 Hr Post-Filter Influent Results
pH	Calibrated Electrode	7.590	7.515
Total Organic Carbon (TOC) (mg/L)	EPA 5310C	3.06	3.38
Sulfate (mg/L)	EPA 300.0	NA	48
Chloride (mg/L)		NA	49
Nitrite as N (mg/L)	EPA 353.2	<0.0042	<0.0042
Nitrate Nitrite as N (mg/L)		0.71	0.69
Nitrate as N (mg/L)	SM Nitrate by calc	0.71	0.69

NA: Not Available, the laboratory received the sample, but did not log it in for analysis.

Table 5-4. CCWA Round 3B (Hicks RO) Pre-filtration Baseline and Post-Filtration Results (August 2023)

Analyte/Method	Raw Water Results	48 Hr Post-Filter Influent Results
Pharmaceutically Active Compounds (Positive), LCMS_PPCP_POS-Local Method, ug/L		
1,7-Dimethylxanthine (Paraxanthine)	<0.017	<0.017
Acetaminophen	<0.015	<0.015
Amoxicillin	<0.53	<0.53
Androstenedione	<0.0039	<0.0039
Atenolol	<0.0017	<0.0017
Azithromycin	<0.0081	<0.0081
Caffeine	**0.059**	**0.056**
Carbadox	<0.0026	<0.0026
Carbamazepine	**0.14**	**0.14**
Cimetidine	<0.0013	<0.0013
Codeine	<0.0034	<0.0034
Cotinine	**0.086**	**0.088**
DEET	**0.17**	**0.17**
Dexamethasone	<0.004	<0.004
Diazepam	<0.0016	<0.0016
Diltiazem	<0.0052	<0.0052
Diphenhydramine	<0.0027	<0.0027
Epitestosterone	<0.002	<0.002
Erythromycin	<0.013	<0.013
Fluoxetine	<0.0017	<0.0017
Lincomycin	<0.0027	<0.0027
Meprobamate	**0.11**	**0.12**
Metformin	**0.063**	**0.066**
Monensin	<0.0034	<0.0034
Narasin	<0.012	<0.012
Nicotine	<0.27	<0.27
Oleandomycin	<0.0015	<0.0015
Phenazone	<0.0014	<0.0014
Primidone	**0.23**	**0.22**
Progesterone	<0.0027	<0.0027
Quinoline	<0.023	<0.023
Roxithromycin	<0.0022	<0.0022
Salinomycin	<0.0085	<0.0085
Sulfadiazine	<0.0025	<0.0025
Sulfadimethoxine	<0.0025	<0.0025
Sulfamerazine	<0.0045	<0.0045
Sulfamethazine	<0.0024	<0.0024
Sulfamethizole	<0.003	<0.003
Sulfamethoxazole	<0.007	<0.007
Sulfasalazine	<0.011	<0.011
Sulfathiazole	<0.0029	<0.0029
TCEP	**0.40**	**0.41**
TCPP	**3.4**	**3.4**
TDCPP	<0.35	<0.35
Testosterone	<0.0042	<0.0042
Theobromine	<0.25	<0.25
Trimethoprim	<0.001	<0.001
Tylosin	<0.0041	<0.0041
Virginiamycin M1	<0.0039	<0.0039

Table 5-4. CCWA Round 3B (Hicks RO) Pre-filtration Baseline and Post-Filtration Results (August 2023), Continued

Analyte/Method	Raw Water Results	48 Hr Post-Filter Influent Results
pH	8.244	8.436
Total Organic Carbon (TOC) (mg/L), EPA 5310C	11.6	11.4
Sulfate (mg/L), EPA 300.0	340	<7.2
Chloride (mg/L), EPA 300.0	330	14 (J)
Nitrite as N (mg/L), EPA 353.2	0.0067 (J)	0.0071 (J)
Nitrate Nitrite as N (mg/L), EPA 353.2	0.26	0.27
Nitrate as N (mg/L), SM Nitrate by calc	0.25	0.26
Pharmaceutically Active Compounds (Negative), LCMS_PPCP_NEG-Full List, ug/L		
17a-Estradiol	<0.0016	<0.0016
17a-Ethinylestradiol	<0.0027	<0.0027
4-Nonylphenol	<0.086	<0.086
4-Phenylphenol	<0.0077	<0.0077
4-tert-Octylphenol	**0.018 (J)**	<0.012
Bezafibrate	<0.0011	<0.0011
BPA	**1.2**	**1.0**
Chloramphenicol	<0.0011	<0.0011
Clofibric Acid	0.0044 (J)	<0.0015
Diclofenac acid	0.0042 (J)	**0.016**
Diethylstilbestrol	<0.0017	<0.0017
Dilantin	**0.062**	**0.065**
Equilin	<0.003	<0.003
Estradiol	<0.0021	<0.0021
Estriol	<0.0029	<0.0029
Estrone	<0.0012	<0.0012
Gemfibrozil	<0.00057	<0.00057
Ibuprofen	<0.0035	<0.0035
Iopromide	<0.005	<0.005
Levothyroxine	<0.0079	<0.0079
Naproxen	<0.0084	<0.0084
Penicillin G	<0.001	<0.001
Penicillin V	<0.0013	<0.0013
Pentachlorophenol	<0.019	<0.019
Prednisone	<0.0014	<0.0014
Salicylic Acid	**0.66**	**0.77**
Tetrabromobisphenol A	<0.013	<0.013
Theophylline	**0.038**	**0.043**
Trichlorophenols, Total	<0.027	<0.027
Triclocarban	<0.019	<0.019
Triclosan	<0.02	<0.02
Acesulfame K	**1.9**	**1.9**
Iohexol	**6.9**	**8.2**
Sucralose	**99**	**100**

Table 5-5. CCWA Round 1 (Hooper) Pre-filter Saturation Test[a] PFAS Results (April 2023)

Analyte	Hooper Raw (ng/L)	Qualifier	Hooper 4 hr. (ng/L)	Qualifier	Hooper 12 hr. (ng/L)	Qualifier	Hooper 24 hr. (ng/L)	Qualifier
11Cl-PF3OUdS	0.89	U	0.92	U	0.85	U	0.91	U
9Cl-PF3ONS	0.89	U	0.92	U	0.85	U	0.91	U
Adona	1.33	U	1.38	U	1.28	U	1.36	U
HFPO-DA	0.89	U	0.92	U	0.85	U	0.91	U
NFDHA	1.33	U	1.38	U	1.28	U	1.36	U
PFBA	5.03		6.69		5.52		4.82	
PFBS	4.47		4.35	J	4.19	J	4.31	J
8:2FTS	0.44	U	0.46	U	0.43	U	0.45	U
PFDA	0.44	U	0.46	U	0.43	U	0.45	U
PFDoA	0.44	U	0.46	U	0.43	U	0.45	U
PFEESA	1.77	U	1.85	U	1.70	U	1.82	U
PFHpS	0.89	U	0.92	U	0.85	U	0.91	U
PFHpA	3.13	J	3.14	J	3.03	J	3.00	J
4:2FTS	0.89	U	0.92	U	0.85	U	0.91	U
PFHxS	3.96	J	0.84	J	1.61	J	1.73	J
PFHxA	9.11		9.36		9.12		8.57	
PFMPA	0.35	U	0.37	U	0.34	U	0.36	U
PFMBA	1.77	U	1.85	U	1.70	U	1.82	U
PFNA	1.20	J	0.92	U	0.85	U	0.91	U
6:2FTS	1.02	J	1.84	J	1.19	J	0.79	J
PFOS	3.02	J	0.37	J	0.28	J	0.29	J
PFOA	6.29		15.15		6.38		4.31	J
PFPeA	6.67		6.79		6.96		6.55	
PFPeS	0.71	J	1.85	U	1.70	U	1.82	U
PFUnA	2.66	U	2.77	U	2.55	U	2.73	U
Surrogate Recoveries (%)								
13C4-PFBA	98		94		97		95	
13C5-PFPeA	173		159		168		168	
13C3-PFBS	86		84		86		83	
13C2-4:2FTS	164		177		163		152	
13C5-PFHxA	68		71		75		78	
13C3-HFPO-DA	67		69		74		78	
13C4-PFHpA	73		77		80		84	
13C3-PFHxS	73		98		94		85	
13C2-6:2FTS	150		236	N	187		165	
13C8-PFOA	73		83		88		86	
13C9-PFNA	59		91		95		83	
13C8-PFOS	56		96		84		67	
13C2-8:2FTS	89		225	N	197		131	
13C6-PFDA	53		90		99		82	
13C7-PFUnA	50		88		93		74	
13C2-PFDoA	50		101		98		76	

J: Analyte detected below the Limit of Quantitation (LOQ)

N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)

U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

a: Pre-filters saturated for 24-hours prior to RSSCT.

Table 5-6. CCWA Round 2 (Smith) Pre-filter Saturation Test[a] PFAS Results (April 2023)

Analyte	Smith Raw (ng/L)	Qualifier	Smith 4 hr. (ng/L)	Qualifier	Smith 12 hr. (ng/L)	Qualifier	Smith 24 hr. (ng/L)	Qualifier
11Cl-PF3OUdS	0.87	U	0.94	U	0.84	U	0.84	U
9Cl-PF3ONS	0.87	U	0.94	U	0.84	U	0.84	U
Adona	1.30	U	1.40	U	1.25	U	1.26	U
HFPO-DA	0.87	U	0.94	U	0.84	U	0.84	U
NFDHA	1.30	U	1.40	U	1.25	U	1.26	U
PFBA	6.31		7.30		6.49		6.39	
PFBS	5.12		4.84		4.98		4.85	
8:2FTS	0.43	U	0.47	U	0.42	U	0.42	U
PFDA	0.43	U	0.47	U	0.42	U	0.42	U
PFDoA	0.43	U	0.47	U	0.42	U	0.42	U
PFEESA	1.74	U	1.87	U	1.67	U	1.68	U
PFHpS	0.87	U	0.94	U	0.84	U	0.84	U
PFHpA	3.35	J	3.35	J	3.24	J	3.19	J
4:2FTS	0.87	U	0.94	U	0.84	U	0.84	U
PFHxS	5.18		5.27		4.97		4.76	
PFHxA	8.97		10.30		9.79		10.09	
PFMPA	0.35	U	0.37	U	0.33	U	0.34	U
PFMBA	1.74	U	1.87	U	1.67	U	1.68	U
PFNA	1.06	J	0.95	J	1.00	J	0.99	J
6:2FTS	6.05		7.01		6.23		5.86	
PFOS	7.99		2.29	J	5.10		6.54	
PFOA	8.63		8.39		8.35		8.46	
PFPeA	8.38		8.45		8.40		8.14	
PFPeS	0.85	J	0.82	J	0.80	J	0.78	J
PFUnA	2.60	U	2.81	U	2.51	U	2.52	U
Surrogate Recoveries (%)								
13C4-PFBA	97		97		99		94	
13C5-PFPeA	148		123		154		152	
13C3-PFBS	84		86		82		86	
13C2-4:2FTS	153		187		152		155	
13C5-PFHxA	64		65		70		63	
13C3-HFPO-DA	63		63		70		66	
13C4-PFHpA	66		70		74		70	
13C3-PFHxS	91		99		94		99	
13C2-6:2FTS	160		257	N	187		187	
13C8-PFOA	75		81		85		79	
13C9-PFNA	72		87		87		81	
13C8-PFOS	96		97		92		99	
13C2-8:2FTS	137		254	N	179		165	
13C6-PFDA	76		83		92		85	
13C7-PFUnA	81		90		92		89	
13C2-PFDoA	76		100		102		97	

J: Analyte detected below the Limit of Quantitation (LOQ)

N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)

U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

a: Pre-filters saturated for 24 hours prior to RSSCT.

Table 5-7. CCWA Round 3A (Hicks) Pre-filter Saturation Test[a] PFAS Results (April 2023)

Analyte	Hicks Raw (ng/L)	Qualifier	Hicks 4 hr. (ng/L)	Qualifier	Hicks 12 hr. (ng/L)	Qualifier	Hicks 24 hr. (ng/L)	Qualifier
11Cl-PF3OUdS	0.87	U	0.92	U	0.84	U	0.94	U
9Cl-PF3ONS	0.87	U	0.92	U	0.84	U	0.94	U
Adona	1.31	U	1.38	U	1.27	U	1.4	U
HFPO-DA	0.87	U	0.92	U	0.84	U	0.94	U
NFDHA	1.31	U	1.38	U	1.27	U	1.40	U
PFBA	6.71		7.23		7.07		6.56	
PFBS	5.49		5.37		5.10		5.54	
8:2FTS	0.44	U	0.46	U	0.42	U	0.47	U
PFDA	0.76	J	0.46	U	0.39	J	0.31	J
PFDoA	0.44	U	0.46	U	0.42	U	0.47	U
PFEESA	1.75	U	1.85	U	1.69	U	1.87	U
PFHpS	0.87	U	0.92	U	0.84	U	0.94	U
PFHpA	5.76		5.49		5.75		5.54	
4:2FTS	0.87	U	0.92	U	0.84	U	0.94	U
PFHxS	4.45		4.34	J	3.85	J	4.18	J
PFHxA	17.91		20.25		18.94		18.35	
PFMPA	0.35	U	0.37	U	0.34	U	0.37	U
PFMBA	1.75	U	1.85	U	1.69	U	1.87	U
PFNA	1.69	J	1.38	J	1.40	J	1.34	J
6:2FTS	1.95	J	2.10	J	1.92	J	1.94	J
PFOS	10.91		3.16	J	6.24		6.76	
PFOA	8.12		8.46		8.63		7.91	
PFPeA	13.19		13.14		11.89		11.61	
PFPeS	0.82	J	0.87	J	0.84	J	0.88	J
PFUnA	2.62	U	2.77	U	2.53	U	2.81	U
Surrogate Recoveries (%)								
13C4-PFBA	95		93		97		96	
13C5-PFPeA	199		166		206	N	195	
13C3-PFBS	79		87		78		77	
13C2-4:2FTS	169		182		163		160	
13C5-PFHxA	65		60		72		79	
13C3-HFPO-DA	69		68		81		79	
13C4-PFHpA	70		71		85		88	
13C3-PFHxS	93		98		93		88	
13C2-6:2FTS	185		234	N	207	N	178	
13C8-PFOA	75		78		86		89	
13C9-PFNA	77		87		97		99	
13C8-PFOS	95		94		92		95	
13C2-8:2FTS	151		229	N	205	N	165	
13C6-PFDA	80		87		106		105	
13C7-PFUnA	82		85		103		104	
13C2-PFDoA	77		98		111		114	

J: Analyte detected below the Limit of Quantitation (LOQ)

N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)

U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

a: Pre-filters saturated for 48 hours prior to RSSCT.

Table 5-8. CCWA Round 3B (Hicks RO) Pre-filter Saturation Test[a] PFAS Results (August 2023)

Analyte	Hicks RO Raw (ng/L)	Qualifier	Hicks RO 12 hr. (ng/L)	Qualifier	Hicks RO 36 hr. (ng/L)	Qualifier	Hicks RO 48 hr. (ng/L)	Qualifier
11Cl-PF3OUdS	0.84	U	0.89	U	0.91	U	0.91	U
9Cl-PF3ONS	0.84	U	0.89	U	0.91	U	0.91	U
Adona	0.84	U	0.89	U	0.91	U	0.91	U
HFPO-DA	1.96	J	2.08	J	2.18	J	2.07	J
NFDHA	0.32	J	0.32	J	0.33	J	0.36	J
PFBA	47.28		47.66		48.55		46.64	
PFBS	42.81		42.87		42.13		43.32	
8:2FTS	17.15		10.59		13.7		13.92	
PFDA	55.08		23.53		38.85		44.03	
PFDoA	24.37		0.89	U	0.91	U	0.91	U
PFEESA	0.84	U	0.89	U	0.91	U	0.91	U
PFHpS	1.63	J	1.14	J	1.31	J	1.37	J
PFHpA	39.73		40.93		42.58		39.98	
4:2FTS	0.84	U	0.89	U	0.91	U	0.91	U
PFHxS	33.55		31.17		32.72		31.08	
PFHxA	119.53		121.33		126.09		122.59	
PFMPA	0.84	U	0.89	U	0.91	U	0.91	U
PFMBA	0.84	U	0.89	U	0.91	U	0.91	U
PFNA	12.65		10.21		11.5		11.62	
6:2FTS	12.64		12.60		12.81		12.25	
PFOS	107.65		35.49		73.98		73.76	
PFOA	78.54		71.11		72.05		72.94	
PFPeA	79.12		80.72		84.85		80.64	
PFPeS	6.59		6.51		6.68		6.64	
PFUnA	24.43		0.78	J	4.66		6.04	
Surrogate Recoveries (%)								
13C4-PFBA	75		78		77		81	
13C5-PFPeA	181		184		177		193	
13C3-PFBS	50		53		54		55	
13C2-4:2FTS	178		179		175		187	
13C5-PFHxA	52		54		55		57	
13C3-HFPO-DA	77		79		81		83	
13C4-PFHpA	73		75		74		80	
13C3-PFHxS	75		78		74		81	
13C2-6:2FTS	219	N	231	N	207	N	233	N
13C8-PFOA	72		77		76		79	
13C9-PFNA	92		99		95		98	
13C8-PFOS	84		90		85		91	
13C2-8:2FTS	178		215	N	172		192	
13C6-PFDA	90		102		94		99	
13C7-PFUnA	85		101		96		104	
13C2-PFDoA	81		111		98		105	

J: Analyte detected below the Limit of Quantitation (LOQ)

N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)

U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

a: Pre-filters saturated for 48-hours prior to RSSCT.

Table 5-9. CCWA Pre-filter Saturation Parameters

Column	Target Saturation Volume (Gal)	Actual Saturation Volume (Gal)	Target Flowrate (ml/min)	Average Flowrate (ml/min)	Duration (Hours)
Round 1 (Hooper)					
F400-1	1.6	1.7	4.3	4.1	24
UC1240LD		1.5		3.8	
CalRes	2.2	2.2	5.9	5.4	
PSR2+		2.5		6.6	
FS[(a)]	2.5	2.5	6.5	6.5	
Round 2 (Smith)					
F400-1[(a)]	1.6	1.6	4.3	4.3	24
CalRes	2.2	2.2	5.9	5.6	
PSR2+		2.1		5.3	
Round 3A (Hicks)					
F400-1	3.3	3.2	4.3	4.1	48
CalRes	4.5	4.6	5.9	6.0	
PSR2+		4.3		5.6	
Round 3B (Hicks RO)					
F400-1	3.3	3.3	4.3	4.3	48
CalRes	4.5	4.5	5.9	5.9	
PSR2+	4.5	4.3		5.7	
FS	4.9	4.6	6.5	6.1	

(a) Inline filters used from pre-filter saturation evaluation.

Section 6.0 References

American Society for Testing and Materials International. 2014. ASTM D6586–03, Standard Practice for the Prediction of Contaminant Adsorption on GAC In Aqueous Systems Using Rapid Small-Scale Column Tests.

Redding, A. 2016. Activated Carbon Wet-Sieving Protocol, Personal Correspondence, unpublished.

Appendix A

All of the data including water quality parameters, CECs, and PFAS measured during the RSSCT for all sorbents are tabulated in Appendix A.

Appendix A

RSSCT Parameters, PFAS, CECs, TOC, and pH

Table A-1. CCWA RSSCT Parameters

Column ID	Round	Description	Source Water	Particle Size Range (mesh)	Filtration	Pre-Filter Saturation Period	Weight Dry Media (g)	Column Height (cm)	Column Bulk Density (g/mL)	Bed Volume (mL)	Target Flowrate (mL/min)	Actual Average Flowrate (mL/min)	Small-Scale EBCT (min)	Test Duration (Days)	Total Bed Volumes
R1_F400-1	1 (5/23/23 to 6/14/23)	Calgon Filtrasorb 400-1	Hooper	100x140	Inline filter (Cytiva Polycap AS 75 Capsule Filter, 0.2 µm)	24 Hours	0.4088	2.5	0.42	0.96	4.3	4.3	0.22	20	130,658
R1_UC1240LD		Evoqua UC1240LD					0.3948	2.5	0.41	0.96		4.3	0.22		129,831
R1_CalRes		CalRes 2301					0.1455	1.0	0.38	0.38	5.9	5.9	0.07	15	334,831
R1_PSR2+		Evoqua PSR2+					0.1817	1.0	0.47	0.38		5.8	0.07		328,538
R1_FS		CETCO Fluoro-Sorb 200					0.4279	1.5	0.74	0.58	6.5	6.5	0.09	22	355,820
R2A_F400-1	2A (5/23/23 to 6/12/23)	Calgon Filtrasorb 400-1	Smith				0.3977	2.5	0.41	0.96	4.3	4.3	0.23	20	129,445
R2A_CalRes		CalRes 2301					0.1449	1.0	0.38	0.38	5.9	5.7	0.07	15	324,082
R2A_PSR2+		Evoqua PSR2+					0.1455	0.9	0.42	0.35		5.8	0.06	15	368,825
R2B_F400-1	2B (4/24/23 to 4/27/23)	Calgon Filtrasorb 400-1	Hicks RO Concentrate (85% Recovery) for Feasibility Testing			NA	0.4008	2.5	0.42	0.96	4.3	4.4	0.22	3	19,928
R2B_FS		CETCO Fluoro-Sorb 200					0.4209	1.5	0.73	0.58	6.5	7.1	0.08	3	54,804
R3A_F400-1	3A (8/28/23 to 9/17/23)	Calgon Filtrasorb 400-1	Hicks			48 Hours	0.4024	2.5	0.42	0.96	4.3	4.4	0.22	20	131348
R3A_CalRes		CalRes 2301					0.1547	1.0	0.40	0.38	5.9	5.8	0.07	15	332,105
R3A_PSR2+		Evoqua PSR2+					0.212	1.0	0.55	0.38		5.9	0.07	15	336,460
R3B_F400-1	3B (8/28/23 to 9/19/23)	Calgon Filtrasorb 400-1	Hicks RO Concentrate (85% Recovery)				0.4147	2.5	0.43	0.96	4.3	4.3	0.22	20	129,850
R3B_CalRes		CalRes 2301					0.1973	1.1	0.47	0.42	5.9	5.8	0.07	15	298,146
R3B_PSR2+		Evoqua PSR2+					0.1883	1.0	0.49	0.38		5.9	0.07	15	334,298
R3B_FS		CETCO Fluoro-Sorb 200					0.4315	1.5	0.75	0.58	6.5	6.4	0.09	22	349,769

Table A-2. CCWA Round 1 (Hooper) Influent (Collected Post-filter from the FS Column)

Analyte	Influent (Day 1)		Influent (Day 5)		Influent (Day 10)		Influent (Day 17)		Influent (Day 22)		Average Influent	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.94	U	0.91	U	0.91	U	0.88	U	0.91	U	0.91	U
9Cl-PF3ONS	0.94	U	0.91	U	0.91	U	0.88	U	0.91	U	0.91	U
Adona	1.41	U	1.36	U	1.36	U	1.32	U	1.37	U	1.36	U
HFPO-DA	0.94	U	0.91	U	0.91	U	0.88	U	0.91	U	0.91	U
NFDHA	1.41	U	1.36	U	1.36	U	1.32	U	1.37	U	1.36	U
PFBA	4.68	J	5.22		4.46	J	4.77		4.95		4.82	
PFBS	4.08	J	4.42	J	3.98	J	4.05	J	3.83	J	4.07	J
8:2FTS	0.47	U	0.45	U	0.45	U	0.44	U	0.46	U	0.45	U
PFDA	0.47	U	0.45	U	0.45	U	0.44	U	0.46	U	0.45	U
PFDoA	0.47	U	0.45	U	0.45	U	0.44	U	0.46	U	0.45	U
PFEESA	1.88	U	1.82	U	1.82	U	1.76	U	1.82	U	1.82	U
PFHpS	0.94	U	0.91	U	0.91	U	0.88	U	0.91	U	0.91	U
PFHpA	3.12	J	3.06	J	2.81	J	3.03	J	3.12	J	3.03	J
4:2FTS	0.94	U	0.91	U	0.91	U	0.88	U	0.91	U	0.91	U
PFHxS	2.07	J	2.28	J	2.23	J	2.24	J	2.31	J	2.23	J
PFHxA	9.74		9.78		8.73		9.17		8.88		9.26	
PFMPA	0.38	U	0.36	U	0.36	U	0.35	U	0.36	U	0.36	U
PFMBA	1.88	U	1.82	U	1.82	U	1.76	U	1.82	U	1.82	U
PFNA	0.42	J	0.52	J	0.49	J	0.48	J	0.48	J	0.48	J
6:2FTS	0.89	J	0.89	J	1.12	J	0.77	J	0.72	J	0.88	J
PFOS	1.43	J	1.49	J	2.98	J	2.38	J	2.19	J	2.09	J
PFOA	5.19		5.08		5.53		5.61		5.65		5.41	
PFPeA	6.92		7.79		6.65		6.51		6.79		6.93	
PFPeS	0.66	J	0.85	J	0.62	J	0.78	J	0.77	J	0.74	J
PFUnA	2.82	U	2.73	U	2.73	U	2.64	U	2.74	U	2.73	U
Surrogate Recoveries (%)												
13C4-PFBA	102		91		98		114		115			
13C5-PFPeA	156		142		157		187		185			
13C3-PFBS	92		83		89		98		101			
13C2-4:2FTS	159		151		158		177		180			
13C5-PFHxA	93		90		83		105		108			
13C3-HFPO-DA	78		76		82		96		97			
13C4-PFHpA	93		90		89		106		105			
13C3-PFHxS	87		62		67		73		71			
13C2-6:2FTS	136		109		109		115		119			
13C8-PFOA	93		81		83		97		99			
13C9-PFNA	104		65		66		88		82			
13C8-PFOS	96		37	N	40	N	48	N	44	N		
13C2-8:2FTS	113		56		56		63		58			
13C6-PFDA	101		52		53		68		63			
13C7-PFUnA	97		43	N	43	N	62		55			
13C2-PFDoA	84		39	N	38	N	57		53			

J: Analyte detected below the Limit of Quantitation (LOQ)

N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)

U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-3. CCWA Round 2A (Smith) Influent (Collected Post-filter from the F400-1 Column)

Analyte	Influent (Day 1)		Influent (Day 5)		Influent (Day 10)		Influent (Day 17)		Influent (Day 20)		Average Influent	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.92	U	0.91	U	0.92	U	0.91	U	0.91	U
9Cl-PF3ONS	0.91	U	0.92	U	0.91	U	0.92	U	0.91	U	0.91	U
Adona	1.37	U	1.37	U	1.37	U	1.37	U	1.36	U	1.37	U
HFPO-DA	0.91	U	0.92	U	0.91	U	0.92	U	0.91	U	0.91	U
NFDHA	1.37	U	1.37	U	1.37	U	1.37	U	1.36	U	1.37	U
PFBA	6.01		6.03		5.55		5.61		5.61		5.76	
PFBS	5.01		4.62		4.32	J	4.57	J	4.49	J	4.60	
8:2FTS	0.46	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U
PFDA	0.33	J	0.30	J	0.34	J	0.32	J	0.34	J	0.33	U
PFDoA	0.46	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U
PFEESA	1.82	U	1.83	U	1.82	U	1.83	U	1.82	U	1.82	U
PFHpS	0.91	U	0.92	U	0.91	U	0.92	U	0.91	U	0.91	U
PFHpA	3.44	J	3.47	J	2.95	J	3.21	J	3.31	J	3.28	J
4:2FTS	0.91	U	0.92	U	0.91	U	0.92	U	0.91	U	0.91	U
PFHxS	4.97		4.93		4.77		5.22		5.12		5.00	
PFHxA	8.82		9.97		8.52		9.28		8.87		9.09	
PFMPA	0.36	U	0.37	U	0.36	U	0.37	U	0.36	U	0.36	U
PFMBA	1.82	U	1.83	U	1.82	U	1.83	U	1.82	U	1.82	U
PFNA	1.16	J	1.19	J	0.92	J	1.02	J	1.08	J	1.07	J
6:2FTS	7.20		7.53		6.80		7.42		7.09		7.21	
PFOS	9.74		11.34		9.60		9.32		9.48		9.90	
PFOA	9.58		8.61		6.66		6.19		6.42		7.49	
PFPeA	8.88		9.64		7.33		8.03		8.12		8.40	
PFPeS	1.11	J	1.13	J	0.92	J	1.10	J	1.02	J	1.06	J
PFUnA	2.74	U	2.75	U	2.74	U	2.75	U	2.73	U	2.74	U
Surrogate Recoveries (%)												
13C4-PFBA	95		95		98		114		112			
13C5-PFPeA	142		128		147		165		160			
13C3-PFBS	84		93		95		105		105			
13C2-4:2FTS	143		151		165		177		180			
13C5-PFHxA	92		87		82		111		112			
13C3-HFPO-DA	75		81		80		103		94			
13C4-PFHpA	88		94		90		112		110			
13C3-PFHxS	83		92		90		96		96			
13C2-6:2FTS	118		123		132		128		130			
13C8-PFOA	92		94		92		113		105			
13C9-PFNA	95		97		89		118		110			
13C8-PFOS	91		93		91		100		97			
13C2-8:2FTS	104		119		104		110		104			
13C6-PFDA	98		99		90		117		110			
13C7-PFUnA	96		99		85		111		100			
13C2-PFDoA	91		85		79		93		83			

U: Non-detect

J: Analyte detected below the Limit of Quantitation (LOQ)

Table A-4. CCWA Round 3A (Hicks) Influent (Collected Post-filter from the F400-1 Column)

Analyte	Hicks_Day 1		Hicks_Day 5		Hickst_Day 10		Hicks__Day 17		Hicks_Day 20		Average Influent	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
9Cl-PF3ONS	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
Adona	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
HFPO-DA	0.51	J	0.51	J	0.40	J	0.41	J	0.41	J	0.45	J
NFDHA	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
PFBA	9.29		8.64		8.55		9.08		9.21		8.95	
PFBS	7.04		6.81		5.87		6.83		6.54		6.62	
8:2FTS	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
PFDA	0.88	J	0.81	J	0.78	J	0.88	J	0.90	J	0.85	J
PFDoA	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
PFEESA	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
PFHpS	0.41	J	0.40	J	0.46	J	0.44	J	0.47	J	0.44	J
PFHpA	6.71		6.72		6.32		6.70		6.70		6.63	
4:2FTS	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
PFHxS	5.16		5.07		4.81		5.41		5.39		5.17	
PFHxA	20.68		20.88		19.19		20.93		21.00		20.54	
PFMPA	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
PFMBA	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
PFNA	1.85	J	1.90	J	1.79	J	1.91	J	1.95	J	1.88	J
6:2FTS	2.31		2.79		2.29		2.32		2.62		2.47	
PFOS	10.17		10.15		9.55		10.74		11.04		10.33	
PFOA	8.62		9.60		7.80		9.01		9.99		9.00	
PFPeA	12.84		12.18		12.39		13.06		13.51		12.80	
PFPeS	1.32	J	1.28	J	1.17	J	1.40	J	1.31	J	1.30	J
PFUnA	0.90	U	0.92	U	0.90	U	0.92	U	0.91	U	0.91	U
Surrogate Recoveries (%)												
13C4-PFBA	97		102		109		91		90			
13C5-PFPeA	161		169		169		148		143			
13C3-PFBS	82		85		97		82		80			
13C2-4:2FTS	180		176		239	N	187		192			
13C5-PFHxA	83		84		91		77		76			
13C3-HFPO-DA	78		78		95		78		73			
13C4-PFHpA	86		87		94		81		79			
13C3-PFHxS	84		87		102		82		80			
13C2-6:2FTS	124		122		153		134		131			
13C8-PFOA	87		89		102		83		78			
13C9-PFNA	94		89		99		86		83			
13C8-PFOS	84		86		102		85		83			
13C2-8:2FTS	95		96		113		97		100			
13C6-PFDA	90		90		96		83		81			
13C7-PFUnA	90		89		89		84		78			
13C2-PFDoA	76		75		70		71		68			

J: Analyte detected below the Limit of Quantitation (LOQ)

N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)

U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-5. CCWA Round 3B (Hicks RO) Influent (Collected Post-filter from the FS Column)

Analyte	Hicks RO Day 1		Hicks RO Day 5		Hicks RO_Day 10		Hicks RO_Day 17		Hicks RO_Day 22		Average Influent	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.92	U	0.91	U	0.93	U	0.92	U	0.92	U
9Cl-PF3ONS	0.91	U	0.92	U	0.91	U	0.93	U	0.92	U	0.92	U
Adona	0.91	U	0.92	U	0.91	U	0.93	U	0.92	U	0.92	U
HFPO-DA	2.23	J	2.17	J	1.96	J	2.14	J	2.26	J	2.15	J
NFDHA	0.91	U	0.92	U	0.91	U	0.93	U	0.92	U	0.92	U
PFBA	48.90		46.82		48.77		47.25		54.85		49.32	
PFBS	42.47		43.23		37.66		39.79		41.90		41.01	
8:2FTS	18.39		17.00		13.61		14.26		14.17		15.49	
PFDA	56.85		55.84		46.96		54.30		58.12		54.41	
PFDoA	1.50	J	6.97		10.24		10.83		12.52		8.41	
PFEESA	0.91	U	0.92	U	0.91	U	0.93	U	0.92	U	0.92	U
PFHpS	2.09	J	1.98	J	1.71	J	1.75	J	1.96	J	1.90	J
PFHpA	45.84		46.94		41.96		46.90		47.65		45.86	
4:2FTS	0.91	U	0.92	U	0.91	U	0.93	U	0.92	U	0.92	U
PFHxS	31.16		31.77		28.15		33.13		32.94		31.43	
PFHxA	120.48		118.63		117.81		116.65		130.68		120.85	
PFMPA	0.91	U	0.92	U	0.91	U	0.93	U	0.92	U	0.92	U
PFMBA	0.91	U	0.92	U	0.91	U	0.93	U	0.92	U	0.92	U
PFNA	12.27		12.70		12.44		12.66		12.94		12.60	
6:2FTS	14.03		13.76		12.96		13.57		13.97		13.66	
PFOS	87.27		118.01		96.71		106.05		109.87		103.58	
PFOA	79.30		86.63		72.53		76.91		84.40		79.95	
PFPeA	78.50		76.74		77.17		81.77		85.98		80.03	
PFPeS	6.37		6.27		5.89		6.49		6.24		6.25	
PFUnA	7.08		21.74		11.89		16.76		17.88		15.07	
Surrogate Recoveries (%)												
13C4-PFBA	93		89		91		83		76			
13C5-PFPeA	211	N	202	N	205	N	196		174			
13C3-PFBS	59		55		61		57		53			
13C2-4:2FTS	163		164		208	N	202	N	193			
13C5-PFHxA	68		66		66		64		56			
13C3-HFPO-DA	72		71		89		81		73			
13C4-PFHpA	76		75		82		73		70			
13C3-PFHxS	77		70		89		74		73			
13C2-6:2FTS	212	N	204	N	237	N	235	N	233	N		
13C8-PFOA	86		82		94		85		77			
13C9-PFNA	107		102		105		96		92			
13C8-PFOS	83		77		93		84		82			
13C2-8:2FTS	174		160		189		173		185			
13C6-PFDA	105		104		108		97		96			
13C7-PFUnA	107		106		102		94		95			
13C2-PFDoA	106		100		102		93		97			

J: Analyte detected below the Limit of Quantitation (LOQ)

N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)

U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-6. CCWA Round 1 (Hooper) Effluent CECs Positive Compound Results

Analyte	Influent[(a)]	R1_PSR2+					R1_F400-1					R1_FS				
		Day 1	Day 3	Day 7	Day 11	Day 15	Day 1	Day 5	Day 10	Day 17	Day 20	Day 1	Day 5	Day 10	Day 17	Day 22
Pharmaceutically Active Compounds (Positive), Method L220																
Acetaminophen	<0.00049	<0.00048	**0.0024 J**	<0.00049	<0.00050	<0.00050	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049
Antipyrine	<0.000069	<0.000068	<0.000068	<0.000068	<0.000070	<0.000069	<0.000069	<0.000068	**0.00010 J**	<0.000068	<0.000069	<0.000068	<0.000069	<0.000069	<0.000069	<0.000068
Atenolol	<0.00030	<0.00029	<0.00029	<0.00029	<0.00030	<0.00030	<0.0030	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.0030	<0.0030	<0.0030	<0.00029
Azithromycin	<0.0020	<0.0019	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0019	<0.0020	<0.0019	<0.0020	<0.0019	<0.0020	<0.0019
Caffeine	**0.011 J**	**0.013 J**	**0.011 J**	**0.012 J**	**0.012 J**	**0.011 J**	<0.0040	<0.0039	<0.0039	**0.0039 J**	**0.0084 J**	**0.013 J**	**0.012 J**	**0.012 J**	**0.011 J**	**0.011 J**
Carbadox	<0.0040	<0.0039	<0.0039	<0.0039	<0.0040	<0.0040	<0.0040	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039
Carbamazepine	**0.0038**	**0.0045**	**0.0056**	**0.0069**	**0.0065**	**0.0047**	<0.00020	<0.00020	<0.00020	**0.00084 J**	**0.0013**	**0.0068**	**0.0069**	**0.0053**	**0.0058**	**0.0056**
Cotinine	**0.0092**	**0.0088**	**0.0087**	**0.0086**	**0.0091**	**0.0088**	**0.00020 J**	**0.0022**	**0.0093**	**0.01**	**0.0099**	**0.0089**	**0.0087**	**0.0091**	**0.009**	**0.0092**
DEET	**0.0068**	**0.0061**	**0.0063**	**0.0059**	**0.0074**	**0.0063**	<0.0020	<0.0020	**0.0026 J**	**0.0048 J**	**0.0049**	**0.0061**	**0.0061**	**0.0074**	**0.0064**	**0.0072**
Dexamethasone	<0.00089	<0.00087	<0.00088	<0.00088	<0.00089	<0.00089	<0.00089	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00089	<0.00088
Diazepam	<0.00049	<0.00048	<0.00049	<0.00049	<0.00050	<0.00050	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049
Diltiazem	<0.000030	<0.000029	<0.000029	<0.000029	<0.000030	<0.000030	<0.000030	<0.000029	**0.000035 J**	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000030	<0.000029
Erythromycin	<0.00030	<0.00029	<0.00029	<0.00029	<0.00030	<0.00030	<0.00030	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00030	<0.00029
Fluoxetine	<0.00020	<0.00019	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00019	<0.00020	<0.00019	<0.00020	<0.00019	<0.00020	<0.00019
Iopromide	<0.020	<0.019	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.019	<0.020	<0.019	<0.020	<0.019	<0.020	<0.019
Lincomycin	<0.000030	<0.000029	<0.000029	<0.000029	<0.000030	<0.000030	<0.000030	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000030	<0.000029
Meprobamate	**0.0085**	**0.0083**	**0.0071**	**0.0074**	**0.0077**	**0.0069**	<0.00049	**0.00062 J**	**0.0045**	**0.0064**	**0.007**	**0.0084**	**0.0084**	**0.0078**	**0.007**	**0.0072**
Monensin	<0.00049	<0.00048	<0.00049	<0.00049	<0.00050	<0.00050	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049
Narasin	<0.00069	<0.00068	<0.00068	<0.00068	<0.00070	<0.00070	<0.00069	<0.00068	<0.00068	<0.00068	<0.00069	<0.00068	<0.00068	<0.00068	<0.00069	<0.00068
Oleandomycin	<0.00030	<0.00029	<0.00029	<0.00029	<0.00030	<0.00030	<0.00030	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00030	<0.00029
Paraxanthine	<0.0030	<0.0029	<0.0029	<0.0029	<0.0030	<0.0030	<0.0030	<0.0029	<0.0029	<0.0029	**0.0034 J**	<0.0029	<0.0029	<0.0029	<0.0030	<0.0029
Primidone	**0.015**	**0.015**	**0.014**	**0.015**	**0.015**	**0.014**	<0.00059	**0.0012 J**	**0.0088**	**0.014**	**0.015**	**0.015**	**0.015**	**0.016**	**0.013**	**0.015**
Roxithromycin	<0.00030	<0.00029	<0.00029	<0.00029	<0.00030	<0.00030	<0.00030	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00030	<0.00029
Salinomycin	<0.000069	<0.000068	<0.000068	<0.000068	<0.000070	<0.000069	<0.000069	<0.000068	<0.000068	<0.000068	<0.000069	<0.000068	<0.000068	<0.000068	<0.000069	<0.000068
Sulfadiazine	<0.00030	<0.00029	<0.00029	<0.00029	<0.00030	<0.00030	<0.00030	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00029	<0.00030	<0.00029
Sulfadimethoxine	**0.000095 J**	<0.000029	<0.000029	<0.000029	<0.000030	<0.000030	<0.000030	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000029	<0.000030	<0.000029
Sulfamethazine	<0.000059	<0.000058	<0.000059	<0.000059	<0.000060	<0.000059	<0.000059	<0.000059	<0.000059	<0.000058	<0.000059	<0.000058	<0.000059	<0.000058	<0.000059	<0.000058
Sulfamethizole	<0.000099	<0.000097	<0.000098	<0.000098	<0.000099	<0.000099	<0.000099	<0.000098	<0.000098	<0.000097	<0.000098	<0.000097	<0.000098	<0.000097	<0.000099	<0.000097
Sulfamethoxazole	**0.0015**	**0.00023 J**	**0.00038 J**	**0.00051 J**	**0.00061 J**	**0.00075 J**	<0.00020	<0.00020	**0.00027 J**	**0.00035 J**	**0.00037 J**	**0.00054 J**	**0.00048 J**	**0.00062 J**	**0.00058 J**	**0.00054 J**
Sulfasalazine	<0.0020	<0.0019	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0019	<0.0020	<0.0019	<0.0020	<0.0019	<0.0020	<0.0019
Sulfathiazole	<0.00020	<0.00019	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	**0.00044 J**	<0.00020	<0.00019	<0.00020	<0.00019	<0.00020	<0.00019
TCEP (Tris(2-chloroethyl)phosphate)	**0.021**	**0.023**	**0.024**	**0.023**	**0.021**	**0.022**	<0.0020	<0.0020	**0.0063 J**	**0.015**	**0.018**	**0.024**	**0.023**	**0.021**	**0.022**	**0.021**
TCPP (Tris(2-chloroisopropyl)phosphate)	**0.19**	**0.21**	**0.20**	**0.21**	**0.21**	**0.20**	<0.0089	<0.0088	**0.040 J**	**0.085**	**0.11**	**0.22**	**0.22**	**0.21**	**0.20**	**0.21**
Theobromine	<0.030	<0.029	<0.029	<0.029	<0.030	<0.030	<0.030	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.030	<0.029
Trimethoprim	<0.00020	<0.00019	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	**0.00024 J**	<0.00020	<0.00019	<0.00020	<0.00019	<0.00020	<0.00019	<0.00020	<0.00019
Tylosin	<0.00059	<0.00058	<0.00059	<0.00059	<0.00060	<0.00059	<0.00059	<0.00059	<0.00059	<0.00058	<0.00059	<0.00058	<0.00059	<0.00058	<0.00059	<0.00058
Virginiamycin M1	<0.00040	<0.00039	<0.00039	<0.00039	<0.00040	<0.00040	<0.00040	<0.00039	<0.00039	<0.00039	<0.00039	<0.00039	<0.00039	<0.00039	<0.00039	<0.00039
Nicotine	**0.0037 J**	**0.0094 J**	**0.0054 J**	**0.0048 J**	**0.0026 J**	**0.0037 J**	**0.0025 J**	**0.0032 J**	**0.0023 J**	**0.0033 J**	**0.0035 J**	**0.0078 J**	**0.0056 J**	**0.0028 J**	**0.0035 J**	**0.0042 J**

(a): R1 Prefilter Saturation Results from 24 Hour Post-Filter Influent Sample.

Table A-7. CCWA Round 1 (Hooper) Effluent CECs Negative Compound Results

Analyte	Influent[(a)]	R1_PSR2+					R1_F400-1					R1_FS				
		Day 1	Day 3	Day 7	Day 11	Day 15	Day 1	Day 5	Day 10	Day 17	Day 20	Day 1	Day 5	Day 10	Day 17	Day 22
Pharmaceutically Active Compounds (Negative), Method L221																
17a-Estradiol	NA	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
17a-Ethinylestradiol	NA	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027
Estradiol	NA	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021
4-tert-Octylphenol	NA	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Acesulfame K	**0.38**	**0.027**	**0.33**	**0.31**	**0.29**	**0.32**	**0.0023 J**	**0.34**	**0.32**	**0.32**	**0.33**	**0.28**	**0.29**	**0.28**	**0.31**	**0.32**
Bezafibrate	<0.00049	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
BPA	NA	<0.0074	<0.0074	0.012 J	<0.0074	**0.021**	**0.0075 J**	<0.0074	**0.011 J**	<0.0074	<0.0074	<0.0074	**0.0097 J**	**0.0097 J**	**0.021**	**0.011 J**
Chloramphenicol	<0.0049	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
Clofibric Acid	<0.00049	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Diclofenac acid	<0.00049	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	**0.0032 J**	<0.0024	0.0057
Diethylstilbestrol	NA	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
Dilantin	**0.0044**	<0.0025	<0.0025	<0.0025	<0.0025	**0.0029 J**	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	**0.0032 J**	**0.0029 J**
Equilin	NA	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Estriol	NA	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029
Estrone	NA	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
Gemfibrozil	<0.00049	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057
Ibuprofen	<0.049	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035
Iohexol	NA	**1.0**	**1.0**	**1.2**	**1.1**	**1.2**	<0.0087	**0.41**	**1.1**	**0.86**	**0.89**	**1.1**	**0.98**	**1.2**	**1.0**	**0.93**
Iopromide	NA	<0.0050	<0.0050	0.0053 J	<0.0050	<0.0050	<0.0050	<0.0050	**0.0051 J**	<0.0050	<0.0050	<0.0050	<0.0050	**0.0087 J**	<0.0050	<0.0050
Levothyroxine	<0.0020	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079
Naproxen	<0.0020	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084
4-Nonylphenol	NA	<0.086	**0.11 J**	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	**0.15 J**
Penicillin G	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Penicillin V	<0.0020	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
Pentachlorophenol	NA	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
4-Phenylphenol	NA	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077
Prednisone	<0.0020	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Salicylic Acid	<0.049	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Sucralose	**5.8**	**6.6**	**6.7**	**6.8**	**6.6**	**6.4**	<0.014	**1.0**	**3.7**	**5.4**	**6.1**	**6.7**	**6.5**	**6.6**	**3.9**	**6.9**
Tetrabromobisphenol A	NA	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Trichlorophenols, Total	NA	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027
Theophylline	<0.0049	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Triclocarban	<0.00049	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Triclosan	<0.049	<0.020	<0.020	<0.020	<0.020	<0.020	<0.019	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020

(a): R1 Prefilter Saturation Results from 24 Hour Post-Filter Influent Sample.

NA: Not Available.

Table A-8. CCWA Round 3B (Hicks RO) Effluent CECs Positive Compound Results

Analyte	Influent[a]	PSR2+					F400-1					FS				
		Day 1	Day 3	Day 7	Day 11	Day 15	Day 1	Day 5	Day 10	Day 17	Day 20	Day 1	Day 5	Day 10	Day 17	Day 22
Pharmaceutically Active Compounds (Positive), LCMS_PPCP_POS-Local Method, ug/L																
1,7-Dimethylxanthine (Paraxanthine)	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
Acetaminophen	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Amoxicillin	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53
Androstenedione	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039
Phenazone	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Atenolol	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
Azithromycin	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081
Caffeine	**0.056**	**0.083**	**0.071**	**0.070**	**0.059**	**0.053**	<0.0052	**0.033**	**0.052**	**0.052**	**0.061**	**0.087**	**0.062**	**0.064**	**0.060**	**0.069**
Carbadox	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026
Carbamazepine	**0.14**	**0.13**	**0.12**	**0.13**	**0.12**	**0.12**	<0.0019	**0.049**	**0.080**	**0.096**	**0.12**	**0.13**	**0.12**	**0.13**	**0.12**	**0.15**
Cimetidine	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
Epitestosterone	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Codeine	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034
Cotinine	**0.088**	**0.076**	**0.077**	**0.076**	**0.074**	**0.075**	**0.045**	**0.078**	**0.077**	**0.077**	**0.090**	**0.076**	**0.076**	**0.077**	**0.075**	**0.088**
DEET	**0.17**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.016**	**0.11**	**0.14**	**0.14**	**0.17**	**0.16**	**0.15**	**0.15**	**0.15**	**0.17**
Dexamethasone	<0.004	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Diazepam	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Diltiazem	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052
Diphenhydramine	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027
Erythromycin	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Fluoxetine	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
Lincomycin	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027
Meprobamate	**0.12**	**0.095**	**0.10**	**0.098**	**0.099**	**0.098**	**0.031**	**0.092**	**0.10**	**0.10**	**0.11**	**0.096**	**0.095**	**0.10**	**0.10**	**0.11**
Metformin	**0.066**	**0.042**	**0.047**	**0.040**	**0.040**	**0.036**	**0.036**	**0.033**	**0.041**	**0.041**	**0.041**	**0.046**	**0.039**	**0.046**	**0.036**	**0.032**
Monensin	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034
Narasin	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Nicotine	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
Oleandomycin	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Primidone	**0.22**	**0.20**	**0.20**	**0.20**	**0.19**	**0.19**	**0.073**	**0.19**	**0.20**	**0.21**	**0.22**	**0.20**	**0.19**	**0.20**	**0.20**	**0.22**
Progesterone	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027
Quinoline	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Roxithromycin	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022
Salinomycin	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085
Sulfadiazine	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Sulfadimethoxine	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Sulfamerazine	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045
Sulfamethazine	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024	<0.0024
Sulfamethizole	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	**0.013**	<0.0030	<0.0030	<0.0030	<0.0030	**0.013**
Sulfamethoxazole	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070
Sulfasalazine	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Sulfathiazole	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029
Theobromine	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Testosterone	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042
TDCPP	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
TCPP	**3.4**	**3.0**	**3.0**	**3.0**	**2.9**	**2.8**	<0.24	**2.0**	**2.5**	**2.5**	**3.4**	**3.0**	**3.0**	**3.0**	**2.8**	**3.5**
TCEP	**0.41**	**0.37**	**0.37**	**0.37**	**0.36**	**0.34**	**0.045**	**0.29**	**0.35**	**0.35**	**0.40**	**0.36**	**0.36**	**0.36**	**0.36**	**0.40**
Tylosin	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041
Virginiamycin M1	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039
Trimethoprim	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

(a): R3B Prefilter Saturation Results from 48 Hour Post-Filter Influent Sample.

Table A-9. CCWA Round 3B (Hicks RO) Effluent CECs Negative Compound Results

Analyte	Influent[(a)]	PSR2+					F400-1					FS				
		Day 1	Day 3	Day 7	Day 11	Day 15	Day 1	Day 5	Day 10	Day 17	Day 20	Day 1	Day 5	Day 10	Day 17	Day 22
17a-Estradiol	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
17a-Ethinylestradiol	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027
Estradiol	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021
4-tert-Octylphenol	<0.012	<0.012	**0.013 J**	**0.017 J**	**0.018 J**	**0.024**	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	**0.013 J**	**0.016 J**	**0.015 J**	**0.017 J**
Acesulfame K	**1.9**	**1.9**	**2.0**	**1.8**	**1.7**	**2.0**	**2.3**	**1.9**	**1.7**	**2.0**	**2.0**	**2.0**	**1.8**	**1.7**	**2.1**	**2.0**
Bezafibrate	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
BPA	**1.0**	**0.31**	**0.58**	**0.55**	**0.50**	**0.58**	<0.0074	**0.14**	**0.23**	**0.34**	**0.36**	**0.35**	**0.55**	**0.52**	**0.57**	**0.51**
Chloramphenicol	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
Clofibric Acid	<0.0015	<0.0015	<0.0015	<0.0015	**0.0033 J**	**0.0064**	<0.0015	<0.0015	**0.0018 J**	**0.008**	**0.0068**	<0.0015	<0.0015	**0.0033 J**	<0.0015	0.0074
Diclofenac acid	**0.016**	<0.0024	<0.0024	<0.0024	0.0071	<0.0024	<0.0024	**0.0034 J**	**0.0030 J**	<0.0024	<0.0024	<0.0024	0.034	<0.0024	<0.0024	<0.0024
Diethylstilbestrol	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
Dilantin	**0.065**	**0.041**	**0.043**	**0.042**	**0.042**	**0.041**	**0.0042 J**	**0.027**	**0.034**	**0.037**	**0.040**	**0.043**	**0.043**	**0.043**	**0.043**	**0.043**
Equilin	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Estriol	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029
Estrone	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
Gemfibrozil	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057	<0.00057
Ibuprofen	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035
Iohexol	**8.2**	**6.3**	**6.2**	**5.9**	**3.8**	**4.8**	**1.6**	**6.1**	**1.1**	**4.4**	**6.6**	**6.1**	**6.3**	**4.1**	**4.6**	**5.0**
Iopromide	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Levothyroxine	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079
Naproxen	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084
4-Nonylphenol	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086	<0.086
Penicillin G	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Penicillin V	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
Pentachlorophenol	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
4-Phenylphenol	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077
Prednisone	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Salicylic Acid	**0.77**	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Tetrabromobisphenol A	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Trichlorophenols, Total	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027
Theophylline	**0.043**	**0.026**	**0.027**	**0.025**	**0.025**	**0.030**	**0.0021 J**	**0.019 J**	**0.025**	**0.029**	**0.029**	**0.025**	**0.025**	**0.026**	**0.030**	**0.031**
Triclocarban	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Triclosan	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Sucralose	**100**	**110**	**110**	**120**	**110**	**140**	**49**	**96**	**110**	**140**	**110**	**110**	**110**	**110**	**140**	**130**

(a): R3B Prefilter Saturation Results from 48 Hour Post-Filter Influent Sample.

Table A-10. CCWA Round 1 (Hooper) Calgon Filtrasorb 400-1 Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 10		Day 10 Replicate		Day 13		Day 17		Day 20	
			Bed Volumes (Day 1)	6,893	Bed Volumes (Day 2)	12,671	Bed Volumes (Day 3)	19,714	Bed Volumes (Day 5)	32,619	Bed Volumes (Day 7)	45,235	Bed Volumes (Day 10)	65,620	Bed Volumes (Day 10 DUP)	65,620	Bed Volumes (Day 13)	84,755	Bed Volumes (Day 17)	111,729	Bed Volumes (Day 20)	130,658
			R1_F400-1 (Day 1)		R1_F400-1 (Day 2)		R1_F400-1 (Day 3)		R1_F400-1 (Day 5)		R1_F400-1 (Day 7)		R1_F400-1 (Day 10)		R1_F400-1 (Day 10)		R1_F400-1 (Day 13)		R1_F400-1 (Day 17)		R1_F400-1 (Day 20)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.93	U	0.89	U	0.92	U	0.91	U	0.92	U	0.92	U	0.94	U	0.92	U	0.92	U	0.91	U
9Cl-PF3ONS	0.91	U	0.93	U	0.89	U	0.92	U	0.91	U	0.92	U	0.92	U	0.94	U	0.92	U	0.92	U	0.91	U
Adona	1.36	U	1.39	U	1.33	U	1.38	U	1.37	U	1.38	U	1.38	U	1.40	U	1.38	U	1.37	U	1.37	U
HFPO-DA	0.91	U	0.93	U	0.89	U	0.92	U	0.91	U	0.92	U	0.92	U	0.94	U	0.92	U	0.92	U	0.91	U
NFDHA	1.36	U	1.39	U	1.33	U	1.38	U	1.37	U	1.38	U	1.38	U	1.40	U	1.38	U	1.37	U	1.37	U
PFBA	4.82		6.37		4.94		5.80		5.33		4.83		5.46		4.67	J	4.47	J	5.02		5.13	
PFBS	4.07	J	0.46	U	1.25	J	3.05	J	5.00		4.60		4.56	J	4.57	J	4.27	J	4.27	J	4.08	J
8:2FTS	0.45	U	0.46	U	0.44	U	0.46	U	0.46	U	0.46	U	0.46	U	0.47	U	0.46	U	0.46	U	0.46	U
PFDA	0.45	U	0.46	U	0.44	U	0.46	U	0.46	U	0.46	U	0.46	U	0.47	U	0.46	U	0.46	U	0.46	U
PFDoA	0.45	U	0.46	U	0.44	U	0.46	U	0.46	U	0.46	U	0.46	U	0.47	U	0.46	U	0.46	U	0.46	U
PFEESA	1.82	U	1.85	U	1.77	U	1.84	U	1.82	U	1.84	U	1.85	U	1.87	U	1.85	U	1.83	U	1.82	U
PFHpS	0.91	U	0.93	U	0.89	U	0.92	U	0.91	U	0.92	U	0.92	U	0.94	U	0.92	U	0.92	U	0.91	U
PFHpA	3.03	J	0.93	U	0.53	J	1.30	J	2.73	J	3.06	J	3.15	J	3.20	J	3.13	J	3.35	J	3.35	J
4:2FTS	0.91	U	0.93	U	0.89	U	0.92	U	0.91	U	0.92	U	0.92	U	0.94	U	0.92	U	0.92	U	0.91	U
PFHxS	2.23	J	0.46	U	0.44	U	0.18	J	0.61	J	1.04	J	1.63	J	1.58	J	1.87	J	2.15	J	2.24	J
PFHxA	9.26		1.36	J	13.47		19.38		20.10		15.89		12.65		12.18		11.01		11.44		10.80	
PFMPA	0.36	U	0.37	U	0.35	U	0.37	U	0.36	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.36	U
PFMBA	1.82	U	1.85	U	1.77	U	1.84	U	1.82	U	1.84	U	1.85	U	1.87	U	1.85	U	1.83	U	1.82	U
PFNA	0.48	J	0.93	U	0.89	U	0.92	U	0.91	U	0.92	U	0.92	U	0.94	U	0.92	U	0.92	U	0.42	J
6:2FTS	0.88	J	0.93	U	0.89	U	0.92	U	0.91	U	0.41	J	0.65	J	0.87	J	0.83	J	0.74	J	0.76	J
PFOS	2.09	J	0.93	U	0.89	U	0.92	U	0.91	U	0.92	U	0.61	J	0.69	J	0.90	J	0.95	J	1.05	J
PFOA	5.41		0.93	U	0.89	U	0.96	J	2.17	J	4.33	J	5.13		5.01		5.02		5.81		5.85	
PFPeA	6.93		2.12	J	10.44		9.11		8.07		7.06		6.78		6.20		6.53		6.99		6.73	
PFPeS	0.74	J	1.85	U	1.77	U	1.84	U	1.82	U	0.69	J	0.66	J	0.69	J	0.74	J	0.85	J	0.79	J
PFUnA	2.73	U	2.78	U	2.66	U	2.76	U	2.74	U	2.76	U	2.77	U	2.81	U	2.77	U	2.75	U	2.74	U
Surrogate Recoveries (%)																						
13C4-PFBA			92		101		113		106		107		97		95		100		112		111	
13C5-PFPeA			95		119		148		148		166		157		161		161		191		187	
13C3-PFBS			104		110		141		114		110		97		96		98		100		103	
13C2-4:2FTS			104		111		144		132		138		135		137		142		163		164	
13C5-PFHxA			92		90		120		104		100		94		91		96		113		115	
13C3-HFPO-DA			82		86		102		85		87		86		82		83		95		102	
13C4-PFHpA			92		93		115		98		97		91		90		94		107		107	
13C3-PFHxS			99		97		114		98		77		67		70		69		66		70	
13C2-6:2FTS			101		101		119		111		103		89		92		98		95		98	
13C8-PFOA			93		99		110		104		88		84		80		88		95		97	
13C9-PFNA			94		95		107		96		76		67		66		66		72		76	
13C8-PFOS			94		94		106		99		51		36	N	39	N	37	N	37	N	44	N
13C2-8:2FTS			95		98		108		98		62		47	N	49	N	50		48	N	53	
13C6-PFDA			97		97		107		95		62		50		50		48	N	52		60	
13C7-PFUnA			88		95		102		93		56		43	N	44	N	43	N	48	N	54	
13C2-PFDoA			76		86		88		82		53		39	N	40	N	39	N	47	N	53	
pH	-		7.522		-		-		-		-		7.668		-		-		-		7.632	
TOC (mg/L)	-		0.903		-		-		1.64		-		1.76		-		-		1.81		1.83	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-11. CCWA Round 1 (Hooper) Evoqua UC1240LD Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 10		Day 10 Replicate		Day 13		Day 17		Day 20	
			Bed Volumes (Day 1)	7,022	Bed Volumes (Day 2)	13,151	Bed Volumes (Day 3)	20,013	Bed Volumes (Day 5)	32,426	Bed Volumes (Day 7)	45,195	Bed Volumes (Day 10)	65,200	Bed Volumes (Day 10 DUP)	65,200	Bed Volumes (Day 13)	83,744	Bed Volumes (Day 17)	110,010	Bed Volumes (Day 20)	129,831
			R1_UC1240 (Day 1)		R1_UC1240 (Day 2)		R1_UC1240 (Day 3)		R1_UC1240 (Day 5)		R1_UC1240 (Day 7)		R1_UC1240 (Day 10)		R1_UC1240 (Day 10)		R1_UC1240 (Day 13)		R1_UC1240 (Day 17)		R1_UC1240 (Day 20)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.93	U	0.83	U	0.92	U	0.90	U	0.91	U	0.92	U	0.93	U	0.94	U	0.92	U	0.93	U
9Cl-PF3ONS	0.91	U	0.93	U	0.83	U	0.92	U	0.90	U	0.91	U	0.92	U	0.93	U	0.94	U	0.92	U	0.93	U
Adona	1.36	U	1.39	U	1.24	U	1.38	U	1.35	U	1.37	U	1.38	U	1.39	U	1.40	U	1.38	U	1.40	U
HFPO-DA	0.91	U	0.93	U	0.83	U	0.92	U	0.90	U	0.91	U	0.92	U	0.93	U	0.94	U	0.92	U	0.93	U
NFDHA	1.36	U	1.39	U	1.24	U	1.38	U	1.35	U	1.37	U	1.38	U	1.39	U	1.40	U	1.38	U	1.40	U
PFBA	4.82		5.08		5.63		4.79		4.82		5.07		4.83		4.55	J	5.69		4.88		4.97	
PFBS	4.07	J	1.17	J	4.63		4.03	J	3.99	J	4.38	J	4.22	J	3.95	J	4.45	J	4.10	J	4.03	J
8:2FTS	0.45	U	0.46	U	0.41	U	0.46	U	0.45	U	0.46	U	0.46	U	0.46	U	0.47	U	0.46	U	0.47	U
PFDA	0.45	U	0.46	U	0.41	U	0.46	U	0.45	U	0.46	U	0.46	U	0.46	U	0.47	U	0.46	U	0.47	U
PFDoA	0.45	U	0.46	U	0.41	U	0.46	U	0.45	U	0.46	U	0.46	U	0.46	U	0.47	U	0.46	U	0.47	U
PFEESA	1.82	U	1.85	U	1.66	U	1.85	U	1.80	U	1.82	U	1.84	U	1.85	U	1.87	U	1.85	U	1.87	U
PFHpS	0.91	U	0.93	U	0.83	U	0.92	U	0.90	U	0.91	U	0.92	U	0.93	U	0.94	U	0.92	U	0.93	U
PFHpA	3.03	J	0.93	U	2.03	J	2.51	J	2.95	J	3.13	J	2.99	J	2.98	J	3.17	J	2.94	J	2.97	J
4:2FTS	0.91	U	0.93	U	0.83	U	0.92	U	0.90	U	0.91	U	0.92	U	0.93	U	0.94	U	0.92	U	0.93	U
PFHxS	2.23	J	0.46	U	0.69	J	1.04	J	1.41	J	1.69	J	1.98	J	1.94	J	2.22	J	2.22	J	2.38	J
PFHxA	9.26		10.28		22.19		20.36		17.06		15.74		13.34		12.38		12.49		10.92		11.37	
PFMPA	0.36	U	0.37	U	0.33	U	0.37	U	0.36	U	0.36	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
PFMBA	1.82	U	1.85	U	1.66	U	1.85	U	1.80	U	1.82	U	1.84	U	1.85	U	1.87	U	1.85	U	1.87	U
PFNA	0.48	J	0.93	U	0.83	U	0.92	U	0.90	U	0.91	U	0.92	U	0.93	U	0.94	U	0.46	J	0.50	J
6:2FTS	0.88	J	0.85	J	1.03	J	1.79	J	0.89	J	1.34	J	1.72	J	1.29	J	1.25	J	1.10	J	0.79	J
PFOS	2.09	J	0.93	U	0.55	J	0.51	J	0.57	J	0.61	J	1.07	J	1.38	J	2.45	J	1.53	J	1.48	J
PFOA	5.41		0.64	J	2.64	J	3.07	J	3.90	J	5.74		5.65		5.55		6.22		5.82		5.63	
PFPeA	6.93		6.95		8.44		7.89		7.54		7.66		6.72		6.32		6.83		6.78		6.42	
PFPeS	0.74	J	1.85	U	1.66	U	1.85	U	0.59	J	0.72	J	0.71	J	0.59	J	0.60	J	0.79	J	0.78	J
PFUnA	2.73	U	2.78	U	2.48	U	2.77	U	2.70	U	2.74	U	2.76	U	2.78	U	2.81	U	2.77	U	2.80	U
Surrogate Recoveries (%)																						
13C4-PFBA			98		97		106		111		97		96		100		88		118		111	
13C5-PFPeA			111		140		154		171		153		164		169		130		188		189	
13C3-PFBS			106		106		123		131		99		95		96		94		107		100	
13C2-4:2FTS			111		129		146		162		146		149		155		133		179		167	
13C5-PFHxA			101		98		110		116		91		85		84		71		108		110	
13C3-HFPO-DA			83		78		90		92		78		80		80		62		93		97	
13C4-PFHpA			96		97		104		108		90		87		89		69		109		112	
13C3-PFHxS			93		90		103		112		73		74		79		82		75		70	
13C2-6:2FTS			98		102		113		122		98		103		107		106		116		104	
13C8-PFOA			100		95		103		108		86		81		84		72		93		101	
13C9-PFNA			95		94		94		99		67		65		73		68		77		80	
13C8-PFOS			91		92		104		108		39	N	44	N	55		77		43	N	43	N
13C2-8:2FTS			93		93		99		102		53		54		66		83		58		50	
13C6-PFDA			98		94		95		99		51		51		62		65		58		60	
13C7-PFUnA			94		90		90		93		44	N	44	N	59		68		52		53	
13C2-PFDoA			82		82		79		78		41	N	40	N	52		64		50		51	
pH	-		7.529		-		-		-		-		7.639		-		-		-		7.677	
TOC (mg/L)	-		1.22		-		-		1.67		-		1.89		-		-		1.86		1.88	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-12. CCWA Round 1 (Hooper) CalRes 2301 Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 7 Replicate		Day 9		Day 11		Day 13		Day 15	
			Bed Volumes (Day 1)	26,839	Bed Volumes (Day 2)	44,291	Bed Volumes (Day 3)	88,989	Bed Volumes (Day 5)	111,120	Bed Volumes (Day 7)	157,090	Bed Volumes (Day 7 DUP)	157,090	Bed Volumes (Day 9)	200,717	Bed Volumes (Day 11)	244,716	Bed Volumes (Day 13)	286,457	Bed Volumes (Day 15)	334,831
			R1_CalRes (Day 1)		R1_CalRes (Day 2)		R1_CalRes (Day 3)		R1_CalRes (Day 5)		R1_CalRes (Day 7)		R1_CalRes (Day 7)		R1_CalRes (Day 9)		R1_CalRes (Day 11)		R1_CalRes (Day 13)		R1_CalRes (Day 15)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.88	U	0.90	U	0.93	U	0.90	U	0.93	U	0.92	U	0.93	U	0.87	U	0.91	U	0.92	U
9Cl-PF3ONS	0.91	U	0.88	U	0.90	U	0.93	U	0.90	U	0.93	U	0.92	U	0.93	U	0.87	U	0.91	U	0.92	U
Adona	1.36	U	1.32	U	1.34	U	1.39	U	1.35	U	1.39	U	1.38	U	1.40	U	1.31	U	1.37	U	1.38	U
HFPO-DA	0.91	U	0.88	U	0.90	U	0.93	U	0.90	U	0.93	U	0.92	U	0.93	U	0.87	U	0.91	U	0.92	U
NFDHA	1.36	U	1.32	U	1.34	U	1.39	U	1.35	U	1.39	U	1.38	U	1.40	U	1.31	U	1.37	U	1.38	U
PFBA	4.82		3.52	J	5.60		5.47		5.05		4.82		4.91		4.90		4.70		4.76		4.87	
PFBS	4.07	J	0.44	U	0.45	U	0.46	U	0.18	J	0.34	J	0.32	J	0.52	J	0.79	J	0.99	J	1.06	J
8:2FTS	0.45	U	0.44	U	0.45	U	0.46	U	0.45	U	0.46	U	0.46	U	0.47	U	0.44	U	0.46	U	0.46	U
PFDA	0.45	U	0.44	U	0.45	U	0.46	U	0.45	U	0.46	U	0.46	U	0.47	U	0.44	U	0.46	U	0.46	U
PFDoA	0.45	U	0.44	U	0.45	U	0.46	U	0.45	U	0.46	U	0.46	U	0.47	U	0.44	U	0.46	U	0.46	U
PFEESA	1.82	U	1.75	U	1.79	U	1.86	U	1.80	U	1.85	U	1.84	U	1.87	U	1.75	U	1.82	U	1.85	U
PFHpS	0.91	U	0.88	U	0.90	U	0.93	U	0.90	U	0.93	U	0.92	U	0.93	U	0.87	U	0.91	U	0.92	U
PFHpA	3.03	J	0.88	U	0.90	U	0.52	J	1.49	J	2.20	J	2.06	J	2.61	J	2.83	J	3.06	J	3.06	J
4:2FTS	0.91	U	0.88	U	0.90	U	0.93	U	0.90	U	0.93	U	0.92	U	0.93	U	0.87	U	0.91	U	0.92	U
PFHxS	2.23	J	0.44	U	0.45	U	0.46	U	0.45	U	0.46	U	0.46	U	0.47	U	0.44	U	0.46	U	0.46	U
PFHxA	9.26		1.47	J	3.23	J	6.98		10.56		11.45		11.23		11.12		10.26		10.24		10.56	
PFMPA	0.36	U	0.35	U	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.37	U	0.35	U	0.36	U	0.37	U
PFMBA	1.82	U	1.75	U	1.79	U	1.86	U	1.80	U	1.85	U	1.84	U	1.87	U	1.75	U	1.82	U	1.85	U
PFNA	0.48	J	0.88	U	0.90	U	0.93	U	0.90	U	0.93	U	0.92	U	0.93	U	0.87	U	0.91	U	0.92	U
6:2FTS	0.88	J	0.34	J	0.44	J	0.75	J	1.09	J	1.22	J	1.21	J	1.23	J	1.28	J	1.29	J	1.06	J
PFOS	2.09	J	0.88	U	0.90	U	0.93	U	0.90	U	0.93	U	0.92	U	0.93	U	0.87	U	0.91	U	0.92	U
PFOA	5.41		0.88	U	0.90	U	0.93	U	0.86	J	1.77	J	1.71	J	2.61	J	3.20	J	3.70	J	4.24	J
PFPeA	6.93		2.28	J	5.31		7.84		8.67		8.13		8.64		7.90		6.91		7.05		6.92	
PFPeS	0.74	J	1.75	U	1.79	U	1.86	U	1.80	U	1.85	U	1.84	U	1.87	U	1.75	U	1.82	U	1.85	U
PFUnA	2.73	U	2.63	U	2.69	U	2.79	U	2.70	U	2.78	U	2.76	U	2.80	U	2.62	U	2.74	U	2.77	U
Surrogate Recoveries (%)																						
13C4-PFBA			95		100		105		94		95		92		95		87		89		115	
13C5-PFPeA			149		166		166		147		153		138		140		140		145		183	
13C3-PFBS			92		98		105		91		88		88		89		86		83		97	
13C2-4:2FTS			154		155		168		151		158		147		145		150		149		184	
13C5-PFHxA			89		97		101		78		91		92		91		73		72		109	
13C3-HFPO-DA			80		90		88		66		76		74		79		67		65		103	
13C4-PFHpA			88		93		99		79		87		89		89		75		73		113	
13C3-PFHxS			88		89		99		64		59		62		71		74		75		73	
13C2-6:2FTS			123		119		134		114		108		101		108		107		108		121	
13C8-PFOA			93		96		102		77		82		80		84		78		78		101	
13C9-PFNA			91		95		98		58		64		63		69		73		67		84	
13C8-PFOS			90		94		98		36	N	35	N	35	N	44	N	76		74		44	N
13C2-8:2FTS			98		96		108		58		49	N	54		55		80		80		60	
13C6-PFDA			90		93		103		45	N	48	N	51		53		75		67		65	
13C7-PFUnA			88		87		93		37	N	41	N	42	N	46	N	71		67		58	
13C2-PFDoA			83		77		84		36	N	39	N	39	N	44	N	68		67		52	
pH	-		7.603		-		-		-		7.499		-		-		-		-		7.627	
TOC (mg/L)	-		1.66		-		1.84		-		1.86				-		2.04				1.94	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-13. CCWA Round 1 (Hooper) Evoqua PSR2+ Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 7 Replicate		Day 9		Day 11		Day 13		Day 15	
			Bed Volumes (Day 1)	22,429	Bed Volumes (Day 2)	41,864	Bed Volumes (Day 3)	64,275	Bed Volumes (Day 5)	105,074	Bed Volumes (Day 7)	149,833	Bed Volumes (Day 7 DUP)	149,833	Bed Volumes (Day 9)	193,325	Bed Volumes (Day 11)	235,544	Bed Volumes (Day 13)	278,077	Bed Volumes (Day 15)	328,538
			R1_PSR2+ (Day 1)		R1_PSR2+ (Day 2)		R1_PSR2+ (Day 3)		R1_PSR2+ (Day 5)		R1_PSR2+ (Day 7)		R1_PSR2+ (Day 7)		R1_PSR2+ (Day 9)		R1_PSR2+ (Day 11)		R1_PSR2+ (Day 13)		R1_PSR2+ (Day 15)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.83	U	0.88	U	0.93	U	0.93	U	0.92	U	0.91	U	0.92	U	0.92	U	0.92	U	0.92	U
9Cl-PF3ONS	0.91	U	0.83	U	0.88	U	0.93	U	0.93	U	0.92	U	0.91	U	0.92	U	0.92	U	0.92	U	0.92	U
Adona	1.36	U	1.25	U	1.33	U	1.39	U	1.39	U	1.37	U	1.36	U	1.37	U	1.38	U	1.37	U	1.38	U
HFPO-DA	0.91	U	0.83	U	0.88	U	0.93	U	0.93	U	0.92	U	0.91	U	0.92	U	0.92	U	0.92	U	0.92	U
NFDHA	1.36	U	1.25	U	1.33	U	1.39	U	1.39	U	1.37	U	1.36	U	1.37	U	1.38	U	1.37	U	1.38	U
PFBA	4.82		2.93	J	5.44		5.42		4.63	J	5.16		4.84		4.70		4.94		4.64		4.95	
PFBS	4.07	J	0.42	U	0.44	U	0.46	U	0.46	U	0.18	J	0.23	J	0.43	J	0.67	J	0.94	J	1.12	J
8:2FTS	0.45	U	0.42	U	0.44	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.46	U	0.46	U	0.46	U
PFDA	0.45	U	0.42	U	0.44	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.46	U	0.46	U	0.46	U
PFDoA	0.45	U	0.42	U	0.44	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.46	U	0.46	U	0.46	U
PFEESA	1.82	U	1.66	U	1.77	U	1.85	U	1.86	U	1.83	U	1.82	U	1.83	U	1.84	U	1.83	U	1.84	U
PFHpS	0.91	U	0.83	U	0.88	U	0.93	U	0.93	U	0.92	U	0.91	U	0.92	U	0.92	U	0.92	U	0.92	U
PFHpA	3.03	J	0.83	U	0.88	U	0.93	J	1.69	J	2.28	J	2.35	J	2.58	J	2.69	J	2.68	J	2.74	J
4:2FTS	0.91	U	0.83	U	0.88	U	0.93	U	0.93	U	0.92	U	0.91	U	0.92	U	0.92	U	0.92	U	0.92	U
PFHxS	2.23	J	0.42	U	0.44	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.46	U	0.46	U	0.46	U
PFHxA	9.26		1.19	J	3.58	J	5.74		8.08		9.59		9.47		9.00		9.57		9.82		9.50	
PFMPA	0.36	U	0.33	U	0.35	U	0.37	U	0.37	U	0.37	U	0.36	U	0.37	U	0.37	U	0.37	U	0.37	U
PFMBA	1.82	U	1.66	U	1.77	U	1.85	U	1.86	U	1.83	U	1.82	U	1.83	U	1.84	U	1.83	U	1.84	U
PFNA	0.48	J	0.83	U	0.88	U	0.93	U	0.93	U	0.92	U	0.91	U	0.92	U	0.92	U	0.92	U	0.92	U
6:2FTS	0.88	J	0.83	U	0.88	U	0.46	J	0.60	J	0.76	J	0.90	J	0.90	J	0.76	J	0.67	J	0.70	J
PFOS	2.09	J	0.83	U	0.88	U	0.93	U	0.93	U	0.92	U	0.91	U	0.92	U	0.92	U	0.92	U	0.92	U
PFOA	5.41		0.83	U	0.88	U	0.81	J	1.88	J	2.90	J	3.08	J	4.06	J	4.01	J	4.14	J	4.81	
PFPeA	6.93		1.91	J	5.62		6.59		7.21		7.97		7.38		7.44		7.37		7.46		7.06	
PFPeS	0.74	J	1.66	U	1.77	U	1.85	U	1.86	U	1.83	U	1.82	U	1.83	U	1.84	U	1.83	U	1.84	U
PFUnA	2.73	U	2.49	U	2.65	U	2.78	U	2.79	U	2.75	U	2.73	U	2.75	U	2.76	U	2.75	U	2.76	U
Surrogate Recoveries (%)																						
13C4-PFBA			108		100		107		102		97		95		94		86		91		114	
13C5-PFPeA			168		151		167		167		151		148		149		121		142		181	
13C3-PFBS			100		93		111		104		90		89		92		85		83		95	
13C2-4:2FTS			169		158		185		175		161		152		154		143		150		178	
13C5-PFHxA			101		93		104		104		79		84		96		70		72		106	
13C3-HFPO-DA			84		79		85		87		74		74		81		65		65		93	
13C4-PFHpA			103		96		100		101		88		84		90		74		74		104	
13C3-PFHxS			95		89		100		87		67		66		72		77		77		70	
13C2-6:2FTS			139		135		138		129		119		111		108		111		114		114	
13C8-PFOA			104		97		99		97		83		81		83		76		79		97	
13C9-PFNA			108		99		99		79		65		69		71		70		71		82	
13C8-PFOS			106		97		100		48	N	41	N	42	N	44	N	74		73		45	N
13C2-8:2FTS			111		107		120		69		66		61		57		84		80		60	
13C6-PFDA			110		99		106		64		56		56		53		69		69		64	
13C7-PFUnA			106		100		93		52		46	N	48	N	47	N	71		72		59	
13C2-PFDoA			102		92		89		48	N	42	N	44	N	44	N	67		68		51	
pH	-		7.669		-		-		-		7.612		-		-		-		-		7.702	
TOC (mg/L)	-		1.53		-		1.73		-		1.91				-		1.99				1.96	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-14. CCWA Round 1 (Hooper) Fluorosorb Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 10		Day 10 Replicate		Day 13		Day 17		Day 22	
			Bed Volumes (Day 1)	17,547	Bed Volumes (Day 2)	32,581	Bed Volumes (Day 3)	49,444	Bed Volumes (Day 5)	80,616	Bed Volumes (Day 7)	111,408	Bed Volumes (Day 10)	162,851	Bed Volumes (Day 10 DUP)	162,851	Bed Volumes (Day 13)	209,624	Bed Volumes (Day 17)	274,827	Bed Volumes (Day 22)	355,820
			R1_FS (Day 1)		R1_FS (Day 2)		R1_FS (Day 3)		R1_FS (Day 5)		R1_FS (Day 7)		R1_FS (Day 10)		R1_FS (Day 10 DUP)		R1_FS (Day 13)		R1_FS (Day 17)		R1_FS (Day 22)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.92	U	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U	0.92	U
9Cl-PF3ONS	0.91	U	0.92	U	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U	0.92	U
Adona	1.36	U	1.37	U	1.39	U	1.38	U	1.38	U	1.38	U	1.38	U	1.37	U	1.37	U	1.38	U	1.38	U
HFPO-DA	0.91	U	0.92	U	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U	0.92	U
NFDHA	1.36	U	1.37	U	1.39	U	1.38	U	1.38	U	1.38	U	1.38	U	1.37	U	1.37	U	1.38	U	1.38	U
PFBA	4.82		4.34	J	4.63		4.63		4.52	J	4.60	J	4.45	J	4.36	J	4.63		5.12		5.02	
PFBS	4.07	J	0.46	U	0.46	U	0.46	U	0.46	U	0.16	J	0.48	J	0.48	J	0.89	J	1.06	J	1.54	J
8:2FTS	0.45	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
PFDA	0.45	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
PFDoA	0.45	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
PFEESA	1.82	U	1.83	U	1.85	U	1.84	U	1.85	U	1.84	U	1.85	U	1.83	U	1.82	U	1.84	U	1.85	U
PFHpS	0.91	U	0.92	U	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U	0.92	U
PFHpA	3.03	J	0.92	U	0.93	U	0.92	U	0.63	J	0.96	J	1.38	J	1.31	J	1.80	J	2.03	J	2.28	J
4:2FTS	0.91	U	0.92	U	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U	0.92	U
PFHxS	2.23	J	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
PFHxA	9.26		4.57	J	6.13		6.43		7.03		7.69		7.65		7.71		8.17		8.57		9.35	
PFMPA	0.36	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.36	U	0.37	U	0.37	U
PFMBA	1.82	U	1.83	U	1.85	U	1.84	U	1.85	U	1.84	U	1.85	U	1.83	U	1.82	U	1.84	U	1.85	U
PFNA	0.48	J	0.92	U	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U	0.92	U
6:2FTS	0.88	J	0.92	U	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U	0.92	U
PFOS	2.09	J	0.44	J	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.91	U	0.92	U	0.92	U
PFOA	5.41		0.92	U	0.93	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.47	J	0.71	J	1.27	J
PFPeA	6.93		4.86		6.31		5.95		6.45		7.09		6.30		6.65		6.64		6.73		6.76	
PFPeS	0.74	J	1.83	U	1.85	U	1.84	U	1.85	U	1.84	U	1.85	U	1.83	U	1.82	U	1.84	U	1.85	U
PFUnA	2.73	U	2.75	U	2.78	U	2.76	U	2.77	U	2.76	U	2.77	U	2.75	U	2.74	U	2.76	U	2.77	U
Surrogate Recoveries (%)																						
13C4-PFBA			96		100		131		110		96		96		96		89		112		111	
13C5-PFPeA			151		147		210	N	172		150		155		149		144		184		174	
13C3-PFBS			90		94		136		114		92		91		93		86		104		98	
13C2-4:2FTS			156		155		226	N	185		164		162		162		146		189		178	
13C5-PFHxA			96		92		129		97		88		80		80		78		106		99	
13C3-HFPO-DA			73		76		112		89		76		74		74		71		93		90	
13C4-PFHpA			89		91		127		96		86		81		84		79		105		100	
13C3-PFHxS			87		96		131		87		69		72		70		77		78		70	
13C2-6:2FTS			123		126		182		135		120		115		114		110		122		108	
13C8-PFOA			96		92		127		94		83		81		81		81		97		90	
13C9-PFNA			95		96		122		76		70		66		67		76		82		73	
13C8-PFOS			91		97		125		51		41	N	42	N	41	N	75		44	N	43	N
13C2-8:2FTS			95		100		139		68		61		57		56		81		64		54	
13C6-PFDA			94		95		123		61		55		52		50		75		61		56	
13C7-PFUnA			95		89		114		50		48	N	41	N	42	N	75		53		50	
13C2-PFDoA			86		80		97		45	N	43	N	37	N	39	N	71		47	N	48	N
pH	-		7.672		-		-		-		-		7.658		-		-		-		7.656	
TOC (mg/L)	-		2.21		-		-		1.88		-		2.11		-		-		1.91		1.90	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-15. CCWA Round 2A (Smith) Calgon Filtrasorb 400-1 Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 10		Day 10 Replicate		Day 13		Day 17		Day 20	
			Bed Volumes (Day 1)	7,426	Bed Volumes (Day 2)	13,856	Bed Volumes (Day 3)	20,577	Bed Volumes (Day 5)	33,055	Bed Volumes (Day 7)	44,914	Bed Volumes (Day 10)	64,799	Bed Volumes (Day 10 DUP)	64,799	Bed Volumes (Day 13)	82,810	Bed Volumes (Day 17)	108,701	Bed Volumes (Day 20)	129,445
			R2_F400-1 (Day 1)		R2_F400-1 (Day 2)		R2_F400-1 (Day 3)		R2_F400-1 (Day 5)		R2_F400-1 (Day 7)		R2_F400-1 (Day 10)		R2_F400-1 (Day 10)		R2_F400-1 (Day 13)		R2_F400-1 (Day 17)		R2_F400-1 (Day 20)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.93	U	0.93	U	0.88	U	0.92	U	0.92	U	0.90	U
9Cl-PF3ONS	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.93	U	0.93	U	0.88	U	0.92	U	0.92	U	0.90	U
Adona	1.37	U	1.37	U	1.36	U	1.37	U	1.36	U	1.39	U	1.39	U	1.33	U	1.37	U	1.38	U	1.34	U
HFPO-DA	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.93	U	0.93	U	0.88	U	0.92	U	0.92	U	0.90	U
NFDHA	1.37	U	1.37	U	1.36	U	1.37	U	1.36	U	1.39	U	1.39	U	1.33	U	1.37	U	1.38	U	1.34	U
PFBA	5.76		5.64		6.20		5.29		5.29		5.38		4.98		5.08		5.37		5.97		5.64	
PFBS	4.60		0.46	U	1.14	J	2.97	J	5.04		5.26		4.82		4.90		5.29		4.87		4.97	
8:2FTS	0.46	U	0.46	U	0.45	U	0.46	U	0.45	U	0.46	U	0.46	U	0.44	U	0.46	U	0.46	U	0.45	U
PFDA	0.33	U	0.46	U	0.45	U	0.46	U	0.45	U	0.46	U	0.46	U	0.44	U	0.46	U	0.46	U	0.19	J
PFDoA	0.46	U	0.46	U	0.45	U	0.46	U	0.45	U	0.46	U	0.46	U	0.44	U	0.46	U	0.46	U	0.45	U
PFEESA	1.82	U	1.82	U	1.81	U	1.82	U	1.82	U	1.86	U	1.85	U	1.77	U	1.83	U	1.85	U	1.79	U
PFHpS	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.93	U	0.93	U	0.88	U	0.92	U	0.92	U	0.90	U
PFHpA	3.28	J	0.91	U	0.91	U	1.45	J	2.78	J	3.48	J	3.21	J	3.17	J	3.64	J	3.66	J	3.62	J
4:2FTS	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.93	U	0.93	U	0.88	U	0.92	U	0.92	U	0.90	U
PFHxS	5.00		0.46	U	0.45	U	0.67	J	1.69	J	2.92	J	3.54	J	3.58	J	4.31	J	4.63		4.93	
PFHxA	9.09		0.39	J	4.32	J	10.08		13.31		14.20		11.47		11.54		11.50		11.26		10.83	
PFMPA	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.37	U	0.37	U	0.35	U	0.37	U	0.37	U	0.36	U
PFMBA	1.82	U	1.82	U	1.81	U	1.82	U	1.82	U	1.86	U	1.85	U	1.77	U	1.83	U	1.85	U	1.79	U
PFNA	1.07	J	0.91	U	0.91	U	0.91	U	0.91	U	0.93	U	0.49	J	0.50	J	0.65	J	0.85	J	0.83	J
6:2FTS	7.21		0.91	U	0.39	J	1.00	J	2.32	J	3.87	J	4.95		5.18		6.01		6.59		7.09	
PFOS	9.90		0.91	U	0.40	J	0.80	J	2.00	J	3.15	J	4.15	J	4.26	J	5.70		5.68		6.17	
PFOA	7.49		0.91	U	0.61	J	1.85	J	4.14	J	5.12		5.59		5.93		7.15		6.63		6.31	
PFPeA	8.40		2.07	J	10.48		11.50		10.19		9.82		8.08		7.86		8.89		8.32		8.23	
PFPeS	1.06	J	1.82	U	1.81	U	1.82	U	0.68	J	0.92	J	0.95	J	0.88	J	1.01	J	1.10	J	1.07	J
PFUnA	2.74	U	2.74	U	2.72	U	2.74	U	2.73	U	2.79	U	2.78	U	2.65	U	2.75	U	2.77	U	2.69	U
Surrogate Recoveries (%)																						
13C4-PFBA			90		101		108		103		98		93		98		88		112		111	
13C5-PFPeA			100		120		138		142		140		138		151		126		170		170	
13C3-PFBS			106		113		130		115		106		102		100		93		114		107	
13C2-4:2FTS			106		107		130		130		137		137		145		136		163		164	
13C5-PFHxA			95		106		110		106		98		75		85		80		108		112	
13C3-HFPO-DA			80		98		97		92		84		70		83		71		96		100	
13C4-PFHpA			90		97		105		100		95		80		92		80		104		113	
13C3-PFHxS			94		99		105		104		96		92		94		83		105		100	
13C2-6:2FTS			99		103		118		107		109		110		109		102		118		118	
13C8-PFOA			93		98		108		99		95		86		89		81		102		113	
13C9-PFNA			87		94		99		94		95		77		87		80		109		118	
13C8-PFOS			93		99		102		96		93		86		85		83		104		100	
13C2-8:2FTS			95		96		101		92		96		88		87		86		107		102	
13C6-PFDA			93		94		101		95		99		80		85		81		107		113	
13C7-PFUnA			93		95		95		90		94		74		78		79		95		106	
13C2-PFDoA			83		83		85		74		80		64		66		75		80		91	
pH	-		7.464		-		-				-		7.517		-		-		-		7.565	
TOC (mg/L)	-		0.919		-		-		1.26		-		1.63		-		-		1.42		1.46	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-16. CCWA Round 2A (Smith) CalRes 2301 Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 7 Replicate		Day 9		Day 11		Day 13		Day 15	
			Bed Volumes (Day 1)	21,546	Bed Volumes (Day 2)	42,657	Bed Volumes (Day 3)	65,479	Bed Volumes (Day 5)	105,431	Bed Volumes (Day 7)	151,276	Bed Volumes (Day 7 DUP)	151,276	Bed Volumes (Day 9)	192,744	Bed Volumes (Day 11)	234,893	Bed Volumes (Day 13)	275,879	Bed Volumes (Day 15)	324,082
			R2_CalRes (Day 1)		R2_CalRes (Day 2)		R2_CalRes (Day 3)		R2_CalRes (Day 5)		R2_CalRes (Day 7)		R2_CalRes (Day 7)		R2_CalRes (Day 9)		R2_CalRes (Day 11)		R2_CalRes (Day 13)		R2_CalRes (Day 15)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.92	U	0.92	U	0.93	U	0.95	U	0.93	U	0.93	U	0.93	U	0.89	U	0.90	U	0.92	U
9Cl-PF3ONS	0.91	U	0.92	U	0.92	U	0.93	U	0.95	U	0.93	U	0.93	U	0.93	U	0.89	U	0.90	U	0.92	U
Adona	1.37	U	1.38	U	1.38	U	1.40	U	1.43	U	1.39	U	1.39	U	1.39	U	1.33	U	1.35	U	1.38	U
HFPO-DA	0.91	U	0.92	U	0.92	U	0.93	U	0.95	U	0.93	U	0.93	U	0.93	U	0.89	U	0.90	U	0.92	U
NFDHA	1.37	U	1.38	U	1.38	U	1.40	U	1.43	U	1.39	U	1.39	U	1.39	U	1.33	U	1.35	U	1.38	U
PFBA	5.76		2.91	J	5.71		6.07		5.95		6.17		5.99		5.55		5.76		5.78		5.73	
PFBS	4.60		0.46	U	0.46	U	0.47	U	0.48	U	0.24	J	0.30	J	0.51	J	0.88	J	1.12	J	1.28	J
8:2FTS	0.46	U	0.46	U	0.46	U	0.47	U	0.48	U	0.46	U	0.46	U	0.46	U	0.44	U	0.45	U	0.46	U
PFDA	0.33	U	0.46	U	0.46	U	0.47	U	0.48	U	0.46	U	0.46	U	0.46	U	0.44	U	0.45	U	0.46	U
PFDoA	0.46	U	0.46	U	0.46	U	0.47	U	0.48	U	0.46	U	0.46	U	0.46	U	0.44	U	0.45	U	0.46	U
PFEESA	1.82	U	1.84	U	1.85	U	1.87	U	1.90	U	1.86	U	1.85	U	1.86	U	1.78	U	1.80	U	1.85	U
PFHpS	0.91	U	0.92	U	0.92	U	0.93	U	0.95	U	0.93	U	0.93	U	0.93	U	0.89	U	0.90	U	0.92	U
PFHpA	3.28	J	0.92	U	0.92	U	0.93	U	1.14	J	1.87	J	2.06	J	2.38	J	2.79	J	2.91	J	3.21	J
4:2FTS	0.91	U	0.92	U	0.92	U	0.93	U	0.95	U	0.93	U	0.93	U	0.93	U	0.89	U	0.90	U	0.92	U
PFHxS	5.00		0.46	U	0.46	U	0.47	U	0.48	U	0.46	U	0.46	U	0.46	U	0.34	J	0.44	J	0.40	J
PFHxA	9.09		0.79	J	2.31	J	4.24	J	8.03		10.15		9.65		11.04		10.89		10.20		10.03	
PFMPA	0.36	U	0.37	U	0.37	U	0.37	U	0.38	U	0.37	U	0.37	U	0.37	U	0.36	U	0.36	U	0.37	U
PFMBA	1.82	U	1.84	U	1.85	U	1.87	U	1.90	U	1.86	U	1.85	U	1.86	U	1.78	U	1.80	U	1.85	U
PFNA	1.07	J	0.92	U	0.92	U	0.93	U	0.95	U	0.93	U	0.93	U	0.93	U	0.89	U	0.90	U	0.92	U
6:2FTS	7.21		0.92	U	0.92	J	1.40	J	3.08	J	4.80		5.08		5.48		6.28		6.67		6.92	
PFOS	9.90		0.92	U	0.92	U	0.93	U	0.26	J	0.28	J	0.31	J	0.37	J	0.51	J	0.70	J	0.55	J
PFOA	7.49		0.92	U	0.92	U	0.61	J	1.70	J	2.57	J	2.65	J	3.23	J	4.12	J	4.48	J	4.72	
PFPeA	8.40		1.28	J	4.63		7.80		9.98		10.48		9.85		9.81		9.49		8.35		8.79	
PFPeS	1.06	J	1.84	U	1.85	U	1.87	U	1.90	U	1.86	U	1.85	U	1.86	U	1.78	U	1.80	U	1.85	U
PFUnA	2.74	U	2.76	U	2.77	U	2.80	U	2.85	U	2.79	U	2.78	U	2.79	U	2.67	U	2.70	U	2.77	U
Surrogate Recoveries (%)																						
13C4-PFBA			100		98		105		109		98		94		97		82		90		114	
13C5-PFPeA			144		137		144		150		138		134		133		113		129		162	
13C3-PFBS			91		97		106		110		95		95		99		82		88		103	
13C2-4:2FTS			139		149		165		167		160		149		158		126		141		179	
13C5-PFHxA			95		95		104		100		90		91		95		73		77		112	
13C3-HFPO-DA			77		85		92		83		83		74		79		67		69		99	
13C4-PFHpA			96		94		100		102		92		85		91		77		80		109	
13C3-PFHxS			86		90		101		102		93		86		88		76		81		96	
13C2-6:2FTS			111		116		125		134		131		124		124		101		109		133	
13C8-PFOA			98		93		98		103		93		91		92		77		81		113	
13C9-PFNA			102		92		96		97		91		91		92		74		77		116	
13C8-PFOS			91		93		95		99		92		92		90		75		76		99	
13C2-8:2FTS			96		98		98		109		107		106		96		84		82		108	
13C6-PFDA			103		93		97		99		97		95		96		77		79		114	
13C7-PFUnA			102		93		89		89		88		94		90		77		76		102	
13C2-PFDoA			93		82		76		78		76		82		77		69		70		83	
pH	-		7.405		-		-		-		7.379		-		-		-		-		7.497	
TOC (mg/L)	-		1.23		-		1.44		-		1.49				-		1.59				1.66	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-17. CCWA Round 2A (Smith) Evoqua PSR2+Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 7 Replicate		Day 9		Day 11		Day 13		Day 15	
			Bed Volumes (Day 1)	25,644	Bed Volumes (Day 2)	47,227	Bed Volumes (Day 3)	72,897	Bed Volumes (Day 5)	120,102	Bed Volumes (Day 7)	170,415	Bed Volumes (Day 7 DUP)	170,415	Bed Volumes (Day 9)	216,795	Bed Volumes (Day 11)	267,007	Bed Volumes (Day 13)	312,806	Bed Volumes (Day 15)	368,825
			R2_PSR2+ (Day 1)		R2_PSR2+ (Day 2)		R2_PSR2+ (Day 3)		R2_PSR2+ (Day 5)		R2_PSR2+ (Day 7)		R2_PSR2+ (Day 7)		R2_PSR2+ (Day 9)		R2_PSR2+ (Day 11)		R2_PSR2+ (Day 13)		R2_PSR2+ (Day 15)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.91	U	0.93	U	0.92	U	0.90	U	0.92	U	0.85	U	0.93	U	0.83	U	0.92	U	0.92	U
9Cl-PF3ONS	0.91	U	0.91	U	0.93	U	0.92	U	0.90	U	0.92	U	0.85	U	0.93	U	0.83	U	0.92	U	0.92	U
Adona	1.37	U	1.37	U	1.39	U	1.38	U	1.35	U	1.38	U	1.28	U	1.39	U	1.24	U	1.38	U	1.38	U
HFPO-DA	0.91	U	0.91	U	0.93	U	0.92	U	0.90	U	0.92	U	0.85	U	0.93	U	0.83	U	0.92	U	0.92	U
NFDHA	1.37	U	1.37	U	1.39	U	1.38	U	1.35	U	1.38	U	1.28	U	1.39	U	1.24	U	1.38	U	1.38	U
PFBA	5.76		3.09	J	4.80		5.25		6.00		5.89		5.86		5.65		5.61		5.44		5.59	
PFBS	4.60		0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.43	U	0.46	U	0.21	J	0.26	J	0.29	J
8:2FTS	0.46	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.43	U	0.46	U	0.41	U	0.46	U	0.46	U
PFDA	0.33	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.43	U	0.46	U	0.41	U	0.46	U	0.46	U
PFDoA	0.46	U	0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.43	U	0.46	U	0.41	U	0.46	U	0.46	U
PFEESA	1.82	U	1.82	U	1.85	U	1.85	U	1.80	U	1.84	U	1.71	U	1.86	U	1.65	U	1.84	U	1.85	U
PFHpS	0.91	U	0.91	U	0.93	U	0.92	U	0.90	U	0.92	U	0.85	U	0.93	U	0.83	U	0.92	U	0.92	U
PFHpA	3.28	J	0.91	U	0.93	U	0.92	U	0.86	J	1.40	J	1.44	J	1.82	J	2.38	J	2.36	J	2.53	J
4:2FTS	0.91	U	0.91	U	0.93	U	0.92	U	0.90	U	0.92	U	0.85	U	0.93	U	0.83	U	0.92	U	0.92	U
PFHxS	5.00		0.46	U	0.46	U	0.46	U	0.45	U	0.46	U	0.43	U	0.46	U	0.41	U	0.46	U	0.46	U
PFHxA	9.09		1.39	J	2.64	J	4.25	J	6.92		9.09		9.45		10.15		10.02		10.23		10.50	
PFMPA	0.36	U	0.36	U	0.37	U	0.37	U	0.36	U	0.37	U	0.34	U	0.37	U	0.33	U	0.37	U	0.37	U
PFMBA	1.82	U	1.82	U	1.85	U	1.85	U	1.80	U	1.84	U	1.71	U	1.86	U	1.65	U	1.84	U	1.85	U
PFNA	1.07	J	0.91	U	0.93	U	0.92	U	0.90	U	0.92	U	0.85	U	0.93	U	0.83	U	0.92	U	0.92	U
6:2FTS	7.21		0.49	J	1.07	J	1.77	J	2.66	J	4.06	J	4.20	J	4.70		6.29		5.84		6.17	
PFOS	9.90		0.91	U	0.93	U	0.92	U	0.90	U	0.92	U	0.85	U	0.93	U	0.25	J	0.92	U	0.92	U
PFOA	7.49		0.91	U	0.93	U	0.92	U	1.05	J	1.74	J	1.83	J	2.20	J	3.26	J	3.55	J	3.92	J
PFPeA	8.40		1.54	J	4.11	J	6.47		8.86		9.83		10.15		9.98		9.40		8.70		8.40	
PFPeS	1.06	J	1.82	U	1.85	U	1.85	U	1.80	U	1.84	U	1.71	U	1.86	U	1.65	U	1.84	U	1.85	U
PFUnA	2.74	U	2.74	U	2.78	U	2.77	U	2.70	U	2.76	U	2.56	U	2.79	U	2.48	U	2.76	U	2.77	U
Surrogate Recoveries (%)																						
13C4-PFBA			96		102		108		112		100		101		96		88		89		116	
13C5-PFPeA			138		138		153		155		149		141		131		125		141		167	
13C3-PFBS			90		101		108		113		99		86		97		79		94		104	
13C2-4:2FTS			146		156		175		176		167		150		149		138		155		181	
13C5-PFHxA			95		97		100		105		96		93		91		76		81		112	
13C3-HFPO-DA			74		83		88		90		82		76		75		65		75		99	
13C4-PFHpA			92		92		103		102		95		92		90		76		84		114	
13C3-PFHxS			87		91		104		101		97		87		85		73		82		99	
13C2-6:2FTS			122		128		140		144		135		130		113		106		122		132	
13C8-PFOA			94		94		101		102		96		94		90		80		84		110	
13C9-PFNA			95		93		100		102		97		102		87		76		82		118	
13C8-PFOS			92		93		103		104		95		93		84		74		83		102	
13C2-8:2FTS			98		101		118		111		107		105		91		83		92		113	
13C6-PFDA			99		93		103		105		101		102		85		78		82		117	
13C7-PFUnA			97		86		96		96		92		99		77		75		80		109	
13C2-PFDoA			86		78		87		81		79		87		64		68		79		85	
pH	-		7.376		-		-		-		7.277		-		-		-		-		7.412	
TOC (mg/L)	-		2.10		-		1.86		-		1.53		-				1.63		-		1.51	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Table A-18. CCWA Round 3A (Hicks) Calgon Filtrasorb 400-1 Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 10		Day 10 Replicate		Day 13		Day 17		Day 20	
			Bed Volumes (Day 1)	7,796	Bed Volumes (Day 2)	14,505	Bed Volumes (Day 3)	20,319	Bed Volumes (Day 5)	31,802	Bed Volumes (Day 7)	45,491	Bed Volumes (Day 10)	64,602	Bed Volumes (Day 10 DUP)	64,602	Bed Volumes (Day 13)	85,129	Bed Volumes (Day 17)	111,415	Bed Volumes (Day 20)	131,347
			R3_F400-1 (Day 1)		R3_F400-1 (Day 2)		R3_F400-1 (Day 3)		R3_F400-1 (Day 5)		R3_F400-1 (Day 7)		R3_F400-1 (Day 10)		R3_F400-1 (Day 10)		R3_F400-1 (Day 13)		R3_F400-1 (Day 17)		R3_F400-1 (Day 20)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
9Cl-PF3ONS	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
Adona	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
HFPO-DA	0.45	J	0.44	J	0.63	J	0.61	J	0.55	J	0.48	J	0.93	U	0.40	J	0.43	J	0.42	J	0.41	J
NFDHA	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
PFBA	8.95		8.76		8.16		9.11		10.59		7.45		8.33		8.48		8.95		9.17		9.04	
PFBS	6.62		2.87		7.13		7.98		7.74		7.31		6.09		6.06		6.25		6.72		6.54	
8:2FTS	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
PFDA	0.85	J	0.92	U	0.94	U	0.91	U	0.34	J	0.43	J	0.50	J	0.51	J	0.63	J	0.74	J	0.79	J
PFDoA	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
PFEESA	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
PFHpS	0.44	J	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.39	J	0.41	J	0.94	U	0.43	J	0.44	J
PFHpA	6.63		1.29	J	4.02		5.96		6.93		6.64		6.19		6.71		7.48		7.25		7.25	
4:2FTS	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
PFHxS	5.17		0.65	J	1.60	J	2.36		3.63		4.63		4.27		4.29		5.45		5.42		5.20	
PFHxA	20.54		11.21		23.97		26.24		24.46		24.27		20.05		19.39		23.86		23.19		22.27	
PFMPA	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
PFMBA	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
PFNA	1.88	J	0.92	U	0.37	J	0.62	J	1.04	J	1.82	J	1.39	J	1.49	J	1.75	J	1.89	J	1.84	J
6:2FTS	2.47		0.44	J	4.17		1.70	J	2.02	J	1.85	J	2.26	J	2.25	J	2.94		3.06		2.87	
PFOS	10.33		0.55	J	1.36	J	2.15	J	4.00		4.82		5.77		6.03		7.78		8.59		9.16	
PFOA	9.00		0.92	J	2.96		5.71		7.78		9.34		7.66		7.72		9.52		9.03		8.95	
PFPeA	12.80		16.97		16.00		15.10		13.08		13.82		12.43		12.56		14.13		14.11		13.86	
PFPeS	1.30	J	0.29	J	0.70	J	1.01	J	1.20	J	1.23	J	1.22	J	1.23	J	1.34	J	1.45	J	1.32	J
PFUnA	0.91	U	0.92	U	0.94	U	0.91	U	0.93	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.95	U
Surrogate Recoveries (%)																						
13C4-PFBA			93		95		97		98		92		106		102		84		88		93	
13C5-PFPeA			99		122		130		145		158		158		154		138		141		146	
13C3-PFBS			96		94		101		90		83		104		108		85		85		89	
13C2-4:2FTS			98		109		124		138		167		200		205	N	200		175		177	
13C5-PFHxA			84		88		87		86		75		91		100		72		80		80	
13C3-HFPO-DA			72		73		80		81		69		92		97		75		79		75	
13C4-PFHpA			87		87		87		85		81		96		98		77		81		79	
13C3-PFHxS			91		89		99		92		88		105		106		84		83		89	
13C2-6:2FTS			86		85		90		93		116		122		122		128		112		118	
13C8-PFOA			81		85		87		86		79		99		104		80		87		85	
13C9-PFNA			81		81		85		82		81		96		96		77		84		84	
13C8-PFOS			79		81		88		80		83		100		93		84		85		87	
13C2-8:2FTS			72		74		77		70		90		94		88		89		85		88	
13C6-PFDA			76		80		82		79		79		90		90		79		83		81	
13C7-PFUnA			67		77		80		79		70		84		78		79		82		79	
13C2-PFDoA			45	N	55		58		58		61		61		57		71		66		65	
pH	-		7.788		-		-		-		-		7.707		-		-		-		7.672	
TOC (mg/L)	-		1.61		-		-		2.31		-		2.55		-		-		2.61		2.79	

Table A-19. CCWA Round 3A (Hicks) CalRes 2301 Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 7 Replicate		Day 9		Day 11		Day 13		Day 15	
			Bed Volumes (Day 1)	25,875	Bed Volumes (Day 2)	49,172	Bed Volumes (Day 3)	70,644	Bed Volumes (Day 5)	110,467	Bed Volumes (Day 7)	156,240	Bed Volumes (Day 7 DUP)	156,240	Bed Volumes (Day 9)	200,860	Bed Volumes (Day 11)	243,550	Bed Volumes (Day 13)	286,108	Bed Volumes (Day 15)	332,105
			R3_CalRes (Day 1)		R3_CalRes (Day 2)		R3_CalRes (Day 3)		R3_CalRes (Day 5)		R3_CalRes (Day 7)		R3_CalRes (Day 7)		R3_CalRes (Day 9)		C R3_alRes (Day 11)		R3_CalRes (Day 13)		R3_CalRes (Day 15)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
9Cl-PF3ONS	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
Adona	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
HFPO-DA	0.45	J	0.93	U	0.40	J	0.52	J	0.58	J	0.46	J	0.46	J	0.92	J	0.41	J	0.44	J	0.45	J
NFDHA	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
PFBA	8.95		8.53		9.77		9.73		9.25		7.58		8.89		22.45		8.30		8.16		8.61	
PFBS	6.62		0.93	U	0.93	U	0.93	U	0.88	J	1.50	J	1.54	J	12.23		2.79		3.30		4.12	
8:2FTS	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.87	J	0.93	U	0.91	U	0.93	U
PFDA	0.85	J	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.57	J	0.34	J	0.38	J	0.52	J
PFDoA	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
PFEESA	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
PFHpS	0.44	J	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
PFHpA	6.63		0.36	J	1.67	J	3.24		5.18		6.30		6.50		17.87		6.54		6.91		7.25	
4:2FTS	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
PFHxS	5.17		0.93	U	0.32	J	0.29	J	0.41	J	0.50	J	0.40	J	2.46		0.81	J	1.13	J	1.43	J
PFHxA	20.54		3.10		12.38		19.85		24.43		22.54		24.20		51.94		21.45		21.08		22.92	
PFMPA	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
PFMBA	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
PFNA	1.88	J	0.93	U	0.93	U	0.93	U	0.47	J	0.98	J	0.83	J	2.21	J	1.08	J	1.38	J	1.49	J
6:2FTS	2.47		0.93	U	0.78	J	1.83	J	2.51		2.44		2.54		5.82		2.69		2.80		2.71	
PFOS	10.33		0.24	J	0.27	J	0.29	J	0.33	J	0.36	J	0.44	J	0.49	J	0.71	J	1.06	J	1.26	J
PFOA	9.00		0.93	U	0.80	J	2.22	J	4.63		6.50		5.52		23.93		6.54		7.55		7.91	
PFPeA	12.80		6.35		14.66		15.67		13.54		13.46		14.75		34.37		12.58		13.52		14.34	
PFPeS	1.30	J	0.75	U	0.74	U	0.75	U	0.73	U	0.33	J	0.38	J	1.77	J	0.50	J	0.62	J	0.58	J
PFUnA	0.91	U	0.93	U	0.93	U	0.93	U	0.91	U	0.93	U	0.91	U	0.93	U	0.93	U	0.91	U	0.93	U
Surrogate Recoveries (%)																						
13C4-PFBA			102		100		100		101		88		89		93		103		87		87	
13C5-PFPeA			162		161		169		175		169		115		206	N	157		143		135	
13C3-PFBS			90		85		89		87		78		86		69		92		79		78	
13C2-4:2FTS			175		183		186		180		179		232	N	266	N	215	N	222	N	221	N
13C5-PFHxA			84		83		84		80		69		74		63		85		71		68	
13C3-HFPO-DA			78		76		86		80		70		80		85		87		79		77	
13C4-PFHpA			90		85		88		86		71		77		71		91		78		74	
13C3-PFHxS			91		88		92		90		78		83		88		98		83		81	
13C2-6:2FTS			114		120		126		121		134		142		208	N	139		140		138	
13C8-PFOA			90		88		92		87		75		84		80		98		81		82	
13C9-PFNA			86		86		90		88		74		82		85		96		83		79	
13C8-PFOS			80		82		85		86		76		84		86		97		84		85	
13C2-8:2FTS			77		86		92		90		90		109		138		100		105		103	
13C6-PFDA			81		86		89		87		71		85		88		92		86		81	
13C7-PFUnA			73		85		84		82		73		87		92		83		89		85	
13C2-PFDoA			53		69		68		67		68		80		92		62		77		78	
pH	-		7.816		-		-		-		7.764		-		-		-		-		7.723	
TOC (mg/L)	-		2.06		-		8.46				2.64				-		2.65				2.86	

Table A-20. CCWA Round 3A (Hicks) Evoqua PSR2+ Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 7 Replicate		Day 9		Day 11		Day 13		Day 15	
			Bed Volumes (Day 1)	25,032	Bed Volumes (Day 2)	48,329	Bed Volumes (Day 3)	70,028	Bed Volumes (Day 5)	109,369	Bed Volumes (Day 7)	157,234	Bed Volumes (Day 7 DUP)	157,234	Bed Volumes (Day 9)	200,539	Bed Volumes (Day 11)	246,608	Bed Volumes (Day 13)	289,644	Bed Volumes (Day 15)	336,460
			PSR2+ (Day 1)		PSR2+ (Day 2)		PSR2+ (Day 3)		PSR2+ (Day 5)		PSR2+ (Day 7)		PSR2+ (Day 7 DUP)		PSR2+ (Day 9)		PSR2+ (Day 11)		PSR2+ (Day 13)		PSR2+ (Day 15)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
9Cl-PF3ONS	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
Adona	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
HFPO-DA	0.45	J	0.91	U	0.93	U	0.45	J	0.48	J	0.39	J	0.43	J	0.41	J	0.41	J	0.48	J	0.92	U
NFDHA	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
PFBA	8.95		7.79		8.77		9.81		8.77		8.28		8.59		8.15		7.60		9.75		9.10	
PFBS	6.62		0.91	U	0.93	U	0.93	U	0.93	U	0.67	J	0.51	J	0.79	J	1.10	J	1.63	J	1.78	J
8:2FTS	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
PFDA	0.85	J	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.35	J	0.34	J
PFDoA	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
PFEESA	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
PFHpS	0.44	J	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
PFHpA	6.63		0.67	J	1.46	J	2.74		3.67		4.73		4.78		5.30		5.40		6.81		6.39	
4:2FTS	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
PFHxS	5.17		0.27	J	0.93	U	0.27	J	0.32	J	0.94	U	0.93	U	0.93	U	0.27	J	0.48	J	0.44	J
PFHxA	20.54		4.96		9.89		14.91		18.34		20.01		20.70		22.30		20.27		25.50		22.89	
PFMPA	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
PFMBA	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
PFNA	1.88	J	0.91	U	0.93	U	0.93	U	0.40	J	0.59	J	0.58	J	0.74	J	0.79	J	1.12	J	1.07	J
6:2FTS	2.47		10.46		0.83	J	1.64	J	2.09	J	2.28	J	2.18	J	2.26	J	2.13	J	2.88		2.48	
PFOS	10.33		0.32	J	0.27	J	0.27	J	0.31	J	0.31	J	0.35	J	0.47	J	0.44	J	0.55	J	0.54	J
PFOA	9.00		0.44	J	1.04	J	2.29	J	3.60		3.95		4.16		4.97		5.13		6.69		6.49	
PFPeA	12.80		6.64		10.63		12.79		13.11		14.42		14.86		14.44		13.02		15.47		14.73	
PFPeS	1.30	J	0.73	U	0.74	U	0.74	U	0.74	U	0.75	U	0.74	U	0.74	U	0.39	J	0.24	J	0.36	J
PFUnA	0.91	U	0.91	U	0.93	U	0.93	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U	0.90	U	0.92	U
Surrogate Recoveries (%)																						
13C4-PFBA			100		102		94		104		91		87		93		104		80		87	
13C5-PFPeA			162		168		157		170		142		131		139		163		131		139	
13C3-PFBS			91		87		87		91		83		81		84		98		74		79	
13C2-4:2FTS			189		186		170		194		236	N	231	N	229	N	237	N	206	N	226	N
13C5-PFHxA			82		84		79		87		77		74		74		89		63		74	
13C3-HFPO-DA			77		78		77		86		84		77		81		87		72		85	
13C4-PFHpA			85		88		80		96		80		77		81		91		68		78	
13C3-PFHxS			93		92		87		93		84		83		92		98		77		84	
13C2-6:2FTS			122		128		123		128		137		134		132		145		133		141	
13C8-PFOA			83		86		83		94		86		80		82		97		72		84	
13C9-PFNA			84		89		86		96		88		81		83		97		74		85	
13C8-PFOS			83		82		86		90		87		82		91		97		80		85	
13C2-8:2FTS			90		88		92		95		111		109		106		111		97		103	
13C6-PFDA			82		84		84		94		88		81		88		96		77		88	
13C7-PFUnA			71		72		78		89		85		77		88		86		79		91	
13C2-PFDoA			48	N	46	N	54		72		75		66		83		66		70		80	
pH	-		7.866		-		-		-		7.811		-		-		-		-		7.768	
TOC (mg/L)	-		2.32		-		2.68				3.29				-		2.68				2.76	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported.

Table A-21. CCWA Round 3B (Hicks RO) Calgon Filtrasorb 400-1 Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 10		Day 10 Replicate		Day 13		Day 17		Day 20	
			Bed Volumes (Day 1)	8,019	Bed Volumes (Day 2)	15,116	Bed Volumes (Day 3)	21,445	Bed Volumes (Day 5)	33,395	Bed Volumes (Day 7)	46,541	Bed Volumes (Day 10)	65,864	Bed Volumes (Day 10 DUP)	65,864	Bed Volumes (Day 13)	85,170	Bed Volumes (Day 17)	110,899	Bed Volumes (Day 20)	129,850
			RO_F400-1 (Day 1)		RO_F400-1 (Day 2)		RO_F400-1 (Day 3)		RO_F400-1 (Day 5)		RO_F400-1 (Day 7)		RO_F400-1 (Day 10)		RO_F400-1 (Day 10)		RO_F400-1 (Day 13)		RO_F400-1 (Day 17)		RO_F400-1 (Day 20)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.92	U	0.92	U	0.92	U	0.93	U	0.93	U	0.91	U	0.90	U	0.94	U	0.91	U	0.92	U	0.91	U
9Cl-PF3ONS	0.92	U	0.92	U	0.92	U	0.93	U	0.93	U	0.91	U	0.90	U	0.94	U	0.91	U	0.92	U	0.91	U
Adona	0.92	U	0.92	U	0.92	U	0.93	U	0.93	U	0.91	U	0.90	U	0.94	U	0.91	U	0.92	U	0.91	U
HFPO-DA	2.15	J	2.41		2.18	J	2.33		2.11	J	2.00	J	1.93	J	2.05	J	2.25	J	2.19	J	2.10	J
NFDHA	0.92	U	0.92	U	0.92	U	0.93	U	0.93	U	0.91	U	0.90	U	0.94	U	0.91	U	0.92	U	0.91	U
PFBA	49.32		65.32		47.25		53.21		61.54		51.67		48.63		45.50		54.07		54.74		48.34	
PFBS	41.01		48.95		43.84		43.45		40.57		39.20		35.80		35.13		39.51		41.33		39.54	
8:2FTS	15.49		5.89		12.40		10.09		13.10		14.15		12.41		11.93		13.67		13.99		13.70	
PFDA	54.41		23.17		44.54		41.59		48.50		47.93		43.19		41.99		50.57		55.79		56.33	
PFDoA	8.41		0.92	U	0.55	J	0.93	U	1.14	J	3.30		6.13		6.32		9.29		13.00		14.40	
PFEESA	0.92	U	0.92	U	0.92	U	0.93	U	0.93	U	0.91	U	0.90	U	0.94	U	0.91	U	0.92	U	0.91	U
PFHpS	1.90	J	0.89	J	1.90	J	1.52	J	1.75	J	1.75	J	1.65	J	1.70	J	1.76	J	1.94	J	1.88	J
PFHpA	45.86		44.81		48.04		48.39		45.50		45.49		41.23		41.31		47.52		45.95		46.94	
4:2FTS	0.92	U	0.92	U	0.92	U	0.93	U	0.93	U	0.91	U	0.90	U	0.94	U	0.91	U	0.92	U	0.91	U
PFHxS	31.43		20.99		30.36		27.54		29.07		31.88		29.24		27.79		32.51		32.57		30.81	
PFHxA	120.85		136.17		123.50		125.96		115.64		126.49		112.12		110.74		127.73		129.23		125.31	
PFMPA	0.92	U	0.92	U	0.92	U	0.93	U	0.93	U	0.91	U	0.90	U	0.94	U	0.91	U	0.92	U	0.91	U
PFMBA	0.92	U	0.92	U	0.92	U	0.93	U	0.93	U	0.91	U	0.90	U	0.94	U	0.91	U	0.92	U	0.91	U
PFNA	12.60		6.81		10.80		10.02		11.33		12.10		11.81		10.99		12.56		13.29		13.03	
6:2FTS	13.66		8.15		12.69		12.31		13.80		14.13		12.76		12.01		13.50		13.49		13.42	
PFOS	103.58		32.39		97.27		66.09		91.47		93.20		91.00		86.30		100.52		108.16		108.15	
PFOA	79.95		60.95		76.41		76.63		82.60		72.76		71.77		72.95		82.52		82.34		77.70	
PFPeA	80.03		81.54		75.56		76.85		72.49		82.95		72.99		71.84		84.74		87.75		82.25	
PFPeS	6.25		5.97		6.76		6.40		6.24		6.51		5.81		5.80		6.63		6.34		6.24	
PFUnA	15.07		1.95	J	10.23		5.64		16.58		18.92		13.96		13.54		14.85		19.67		18.05	
Surrogate Recoveries (%)																						
13C4-PFBA			97		96		94		94		82		93		96		76		85		81	
13C5-PFPeA			241	N	229	N	236	N	223	N	185		216	N	225	N	179		195		192	
13C3-PFBS			65		56		60		59		58		64		65		53		54		56	
13C2-4:2FTS			156		154		147		161		225	N	220	N	230	N	210	N	195		203	N
13C5-PFHxA			67		66		65		68		57		67		69		53		60		61	
13C3-HFPO-DA			68		69		68		71		84		89		89		78		79		80	
13C4-PFHpA			74		76		73		77		69		82		82		65		76		73	
13C3-PFHxS			79		73		76		77		81		87		90		75		77		79	
13C2-6:2FTS			172		196		183		198		218	N	242	N	249	N	230	N	238	N	229	N
13C8-PFOA			83		87		87		87		83		96		97		77		86		83	
13C9-PFNA			89		100		94		101		92		109		112		93		99		98	
13C8-PFOS			84		80		78		85		87		96		100		84		84		87	
13C2-8:2FTS			96		133		114		136		167		185		181		178		177		187	
13C6-PFDA			85		103		90		97		93		114		112		97		99		104	
13C7-PFUnA			74		97		81		94		86		104		104		101		94		102	
13C2-PFDoA			54		80		62		77		83		96		93		106		87		100	
pH	-		8.089		-		-		-		-		8.148		-		-		-		8.237	
TOC (mg/L)	-		7.61		-		-		7.96		-		8.06		-		-		9.63		9.72	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported.

Table A-22. CCWA Round 3B (Hicks RO) CalRes 2301 Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 7 Replicate		Day 9		Day 11		Day 13		Day 15	
			Bed Volumes (Day 1)	23,040	Bed Volumes (Day 2)	38,337	Bed Volumes (Day 3)	59,709	Bed Volumes (Day 5)	97,117	Bed Volumes (Day 7)	139,163	Bed Volumes (Day 7 DUP)	139,163	Bed Volumes (Day 9)	178,338	Bed Volumes (Day 11)	218,296	Bed Volumes (Day 13)	255,088	Bed Volumes (Day 15)	298,146
			RO_CalRes (Day 1)		RO_CalRes (Day 2)		RO_CalRes (Day 3)		RO_CalRes (Day 5)		RO_CalRes (Day 7)		RO_CalRes (Day 7)		RO_CalRes (Day 9)		RO_CalRes (Day 11)		RO_CalRes (Day 13)		RO_CalRes (Day 15)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.92	U	0.91	U	0.92	U	0.92	U	0.93	U	0.93	U	0.92	U	0.92	U	0.91	U	0.93	U	0.93	U
9Cl-PF3ONS	0.92	U	0.91	U	0.92	U	0.92	U	0.93	U	0.93	U	0.92	U	0.92	U	0.91	U	0.93	U	0.93	U
Adona	0.92	U	0.91	U	0.92	U	0.92	U	0.93	U	0.93	U	0.92	U	0.92	U	0.91	U	0.93	U	0.93	U
HFPO-DA	2.15	J	2.06	J	2.32		2.22	J	1.99	J	2.08	J	2.01	J	2.29		1.94	J	2.19	J	2.04	J
NFDHA	0.92	U	0.91	U	0.92	U	0.92	U	0.93	U	0.26	J	0.92	U	0.24	J	0.91	U	0.93	U	0.93	U
PFBA	49.32		57.03		50.42		46.09		49.33		51.24		49.82		56.28		46.85		48.00		49.99	
PFBS	41.01		4.73		10.09		16.79		23.13		26.11		25.85		31.97		28.63		33.12		33.98	
8:2FTS	15.49		4.71		7.74		9.83		11.46		12.37		11.59		14.06		11.86		13.51		13.31	
PFDA	54.41		6.52		15.37		21.90		27.61		31.27		32.60		37.86		33.79		37.76		40.65	
PFDoA	8.41		0.91	U	0.92	U	0.48	J	1.39	J	3.39		3.57		6.41		5.99		7.11		7.96	
PFEESA	0.92	U	0.91	U	0.92	U	0.92	U	0.93	U	0.93	U	0.92	U	0.92	U	0.91	U	0.93	U	0.93	U
PFHpS	1.90	J	0.91	U	0.92	U	0.92	U	0.47	J	0.50	J	0.51	J	0.71	J	0.76	J	0.83	J	0.91	J
PFHpA	45.86		29.96		38.79		42.07		42.57		43.13		42.18		50.31		41.47		46.93		45.87	
4:2FTS	0.92	U	0.91	U	0.92	U	0.92	U	0.93	U	0.93	U	0.92	U	0.92	U	0.91	U	0.93	U	0.93	U
PFHxS	31.43		0.74	J	2.38		4.82		7.86		11.19		10.52		14.80		13.92		16.61		18.61	
PFHxA	120.85		109.99		124.61		124.56		111.47		122.33		117.62		138.12		109.16		128.41		125.54	
PFMPA	0.92	U	0.91	U	0.92	U	0.92	U	0.93	U	0.93	U	0.92	U	0.92	U	0.91	U	0.93	U	0.93	U
PFMBA	0.92	U	0.91	U	0.92	U	0.92	U	0.93	U	0.93	U	0.92	U	0.92	U	0.91	U	0.93	U	0.93	U
PFNA	12.60		2.67		4.76		6.52		8.20		8.97		9.63		11.08		9.53		10.83		10.90	
6:2FTS	13.66		9.79		12.36		13.14		13.38		13.79		13.11		16.46		12.06		14.22		13.75	
PFOS	103.58		1.34	J	3.06		7.86		15.68		20.96		21.44		31.33		30.40		36.42		42.89	
PFOA	79.95		32.27		46.37		62.92		70.50		67.11		69.72		77.62		66.38		74.81		75.97	
PFPeA	80.03		81.06		82.26		73.72		71.35		79.83		79.14		89.30		72.83		82.31		82.51	
PFPeS	6.25		0.72	U	0.80	J	1.60	J	2.54		2.97		2.89		3.87		3.51		4.14		4.57	
PFUnA	15.07		0.97	J	2.35		5.50		8.68		10.36		10.47		11.67		9.00		10.01		11.99	
Surrogate Recoveries (%)																						
13C4-PFBA			90		96		96		90		84		87		76		96		78		76	
13C5-PFPeA			212	N	219	N	227	N	209	N	181		191		164		225	N	183		174	
13C3-PFBS			56		54		62		58		58		61		52		64		57		55	
13C2-4:2FTS			153		161		167		164		231	N	233	N	204	N	230	N	217	N	217	N
13C5-PFHxA			67		68		70		69		59		63		52		70		57		55	
13C3-HFPO-DA			70		71		77		71		86		92		77		93		81		82	
13C4-PFHpA			78		80		83		77		73		82		63		85		71		68	
13C3-PFHxS			71		71		77		76		80		89		73		91		78		77	
13C2-6:2FTS			207	N	210	N	219	N	204	N	230	N	244	N	205	N	257	N	218	N	217	N
13C8-PFOA			84		87		90		82		80		89		73		98		82		76	
13C9-PFNA			104		110		111		98		95		106		84		115		97		91	
13C8-PFOS			77		80		87		81		92		102		81		103		88		83	
13C2-8:2FTS			166		176		171		153		194		214	N	180		206	N	185		187	
13C6-PFDA			105		108		111		102		95		113		89		119		102		99	
13C7-PFUnA			101		103		103		96		94		110		83		115		102		95	
13C2-PFDoA			93		93		94		87		108		129		94		117		108		108	
pH	-		8.212		-		-		-		8.072		-		-		-		-		8.148	
TOC (mg/L)	-		8.06		-		8.09				7.92				-		7.72				9.46	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported.

Table A-23. CCWA Round 3B (Hicks RO) Evoqua PSR2+ Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 7 Replicate		Day 9		Day 11		Day 13		Day 15	
			Bed Volumes (Day 1)	25,953	Bed Volumes (Day 2)	48,662	Bed Volumes (Day 3)	70,321	Bed Volumes (Day 5)	107,268	Bed Volumes (Day 7)	156,612	Bed Volumes (Day 7 DUP)	156,612	Bed Volumes (Day 9)	199,796	Bed Volumes (Day 11)	242,395	Bed Volumes (Day 13)	285,408	Bed Volumes (Day 15)	334,298
			RO_PSR2+ (Day 1)		RO_PSR2+ (Day 2)		RO_PSR2+ (Day 3)		RO_PSR2+ (Day 5)		RO_PSR2+ (Day 7)		RO_PSR2+ (Day 7)		RO_PSR2+ (Day 9)		RO_PSR2+ (Day 11)		RO_PSR2+ (Day 13)		RO_PSR2+ (Day 15)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.92	U	0.91	U	0.94	U	0.92	U	0.91	U	0.95	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
9Cl-PF3ONS	0.92	U	0.91	U	0.94	U	0.92	U	0.91	U	0.95	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
Adona	0.92	U	0.91	U	0.94	U	0.92	U	0.91	U	0.95	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
HFPO-DA	2.15	J	1.97	J	2.06	J	2.09	J	2.15	J	2.23	J	2.12	J	1.85	J	1.96	J	2.25	J	1.99	J
NFDHA	0.92	U	0.91	U	0.94	U	0.92	U	0.91	U	0.95	U	0.93	U	0.93	U	0.24	J	0.93	U	0.93	U
PFBA	49.32		51.38		51.59		50.56		46.37		52.13		49.35		48.36		46.89		51.24		51.64	
PFBS	41.01		12.03		17.60		21.76		26.23		28.81		27.94		26.15		27.80		32.71		32.31	
8:2FTS	15.49		9.24		12.21		12.97		13.79		13.88		14.46		12.73		13.29		14.03		14.62	
PFDA	54.41		18.49		32.94		35.89		41.87		40.26		40.32		36.38		40.42		44.01		46.97	
PFDoA	8.41		0.62	J	0.79	J	1.43	J	3.61		7.06		7.15		6.92		7.02		8.40		8.68	
PFEESA	0.92	U	0.91	U	0.94	U	0.92	U	0.91	U	0.95	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
PFHpS	1.90	J	0.91	U	0.94	U	0.92	U	0.56	J	0.63	J	0.70	J	0.59	J	0.79	J	0.77	J	0.68	J
PFHpA	45.86		36.85		40.30		42.01		42.06		45.76		40.76		40.95		40.76		46.52		45.55	
4:2FTS	0.92	U	0.91	U	0.94	U	0.92	U	0.91	U	0.95	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
PFHxS	31.43		3.66		6.11		8.23		11.35		13.30		13.53		13.13		14.26		17.09		16.94	
PFHxA	120.85		110.75		116.78		118.74		119.34		133.37		126.88		109.14		114.55		131.87		122.93	
PFMPA	0.92	U	0.91	U	0.94	U	0.92	U	0.91	U	0.95	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
PFMBA	0.92	U	0.91	U	0.94	U	0.92	U	0.91	U	0.95	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
PFNA	12.60		7.10		8.74		9.21		9.57		10.92		11.10		9.84		10.71		12.30		10.67	
6:2FTS	13.66		18.87		12.01		12.63		12.73		13.77		13.81		12.05		12.91		14.04		12.78	
PFOS	103.58		4.53		11.69		17.96		25.59		29.66		30.81		28.82		34.03		42.20		39.00	
PFOA	79.95		55.08		61.43		70.73		74.37		70.63		67.90		63.94		65.87		74.95		72.33	
PFPeA	80.03		74.07		75.34		73.19		74.03		87.88		82.04		76.66		72.22		85.66		80.81	
PFPeS	6.25		1.21	J	1.74	J	2.33		2.99		3.07		3.33		3.49		3.47		3.91		4.07	
PFUnA	15.07		3.56		7.87		11.68		13.17		13.71		12.99		10.01		10.28		12.25		14.44	
Surrogate Recoveries (%)																						
13C4-PFBA			95		100		95		93		76		83		86		97		76		82	
13C5-PFPeA			216	N	229	N	226	N	208	N	164		191		193		227	N	186		182	
13C3-PFBS			63		59		60		59		55		60		59		67		52		57	
13C2-4:2FTS			162		167		165		164		218	N	236	N	229	N	232	N	199		229	N
13C5-PFHxA			73		71		68		66		55		59		63		70		54		60	
13C3-HFPO-DA			74		80		76		71		80		86		92		94		79		86	
13C4-PFHpA			79		84		79		76		68		75		75		87		67		70	
13C3-PFHxS			79		77		78		72		79		82		83		93		76		81	
13C2-6:2FTS			193		212	N	208	N	216	N	212	N	228	N	235	N	246	N	210	N	241	N
13C8-PFOA			88		95		88		84		80		86		86		100		77		82	
13C9-PFNA			103		113		108		101		92		97		104		115		94		97	
13C8-PFOS			87		84		85		81		87		89		91		98		81		93	
13C2-8:2FTS			163		177		169		166		185		190		189		196		173		186	
13C6-PFDA			108		117		107		97		91		97		108		115		101		98	
13C7-PFUnA			106		109		100		94		86		91		102		102		96		98	
13C2-PFDoA			99		100		96		83		104		97		118		92		101		106	
pH	-		7.920		-		-		-		8.137		-		-		-		-		8.169	
TOC (mg/L)	-		13.40		-		8.35				7.97				-		7.94				9.86	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported.

Table A-24. CCWA Round 3B (Hicks RO) Fluorosorb Results

Analyte	Average Influent		Day 1		Day 2		Day 3		Day 5		Day 7		Day 10		Day 10 Replicate		Day 13		Day 17		Day 22	
			Bed Volumes (Day 1)	17,225	Bed Volumes (Day 2)	35,354	Bed Volumes (Day 3)	51,026	Bed Volumes (Day 5)	80,156	Bed Volumes (Day 7)	112,630	Bed Volumes (Day 10)	157,785	Bed Volumes (Day 10 DUP)	157,785	Bed Volumes (Day 13)	206,538	Bed Volumes (Day 17)	270,520	Bed Volumes (Day 22)	349,769
			RO_FS (Day 1)		RO_FS (Day 2)		RO_FS (Day 3)		RO_FS (Day 5)		RO_FS (Day 7)		RO_FS (Day 10)		RO_FS (Day 10)		RO_FS (Day 13)		RO_FS (Day 17)		RO_FS (Day 22)	
	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier	ng/L	Qualifier
11Cl-PF3OUdS	0.92	U	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
9Cl-PF3ONS	0.92	U	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
Adona	0.92	U	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
HFPO-DA	2.15	J	2.23	J	2.14	J	2.15	J	2.13	J	1.54	J	1.86	J	1.92	J	2.21	J	2.22	J	2.26	J
NFDHA	0.92	U	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
PFBA	49.32		51.91		46.78		55.34		49.62		35.00		47.18		47.88		51.87		53.90		50.65	
PFBS	41.01		25.90		31.25		35.49		35.12		25.24		34.11		32.81		36.70		40.05		39.70	
8:2FTS	15.49		0.92	U	0.37	J	0.80	J	1.48	J	1.78	J	2.73		2.79		4.05		4.99		6.35	
PFDA	54.41		0.92	U	0.92	U	0.93	U	0.62	J	1.00	J	1.86	J	1.92	J	3.17		5.18		9.60	
PFDoA	8.41		0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.59	J	0.48	J	0.58	J	0.75	J	0.80	J
PFEESA	0.92	U	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
PFHpS	1.90	J	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
PFHpA	45.86		36.19		41.26		43.62		44.05		32.39		40.60		39.88		45.92		44.42		49.18	
4:2FTS	0.92	U	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
PFHxS	31.43		0.72	J	1.81	J	2.92		4.87		5.18		8.28		8.32		11.74		14.61		18.72	
PFHxA	120.85		113.71		114.15		122.77		118.61		89.57		112.11		108.87		122.53		122.66		127.70	
PFMPA	0.92	U	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
PFMBA	0.92	U	0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.93	U	0.91	U
PFNA	12.60		0.41	J	1.19	J	2.32	J	3.26		4.07		5.24		5.27		7.01		7.99		9.10	
6:2FTS	13.66		10.11		10.94		12.44		12.24		9.81		11.84		11.26		13.12		13.33		13.61	
PFOS	103.58		0.75	J	1.02	J	1.18	J	1.27	J	1.67	J	0.74	U	0.75	U	2.49		0.74	U	0.73	U
PFOA	79.95		29.80		44.01		61.70		63.64		45.17		61.62		61.54		69.74		73.35		77.71	
PFPeA	80.03		73.60		73.28		78.49		74.03		58.95		73.45		75.46		82.10		81.07		83.34	
PFPeS	6.25		1.23	J	1.93	J	2.72		3.44		2.91		3.91		4.15		4.91		5.45		5.84	
PFUnA	15.07		0.92	U	0.92	U	0.93	U	0.91	U	0.92	U	0.93	U	0.94	U	0.93	U	0.44	J	0.58	J
Surrogate Recoveries (%)																						
13C4-PFBA			99		104		92		96		88		94		96		79		83		81	
13C5-PFPeA			225	N	237	N	213	N	214	N	182		221	N	222	N	177		194		187	
13C3-PFBS			59		60		61		60		60		61		65		52		54		54	
13C2-4:2FTS			164		171		169		164		224	N	221	N	229	N	199		194		188	
13C5-PFHxA			63		74		68		69		62		68		72		53		58		56	
13C3-HFPO-DA			66		77		74		75		83		95		94		81		76		73	
13C4-PFHpA			75		82		78		78		72		83		88		68		71		66	
13C3-PFHxS			75		80		79		75		80		87		90		72		78		71	
13C2-6:2FTS			223	N	219	N	217	N	209	N	230	N	234	N	265	N	213	N	226	N	224	N
13C8-PFOA			84		94		87		87		84		96		99		78		82		77	
13C9-PFNA			105		122		104		110		96		112		119		93		94		94	
13C8-PFOS			85		85		85		84		98		96		99		82		86		82	
13C2-8:2FTS			182		192		179		171		240	N	199		209	N	182		186		194	
13C6-PFDA			103		115		103		107		99		117		120		100		100		97	
13C7-PFUnA			96		110		100		102		113		104		113		95		90		89	
13C2-PFDoA			90		98		89		90		105		100		106		103		85		91	
pH	-		8.140		-		-		-		-		8.163		-		-		-		8.217	
TOC (mg/L)	-		8.23		-		-		8.20		-		8.05		-		-		9.74		9.73	

J: Analyte detected below the Limit of Quantitation (LOQ); N: Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO); U: Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported.

Exhibit B – Project Technical Requirements

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Exhibit B

Project Technical Requirements

for

Advanced Water Treatment and Capacity Upgrades

Clayton County Water Authority

February 2024

Table of Contents

1. Introduction

This document provides a summary of the minimum project technical requirements that must be followed by the selected Design-Builder for design of the Advanced Water Treatment and Capacity Upgrades (Project) being undertaken by the Clayton County Water Authority (Owner). The selected Design-Builder will utilize the requirements set forth in this document in concert with other technical requirements contained in the Basis of Design Report (see Exhibit A – Project Background Document) and other available information to develop a design that meets the Owner's Project Criteria. Additional technical requirements for the Project will be developed by the selected Design-Builder in collaboration with the Owner during design of the Project.

The design must meet the latest requirements of the International Building Code (as adopted by the State of Georgia), as well as other applicable local, state, and federal requirements and design standards in effect at the time when construction begins.

2. General Facility Area and Layout Requirements

- Design the new WPP and roadway geometry to suit all reasonably foreseeable delivery and service vehicles; develop a functional infrastructure arrangement in which each building's function and the access requirements for maintenance vehicles are defined. Integrate design with infrastructure in place for the existing Hicks WPP.
- Design the new PFAS treatment and roadway geometry to suit all reasonably foreseeable delivery and service vehicles for Hooper WWP.
- Ensure adequate access to all equipment and plan pathways in the same manner as the roadways.
- Undertake emergency access planning, considering requirements for ingress and egress routes for ambulances, fire trucks and other safety personnel into the roadways and pathways design to ensure that distances are not excessive between any point where accidents or fires could occur and a roadway accessible to the appropriate emergency vehicle.
- Consult any applicable Governmental Authority early in the design process to facilitate their input.
- Consider piping distances, wherever possible minimizing distances and bends of all piping arrangements.
- Consider future requirements, including making reasonable allowances in accordance with Good Industry Practice for the installation and tie-in of future pipes, conduits, access ways, tanks, treatment processes, buildings, and other infrastructure.

3. General Arrangements Requirements

- Provide at least 4 feet of clearance in front of any equipment face or panel requiring maintenance.

- Minimize piping located above equipment to facilitate lifting.
- Provide permanently installed lift equipment with motorized overhead hoists where equipment component masses exceed 100 lb and when frequent lifting for maintenance is required.
- Allow adequate space for control panels and consider the control wiring and power wiring servicing in the layout and provide sufficient space.
- Arrange pumps to minimize the distance, length of suction pipe, and number of bends through which the liquid must be conveyed.

4. General Yard Piping Requirements

- Design all pipe support/restraint systems.
- Provide for maintenance of piping and process elements.
- Follow recommendations of the Hydraulic Institute for all piping and equipment installations.
- Provide gates and valves as necessary to isolate, dewater and drain each treatment process for maintenance and provide functionality (bypasses, redundancy, etc.) to bypass major equipment in the event that tanks or treatment process units have to be removed from service for maintenance.
- Ensure that the hydraulic elements are able to convey the expected peak flows to the appropriate process units.
- Design piping using Good Industry Practice to calculate and minimize excessive friction losses.
- Design to minimize solids deposition and debris accumulation in all pipes under all conditions.

5. Piping Arrangement Requirements

- Arrange sidewall pipe racks so they do not contain more than three pipes nor are more than 5 feet wide and, if the headroom over a pipe rack is not sufficient for personnel to access and remove interior pipes, limit pipe rack width to 3 feet.
- Make wall penetrations perpendicular to the wall whenever possible.
- Make full allowance in design of the piping for expansion and contraction due to temperature changes as required to suit the intended service.
- Provide sludge piping with smooth flow fittings and long radius elbows and bends.
- Place flanges, grooved joint couplings, and unions at appropriate spacing to allow pipe disassembly and minimize the length of runs between disassembly points for piping that may be prone to plugging.

- Arrange the layout of piping to minimize potential plugging problems and minimize dead ends in the downstream direction in which solids could accumulate.
- Keep valves within operator reach (below 8 feet) as much as possible; for any valve over 8 feet above the operating floor, provide chain operator or valve stem extension.
- Provide sufficient straight runs for flow meters and other instrumentation and control elements as recommended by the manufacturer for accurate readings.
- Provide purge points at high points and drain points at low points of piping and ensure that these points are accessible to operating staff.
- Place utility stations in logical areas to facilitate wash down and pipe flushing so that the maximum length of hose is limited to 50 feet.
- Treatment Process Requirements
- Chemicals should be added at a single common point wherever possible, including for example: (1) to raw water upstream of a flow splitter box that splits flow to multiple treatment trains; (2) to the combined filtered water upstream of the PFAS treatment; and (3) to the combined finished water flow downstream of PFAS treatment prior to water being pumped into the distribution system.
- Provide highly accurate raw water flow measurement devices over the entire range of current and future flows into Pond E, if used for raw water storage and into the new WPP.
- Provide accurate raw water flow measurement and control over the entire range of current and future flows into the new WPP and Huie pond (for initial plant size and future expansions covering the range of expected minimum and maximum flows).
- Provide tapered mixing energies across new flocculation basins (if used) with the ability to seasonally adjust mixing energies.
- If chosen as a treatment process, optimize size of any new sedimentation basins using stainless steel plate settlers and weir troughs. Consider use of stainless steel covers integrated with the new plate settlers by providing Owner with estimated costs and summary of benefits.
- Provide ability to control algae growth within open tanks.
- Provide washdown loop with connections for fire hoses around the perimeter of any new flocculation or sedimentation basins and ability to easily drain loop when not in service.
- Provide automated sludge removal mechanisms for any new sedimentation basins.
- Provide robust and durable filter underdrain system for any new gravity media filters.
- Provide n+1 redundancy in all processes unless otherwise accepted by CCWA and allowed by regulatory and permitting agencies. Firm pumping capacity of each pump station should assume the largest pump is out of service.

- Provide cartridge filters upstream of any nanofiltration or reverse osmosis membrane system, if membrane technology is selected for PFAS removal.
- Ion exchange (IX) will not be considered for the advanced treatment process of Existing Hicks, New Hicks, and Hooper WPP water. IX will be considered for treatment of WPPs' advanced treatment process reject water.
- Provide the ability to temporarily bypass all or a portion of the flow around the PFAS treatment with ability to accurately measure amount of flow that is bypassed vs. treated.
- Sample pumps at each stage of the process will supply water to operator lab for testing.
- Redundant chemical feed lines to each portion of process.

6. Electrical Design Requirements

- Ensure that the new and modified facilities meets the current versions of building and fire codes and the latest edition of the NEC, and is in accordance with any applicable Governmental Authority, Applicable Law, Standards and Guidelines and Permits and Approvals.
- Only specify industrial grade equipment, components and solutions provided by standard manufacturers normally involved in the provision of equipment to the water and wastewater treatment industry.
- Present considerations of costs/benefits for power distribution system architectures that incorporate varying degrees of reliability and redundancy including single utility service versus two services, and single-ended equipment versus double-ended main-tie-main switchgear, switchboards, and motor control centers.
- Present considerations for providing onsite standby power and various topologies for automatic transfer to/from the standby power system.
- Present considerations for VFD provisions including mounting in motor control centers versus individual, stand-alone cabinets; incorporating bypass contactors or not; and harmonic mitigation devices integrated in each VFD cabinet versus aggregation of harmonic filtering at upstream buses.
- Present considerations for selecting materials of construction for equipment cabinets/enclosures, conduits, and wire/cable.
- For the processes to be added to the W.J. Hooper WPP and to the J.W. Smith RWPS, identify the power system tie-in point(s) and evaluate power system capacities to serve the additional loads. Present considerations for housing the new electrical distribution and motor control equipment.
- New Hicks WPP generator will be sized to supply power to all processes

7. Instrumentation & Control System Design Requirements

- Only specify industrial grade equipment, components and solutions provided by standard manufacturers normally involved in the provision of equipment to the water and wastewater treatment industry.
- Base design only on Allen-Bradley ControlLogix & CompactLogix PLCs.
- Utilize MR Systems, Inc. as the Systems Integrator.
- Present considerations for selection of SCADA HMI package.
- Present considerations for selection of process instrumentation.
- Present considerations for usage of SMART P&IDs.
- Present considerations for control system architecture at Existing and New Hicks WPP and Hooper WPP that incorporates varying degrees of reliability and redundancy, including redundancy protocol recommendations.
- Present considerations for the control system architecture connection of New Hicks WPP to the Existing Hicks WPP.
- For the process to be added to the W.J. Hooper WPP, J.W. Smith HSPS, and the J.W. Smith RWPS, identify the existing control system and evaluate connection of new equipment to the existing control systems. Present considerations for the locations of any new control panels.

8. Mechanical Systems (HVAC, Plumbing and Fire Protection Systems)

- Ensure that new construction, renovations/upgrades comply with the Georgia Building Code, ASHRAE, NFPA, and Owner's stipulated guidelines for all aspects of the design. The design of the new and modified facilities shall meet the ventilation, extent of classification, electrical classification, material of construction for buildings or structures and fire protection measures as applicable.
- Address the requirements listed in Table 1 in the design of the mechanical systems.

Table 1. Mechanical System Design Requirements

Design Requirements	Details
Room Pressurization	Cleaner areas are to be positively pressurized relative to dirtier areas to prevent the migration of the dirty air into the cleaner area.
Ventilation Effectiveness	Provide air distribution in rooms in accordance with Good Industry Practice.
Emergency Eyewash and Showers	Provide properly plumbed and drained emergency eyewash and showers with tempered water in accordance with US Occupational Safety and Health Act and Regulations and ANSI-Z358.1.
Material Selection	Provide durable design by incorporating appropriate materials selections such as corrosion resistant materials and equipment coatings. Equipment shall be easy to clean and water resistant with smooth surfaces.
Heating/Cooling	Provide heating and cooling to meet requirements of the mechanical design codes, Applicable Law, and any Governmental Authority, at a minimum considering heat rejection from mechanical and electrical equipment.
Noise and Vibration Control	Provide adequate noise control with quiet equipment selections and adequate use of noise control equipment (e.g., silencers and acoustic panels). Place and properly secure floor-mounted equipment on house-keeping pads. Equipment shall be equipped with adequate use of expansion joints and vibration isolation components.
Commissioning	Incorporate functional commissioning into construction to ensure all installed systems operate as intended.
Control System	The HVAC control system (e.g., BMS) shall be compatible with any existing equipment or structures employed as part of new or modified facilities and shall relay alarms including, but not limited to, a General Alarm to facility control system. Control system shall have trending capabilities and be web-accessible to improve troubleshooting capabilities.

9. Start-up and Commissioning

No water shall be pumped or otherwise be allowed to enter into the distribution system until all new or modified treatment processes have successfully completed all required performance tests and capacity tests, have all equipment certified by the manufacturer to be properly installed, have been certified by the Owner's designated Independent Certifier, have been disinfected according to AWWA standards (where applicable), and have received approval from Georgia EPD.

Exhibit C – Scope of Design-Builder Services

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Exhibit C
Scope of Design-Builder Services

Advanced Water Treatment and Capacity Upgrades

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Contents

Attachment

1 General Requirements

The requirements of this Exhibit are in addition to those requirements set forth in the Agreement and other Contract Documents. As provided in Section 12.23 of the Agreement (Order of Precedence), nothing in this Exhibit will affect, or render ambiguous, any contrary provision in documents with higher precedence. This Exhibit contains a description of the planning and design services required to be performed by the Design-Builder in Phase 1A and Phase 1B and contains certain elements of Phase 2 Services that are in addition to any requirements provided elsewhere in the Contract Documents. Any terms used herein that are defined in other Contract Documents shall be defined as provided in such other Contract Documents.

The Design-Builder shall perform all design services described in, contemplated by, inferable from, or necessary or desirable to achieve the objectives in Owner's Project Criteria and the Agreement, including all design services necessary for the Project to be permitted, properly constructed by Design-Builder, and used, operated, and maintained by the Owner in accordance with all applicable guidelines, requirements, and standards.

Notwithstanding anything to the contrary in this Exhibit, Owner's review, approval, or rejection of, comment on, or other involvement with the development of, any document referenced herein remains subject to Sections 2.1.3 of the General Conditions, Sections 2.3.1 of the General Conditions, and Section 2.4.3 of the General Conditions. Notwithstanding anything to the contrary in this Exhibit, Design-Builder must schedule each task described herein to comply with any deadline set forth herein, but in no event later than the time necessary to satisfy the Contract Times.

Design services by the Design-Builder shall be conducted in three phases. In Phase 1A, the Design-Builder shall achieve a 15-percent design enabling the Design-Builder to develop the Phase 1B Proposal, as provided in Article 2 of the Agreement. In Phase 1B, the Design-Builder shall achieve a 60-percent-complete detailed design enabling Design-Builder to develop the Phase 2 Proposal (which includes a proposed Guaranteed Maximum Price), as provided in Article 2 of the Agreement. In Phase 2, the Design-Builder shall achieve a 100-percent-complete detailed design for construction. These phases are designated as follows, as further defined in Article 2 of the Agreement.

- Phase 1A Services – The development of the Project design from Project initiation to the development of the Initial Design Report and submittal of Design-Builder's Phase 1B Proposal
- Phase 1B Services – The development of the Project design from completion of the Initial Design Report performed in Phase 1A to submittal of Design-Builder's Phase 2 Proposal
- Phase 2 Services – Completion of Design Services of the Project to 100 percent design and construction of the Project

2 Phase 1A Services and Phase 1B Services

Phase 1A Services shall include, without limitation, the following tasks:

- Task 1: Project Management
- Task 2: Existing Site and Facilities Conditions Review and Verification

- Task 3: Initial Design and Pilot Testing
- Task 4: Preparation of Phase 1B Proposal (as defined in the Agreement) and Supporting Cost Estimates

Phase 1B Services shall include, without limitation, the following tasks:

- Task 1: Project Management
- Task 5: 30 percent Design Completion Documents
- Task 6: 60 percent Design Completion Documents
- Task 7: Preparation of Phase 2 Proposal (as defined in the Agreement) and Supporting Cost Estimates

2.1 Task 1 – Project Management

2.1.1 General

The Design-Builder shall provide management of Design-Builder's Project Team in terms of staffing, budget, schedule, scope, and coordination with the Owner for Phase 1A and Phase 1B. This task includes managing the Scope of Work, schedule, and budget for execution of this Scope of Work, and communication and coordination with the Owner. The Design-Builder will prepare invoices, progress reports, and Design Progression Log and Project Decision Log updates on a monthly basis. Other activities include keeping the Owner informed and soliciting input from the Owner when making key decisions, coordination with Design Consultants and Subcontractors, scheduling of staff, and coordinating the quality assurance effort.

2.1.2 Monthly Project Reporting Requirements

The Design-Builder shall keep the Owner regularly informed as to the progress of the Phase 1A and Phase 1B Services through the submittal of Monthly Project Reports in the form of project dashboards as required by this section, the General Conditions, and this Exhibit. At a minimum, Monthly Project Reports shall address Work performed during the past month, including details of how Work performed may have varied from Work planned as submitted in the previous Monthly Project Report, percentage of Work completed for each task, subtask, and overall contract, and compliance with the Phase 1A Services Schedule and Phase 1B Services Schedule. The Design-Builder shall describe Project issues, risks, construction budget, problems, or concerns that affect the Work or the Project, and how the Design-Builder proposes to address them. The Design-Builder shall update the description of the Work planned for the following three months. The Monthly Project Report shall present Project budget information and indicate amounts billed by Phase 1A Services and Phase 1B Services Tasks by the Design-Builder for the prior month, cumulatively to date, and the amount of funds remaining. Billing information shall be shown relative to the Schedule of Values submitted as required in the General Conditions Section 6.1. Beginning with Phase 2, each Monthly Project Report shall include updates to the Asset Registry described in Section 3.3.

For conditions or issues that the Design-Builder believes may create a requirement for additional work beyond the scope of Phase 1A Services or Phase 1B Services, the Design-Builder shall, in addition to all notices and requirements under the Contract Documents, provide information to the Owner so that the

parties may discuss them and determine whether such additional services are to be provided. Each Monthly Project Report shall include a section on the progress of the design and list any concerns, actions, changes, and reviews and approvals from the Owner that the Design-Builder requires.

Task 2.1 Deliverables:

- Monthly Project Reports
- Design Progression Log
- Project Decision Log

2.1.3 Meetings and Workshops

Unless otherwise agreed to with the Owner, meetings and workshops shall be held at Owner's facilities or, if approved by Owner, virtually.

2.1.3.1 Kickoff/Partnering Workshops

Within two weeks of the Notice to Proceed for Phase 1A Services, the Design-Builder shall arrange and conduct with key staff members of the Owner a Phase 1A Kickoff/Partnering Workshop. The goals of this workshop are to discuss Owner objectives, discuss the plan for execution of Phase 1A, deepen working relationships, develop common goals and objectives, and achieve a cooperative partnership environment among Project participants. In addition, the Owner and Design-Builder shall identify what information shall be incorporated into project dashboards that will be updated by the Design Builder throughout the project duration to inform the Owner on various aspects of the project. The workshop attendees, agenda, and workshop venue will be coordinated between the Owner and Design-Builder's Project Manager.

2.1.3.2 Periodic Progress Meetings

The Design-Builder shall hold periodic progress meetings with the Owner during the performance of Phase 1A Services and Phase 1B Services. Progress meetings shall be held at least monthly to verify and confirm that the development of the Project is proceeding as follows:

- Has the full benefit of the Owner's experience and knowledge of existing needs and facilities
- Is consistent with the Owner's current policies and standards
- Is proceeding in accordance with the Phase 1A and Phase 1B Services Schedules

The frequency of these meetings shall be as agreed to with and approved by the Owner.

Meeting agendas shall include, but not be limited to, the following:

- Ongoing and upcoming activities
- Scope, schedule, and construction budget tracking and status
- Project risks analysis and updates
- Critical issues to be addressed
- Decisions and actions
- Quality management
- Change management
- Health and safety
- Updates to the Project Execution Plan
- Monthly Project Reports

- Equipment and Subcontractor procurement

During Phase 1A, the Design-Builder shall include at least one meeting with the Owner's Board of Directors to present Project progress and status updates. During Phase 1B, the Design-Builder shall include at least one meeting with the Owner's Board of Directors to present Project progress and status updates. The Design-Builder shall assist the Owner with preparation of presentation materials, attend the meetings, and assist with presentation, if requested.

2.1.3.3 Technical Workshops

Technical Workshops will be held during Phase 1A and Phase 1B to address specific engineering discipline and technical subjects and facilitate collaboration and development of ideas and decisions to be carried forward during design development. Each workshop will be facilitated by the Design-Builder. An agenda (including desired outcomes) as well as technical background documents will be distributed to workshop attendees at least three working days prior to the meetings. The Design-Builder will document the outcome of each workshop and distribute meeting notes and action items within three working days after each workshop. Technical Workshops will be conducted during the performance of the design tasks described in this Exhibit at a frequency necessary to address all technical subjects.

Task 2.1.3 Deliverables:

- Meetings and Workshop Agendas and Minutes
- Board of Directors (Board) Meetings – Presentation preparation and handouts.

2.1.4 Risk Management Requirements

In providing Phase 1A Services, the Design-Builder shall address risk management in the development of the Project design. A Risk Management Workshop shall be conducted with the Owner within 30 days after the Phase 1A Kickoff/Partnering Workshop. The Risk Management Workshop shall be used to identify key Project risks and opportunities for avoiding and minimizing risks. This workshop may be combined with other meetings or workshops.

A Risk Register shall be developed and maintained by the Design-Builder using a risk register template developed by the Design-Builder and accepted by the Owner. The Risk Register shall be initially populated with risks identified in the Phase 1A Risk Management Workshop. The Risk Register shall include the following information:

- Risk identification
- Activities affected (tied to schedule activities)
- Risk description including qualitative categorization of risk
- Estimated/calculated percent likelihood that risk may occur (Note: this will be output from quantitative analysis performed on key risks that could exceed target cost or schedule thresholds)
- Phase of Project that risk could impact
- Potential schedule impact should risk occur
- Potential cost impact should risk occur
- Potential health and safety impacts should risk occur
- Risk triggers

- Risk owner[1]
- Risk strategy (transfer, mitigate, accept, exploit)
- Risk trend analysis

Ongoing risk analysis during Phase 1A and Phase 1B shall be conducted by Design-Builder with review and input from the Owner. The Design-Builder shall submit and discuss such findings at Periodic Progress Meetings and Technical Workshops, and in separate risk management workshops, if appropriate. The Design-Builder shall update the risk register to reflect any such findings.

Task 2.1.4 Deliverables:

- Risk Register and updates
- Workshop agendas items and workshop notes related to risk management

2.1.5 Change Management Requirements

The Design-Builder shall prepare and maintain a Change Management Log for the duration of the Phase 1A and Phase 1B Services. The Change Management Log shall integrate with the Project Decision Log and be used to document proposed and approved changes to the design, scope, price, and schedule. At a minimum, the Change Management Log shall include the following information:

- Change identification number
- Brief description of change
- Status of change (pending, approved, rejected)
- Dates associated with change including initial proposal date and change acceptance date
- Back-up information, including cost, schedule, and technical information

Change management shall be a standing agenda item at each Periodic Progress Meeting and shall be updated in each Monthly Project Report. Following approval of the Initial Design Report (IDR), the Change Management Log shall be used to track changes to the approved Project design and their associated cost and schedule impacts.

Task 2.1.5 Deliverables:

- Change Management Log and updates
- Back-up information including cost and schedule updates for proposed changes

2.1.6 Quality Management Plan

The Design-Builder shall develop a Quality Management Plan, including quality assurance (“QA”) and quality control (“QC”) procedures, that shall be implemented during the Work (i.e., Phase 1A Services, Phase 1B Services, and Phase 2 Services). This Plan shall ensure that adequate QA/QC procedures and resources are provided by the Design-Builder to effectively assess and ensure high quality in all Work products. The Quality Management Plan shall be included in the Project Execution Plan (Task 2.1.10) and shall be updated by the Design-Builder over the course of the Project.

[1]The risk register described herein shall not vary or render ambiguous any provision of the Agreement or General Conditions. Without a valid Change Order, no allocation of risk in the Risk Register will change the legal rights and obligations of the parties.

Task 2.1.6 Deliverables:

- Quality Management Plan and updates

2.1.7 Communication Plan

The Design-Builder shall prepare a draft Communication Plan for review and comment by the Owner no later than 14 days after the Notice to Proceed for Phase 1A Services. The Communication Plan shall be prepared in collaboration with the Owner and shall provide contact information for the Design-Builder, the Owner, the Owner's Advisor, and other parties designated by the Owner. The Communication Plan shall contain communication requirements for the Design-Builder and the Owner (including frequency and timeframe of communications, information to be communicated, and methods or technologies used to convey information). The Plan shall be organized as a directory available to Design-Builder's and Owner's personnel and shall outline points of contact under various circumstances, including emergencies. The Communication Plan shall be included in the Project Execution Plan (Task 2.1.10) and shall be updated by the Design-Builder over the course of the Project.

During Phase 1B, the Design-Builder shall support the Owner by participating in at least two public information meetings that will be planned and scheduled by the Owner. The Design-Builder shall attend the meetings and provide supporting information to the Owner for presentation purposes.

Task 2.1.7 Deliverables:

- Communication Plan and updates
- Supporting information for public meetings

2.1.8 Design-Build Schedule

The Design-Builder shall prepare a schedule for Phase 1A Services, Phase 1B Services, and Phase 2 Services, which schedule must comply with and remain subject to Section 2.1.3 of the General Conditions of Contract. These schedules shall be detailed, critical path (CPM) schedules in a form acceptable to Owner and shall be submitted as electronic files (native and PDF) and hardcopy. Together, these schedules shall be known herein as the Design-Build Schedule. The Design-Build Schedule shall be based on the requirements of Article 6 of the Agreement.

2.1.8.1 Phase 1A Services Schedule

The Phase 1A Services Schedule shall reflect the schedule for all activities comprising the Phase 1A Services (including all activities set forth in this Exhibit) and shall set forth all tasks and key subtasks in a logical and efficient work sequence that the Design-Builder intends to use in taking the Project from the Notice to Proceed for Phase 1A Services to the submittal of the Phase 1B Proposal (as required in Article 2 of the Agreement). The Design-Builder shall submit the Phase 1A Services Schedule three working days prior to the Phase 1A Kickoff/Partnering Workshop required by Section 2.1.3.1 of this Exhibit.

During Phase 1A, the Design-Builder shall update the Phase 1A Services Schedule on a monthly basis, at a minimum, and as otherwise required herein. Design-Builder shall complete the Phase 1A Services in accordance with the Phase 1A Services Schedule. Updates on the Design-Builder's compliance with the Phase 1A Services Schedule shall be submitted with each Monthly Project Report required by this Exhibit and the General Conditions. The Phase 1A Services Schedule shall meet the requirements set forth in this Exhibit.

2.1.8.2 Phase 1B Services Schedule

The Design-Builder shall submit a Phase 1B Schedule as part of the Phase 1B Proposal. The Phase 1B Services Schedule shall reflect the schedule for all activities comprising the Phase 1B Services (including all activities set forth in this Exhibit) and shall set forth all tasks and key subtasks in a logical and efficient work sequence that the Design-Builder intends to use in taking the Project from the Notice to Proceed for Phase 1B Services to the submittal of the Phase 2 Proposal (as required in Article 2 of the Agreement).

During Phase 1B, the Design-Builder shall update the Phase 1B Services Schedule on a monthly basis, at a minimum, and as otherwise required herein. The Design-Builder shall complete the Phase 1B Services in accordance with the Phase 1B Services Schedule. Updates on the Design-Builder's compliance with the Phase 1B Services Schedule shall be submitted with each Monthly Project Report required by this Exhibit and the General Conditions. The Phase 1B Services Schedule shall meet the requirements set forth in this Exhibit.

2.1.8.3 Phase 2 Services Schedule

The Design-Builder shall submit a draft Phase 2 Services Schedule as part of the Phase 1B Proposal. During Phase 1B, the Design-Builder shall update the draft Phase 2 Services Schedule on a monthly basis, at a minimum, and as otherwise required herein. The Design-Builder shall incorporate a final proposed Phase 2 Schedule in the Phase 2 Proposal.

Notwithstanding anything to the contrary herein, the schedules identified and described in this Exhibit are subject to the conditions set forth in Section 2.1.3.

2.1.8.4 Minimum Requirements

At a minimum, the Design-Build Schedule shall include:

- Start date for each activity
- Finish date for each activity
- Major milestones
- Meeting and workshop dates
- Submittal dates including draft submission dates, Owner review periods, and final submission dates
- Identification of critical path
- Float

The Design-Build Schedule shall provide for adequate periods for Owner review of the design and the Phase 1B and Phase 2 Proposals, and adequate periods for the Design-Builder to make revisions before proceeding with the next Work phase. Updated schedules shall be accompanied by a written report that explains significant changes for each schedule update.

2.1.8.5 Owner Review

The Owner will review and comment on the Initial Phase 1A Services Schedule and the draft Initial Phase 1B and Phase 2 Services Schedules within 15 days of receipt. Comments on the Phase 1A , Phase 1B, and Phase 2 Services Schedules shall be discussed between Design-Builder and Owner. The Design-Builder shall provide a revised Phase 1A Services Schedule or revised draft Initial Phase 1B or P

hase 2 Services Schedules, as applicable, based on agreed-upon changes. The effect of Owner's review is set forth in Section 2.1.3 of the General Conditions of Contract.

Task 2.1.8 Deliverables:

- Design-Build Schedule submittals and monthly updates

2.1.9 Records Management System

The Design-Builder shall furnish and implement a Records Management System to facilitate workflow and transmit and store written documents associated with the Project. The software system will be made available for use by the Owner, the Owner's Representatives (as defined in the Agreement), and the Design-Builder to transmit, review and respond, log, and store Project-related documents and comments. At a minimum, the Records Management System will incorporate the following:

- Overall Project tracking and monitoring of key performance indicators
- Meeting and workshops agendas, presentations, and notes
- Action items, issues, decision logs, and tracking
- Phase 1A and Phase 1B Services Work products and deliverables
- Budget and schedule tracking
- Risk tracking and mitigation
- Quality management documentation including comments, responses, and confirmations
- Cost Model Information including equipment vendor submissions; subcontractor pricing, quotes and estimates; Design Consultants pricing quotes, and estimates
- Monthly reports
- Project-related communication
- Project Progress Dashboards for the Owner

Task 2.1.9 Deliverables:

- Records Management System documentation

2.1.10 Project Execution Plan

The Design-Builder shall develop and submit a Project Execution Plan to the Owner for review and comment. The Project Execution Plan shall serve as a Project management tool for the Owner and Design-Builder and will include guidelines and procedures for execution of the Work and issues resolution. The Project Execution Plan will be submitted prior to the Phase 1A Kickoff/Partnering Workshop and updated periodically as appropriate throughout the execution of the Project. The Project Execution Plan shall include, at a minimum, the following:

- A description of Design-Builder's Project Team organization, roles, and responsibilities, including an organization chart that identifies all key discipline design leads for the Project and the engineer-of-record for each discipline.
- A compilation of Task 1 Project Management requirements including:
  - Plan for Monthly Project Reporting
  - Plan for Meetings and Workshops
  - Risk Management including Risk Register and periodic updates
  - Change Management Requirements

  - Quality Management Plan
  - Communications Plan
  - Plan for managing and maintaining the Project schedule
  - Phase 1A Services Schedule, Phase 1B Services Schedule, and Phase 2 Services Schedule
  - Plan for managing Project documents
  - Records Management System Documentation
- Any other elements of Project Management proposed by the Design-Builder to support successful implementation of the Project

Task 2.1.10 Deliverables:

- Project Execution Plan and updates

2.1.11 Constructability Reviews

Constructability reviews shall be conducted by the Design-Builder as an ongoing activity during the development of the Initial Design, 30 percent Design, and 60 percent Design submittals. Constructability reviews shall include the following considerations, at a minimum, for all areas of Work: general construction sequencing, maintenance of existing plant access and operations during construction, required shutdowns of plant operations, site utilization for storage of equipment and materials, site entry and exit during construction, temporary construction facilities (parking for Design-Builder and Owner, staging, storage, stormwater controls, and construction office trailers), and site security and access control during construction. Constructability discussions shall be included in the design development workshops conducted with the Owner during the performance of Phase 1A and Phase 1B Services and the results of these reviews shall be presented in the deliverables for the Initial Design, 30 percent Design, and 60 percent Design submittals.

2.1.12 Value Engineering

Value engineering shall be conducted by the Design-Builder as an ongoing activity during the development of the Initial Design, 30 percent Design, and 60 percent Design submittals. The value engineering effort shall consider how design decisions affect construction costs, operation and maintenance (O&M) costs, schedule, operability, safety, reliability, and other O&M considerations. The Design-Builder shall prepare and present to the Owner technical information and cost estimates that will enable the Owner to make design decisions that include value engineering considerations. Value engineering discussions shall be included in the design development workshops conducted with the Owner during the execution of Phase 1A and Phase 1B Services and the results of these reviews shall be presented in the deliverables for the Initial Design, 30 percent Design and 60 percent Design submittals.

2.1.13 Commissioning and Start-up Plan

2.1.13.1 Phase 1B Services

Starting with development of the 30 percent Design, the Design-Builder shall continue to develop the Commissioning and Start-up Plan. Updates to the Commissioning and Start-up Plan shall be incorporated in the deliverables for the 30-percent and 60-percent Design submittals.

The Commissioning and Startup Plan develop during Phase 1B shall include the following at a minimum:

- A detailed description of Design-Builder's systematic testing and start-up procedures for each unit process, as well as complete system tests that will be performed locally and using SCADA to demonstrate that the facilities perform interactively and at the performance levels specified in the Project Technical Requirements.
- Details to ensure compliance with Section 3.19.1, Commissioning, Start-up and Testing to achieve Substantial Completion.
- A description of the methodology to demonstrate compliance with the requirements of the Agreement, any applicable Governmental Authority, Applicable Law, Standards and Guidelines or Permits and Approvals.
- A description of the methodology for the 30-day Performance Tests.
- Processes and procedures to be followed for testing, diagnosis, and correction of problems, including repeat testing where required.
- A detailed schedule of commissioning and start-up activities, including schedule for final connections, tie-ins, and the testing of all component parts of the Project in compliance with Owner's SCADA Standards, which must clearly identify the commissioning and start-up milestones and activities that are identified in Design-Builder's Works Schedule.
- The methods for introducing flow, disposing of any by-products or other waste streams generated during the commissioning and start-up testing.
- The methods for securing, utilizing, and disposing of water and other materials necessary for pipeline testing, including meeting all AWWA standards for disinfection of new water mains.
- Specific testing procedures for the Capacity Tests (tests performed to demonstrate each unit process can hydraulically pass the required design flow and meet all water quality standards), including means and methods to complete the tests even if the incoming flows are below the maximum design capacities specified in the Project Planning Document (Exhibit A of the Agreement) and/or Project Technical Requirements (Exhibit B of the Agreement).
- Sampling and Analysis Plan detailing sampling procedures, frequency of sampling, analysis procedures, third party laboratory requirements for demonstrating compliance with start-up and performance testing.
- Specific testing procedures for all auxiliary systems, including but not limited to, HVAC, mechanical, electrical, controls, fire and life safety, and security systems.
- Drawings and sketches, as required to illustrate the planned sequence of events.
- The commissioning and testing team organization and schedule, including the planned attendance of Design-Builder, any Design-Builder parties, and Owner Representatives.
- A list of the personnel who Design-Builder plans to employ for commissioning and start-up with information indicating their qualifications for this Work.
- The arrangements for collating and the format for reporting the results of all tests, including the start-up study as defined in Chapter 391-3-5 of the Rules and Regulations of the State of Georgia and GA Environmental Protection Agency (EPD) Engineering Plans and Specifications Review and Approval requirements.

- A plan for delivering operations and maintenance training and education to the Owner by the Design-Builder and Design-Builder party staff prior to Substantial Completion.
- Contingency plans in the event of equipment failures, instrument failures and process malfunctions.
- A listing and details for all temporary equipment and instruments required for the commissioning and testing.
- All test parameters to be monitored and measured during start-up and commissioning.
- Specific and detailed calibration methods, requirements and schedules for all testing equipment and instruments.
- Specific and detailed sample collection, handling, and testing procedures to be followed including a comprehensive QA/QC program for the 30-day Performance Tests and Capacity Tests.
- Response procedures for unsatisfactory test results including the definition of test result limits that constitute a failure during commissioning and start-up testing.
- Procedures for coordinating with Owner, as applicable, any start-up or shutdown of the Project required for commissioning and start-up activities, including the 30-day Performance Tests and Capacity Tests.
- A plan for Owner to hire an Independent Certifier to verify Design-Builder's compliance with the requirements set forth in this Exhibit.
- Procedures for an Independent Certifier to verify to the Owner that the Project satisfies all requirements for of the Commissioning and Start-up Plan and any Performance Requirements.

A Commissioning and Start-up Plan shall be prepared for each portion of the Project that may be considered for Substantial Completion.

With Owner's prior written approval, the Design-Builder may be allowed to not fully develop some of the requirements of the Phase 1B Commissioning and Start-up Plan stated above so long as there is sufficient detail in the Phase 1B Commissioning and Start-up Plan to develop the Guaranteed Maximum Price and the Phase 2 Schedule. In this scenario, all remaining parts of the Commissioning and Start-Up Plan shall be fully developed during the Phase 2 design.

As used herein, an "Independent Certifier" is a third party hired by the Owner to perform the reviews and observations set forth herein.

Task 2.1.13 Deliverables:

- Commissioning and Start-up Plan and updates

2.2 Task 2 – Existing Site and Facilities Conditions Review and Verification

2.2.1 General Review and Verification

As required by and subject to Section 4.2 of the General Conditions of Contract, the Design-Builder shall complete a comprehensive review of the Project Site and any contiguous areas that may affect or be affected by the Project, including Legal Requirements that may affect the Project.

The Design-Builder shall coordinate all field investigations of the Project Site with the Owner. Design-Builder's review shall include, but is not limited to:

- The existing facilities' operations, maintenance, permits, requirements, Legal Requirements, constraints, and the Owner's requirements and objectives for the Project.
- Site ingress and egress requirements and restrictions, traffic conditions and traffic control requirements, time of work restrictions, and requirements of public and private authorities with jurisdiction over roadways to and from the Project Site or along any public roads where Work is being performed, parking, and any other restrictions or considerations that may affect the Design-Builder's Work.
- Existing-conditions information provided by the Owner, including all available as-built information, geotechnical reports, engineering studies and reports, environmental studies, data, memos, reports, surveys, and site measurements.
- Any other investigations deemed necessary by the Design-Builder to fully acquaint itself with existing conditions for purposes of performing Phase 1A and Phase 1B Services.

The Design-Builder shall prepare a technical memorandum summarizing the information gathered during this review.

Task 2.2.1 Deliverables:

- Memorandum requesting additional information or comments on existing information
- Draft and final Site information review technical memorandum

2.2.2 Underground Utilities and Structures Report

The Design-Builder will prepare a report describing and identifying the locations of existing surface and subsurface utilities at the Project Site and the locations of man-made objects or structures. For circumstances where existing information is either conflicting or not available, the Design-Builder will coordinate and engage the services of a utility location subcontractor for identifying, designating, locating, and mapping existing and abandoned utility infrastructure. The Design-Builder will use Identification techniques appropriate to the Project Site and the underground structures being located. The Design-Builder will perform the aforementioned investigations promptly after commencement of the Project. The Design-Builder will report to the Owner in writing any additional information that is needed in order to complete the assessment of the existing conditions.

Task 2.2.2 Deliverables:

- Draft and final Underground Utilities and Structures Report

2.2.3 Topographic Survey

The Design-Builder shall conduct a topographic survey of the Project Site suitable for use for subsequent design and construction of the Project. Design-Builder shall set survey control at each Project Site location where Work will be performed to the extent decided by Design-Builder and with precision suitable for subsequent construction layout. Horizontal control shall be based on NAD 83 State Plane Coordinates and vertical control shall be based on NAVD 88 unless Design-Builder proposes otherwise, and the Owner agrees. The Design-Builder shall obtain appropriate elevations of existing facilities needed for design of the Project.

Task 2.2.3 Deliverables:

- Draft and final topographic survey

2.2.4 Geotechnical Investigations

The Design-Builder shall conduct geotechnical investigations at the Project Site. The results of the geotechnical investigations will be used to develop design criteria to be used by the Design-Builder during preparation of the IDR and subsequent design documents. The Design-Builder shall be responsible for determining the required scope of the preliminary geotechnical investigations and for arranging the execution of the Work.

The Design-Builder shall use the services of a geotechnical engineering firm to conduct fieldwork, perform the required geotechnical analyses, and produce the Geotechnical Data and Baseline Reports. The timing of the geotechnical investigations shall be at the discretion of the Design-Builder to coincide with decisions regarding location of structures and other site Work, and with the requirements for production of the subsequent Project detailed design.

2.2.4.1 Geotechnical Field Exploration

The Design-Builder, through either its own staff or the staff of a Subcontractor, shall provide an experienced geologist or engineer, licensed in Georgia, to continuously observe the field exploration activities to ensure compliance with the scope and objectives of the geotechnical investigations. Before drilling, the Design-Builder shall ensure that underground utilities have been previously marked, or arrange to have them marked, at each exploration location. All borings shall be backfilled with a lean concrete slurry, or by other means recommended by the Design-Builder, and cuttings containerized and hauled off-site for proper disposal. The Design-Builder and its Subcontractors and Sub-Subcontractors will exercise due care while working at the Project Site.

2.2.4.2 Geotechnical Laboratory Testing

The Design-Builder shall determine the laboratory tests required to evaluate subsurface conditions to obtain the data required for the design of the Project. The Design-Builder shall be responsible for conducting these tests.

2.2.4.3 Geotechnical Review and Report Preparation

Field exploration data, laboratory testing data, and research findings shall be evaluated by the Design-Builder to develop conclusions and recommendations concerning the geotechnical aspects of the Sites for design purposes. The Design-Builder shall prepare a Geotechnical Data and Baseline Report for the Project. The Design-Builder shall submit draft reports for review by the Owner. Any Owner comments shall be discussed at a review meeting, and the Design-Builder shall prepare final reports based upon the comments received.

Task 2.2.4 Deliverables:

- Draft and final Geotechnical Data and Baseline Reports

2.2.5 Hazardous Materials Survey and Analysis

The Design-Builder shall conduct a hazardous materials survey of the Project Site and any existing buildings to be included in the Work. The objective of the hazardous material survey is to identify

building materials that will require abatement, removal, or special handling, or have unique disposal requirements. If not addressed properly, these materials may expose workers and building occupants to health hazards if disturbed during renovation or demolition activities. In addition, not addressing hazardous building materials properly may invoke fines, citations, penalties from regulatory agencies or litigation from those potentially exposed to hazardous conditions, which shall be the sole responsibility of the Design-Builder. The procedures for conducting the survey and preparing the report shall comply with all Legal Requirements. The survey and analysis shall be completed so that the cost of handling any hazardous materials found can be included in the Project Cost Model.

2.3 Task 3 – Initial Design and Pilot Testing

2.3.1 Initial Design Development

Consistent with Owner's Project Criteria, the Design-Builder shall develop the Initial Design. The Design-Builder shall conduct all evaluations, alternative comparisons, equipment selection reviews, calculations, cost estimating, scheduling, workshops, and other services as needed to develop the Initial Design. The completion of the Initial Design will represent an approximately 15-percent complete design.

In developing the Initial Design, the Design-Builder shall address at a minimum the following topics:

- Project management requirements (see Task 1)
- Considerations needed to comply with Section 1.4 of the Agreement (e.g., maximize funding from federal and state sources)
- GEFA and WIFIA considerations to comply with all funding requirements
    - Design-Builder shall submit a memorandum to Owner summarizing these requirements.
- Evaluate Existing Hicks WPP and Hooper WPP water quality data, Battelle's technical memorandum found In Exhibit A-Appendix C, and the results of the Pilot Testing performed as a part of this Task to determine appropriate advanced treatment technologies for the removal of PFAS at Existing Hicks WPP, New Hicks WPP, and Hooper WPP.
- Technology evaluation of multiple scenarios for the entire Project's primary project components, including developing Cost Models and evaluating non-cost criteria (i.e., facility process flow diagram, constructability, operations and maintenance, and compliance with water quality requirements).
    - Primary Project components, include, but not limited to:
        - Existing Hicks WPP / New Hicks WPP:
            - Modified existing processes at Existing Hicks WPP
            - Processes at New Hicks WPP upstream of PFAS treatment
            - PFAS treatment of combined water from the Existing Hicks WPP and New Hicks WPP
            - Membrane reject water treatment and disposal, as applicable
            - Finished water processes, pumping to system via new High Service Pump Station, and storage (downstream of PFAS treatment)
            - Modified or new processes for residuals handling and dewatering

        - Hooper WPP:
            - Modified existing processes upstream of PFAS treatment, if applicable
            - New processes upstream of PFAS treatment, if applicable
            - PFAS treatment
            - Membrane reject water treatment and disposal, as applicable
            - Finished water processes and pumping (downstream of PFAS treatment)
            - Modified or new processes for residuals handling and dewatering

    - Coordinate with Owner to select technologies for the Project design elements.
    - Develop design criteria and select equipment for selected technologies.

- Incorporation and modifications of other existing facilities that will remain and be incorporated into the design plan, including but not limited to:

    - Smith Raw Water Pump Station and/or Smith High Service Pump Station and water transmission mains to convey raw water to Existing and New Hicks WPPs
    - Raw water transmission mains from Blalock Reservoir to Hicks WPP/new WPP
    - Repurposing of one or more of the existing Huie Constructed Treatment Wetlands (CTW) storage ponds for raw water supply and/or backwash holding for the Existing and New Hicks WPPs
    - Finished water distribution mains

- Coordinate with the Georgia EPD to determine any necessary treatability studies or pilot testing required for conventional or non-conventional treatment processes that will be considered for the New Hicks WPP.

    - Summarize findings of this coordination and submit to Owner for review and approval.
    - The outcomes of this determination are to be performed as a part of the pilot testing activities as described in Section 2.3.5.

- Summary of proposed equipment and facilities to be constructed, including sizing requirements and levels of redundancy for all major equipment, treatment processes, and pipelines.

- Process flow diagrams and hydraulic profiles through WPPs, including proposed facilities.

- Alternatives evaluated, and basis for evaluation and recommended systems; and equipment vendors proposed, evaluated, and recommended.

- Overall design criteria and any proposed performance standards and performance guarantees for the selected equipment and processes. Final performance guarantee requirements will be incorporated into the Agreement in the Phase 2 Contract Price Amendment.

- Proposed design criteria and description of improvements for:

    - Site civil engineering, including preliminary site plans showing flood elevations, buffer requirements, etc.; facilities to be demolished or abandoned; potential subsurface pipe and utility conflicts that may interfere with construction; grading and stormwater handling; parking and service access; access roads and walkways; piping connections to existing utilities; geotechnical conditions; hazardous materials conditions and abatement; protection of cultural resources; site constraints; traffic conditions; vehicular and pedestrian access; temporary facilities and parking for the Design-

Builder's and Owner's workforce during construction; materials and equipment staging area locations, size and security
  - Site landscaping allowance
  - Geotechnical and foundation requirements
  - Structural
  - Architectural, including building types, architectural requirements, and programming of administrative spaces
  - Building mechanical, including HVAC, plumbing, and fire protection
  - Instrumentation, controls, and SCADA improvements and interface with existing systems
  - Electrical supply and distribution (including emergency power), building electrical and lighting, and site lighting

- Summary of results of Task 2 – Existing Site and Facilities Conditions Review and Verification
- Site security including design guidelines, physical security facilities, electronic security features, and cybersecurity
- Summary of code requirements
- Initial development of the Commissioning and Start-up Plan
- Permitting considerations and permitting effects on design
- Demolition of existing facilities and waste materials disposal planning
- Proposed new facilities operations plan
- Site plan layout and description of new or altered existing facilities
- Finished water corrosion control treatment strategy (modifications to existing treatment as required due to changes in any other treatment process)
- Plan for general construction sequencing and maintenance of existing plant operations during construction
- Discussion of value engineering and constructability reviews

The Design-Builder shall prepare technical memoranda and conduct a series of workshops with the Owner to address the components of the Initial Design as it is developed, including but not limited to, treatment technology selection, size and redundancy concepts, preliminary facility layouts and concepts, and maintenance of plant operations and sequencing requirements. The Design-Builder shall incorporate preparation of technical memoranda and all planned workshops into the Phase 1A Project Schedule.

Draft technical memoranda on each workshop topic shall be submitted to the Owner at least 3 working days prior to the workshop. Each workshop shall include a weighted decision process to compare any alternatives on the basis of agreed-upon evaluation criteria.

The Design-Builder shall incorporate decisions made in the workshops into the respective technical memorandum. A summary of each workshop topic to the Owner within three working days after each workshop. The Owner will review and provide any comments to the Design-Builder to incorporate into final technical memoranda. All final technical memoranda shall be included as an appendix in the Initial Design Report (IDR). Notwithstanding anything to the contrary herein, Owner's review, approval, or requested revision of any design submission at any stage, memorandum, report, meeting minutes, or proposed or adopted Construction Document, or any other involvement in the design-development process, is subject to Section 2.4.3 of the General Conditions of Contract.

Task 2.3.1 Deliverables:

- Draft and final technical memoranda
- Workshop agendas, PowerPoint presentations, and meeting minutes

2.3.2 Initial Design Report

The Design-Builder shall prepare and submit to the Owner an IDR that includes the Design-Builder's evaluation, findings, and recommended overall Phase 1A design for the Project. The IDR will explain how the proposed Phase 1A design will meet the Owner's performance, operational, and maintenance requirements for the Project and comply with all Legal Requirements. The IDR will include information on alternatives considered and evaluated, and information on the rationale or method by which the recommended design was selected. Information considered in the evaluation of alternatives and selection of a recommended design shall include, but not be limited to: estimated capital costs; estimated O&M costs, reliability, robustness, and flexibility of the recommended processes and equipment; ease of Owner operation and maintenance; flexibility; compliance with existing and future Legal Requirements; any performance guarantees; and public safety.

The IDR shall include all information required by Georgia EPD to satisfy the engineering report requirements stated in Georgia EPD's Minimum Standards for Public Water Systems, Revised March 2021.

The IDR shall also include the following:

- A description of Legal Requirements and permitting requirements that apply to the proposed design, including but not limited to:
  - Review and approval by, and other Legal Requirements of, the Georgia EPD, Georgia Environmental Finance Authority (GEFA), and the U.S. Environmental Protection Agency
  - Water Infrastructure Finance and Innovation Act (WIFIA) loan review and approval, as it pertains to this project
  - NEPA cross cutter permitting agency review and approval
  - Local land disturbance permitting
  - Construction phase stormwater management permitting
  - Local building permitting
  - Other Legal Requirements set forth in Section 2.5 of the General Conditions of Contract

  The Design-Builder shall coordinate with appropriate agencies regarding Project permitting requirements and shall work closely with the Owner on all permitting requirements. Contact and discussions with permitting agencies shall be done in coordination with the Owner and documented by the Design-Builder.

- An update of the Design-Build Schedule that is prepared in accordance with Section 2.1.8 of this Exhibit and the Contract Documents that shows, at a minimum:
  - Submission of the Phase 1B Proposal
  - Preparation and completion of 30 percent Design Completion Documents (DCD)
  - Preparation and completion of 60 percent DCD
  - Submission of a 60 percent Design-based Phase 2 Proposal (including the GMP)
  - Final design integrated with construction, testing, start-up, and commencement of operations

Changes to the Design-Build Schedule from the initial Design-Build Schedule must be approved by the Owner.

- Initial development of the Project Cost Model (the Phase 2 Cost Estimate). Design Builder will be required to develop and maintain multiple Cost Models while various technologies are being selected and the project is being defined.
- Design-Builder's estimate of Phase 2 cash flow requirements by month from commencement of construction Work through Final Completion.

The IDR shall include information on major equipment and vendors proposed and alternatives evaluated, including initial pilot testing results. Comparisons of equipment and vendors will include technical and performance characteristics, reliability, safety, warranties, and operational experience. The IDR will include supporting documentation such as calculations, schematics, and drawings to support the comparisons and recommendations.

The Design-Builder will include within the IDR a study of the Project's outside utility requirements including natural gas service, electric service, and any other outside utility service requirements identified by the Design-Builder as required for the Project. The Design-Builder will work with the Owner and coordinate with local utility service providers. The Design-Builder shall determine, with utility provider input as needed, what improvements are required for the Project, and incorporate appropriate components into the Project design.

A draft IDR shall be submitted to the Owner for review. The Design-Builder shall hold a workshop with the Owner to present the IDR (Task 2.3.2). The Owner will review the draft IDR and provide written comments to the Design-Builder. The Owner's comments shall be addressed by the Design-Builder in a final IDR (Task 2.3.4).

Task 2.3.2 Deliverables:

- Draft IDR with all supporting documentation

2.3.3 Initial Design Review Workshop

The Design-Builder shall meet with the Owner's staff to present a summary of the IDR and discuss Owner comments on the draft IDR. The Design-Builder shall obtain Owner approval on any recommended alternatives prior to proceeding with 30 percent design.

Task 2.3.3 Deliverables:

- Meeting agenda and notes
- Updated Design Progression Log
- Updated Project Decision Log

2.3.4 Final Initial Design Report

The Design-Builder shall prepare a final IDR incorporating Owner comments on the draft IDR. The Design-Builder shall provide a summary log of how each Owner comment has been addressed. The Owner will review the final IDR and provide written concurrence that Owner has no further comments. Owner's review and comment is subject to Section 2.4.3 of the General Conditions of Contract.

Task 2.3.4 Deliverables:

- Final IDR

Generally, the deliverables of the IDR phase shall be in searchable, bookmarked PDF format. Upon request, the Design-Builder will provide hard copies or the native electronic format of any deliverables.

2.3.5 Treatability Studies and Pilot Testing

The Design-Builder will coordinate conventional plant treatability studies required for the New Hicks WPP. The Design-Builder will also coordinate pilot testing requirements for non-conventional treatment processes including, but not limited to, high-rate filter studies, membrane filtration, cartridge filters, tube or plate settler clarifications, and post-surface water treatment.

2.3.5.1 Planning

Following Notice to Proceed with Phase 1A Services, the Design-Builder shall review Exhibit A (Project Planning Document) and existing site conditions and conduct additional due diligence as necessary (including coordination with the Georgia EPD), to determine what treatability studies and pilot testing of advanced treatment technologies will be required for the Existing Hicks and Hooper WPPs. The Design-Builder will present the proposed technologies for piloting to Owner. Owner will approve technologies selected for pilot testing; Owner will consider having different advanced treatment technologies at the WPPs.

2.3.5.2 Advanced Treatment Technologies Testing Plan

The Design-Builder shall develop an Advanced Treatment Technologies Testing Plan for Existing Hicks WPP source water and Hooper WPP source water based on recommended treatability testing and utilizing the above-selected advanced treatment technologies for pilot testing. If RO or NF is tested, a pilot testing plan shall be developed for their reject water.

The Design-Builder shall develop the scope of work and coordinate with the pilot testing firms for the site preparation requirements and oversee the installation, execution of testing, and breakdown of testing equipment. The Design Builder will submit the Advanced Treatment Technologies Testing Plan to Owner and EPD for approval, which shall detail, at a minimum: objectives of the pilot testing, modifications required to existing WPP structures, shutdown plan (if necessary) of Owner's processes, site layout plan, testing procedures, parameters measured, and plan schedule.

At a minimum, the following data will be collected during pilot testing: minimum/maximum source flow rejection (for RO/NF), total organic carbon (TOC) rejection, sulfate rejection, sodium rejection, chlorite rejection, PFOA rejection, PFOS rejection, GenX rejection, PFBS rejection, PFNA rejection, and PFHxS rejection.

2.3.5.3 Pilot Testing Proposal

The Design-Builder shall prepare a Pilot Testing Proposal, including all work required by the Advanced Treatment Technologies Testing Plan, to be performed under the Pilot Testing Allowance Value included in Attachment E Fee and Rate Proposal, for review and approval by Owner prior to execution of work. The Pilot Testing Proposal shall include all labor, supplies, equipment, and other direct costs necessary to perform the treatability and pilot testing, including but not limited to design, delivery, installation,

operation, sampling and analyses, data analysis, report preparation, meetings/coordination with Owner, etc.

Tasks 2.3.5.1 through 2.3.5.3 shall be included in the Phase 1A Services lump sum fee.

2.3.5.4 Pilot Testing Implementation

Upon review and written approval of the Pilot Testing Proposal, Design-Builder shall execute the work included in the Pilot Testing Proposal, including submitting the Test Plan to Georgia EPD for approval, coordinating with the testing firms for the site preparation requirements, and overseeing the installation, execution of testing, and breakdown of testing equipment. This work shall be paid from the Pilot Testing Allowance Value.

Task 2.3.5 Deliverables:

- Planning Workshop agenda, meeting notes, and action items
- Advanced Treatment Technologies Testing Plan
- Georgia EPD Testing Plan approval
- Pilot Testing Proposal
- TM summarizing results from all pilot studies
- Pilot Testing Result Workshop agenda, meeting notes, and action items

2.4 Task 4 – Development of Phase 1B Proposal

2.4.1 Phase 1B Proposal

After the Design-Builder has received the Owner's written notification that its comments have been satisfactorily addressed in the revised IDR, the Design-Builder shall provide the Owner with a Phase 1B Proposal as set forth in Article 2 of the Agreement. The Phase 1B Proposal shall cover completion of design from the Initial Design to 60 percent. The Phase 1B Proposal shall provide information on all engineering and other services necessary to perform the Phase 1B Services as required under the Agreement. As part of its Phase 1B Proposal, the Design-Builder shall submit a final Phase 1B Schedule that meets the requirements for scheduling set forth herein and any other Contract Document. The Phase 1B Proposal shall contain the proposed Phase 1B Contract Price as described in the Agreement.

2.4.2 Basis of the Proposed Phase 1B Contract Price

In the Phase 1B Proposal, the Design-Builder shall prepare and include documentation supporting the Phase 1B Contract Price. The proposed Phase 1B Contract Price shall include the components set forth in Section 2.3.1 of the Agreement. The supporting documentation required by this section includes, at a minimum, the following cost estimate and proposal:

- Completion of Design Services (from Initial Design to 60 percent Design)

The proposed Phase 1B Contract Price shall include sufficient detail to show the calculation of the build-up of all of its cost components, including labor category and rate table, work breakdown structure (aligning with Exhibit C), estimated hours by labor category and task and major subtasks, estimated sheet count by discipline, list of assumptions, list of deliverables, and other direct costs. I

nclude with Phase 1B Proposal a summary of changes from the preliminary estimate for Phase 1B Services provided within Attachment E – Fee and Rate Proposal.

2.4.3 Preparation of the Draft Phase 1B Proposal

The Design-Builder shall start the development of the Phase 1B Proposal with the start of the Initial Design Development and will continue with development of the Cost Estimate Submittal through to the final IDR. During Phase 1A, the Design-Builder shall maintain ongoing communication with the Owner to assess and analyze concept and design changes as they relate to the overall Project cost and schedule.

Design-Builder will prepare such documents and estimates as accurately as possible and will keep the Owner fully informed and involved with the design development and cost estimates throughout the development of the Project. The draft Phase 1B Proposal shall be submitted to the Owner and reviewed in a workshop (Task 2.4.4). The parties will discuss the Phase 1B Proposal and attempt to reach a Phase 1B Contract Price Amendment.

Tasks 2.4.3 Deliverables:

- Draft Phase 1B Proposal, including backup documentation

2.4.4 Phase 1B Proposal Workshop and Final Phase 1B Proposal

Within 10 working days after delivery of the draft Phase 1B Proposal, the Design-Builder shall meet with the Owner to present, review, and answer questions about the content of the Phase 1B Proposal and all attachments. The Design-Builder shall finalize the Phase 1B Proposal within 10 working days after the workshop and resubmit it to the Owner for final review. Changes to the draft Phase 1B Proposal shall be clearly highlighted in an organized format.

Task 2.4.4 Deliverables:

- Workshop Agenda, meeting notes and action items
- Phase 1B Proposal

2.5 Task 5 – 30 Percent Design Completion Documents

2.5.1 Period of Performance

The Design-Builder shall prepare and submit to the Owner the complete 30 percent Design Completion Documents (DCD) in accordance with the Owner-approved Design-Build Schedule or, if earlier, at such time to avoid any delays to Contract Times.

2.5.2 30 Percent Design Workshops

The Design-Builder shall conduct with the Owner a series of workshops to review the development of the 30 percent DCD and obtain input from the Owner as the design progresses. Workshops shall be conducted to review specific areas of the Project and to review the design progress of specific systems and disciplines. The intent is to develop consensus on layouts, configurations, and features of various systems as the design refinement efforts progress. A log of review comments will be maintained by the

Design-Builder to ensure all design comments are addressed and incorporated into the final 30 percent DCD.

Task 2.5.2 Deliverables:

- Meeting agenda, notes, action items and review comments log

2.5.3 Criteria

The 30 percent Design will take the concepts developed in the IDR and advance them to 30 percent complete engineering drawings, specifications, and other documents as required herein. The 30 percent completion process shall address any alternative designs, approaches, technologies, equipment, or processes that the Design-Builder recommends for consideration by the Owner if not included in the final IDR.

2.5.4 Minimum Requirements

The 30 percent DCD shall address all requirements of the Project and shall include, without limitation, the following:

2.5.4.1 Drawings, Specifications, and Additional Information

The 30 percent DCD will incorporate the recommended systems and layouts identified in the IDR into the 30 percent drawings and specifications organized by Project Site location. The 30 percent DCD drawings shall be developed using computer-aided design software and three-dimensional models. Three-dimensional models shall be capable of incorporating future Asset Registry data and being integrated into Owner's CMMS systems.

The following paragraphs describe the minimum requirements of the 30 percent DCD drawings, specifications, and additional information.

Preliminary drawings that illustrate each of the basic components of the Project including the size, scale, location, dimensions, and character of each building structure and each improvement, and including, at the approximate levels of completion shown, the following:

- General Drawings:
  - Cover sheet
  - List of drawings included in submittal and anticipated drawings (not yet started) to be included in future submittals
  - Drawing symbols, numbering, and tagging conventions, symbols, and abbreviations
- Civil Drawings (all civil site plans shall be at 1"=20' scale):
  - Topographic survey site plans:
    - Show existing grading, structures, piping, easements, rights-of-ways, property boundaries, floodplains, streams, wetlands, required setbacks/buffers, horizontal and vertical control information, etc.
  - Location of proposed facilities and roads
  - Yard piping plans
  - Transmission mains – plans and profiles for any modified or new mains
  - Preliminary grading plans

  - Stormwater management concept plans and proposed control measures

- Process Drawings:
  - Hydraulic profiles of New Hicks WPP, modified portions of Existing Hicks WPP, modified portions of Hooper WPP
  - Process flow diagrams (process flows and residuals handling)
  - Preliminary facility plans and sections
  - Process and instrumentation diagrams (P&IDs) – process portion complete
  - Existing and proposed yard piping (coordinate with Civil)
- Structural Drawings:
  - As needed to support 30% DCD submittal
- Architectural Drawings:
  - Floor plan layouts (incorporating Owner-approved architectural programming requirements from Initial Design)
  - Building code summary sheets
- Mechanical Drawings:
  - Facility plans (general arrangement for HVAC and plumbing)
  - Fire suppression preliminary schedules
- Electrical Drawings:
  - Overall electrical single line diagrams
  - Overall electrical site plans
  - Preliminary electrical distribution site plan
  - Main switchgear single line diagram
  - Preliminary load schedules
- Instrumentation Drawings:
  - Legends and symbols
  - Control system block diagrams/network architecture
  - P&IDs – in progress with process portion complete

Written preliminary specifications shall include the following, at a minimum:

- A table of contents listing all anticipated specification sections for the Project.
- Draft specifications for major equipment items including, at a minimum: SCADA system, primary process mechanical equipment, PFAS removal technology (-ies), and electrical switchgear.
  - Major equipment is generally defined as having a purchase price greater than $100,000.
  - Specifications shall be organized according to Construction Specifications Institute (CSI) MasterFormat (latest revision).

The overall arrangement and contents of the 30 percent Design specifications shall be as approved by the Owner.

Additional information shall include the following, at a minimum:

- Major equipment list, including:

  - Reference specification number
  - List of acceptable manufacturers
  - Estimated weights and horsepower requirements
  - Additional information needed for coordination of all disciplines
- List of proposed sole-sourced equipment and justification
- Site landscaping recommended cash allowance
- Results of pipe transient surge analysis performed for all new and modified pumping facilities
  - Methodology used and summary of analyses performed
  - List of recommended facilities to be designed

2.5.4.2 Constructability and Value Engineering Reviews

The constructability and value engineering requirements set forth in Sections 2.1.11 and 2.1.12 shall be performed in the 30 percent Design and incorporated as part of the 30 percent DCD.

2.5.4.3 Updated Project Cost Model

During development of the 30 percent DCD, the Design-Builder shall update its Cost Estimate Submittal presented in the IDR on a monthly basis and shall present the updates during Monthly Progress Meetings and the workshops conducted during the 30 percent Design. The Design-Builder shall also prepare an updated Cost Estimate Submittal based on the final 30 percent Design. The updated Cost Estimate Submittal shall be prepared in accordance with Section 2.9 of this Exhibit.

Task 2.5.4.4 Deliverables:

- Monthly updates to the Cost Model
- Update of the Project Cost Model based on the completed 30 percent DCD

2.5.4.4 Updated Design-Build Schedule

The Design-Builder shall update its Design-Build Schedule on a monthly basis and present updates during the Monthly Progress Meetings and workshops conducted during the 30 percent Design. The updated schedule shall indicate key milestone dates for Work completion from the final 30 percent DCD through Substantial Completion, start-up, testing, and Final Completion.

Task 2.5.4.5 Deliverables:

- Updated Design-Build Schedule at each Monthly Progress Meeting and workshop and at the conclusion of 30 percent DCD

2.5.4.5 Initial Commissioning and Start-up Plan

The Design-Builder shall provide an initial Commissioning and Start-up Plan as required in Section 2.1.13 of this Exhibit.

2.5.4.6 30 Percent DCD Package

A 30 percent DCD Package shall be prepared that includes all the deliverables developed for the 30 percent Design.

Task 2.5.4.7 Deliverables:

- Draft and final 30 percent DCD Package

Generally, the 30 percent DCD deliverables shall be in searchable, bookmarked PDF format. Upon request, Design-Builder will provide hard copies or native electronic format of any deliverables. Hard copies of Drawings shall be 11 by 17 inches in size. Drawings and specifications shall be bound.

2.5.5 Owner Review

The Design-Builder shall submit a complete draft set of the 30 percent DCD Package to the Owner for review. The Design-Builder shall hold a workshop with the Owner to present the 30 percent DCD Package (Task 2.5.6). The Owner will review the 30 percent DCD and provide the Design-Builder with written review comments. The Design-Builder shall make such revisions as required in order to address the Owner's comments. Owner's review and comment is subject to Section 2.4.3 of the General Conditions of Contract.

2.5.6 30 Percent Design Final Review Workshop and Final 30 Percent DCD Package

After the Owner completes review of the draft 30 percent DCD, the Design-Builder shall schedule and conduct a workshop or workshops with the Owner to review the draft final 30 percent DCD. The Design-Builder shall address any Owner comments on the final draft DCD and incorporate any resulting changes into the final 30 percent DCD. The Owner will notify the Design-Builder in writing after the Owner has determined that revisions made by Design-Builder are acceptable. Owner's notice under this section is subject to Section 2.4.3 of the General Conditions of Contract.

Task 2.5.6 Deliverables:

- Meeting agenda, notes, action items and review comments log
- Final 30 percent DCD Package

2.5.7 Regulatory Review and Approval

The Design-Builder shall begin to prepare submittal packages required to obtain regulatory permits and approval, including as may be required by the Legal Requirements and as required for funding sources identified in Section 1.4 of the Agreement. Design-Builder shall hold pre-submittal meetings with these agencies and incorporate any comments into the design as necessary to obtain required permits and approvals. Section 2.6.7 provides a list of anticipated regulatory agencies and permits for this Project; Design-Builder will determine additional regulatory agency approvals required.

The Design-Builder shall also be responsible for satisfying all requirements in GEFA's guidance document ("Georgia's State Revolving Loan Fund Guidance for Project Requirements, Drinking Water SRF") and all requirements of the WIFIA Program, and shall include such requirements and activities necessary to comply therewith in the Design-Build Schedule. Such requirements include, but are not limited to, those set forth in Exhibit D of the Agreement.

The Design-Builder shall update the IDR previously completed in Task 3 based upon any changes made during Task 4 and submit to Georgia EPD for review and approval. The report shall be stamped by a professional engineer licensed in the state of Georgia and duly qualified and capable of designing water systems and computing flows and pressures in water system projects. Any comments received from

Georgia EPD shall be reviewed with the Owner. The Design-Builder will address said comments to obtain approval from Georgia EPD.

Owner may submit the revised final IDR to GEFA, USEPA, and any other regulatory body for review and approval. The Design-Builder shall address any comments received from any regulatory body or funding agency, and work with any regulatory body or funding agency to obtain approval of the IDR.

Task 2.5.7 Deliverables:

- Revised IDR, as needed to address comments from regulatory bodies or funding agencies
- Georgia EPD approval of IDR

2.6 Task 6 – 60 Percent Design Completion Documents

2.6.1 Period of Performance

The Design-Builder shall prepare and submit to the Owner the complete 60 percent DCD in accordance with the Owner-approved Design-Build Schedule or, if earlier, at such time to avoid any delays to Contract Times.

2.6.2 60 Percent Design Workshops

The Design-Builder shall conduct with the Owner a series of workshops to review the development of the 60 percent DCD and obtain input from the Owner as the design progresses. Workshops shall be conducted to review specific areas of the Project and to review the design progress of specific systems and disciplines. The intent is to develop consensus on layouts, configurations, and features of various systems as the design refinement efforts progress. A log of review comments will be maintained by the Design-Builder to ensure all design comments are addressed and incorporated into the final 60 percent DCD.

Deliverables:

- Meeting agenda, notes, action items and review comments log

2.6.3 Criteria

The 60 percent DCD will take the designs presented in the 30 percent DCD and advance them to 60 percent complete engineering drawings, specifications, and other documents required herein. The 60 percent DCD shall indicate any new alternative designs, approaches, technologies, equipment, or processes that the Design-Builder recommends, and the Owner approves, if not included in the final 30 percent DCD.

2.6.4 Minimum Requirements

The Design-Builder shall achieve an overall 60 percent-complete detailed design enabling Design-Builder to prepare the Phase 2 Proposal (including a proposed GMP) pursuant to Article 2 of the Agreement. The 60 percent DCD shall address all requirements of the Project and shall include, without limitation, the following:

2.6.4.1 Drawings, Specifications, and Additional Information

The 60 percent DCD shall include an update to the 30 percent Design drawings developed to an overall 60 percent complete stage, including drawings added to the 30 percent Design drawings to provide additional design details to bring the overall design completion to approximately 60 percent. The 60 percent Design drawings shall incorporate approved Owner comments from the 30 percent review. The 60 percent Design drawings shall be developed using computer-aided design software and three-dimensional models.

Drawings shall be advanced to the following minimum levels of completion:

- General Drawings:
  - Cover sheet
  - List of drawings
  - Drawing symbols, numbering, and tagging conventions, symbols, and abbreviations
  - Standard details
- Civil Drawings:
  - Site plans showing existing conditions and proposed facilities and roads
  - Yard piping, paving, grading, and stormwater drawings
  - Transmission mains – plans and profiles for any modified or new mains
  - Erosion and Sedimentation Control requirements
- Process Drawings:
  - Hydraulic profiles of New Hicks WPP, modified portions of Existing Hicks WPP, modified portions of Hooper WPP
  - Process flow diagrams (process flows and residuals handling)
  - Demolition plans
  - Facility plans, sections, and details
  - Completed P&IDs
  - Existing and proposed yard piping (coordinate with Civil)
  - Pipe profiles for any major pipe or electrical ductbank crossings
  - Pipe and valve schedules
  - Pipe support details
  - Standard details
- Structural Drawings:
  - General notes
  - Pipe support and thrust restraint details
  - Special inspections requirements
  - Demolition plans
  - Facility plans, sections, and details
  - Beam and column schedules
  - Steel framing elevations and details
  - Pile location plans, if applicable
  - Standard details
- Architectural Drawings:

- Floor plans
- Building code plan
- Elevations
- Roof plans
- Exterior elevations
- Material and finish schedules
- Standard details

- Mechanical Drawings:
  - HVAC:
    - General notes
    - Facility plans, sections, and details
    - Flow control diagrams
    - Schedules
    - Standard details
  - Plumbing:
    - General notes
    - Facility plans
    - Riser diagrams and isometrics
    - Schedules
    - Standard details
  - Fire Protection:
    - General notes
    - Facility plans (schematic)
    - Riser diagrams and isometrics
    - Schedules
    - Standard details

- Electrical Drawings:
  - General notes, legend, and symbols
  - Overall plant electrical single line diagrams
  - Overall electrical site plans
  - Site plans (proposed and demolition)
  - Ductbank schedules
  - Facility single line diagrams
  - Facility lighting plans
  - Facility power plans
  - Facility demolition plans and temporary requirements, if applicable
  - Grounding plans
  - Electrical equipment elevations (switchgear and MCCs)
  - Electrical distribution site plan
  - Main switchgear single line diagrams
  - Panel schedules
  - Load schedules
  - Communication block diagrams
  - Standard details

- Instrumentation Drawings:
    - Legends and symbols
    - Control system block diagrams/network architecture
    - P&IDs
    - Standard details

The 60 percent DCD shall include additions and updates to the 30 percent DCD specifications for all design disciplines. Written specifications shall include a description of all equipment and Work procedures. Specifications shall also include, at a minimum, the following:

- Division 01 Specifications including, but not limited to, requirements for:
    - Jobsite Security
    - Coordination with Other Projects and Plant Operations
    - Project Meetings (type, frequency, location, attendees)
    - Quality Assurance and Control Procedures
        - Submittal Procedures (including list of all planned submittals
        - Requests for information Procedures
        - Proposed document controls and records management system
        - Process flow diagram showing routing and review of all submittals and RFIs, including Owner's involvement
    - Project photographs
    - Temporary Utilities
    - Temporary Controls
    - Maintenance of Utility Operations During Construction
    - Protection of Existing Facilities
    - Demolition and Removal of Existing Structures and Equipment
    - Testing Services
    - Site Access and Storage (including proposed Design-Builder parking and laydown areas)
    - Temporary Environmental Controls
    - Field Offices, Equipment and Services
    - Common Product Requirements
    - General Equipment Stipulations
    - Product Delivery, Storage and Protection Requirements
    - Cleaning and Waste Management
    - Project Record Documents
    - Asset Registry
    - Electronic Operations and Maintenance Manuals
    - Instruction of Owner's Personnel (training for all new process equipment)
    - Spare Parts and Extra Material
    - Project Closeout Requirements
- Equipment and any applicable system performance guarantees developed in accordance with Exhibit B-Project Technical Requirements and as agreed upon with the Owner during the execution of this and previous tasks.
- Equipment and systems manufacturer requirements for installation verification, testing, start-up, and training.

- Detailed commissioning and start-up requirements and procedures for all equipment items in conformance with the Commissioning and Start-up Plan.
- Manufacturer-required operations and maintenance documentation.
- Equipment and systems warranty provisions.
- Requirements for Special Inspection, Observation, and Testing as required in accordance with Chapter 17 of the most recent edition of the International Building Code and any other applicable standards.

Specifications shall be organized according to Construction Specifications Institute (CSI) MasterFormat (latest revision).

Additional information shall include the following, at a minimum:

- Final equipment list
- Process control descriptions
- Input/output list
- Instrument list
- Asset registry list

2.6.4.2 Constructability and Value Engineering Reviews

The constructability and value engineering requirements set forth in Sections 2.1.11 and 2.1.12 shall be performed in the 60 percent Design and incorporated as part of the 60 percent DCD.

2.6.4.3 Maintenance of Plant Operations and Construction Phasing Plan

The Design-Builder shall develop an initial maintenance of plant operations (MOPO) and Construction Phasing Plan for general construction sequencing, maintenance of existing plant access and operations, tie-ins to existing plant operations, required shutdowns of plant operations, proposed site access, site utilization for storage of equipment and materials, site entry and exit during construction, temporary construction facilities (parking for Design-Builder and Owner, staging, storage, stormwater controls, office trailers), and site security and access control during construction. A schematic will be provided showing areas to be used by the Design-Builder for storage of construction materials and equipment, locations of a temporary construction trailers and for construction of new facilities including required setbacks and traffic flow for the construction vehicles entering and exiting the Project Site. This information shall be incorporated as part of the 60 percent DCD.

Task 2.5.4.3 Deliverables:

- MOPO and Construction Phasing Plan

2.6.4.4 Updated Project Cost Model

During development of the 60 percent Design, the Design-Builder shall update its Cost Estimate Submittal on a monthly basis and shall present the updates during Monthly Progress Meetings and the workshops conducted during the 60 percent Design. The Design-Builder shall also prepare an updated Cost Estimate Submittal based on the final 60 percent Design. The updated Cost Estimate Submittal shall be prepared in accordance with Section 2.9 of this Exhibit.

Task 2.6.4.4 Deliverables:

- Monthly updates to the Cost Model
- Update of the Project Cost Model based on the completed 60 percent DCD

2.6.4.5 Updated Design-Build Schedule

The Design-Builder shall update its Design-Build Schedule on a monthly basis and present updates during the during Monthly Progress Meetings and workshops conducted during development of the 60 percent Design. The updated schedule shall indicate key milestone dates for completion of Work from the final 60 percent DCD through Substantial Completion, start-up, testing, and Final Completion.

Task 2.6.4.5 Deliverables:

- Updated Design-Build Schedule presented at each Monthly Progress Meeting and workshop and at the conclusion of 60 percent DCD

2.6.4.6 Training Plan Requirements

The Design-Builder shall develop a Training Plan to cover operations and maintenance of all processes and equipment. The requirements of the Training Plan shall be incorporated into the equipment specifications. The Training Plan shall, at a minimum:

- Include a combination of classroom and field/maintenance shop training.
- Include preparation for virtual training sessions, if required by conditions and circumstances in effect at the time.
- Include preparation for covering multiple work shifts and professionally record all sessions for Owner's subsequent use.
- Be designed to completely train Owner staff to competently operate and maintain the Project equipment with the systems theory, sequence of operations, component and functional descriptions, standard operating procedures, hazard analysis of equipment, safety features, emergency procedures, assembly, disassembly, preventive, corrective and predictive maintenance, internal and external wiring, control loop, schematics, and diagrams of all components.
- List all equipment and systems to be installed on the Project, including the following information for each equipment package or system:
  - A description of each equipment package or system with reference to technical specifications or drawings as applicable
  - Identification of target audiences (e.g., operators, mechanical maintenance, electrical maintenance, instrumentation maintenance)
  - Required duration of classroom training for each session and each audience
  - Required duration of hands-on training for each session and each audience
- Establish the hours of training that will be provided prior to Substantial Completion.

Task 2.6.4.6 Deliverables:

- Training Plan and updates

2.6.4.7 Subcontracting Plan

The Design-Builder shall prepare a draft Subcontracting Plan that identifies the type of work or trades that will be required to complete the Work by the Scheduled Substantial Completion Date, describes the methods the Design-Builder will utilize to engage Design Consultants and Subcontractors, describes the methods the Design-Builder will utilize to engage with Design Consultant and Subcontractors classified as disadvantaged business enterprises (as specified by GEFA, WIFIA, SLBE, EPD, and any other regulatory body), and provides a detailed, line-item breakdown of the estimated costs of each subcontracting package. The Subcontracting Plan shall be submitted as part of the 60 percent DCD Package.

Task 2.6.4.7 Deliverables:

- Subcontracting Plan and updates

2.6.4.8 Final Commissioning and Start-up Plan

The Design-Builder shall refine and update the initial Commissioning and Start-up Plan developed in the 30 percent DCD and provide a final Commissioning and Start-up Plan as required in Section 2.1.13 of this Exhibit. The elements of this Plan shall be included in the various equipment specifications, as appropriate.

2.6.4.9 Required Permits and Approvals.

The Design-Builder shall update the summary of required regulatory permits and approvals and summarize in an Owner's Permit List that is submitted with the 60 percent DCD Package. This summary shall include regulatory contacts and expected procedures required to obtain required permits and regulatory approvals.

2.6.4.10 60 percent DCD Package

A 60 percent DCD Package shall be prepared that includes all the deliverables developed for the 60 percent Design.

Deliverables:

- Draft and final 60 percent DCD Package

Generally, the 60 percent DCD deliverables shall be in searchable, bookmarked PDF format. Upon request, the Design-Builder will provide hard copies or native electronic format of any deliverables. Drawing hard copies shall be 11-by-17 inches in size. Drawings and specifications shall be bound.

2.6.5 Owner Review

The Design-Builder shall submit a complete draft set of the 60 percent DCD Package to the Owner for review. The Design-Builder shall hold a workshop with the Owner to present the 60 percent DCD Package (Task 2.6.6). The Owner will review the 60 percent DCD and provide the Design-Builder with written review comments. The Design-Builder shall make such revisions as required in order to address the Owner's comments. Owner's review and comment is subject to Section 2.4.3 of the General Conditions of Contract.

2.6.6 60 Percent Design Final Review Workshop and Final 60 Percent DCD Package

After the Owner completes review of the draft 60 percent DCD, the Design-Builder shall schedule and conduct a workshop or workshops with the Owner to review the draft final 60 percent DCD. The Design-Builder shall address any Owner comments on the final draft DCD and incorporate any resulting changes into the final 60 percent DCD. The Owner will notify the Design-Builder in writing after the Owner has determined that revisions made by the Design-Builder are acceptable. Owner's notice under this section is subject to Section 2.4.3 of the General Conditions of Contract.

Deliverables:

- Meeting agenda, notes, action items and review comments log
- Final 60 percent DCD Package

2.6.7 Regulatory Review and Approval

The Design-Builder shall prepare submittal packages, including construction drawings and specifications and other materials, required to obtain regulatory permits and approvals, including those that may be required for funding sources identified in Section 1.4 of the Agreement. Design-Builder shall be responsible for submitting these packages, with Owner input and approval, to the identified agencies. The Design-Builder shall follow-up with these agencies and respond to any comments to obtain required permits and approvals, or to get the required submittals in an approvable form. Expected regulatory permits and approvals include, but are not limited to:

- Georgia EPD reviews (see additional requirements for Georgia EPD reviews of plans and specifications required prior to commencement of any construction activities in Section 3.2 Phase 2 Design Services)
- Reviews required by GEFA, Georgia EPD, and USEPA
- Local building permitting
- Land disturbance permitting
- Georgia Department of Transportation (GDOT) Utility Facility Encroachment Permit (GUPS Permit).
- US Army Corps of Engineers (USACE) Section 404 Permit
- Pipeline licenses and maintenance right of entry permits through RailPros
- Variances/easements for work encroaching private property or Waters of the State buffers

The Design-Builder will also be responsible for satisfying all requirements in GEFA's guidance document ("Georgia's State Revolving Loan Fund Guidance for Project Requirements, Drinking Water SRF"), all requirements of the WIFIA Program, and other requirements set forth in Exhibit D of the Agreement. Design-Builder will include all such requirements, activities, and durations necessary to comply with the foregoing in the Design-Build Schedule.

Deliverables:

- Permit applications and submittal packages are required by individual permitting agencies (including interim design packages, as applicable)

2.7 Task 7 – Development of the Phase 2 Proposal

2.7.1 Phase 2 Proposal

After the Design-Builder has received the Owner's written notification that its comments have been satisfactorily addressed in the revised 60 percent DCD, the Design-Builder shall provide the Owner with a Phase 2 Proposal as outlined in Article 2 of the Agreement. The Phase 2 Proposal shall cover completion of design from 60 percent to 100 percent and construction of all of the Work included in the approved 60 percent DCD, including construction of the Project through commissioning, start-up, performance and acceptance testing, and Final Completion.

The Phase 2 Proposal shall provide information on all engineering, procurement, materials, construction labor and equipment, and other services necessary to perform the Work as required under the Agreement. As part of its Phase 2 Proposal, the Design-Builder shall submit a final Subcontracting Plan and a final Phase 2 Schedule that meets the requirements for scheduling set forth herein and in the Contract Documents. The Phase 2 Proposal shall contain the estimated Phase 2 Contract Price and the proposed Guaranteed Maximum Price as described in the Agreement.

2.7.2 Basis of the Estimated Phase 2 Contract Price

In the Phase 2 Proposal, the Design-Builder shall prepare and include documentation supporting the estimated Phase 2 Contract Price and the proposed GMP. The estimated Phase 2 Contract Price shall include the components set forth in Section 2.4.1.1 of the Agreement. The supporting documentation required by this section includes, at a minimum, the following cost estimates and proposal:

- Completion of Design Services (from 60 percent Design to 100 percent Design)
- Professional Services associated with the construction Work performed during Phase 2
- Cost of the Work
- Design-Builder's Fee (based on the estimated Cost of the Work)
- Design-Builder's General Conditions Amount (based on the estimated Cost of the Work)
- The proposed Contingency set forth in Section 7.4.2 of the Agreement

The Phase 2 Proposal shall also include a proposed GMP, which if accepted by the Owner, will be incorporated by the Phase 2 Contract Price Amendment.

The estimated Phase 2 Contract Price shall include sufficient detail to show the build-up of all of its cost components and shall follow the Cost Model Guidelines contained herein. The estimated Phase 2 Contract Price shall include, at a minimum, the following: Subcontractor and equipment vendor competitive bids and quotations, a comparison of the Design-Builder proposed self-performed Work costs with Subcontractor quotations, detailed cost estimating data, allowances (when appropriate), and the method of calculating Design-Builder's contingency (including the method of determining any percentage) proposed to be included in the Phase 2 Contract Price.

For design services, Design-Builder shall provide labor staff categories and associate labor rates used and shall provide the total labor hours by discipline for Phase 2 Services.

The Design-Builder shall validate that all quotations meet the requirements of the Project drawings and specifications and other Contract Documents; all proposed exceptions to the requirements are to be identified and submitted to the Owner for review and approval prior to incorporating into the Phase 2 Proposal.

As provided in Section 7.3.1.1.1 of the Agreement, the Phase 2 Proposal may include proposed rates for direct employees of Design-Builder to perform design services during Phase 2. However, because such rates, if accepted by Owner, will constitute Cost of the Work, such rates shall not include any markup.

2.7.3 Preparation of the Phase 2 Proposal

The Design-Builder will start the development of the Phase 2 Proposal with the preparation of the Cost Estimate Submittal during the Initial Design Development and will continue with development of the Cost Estimate Submittal during 60 percent Design. During Phase 1A and Phase 1B, the Design-Builder will maintain ongoing communication with the Owner to assess and analyze concept and design changes as they relate to the overall Project cost and schedule. The Design-Builder shall utilize an "open-book" approach to develop the Phase 2 Proposal, providing the Owner with full access to all the details that make up the final Phase 2 Proposal.

Design-Builder will prepare the documents and estimates as accurately as possible and keep the Owner fully informed and involved with the design development and cost estimation throughout the Project. The draft Phase 2 Proposal shall be submitted to the Owner and reviewed in a workshop and finalized to incorporate Owner comments (Task 2.7.4).

Task 2.7.3 Deliverables:

- Draft Phase 2 Proposal

2.7.4 Phase 2 Proposal Workshop and Final Phase 2 Proposal

Within 10 working days after delivery of the draft Phase 2 Proposal, the Design-Builder will meet with the Owner in a two-day workshop to present, review, and answer questions about the content of the Phase 2 Proposal, including a detailed review of all Attachments. The Design-Builder will finalize the Phase 2 Proposal within 10 working days after the workshop and resubmit it to the Owner for final review. Changes to the draft Phase 2 Proposal shall be clearly highlighted in an organized format.

Task 2.7.4 Deliverables:

- Workshop Agenda, meeting notes and action items
- Phase 2 Proposal

2.8 Potential Additional Phase 1A and Phase 1B Services

The Owner may request that Design-Builder perform additional services during Phase 1A or Phase 1B. In such event, the provisions of Article 9 of the General Conditions will apply.

2.9 Project Cost Model Guidelines

2.9.1 Introduction

As part of performance of the Phase 1A and Phase 1B Services, the Design-Builder shall prepare, at each design task milestone set forth in this Exhibit (Initial Design, 30 percent DCD and 60 percent DCD), a Cost Estimate Submittal for Phase 2 of the Project. This Section 2.9 sets the requirements to prepare Desi

gn-Builder's Cost Model and Cost Estimate Submittals. Each Cost Estimate Submittal shall represent an "open-book" cost estimate detailing every component of the estimated Phase 2 Contract Price and proposed GMP.

The Cost Estimate Submittal at each milestone will be submitted to the Owner for review and comment. The Owner will either:

1. Approve the Cost Estimate Submittal;
2. Approve the Cost Estimate Submittal with exceptions that the Design-Builder shall incorporate in the next Cost Estimate Submittal (i.e., the cost estimate with the next design submittal); or
3. Reject the Cost Estimate Submittal for additional refinement or development to meet the Owner's requirements.

Upon acceptance by the Owner of the Cost Estimate Submittal provided at the 60 percent Design submittal milestone, the Design-Builder will be directed to prepare a Phase 2 Proposal to include a proposed GMP as defined in this Exhibit and in the Agreement. The preparation and arrangement of the Phase 2 Proposal and proposed GMP shall also follow these Cost Model Guidelines. Owner's review, approval, or acceptance of any cost estimates, cost models, or similar information at any stage is subject to Section 2.4.3 of the General Conditions of Contract.

2.9.2 Cost Estimate Submittal Requirements

2.9.2.1 Organization of the Cost Estimate Submittal

The Design-Builder shall prepare each Cost Estimate Submittal containing the following components in the following order:

- Cost Estimate Summary Memorandum
- Attachment 1 – Cost Model
- Attachment 2 – Assumptions and Exclusions
- Attachment 3 – Subcontractor and Supplier Estimates or Bids
- Attachment 4 – Professional Services During Final Design (60 percent to 100 percent) and Professional Services Support during Construction Information
- Attachment 5 – Allowance Items
- Attachment 6 – Proposed Contingency and Contingency Cost Support Information
- Attachment 7 – Start-up, Commissioning, and Acceptance Testing Costs Support Information
- Attachment 8 – Updated Letter from Surety
- Attachment 9 – Updated Phase 2 Schedule

The Design-Builder shall provide four (4) paper copies of each Cost Estimate Submittal in 3-ring binders or other format requested by Owner, as well as one (1) flash drive containing an electronic copy in Microsoft Excel and Adobe PDF format. Upon request, the Design-Builder will provide the native electronic format of any submittal.

The Owner will provide any comments regarding each Cost Estimate Submittal, and whether the Owner approves, approves with exceptions, or requires revisions to each Cost Estimate Submittal. A meeting will shall be held to discuss the Owner's comments, as well as how the Design-Builder intends to address such comments and incorporate those comments into either a revised Cost Estimate Submittal or the subsequent Cost Estimate Submittal (i.e., the cost estimate with the next design submittal).

The following subsections describe in detail the information to be provided within each Cost Estimate Submittal component.

2.9.2.2 Cost Estimate Summary Memorandum

The Cost Estimate Summary Memorandum shall consist of a narrative summary of the cost estimate that includes, at a minimum, the following:

- Summary of costing activities since the previous Cost Estimate Submittal.
- Changes subsequent to the previous cost estimate and reasons for the changes. Changes should be clearly denoted between the current cost estimate and the prior cost estimate.
- Response to Owner's comments on prior Cost Estimate Submittal.
- List of proposed major equipment with the procurement status for each. The procurement status should include supplier pre-qualification activities and suppliers pre-qualified to-date.
- List of proposed construction package subcontracts with the procurement status for each. The procurement updates should include subcontractor pre-qualification activities and subcontractors pre-qualified to-date.
- Current contingency value and the approach to determining the value.
- A cost summary table similar to Table C-1. The total estimated Phase 2 Contract Price is the amount that Design-Builder estimates to complete the final Construction Documents (i.e., final design) and complete all other Work required for construction of the Project.

Table C-1. Design-Builder Cost Summary

Cost Element	IDR	30% Design	60% Design
Cost of the Work: Direct Costs			
Construction Costs			
Allowances and Unit-Price Work			
Start-up, Commissioning, and Acceptance Testing			
Phase 2 Professional Services Itemized Below			
Final Design (60 percent to 100 percent)			
Engineering Services During Construction			
Materials Testing During Construction			
Special Inspections During Construction			
Other Professional Services During Construction			
Subtotal Cost of the Work: Direct Costs (A)			
Cost of the Work: Indirect Costs (excluding General Conditions Costs)			
Bonds and Insurance			
Subtotal Cost of the Work: Indirect Costs (B)			
Contingencies (as allowed by the Agreement)			
General Conditions Amount (D)			
Design-Builder Fee (E)			
Total Estimated Phase 2 Contract Price (A+B+C+D+E)			

2.9.2.3 Attachments

The Design-Builder shall update the attachments described below at each milestone to reflect design progression and refinement of Project during Phase 1A and Phase 1B Services. Such attachments shall also be included in the Phase 2 Proposal. All attachments shall use minimum 11 pt Calibri font with at least 6 pt of spacing between each line item, plotted landscape on 11”x17” paper.

A. Attachment 1 – Cost Model

1. Attachment 1 shall include a line-item cost breakdown of all estimated costs, including all labor, materials, subcontractor, and supplier cost elements consistent with Association for the Advancement of Cost Engineering - International (AACEi) practices. The organization of the Design-Builder's cost model should follow the organization of Table C-2 such that all Direct Costs (including professional services costs during Phase 2) and Indirect Costs, and any other costs are accurately accounted for. The Design-Builder may propose an alternate arrangement for the organization of the Cost Model, which will be subject to approval by the Owner.
2. The Direct Costs shall be organized by each designated Work Package. The individual Work Package scopes will be agreed upon by both the Owner and Design-Builder. Direct Costs within each Work Package shall be organized by Construction Specifications Institute (CSI) MasterFormat (latest revision).
3. For Work proposed to be performed by the Design-Builder directly (i.e., self-performance), costs should be designated as self-performed Work and should be presented in conformance with Construction Specifications Institute (CSI) MasterFormat (latest revision). The Design-Builder shall provide subcontractor quotations for proposed self-performance Work for comparison to Design-Builder's proposed cost, unless agreed otherwise with the Owner.
4. An example cost model format is provided in Table C-2. The cost model format by Design-Builder does not need to match the example exactly but shall include the level of detail and intent reflected in the example.
5. General Conditions Amount shall be calculated as provided in Section 7.2.2 of the Agreement: General Conditions Percent multiplied by the estimated Cost of the Work.
6. For Work not performed by the Design-Builder directly (e.g., Work provided by Subcontractors and Sub-Subcontractors), Direct Costs should be designated as such and do not have to be presented in the CSI format. If a quote or bid is received for a particular cost element (e.g., major equipment or subcontracted Work Package), the cost model line item shall correspond to the quotes and bids provided in Attachment 3 of the Cost Estimate Submittal (e.g., line-item cost for concrete material shall correspond to the bid price provided by selected concrete supplier). Line-item costs shall include all applicable taxes and fees.
7. The total cost reflected in the Cost Model shall equal the estimated Phase 2 Contract Price provided in the Cost Estimate Summary Memorandum.
8. The Cost Model should include a listing of vehicles, material/hoisting equipment, and other construction-related equipment required to complete the Work.
9. The Design-Builder shall provide an organizational chart of its construction staff and a person-hour analysis including burdened labor rates of employees performing Work at the Site, such as wages and costs as outlined in Sections 7.3.1.1.1 and 7.3.1.1.2 of the Agreement.

Table C-2. Work Package Number

	Work Element Description	Labor Price	Material Price	Equipment	TOTAL COST
Division 3					
03-100	**Concrete**				
03-101	Concrete Material				
03-102	Reinforcing Steel				
03-103	Formwork				
03-104	Cranes				
03-105	Concrete Pumping				
Subtotal 03-100					
Subtotal Division 3					

B. Attachment 2 – Assumptions and Exclusions

1. Attachment 2 shall include a list of all assumptions, clarifications, and exclusions that Design-Builder used to determine the Project costs. Each assumption, clarification, and/or exclusion shall be referenced to a specific portion of the Agreement, drawing location or specification paragraph.

2. Assumptions, clarifications, and exclusions that are contrary to, or inconsistent with, the Contract Documents shall not be used in interpreting the rights and obligations of the Parties under the Agreement.

C. Attachment 3 – Subcontractor and Supplier Estimates or Bids

1. Attachment 3 shall include a copy of all Subcontractor and supplier quotes or bids received by the Design-Builder. The quotes and bids shall be organized by Work Package. A summary sheet shall be provided for each bid package listing the supplier or Subcontractor that provided quote or bids, the price from each quote or bid, the supplier or Subcontractor selected or recommended, the reason for selection (i.e., low bid, best-value, etc.). One summary sheet can be used for each bid package. Quotes and bids from respective Subcontractors and suppliers shall explicitly describe the scope of services associated with the quote or bid (including assumptions, exclusions, and clarifications), and shall include a quantity and unit price breakdown of primary Work elements.

2. It is expected that as the design progresses (e.g., IDR to 60 percent Design Submittal) most supplier and Subcontractor bids will be obtained by Design-Builder, rather than estimates or quotes, and will be used as the basis for the Cost Estimate Submittal. The Design-Builder shall be responsible for ensuring that all bids are inclusive of all requirements of the Contract Documents; any exception taken by supplier and/or Subcontractor bids must be submitted in writing to the Owner for review and approval prior to incorporating into the Phase 2 Proposal.

3. For sole-source equipment on all major equipment (defined as all treatment process and hydraulic conveyance-related equipment that has a purchase price greater than $50,000) or Subcontracts which may be procured from a sole-source by the Design-Builder without receiving three (3) competitive bids, the Design-Builder shall provide, for each piece of major equipment, documentation listing the purchase price of three (3) similar systems procured within the most recent 24 months.

D. Attachment 4 – Professional Services Scope and Cost

1. Attachment 4 shall include the proposed professional services scope and cost for all professional services to be performed during Phase 2 Services. This may include but is not limited to the following: final design services (60 percent Design to 100 percent Design), permitting assistance, engineering services during construction, Special Inspections during construction, materials testing during construction, and Project closeout.

2. Percentage estimates for various professional services tasks may be used for the Cost Estimate Submittal for the IDR. Further Cost Estimate Submittals (30 percent and 60 percent) shall provide an estimate of labor hours and other Direct Costs associated with such professional services.

3. The Design-Builder shall provide an organizational chart of its proposed professional staff and a person-hour analysis including labor billing rates of professional staff.

4. The cost estimate for professional services for Special Inspections shall be shown separately and shall be based on a work proposal from qualified Special Inspections firms. The Owner reserves the right to contract separately with a Special Inspections firm for these services.

E. Attachment 5 – Allowances (if applicable)

1. Attachment 5 shall include a detailed description of each allowance item proposed by the Design-Builder along with a proposed cost for each allowance item. Each allowance item description shall consist of a summary description of the allowance item, an itemized list of scope items included within allowance item, and any specific and applicable exclusions to allowance item.

F. Attachment 6 – Contingency Support Information

1. Attachment 6 shall include a breakdown of contingencies consisting of estimated costs resulting from those events set forth in Section 7.4.2 of the Agreement. Attachment 6 shall contain all financial and probability-of-occurrence analysis and other support information that was used by the Design-Builder to determine the value of the contingencies.

2. For escalation contingencies, the Design-Builder shall detail the escalation approach and methodology used for determining materials and goods escalation over the Project's duration. Escalation for equipment, supply contracts, and subcontracts should not be included within the escalation contingency if such costs were included within the subcontract and equipment packages (e.g., proposers were required to include escalation in their pricing).

3. For risk contingencies, a risk register in accordance with this Exhibit or a risk model of all risks assumed by the Design-Builder shall be included with a corresponding monetary value associated with each risk.[2] The risk register or risk model shall include risk description, risk likelihood/probability, consequence of occurrence (monetary value/cost), mitigation approach, and risk assignment. A copy of the risk register will be provided to the Owner.

4. The monetary value of the contingencies shall equal the Contingency amount provided in the Cost Estimate Summary Memorandum.

G. Attachment 7 – Start-up, Commissioning and Acceptance Testing Costs Support Information

1. Attachment 7 shall include information to support the start-up, commissioning, and acceptance testing, including the Commissioning and Start-up Plan, costs provided in the Cost Model.

2. The Design-Builder shall provide an organizational chart of its start-up, commissioning, and acceptance testing staff; the plan for performing these activities; and person-hour and cost analysis for the associated activities. Include cost information for development of the operations and maintenance manuals by the Design-Builder, if any.

3. The Design-Builder shall provide the cost elements for warranty periods following Substantial Completion.

H. Attachment 8 – Updated Letter from Surety

1. This attachment shall include an updated letter from the surety (or sureties) verifying that Design-Builder has sufficient bonding capacity available for the Project based on the current cost estimate.

2. An updated letter from the surety is not required for the Cost Estimate Submittal with the IDR.

I. Attachment 9 – Updated Final Design and Construction Schedule

[2] The risk register described herein shall not vary or render ambiguous any provision of the Agreement or General Conditions. Without a valid Change Order, no allocation of risk in the Risk Register will change the legal rights and obligations of the parties.

1. Attachment 9 shall include an updated summary-level (i.e., roll-up) schedule for Phase 2 Services in accordance with the requirements of this Exhibit and the Agreement that shall be consistent with the completion durations included in the Cost Model.

2.9.2.4 General Conditions Costs

Instead of reimbursing actual General Conditions Costs as Cost of the Work, the parties have agreed that Design-Builder will be paid General Conditions Costs as a percentage (General Conditions Percent) of the Cost of the Work – which product will be the General Conditions Amount. In developing the General Conditions Percent and estimated General Conditions Amount, the Design-Builder will provide an estimated amount of General Conditions Costs, which will include, without limitation, the following:

- Wages or salaries of Design-Builder's supervisory and administrative personnel engaged in the performance of the Work and who are located at the Site or working off-Site to assist in the production or transportation of material and equipment necessary for the Work.
- Wages or salaries of Design-Builder's personnel stationed at Design-Builder's principal or branch offices.
- The cost of travel, accommodations, and meals for Design-Builder's personnel.
- Costs and expenses incurred in establishing, operating, and demobilizing the Site office, including the cost of facsimile transmissions, long-distance telephone calls, postage and express delivery charges, telephone, radio, and internet equipment and service, office computers, software, and maintenance photocopying, office supplies, and petty cash expenses..
- Accounting and data processing costs related to the Work.
- All field and Site overhead costs and the cost of supervision of the Work, including:
  - Scheduling expenses and job meeting expenses
  - Job travel, including fuel and vehicle
  - Temporary parking and laydown areas
  - Storage facilities, both on and off site, as appropriate
  - Tools and toolshed
  - Surveying equipment and supplies
  - Project specific signage
  - Reference manuals
  - Employee identification system
  - Business licenses and fees
  - Facilities for drinking water and sanitation to support field offices
  - Fire protection, site security, power generation, communications, and appropriate lighting for temporary facilities
  - Traffic control equipment rental
  - Temporary weather protection facilities
  - Fencing, barricades, partitions, and protected walkways
  - Site erosion control
  - Costs for maintaining a clean Project Site through the Project duration, which includes daily site cleanup and dumpsters, cleanup at Substantial Completion, and cleanup at Final Completion
  - Costs for developing and maintaining the Health and Safety Program
  - Costs to visually document Project progress using photographs and videos

3 Phase 2 Services

In addition to other requirements of the Agreement, the Design-Builder shall provide the services described in this Section 3.0 during Phase 2.

3.1 Project Management

3.1.1 General

The Design-Builder shall provide management of Design-Builder's Project Team in terms of staffing, budget, schedule, scope, and coordination with the Owner for Phase 2. This task includes managing the Scope of Work, schedule, and budget for execution of this Scope of Work, and communication and coordination with the Owner. The Design-Builder will prepare invoices, progress reports, and Design Progression Log and Project Decision Log updates on a monthly basis. Other activities include keeping the Owner informed and soliciting input from the Owner when making key decisions, coordination with Design Consultants and Subcontractors, scheduling of staff, and coordinating the quality assurance effort.

3.1.2 Monthly Project Reporting Requirements

The Design-Builder shall keep the Owner regularly informed as to the progress of the Phase 2 Services through the submittal of Monthly Project Reports in the form of project dashboards as required by this section, the General Conditions, and this Exhibit. Monthly Project Report requirements shall be consistent with the requirements provided in Section 2.1.2.

Task 3.1 Deliverables:

- Monthly Project Reports
- Design Progression Log
- Project Decision Log

3.1.3 Meetings and Workshops

Unless otherwise agreed to with the Owner, meetings and workshops shall be held at Owner's facilities or, if approved by Owner, virtually.

3.1.3.1 Periodic Progress Meetings

The Design-Builder shall hold periodic progress meetings with the Owner during the performance of Phase 2 Services. Progress meetings shall be held at least monthly shall be consistent with the requirements provided in Section 2.1.3.2.

During Phase 2, the Design-Builder shall include at least one meeting for every 12-months of project schedule with the Owner's Board of Directors to present Project progress and status updates. The Design-Builder shall assist the Owner with preparation of presentation materials, attend the meetings, and assist with presentation, if requested.

3.1.3.2 Technical Workshops

Through the completion of the 100% DCDs, technical Workshops will be held during Phase 2. Workshops shall be consistent with the requirements provided in Section 2.1.3.3.

Task 3.1.3 Deliverables:

- Meetings and Workshop Agendas and Minutes
- Board of Directors (Board) Meetings – Presentation preparation and handouts.

3.1.4 Change Management Requirements

Throughout Phase 2 Services, Change management shall be a standing agenda item at each Periodic Progress Meeting and shall be updated consistent with the requirements provided in Section 2.1.5 in each Monthly Project Report. Following approval of the Initial Design Report (IDR), the Change Management Log shall be used to track changes to the approved Project design and their associated cost and schedule impacts.

Task 3.1.4 Deliverables:

- Change Management Log and updates
- Back-up information including cost and schedule updates for proposed changes

3.1.5 Quality Management Plan

The Quality Management Plan as required in Section 2.1.6 shall be updated by the Design-Builder over the course of the Project.

Task 3.1.5 Deliverables:

- Quality Management Plan updates

3.1.6 Design-Build Schedule

The Design-Builder shall update the Phase 2 Services Schedule developed as a part of Section 2.1.8 and submitted for acceptance by the Owner as a part of Section 2.7 Task 7 – Development of the Phase 2 Proposal, which schedule must comply with and remain subject to Section 2.1.3 of the General Conditions of Contract. The Design-Build Schedule shall be based on the requirements of Article 6 of the Agreement.

During Phase 2, the Design-Builder shall update the Phase 2 Services Schedule on a monthly basis, at a minimum, and as otherwise required herein.

The Design-Builder shall undertake and complete the Phase 2 Services in accordance with the Phase 2 Services Schedule. Updates on the Design-Builder's compliance with the Phase 2 Services Schedule shall be submitted with each Monthly Project Report required by this Exhibit and the General Conditions. The Phase 2 Services Schedule shall meet the requirements set forth in this Exhibit.

Notwithstanding anything to the contrary herein, the schedules identified and described in this Exhibit are subject to the conditions set forth in Section 2.1.3. The Minimum Requirements for the Design Build Schedule are provided in Section 2.1.8.4. The Owner's Review requirements are provided in Section 2.1.8.5.

Task 23.1.6 Deliverables:

- Design-Build Schedule monthly updates

3.1.7 Records Management System

Consistent with the requirements provided in Section 2.1.9, the Design-Builder shall maintain and update the Records Management System throughout Phase 2 Services.

Task 3.1.7 Deliverables:

- Records Management System documentation

3.1.8 Project Execution Plan

Consistent with the requirements of Section 2.1.10, the Design-Builder shall maintain and update the Project Execution Plan throughout Phase 2 Services.

Task 3.1.8 Deliverables:

- Project Execution Plan and updates

3.1.9 Constructability Reviews

Constructability reviews shall be conducted by the Design-Builder as an ongoing activity during the development of the Initial Design, 90 percent Design submittals. Constructability reviews shall be consistent with the requirements provided in Section 2.1.11. Constructability discussions shall be included in the design development workshops conducted with the Owner during the performance of Phase 2 Services and the results of these reviews shall be presented in the deliverables for the 90-percent Design submittals.

3.1.10 Value Engineering

Value engineering shall be conducted by the Design-Builder as an ongoing activity during the development of the 90 percent Design submittal. The value engineering effort shall be consistent with the requirements provided in Section 2.1.12. Value engineering discussions shall be included in the design development workshops conducted with the Owner during the execution of Phase 2 and the results of these reviews shall be presented in the deliverables for the 90-percent Design submittals.

3.1.11 Commissioning and Start-up Plan

The Design-Builder shall continue to develop the Commissioning and Start-up Plan throughout Phase 2 Services. Updates to the Commissioning and Start-up Plan shall be incorporated in the deliverables for the 90-percent Design submittals.

The Design-Builder shall prepare and submit a Performance Guarantee Summary documenting all aspects of the project where performance standards are specified in the Contract Documents. Summary to be organized by drawing sheet, specification section, and equipment item.

The Commissioning and Startup Plan shall be consistent with the requirements provided in Section 2.1.13.

Task 3.1.11 Deliverables:

- Commissioning and Start-up Plan updates

3.2 Phase 2 Design Services

As set forth in Section 2.2.3 of the Agreement, the Design-Builder shall complete the design submissions, starting with the 60 percent DCD identified in Section 2.6.6 hereof, and proceeding as described in Section 2.4.2 of the General Conditions to achieve final Construction Documents.

Prior to commencing any construction activities on the Project, the Design-Builder shall submit plans and specifications to Georgia EPD for review and approval in accordance with the requirements stated in Georgia

EPD's Minimum Standards for Public Water Systems, latest edition. The plans and specifications shall be stamped by professional engineers and architects licensed in the state of Georgia and duly qualified and capable of designing water systems and computing flows and pressures in water system projects. Any comments received from Georgia EPD or other agencies (including agencies providing or administering funds) shall be reviewed with the Owner. The Design-Builder will address said comments to obtain approval to construct from Georgia EPD and such other agencies.

Any significant deviation from the approved plans or specifications affecting capacity, hydraulic conditions, operating units, the functioning of water treatment processes, the quality of water to be delivered, or any provisions stipulated in the Georgia EPD's original and subsequent letters of approval must receive prior approval by Georgia EPD before any construction or installation. During construction, the Design-Builder shall comply with all requirements stipulated by Georgia EPD in their approval letter of the plans and specifications and provide timely notifications to Georgia EPD during start-up and commissioning of facilities.

3.3 Asset Registry

The Design-Builder shall gather and electronically record financial and technical information for new assets associated with this Project needed to support Owner's Fixed Asset Registry and Computerized Maintenance Management System (CMMS). The Design-Builder shall submit the information on a monthly basis with each Monthly Status Report. The proposed format and content of the Asset Management report shall be developed by the Design-Builder during Phase 1B and submitted to the Owner for acceptance. Information required for the Asset Registry shall continue to be tracked during Phase 2 Services (final design and construction) and included on monthly submittals to the Owner.

3.4 Progress Payments and Sales Tax Rebate Assistance

Certain sales tax paid to the State of Georgia by the Design-Builder, its Subcontractors, suppliers, and vendors ultimately may be paid by the Owner by reimbursement to the Design-Builder through Progress Payments. The Owner desires to apply to the State of Georgia for a rebate of such sales taxes back to the Owner. The Design-Builder shall assist the Owner with the Owner's procedures for applying for such rebates. With each Application for Payment, the Design-Builder shall submit invoices that show the amount of sales tax paid, and the entity that paid the tax, for the items on that invoice.

The Design-Builder shall develop and maintain an Excel spreadsheet that summarizes the date and amount of sales tax paid, the entity that paid the tax, and a cross reference to the Design-Builder's Application for Payment number. The Design-Builder shall further assist the Owner by periodically executing, and requiring its Subcontractors, suppliers, and vendors that paid sales tax to the State of Georgia to periodically execute, certain forms required by the State of Georgia as part of Owner's application for sales tax rebate.

3.5 Submittals and Shop Drawings

Review and Approval of Submittals: The Design-Builder shall review, study, and approve, or take other necessary action upon all shop drawings, product data, samples, and other submittals to ensure that the Project will be constructed timely in strict compliance with the Contract Documents. The Design-Builder shall use the Records Management System to distribute, record comments, and track submittals. For those submittals that require Owner's approval, Design-Builder will not proceed with the construction Work until such approval is obtained in writing. Any requested deviations from previously approved design documents require Owner's approval and may require approval from Georgia EPD.

Owner's Option to Review Submittals: The Owner shall, in its discretion, have the right to review and approve of submittals, and if the Owner so elects, the Design-Builder shall not perform any portion of the Work as to which Owner has required submittal and review until such submittal has been approved by the Owner. All Work requiring approved shop drawings or other submittals shall be done in strict compliance with such approved documents. Approval by the Owner, however, shall not be evidence that Work installed pursuant thereto conforms with the requirements of the Contract Documents nor shall such approvals relieve Design-Builder of any of its responsibilities or warranties under the Contract Documents. The Design-Builder shall maintain a submittal log which shall include, at a minimum, the date of each submittal, the date of any resubmittal, the date of any approval or rejection, and the reason for any approval or rejection. The Design-Builder shall have the duty to carefully review, inspect and examine any and all submittals before submission of same to the Owner.

3.6 Operations and Maintenance Documentation

The Design-Builder shall prepare or procure and shall transmit to the Owner all documentation required by the Contract regarding the operation and recommended maintenance programs relating to the various elements of the Work. Facility-wide operation and maintenance manuals shall be provided in searchable, electronic format and shall be compatible with Owner's electronic O&M software.

3.7 Record Documents

3.7.1 General

The Design-Builder shall compile, maintain, record, and submit Project Record Documents as specified herein.

Record Documents include but are not limited to:

- As-Built Drawings
- Specifications
- Change Orders and other authorized modifications to the Contract Documents
- Design-Builder's field orders or written instructions, including Requests for Information (RFI), and clarification memorandums
- Reviewed submittals, including shop drawings, product data, and samples
- Test records

The Design-Builder shall continuously maintain on the Site throughout the Contract Times (i) an up-to-date set of the Contract Documents and Construction Documents marked to record, on a current basis, the changes authorized by Article 9 of the General Conditions, and (ii) the following:

- Selections and modifications made during Phase 2
- Change Orders and Change Order logs
- A copy of all Requests for Information ("RFI") and responses thereto
- RFI logs
- Shop drawings, product data, samples, other submittals, and all responses thereto and approvals thereof
- Submittal log

All of the items identified in this Section 3.7, herein known as “Record Documents,” shall be available to the Owner at all regular business hours and shall be the property of the Owner. The Design-Builder shall store Record Documents in a location and in a manner so as to be readily accessible to the Owner. The Design-Builder shall maintain documents in a clean, dry, legible condition, and in good order, and shall provide for secure storage of the documents. The Design-Builder shall make Record Documents and all other Project-related documents and samples available, at all times, for inspection by the Owner.

3.7.2 As-Built Drawing Documentation

The Design-Builder shall employ a currently registered surveyor to prepare the As-Built Drawings from a post-construction, field-run survey. Unless otherwise noted, the As-Built Drawings shall provide elevations to the nearest 0.01 foot for all pertinent items constructed by the Design-Builder, dimensions, distances, and coordinates to the nearest 0.01 foot, and horizontal angles to the nearest 10 seconds.

3.7.3 Recording

The Design-Builder shall:

- Label each document "Project Record" followed by the date of preparation in neat, large, printed letters.
- Record information concurrently with construction progress.
- Not conceal any Work until required information is recorded.

3.7.4 As-Built Drawings

As-Built Drawings shall have a title block indicating that the drawings are As-Built Drawings and the date the As-Built Drawings were prepared. Design-Builder will use paper copies of the Drawings for field-markup purposes.

All As-Built Drawing information shall be based on the following:

- North American Datum of 1983 (NAD 83) State Plane Georgia West FIPS 1002 US Feet
- North American Vertical Datum of 1988 (NAVD 1988)

The Design-Builder will legibly update As-Built Drawings, including data from field-run surveys, to record actual construction, including:

- All Construction:
  - Changes of dimension and detail
  - Changes authorized by Article 9 of the General Conditions
  - Details not on original Construction Documents
- Site Improvements, including underground utilities:
  - Horizontal and vertical locations of all exposed and underground utilities and appurtenances, both new facilities constructed, utilities encountered, and those utilities abandoned, referenced to permanent surface improvements
  - Labels and stationing for all newly installed, encountered, and abandoned underground utilities and appurtenances
  - Locations of and dimensions of roadways and parking areas, providing dimensions to back of curb when present

- The locations shall be referenced to at least two easily identifiable, permanent landmarks (such as power poles, valve markers, and the like) or benchmarks for each project Site location

3.7.5 Specifications

The Design-Builder will legibly mark each section to record:

- Manufacturer, trade name, catalog number, and supplier of each product, and item of equipment actually installed
- Changes authorized by Article 9 of the General Conditions

3.7.6 Submittal of Record Documents

The Design-Builder shall provide the original, red-lined markup copy of the Construction Documents. Additionally, the Design-Builder shall provide all final Record Documents via appropriate electronic transfer as approved by Owner. The drawings shall be provided in native and neutral (.X3D or Owner-approved equivalent) digital file format and in PDF format. The Design-Builder shall also provide the Owner with two sets of paper prints of the as-built drawings – one set shall be 11" x 17" and the second set shall be 22" x 34". Specifications and other written documents shall be provided in bookmarked PDF searchable electronic format with record changes shown in "tracked changes."

Periodic field visitations shall be made during construction by the Design-Builder's primary design engineer, and all other consultants retained for design of this Project, to observe the implementation of their specific discipline and area of work. The Design-Builder shall require each of these to generate a written report of each visit. The Design-Builder shall provide the Owner with copies of such written reports as promptly as possible, but in no event later than five days after each such visit.

Final inspections and punch lists shall be made by each of the primary design engineer and all other consultants, as well as the Design-Builder. The Design-Builder shall provide the Owner with copies of the punch lists and any other written reports from these visits as promptly as possible, but in no event later than three days after each such visit.

3.8 Project Meetings

3.8.1 Preconstruction Conference

Owner will schedule and conduct a Preconstruction Conference prior to the issuance of the Notice to Proceed with Phase 2 Services. The Design-Builder's staff and major Subcontractor's staff shall attend, including at a minimum the following:

- Project Administrator
- Project Manager
- Construction Superintendents
- Principal Design Engineer's key staff (e.g., Design Manager, Discipline Lead Engineers, etc.)
- Major Subcontractors

3.8.2 Project Coordination Meetings

The Design-Builder shall conduct a jobsite progress meeting at least once every two weeks after site Work begins.

The Design-Builder shall also conduct regular monthly meetings at a location approved by the Owner. The following parties will attend these meetings:

- Owner's Representatives, as appropriate
- Design-Builder's Project Manager and Site Superintendents
- Representatives of the Design-Manager's design engineer as pertinent to the meeting agenda
- Major Subcontractors as pertinent to the meeting agenda

The Design-Builder shall prepare and distribute agenda 3 working days before the meeting and minutes for Project Coordination Meetings a within a week of the meeting.

3.8.3 Plant Operation Coordination Meetings

The Design-Builder shall conduct coordination meetings with Owner's plant operations staff at least once per week at each WPP where Work is being performed to discuss planned construction activities and coordinate with Owner's operations.

3.9 Construction Photographs and Videos

The Design-Builder shall provide the Owner with digital construction photographs and audio/video recordings of the Project. Photographs and audio/video recordings shall become the property of the Owner. None of the photographs or audio/video recordings shall be published without express written permission of the Owner. The photographs and recordings shall include date and time markings. All photographs and recordings shall be labeled electronically to indicate date, Project Site location, and description of Work shown. All videos shall be provided with an audio narration, stating a description of what is shown.

3.9.1 Pre- and Post-Construction Photographs

Prior to the beginning of any Work, the Design-Builder shall take photographs and audio/video recordings of the Work area to record existing conditions. Following completion of the Work, additional photographs and video/video recordings shall be made showing the same areas and features as in the preconstruction photographs and videos.

3.9.2 Progress Photographs

Progress photographs and video recordings shall be provided periodically to the Owner, at least monthly, and shall be of sufficient quantity and detail to capture all of the in-progress and recently completed elements of the Work.

3.10 Special Inspections

The Design-Builder shall coordinate with Special Inspectors during Phase 2, as follows, at a minimum:

- Provide access to shop or Project Site for Special Inspection and Testing requirements.
- Coordinate with Special Inspection firm in advance of required Special Inspection no later than 3 working days prior to date of Special Inspection.

- Provide access for Special Inspector to Construction Documents and Record Documents.
- Retain special inspection records on-site to be readily available for review.
- Cooperate with Special Inspector and provide safe access to the Work to be inspected.
- Submit Fabricator's Certificates of Compliance for approved fabricators.
- Provide reasonable auxiliary services as requested by the Special Inspector. Auxiliary services required including at a minimum the following:
  - Provide access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests to assist the Special Inspector in performing tests or inspections.
  - Provide storage space for the Special Inspector's exclusive use, such as for storing and curing concrete test samples and delivery of samples to testing laboratories.
  - Provide the Special Inspector with access to all approved submittals.
  - Provide security and protection of samples and test equipment at the Project Site.
  - Provide samples of materials to be tested in required quantities.
  - Materials and systems shall be inspected during placement where continuous Special Inspection is required.
- Where periodic Special Inspection is required:
  - Schedule inspections during or at completion of their placement or a combination of both.
  - Schedule periodically inspected Work (either inspected during or after its placement) so that corrections can be completed and re-inspected before Work is inaccessible.

3.11 Temporary Facilities and Controls

In addition to the requirements set forth in the General Conditions, the Design-Builder shall provide the following for Owner's exclusive use at both the Hicks and Hooper WPP sites:

- Owner's field office, including temporary utility services.
  - Each field office shall be fully installed, including all equipment and services, and available for Owner's use prior to the start of Work and shall remain on Site until Final Completion of the Work.
  - Each field office shall have a 24-inch by 36-inch marine plywood sign erected on the outside wall of the field office in a location determined by the Owner and painted with at least two coats of exterior grade paint, white background with 3-inch high lettering, neatly arranged, with colored Owner's logo added.
  - The Owner's field offices shall each have, when finished, not less than 800 square feet of interior floor space with full height (floor to ceiling) partition walls. The office shall be divided into the following areas:
    - Storage closet for consumable supplies.
    - Two (2) separate rooms (120 sf minimum each) with lockable doors and equipped with desk, chair, and other office furnishings as required by Owner.
    - One (1) general use area (400 sf minimum) equipped with furnishings as required by Owner.
    - One (1) restroom facility (totally enclosed water closets and lavatories, 100 sf minimum).

- Final arrangement of these spaces required furnishings, and office supplies to be provided by Design-Builder shall be developed as part of Design-Builder's Phase 1B Services.

3.12 Project Site Access and Security

The Design-Builder shall take all reasonable steps and legally required measures at the Project Site to adequately protect the Work, stored materials, and temporary structures located on the premises, and to prevent unauthorized persons from entering upon the Project Site. The Design-Builder shall at all times safeguard the Owner's property and employees from injury or loss in connection with the performance of the Work. Design-Builder shall at all times safeguard and protect its own partially or completely finished Work and that of the adjacent property and all adjacent work from damage.

The Design-Builder shall protect the Owner's equipment, apparatus, machinery, and other property and all adjacent work with boarding and other safeguards so as to keep the premises free from dampness, dirt, dust, or other damage and shall remove all such temporary protection upon completion of the Work.

While on the Owner's property, all Design-Builder's employees and Subcontractors shall confine themselves to areas designated by the Owner and will be subject to the Owner site access controls and security requirements, if any, in effect at the site of the Work. At all times relevant to the Work, the Design-Builder shall provide access to the Work to the Owner and the Owner's designees without formality or other procedure.

3.13 Records Management System

The Records Management System established by the Design-Builder for use by all parties during Phase 1A and Phase 1B Services shall be used for management of documents generated or used during Phase 2, including at a minimum:

- Meeting and workshops agendas, presentations, and notes
- Construction Documents
- Submitting and tracking requests for information (RFIs)
- Document submittals and transmittals including drawings (PDF format)
- Change Orders
- Work Change Directives
- Other construction phase submittals as agreed to with the Owner

3.14 Existing Facility Operations

The Design-Builder is advised that continuous operation of Owner's facilities is of critical importance. The Design-Builder shall schedule and conduct activities to enable existing facilities to operate continuously and without abatement or impairment, unless otherwise planned and approved in writing by the Owner. The Design-Builder shall perform Work continuously during critical connections and changeovers, and as required to prevent interruption of Owner's operations. When necessary, the Design-Builder shall plan, design, and provide various temporary services, utilities, connections, temporary piping and heating, access, and similar items to maintain continuous operations of Owner's facilities. The Design-Builder shall not close lines, open or close valves, or take other action that would affect the operation of existing facilities or systems unless authorized in advance and in writing by Owner. Such authorization must be requested no less than 3 working days after receipt of Design-Builder's written request.

3.15 Transportation and Handling

Design-Builder shall provide transportation of all equipment, materials, and products furnished for the Project to the Project Site. In addition, the Design-Builder shall provide preparation for shipment, loading, unloading, handling and preparation for installation, and all other Work and incidental items necessary for the satisfactory prosecution and completion of the Work.

3.16 Storage and Protection

The Design-Builder shall be responsible for selecting and securing any storage site or sites necessary for the construction of this Project. The Owner may, but has no obligation to, provide an area or areas near the Project Site for temporary storage of Design-Builder's material. The Design-Builder shall coordinate with the Owner prior to the commencement of construction for these arrangements.

3.16.1 Storage

- Maintain ample way for foot traffic at all times.
- All property damaged by reason of storing of material shall be properly replaced at no additional cost to the Owner (and such costs will be considered as costs under Section 7.3.2.14 of the Agreement).
- Packaged materials shall be delivered in original unopened containers and so stored until ready for use.
- Store products in accordance with manufacturer's instructions.

3.16.2 Protection

- Use all means necessary to protect the materials, equipment, and products before, during, and after installation and to protect the installed Work and materials of all trades.
- All materials shall be delivered, stored, and handled to prevent the inclusion of foreign materials and damage by water, breakage, vandalism, or other causes.
- Substantially constructed weathertight storage sheds, with raised floors, shall be provided and maintained as may be required to adequately protect those materials and products stored on the Site that may require protection from damage by the elements.
- Equipment and products stored outdoors shall be supported above the ground on suitable wooden blocks or braces arranged to prevent excessive deflection or bending between supports. Items such as pipe, structural steel, and sheet construction products shall be stored with one end elevated to facilitate drainage.
- Building products and materials such as cement, grout, plaster, gypsum board, particleboard, resilient flooring, acoustical tile, paneling, finish lumber, insulation, wiring, and the like shall be stored indoors in a dry location. Building products such as rough lumber, plywood, concrete block, and structural tile may be stored outdoors under a properly secured waterproof covering.
- Tarps and other coverings shall be supported above the stored equipment or materials on wooden strips to provide ventilation under the cover and minimize condensation. Tarps and covers shall be arranged to prevent ponding of precipitation and wind damage.

3.16.3 Extended Storage

If certain items of major equipment need to be stored for an extended period, the Design-Builder shall provide satisfactory long-term storage facilities that are acceptable to the equipment Manufacturer and the Owner. The Design-Builder shall provide all special packaging, protective coverings, protective coatings, power, nitrogen purge, desiccants, lubricants, and exercising necessary or recommended by the manufacturer to properly maintain and protect the equipment during the period of extended storage.

3.17 Procurement of Owner-Direct Purchases

At the Owner's option and election, the Owner may directly purchase materials or equipment, or both, for the Project to be installed as part of the Work ("Owner-Direct Purchases"). The Design-Builder, as part of the 60 percent DCD, shall provide the Owner with a listing of major equipment items. The Design-Builder shall assist the Owner in procuring such Owner-Direct Purchases and, if requested in writing by Owner, as the Owner's agent pursuant to a form of purchase agreement provided by the Owner. If Owner elects the option provided in this section, Design-Builder will consult with Owner concerning the payment of Georgia use taxes.

3.18 Contract Closeout

In addition to all other requirements in Section 6.7 of the General Conditions, prior to Project closeout and Final Payment, the Design-Builder shall deliver to the Owner the following:

- Record Documents
- Equipment and structure test reports
- Operation and maintenance, information, instructions, manuals, documents, drawings, diagrams, and records
- Spare parts
- Training session materials and recordings
- Post-construction photographs and videos
- Warranty information
- Asset registry information
- Documentation that all permits have been properly closed out
- Approved shop drawings and samples
- Special bonds, special guarantees, and service agreements
- Consent of Surety to Final Payment
- Releases or waivers of liens and claims

3.19 Commissioning, Start-up, and Testing

3.19.1 Commissioning, Start-up, and Testing to Achieve Substantial Completion

3.19.1.1 Design-Builder's Commissioning and Start-up Activities Requirements

The Design-Builder shall carry out all detailed testing processes and procedures, and sequence and schedule all corresponding activities, necessary to demonstrate the ability of the Project to meet all specified Performance Requirements, in accordance with the Commissioning and Start-up Plan. The Performance Requirements include all performance requirements set forth in this Exhibit, other Contract Documents, any

performance guaranties or performance standards set forth in the Phase 2 Contract Price Amendment or other Contract Documents, or as required by any funding agencies or the Legal Requirements. All testing processes and procedures and all other requirements of the Commissioning and Start-up Plan shall be conducted so that the Independent Certifier will review the Project's compliance with all tests, performance standards, and other requirements of the Contract Documents.

The Design-Builder shall complete each step set out below as a condition to the achievement of Substantial Completion and shall coordinate its activities to ensure that the Owner's Representatives may observe any testing activities:

- Software FAT and SAT testing, including test plan development shall be conducted by the Design-Builder in compliance with Owner's SCADA Standards.
- Dry and Wet Testing:
  - All process, mechanical, electrical, control and any other equipment related to the Project shall be dry and wet tested to demonstrate that they are successfully installed in full compliance with the Contract Documents, and shall be completed on each piece of equipment, sub-system, and system prior to that component of the Project being placed in service.
  - Any part of any existing facilities that forms part of the Contract Documents or the Project shall be tested as part of the dry and wet testing phase to demonstrate that it can meet the duty and Performance Requirements of the Contract Documents.
- Dry Testing:
  - Carry out dry testing of the Project to the extent possible before introducing flows into the Project.
  - Dimensional, alignment, piping connections and electrical connections and equipment and control system functionality shall all be verified.
  - Arrange for the supplier or their authorized representative to verify that the equipment is properly installed and provide a Certificate of Proper Installation. Where multiple suppliers provide equipment to make a system fully functional, such as a pump equipped with a variable-speed drive, each supplier shall sign off on a Certificate of Proper Installation.
- Wet Testing:
  - Wet testing shall be completed in two stages.
    - In the first stage, equipment shall be run for a short period, either individually or as complete sub-systems or systems, as appropriate. During this first stage, local controls shall be satisfactorily verified by cycling the equipment through several start-stop operations and modulating its output, or a combination thereof. The frequency of start-stop operations shall not exceed equipment manfacturer recommendations. Operating parameters such as temperature, pressure, voltage, vibration, and any other applicable supplier specifications and Construction Documents shall be checked to ensure they are consistent with the Contract Documents and, as a minimum, the supplier's recommended limits.
    - In the second stage, process systems shall be restarted and run continuously for a minimum of seven days in automatic control. During this second stage, as far as practicable, conditions shall be simulated which represent maximum or most severe, average, and minimum or least severe conditions as defined by the Contract

Documents. In the event that it is not practical to simulate automatic control and operate process systems continuously for a minimum of seven days, the Design-Builder shall propose an alternate means of testing such equipment.

  - The test conditions shall be as set out in the Commissioning and Start-up Plan and shall be determined to ensure that the wet testing properly verifies the performance of the Project in accordance with the Contract Documents.
  - The seven-day wet testing of individual systems may be conducted either concurrently or in sequence as is practicable and as set out in the Commissioning and Start-up Plan.
  - In the event that any of the seven-day wet tests are terminated before completion or are unsuccessful, then that test shall be repeated in its entirety.
  - Design-Builder shall make provisions for water used in Wet Testing to not be sent into the Owner's distribution system as part of the Commissioning and Start-up Plan.

- Capacity Tests:
  - The capability of the Project, including pumps, all equipment, conduits, piping, to successfully convey the flows and meet the design capacity of individual equipment and the system as a whole and in accordance with the Contract Documents shall be demonstrated during the Capacity Tests, which will be performed after dry and wet testing are complete for components of the Project related to each such Capacity Test. The Design-Builder shall plan and conduct the tests so as to ensure that the systems are subjected to the design capacity flows and in accordance with the Contract Documents.
  - The Capacity Tests shall also demonstrate that the Project functions in accordance with the key hydraulic parameters of the Contract Documents. Where necessary to achieve the design capacity flows for the Capacity Tests, either individual trains or facilities with multiple identical trains can be utilized with proportional flows and/or the flows shall be augmented using temporary equipment to simulate the design capacity flows. Where it is necessary to modify settings or utilize temporary equipment outside the limits of the Project, such modifications must be coordinated with Owner.
  - The Capacity Tests may be conducted during the 30-day Performance Test. If the Capacity Tests are terminated before successful completion, the testing shall be repeated in its entirety for components of the Project related to each such Capacity Test. Testing shall demonstrate the ability to treat the design capacity and in accordance with the Contract Documents for a minimum of an eight-hour period.
  - Design-Builder shall obtain necessary approvals from Owner and Georgia EPD prior to discharging any treated water into the Owner's distribution system.

- Pump Testing
  - Design-Builder will meet or exceed the performance and testing requirements of the Hydraulic Institute (HI).
  - As part of Phase 2, Design-Builder will witness factory testing as deemed necessary and approved by Owner.

- 30-day Performance Test:
  - The Design-Builder shall perform the 30-day Performance Test in accordance with Section 3.19.2.

Design-Builder shall ensure the completion of all demolition and decommissioning activities.

3.19.1.2 Commissioning and Start-up Test Monitoring

During the Commissioning and Start-up Testing the process parameters from any performance standards and performance guarantees shall be regularly monitored by Design-Builder for specific key parameters identified in the Commissioning and Start-up Plan, as well as electricity, natural gas, raw and potable water consumption, and process return flows directed back to the head of the WPP in order to evaluate the performance of the Project.

Design-Builder shall ensure that the frequency of sampling and analysis conducted shall be in accordance with the Commissioning and Start-up Plan. All samples shall be analyzed by a certified, independent laboratory that utilizes standard analytical and quality control procedures. The laboratory shall be identified and agreed upon by Design-Builder and Owner prior to testing.

3.19.1.3 Commissioning and Start-up Test Reporting

The Design-Builder shall prepare the Commissioning and Start-up Test Report and submit the report to Owner and the Independent Certifier in accordance with the format set out in the Commissioning and Start-up Plan as a condition of Substantial Completion. The Design-Builder shall ensure that the Commissioning and Start-up Test Report shall include, at a minimum, the following information:

- All sampling, analysis and monitoring data measured and recorded pursuant to the Commissioning and Start-up Plan including laboratory analysis, chemical consumption, instrument calibration certificates and any relevant calculations based on the data provided
- All process trend data from relevant analyzers and meters
- All necessary certification relating to the testing, analysis, and evaluation
- A record of all equipment failures, repairs, replacements, and maintenance encountered during execution of the Commissioning and Start-up Plan
- Certification stating that all testing was completed in accordance with the reviewed Commissioning and Start-up Plan
- Certification of the Capacity Tests and Performance Test results and a determination of the extent to which the results comply with the Contract Documents

The Design-Builder, the Independent Certifier, and Owner shall meet to review the Commissioning and Start-up Test Report no later than five working days following submission of the Commissioning and Start-up Test Report by the Design-Builder. Owner and the Independent Certifier shall, following such meeting, provide the Design-Builder with comments on the Commissioning and Start-up Test Report no later than five working days following such meeting. The comments on the Commissioning and Start-up Test Report shall be categorized as follows:

- Comments identifying instances of non-compliance with the criteria set out in the Commissioning and Start-up Test
- Drafting comments not related to compliance

The Design-Builder shall promptly resolve any instances of non-compliance indicated by the commissioning and testing required by this 3.19 or as may be raised by Owner or the Independent Certifier to the satisfaction of Owner and the Independent Certifier. In the event of a non-compliance, required re-testing will be completed in accordance with the Commissioning and Start-up Test. The Design-Builder shall, following resolution of all such non-compliances, re-issue the Commissioning and Start-up Test Report as a

condition of the Independent Certifier's confirmation that the Commissioning and Start-up Test has been successfully completed.

For clarity, "drafting comments" as mentioned herein need not be resolved as a condition of the Independent Certifier's confirmation that the Commissioning and Start-up Test has been successfully completed; however, the Design-Builder will be required to treat all such "drafting issues" as minor deficiencies and re-issue the corrected Commissioning and Start-up Test Report prior to Final Completion.

3.19.1.4 Criteria to Determine Compliant Commissioning and Start-up Test

The Design-Builder acknowledges and agrees that the Project will be deemed to have passed the Commissioning and Start-up Test only if the results for every parameter comply with the Contract Documents and the test standards and criteria identified in the reviewed Commissioning and Start-up Plan, and all components and systems operate successfully throughout the tests in automatic control with only routine operator adjustment.

3.19.1.5 Re-testing of the Commissioning and Start-up Test

The Design-Builder shall take corrective actions and repeat such tests, as applicable, if a compliant Commissioning and Start-up Test is not achieved.

3.19.1.6 Operation and Maintenance Manuals

Consistent with Section 3.6 hereof, the Design-Builder shall further develop the content of the O&M Manuals by consulting with Owner or their designated representative when required but prior to Substantial Completion.

The Design-Builder shall provide the O&M Manuals for the Project in both electronic pdf and hard copy form conforming to Owner's Standards. A minimum of five hardcopies and two electronic (on USB Flash drive) shall be provided. Format of O&M Manuals shall be coordinated with and similar to the Owner's electronic O&M manual specifications.

The Design-Builder shall ensure that all instructions in the O&M Manuals are in simple language to guide the Owner's operating staff in the proper operation and maintenance of the Project.

The Design-Builder shall ensure that the O&M Manuals shall contain the following items as they specifically apply to the Project and conform with the requirements outlined in Owner's SCADA Standards:

- System design criteria
- Process description and functional design specifications
- System and controls schematics
- Operating instructions, including proprietary equipment manufacturer's printed instructions describing proper operation
- Equipment list and equipment identification data including name plate information for each piece of equipment
- Tag listing identifying the tag number and equipment description and location
- Spare parts list including proprietary equipment manufacturer's recommended spare parts listing for all equipment

- Supplier and Design-Builder listing identifying all Design-Builder Parties and suppliers who supplied and installed the equipment, systems, materials or finishes and including the suppliers' and Project Parties' names, addresses and telephone numbers
- Record Drawings
- Complete set of the final shop drawings
- Product data including equipment manufacturer's product data for proprietary equipment, systems, materials, and finishes
- Copies of inspection reports, test reports and other certificates required by the Agreement
- Copies of manufacturer's warranties, maintenance bonds and service contracts
- Construction completion and testing reports documenting the performance and the results of the tests required by the Agreement
- Any other documentation or information required by the Agreement

3.19.2 30-day Performance Test

3.19.2.1 30-day Performance Test Requirements

- The Design-Builder shall perform a 30-day Performance Test for the new WPP, PFAS treatment processes for combined Hicks WPP/new WPP, PFAS treatment processes for Hooper WPP, and all raw water, intermediate/transfer, and finished water pumping systems to demonstrate that Project meets the requirements of the Contract Documents and can operate reliably for a minimum of 30 consecutive days with only routine operator adjustment.
- The Design-Builder shall perform 30-day Performance Test such that the number of treatment components in service is varied to demonstrate that performance through the entire operational loading rates meets all design conditions.
- The Design-Builder shall ensure that the Project is placed into the configuration for normal operation and shall have all equipment operational prior to the commencement of the 30-day Performance Test.
- The Design-Builder shall ensure that, during the 30-day Performance Test, components and systems are operated in automatic mode to prove proper operation of the plant control system.
- The Design-Builder shall plan the 30-day Performance Test to ensure that the system is subjected to the maximum design flows during at least two 24-hour periods during the 30-day Performance Test, in accordance with this section and shall modify its plant configuration and vary the number of treatment components in service as required to simulate these conditions. The Design-Builder shall coordinate raw water flow requirements with Owner during the 30-day Performance Test and shall coordinate its activities to ensure that Owner or its representatives may observe any testing activities.
- During the 30-day Performance Test, the Design-Builder shall ensure that the operations of the Project shall follow operating procedures and protocols in the O&M Manuals.
- The Design-Builder shall ensure that the testing requirements for the 30-day Performance Test, shall, at a minimum, include the categories and frequencies of analysis required by the O&M Manuals,

augmented as required by additional sampling and analysis to demonstrate that the Project meets the Performance Requirements contained in the Contract Documents.

- The Design-Builder shall monitor and sample the raw water, finished water, and any waste (e.g., reject water from membranes or spent backwash water) streams at a frequency equal to or greater than that specified in Commissioning and Start-up Plan for all design and performance testing requirements, parameters, and criteria specified in the Contract Documents.
- The Design-Builder shall ensure that all sampling and analysis carried out during the 30-day Performance Test shall be carried out in accordance with the procedures set out in a Sampling and Analysis Plan submitted by the Design-Builder and approved by the Owner prior to incorporating into the Commissioning and Start-up Plan. The Design-Builder shall ensure that split samples of all the samples taken during the during the 30-day Performance Test shall be provided to Owner for independent analysis if so required.
- The Design-Builder shall ensure that all samples shall be analyzed by a certified, independent laboratory that uses standard analytical and quality control procedures. The Design-Builder shall identify and submit the laboratory to Owner for Owner's approval 30 days prior to testing.

3.19.2.2 Criteria to Determine That the 30-day Performance Test Has Met Requirements

The Design-Builder acknowledges and agrees that the Project will be deemed to have passed the 30-day Performance Test only if:

- The results for every parameter comply with the Contract Documents and the test standards and criteria identified in the reviewed Commissioning and Start-up Plan in accordance with the Contract Documents and all components and systems operate successfully throughout the tests in automatic control with only routine operator adjustment;
- The testing must meet the specified water quality standards for the continuous duration of the Performance Test for this test to be deemed to have passed; and
- Performance guarantee for any membrane treatment system will include, at a minimum, the following general water quality parameters: maximum reject flow, total organic carbon (TOC) rejection, sulfate rejection, sodium rejection, and chloride rejection. Performance guarantees for the following PFAS species will be provided: PFOA rejection, PFOS rejection, GenX rejection, PFBS rejection, PFNA rejection, and PFHxS rejection. Performance guarantees will be provided for both the advanced treatment and the reject water treatment for the 30-days Performance Test. Performance guarantees beyond 30-days will be as agreed upon between the Design-Builder and the Owner for the PFAS species. Owner and the Design-Builder will agree upon a correlation between the PFAS species rejection and the general water quality parameters listed to determine what performance guarantees are required for the other parameters beyond 30 days.

3.19.2.3 Re-testing of the 30-day Performance Test

If the 30-day Performance Test results fail to demonstrate compliance with the Contract Documents and to fulfil the test standards and criteria identified in the reviewed Commissioning and Start-up Plan in accordance with the Contract Documents, the Design-Builder shall take corrective actions and repeat such tests until the Project satisfies the requirements of Section 3.19.2 hereof.

3.19.2.4 30-day Performance Test Reporting

The Design-Builder shall prepare a report documenting the 30-day Performance Test (the "30-day Performance Test Report") and submit the 30-day Performance Test Report to Owner and the Independent Certifier in accordance with the form set out in the Commissioning and Start-up Plan. The 30-day Performance Test Report shall include:

- All sampling, analysis and monitoring data measured and recorded pursuant to the Commissioning and Start-up Plan including laboratory analysis, chemical consumption, instrument calibration certificates and any relevant calculations based on the data provided.
- All process trend data from the related instruments and meters.
- All necessary certification relating to the testing, analysis, and evaluation.
- A record of all equipment failures, repairs, replacements, and maintenance encountered during execution of the Commissioning and Start-up Plan.
- Certification stating that all testing was completed in accordance with the reviewed Commissioning and Start-up Plan.
- Certification of the 30-day Performance Test results and a determination of the extent to which the results comply with the Contract Documents.

The Design-Builder, the Owner's Independent Certifier, and Owner shall meet to review the 30-day Performance Test Report no later than 5 working days following submission of the 30-day Performance Test Report. Owner and the Independent Certifier shall, following such meeting, provide the Design-Builder with comments on the 30-day Performance Test Report no later than 3 working days following such meeting. The comments on the 30-day Performance Test Report shall be categorized as follows:

- Comments identifying instances of non-compliance with the criteria set out in the Commissioning and Testing Plan in relation to the 30-day Performance Test Report
- Drafting comments not related to compliance

The Design-Builder shall promptly resolve any instances of non-compliance raised by Owner or the Independent Certifier to the satisfaction of the Independent Certifier. In the event of non-compliance, required re-testing will be completed in accordance with the Commissioning and Testing Plan. The Design-Builder shall, following resolution of all such non-compliances, re-issue the 30-day Performance Test Report as a condition of the Independent Certifier's confirmation that the 30-day Performance Test has been successfully completed.

For clarity, "drafting comments" as set out herein need not be resolved as a condition of the Independent Certifier's confirmation that the 30-day Performance Test has been successfully completed; however, the Design-Builder will be required to treat all such "drafting issues" as minor deficiencies and re-issue the corrected 30-day Performance Test Report prior to Final Completion.

ATTACHMENT

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Exhibit C
Attachment A

Project Design Elements for
Initial Phase 1B Estimate of Work

for

Advanced Water Treatment and Capacity Upgrades

Clayton County Water Authority

February 2024

Table of Contents

1. Purpose

The purpose of this document (Project Design Elements for Initial Phase 1B Estimate of Work) is to provide the Proposer a basis for developing its preliminary estimate for Phase 1B Services to be included in Attachment E Fee and Rate Proposal.

The scope of work to be assumed in the Initial Phase 1B Estimate of Work includes: Phase 1B services, as defined in Exhibit C – Scope of Design Builder Services, for a project with the design elements detailed in this document. The Initial Phase 1B Estimate of Work shall include all items listed within the Request for Proposal, Section 5 Proposal Submission Requirements, Part 6 Fee and Rate Proposal.

Note that the design elements provided below are not meant to reflect Owner's preferences, rather to provide a basis for development of Initial Phase 1B Estimate of Work. Actual design elements will be selected during Phase 1A services, and those elements will then be incorporated into the Design-Builder's Phase 1B Proposal.

2. General Considerations

The Project design must meet the latest requirements of the International Building Code (as adopted by the State of Georgia), as well as other applicable local, state, and federal requirements and design standards in effect at the time when construction begins. Additionally, the design shall be developed in accordance with the Project Technical Requirements (Exhibit B).

The Design-Builder shall make provisions, as necessary, to keep existing WPPs in operation (100% capacity) throughout construction of the new Project.

The Design-Builder shall consider the full buildout of the Hicks WPP property in all aspects of the Project design.

3. Smith Reservoir Site

3.1 Raw Water Pump Station

- New Smith Reservoir Raw Water Pump Station (RWPS) to provide firm capacity of 24 mgd or as required to meet finished water capacity goals at Existing and New Hicks WPP.
- Facility design to ensure efficient firm capacity expansion to meet the 2050 New Hicks finished water capacity goals as provided in Exhibit C, Table 3-1 (minimum 40 mgd).

Assumptions

- Pump station in a new building.
- Vertical turbine pumps equipped with variable frequency drives (VFDs, housed in an air conditioned space).

- Initial pumps: minimum of four operating pumps of two sizes (including one redundant pump of the largest size).
- Future pumps: minimum of six operating pumps of two sizes (including one redundant pumps of the largest size).

- Standby power generator sized to operate pump station firm capacity.
- SCADA with remote monitoring/control of pumps from New Hicks WPP.
- Access driveway with security/gate and fencing around building; security cameras (remote monitoring at New Hicks WPP).

4. Huie Constructed Treatment Wetlands Site

4.1 Pond E Modifications

- Evaluate Huie CTW Pond E embankments to determine if remediation is required.
- Dredge Huie CTW Pond E to regain original pond capacity; dispose dredged material off site in accordance with all applicable regulations.
- Add manually operated sluice gate between Huie CTW Ponds D and E.
- Report water surface level of Huie CTW Pond E to SCADA.

Assumptions

- No remediation of the Pond E dam is required.

4.2 Transmission Main from Blalock RWPS

- Redirect existing transmission main from existing Blalock RWPS to Existing Hicks WPP into CTW Pond E and meter flow.

Assumptions

- Flow meter monitored by SCADA at New Hicks WPP.
- Provide bypass line to send flow directly to Raw Water Flow Control Valves at Existing/New Hicks WPPs.

4.3 Transmission Main from Smith Reservoir

- Redirect existing transmission main from existing Smith RWPS to Existing Hicks WPP into CTW Pond E and meter flow.

Assumptions

- Flow meter monitored by SCADA at New Hicks WPP.
- Provide bypass line to send flow directly to Raw Water Flow Control Valves at Existing/New Hicks WPPs.

4.4 Raw Water Main from Pond E to Existing and New Hicks WPPs

- New raw water supply main from Pond E to Raw Water Flow Control Valves at Existing/New Hicks WPPs.

Assumptions

- Main constructed through the Pond E dam. Coordinate requirements with Georgia Safe Dams Program.
- Gravity flow from Pond E through WPP up to transfer pump station that pumps to the UV system and advanced treatment.

5. Hicks WPP Site

5.1 Site

- Site improvements (including utilities and yard piping; grading and drainage; roadways and parking; fencing and site security; stormwater management) as required for the entire facility, including considerations for future expansions as provided in Exhibit C, Table 3-1.
- Entire Hicks WPPs site to be considered as one campus, incorporating continuity in planning and design.

5.2 Raw Water Flow Control

- New raw water flow control system to divert flow to the Existing Hicks WPP and New Hicks WPP.

Assumptions

- Flow will come from Huie CTW Pond E and the bypass lines from Blalock RWPS and Smith Reservoir RWPS transmission mains.
- Flow control valves will be tied to SCADA (monitor valve position and control flow from New Hicks WPP).
- Uninterruptable power supply for all control valves.

5.3 Existing Hicks WPP

5.3.1 Raw Water Meter Vault

- Modify raw water meter vault into the Existing Hicks WPP for new influent pipe from Pond E.

Assumptions

- Replace existing raw water main butterfly valves upstream of meter vault.
- Maintain existing venturi flow meters in service as primary flow measurement.
- Add clamp-on flow meter upstream of existing vault to provide redundant flow measurement (tie to SCADA).
- Provide manufacturer-recommended pipe configuration upstream and downstream of all flow meters.

5.4 New Hicks WPP Facilities

As per Exhibit C, Table 3-1, this Project is to provide 20 mgd of finished water capacity ("Initial WPP Capacity"), with two anticipated expansions to a buildout capacity of 40 mgd finished water ("Buildout WPP Capacity"). All processes within the New Hicks WPP are to incorporate these requirements.

5.4.1 Raw Water Meter Vault

- New raw water meter vault to measure flow coming into the New Hicks WPP. Isolation butterfly valves will be included upstream and downstream of the vault.

Assumptions

- All flow will come from Huie CTW Pond E, Smith Reservoir, and Blalock Reservoir through the Raw Water Flow Control System.
- Primary flow meter to be Venturi (tied to SCADA).
- Provide redundant flow meter in vault (tied to SCADA).
- Provide manufacturer-recommended pipe configuration upstream and downstream of all flow meters.

5.4.2 Rapid Mix Basin

- Single Rapid Mix Basin with redundant mixer chambers and integrated flow splitter box to proportionally divide flow into downstream treatment trains.

Assumptions

- Variable speed mechanical mixers (Lightnin or equal).

- Each basin capable of treating 100% of WPP capacity (initial and future flows).
- Incorporate provisions in splitter box for future treatment trains.

5.4.3 Treatment Train

- Conventional Treatment: Flocculation, Sedimentation, and Filtration
- Treatment trains capable of treating Initial WPP Capacity, with future trains added for Buildout WPP Capacity.
- Variable speed mechanical mixers in flocculation basins (Lightnin or equal).
- Four-stage flocculation per treatment train (tapered energy across stages).
- Stainless steel plate settlers with integrated weir troughs for sedimentation basins (SS covers over plates/weir troughs); maximum loading rate of 0.25 gpm/sf.
- Basin washdown loop around entire perimeter of flocculation and sedimentation basins.
- Common point of chemical addition for sedimentation basin effluent (prior to entering filters).
- Multi-media (i.e., sand/anthracite) with maximum filtration rate of 5 gpm/sf; provisions for future total media depth of 42” and >30% media bed expansion during backwash.
- Stainless steel AWI filter bottoms capable of simultaneous air/water backwash.
- Filters in enclosed building that is connected to the operations building.
- Redundancy built into all treatment trains. Plant capacity is achievable with one entire treatment train offline.
- Sample pumps provided for raw water (prior to chemical additional), raw water (after chemical addition prior to flocculation), settled water, filtered water (from each filter as well as combined filtered water effluent), downstream of post-filter chemical addition point, downstream of advanced treatment, and finished water. Sample taps from each point are provided in the operator lab.
- Instrumentation at various locations across the treatment process as typically utilized for modern water treatment plants, including but not limited to streaming current detectors, turbidimeters, pH meters, chlorine residual analyzers, etc. Local readouts as well as connection to SCADA.

5.4.4 Chemical Feed Systems

New chemical systems sized to serve both the Existing and New Hicks WPPs for the initial combined WPP capacity with space allocated for additional tanks and pumps to be added for Buildout WPP Capacity.

- Chlorine dioxide system

- Feed points: raw water main coming into WPP

- Sodium hypochlorite bulk storage and feed system
    - Feed points: raw water into WPP, sedimentation basin influent, filter effluent, downstream of advanced treatment, downstream of UV system
    - Provisions to dilute sodium hypochlorite to 6% strength for storage and feeding.
- Alum bulk storage and feed system
    - Feed points: rapid mix
- Liquid lime storage and feed system
    - Feed points: rapid mix, filter effluent, downstream of advanced treatment, downstream of UV system
- Liquid polymer storage and feed system
    - Feed points: rapid mix, upstream of sedimentation basins, residual handling
- Phosphoric acid bulk storage and feed system
    - Feed points: Downstream of advanced treatment, downstream of UV system
- Sodium fluorosilicate dry feed system
    - Feed Points: downstream of advanced treatment, downstream of UV system
- Powdered activated carbon (PAC) dry feed system (SuperSacks)
    - Feed Points: Smith Reservoir raw water main bypass line, Blalock Reservoir raw water main bypass line, Huie CTW Pond E raw water main, rapid mix, settled water

Assumptions

- Existing Hicks WPP feed points, as detailed in Exhibit A - Project Planning Document, will be included in addition to new feed points listed at New Hicks WPP for chemical feed systems designs.
- New Chemical Feed Systems
    - Chemical feed systems and day tanks will be housed in a new building; bulk tanks may be located outside in segregated containment areas adjacent to the feed systems (note that PAC will be in a separate building).
    - Chlorine dioxide system: Purate system.
    - Liquid lime storage and feed system: Burnett Cal-Flo.
    - PAC feed systems will be housed in a separate building; spare SuperSacks stored in same building.

- Minimum 30 days storage at maximum flow, average dose conditions (45 days minimum storage for alum and 6% sodium hypochlorite).
- Minimum, average, and maximum chemical dosages based on historical data.
- Single wall bulk storage tanks will be used.
- Minimum bulk storage tank capacity of 6,000 gal (or 1.5 times bulk delivery truck capacity).
- Provide one spare (redundant bulk tank) for each sodium hypochlorite and alum.
- Redundant feed pumps for all chemical feed systems and to each feed point (assume Watson Marlow peristaltic pumps or equal).
- Day tanks will be provided for each chemical inside the building (transfer pumps will be used to fill all day tanks).
- Bulk storage and day tank levels will be tied to SCADA. Day tank level monitoring is also provided locally at chemical transfer pump location with alarms.
- New chemical feed systems will be tied to SCADA (control and monitoring).
- Fire suppression system will be installed in the building.
- Emergency eyewash/showers will use tempered water and be equipped with local alarms and tied into SCADA.

5.4.5 Residuals Handling

- Modify Existing Hicks WPP residuals handling system for additional residuals from New Hicks WPP.

Assumptions

- Upgrade the two existing centrifuges to larger units (sized to provide n+1 redundancy with no more than 40 hours/week dewatering operation).
- Add scale to existing truck bay.
- Add additional gravity thickener.
- Replace sludge pumps with larger capacity units between Thickeners and centrifuges.

5.4.6 Transfer Pump Stations

- Existing Hicks transfer PS will be retrofitted to pump water from Existing Hicks WPP to relocated/expanded UV treatment system and then flow to the advanced treatment process.
- New transfer PS will be provided to pump treated water from New Hicks WPP through the relocated/expanded UV treatment system and then flow to the advanced treatment process.

Assumptions

- Vertical turbine pumps equipped with VFDs (housed in an air-conditioned space).
- Pump station to include n+1 redundancy (one of the largest pumps assumed to be out of service) and ability to expand for additional future flows (provide space for future pumps or ability to replace pumps with larger units).
- PS located in a new building.

5.4.7 UV Disinfection System

- Relocate Existing Hicks WPP UV disinfection system to New Hicks WPP in a new building.
- Install additional similarly sized UV units to treat the initial combined capacity of New/Existing WPPs.
- Make provisions for future UV units to be installed for the ultimate WPP capacity.

5.4.8 Advanced Treatment Process

- New nanofiltration (NF) or reverse osmosis (RO) treatment facility sized for finished water capacity of the Existing Hicks WPP and New Hicks WPP.
- Membrane treatment will minimize amount of reject water while achieving finished water goals (per Exhibit A – Project Planning Document, Section 2.3).

Assumptions

- See Exhibit A – Project Planning Document, Table 3-1 for initial and buildout capacity.
- Provide treatment to reduce all regulated PFAS compounds to zero ng/L.
- Processes are located in a new building.
- Cartridge filters are installed upstream of membranes.
- Booster pumps required for membrane treatment will be located in the new building.
- Membrane treatment will not affect CCWA's existing corrosion control treatment strategy.

5.4.9 Advanced Treatment Reject Water

- Treat and discharge reject flow from NF/RO treatment.

Assumptions

- Utilize adsorption technology with n+1 redundancy.
- Provide treatment to reduce all regulated PFAS compounds to zero ng/L.

- Provide ability to expand capacity for future flow requirements.
- Located in the same building as advanced treatment technology.
- Treated reject flow will discharge in Huie CTW Pond D.

5.4.10 Ground Storage Tanks

- Two above-grade prestressed concrete ground storage tanks.
- Provide space on site and piping connections for two additional similarly sized tanks.

Assumptions

- Tanks have the ability to drain into a CCWA-approved location.
- Each tank will have 10 MG capacity.
- Provisions provided to bypass either tank.
- Tanks will be vented.
- Tanks will include concrete baffle walls to prevent short-circuiting of flow (design will achieve T10 = 70% of theoretical detention time).
- Tanks will be sized to provide the required contact time for chlorine to achieve the required level of inactivation of Giardia cysts, viruses, and all regulated pathogens through disinfection during maximum WPP production and one tank being offline. Assume tanks are at 30% full and use maximum historical pH and lowest water temperature in design calculations.

5.4.11 High Service Pump Station

- New high service pump station.

Assumptions

- See Exhibit A, Project Planning Documents for buildout requirements.
- Enclosed building, sized for full buildout capacity.
- 40-mgd firm capacity with open slots for 55-mgd firm capacity.
- Vertical turbine pumps equipped with VFDs (housed in an air-conditioned space).
- Bridge crane inside building for lifting/moving equipment and to remove/install pumps.
- Two venturi flow meters in parallel on discharge line (one active and one spare in bypass line) in a concrete vault. Provide manufacturer-recommended pipe configuration upstream and downstream of all flow meters. Meters are accessible in a covered concrete vault (not confined space) and have stairs down into vault.

5.5 Architectural/Miscellaneous MEP

5.5.1 All Buildings

- Total available parking across new Hicks WPP: 75 cars, including required handicap parking and access that is ADA complaint.
- New buildings will be constructed with concrete block walls with brick veneer and have standing seam metal roofs.
- Tour-friendly layout for large groups.
- The entire site will be fenced and gates equipped with security protocols and systems.

5.5.2 New Administration Building

- Ten offices
- Training room
    - Seating for minimum 50 people
    - Integrated Audio/Visual system
- Onsite staff conference room
    - Seating for 20 people
- Bathrooms
    - Men's and Women's separate facilities
    - Showers and lockers for both men's and women's facilities
- Staff breakroom
- Private roadway to building separate from Operations Building

5.5.3 New Operations Building

- Ten offices
- Conference room with table and audio/visual interface
    - Up to ten people
- Operators lab
    - Maximize cabinet storage and counterspace
    - Provide all instruments typical for water treatment operations
- Operator control room

    - Large monitors to display SCADA system plant and distribution system
    - Three workstations
- Emergency Overnight room
    - Four bunk beds
- Bathrooms
    - Men's and Women's separate facilities
    - Showers and lockers for both men's and women's facilities
- Operator breakroom
- Speakers across building that will alert SCADA alarms and gate access for deliveries
- Separate access for operations staff, water quality lab staff, and chemical deliveries

5.5.4 Water Quality Lab Building

- Eight offices
- Bathrooms
    - Men's and Women's separate facilities
    - Include showers and lockers for both men's and women's facilities
- Breakroom
- Conference room for ten people with table and audio/visual interface
- Main lab
    - Large room that maximizes cabinet and counter space for lab equipment
- Large fume hoods (2)

5.5.5 Storage Building

- Large pre-engineered metal building for housing of spare part, boats, golf cart, and other equipment
- Copper sulfate storage area (separated from rest of building)
- Work bench area for maintenance staff

5.5.6 Miscellaneous

- Uninterruptable Power Supply (UPS) across all operator-critical component of the WPP in climate-controlled server room(s)

6. Hooper WPP Site

6.1 Site

- Make site improvements, including yard piping modifications, grading for new structures, roads, and stormwater infrastructure.

6.2 Transfer Pump Stations

- New transfer PS to pump water from existing UV system to Advanced Treatment process.
- New transfer PS to pump water from Advanced Treatment process to existing ground storage tanks.

Assumptions

- Vertical turbine pumps to include n+1 redundancy.
- Equip pumps with variable frequency drives (housed in air-conditioned space).
- Each PS is located in its own enclosed building. A combined building/facility preferred by Owner, if feasible.

6.3 Advanced Treatment Process

- New granular activated carbon (GAC) pressure vessels sized for finished water capacity of Hooper WPP.

Assumptions

- Sized for 20 mgd of finished water production.
- Vessels sized for EBCT of 15 minutes at maximum plant flow.
- Treatment to reduce all regulated PFAS compounds to zero ng/L.
- Process is located in a new building.
- Vessels arranged in lead-lag configuration.
- Redundancy will be included to have entire lead-lag system down and still meet advanced treatment goals.
- GAC pressure vessel treatment will not affect CCWA's existing corrosion control treatment strategy.

6.4 Architectural/Miscellaneous MEP

- New buildings will be constructed with concrete block walls with brick veneer and have standing seam metal roofs.
- The entire site will be fenced and gates equipped with security protocols and systems.

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Exhibit D – GEFA and WIFIA Documents

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GEORGIA ENVIRONMENTAL FINANCE AUTHORITY

SUPPLEMENTAL GENERAL CONDITIONS

for

FEDERALLY ASSISTED STATE REVOLVING FUND CONSTRUCTION CONTRACTS

December 7, 2022

The following standard language must be incorporated into construction contract documents and in all solicitations for offers and bids for all construction contracts or subcontracts in excess of $10,000 to be funded in whole or in part by the federally-assisted State Revolving Fund in the state of Georgia.

These Supplemental General Conditions shall not relieve the participants in this project of responsibility to meet any requirements of other portions of this construction contract or of other agencies, whether these other requirements are more or less stringent. The requirements in these Supplemental General Conditions must be satisfied for work to be funded with the State Revolving Fund.

TABLE OF CONTENTS

INSTRUCTIONS AND GENERAL REQUIREMENTS

It is the policy of the State Revolving Loan Fund (SRF) to promote a fair share of subcontract, materials, equipment, and service awards to small, minority, and women-owned businesses for equipment, supplies, construction, and services. Compliance with these contract provisions is required for project costs to be eligible for SRF funding. The fair share objective is a goal, not a quota. Failure on the part of the apparent successful bidder to submit required information to the loan recipient (Owner) may be considered by the Owner in evaluating whether the bidder is responsive to bid requirements.

THE PRIME CONTRACTOR MUST SUBMIT THE FOLLOWING ITEMS TO THE OWNER:

A. Before beginning the work of any contract:

1) **DBE Compliance Form and related documentation.** The Owner must submit this information to the Georgia Environmental Finance Authority (GEFA) to demonstrate compliance with Disadvantaged Business Enterprise (DBE) requirements. GEFA concurrence is recommended prior to award of the construction contract and is required prior to commencement of any SRF-funded construction. (Pages GEFA-4 and 5)
2) **Certification Regarding Equal Employment Opportunity.** This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor form should be submitted with the DBE Compliance Form, and the subcontractor forms should be submitted as the subcontracts are executed. (Page GEFA-9)
3) **Certification Regarding Debarment, Suspension, and Other Responsible Matters.** This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor form should be submitted with the DBE Compliance Form and the subcontractor forms should be submitted as the subcontracts are executed. (Page GEFA-10)

B. During the performance of the contract:

4) **Changes to Subcontractors Form.** If any changes, substitutions, or additions are proposed to the subcontractors included in previous GEFA concurrences, the Owner must submit this information to GEFA for prior concurrence for the affected subcontract work to be eligible for SRF funding. (Page GEFA-11)
5) **DBE Annual Report.** The Owner must submit this information to GEFA no later than October 20 of any year that the construction contract is active. (Page GEFA-12)
6) **Certified Payrolls.** These should be submitted to the Owner weekly for the Prime Contractor and all subcontractors. The Owner must maintain payroll records and make these available for inspection. Use U.S. Department of Labor form WH-347 or a similar form that contains all the information on the U.S. Department of Labor.

THE OWNER MUST SUBMIT INFORMATION FOR GEFA REVIEW AND CONCURRENCE TO:

Georgia Environmental Finance Authority
47 Trinity Ave SW
Fifth Floor
Atlanta, Georgia 30334
404-584-1000 (phone)
404-584-1069 (fax)
waterresources@gefa.ga.gov

DBE COMPLIANCE FORM

ALL INFORMATION OUTLINED ON THIS FORM IS REQUIRED FOR DBE COMPLIANCE REVIEW. THE PROPOSED PRIME CONTRACTOR AND OWNER SHOULD ENSURE THAT THIS INFORMATION IS COMPLETE PRIOR TO SUBMITTAL.

Loan Recipient _____ **SRF Loan Number** _____

PRIME CONTRACTOR'S AND OWNER'S CERTIFICATIONS:

I certify that the information submitted on and with this form is true and accurate and that this firm has met and will continue to meet the conditions of this construction contract regarding DBE solicitation and utilization. I further certify that criteria used in selecting subcontractors and suppliers were applied equally to all potential participants and that EPA Forms 6100-2 and 6100-3 were distributed to all DBE subcontractors.

_____ **Date**_____
(Prime Contractor signature)

_____
(Printed name and title)

I certify that I have reviewed the information submitted on and with this form and that it meets the requirements of the Owner's State Revolving Fund loan contract.

_____ **Date**_____
(Signature of Owner or Owner's representative)

_____
(Printed name and title)

CONTACT INFORMATION

Owner contact _____

Owner phone number and email _____

Consulting Engineer contact _____

Consulting Engineer phone number and email _____

Proposed Prime Contractor _____

Prime Contractor contact _____

Prime Contractor phone number and email _____

Proposed total contract amount $ _____

Proposed total MBE participation $ _____ **Percentage** _____ **Goal: 4.0 percent**

Proposed total WBE participation $ _____ **Percentage** _____ **Goal: 4.0 percent**

CONTINUED ON NEXT PAGE

Please submit the following with the DBE Compliance Form:

a. List of all committed and uncommitted subcontractors by trade, including company name, address, telephone number, contact person, dollar amount of subcontract, and DBE/MBE/WBE status.

b. Indicate in writing if no solicitations were made because the Prime Contractor intends to use only its own forces to accomplish the work.

c. Proof of certification by EPA, SBA, DOT (or by state, local, tribal, or private entities whose certification criteria match EPA criteria) for each subcontractor listed as a DBE, MBE, or WBE.

d. Documentation of solicitation efforts for prospective DBE firms, such as fax confirmation sheets, copies of solicitation letters and emails, printout of online solicitations, printouts of online search results, and copies and affidavits of publication in newspapers or other publications. (see also, "Six Good Faith Efforts", page GEFA-7).

   i. The Prime Contractor shall use the necessary resources to identify and directly solicit no less than three certified MBE firms and three certified WBE firms to bid in each expected subcontract trade or area. If a diligent and documented search of the recommended directories does not identify three potential certified MBE firms and three potential certified WBE firms, then the Prime Contractor shall post an advertisement in the Owner's local legal organ, the Owner's official website, a regional newspaper in a larger community in the proximity, the Prime Contractor's website, or some other appropriate resource.
   ii. The Prime Contractor is encouraged to follow-up each written, fax, or email solicitation with at least one logged phone call.
   iii. Whenever possible, post solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

e. Written justification for not selecting a certified DBE subcontractor that submitted a low bid for any subcontract area.

f. Certification By Proposed Prime Contractor or Subcontractor Regarding Equal Employment Opportunity (GEFA-9)

g. Certification By Proposed Prime or Subcontractor Regarding Debarment, Suspension, and Other Responsible Matters. (GEFA-10)

END OF DBE COMPLIANCE FORM

DBE COMPLIANCE CHECKLIST

THE PRIME CONTRACTOR MUST SUBMIT THE FOLLOWING ITEMS TO THE OWNER BEFORE THE WORK BEGINS:

Loan Recipient _____ **SRF Loan Number** _____

Include in Package Submittal

PRIME CONTRACTOR ONLY	TOTAL CONTRACT AMOUNT

ALL SUBCONTRACTORS, INCLUDING DBE FIRMS	TRADE	AMOUNT

ALL SUBCONTRACTORS, INCLUDING DBE FIRMS	TRADE	AMOUNT

DBE SUBCONTRACTORS ONLY	TRADE	AMOUNT

DBE SUBCONTRACTORS ONLY	TRADE	AMOUNT

PRIME CONTRACTOR ONLY *(Not applicable if self-performing all work, with no subcontracting)*

1. DBE Compliance Form. The Owner must sign and submit this information to the Georgia Environmental Finance Authority (GEFA) to demonstrate compliance with DBE requirements. GEFA concurrence is recommended prior to award of the construction contract and is required prior to commencement of any SRF-funded construction. **(Pages GEFA-4 and 5**)

2. Certification Regarding Equal Employment Opportunity. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor's form should be submitted with the DBE Compliance Form and the subcontractors' forms should be submitted as the subcontracts are executed. **(Page GEFA-9)**

3. Certification Regarding Debarment, Suspension, and Other Responsible Matters. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor's form should be submitted with the DBE Compliance Form and the subcontractors' forms should be submitted as the subcontracts are executed. **(Page GEFA-10)**

Uncommitted Trades

Documentation of Good Faith Efforts

Newspaper ads		Internet Websites	Fax Confirmation	Copies of Solicitation Emails/letters	Copies of phone logs
PROOF OF CERTIFICATION FOR EACH SUBCONTRACTOR LISTED AS A DBE, MBE, OR WBE					

SIX GOOD FAITH EFFORTS

These good faith efforts are required methods to ensure that DBEs have the opportunity to compete for procurements funded by EPA financial assistance dollars. Such good faith efforts are described as follows:

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. This will include placing DBEs on solicitation lists and soliciting them whenever there are potential sources.

2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.

5. Use the resources, services, and assistance of the U.S. Department of Transportation (DOT), U.S. Small Business Administration (SBA), and the Minority Business Development Agency of the U.S. Department of Commerce (MBDA).

6. If the Prime Contractor awards subcontracts, it must take the steps described in items (1) through (5) listed above.

Please note that DBEs, MBEs, and WBEs must be certified by EPA, SBA, or DOT (or by state, local, tribal, or private entities whose certification criteria match EPA's). DBEs must be certified to be counted toward the Prime Contractor's MBE/WBE goals. "Self-certified" DBE subcontractors will not be counted toward the Prime Contractor's MBE/WBE goals. Depending upon the certifying agency, a DBE may be classified as a DBE, a Minority Business Enterprise (MBE), or a Women's Business Enterprise (WBE).

The Prime Contractor must employ and document the **Six Good Faith Efforts** for all subcontracts, even if the Prime Contractor has achieved the fair share objectives.

The documentation of solicitations for the **Six Good Faith Efforts** must be detailed to allow for satisfactory review. Such documentation might include fax confirmation sheets, copies of solicitation letters/emails, printouts of the online solicitations, printouts of online search results, and affidavits of publication in newspapers or other publications. The Prime Contractor is encouraged to follow up each written, fax, or email solicitation with at least one logged phone call.

The Prime Contractor should attempt to identify and solicit DBEs in the geographic proximity of the project before soliciting those located farther away.

If a DBE subcontractor fails to complete work under the subcontract for any reason, the Prime Contractor must notify the Owner in writing prior to any termination and must employ the Six Good Faith Efforts described above if using a replacement subcontractor. Any proposed changes from the approved DBE subcontractor list must be reported to the Owner and to GEFA on the *Changes to Approved Subcontractors Form* (GEFA-14) prior to initiation of the action. EPA Forms Nos. 6100-3 and 6100-4 must also be submitted to GEFA for new DBE subcontracts.

RESOURCES FOR IDENTIFYING DBE SUBCONTRACTORS

RESOURCES FOR IDENTIFYING DBE SUBCONTRACTOR'S FOR DIRECT SOLICITATION:

Georgia Department of Transportation (GDOT)
Disadvantaged Business Enterprise Program
404-631-1972
https://www.dot.ga.gov/GDOT/Pages/DBE.aspx

City of Atlanta, Georgia Office of Contract Compliance
404-330-6010
https://www.atlantaga.gov/government/mayor-s-office/executive-offices/office-of-contract-compliance

DeKalb County, Georgia
Office of Purchasing and Contracting
404-371-4730
http://dekalblsbe.info/wordpress1/wp-content/uploads/2016/05/DeKalbCountyCertifiedVendorsListMay10-2016-Final2.pdf

Fulton County, Georgia
Purchasing and Contract Compliance
404-612-5800

Metropolitan Atlanta Rapid Transit Authority (MARTA)
Disadvantaged Business Enterprise Program
404-848-4656

U.S. Environmental Protection Agency
http://www.epa.gov/osbp/dbe_team.htm

For more information about DBE compliance, contact:
waterresources@gefa.ga.gov

NOTES:

(1) The Prime Contractor shall use the necessary resources to identify and directly solicit no less than three certified MBE firms and three WBE firms to bid in each expected subcontract area or trade.
(2) If a diligent and documented search of the recommended directories does not identify three potential certified MBE firms and three potential certified WBE firms, then the Prime Contractor shall post an advertisement in the Owner's local legal organ, the Owner's official website, a regional newspaper in a larger community in the proximity, the Prime Contractor's website, or some other appropriate resource. Whenever possible, post solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
(3) Expenditures to a DBE that acts merely as a broker or passive conduit of funds, without performing, managing, or supervising the work of its subcontract in a manner consistent with normal business practices may not be counted.
(4) The Prime Contractor should attempt to identify and first solicit DBEs in the geographic proximity of the project before soliciting those located farther away.
(5) Contact GEFA Project Managers at 404-584-1000 or waterresources@gefa.ga.gov for further assistance or resources.

CERTIFICATION BY PROPOSED PRIME CONTRACTOR OR SUBCONTRACTOR REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Proposed Prime Contractor
Proposed Subcontractor

This certification is required pursuant to Executive Order 11246, Part II, Section 203 (b), (30 F.R. 12319-25), (as amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966–1970 Comp., p. 684; EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230, EO 13672 of July 21, 2104, 79 FR 42971). Any bidder or prospective prime contractor, or any of the proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicated that the prime or subcontractor has not filed a compliance report due under applicable instruction, such contractor shall be required to submit a compliance report.

(1) Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
YES _____ NO _____

(2) Compliance Reports were required to be filed in connection with such contract or subcontract.
YES _____ NO _____ (If YES, state what reports were filed and with what agency.)

(3) Bidder has filed all compliance reports due under applicable instructions, including SF-100 (EEO-1 Report).
YES _____ NO _____ (If NO, please explain in detail.)

The information above is true and complete to the best of my knowledge and belief. (A willfully false statement is punishable by law – U.S. Code, Title 18, Section 1001.)

_____
PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR OR SUBCONTRACTOR

_____ _____
SIGNATURE OF AUTHORIZED REPRESENTATIVE **DATE**

CERTIFICATION BY PROPOSED PRIME CONTRACTOR OR SUBCONTRACTOR REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBLE MATTERS

Proposed Prime Contractor
Proposed Subcontractor

Under Executive Order 12549 individuals or organizations debarred from participation in federal assistance programs may not receive an assistance award under federal program or sub-agreement there under for $25,000 or more. Accordingly, each recipient of a state loan or a contract (engineering or construction) awarded under a loan must complete the following certification (see 2 CFR §1532.220).

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency.

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (federal, state, or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (federal, state, or local) terminated for cause of default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. (A willfully false statement is punishable by law – U.S. Code, Title 18, Section 1001.)

_____

PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR OR SUBCONTRACTOR

_____ _____

SIGNATURE OF AUTHORIZED REPRESENTATIVE **DATE**

_____ **I am unable to certify to the above statements. My explanation is as follows:**

CHANGES TO APPROVED SUBCONTRACTORS FORM

Loan Recipient _____ **SRF Loan Number** _____

CERTIFICATIONS:

I certify that the information submitted on and with this form is true and accurate and that this firm has met and will continue to meet the conditions of this construction contract regarding DBE solicitation and utilization. I further certify that criteria used in selecting subcontractors and suppliers were applied equally to all potential participants.

_____ Date_____
(Prime Contractor signature)

_____
(Printed name and title)

I certify that I have reviewed the information submitted on and with this form and that it meets the requirements of the Owner's State Revolving Fund loan contract.

_____ Date_____
(Signature of Owner or Owner's representative)

_____
(Printed name and title)

GENERAL INFORMATION:

1) If an approved subcontractor is terminated or replaced, please identify this company and briefly state reason.

Subcontractor Name:	**Trade**
Reason Terminated or Replaced	

2) For new or additional subcontractors, list name, trade, address, telephone number, contact person, dollar amount of subcontract, and DBE status.

New Subcontractor Name and Contact Person	**Trade**
Address	**Telephone Number**
Dollar Amount	**DBE Status**

1) Attach proof of certification by EPA, SBA, DOT (or by state, local, tribal, or private entities whose certification criteria match EPA's) for each subcontractor listed as a DBE, MBE, or WBE.

2) Attach documentation of Six Good Faith Efforts solicitation effort for all new subcontracts.

3) Provide justification for not selecting any certified DBE subcontractor that submitted a low bid for any subcontract area.

4) For each subcontractor, attach certifications regarding Equal Employment Opportunity (GEFA-9) and certifications regarding Debarment, Suspension, and Other responsible Matters (GEFA-10)

DBE ANNUAL REPORT
FORM (5700-52A)

This form must be completed by recipients of federal financial assistance for procurement of supplies, equipment, construction, or services. SRF loan recipients are required to submit this report to GEFA by the 20th of October for the previous period of October 1 through September 30. Please submit a "negative" report even if $0 is the amount paid to MBE/WBE subcontractors during the reporting period.

<table>
<tr><th colspan="4">ANNUAL REPORT FORM (5700-52A)</th></tr>
<tr><td colspan="2">1. PRIME CONTRACTOR</td><td colspan="2">2. REPORTING PERIOD (Complete date using current year.)
Period Ending (September 30, _____)</td></tr>
<tr><td colspan="2">3. SUBMIT TO:
Georgia Environmental Finance Authority
Attention: DBE Compliance Coordinator
47 Trinity Ave SW
Fifth Floor
Atlanta, Georgia 30303
waterresources@gefa.ga.gov</td><td colspan="2">4. LOAN RECIPIENT (Name, Address, and Telephone)</td></tr>
<tr><td>5. LOAN RECIPIENT (OWNER)
REPORTING CONTACT</td><td>PHONE:</td><td>6. TYPE OF FEDERAL FINANCIAL ASSISTANCE PROGRAM (Check one)
CWSRF _____ DWSRF_____</td><td>7. SRF LOAN NUMBER</td></tr>
<tr><td colspan="2">8. CONTRACTOR NAME AND TOTAL CONSTRUCTION CONTRACT AMOUNT</td><td colspan="2">9. ACTUAL DOLLAR AMOUNT PAIDTO MBE/WBE SUBCONTRACTORS THIS PERIOD
$ MBE_____ $ WBE_____ NEGATIVE REPORT ($0) ___</td></tr>
<tr><td colspan="2">10. RECIPIENT'S MBE/WBE GOALS
MBE 4.0 % WBE 4.0 %</td><td colspan="2">11. TOTAL DOLLARS SPENT THIS PERIOD
MBE $_____
WBE $_____
NON MBE/WBE $_____
TOTAL $ _____</td></tr>
<tr><td colspan="2">12. NAME AND TITLE OF AUTHORIZED REPRESENTATIVE OF LOAN RECIPIENT (OWNER).</td><td>13. SIGNATURE OF AUTHORIZED REPRESENTATIVE OF LOAN RECIPIENT.</td><td>14. DATE</td></tr>
<tr><th colspan="4">MBE/WBE PAYMENTS MADE DURING PERIOD</th></tr>
<tr><td colspan="2">NAME AND ADDRESS of DBE (SUB)CONTRACTOR (indicate if MBE or WBE firm)</td><td colspan="2">TOTAL DOLLAR AMOUNT PAID AND DATE PAID
$_____ DATE_____</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
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</table>

SPECIAL PROVISIONS

(a) The Prime Contractor is required to pay its subcontractors in accordance with the Georgia Prompt Payment Act (OCGA 13-11).

(b) The Prime Contractor is required to insert the entirety of the Davis Bacon contract requirements into all subcontracts.

(c) Sewer line and water line crossing of all roads and streets shall be done in accordance with the Georgia Department of Transportation (D.O.T.) Policies and Procedures and must comply with the Ga. D.O.T. Standard Specifications, Construction of Roads and Bridges, 1993 Edition.

(d) Construction shall be carried out so as to prevent bypassing of wastewater flow and to prevent interruption of drinking water treatment during construction. EPD must receive written notification prior to any reduction in the level of treatment and must approve all temporary modifications to the treatment process prior to the activity.

(e) Erosion and Sedimentation Control shall be accomplished in accordance with the Georgia Erosion and Sedimentation Control Act of 1975 as currently amended and NPDES General Permits (Storm Water from Construction Sites). See also epd.georgia.gov and gaswcc.georgia.gov for information regarding permits.

(f) Use of Chemicals: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in conformance with state and local regulations as appropriate.

(g) It is the duty of the Prime Contractor, the Owner and the Engineer to ensure the construction of the project, including the letting of contracts in connection therewith, shall comply with all applicable laws and regulations and requirements of the United States of America or any agency thereof, the state of Georgia or any agency thereof, territorial, or any local government laws or political subdivision and ordnances to the extent that such requirements do not conflict with federal laws and this subchapter.

(h) EPD, EPA, and GEFA shall have access to the site and the project work at all times.

BONDS

Bonding requirements for Contracts of $100,000 or less are contained in the General Conditions. Bond requirements of contracts in excess of $100,000 are:

1. Bid guarantee equivalent to five percent of the bid price. The bid guarantee shall consist of a firm commitment such as a certified check or bid bond submitted with the bid;

2. Performance bond equal to 100 percent of the contract price, and;

3. Payment bond equal to 100 percent of the contract price. Bonds must be obtained from companies holding Certificates of Authority as acceptable sureties, issued by the U.S. Treasury.

SPECIAL NOTICE TO BIDDERS

By the submission of this bid, each bidder acknowledges that he understands and agrees to be bound by the equal opportunity requirements of EPA regulations (40 CFR Part 8, particularly Section 8.4 (b)), which shall be applicable throughout the performance of work under any contract awarded pursuant to this solicitation. Each bidder agrees that if awarded a contract, it will similarly bind contractually each subcontractor. In implementation of the foregoing policies, each bidder further understands and agrees that if awarded a contract, it must engage in affirmative action directed at promoting and ensuring equal employment opportunity in the workforce used under the contract (and that it must require contractually the same effort of all subcontractors whose subcontracts exceed $10,000.00). The bidder understands and agrees that “affirmative action” as used herein shall constitute a good faith effort to achieve and maintain minority employment in each trade in the on-site workforce used on the project.

EQUAL EMPLOYMENT OPPORTUNITY NOTICE

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the Equal Opportunity Clause which is included in the nondiscrimination Provision and Labor Standards, EPA Form 5720-4 and the Standard Federal Equal Employment Opportunity (EEO) Construction Contract Specifications set forth herein.

2. The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	**4.0 percent**
Goals for female participation for each trade	**4.0 percent**

   These goals are applicable to all the Contractor's construction work (whether or not it is federal or federally assisted) performed in the covered area.

   The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minority and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation to the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical area where the contract is to be performed giving the state, county, and city, if any).

EEO Construction Contract Specifications

Executive Order 11246
https://www.dol.gov/agencies/ofccp/executive-order-11246/as-amended

Davis-Bacon and Related Acts
https://www.dol.gov/agencies/whd/government-contracts/construction

INSERT WAGE RATE DETERMINATION HERE

Wage Rates (for *Heavy Construction*) are state/county specific can be found at:
http://www.dol.gov/whd/govcontracts/dbra.htm

Sample Payroll Form (WH-347) is found at:
http://www.dol.gov/whd/forms/wh347.pdf

Labor Standards Interview Form (SF-1445) is found at:
http://www.gsa.gov/portal/forms/download/115910

Davis-Bacon (WH-1321) poster is found at:
http://www.dol.gov/whd/regs/compliance/posters/fedprojc.pdf (*English*)

http://www.dol.gov/whd/regs/compliance/posters/davispan.pdf (*Spanish*)

Fair Labor Standards Act Minimum Wage poster is found at:
http://www.dol.gov/whd/regs/compliance/posters/minwagebwp.pdf (*English*)

http://www.dol.gov/whd/regs/compliance/posters/minwagespbwP.pdf (*Spanish*)

"EEO Is the Law" poster is found at:
https://www.eeoc.gov/sites/default/files/2022-10/22-088_EEOC_KnowYourRights_10_20.pdf
(*English*)

https://www.eeoc.gov/sites/default/files/2022-10/22-088_EEOC_KnowYourRightsSp_10_20.pdf
(*Spanish*)

OSHA poster is found at:
https://www.osha.gov/sites/default/files/publications/osha3165.pdf
(*English*)

https://www.osha.gov/sites/default/files/publications/osha3167.pdf
(*Spanish*)

CERTIFIED PAYROLL REVIEW CHECKLIST

(This is a *recommended Certified Payroll Review Checklist for the Owner's use*.)

CONTRACT ID City of CW/DWSRF#00 - 000	**PRIME CONTRACTOR/SUBCONTRACTOR** X Construction
GENERAL WAGE DECISION AND DATE (Insert number and date)	**PAYROLL PERIOD ENDING**

INSTRUCTIONS: This checklist is to be used in conjunction with projects requiring Davis-Bacon Wage Rates and compliance reviews. All certified payrolls are to be date stamped upon receipt from the prime contractor.

Payroll Information Checklist:

_____ Prime Contractor's or subcontractor's name and address
_____ Contract ID numbers (GEFA SRF No.)
_____ Week ending.
_____ Project location.

_____ Employee ID or Last four digits of Social Security
- _____ Number Social Security Number removed
- _____ Employee's work classification
- _____ Identification of OJTs, apprentices, and program levels (%) on payrolls.
- _____ Verify that OJT and Apprentice Program documentation is in project files.

_____ Daily and weekly employee hours worked in each job classification.
- _____ Daily and weekly employee overtime (or premium) hours worked
- _____ Total weekly hours worked on all jobs (prevailing and non-prevailing wage).
- _____ Base rate shown for each employee, overtime (or premium) rate shown when worked.
- _____ Verify correct wage rates are being paid.
- _____ Verify overtime is being paid correctly (over 40 hrs/wk, and Time and a half)
- _____ Week's gross wages
- _____ Week's itemized deductions.
- _____ Week's net wages paid

_____ Compliance statement attached.
- _____ Method of fringe benefit payment described by checking either box (4)(a) or (4)(b).
- _____ Fringe benefit package information in file and updated as needed (if 4(a) is checked)
- _____ Exceptions explanation for fringe benefit (4)(c).
- _____ Signature.

Compliance Review Checklist (for field reviews):

_____ Verify work classifications reported are consistent with the work performed.
_____ Compare payrolls with wage rate interviews when conducted.
_____ Compare number of employees and hours worked with project documentation.

REVIEWED BY:	**DATE**

GEORGIA ENVIRONMENTAL FINANCE AUTHORITY

AMERICAN IRON AND STEEL
SPECIAL CONDITIONS AND INFORMATION

For

FEDERALLY ASSISTED
STATE REVOLVING LOAN FUND
CONSTRUCTION CONTRACTS

April 11, 2014

The following standard language must be incorporated into construction contract documents and in all solicitations for offers and bids for all construction contracts or subcontracts to be funded, in whole or in part, through the Federally-assisted State Revolving Fund in the State of Georgia for projects subject to the American Iron and Steel requirements.

These Special Conditions shall not relieve the participants in this project of responsibility to meet any requirements of other portions of this construction contract or of other agencies, whether these other requirements are more or less stringent. The requirements in these Special Conditions must be satisfied in order for work to be funded with the State Revolving Fund.

TABLE OF CONTENTS

GENERAL REQUIREMENTS

These Special Conditions are based on guidance provided by the United States Environmental Protection Agency (EPA). Public Law 113-76, the Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement that requires State Revolving Loan Fund (SRF) assistance recipients to use iron and steel products that are produced in the United States for projects in this project. A copy of Section 436 of the Act is found in Appendix 3.

The products and materials subject to these requirements will be defined in Appendix 1 of these special conditions.

The Owner must maintain documentation of compliance with the AIS requirements. The documentation that the Owner maintains will be subject to review and audit by representatives of the state of Georgia, the EPA, the EPA Office of the Inspector General, and other federal authorities.

The Prime Contractor must provide certifications of compliance for all products subject to AIS requirements to the Owner prior to requesting payments for those products. The Owner or the Engineer may require certifications of compliance with submittals and shop drawings for these products as part of the submittal review process.

All manufacturing processes for a covered iron or steel product, as further defined in Appendix 1, must take place in the United States. If a covered product is taken out of the US for any part of the manufacturing process, it becomes foreign source material.

The EPA recommends the use of a step certification process to document the locations of the manufacturing processes involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer, processor, etc.) of the iron and steel products certifies that its step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification should include the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached in Appendix 2 is a sample step certification.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes for the product and for its iron and steel components occurred in the United States. The EPA states that additional documentation may be needed if the certification lacks important information and recommends step certification as the best practice. A sample final manufacturer certification is attached in Appendix 2.

The Prime Contractor may document that incidental and generally low cost components, as defined in Appendix 1, are compliant with AIS requirements under the De Minimis Waiver issued by the EPA. For these items, the Contractor must provide the Owner with documentation of costs for these items, including invoices, and a report of types and categories of materials to which the waiver is applied, the total cost of incidental components covered by the waiver for each category, and the calculations by which the total cost of materials incorporated into the project was determined. A sample De Minimis report is attached is Appendix 2.

Contractor, supplier, and manufacturer records are subject to review and audit by the EPA, its Inspector General, and other federal authorities.

Failure to comply with these requirements may delay, limit, or prevent the disbursement of SRF funds to the Owner. Violations of AIS requirements will require correction by the Contractor as determined by the Owner and Engineer, including replacement of deficient products with compliant products and compensation for costs and other damages that may result. Violations may also subject the Owner, the Contractor, and suppliers to other enforcement actions within the discretion of the EPA and other federal authorities.

The Act permits EPA to issue waivers for a case or category of cases in which EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent. The Contractor should notify the Owner and Engineer immediately if it finds that a waiver may be required.

By submitting a bid for this project and by executing this construction contract, the Contractor acknowledges to and for the benefit of the Owner and the state of Georgia that it understands that the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund or the Drinking Water State Revolving Fund and that Federal law authorizing these Funds contains provisions commonly known as "American Iron and Steel" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and the state of Georgia that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the state of Georgia. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner or the state of Georgia to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner or the state of Georgia resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the state of Georgia or any damages owed to the state of Georgia by the Owner). The Owner and the Contractor agree that the state of Georgia, as a lender to the Owner for the funding of its project, is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the state of Georgia.

Appendix 1 – Definitions

For purposes of the Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the project:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete (defined in more detail below); and
Construction materials (defined in more detail below).

Product primarily of Iron or steel: The product must be made of greater than 50% iron or steel, measured by cost. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required, except as required for reinforced precast concrete. If a product is composed of more than 50% iron or steel, but is not listed in Section 436 (a) (2) of the Act, it is not required to be produced in the US. Alternatively, the iron or steel in such a product can be sourced from outside the US.

Steel: An alloy that includes at least 50 percent iron and between 0.02 and 2 percent carbon and may include other elements. Other alloys of iron are not required to be produced in the US.

Produced in the United States: Production in the US of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

Municipal Castings: Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings include access hatches, ballast screen, benches, bollards, cast bases, cast iron hinged hatches, cast iron riser rings, catch basin inlets, cleanout/monument boxes, construction covers and frames, curb and corner guards, curb openings, detectable warning plates, downspout shoes, drainage grates, frames & curb inlets, inlets, junction boxes, lampposts, manhole covers, rings & frames, risers, meter boxes, steel hinged hatches, steel riser rings, trash receptacles, tree grates, tree guards, trench grates, and valve boxes.

Structural Steel: Structural steel is rolled flanged shapes, having at least one dimension of their cross-section 3 inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

Reinforced Precast Concrete: While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing rebar must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin. If the reinforced concrete is cast at the construction site, the reinforcing rebar is considered to be a construction material and must be produced in the US.

Construction Materials subject to AIS: Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: welding rods, wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, gates, and screens.

Construction Materials not subject to AIS: Mechanical and/or electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples, including their appurtenances necessary for their intended use and operation, are NOT considered construction materials: pumps, motors, gear reducers, drives, variable frequency drives (VFDs), mixers, blowers/aeration equipment, compressors, meters, electric/pneumatic/manual accessories used to operate valves (such as valve actuators), gates, motorized screens (such as traveling screens), sensors, controls, switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, dewatering equipment, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, and analytical instrumentation.

Items temporarily used during construction, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel. For example, trench boxes or scaffolding are not considered construction materials subject to AIS requirements.

Incidental Components compliant with AIS under the De Minimis Waiver: This waiver permits the use of de minimis incidental components that may otherwise be prohibited under AIS. These de minimis items may cumulatively comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into the project. The cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into the project.

These items are miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are permanently incorporated into the project. For many of these incidental components, the country of manufacture and the availability of alternatives are not always readily or reasonably identifiable prior to procurement in the normal course of business. For other incidental components, the country of manufacture may be known, but the miscellaneous character in conjunction with the low cost, individually and in total, as typically procured in bulk, mark them as properly incidental. Examples of incidental components include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube.

Examples of items that are not incidental and are not covered by the De Minimis Waiver include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures.

Items covered as compliant under this waiver must be documented in a report to the Owner to demonstrate that they are both incidental and that they fall within the cost allowances of this waiver. The costs of these items must be documented by invoices. The report must include a listing of types and categories of materials to which the waiver is applied, the total cost of incidental components covered by the Waiver for each category, and the calculations by which the total cost of materials incorporated into the project was determined.

Appendix 2 – Sample Certifications
Step Certification

The following information is provided as a sample letter of step certification for American Iron and Steel compliance. Documentation must be provided on company letterhead. This is to be provided by each handler (supplier, fabricator, manufacturer, processor, etc.). Each time a step in the manufacturing process takes place, the handler delivers its work along with a certification of its origin.

Date

Company Name
Company Address
City, State Zip

Subject: American Iron and Steel Step Certification for Project (Insert project name and SRF number)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

List of items, products and/or materials:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Appendix 2 – Sample Certifications
Final manufacturer certification

The following information is provided as a sample letter of the final manufacturer to certify American Iron and Steel compliance for the entire manufacturing process. Documentation must be provided on company letterhead.

Date

Company Name
Company Address
City, State Zip

Subject: American Iron and Steel Certification for Project (Insert project name and SRF number)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement of P.L. 113-76 and as mandated in EPA's State Revolving Fund Programs.

List of items, products and/or materials:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Appendix 2 – Sample Certifications
Contractor De Minimis Report

Owner: (Owner Name)
SRF Project No: (SRF Number)
Project Description: (Contract title or brief description)
Date: (Date of report)
Submitted by (name & title): (Contractor representative)
Company Name

LIST OF MATERIALS OR CATEGORIES OF MATERIALS PERMANENTLY INCORPORATED INTO THE PROJECT	**COST**	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Total Permanent Materials	**$10,000.00**	
1 % of total material cost	**$100.00**	**Maximum cost for individual item waived**
5 % of total material cost	**$500.00**	**Maximum cumulative cost for category waived**

LIST OF MATERIALS OR CATEGORIES OF MATERIALS COVERED BY DE MINIMIS WAIVER	**COST**	**COMPLIANT (Yes/No)**
Category or Item	$100.00	Yes
Category or Item	$100.00	Yes
Category or Item	$100.00	Yes
Category or Item	$100.00	Yes
Category or Item	$100.00	Yes
Total De Minimis Items	**$500.00**	Yes

INVOICES ATTACHED FOR DE MINIMIS ITEMS.

Appendix 3 – P.L. 113-76, Consolidated Appropriations Act, 2014

The Act states:

Sec. 436 (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

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WIFIA PROGRAM

BORROWER GUIDE TO FEDERAL REQUIREMENTS

LAST UPDATED: November 2022

DISCLAIMER

This document is intended as a guide for WIFIA borrowers to understand their general responsibilities for complying with federal requirements and is for informational purposes only. This document discusses several federal statutory and regulatory provisions and other federal requirements, but does not itself have legal effect, and is not a substitute for those provisions and any legally binding requirements that they may impose. It does not expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits to any person.

The information provided in this guide, including in any appendices, does not, and is not intended to, constitute legal advice. Users of this guide should not rely on this information to ensure compliance with federal requirements and should contact their legal counsel to obtain advice with respect to any legal matter, including such compliance. To the extent there is any inconsistency between this document and any legally binding federal requirements, the latter take precedence. EPA retains discretion to use or deviate from this document as appropriate.

This guide is subject to change without notice to address any new laws and regulations that impact the WIFIA program and its borrowers. The guide contains links to third-party websites. Such links are only for the convenience of the reader, and EPA does not recommend or endorse the content of the third-party sites.

VERSION HISTORY

Below documents substantive content updates to this Borrower Guide since its initial release.

November 2022:

- Added Build America, Buy America Requirements section under *Latest Updates on Federal Requirements.*
- Added Suggested Contract Language for Build America, Buy America Requirements under *Appendix: WIFIA Specifications and Bid Contract Language*
- Clarifications to collaborative delivery projects and wage determinations under Davis Bacon Act based on additional guidance from Department of Labor under *Labor Laws and Standards*
- Additional clarifications to required contract language used for Equal Employment Opportunity (EEO) requirements in *Appendix: WIFIA Specifications and Bid Contract Language*
- Updated hyperlinks to outside sources.

October 2021:

- Added Table of Contents.
- Updated Environmental Authorities section, related to construction status of projects.
- Updated Economic and Miscellaneous Authorities section, related the Uniform Act and real property acquisition.
- Updated Labor Laws and Standards section, related to construction type generally used for water infrastructure projects.
- Updated hyperlinks to outside sources.

March 2021:

- Corrected hyperlinks to outside sources.

December 2020:

- Borrower Guide released.

Table of Contents

INTRODUCTION

Borrowers of loans provided under the Water Infrastructure Financing and Innovation Act (WIFIA), 33 U.S.C. § 3901 et seq., are required to comply with all federal laws and regulations. This document highlights important social and economic federal laws, regulations, and Executive Orders specifically listed in the WIFIA regulations (40 CFR Part 35 Subpart Q) as well as any relevant updates to the federal requirements. WIFIA borrowers have the prime responsibility for ensuring their staff and contractors comply with all federal requirements for a project. The project is subject to additional review of these federal requirements by the WIFIA Program during application processing and after loan execution.[1]

This guide provides an overview of the following federal requirements and identifies key borrower responsibilities and additional resources that may be helpful to the borrower for implementing each requirement.

[1] Although the WIFIA program provides oversight on loans issued to state infrastructure financing authorities, the program does not conduct federal requirements reviews during application processing or loan monitoring for these borrowers. These requirements are monitored and managed through the individual SRF programs.

ENVIRONMENTAL AUTHORITIES

OVERVIEW

The ***National Environmental Policy Act*** (NEPA) and various environmental crosscutting authorities fall under the Environmental Authorities listed in the WIFIA regulations at 40 CFR Part 35 Subpart Q.

The NEPA of 1969, 42 U.S.C. § 4321, *et seq*. mandates that federal agencies consider the effects of their actions, including programs, regulations, policies, and grant-funded specific projects, on the quality of the human environment. The issuance of a loan under the WIFIA program constitutes an action that triggers an environmental review of the project scope covered by the loan. The status of NEPA determinations for WIFIA's loans is listed on the WIFIA closed loan web page under the environmental review status column.

Prior to issuing a loan, the WIFIA program must review the environmental impacts of the project and make an independent determination under NEPA. The Council of Environmental Quality has established NEPA implementing regulations at 40 CFR part 1500 for meeting these requirements and the WIFIA program is guided by EPA's implementing regulations at 40 CFR Part 6. The WIFIA program's environmental review considers project impacts and mitigation measures across various environmental crosscutting authorities, including but not limited to:

- Archaeological and Historic Preservation Act, as amended (54 U.S.C. §§ 312501-312508)
- Archaeological Resources Protection Act (16 U.S.C. § 470AA-MM)
- Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668C)
- Cleans Water Act (Section 404)
- Clean Air Act Conformity (42 U.S.C. § 7506(C))
- Coastal Zone Management Act (16 U.S.C. §§ 1451-1466)
- Coastal Barrier Resources Act (16 U.S.C. §§ 3501-3510)
- Endangered Species Act (16 U.S.C. §§ 1531-1599)
- Environmental Justice (Executive Order 12898)
- Essential Fish Habitat Consultation Process under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801-1891)
- Farmland Protection Policy Act (7 U.S.C. §§ 4201-4209)
- Fish and Wildlife Coordination Act (16 U.S.C. § 661, *et seq.*)
- Flood Plain Management (Executive Order 11988, as amended by Executive Order 12148)
- Marine Mammal Protection Act (16 U.S.C. §§ 1361-1407)
- Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
- National Historic Preservation Act (NHPA), as amended (54 U.S.C. § 300101, *et seq*.)
- Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001, *et seq.*)
- Protection of Wetlands (Executive Order 11990, as amended by Executive Order 12608)
- Rivers and Harbors Act (Section 10)
- Safe Drinking Water Act (42 U.S.C. § 300F-300J-26)
- Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1287)
- Wilderness Act (16 U.S.C. § 1131, *et seq.*)

WIFIA borrowers do not need to have a completed environmental review prior to submitting a letter of interest to the program or when applying for a WIFIA loan; however, borrowers can expect to provide available environmental assessments, consultations, or other documentation to support the WIFIA program's review of environmental impacts and mitigation measures as part of application processing. WIFIA projects must comply with all environmental cross-cutting authorities. Compliance with cross-cutting authorities is reviewed and documented by the WIFIA program. The WIFIA program may conduct additional consultations related to federal cross-cutting authorities, as necessary for the environmental review. Compliance with the environmental cross-cutting authorities is particularly important for projects where construction is already in progress or will be starting prior to loan close. Experience has shown that successful and timely completion of consultations under Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act can be difficult when initiated too late in the project schedule. To document the completion of the NEPA environmental review, the WIFIA program will issue one of the following determinations for the loan:

- **Categorical Exclusion (CATEX)**: EPA's list of actions that may be categorically excluded is available at 40 CFR 6.204. The issuance of a CATEX does not require a public comment period.
- **Finding of No Significant Impact (FONSI) under WIFIA's Programmatic Environmental Assessment (PEA)**: The WIFIA program has analyzed the typical potential environmental impacts related to the issuance of credit assistance under WIFIA in the PEA and associated FONSI, related to certain WIFIA water and wastewater projects eligible under 33 U.S.C. § 3905 and described in Section 4 of the PEA. Based on information supplied by the WIFIA borrower and the borrower responses to the WIFIA PEA Questionnaire (included as an appendix to the WIFIA application), the WIFIA program will evaluate the applicability of the project under the PEA. An additional 30-day public comment period is not required for projects that fall under the PEA.
- **FONSI under Environmental Assessment (EA)**: If the project does not qualify for a CATEX or the PEA because the environmental impacts or the significance of the impacts are unknown, the WIFIA borrower will be asked to submit an environmental information document (EID) with a scope and level of detail commensurate with the magnitude and significance of the project. If deemed sufficient and acceptable by the WIFIA program, the borrower may submit a draft EA and supporting documents in lieu of an EID, or the WIFIA program will draft an EA. A FONSI determination under an EA is subject to a 30-day public comment period before it is finalized. EPA's NEPA implementing regulations for environmental assessments are found at 40 CFR 6.205.
- **Environmental Impact Statement (EIS)**: If significant impacts are anticipated for the project during the environmental assessment, the WIFIA borrower will partner with the WIFIA program to assist in the preparation of an EIS describing the environmental impacts and reasonable alternatives. EPA may enter into a third-party agreement with the applicant to hire a consulting firm to prepare the EIS. A draft EIS is subject to a 45-day public comment period and the final EIS is subject to a 30-day waiting period before it is finalized, and a record of decision (ROD) is issued for the project. EPA's NEPA implementing regulations for environmental impact statements are found at 40 CFR 6.207.

WHAT TO EXPECT

The WIFIA program has the responsibility to conduct an environmental review and issue a determination for the project scope covered by a WIFIA loan and to ensure any monitoring requirements are being implemented by the WIFIA borrower prior to and through construction. The WIFIA program must conduct an environmental review prior to issuance of a WIFIA loan. When the WIFIA project is co-funded with other federal or state programs, the WIFIA program may work collaboratively with co-funding agencies to ensure compliance with environmental cross-cutting authorities. WIFIA borrowers should clearly communicate project construction schedules to ensure the environmental compliance requirements can be or have been met prior to conducting ground-disturbing activities or activities that may diminish or alter the character of historic properties. Components of the WIFIA project that do not or cannot comply with environmental cross-cutting authorities may be excluded from the WIFIA project. As part of its compliance monitoring activities, the WIFIA program will conduct periodic document reviews and site walk-throughs during project construction, where applicable, to ensure specific requirements outlined in the WIFIA environmental documentation are met.

Prospective borrowers are not required to submit environmental documentation or findings when submitting their letters of interest (LOIs). However, as part of the WIFIA application, borrowers can expect to:

- ✓ Identify any consultations with cross-cutting agencies that have already been completed or are ongoing.
- ✓ Discuss the environmental review with the WIFIA program prior to submittal of the application. If it appears that the project may not qualify for a CATEX, the WIFIA program will request that the borrower submit a completed PEA Questionnaire along with the relevant supporting materials.

After the application is submitted, WIFIA applicants may be asked to:

- ✓ Provide additional materials relevant to the project environmental review, including project description and location, project maps, any reports, assessments, or consultations conducted for the project, NEPA determinations by other federal agencies or State Revolving Fund (SRF) programs, or other relevant documentation to support the environmental review.
- ✓ If an EA or EIS is required, consult with the WIFIA program to determine the scope and level of detail for the documentation, indicate any public meetings or hearings required as part of the process, and support the WIFIA program in responding to comments if the NEPA determination is subject to a public comment period.
- ✓ Verify accuracy of environmental review documents prepared by the WIFIA program and provided to the applicant at the completion of the environmental review. The signatory of the WIFIA application, or equivalent authority, must sign the Environmental Review Verification Memorandum to confirm the applicant's concurrence with the environmental documentation.

Environmental monitoring and reporting requirements prior to and during project construction will be outlined in the environmental review documents or the loan agreement. The WIFIA program has the responsibility to conduct checks on the borrower's environmental requirements during compliance

monitoring activities.

Key borrower responsibilities for implementation include:

- ✓ Execute the requirements outlined in the environmental review documents or specified in the loan agreement. These requirements vary based on the scope of the project and may include activities like submittal of approved environmental permits; use of construction methods to mitigate potential environmental impacts; environmental training for employees; submittal of biological assessments; or other requirements identified through consultations with other federal agencies.
- ✓ Notify the WIFIA program if the scope of activities under the existing environmental determination is modified and provide supporting documentation for the WIFIA program to initiate additional federal agency consultations, as needed, to maintain the borrower's environmental compliance with the project.

RESOURCES:

- CEQ Regulations for Implementing NEPA (40 CFR part 1500)
- EPA Procedures for Implementing NEPA and Assessing Environmental Effects (40 CFR Part 6)
- PEA for the WIFIA Program
- WIFIA PEA Questionnaires for WIFIA Credit Assistance Projects and SRF Programs

ECONOMIC AND MISCELLANEOUS AUTHORITIES

The following federal requirements fall under the Economic and Miscellaneous Authorities listed in the WIFIA regulations at 40 CFR Part 35 Subpart Q.

DEBARMENT AND SUSPENSION PROHIBITIONS RELATING TO VIOLATIONS OF CWA AND CAA WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS

Executive Order 12549 provides for a governmentwide system for debarment and suspension. A person or business who is debarred or suspended is excluded from activities in which grants, cooperative agreements, contracts of assistance, loans, and loan guarantees are being used to fund the activity. Borrowers must ensure their contractors and subcontractors are not suspended or debarred prior to issuing contracts. For prime contractors, registration under the governmentwide System for Award Management (SAM) is required and borrowers must check their registration under SAM. For lower tier contracts (i.e., subcontracts), OMB guidance under 2 CFR Part 180 Subpart C allows the borrower to verify whether subcontractors are debarred or suspended from government-funded activities using one of three options: (1) check subcontractor status on SAM; (2) collect a certification from the subcontractor; or (3) add a clause or condition to the covered transaction with the subcontractor.

Additionally, Section 306 of the Clean Air Act (CAA) and section 508 of the Clean Water Act (CWA), as implemented by Executive Order 11738 (1973), prohibit performance of Federal assistance agreements at facilities disqualified due to certain violations of the CAA or CWA. As described in the respective CAA and CWA sections, a person or entity who has been convicted of a criminal offense or has a serious pattern of civil violations may be barred from receiving Federal government contracts, loans, and grants. Statutory debarments occur by operation of law following criminal conviction under CWA (Section 508) or CAA (Section 306). The ineligibility lasts until the Debarring Official certifies that the condition giving rise to conviction has been corrected.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers are not debarred or suspended from receiving federal funds.

In its LOI submittal, WIFIA prospective borrowers are asked to:

- ✓ Disclose to EPA if they are currently debarred or suspended; proposed for debarment or suspension; or indicted, convicted, or had a civil judgment rendered against it for any of the offenses listed in the regulations governing debarment and suspension at 2 CFR Part 180 and Part 1532; or declared ineligible or excluded from participating in federal contracts or contracts paid for with federal funds. This disclosure is completed as part of the certification submitted with the LOI.

During application processing, WIFIA applicants are asked to:

- ✓ Disclose their debarment and suspension status as part of the WIFIA application and prior to loan closing.

For all contracts used on the project, WIFIA borrowers are expected to:

- ✓ Communicate to potential contractors the requirement to certify that the contractor is not debarred or suspended and to require their subcontractors to similarly certify. This is generally provided in bid advertisements and executed contracts. Although no specific contract language is required, sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below).
- ✓ Verify that the contractor and its subcontractors are not debarred or suspended. For prime contractors, access SAM to verify the awarded prime contractor is not disqualified or excluded. For lower tier contracts, ensure the prime contractor has verified their subcontractors are not suspended or debarred either by (1) checking exclusions in SAM, (2) collecting a signed certification from the subcontractor, or (3) including a clause or condition for the covered transaction with the subcontractor.

RESOURCES

- Debarment and Suspension (EO 12549)
- Providing for administration of the Clean Air Act and the Federal Water Pollution Control Act with respect to Federal contracts, grants, or loans (EO 11738)
- OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (2 CFR Part 180)
- Non-procurement Debarment and Suspension (2 CFR part 1532)
- System for Award Management (SAM)
- Sample Contract Language in WIFIA Specifications Package

NEW RESTRICTIONS ON LOBBYING

Recipients of federal grants, cooperative agreements, contracts, and loans are prohibited by 31 U.S.C. § 1352 from using federal funds to pay any person for influencing or attempting to influence any officer or employee of an agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress with respect to the award, continuation, renewal, amendment, or modification of any of these instruments. This requirement also applies to the WIFIA program, which follows the EPA implementing regulations on lobbying restrictions prescribed at 40 CFR part 34.

WIFIA borrowers are required to certify that (1) they have not made, and will not make, such a prohibited payment, (2) they will be responsible for reporting the use of non-federal funds for such purposes, and (3) they will include these requirements in subsequent contracts and subcontracts that exceed $100,000 and obtain necessary certifications from those entities.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers are not making prohibited payments related to lobbying using federal funds.

During application processing and prior to issuing a loan, WIFIA applicants are asked to:

- ✓ Provide completed "Certification Regarding Lobbying" (EPA Form 6600-06) form and if applicable, the "Disclosure of Lobbying Activities" (SF-LLL) form, which are included in the WIFIA Application. Use the WIFIA Loan ID as the EPA Project Control Number.
- ✓ Provide evidence of borrower communication to contractors and subcontractors of the need to also comply with restrictions on lobbying. This is generally provided in bid advertisements and executed contracts. Although no specific contract language is required, sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below).

Once a WIFIA loan is executed, key borrower responsibilities for implementation include:

- ✓ Continue to comply with and communicate to contractors and subcontractors of the need to comply with restrictions on lobbying. The WIFIA program will check advertised bids and executed construction contracts, which are a general reporting requirement of the loan, for this type of communication to contractors.

RESOURCES

- Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions (31 U.S.C 1352)
- New Restrictions on Lobbying (40 CFR part 34)
- Certification regarding lobbying (EPA Form 6600-06)
- Disclosure of Lobbying Activities (SF-LLL)
- Sample Contract Language in WIFIA Specifications Package

UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT

This authority applies to WIFIA borrowers who have acquired or will acquire real property, whether temporary or permanent, for the purpose of completing the WIFIA project. The acquisition itself does not need to be federally funded. If federal funds are used in any phase of the program or project, this statute applies.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act (URA), 42 U.S.C 61, establishes a uniform policy for just compensation of acquired real property and for fair and equitable treatment of persons who are displaced from their homes, farms, or businesses to make way for federal or federally assisted projects. It provides basic guidelines for negotiating the acquisition of real property by the federal government. The URA also requires agencies to reimburse individuals for actual and reasonable expenses incident to relocation, such as moving costs, direct loss of tangible personal property associated with moving or discontinuing a business, and expenses involved in searching for a replacement home or business site. 49 CFR Part 24 is the government-wide regulation that implements the URA.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers comply with the requirements of the URA if land acquisition is relevant to the project.

During application processing and once the WIFIA loan is executed, WIFIA borrowers are asked to:

- ✓ Disclose to the WIFIA program if land acquisition has occurred or will occur.
- ✓ Certify that the acquisition complies with or will comply with the URA. This disclosure is completed as part of the certification submitted with the LOI and loan application and as part of disbursement requests to the WIFIA program.
- ✓ Provide evidence that URA requirements are met, if requested, which may include initial notification to the landowner, appraisal and appraisal reviews, and offer of just compensation related to the acquisition.

RESOURCES

- URA implementing regulations for Department of Transportation, incorporated by reference in EPA regulations (49 CFR Part 24)
- Guidance on Acquisition and Appraisal: Acquiring Real Property for Federal and Federal-Aid Programs and Projects, Federal Highway Administration Office of Real Estate Services
- Federal-Aid Essentials for Local Public Agencies: Right of Way Requirements, Federal Highway Administration

DEMONSTRATION CITY AND METROPOLITAN DEVELOPMENT ACT

Executive Order 12372 and Section 204 of the Demonstration Cities and Metropolitan Development Act, 42 U.S.C 3301 *et seq.*, aim to foster an intergovernmental partnership between federal, state, tribal, and local governments. The executive order encourages federal coordination with local officials on the planning and construction of public facilities within their jurisdiction.

WHAT TO EXPECT

The WIFIA program is not identified as a program requiring intergovernmental review under this Executive Order.

The WIFIA program does not conduct compliance monitoring activities related to this Act after loan execution.

RESOURCES

- Intergovernmental Review of Federal Programs (Executive Order 12372)
- EPA Financial Assistance Programs Subject to Executive Order 12372

DRUG-FREE WORKPLACE ACT

Under the Drug-free Workplace Act of 1988, 41 U.S.C. § 8101 *et seq.*, federal contractors or any program receiving federal grants is required to establish a drug-free workplace policy. Governmentwide implementation of the Act is prescribed at 2 CFR Part 182, Subparts A through F.

WHAT TO EXPECT

The WIFIA program is a federal loan program and therefore is not covered by this Act.

The WIFIA program does not conduct compliance monitoring activities related to this Act after loan execution.

RESOURCES

- Drug-free workplace programs, Substance Abuse and Mental Health Services Administration
- Governmentwide requirements for Drug-free Workplace (2 CFR Part 182)

CIVIL RIGHTS, NON-DISCRIMINATION, AND EQUAL EMPLOYMENT OPPORTUNITY AUTHORITIES

The following federal requirements fall under the Civil Rights, Nondiscrimination, and Equal Employment Opportunity Authorities listed in the WIFIA regulations at 40 CFR Part 35 Subpart Q.

AGE DISCRIMINATION ACT, SECTION 504 OF THE REHABILITATION ACT, AND TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

Three important laws prohibit discrimination in the provision of services or benefits, on the basis of race, color, national origin, sex, handicap or age, in programs or activities receiving federal financial assistance. These laws are:

- Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d *et seq.*, as amended, states that "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."
- Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. § 794 *et seq.*, as amended and supplemented by Executive Orders 11914 and 11250, states that "(n)o otherwise qualified individual with a disability in the United States…shall, solely by reason of his or her disability, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving federal financial assistance…," and
- The Age Discrimination Act of 1975, 42 U.S.C. § 6101 *et seq.*, as amended, states that "(n)o person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance…"

Borrower compliance with these laws is not limited to the project funded by the WIFIA program. These laws apply to the WIFIA borrower and its operations in its entirety.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers are complying with civil rights laws and are developing projects, programs, and activities on a non-discriminatory basis.

During application processing and prior to issuing a loan, WIFIA applicants are asked to:

- ✓ Provide a completed "Pre-Award Compliance Review Report" (EPA Form 4700-4), which is included in the WIFIA Application, and if requested, additional information on any outstanding civil actions against the applicant.
- ✓ Provide evidence of communication to contractors and subcontractors of the need to also comply with civil rights laws. This is generally provided in bid advertisements and executed contracts. Although no specific contract language is required, sample contract language in the WIFIA specifications package is available for use by the applicant (see Resources below).

Once a WIFIA loan is executed, key borrower responsibilities for implementation include:

- ✓ Continue to comply with and communicate to contractors and subcontractors of the need to comply with civil rights laws and regulations. The WIFIA program will check advertised bids and executed construction contracts, which are a general reporting requirement of the loan, for this type of communication to contractors.
- ✓ Notify the WIFIA program of new civil suits that have been filed against the borrower that may have material adverse effect.

RESOURCES

- Civil Rights Pre-Award Compliance Review Report (EPA Form 4700-4)
- Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance (40 CFR Part 5)
- Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency (40 CFR Part 7)
- Sample Contract Language in WIFIA Specifications Package

SECTION 13 OF THE CWA

As codified in 42 U.S.C. § 1251, Section 13 provides that "No person in the United States shall on the ground of sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance…" EPA implementing regulations for this provision of the CWA is prescribed in 40 CFR part 7 and enforced similarly to those already established for racial and other discrimination under Title VI of the Civil Rights Act of 1964.

WHAT TO EXPECT

The WIFIA program has similar borrower expectations outlined in *Age Discrimination Act, Section 504 of the Rehabilitation Act, and Title VI of the Civil Rights Act of 1964* for implementing CWA Section 13.

RESOURCES

- Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency (40 CFR Part 7)

EQUAL EMPLOYMENT OPPORTUNITY

Through a series of Executive Orders, and a decision by the Equal Employment Opportunity Commission, the federal government established a national policy related to discrimination based on race, color, sex, religion, and national origin to enhance hiring, training, and promotion opportunities for minorities and women in construction programs financed, in part, by federal dollars.

Chief among these directives is Executive Order 11246, which requires all federal contracting agencies to include certain nondiscrimination and "affirmative action" provisions in all contracts and to require the recipients of federal contracts to include these provisions in subcontracts. The provisions apply to WIFIA borrowers, contractors and subcontractors who receive more than $10,000 in federal dollars a year and

commit these entities to maintaining a policy of non-discrimination in the treatment of employees, to make this policy known to employees, and to recruit, hire, and train employees without regard to race, color, sex, religion, or national origin.

Section 301 of Executive Order 11246 requires that WIFIA borrowers undertake and agree to incorporate into contracts and subcontracts specific language outlining the eight principals and directives found in Section 202 of the Executive Order.

Implementing guidelines can be found in the Department of Labor's regulations at 41 CFR Part 60. Compliance with Executive order 11246 is based on implementation of the Equal Opportunity Clause, and specific affirmative action obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers are complying with laws and regulations related to Equal Employment Opportunity.

During application processing and once the WIFIA loan is executed, WIFIA borrowers are asked to:

- ✓ Provide executed construction contracts (active and completed) that include specified EEO language. EEO law require specific language from Section 202 of Executive Order 11246 be included in bid documents and contracts. The specific language is included in the WIFIA specifications package, which is available for use by the borrower (see Resources below).
- ✓ In bid solicitations, provide an additional "Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity" as described at 41 CFR Part 60-4. The specific language is included in the WIFIA specifications package.
- ✓ Prominently post "Equal Opportunity is the Law" posters where it is accessible to all applicants for employment, employees, contractors, and subcontractors.
- ✓ Notify the Department of Labor's Office of Federal Contract Compliance Programs within 10 working days of award of a construction contract or subcontract in excess of $10,000.

RESOURCES

- Equal Employment Opportunity posters
- Executive Order 11246 and amendments
- DOL Construction Contract Technical Assistance Guide
- DOL Construction Contract Award Notification
- Sample Contract Language in WIFIA Specifications Package

PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN PROCUREMENT UNDER ENVIRONMENTAL PROTECTION AGENCY (EPA) FINANCIAL ASSISTANCE AGREEMENTS

The Disadvantaged Business Enterprise (DBE) Program is an EPA outreach, education, and goal program designed to increase and encourage the utilization and participation of DBEs in procurements funded by EPA assistance programs (73 FR 15904). The implementing regulations can be found at 40 CFR Part 33. WIFIA borrowers are required to seek and encouraged to use small, minority and women-owned businesses for their procurement needs using EPA's six good faith efforts when contracting. The borrower must also ensure that its prime contractor(s) follow the same rules when subcontracting. The six good faith efforts include:

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State, and Local Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs, arrange time frames for contracts, and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State, and Local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in items 1 through 5.

There are no specific requirements for implementing each of the efforts as long as the effort is shown. Aside from these efforts, WIFIA borrowers do not have other administrative or reporting requirements of the DBE program under a WIFIA loan.

WHAT TO EXPECT

In implementing EPA's DBE program, WIFIA borrowers are asked to:

- ✓ Apply the six good faith efforts when in the process of seeking a prime contractor and ensure that its prime contractors apply the six good faith efforts when in the process of seeking subcontractors.
- ✓ Maintain proper records demonstrating that the six good faith efforts were applied during contract procurement.

RESOURCES

- DBE Implementing regulations (40 CFR part 33)
- DBE Program resources and fact sheets
- Sample Contract Language in WIFIA Specifications Package

AMERICAN IRON AND STEEL (AIS) REQUIREMENT

OVERVIEW

This requirement is specified in the WIFIA statute at 33 U.S.C. § 3914 and implementation of the federal requirement mirrors Clean Water and Drinking Water SRF programs. See the *Latest Updates on Federal Requirements* section of this document for Build America, Buy America requirements that are effective starting May 14, 2022.

WIFIA borrowers must install iron and steel products that are produced in the U.S. for the project. Products covered under the AIS requirement include:

- Lined or unlined pipes and fittings
- Manhole covers and other municipal castings
- Hydrants
- Tanks
- Flanges
- Pipe clamps and restraints
- Valves
- Structural steel
- Reinforced precast concrete
- Construction materials

If the listed products are permanently incorporated into the project and are primarily iron and steel material, then borrowers should obtain and keep record of the manufacturer's certification of AIS compliance for that product. If a product does not fall within one of the listed product categories, it does not need to comply with the AIS requirements.

The WIFIA statute allows EPA to grant project waivers in specific circumstances: (1) if the requirement is inconsistent with the public interest; (2) if the products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or (3) if the products will increase the cost of the project by 25% or more. **WIFIA borrowers can seek guidance from the program on waivers at any phase in project design and implementation to discuss borrower-specific circumstances and explore options to ensure compliance.**

Product availability waiver requests are most common because not all items covered under the AIS requirement may be produced in the U.S. Borrowers should notify the WIFIA program when product availability issues are identified and prior to product procurement and installation to ensure that the project maintains compliance with the AIS requirement. Although not required, identifying products during project design can help the borrower assess market availability and initiate a timely waiver process, where needed. The waiver process involves:

1. Independent product research. Before availability waivers are considered, the WIFIA program will conduct independent market review based on the borrower's technical specifications of the product.
2. Borrower assessment. The WIFIA program will notify the borrower of the results and confirm unavailability of the products or identify additional domestically available options for the borrower to assess against their project requirements. If there are feasible options, no further

steps are taken.

3. Preparation and submission of waiver request package. If there are no feasible options, borrowers will prepare a waiver request package. The WIFIA program reviews the request for adequacy and submits the package for review and approval on the borrower's behalf.
4. Public comment period. Waiver requests are subject to a 15-day comment period and will be posted on the AIS webpage under Waiver Requests Received by EPA.
5. Approval and notification. Once all comments have been addressed, an approval package will be routed for review and approval through the Office of Water management team. The WIFIA program will post the approved waiver on the AIS webpage under Approved Project Waivers and notify the borrower.

Waivers should only be sought when all avenues of procuring AIS-compliant products have been exhausted. In many cases, a borrower may find that an availability waiver is not needed.

Public interest and cost waivers are less common. Borrowers should initiate further discussions with the WIFIA program if they believe their project could qualify for a public interest or cost waiver. The waiver process is the same for these waivers except product research and assessment (Steps 1 and 2) do not apply.

There are also national waivers that are immediately available for borrower use and do not require additional approval. The National De Minimis Waiver can be used at the borrower's discretion for incidental and low-cost items; it is ultimately the borrower who decides which items to include under this national waiver. If there is any uncertainty, seek assistance from the WIFIA program.

WIFIA cannot close a loan with previously incurred construction costs that are not compliant with the AIS requirement.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers understand the AIS requirements and that those requirements are being properly implemented for the entire project. WIFIA will conduct periodic document reviews and site walk-throughs during project construction to check AIS implementation as part of its compliance monitoring activities.

During application processing, WIFIA applicants may be asked to:

- ✓ Provide evidence of communication on AIS requirements to contractors and subcontractors. Although not statutorily required, applicants can easily achieve this by including notification in advertised bids and executed contracts. Sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below).
- ✓ If a project has not yet executed contracts, provide a plan for communication on AIS requirements to contractors and subcontractors.
- ✓ If the project includes previously incurred costs for construction activities, provide additional documentation to help the WIFIA program check that incurred costs are compliant with this requirement. This request may include: (1) a list of iron or steel products purchased and installed; (2) a sample of AIS certifications for those items; (3) related project waivers; and/or (4) results of

a third-party AIS audit.

WIFIA borrowers are asked to periodically submit documentation to demonstrate continued compliance with the AIS requirement. Key borrower responsibilities for implementation include:

- ✓ Communicate AIS requirements to contractors and ensure contractors are communicating the requirements to its subcontractors. This is generally included in advertised bids and executed contracts that are a general reporting requirement of the loan and checked by WIFIA. If communication is not included in the contract documents, provide additional evidence that communication has taken place.

- ✓ Submit draft or executed prime construction contracts for WIFIA review to ensure that adequate compliance language is included. The WIFIA program does not generally review subcontracts unless there is cause for further review.

- ✓ Identify products that must comply with AIS requirements and determine whether they can be procured domestically. Communicate to the WIFIA program when products cannot be procured domestically to initiate the program's independent market review and determine whether there is a need for an availability waiver. Submit additional documentation, such as technical specifications and product information, to support the WIFIA program's review and approval process, as needed.

- ✓ Maintain up-to-date records or frequently check with prime contractors on AIS certifications for products purchased and installed on the project. This can help the borrower prevent non-compliant products from being permanently incorporated into the project and triggering a non-compliance event. The WIFIA Program requires AIS documentation to be maintained for three years after project completion. **The key to borrower compliance is collecting adequate AIS documentation for installed products that are covered by the requirement.**

- ✓ Report any issue with noncompliance to the WIFIA program based on the borrower's review of purchased and installed products on contracts and subcontracts that must comply with the AIS requirement.

RESOURCES

- AIS Implementation Memoranda (four documents)
- National Waivers, including National De Minimis Waiver. See also AIS Online Webinar on De Minimis, June 2020
- Project Waiver Request Checklist
- Sample Contract Language in WIFIA Specifications Package
- Sample Certification Letter (available in the AIS Implementation Memorandum, dated March 2014). See also AIS Online Webinar on AIS Certification Letters, July 2020.

LABOR LAWS AND STANDARDS

OVERVIEW

This requirement is included in the WIFIA statute at 33 U.S.C. § 3909(e) by reference to Section 513 of the Federal Water Pollution Control Act (33 U.S.C. § 1372) and primarily covers requirements under the ***Davis-Bacon and Related Acts*** and the ***Contract Work Hours Safety Standards Act***. Implementation of the federal requirements under these Acts are consistent with guidance provided to Clean Water and Drinking Water State Revolving Loan Programs.

Borrowers must comply with federal prevailing wage laws, commonly referred to as Davis-Bacon. While the Davis-Bacon Act itself only requires compliance for federal contracting, WIFIA falls under "related acts" that are also subject to Davis-Bacon requirements. For all prime contracts above the $2,000 threshold, borrowers must enclose specific Davis-Bacon language into the prime contracts and ensure the prime contractor includes the same language in all associated subcontracts. Contracted laborers and mechanics are subject to wages at a rate no less than those determined by the U.S. Department of Labor (DOL).

Borrowers must obtain the wage determination for the locality in which a covered activity will take place prior to issuing requests for bids, proposals, quotes, or other methods for soliciting contracts for activities subject to Davis-Bacon. The wage determinations for water infrastructure projects generally fall under the "Heavy" construction type, although the "Building" construction type may also apply. The wage determinations shall be incorporated into solicitations and subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determinations incorporated into the prime contract.

Force Account laborers and mechanics employed by a governmental agency or political subdivision are not covered under this Act. Further, under the Contract Work Hours Safety Standards Act, borrowers must ensure contractors are receiving overtime pay for work in excess of forty hours for all contracts above the $100,000 threshold. To ensure proper wages are paid, borrowers must collect certified payrolls from contractors and periodically conduct personnel interviews to verify proper wages are being paid under a contract.

Many states also have their own prevailing wage laws; however, state prevailing wage laws are not a substitute for federal prevailing wage laws. Requirements for both laws must be met and the greater of the two wages should be applied to the contracts (where equivalent state labor categories can be discerned). Where contracts include incorrect wage determinations, the borrower must take steps to reissue or amend the contract to retroactively incorporate the proper wage determination to the beginning of the contract and compensate for any increases in wages resulting from the wage determination correction.

WIFIA cannot close a loan that is not compliant or is not in remediation to return to compliance with this requirement.

WHAT TO EXPECT

The WIFIA program has the responsibility to check that its borrowers understand the Davis-Bacon requirements and that those requirements are being properly implemented for the entire project. The WIFIA program will conduct periodic document reviews and site walk-throughs during project construction to check for implementation of Davis-Bacon requirements as part of its compliance monitoring activities.

During application processing, WIFIA applicants may be asked to:

- ✓ Provide executed construction contracts (active and completed) that include specified Davis-Bacon contract language. DOL regulations require specific language and relevant wage determinations be included in bid documents and contracts. **Note that the specified language under 29 CFR §5.5 has been modified for the WIFIA program to also identify borrowers as authorized representatives to ensure compliance with the statute.** The modified language is included in the WIFIA specifications package, which is available for use by the applicant (see Resources below).

- ✓ Provide executed construction contracts (active and completed) that include relevant wage determinations. DOL publishes wage determinations that specify the minimum wage (including fringe benefits) for a given construction type, labor category, and locality in which the work is conducted. These wages are updated regularly on their website. If state prevailing wages also apply, show evidence that a comparison of labor wage rates and categories have been conducted and that the higher of the wages apply to the contract.

- ✓ If a project has not yet executed contracts, provide sample front-end documents that will be used in all relevant bids and contracts issued for the project.

- ✓ If the project includes previously incurred costs for construction activities, provide additional documentation to help the WIFIA program check that incurred costs are compliant with this requirement. This request may include: (1) results of a third-party Davis-Bacon audit of the project or specific contract(s); (2) a random sample of certified payroll reports and personnel interviews collected for the contract(s); and/or (3) other borrower evidence of compliance checks for reporting and paid wages (including fringe benefits).

As a WIFIA program check on compliance after loan execution, WIFIA borrowers are asked to periodically submit documentation to demonstrate continued compliance with the labor laws and standards. Key borrower responsibilities for implementation include:

- ✓ Communicate Davis-Bacon requirements to contractors and ensure contractors are relaying the requirements to their subcontractors. Statutorily, this communication is required in advertised bids and executed contracts that are a general reporting requirement of the loan and checked by WIFIA. While the WIFIA program may check borrower's prime contracts for this language, the onus is on borrowers and prime contractors to verify the same contract language is applied to all relevant subcontracts and that the subcontracts also comply with this requirement.

- ✓ Identify the proper wage rates to apply in advertised bids and subsequently in executed contracts. During advertisement, borrowers should monitor and update the bid with the latest applicable version of DOL's published wage determinations. Borrowers must award contracts within 90 days of bid close to "lock" the wage determinations included in the advertisement. Otherwise, an updated wage determination is required. Seek assistance from the WIFIA program on selecting proper wage determinations, as needed.

- ✓ For collaborative delivery contracts (e.g., Design-Build, Progressive Design-Build, Construction Management at Risk), the Department of Labor, Wage and Hour Division has interpreted each guaranteed maximum price (GMP) package as an additional obligation to the original contract agreement which is substantial enough to require an updated wage determination. According to DOL's AAM157 guidance on 'Application of DBA to Contracts with Options,' if there is "substantial and segregable amount[s] of construction work" that can be exercised using amendments or addenda to the contracts, these types of contracts should include a current wage determination at the time an amendment - with the purpose of initiating construction on a package or phase of a project - is exercised. See DOL's AAM157 guidance on 'Application of DBA to Contracts with Options.'

- ✓ Submit draft or executed prime construction contracts for WIFIA program review to ensure that adequate compliance language and the appropriate federal wage rates are included. The WIFIA program does not generally review subcontracts unless there is cause for further review.

- ✓ If a borrower encounters a unique situation at a site that presents uncertainties regarding Davis-Bacon applicability, the borrower must discuss the situation with EPA before authorizing work on that site. This includes any borrower requests for wage conformances for labor classifications that may not exist in the wage determinations. A conformance request must be initiated by the borrower, submitted by EPA, and approved by DOL.

- ✓ If state prevailing wages also apply, ensure that the certified payrolls reflect paid wages that are also, at a minimum, equal to the corresponding federal prevailing wage rates for the contract.

- ✓ Post proper Davis-Bacon signage and make readily available the applicable prevailing wage determinations at the construction site(s).

- ✓ Maintain up-to-date records for at least three years after project completion. Records should include:

    - Certified payrolls. Borrowers must collect certified payrolls from contractors weekly and check that payroll reports are accurate and paid wages are consistent with the contract's wage determination and overtime requirements.
    - Personnel interviews. Borrowers must conduct periodic interviews of workers to ensure proper wages are being paid and document the interviews by completing SF-1445: Labor Standards Interview. Although WIFIA does not require a specific number and frequency, interviews should occur throughout the course of construction and include a sufficient sample of job classifications represented on the job, as well as across various contracts.

- Apprenticeship and Trainee Programs. Borrowers must confirm apprentice and trainee program registrations and check that ratio requirements under the approved program(s) are met.

RESOURCES

- Davis-Bacon regulations (29 CFR Part 5)
- U.S. Department of Labor On-line Wage Determinations
- U.S. Department of Labor Guides, Forms, and Posters for Davis Bacon and Related Acts (with additional resources)
- AAM157 guidance on 'Application of DBA to Contracts with Options'
- Sample Contract Language in WIFIA Specifications Package

LATEST UPDATES ON FEDERAL REQUIREMENTS

The following federal requirements have been issued since the promulgation of the WIFIA implementation regulation (December 2016) and directly apply to EPA loan and grant programs, including WIFIA borrowers. The WIFIA program will periodically update this section with any notable laws and regulations and WIFIA's expectations for borrower compliance.

BUILD AMERICA, BUY AMERICA ACT (BABA)

In November 2021, Congress enacted the Investment in Infrastructure and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL) (Public Law, PL 117-58). As part of the IIJA, the Build America, Buy America Act (BABA) (Title IX of PL 117-58) establishes domestic preference requirements to maximize the purchase of goods produced in the U.S. BABA requirements apply to federal financial assistance awards, including loans issued through the WIFIA program, after May 14, 2022. The current interpretations of the statute and guidance indicated that BABA does not apply to for-profit organizations.

BABA requirements specify domestic preference requirements in three product categories: iron and steel, manufactured products, and construction materials. The iron and steel product category includes products that are primarily iron and steel. Construction materials include an article, material, or supply that consists primarily of non-ferrous metals, plastic or polymer-based products, glass, lumber, or drywall. All products used in water infrastructure projects will fall under one of the three product categories, except for cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives, which are specifically excepted by the BABA statute. Therefore, manufactured goods cover the remaining products that are not excepted or not classified in the iron and steel and construction materials product categories.

If the product is permanently incorporated on a project that is subject to BABA, these products must be produced in the U.S. and have accompanying BABA compliance documentation for the products. The criteria for "produced in the U.S." are separately defined for each product category.

- All iron and steel items used in covered projects must be produced in the United States. This means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
- All manufactured products used in covered projects must be produced in the United States. This means the manufactured product was manufactured in the United States, and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product.
- All construction materials used in covered projects must be manufactured in the United States. This means that all manufacturing processes for the construction material occurred in the United States.

The Office of Management and Budget's Made in America Office is the lead office directing BABA implementation guidance across all federal agencies. The Office issued initial implementation guidance (OMB Guidance M22-11) to establish government-wide direction for BABA implementation. This

guidance is supplemented by EPA's BABA Implementation Procedures for Office of Water Financial Assistance Programs, which are both linked resources below. *Additional OMB guidance is forthcoming on manufactured goods and construction materials.*

BABA is different from the Buy American Act. Whereas the Buy American Act applies to direct federal procurement, BABA applies to federal financial assistance.

BABA is a separate requirement from AIS, which is a statutory requirement under WIFIA. Nevertheless, BABA requirements for primarily iron and steel products are equivalent to the requirements for covered iron and steel products listed under AIS. Compliance documentation for covered iron and steel products under AIS will also satisfy the BABA requirements, which eases implementation for projects that are subject to both AIS and BABA requirements.

BABA allows the WIFIA Program to grant waivers in specific circumstances, which are the same as and are described in the American Iron and Steel Requirement section of this document. The WIFIA Program will apply similar procedures under the BABA requirement with an additional required step that incorporates a review from the Made in America Office of the proposed waiver prior to its approval.

There are also national waivers that are immediately available for borrower use and do not require additional approval. The EPA National De Minimis Waiver can be used at the borrower's discretion to waive BABA requirements for products totaling up to 5 percent of total project costs; it is ultimately the borrower who decides which items to include under this national waiver.

As this requirement is still evolving, additional national waivers are being considered across the Agency. If there is any uncertainty in the availability and applicability of a national waiver or in the need for a project-specific waiver, seek assistance from the WIFIA program.

WIFIA cannot close a loan that is not compliant or is not in remediation to return to compliance with this requirement.

WHAT TO EXPECT

Note: On June 22, 2022, the WIFIA Program issued a program waiver that waives BABA requirements for projects that can demonstrate design planning efforts were initiated prior to May 14, 2022, the effective date of BABA. The WIFIA Program does not impose BABA requirements to projects that executed a WIFIA loan prior to May 14, 2022.

WIFIA staff will evaluate and communicate the applicability of this waiver for WIFIA Projects during the loan application and due diligence process. AIS requirements will still apply to these projects.

During application processing, WIFIA applicants may be asked to:

- ✓ Provide evidence of planning and design documents for the project elements included in the WIFIA loan to further evaluate the applicability of the WIFIA Program Waiver.
- ✓ Provide evidence of communication on BABA requirements to contractors and subcontractors. Although not statutorily required, applicants can easily achieve this by including notification in advertised bids and executed contracts. Sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below). **BABA requirements should be communicated to contractors and subcontractors for all projects subject to the**

requirement. However, also communicate in the contract language whether the WIFIA project is subject to the WIFIA Program Waiver so that contractors and subcontractors know if it is an approved pathway towards compliance for the project.

- ✓ If a project has not yet executed contracts, provide a plan for communication on BABA requirements to contractors and subcontractors.
- ✓ If a project has not yet executed contracts, provide a plan for communication on BABA requirements to contractors and subcontractors.

WIFIA borrowers are asked to periodically submit documentation to demonstrate continued compliance with the BABA requirement. Key borrower responsibilities for implementation include:

- ✓ Communicate BABA requirements to contractors and ensure contractors are communicating the requirements to its subcontractors. This is generally included in advertised bids and executed contracts that are a general reporting requirement of the loan and checked by WIFIA. If communication is not included in the contract documents, provide additional evidence that communication has taken place.
- ✓ Submit draft or executed prime construction contracts for WIFIA review to ensure that adequate compliance language is included. The WIFIA program does not generally review subcontracts unless there is cause for further review.
- ✓ Procure domestic products that will be permanently incorporated in the project. Communicate to the WIFIA program when products cannot be procured domestically to initiate the program's independent market review and determine whether there is a need for an availability waiver. Submit additional documentation, such as technical specifications and product information, to support the WIFIA program's review and approval process, as needed.
- ✓ Communicate to the WIFIA program if implementation of the BABA requirements results in project impacts for which a public interest waiver or cost waiver may be needed and provide supporting documentation demonstrating the need.
- ✓ Maintain up-to-date records or frequently check with prime contractors on BABA certifications for products purchased and installed on the project. This can help the borrower prevent non-compliant products from being permanently incorporated into the project and triggering a non-compliance event. **The key to borrower compliance is collecting adequate BABA documentation for installed products that are covered by the requirement.**
- ✓ Report any issue with noncompliance to the WIFIA program based on the borrower's review of purchased and installed products on contracts and subcontracts that must comply with the AIS requirement.

RESOURCES

- Office of Management and Budget, Made in America Office, Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure, April 18, 2022

- U.S. EPA, Office of Water, BABA Implementation Procedures Memo, November 3, 2022
- Approved BABA Waivers applicable to the WIFIA Program:
  WIFIA Program Waiver, June 22, 2022
  De Minimis General Applicability Waiver, October 21, 2022
  The WIFIA program will periodically update this waiver list as BABA requirements and implementation guidance evolve.
- Sample Contract Language in WIFIA Specifications Package

PROHIBITION ON CERTAIN TELECOMMUNICATION AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

In August 2018, the federal government enacted the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law, PL 115-232). Section 889(b)(1) of PL 115-232 prohibits an executive agency from obligating or expending loan or grant funds to procure or obtain or to enter into, extend, or renew a contract to procure or obtain "covered telecommunications equipment or services" that are substantial or essential to any system, or as critical technology to any system. Federal loan and grant programs are required to implement this requirement within two years of enactment.

"Covered telecommunications equipment or services" (PL 115-232, Section 889(f)(3)) include:

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- Telecommunications or video surveillance services provided by such entities or using such equipment.
- Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The prohibition does not apply to:

- Procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements.
- Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

Effective August 13, 2020, borrowers cannot submit these costs for WIFIA disbursement as they are no longer eligible costs and the WIFIA program, as a federal loan program, is prohibited from reimbursing for telecommunications equipment and services covered under this law.

WHAT TO EXPECT

To ensure compliance with this requirement, borrowers are asked to:

- ✓ Provide evidence of borrower communication to contractors and subcontractors of the need to comply with the prohibition. This is generally provided in bid advertisements and executed contracts. Although no specific contract language is required, sample contract language in the WIFIA specifications package is available for use by the borrower (see Resources below).
- ✓ Avoid procurement of "covered telecommunications equipment, services, and systems" on contracts that involve the use of federal funds. Access SAM to verify that entities providing telecommunications equipment, services, and systems on the WIFIA project are not listed on the

exclusion list.

RESOURCES

- John S. McCain National Defense Authorization Act for Fiscal Year 2019 (PL 115-232)
- System for Award Management (SAM)
- Sample Contract Language in WIFIA Specifications Package

GENERAL GUIDANCE ON COMPLIANCE WITH FEDERAL REQUIREMENTS

The WIFIA program is committed to supporting its borrowers with complying with federal requirements. In any case of uncertainty with implementation, the WIFIA borrower should seek timely clarification and assistance by contacting their respective WIFIA points of contact.

- For general inquiries on federal requirements for the WIFIA program, email: wifia@epa.gov
- For borrowers processing their loan applications, email the WIFIA engineering or environmental contact assigned to the transaction.
- For borrowers with executed loans, email: wifia_portfolio@epa.gov

GUIDING PRINCIPLES FOR COMPLIANCE

Below are guiding principles to support the borrower in ensuring compliance with federal requirements:

UNDERSTAND THE FEDERAL REQUIREMENTS. Reading through this Borrower Guide is a good first step towards understanding the federal requirements that apply to WIFIA borrowers. These requirements are very similar to those that would apply to other federal funding programs. If there is borrower uncertainty on the WIFIA program's expectations for compliance, seek clarifications by contacting the borrower's respective WIFIA point of contact. Borrowers may find that developing a plan for compliance with federal requirements early in project planning can ensure that potential issues are identified and remedied early or are avoided entirely.

IDENTIFY AND COMMUNICATE EARLY. Defining lines of communications and decision-making roles is also important. WIFIA borrowers are responsible for ensuring compliance with federal requirements and should be the ultimate decision-maker for the project. As frequently noted in this guide, the WIFIA program expects borrowers to communicate federal requirements as part of bid solicitations and in executed contracts when WIFIA funding is anticipated. This is particularly beneficial for construction-related work to avoid the need to retroactively address federal requirements with contractors. Timely communication between the borrower and the WIFIA program, as well as between the borrower and its contractors/subs, can help avoid issues of non-compliance. Throughout the course of the WIFIA project, borrowers should not hesitate to communicate potential issues with compliance to the WIFIA program and collectively explore available options and remedies with them.

MAINTAIN GOOD DOCUMENTATION. Good documentation is key to compliance. If there is no evidence that the borrower has complied with federal requirements, the WIFIA program finds it difficult to verify that the borrower is compliant. The WIFIA program does not require any specific software for borrowers to document compliance. There is no single approach to recordkeeping, and it can be as simple or complex as is appropriate for the project.

Borrowers may want to consider the following when establishing recordkeeping procedures:

1. The borrower is responsible for checking and ensuring compliance for their contractors and subcontractors. Organize documents such that they are easy to internally review against federal requirements.

2. The WIFIA program periodically requests review of documents to ensure compliance. This may include document requests for contracts, environmental monitoring reports, AIS certifications for specific items, and certified payrolls and wage determinations. Although the WIFIA program's review may not be inclusive of all contracts and subcontracts, documents should be easy to locate during compliance monitoring activities.
3. Some federal requirements have a minimum duration for maintaining project records, including AIS and Davis-Bacon. Local and state requirements may be longer or shorter. Be aware of recordkeeping requirements to ensure recordkeeping requirements are fully met.

CO-FUNDING WITH OTHER FEDERAL AND STATE PROGRAMS

As a supplementary financing program, WIFIA borrowers may also receive funds from other federally financed programs.

Some of these programs may have overlapping federal requirements; however, each program will have a separate responsibility (and monitoring procedures) to ensure their borrowers comply with the federal requirements outlined for that program. To the extent possible and reasonable, the WIFIA program will work with other federal programs that are co-funding its borrowers to share information on federal compliance activities that may be relevant across the programs. For example, WIFIA borrowers may also receive funding from their SRF program for a project. To help gain efficiencies for both programs, the WIFIA program might coordinate environmental reviews where there are overlapping elements with the state environmental review process. The WIFIA program might also work collaboratively with the state SRF on AIS-related matters or with other federal agencies on BABA-related matters.

On the other hand, some of these federally financed programs may have similar but different requirements. WIFIA borrowers should evaluate these separate requirements in its entirety such that implementation will satisfy both sets of requirements. For example, WIFIA borrowers may also receive financing from the Department of Transportation, which may trigger Buy American requirements. AIS and Buy American requirements are separate and distinct. One does not replace the other. WIFIA borrowers will have to satisfy both these requirements.

STATE LAWS AND REGULATIONS

Federal and state laws and regulations do not replace each other. WIFIA borrowers should evaluate federal and state requirements in their entirety such that implementation will satisfy both sets of requirements. For example, the Davis-Bacon Act requires that laborers and mechanics are at least paid the federal prevailing wage laws. If the state prevailing wage law provides higher wages than the federal prevailing wage for the locality and for an equivalent labor category, then the use of the state prevailing wage for that locality and equivalent labor category can satisfy both federal and state prevailing wage law requirements for paid wages. However, the use of higher state wage rates does not preclude the WIFIA borrower from having to comply with other requirements under the Davis-Bacon Act.

PROFESSIONAL SERVICE CONTRACTS VS CONSTRUCTION CONTRACTS

All contracts issued for a project that is receiving a WIFIA loan are subject to a federal requirements review as part of the WIFIA program's compliance monitoring responsibilities. The review ensures that federal requirements are being communicated from borrower to contractors and from contractors to

subcontractors. During compliance monitoring, WIFIA targets this review on prime construction contracts as an initial assessment of the borrower's compliance; however, additional contracts may be requested if warranted.

Not all federal laws and regulations listed in this document apply to professional services contracts. In particular, contract language for American Iron and Steel requirements, Davis Bacon and Related Acts, and Equal Employment Opportunity (EEO), Executive Order 11246, do not apply to professional services contracts. On the other hand, professional services contracts do require reference to the economic and miscellaneous authorities listed in this document.

All contracts must abide by the civil rights and non-discrimination laws, whether they are referenced in contracts or not.

APPENDIX: WIFIA SPECIFICATION PACKAGE AND BID CONTRACT LANGUAGE

Last Updated: November 2022

The is a reference document that provides all necessary contract language for WIFIA funded projects. Please note that some of the contract language in this package is required and must be included verbatim and some is suggested. For *Suggested Contract Language*, you may use your own language so long as it still ensures that provisions are included to guarantee compliance with the federal requirements.

EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THE FEDERAL LANGUAGE PROVISIONS WITH RESPECT TO STATE OR LOCAL LAW.

ECONOMIC AND MISCELLANEOUS AUTHORITIES

DEBARMENT AND SUSPENSION AND PROHIBITIONS RELATING TO VIOLATIONS OF CWA AND CAA WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS

Suggested Contract Language:

Debarment and Suspension. Contractor certifies that it will not knowingly enter into a contract with anyone who is ineligible under the 2 CFR part 180 and part 1532 (per Executive Order 12549, 51 FR 6370, February 21, 1986) or who is prohibited under Section 306 of the Clean Air Act or Section 508 of the Clean Water Act to participate in the [Project]. Suspension and debarment information can be accessed at http://www.sam.gov. Contractor represents and warrants that it has or will include a term or conditions requiring compliance with this provision in all of its subcontracts under this Agreement.

NEW RESTRICTIONS ON LOBBYING

Suggested Contract Language:

Federal Lobbying Restrictions (31 U.S.C 1352). Recipients of federal financial assistance may not pay any person for influencing or attempting to influence any officer or employee of a federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress with respect to the award, continuation, renewal, amendment, or modification of a federal grant, loan, or contract. These requirements are implemented for USEPA in 40 CFR Part 34, which also describes types of activities, such as legislative liaison activities and professional and technical services, which are not subject to this prohibition. Upon award of this contract, Contractor shall complete and submit to the City the certification and disclosure forms in Appendix A and Appendix B to 40 CFR Part 34. Contractor shall also require all subcontractors and suppliers of any tier awarded a subcontract over $100,000 to similarly complete and submit the certification and disclosure forms pursuant to the process set forth in 40 CFR 34.110.

CIVIL RIGHTS, NONDISCRIMINATION, AND EQUAL EMPLOYMENT OPPORTUNITY AUTHORITIES

AGE DISCRIMINATION ACT, SECTION 504 OF THE REHABILITATION ACT, TITLE VI OF THE CIVIL RIGHTS ACT OF 1964, AND SECTION 13 OF THE CLEAN WATER ACT

Suggested Contract Language:

CIVIL RIGHTS OBLIGATIONS. Contractor shall comply with the following federal non-discrimination requirements:

a. Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color, and national origin, including limited English proficiency (LEP). (42 U.S.C 2000D, *et. seq)*

b. Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against persons with disabilities. (29 U.S.C. 794, supplemented by EO 11914, 41 FR 17871, April 29, 1976 and EO 11250, 30 FR 13003, October 13, 1965)

c. The Age Discrimination Act of 1975, which prohibits age discrimination. (42 U.S.C 6101 *et. seq)*

d. Section 13 of the Federal Water Pollution Control Act Amendments of 1972, which prohibits discrimination on the basis of sex.

e. 40 CFR Part 7, as it relates to the foregoing.

EQUAL EMPLOYMENT OPPORTUNITY

Required *Contract Language. Note the requirements include three separate sections to include in contracts:* EEO, Standard Federal Equal Employment Opportunity Construction Contract Specifications*, and* Segregated Facilities. *This language must be included verbatim:*

Equal Employment Opportunity (EEO). The Contractor shall comply with Executive Order 11246, entitled 'Equal Employment Opportunity,' as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60). (EO 11246, 30 FR 12319, September 28, 1965)

Contractor's compliance with Executive order 11246 shall be based on implementation of the Equal Opportunity Clause, and specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

During the performance of this contract, the contractor agrees as follows:

1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading,

demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

2) The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5) The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
8) The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor

as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States. [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966–1970 Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230, EO 13665 of April 8, 2014, 79 FR 20749, EO 13672 of July 21, 2014, 79 FR 42971]

Standard Federal Equal Employment Opportunity Construction Contract Specifications. (41 CFR 60-4.3)

1) As used in these specifications:
   a) "Covered area" means the geographical area described in the solicitation from which this contract resulted;
   b) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   c) "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   d) "Minority" includes:
      i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2) Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3) If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4) The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and

female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7) The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
    a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
    b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
    c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
    d) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the

union referral process has impeded the Contractor's efforts to meet its obligations.

e) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations

under these specifications are being carried out.

n) Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9) A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10) The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11) The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12) The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13) The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the

implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14) The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Segregated Facilities. (41 CFR 60-1.8) The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensuring that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. This obligation extends to all contracts containing the equal opportunity clause regardless of the amount of the contract. The term “facilities,” as used in this section, means waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, wash rooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees; Provided, That separate or single-user restrooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

Required *EEO language in bid solicitations only (or equivalent). Goals for minority participation must be filled in for the locality of work.*

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246) located at 41 CFR § 60-4.2:

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation in each trade
	Insert goals for each year[2]	6.9%[3]

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any).

[2] Goals can be found at: https://www.dol.gov/agencies/ofccp/construction

[3] Nationwide goal for all covered areas

PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN PROCUREMENT UNDER EPA FINANCIAL ASSISTANCE AGREEMENTS

Note: The WIFIA program only requires use of the EPA DBE program's six good faith efforts during contract procurement. States may require additional DBE reporting.

Suggested Contract Language:

Disadvantaged Business Enterprises (DBE). The contractor must ensure that the DBE's six good faith efforts are used during the procurement of subcontractors for the [Project]. The six good faith efforts are found at: https://www.epa.gov/grants/disadvantaged-business-enterprise-program-requirements#sixgoodfaithefforts.

AMERICAN IRON AND STEEL (AIS) REQUIREMENT

Suggested Contract Language:

The Contractor acknowledges to and for the benefit of **[Insert WIFIA Borrower Name]** ("Purchaser") and the United States Environmental Protection Agency ("EPA") that it understands the goods and services under this Agreement are being funded with monies made available by the Water Infrastructure Finance and Innovation Act program of the EPA that has statutory requirements commonly known as "American Iron and Steel" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents, warrants and covenants to and for the benefit of the Purchaser and the EPA that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the EPA. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or the EPA to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or the EPA resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EPA or any damages owed to the EPA by the Purchaser). While the Contractor has no direct contractual privity with the EPA, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the EPA is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the EPA.

LABOR LAWS AND STANDARDS

Note that the language below addresses Davis Bacon and Related Acts and incorporates the WIFIA borrower as an authorized representative, in accordance with the WIFIA loan agreement, to ensure compliance with this federal requirement.

***Required** Contract Language.*

Compliance with Davis-Bacon and Related Acts.

(a) In any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 C.F.R. § 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, provided that such modifications are first approved by the Department of Labor):

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its

subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)

(A) The WIFIA assistance recipient, [name of WIFIA borrower], on behalf of the U.S. Environmental Protection Agency (EPA), shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The WIFIA assistance recipient shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the WIFIA assistance recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent to the Administrator of the Wage and Hour Division (WHD Administrator), U.S. Department of Labor, Washington, DC 20210. The WHD Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the WIFIA assistance recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the WIFIA assistance recipient shall refer the questions, including the views of all interested parties and the recommendation of the WIFIA assistance recipient, to the WHD Administrator for determination. The WHD Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor

may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. [name of WIFIA borrower], shall upon written request of the WIFIA Director or an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the WIFIA Director may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) {no text here}

(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to [name of WIFIA borrower] . The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/agencies/whd/forms/wh347 or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to [name of WIFIA borrower], for transmission to the EPA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to[name of WIFIA borrower]).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of [name of the borrower, EPA, or the Department of Labor, and shall permit such

representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the EPA may, after written notice to the [name of WIFIA borrower], take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees –

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the WHD Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to

and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the WHD Administrator determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and [name of WIFIA borrower], EPA, the U.S.

Department of Labor, or the employees or their representatives. (10)Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) Contract Work Hours and Safety Standards Act. The following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section shall be inserted in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by § 5.5(a) or § 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The [name of WIFIA borrower] shall upon its own action or upon written request of an authorized representative of the Department of Labor, or the EPA, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors

to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in § 5.1, the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the EPA shall cause or require the [name of WIFIA borrower] to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the [name of WIFIA borrower], EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

LATEST UPDATES ON FEDERAL REQUIREMENTS

BUILD AMERICA, BUY AMERICA ACT

Other language may be included on contracts for clarity on this federal requirement if an applicable waiver applies. For example, if the WIFIA program has determined program waiver coverage, indicate in contract documents, "This Project is covered under the WIFIA Program Waiver (June 22, 2022), which waives BABA requirements."

Suggested Contract Language:

Build America, Buy America (Effective May 14, 2022)
The Contractor acknowledges to and for the benefit of . ("Purchaser") and the United States Environmental Protection Agency ("EPA") that it understands the goods and services under this Agreement are being funded with federal monies made available by the Water Infrastructure Finance and Innovation Act program of EPA that have statutory requirements commonly known as "Build America, Buy America;" that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States ("Build America, Buy America Requirements") including iron and steel, manufactured products, and construction materials provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Purchaser or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Suggested Contract Language:

Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (Effective August 13, 2020). The John S. McCain National Defense Authorization Act for Fiscal Year 2019 (P.L. 115-232), at Section 889, prohibits EPA financial assistance recipients, including WIFIA borrowers, from expending loan funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in the Act, "covered telecommunications equipment or services" means:

a) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
b) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
c) Telecommunications or video surveillance services provided by such entities or using such equipment.
d) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The Act does not prohibit:

a) Procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements.
b) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

WIFIA Contract Compliance Requirements

1. GENERAL COMPLIANCE OBLIGATION

Contractor acknowledges that the project is funded in whole or in part by the Water Infrastructure Financing and Innovation Act (WIFIA), 33 U.S.C. § 3901 et seq., and as such, Contractor is required to comply with all federal laws and regulations including but not limited to those described in the wifia_borrower_guide_to_federal_requirements.pdf and WIFIA-Program-Handbook.pdf, as they may be updated, both before and after contract execution. Contractor shall ensure that its staff, suppliers, and subcontractors comply with all applicable federal requirements. The project is subject to additional review of these federal requirements by the WIFIA Program during the project, and Contractor is responsible for compliance with all applicable requirements as they may be updated throughout its performance.

2. ECONOMIC AND MISCELLANEOUS AUTHORITIES

2.1. DEBARMENT AND SUSPENSION AND PROHIBITIONS RELATING TO VIOLATIONS OF CWA AND CAA WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS

Debarment and Suspension. Contractor certifies that it will not knowingly enter into a contract with anyone who is ineligible under the 2 C.F.R. part 180 and part 1532 (per Executive Order 12549, 51 FR 6370, February 21, 1986) or who is prohibited under Section 306 of the Clean Air Act or Section 508 of the Clean Water Act to participate in the Project. Suspension and debarment information can be accessed at http://www.sam.gov. Contractor represents and warrants that it has or will include a term or conditions requiring compliance with this provision in all of its subcontracts under this Agreement.

2.2. NEW RESTRICTIONS ON LOBBYING

Federal Lobbying Restrictions (31 U.S.C. § 1352). Recipients of federal financial assistance may not pay any person for influencing or attempting to influence any officer or employee of a federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress with respect to the award, continuation, renewal, amendment, or modification of a federal grant, loan, or contract. These requirements are implemented for USEPA in 40 C.F.R. Part 34, which also describes types of activities, such as legislative liaison activities and professional and technical services, which are not subject to this prohibition. Upon award of this contract, Contractor shall complete and submit to the borrower/owner/purchaser the certification and disclosure forms in Appendix A and Appendix B to 40 C.F.R. Part 34. Contractor shall also require all subcontractors and suppliers of any tier awarded a subcontract over $100,000 to similarly complete and submit the certification and disclosure forms pursuant to the process set forth in 40 C.F.R. § 34.110.

3. CIVIL RIGHTS, NONDISCRIMINATION, AND EQUAL EMPLOYMENT OPPORTUNITY AUTHORITIES

3.1. AGE DISCRIMINATION ACT, SECTION 504 OF THE REHABILITATION ACT, TITLE VI OF THE CIVIL RIGHTS ACT OF 1964, AND SECTION 13 OF THE CLEAN WATER ACT

CIVIL RIGHTS OBLIGATIONS. Contractor shall comply with the following federal non-discrimination requirements:

- Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color, and national origin, including limited English proficiency (LEP). (42 U.S.C. § 2000D, *et seq.)*
- Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against persons with disabilities. (29 U.S.C. § 794, supplemented by E.O. 11914, 41 FR 17871, April 29, 1976 and E.O. 11250, 30 FR 13003, October 13, 1965)
- The Age Discrimination Act of 1975, which prohibits age discrimination. (42 U.S.C. § 6101 *et seq.)*
- Section 13 of the Federal Water Pollution Control Act Amendments of 1972, which prohibits discrimination on the basis of sex.
- 40 C.F.R. Part 7, as it relates to the foregoing.

3.2. EQUAL EMPLOYMENT OPPORTUNITY

3.2.1. **Equal Employment Opportunity (EEO).** The Contractor shall comply with Executive Order 11246, entitled "Equal Employment Opportunity," as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 C.F.R. Part 60). (EO 11246, 30 FR 12319, September 28, 1965)

Contractor's compliance with Executive order 11246 shall be based on implementation of the Equal Opportunity Clause, and specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 C.F.R. Part 60-4.

During the performance of this contract, the contractor agrees as follows:

3.2.1.1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

3.2.1.2. The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for

employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

3.2.1.3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

3.2.1.4. The contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

3.2.1.5. The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

3.2.1.6. The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

3.2.1.7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

3.2.1.8. The contractor will include the provisions of paragraphs 3.2.1.1 through 3.2.1.8 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States. [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 C.F.R., 1966–1970 Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 C.F.R., 1978 Comp.,p. 230, EO 13665 of April 8, 2014, 79 FR 20749, EO 13672 of July 21, 2014, 79 FR 42971]

3.2.2. Standard Federal Equal Employment Opportunity Construction Contract Specifications. (41 **C.F.R.** § 60-4.3)

3.2.2.1. As used in these specifications:

3.2.2.1.1. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

3.2.2.1.2. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

3.2.2.1.3. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

3.2.2.1.4. "Minority" includes:

3.2.2.1.4.1. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

3.2.2.1.4.2. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

3.2.2.1.4.3. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

3.2.2.1.4.4. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

3.2.2.2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3.2.2.3. If the Contractor is participating (pursuant to 41 C.F.R. § 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

3.2.2.4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 3.2.2.7(a) through (p) of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should

reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

3.2.2.5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

3.2.2.6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

3.2.2.7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

(a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

(b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

(c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

(d) Provide immediate written notification to the Director when the union or unions

with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

(e) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

(f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

(g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

(h) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

(i) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

(j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a

Contractor's work force.

(k) Validate all tests and other selection requirements where there is an obligation to do so under 41 C.F.R. part 60-3.

(l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

(m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

(n) Ensure that all facilities and company activities are non-segregated except that separate or single- user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

(o) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

(p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

3.2.2.8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

3.2.2.9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

3.2.2.10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

3.2.2.11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

3.2.2.12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

3.2.2.13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 3.2.2.7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 C.F.R. § 60-4.8.

3.2.2.14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

3.2.2.15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

3.2.3. **Segregated Facilities.** (41 C.F.R. § 60-1.8) The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensuring that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. This obligation extends to all contracts containing the equal opportunity clause regardless of the amount of the contract. The term “facilities,” as used in this section, means waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, wash rooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees; Provided, That separate or single-user restrooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

3.3. PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN PROCUREMENT UNDER EPA FINANCIAL ASSISTANCE AGREEMENTS

Disadvantaged Business Enterprises (DBE). The contractor must ensure that the DBE’s six good faith efforts are used during the procurement of subcontractors for the [Project]. The

six good faith efforts are found at: https://www.epa.gov/grants/disadvantaged-business-enterprise-program- requirements#sixgoodfaithefforts.

4. AMERICAN IRON AND STEEL (AIS) REQUIREMENT

The Contractor acknowledges to and for the benefit of **Clayton County Water Authority** ("Purchaser") and the United States Environmental Protection Agency ("EPA") that it understands the goods and services under this Agreement are being funded with monies made available by the Water Infrastructure Finance and Innovation Act program of the EPA that has statutory requirements commonly known as "American Iron and Steel" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents, warrants and covenants to and for the benefit of the Purchaser and the EPA that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the EPA. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or the EPA to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or the EPA resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EPA or any damages owed to the EPA by the Purchaser). While the Contractor has no direct contractual privity with the EPA, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the EPA is a third- party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the EPA.

5. LABOR LAWS AND STANDARDS

5.1. Compliance with Davis-Bacon and Related Acts.

5.1.1. In any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 C.F.R. § 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, provided that such modifications are first approved by the Department of Labor):

5.1.2. Minimum wages.

5.1.2.1. All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 C.F.R. part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 5.1.2.4 of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 5.1.2.1 of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

5.1.2.1.1. The WIFIA assistance recipient, Purchaser, on behalf of the U.S. Environmental Protection Agency (EPA), shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The WIFIA assista

nce recipient shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- The classification is utilized in the area by the construction industry; and
- The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

5.1.2.1.2. If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the WIFIA assistance recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent to the Administrator of the Wage and Hour Division (WHD Administrator), U.S. Department of Labor, Washington, DC 20210. The WHD Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30- day period that additional time is necessary.

5.1.2.1.3. In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the WIFIA assistance recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the WIFIA assistance recipient shall refer the questions, including the views of all interested parties and the recommendation of the WIFIA assistance recipient, to the WHD Administrator for determination. The WHD Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30-day period that additional time is necessary.

5.1.2.1.4. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 5.1.2.1.2 or 5.1.2.1.3 of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

5.1.2.2. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

5.1.2.3. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or prSecretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor

may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

5.1.3. Withholding. Purchaser shall upon written request of the WIFIA Director or an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the WIFIA Director may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

5.1.4. Payrolls and basic records.

5.1.4.1. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 C.F.R. § 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

5.1.4.2. {no text here}

5.1.4.2.1. The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to Purchaser . The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 C.F.R. § 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an inemployee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form

WH-347 is available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/agencies/whd/forms/wh347 or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to Purchaser, for transmission to the EPA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to Purchaser).

5.1.4.2.2. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

5.1.4.2.2.1. That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 C.F.R. part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 C.F.R. part 5, and that such information is correct and complete;

5.1.4.2.2.2. That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 C.F.R. part 3;

5.1.4.2.2.3. That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

5.1.4.2.3. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 5.1.4.2.2 of this section.

5.1.4.2.4. The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

5.1.4.3. The contractor or subcontractor shall make the records required under paragraph 5.1.4.1 o

f this section available for inspection, copying, or transcription by authorized representatives of Purchaser, EPA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the EPA may, after written notice to Purchaser, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 C.F.R. § 5.12.

5.1.5. Apprentices and trainees –

5.1.5.1. Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the WHD Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

5.1.5.2. Trainees. Except as provided in 29 C.F.R. § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be grea

ter than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the WHD Administrator determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

5.1.5.3. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 C.F.R. part 30.

5.1.6. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 C.F.R. part 3, which are incorporated by reference in this contract.

5.1.7. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 C.F.R. § 5.5(a)(1) through (10) and such other clauses as the EPA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 C.F.R. § 5.5.

5.1.8. Contract termination: debarment. A breach of the contract clauses in 29 C.F.R. § 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 C.F.R. § 5.12.

5.1.9. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 C.F.R. parts 1, 3, and 5 are herein incorporated by reference in this contract.

5.1.10. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 C.F.R. parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Purchaser, EPA, the U.S. Department of Labor, or the employees or their representatives.

5.1.11. Certification of eligibility.

5.1.11.1. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any p

erson or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

5.1.11.2. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

5.1.11.3. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. § 1001.

5.2. Contract Work Hours and Safety Standards Act.

The following clauses set forth in paragraphs 5.2.1 through 5.2.4 of this section shall be inserted in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by § 5.5(a) or § 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

5.2.1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

5.2.2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 5.2.1 of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 5.2.1 of this section, in the sum of $25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 5.2.1 of this section.

5.2.3. Withholding for unpaid wages and liquidated damages. Purchaser shall upon its own action or upon written request of an authorized representative of the Department of Labor, or the EPA, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 5.2.2 of this section.

5.2.4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph 5.2.1 through 5.2.4 of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 5.2.1 through 5.2.4 of this section.

In addition to the clauses contained in paragraph 5 .1, in any contract subject only to the Contract Wo

rk Hours and Safety Standards Act and not to any of the other statutes cited in Section 5.1, the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the EPA shall cause or require Purchaser to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Purchaser, EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

6. BUILD AMERICA, BUY AMERICA ACT

Build America, Buy America (Effective May 14, 2022)

The Contractor acknowledges to and for the benefit of Clayton County Water Authority ("Purchaser") and the United States Environmental Protection Agency ("EPA") that it understands the goods and services under this Agreement are being funded with federal monies made available by the Water Infrastructure Finance and Innovation Act program of EPA that have statutory requirements commonly known as "Build America, Buy America;" that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States ("Build America, Buy America Requirements") including iron and steel, manufactured products, and construction materials provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and

(c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Purchaser or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

7. PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (Effective August 13, 2020). The John S. McCain National Defense Authorization Act for Fiscal Year 2019 (P.L. 115- 232), at Section 889, prohibits EPA financial assistance recipients, including WIFIA borrowers, from expending loan funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in the Act, "covered telecommunications equipment or services" means:

a) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
b) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
c) Telecommunications or video surveillance services provided by such entities or using such equipment.
d) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The Act does not prohibit:

a) Procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements.
b) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

Emerging Contaminants Grant Compliance Requirements

1. GENERAL COMPLIANCE OBLIGATION

Design-Builder acknowledges that the Project is or will be funded in whole or in part by an Emerging Contaminants Grant from the Georgia Environmental Finance Authority ("GEFA Grant"), and as such Design-Builder is required to comply with all laws and regulations as a result of such funding, and Design-Builder shall ensure that its staff, suppliers, and subcontractors comply with all such requirements. This Appendix provides information on some of those requirements but will not limit Design-Builder's compliance obligations.

2. Federal Work Authorization Program

Design-Builder must register with, be authorized to use, and use the federal work authorization program commonly known as E-Verify or any subsequent replacement program in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. The undersigned Design-Builder will continue to use the federal work authorization program throughout the contract period and shall contract for the physical performance of services for the Project only with subcontractors who present an affidavit with the information required by O.C.G.A. § 13-10-91(b). Design-Builder shall provide its federal work authorization number (and those of subcontractors of any tier) to Owner.

3. Federal Requirements

Design-Builder shall comply with the federal requirements applicable to activities supported with federal funds.

4. Debarment and Suspension

Design-Builder shall fully comply with Subpart C of 2 C.F.R. Part 180 and 2 C.F.R. Part 1532, entitled "Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons)." Design-Builder is responsible for ensuring that any lower tier covered transaction as described in Subpart B of 2 C.F.R. Part 180 and 2 C.F.R. Part 1532, entitled "Covered Transactions," includes a term or condition requiring compliance with Subpart C. Design-Builder is responsible for further requiring the inclusion of a similar term or condition in any lower-tier subcontract. Design-Builder acknowledges that failure to disclose the information as required at 2 C.F.R. § 180.335 may result in the delay or negation of the assistance agreement, or pursuance of legal remedies, including suspension and debarment. Design-Builder may access the Excluded Parties List System at www.epls.gov.

5. Woman and Minority Owned Business Enterprises

Design-Builder shall comply with the State of Georgia's objectives for participation by women and minority business enterprises in projects financed with federal funds under the federal Safe Drinking Water Act. It is the policy of GEFA to promote a fair share award of sub-agreements to small and minority- and women-owned businesses on contracts performed with GEFA funding. Design-Builder must take and provide evidence of the positive steps taken to use small, minority-, and women-owned businesses. Such positive efforts shall include:

(a) including qualified small and minority- and women-owned businesses on solicitation lists;

(b) assuring that small and minority- and women-owned businesses are solicited whenever they are potential sources;
(c) dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation of small and minority- and women-owned businesses;
(d) establishing delivery schedules, when the requirements of the work permit, to encourage participation by small and minority- and women-owned businesses;
(e) using the services and assistance of the U.S. Small Business Administration and the Office of Minority Business Enterprise of the U.S. Department of Commerce;
(f) requiring each party to a subagreement to take the affirmative steps outlined in items (a) through (e).

As required by 40 C.F.R. § 33.501(b), the Environmental Protection Agency (EPA) Disadvantaged Business Enterprise Rule requires State Revolving Loan contractors to create and maintain a bidders list. The purpose of a bidders list is to provide the Design-Builder who conducts competitive bidding with a more accurate database of Minority Business Enterprises (MBE) and Women Business Enterprises (WBE) and non-MBE/WBE prime and subcontractors. The list must include all firms that bid on EPA-assisted projects, including both MBE/WBEs and non-MBE/WBEs. The bidders list must be kept active until the project period for the grant has ended. The bidders list must contain the following information from all prime contractors and subcontractors:

(a) Bidder's name with point of contact;

(b) Bidder's mailing address, telephone number, and email address;

(c) The procurement item on which the bidder bid or quoted, and when; and

(d) Bidder's status as an MBE/WBE or non-MBE/WBE.

(e) Design-Builders receiving a combined total of $250,000 or less in federal funding in any one fiscal year, are exempt from the requirements to maintain a bidders list.

6. Drug-Free Workplace

Design-Builder will comply with all federal and state of Georgia laws, rules, and regulations relating to maintenance of a drug-free workplace at the Project.

7. Davis Bacon

Design-Builder shall insert in full in any contract in excess of $2,000 that is entered into for actual construction, alteration, or repair, including painting and decorating, financed in whole or in part from Federal funds and which is subject to the requirements of the Davis-Bacon Act. See the document entitled "Supplemental General Conditions for Federally Assisted State Revolving Loan Fund Construction Contracts," attached as Exhibit D to the Agreement.

8. No Lobbying

Design-Builder must certify that to the best of its knowledge and belief: No Federal appropriated funds have been paid in full or will be paid, by or on behalf of the Design-Builder, to any person influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with any of the following covered federal actions: the awarding of any Federal contract, the making of any

federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement. If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency or a member of Congress in connection with this grant agreement, then Design-Builder shall fully disclose same to GEFA, and shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with instructions.

9. Equal Employment Opportunity

Design-Builder will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. Design-Builder will comply with all sections of Executive Order 11246 - Equal Employment Opportunity. Design-Builder shall carry out applicable requirements of 40 CFR part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

10. Build America Buy America

Design-Builder will comply with all federal requirements outlined in the Water Resources Reform and Development Act of 2014 and related Drinking Water State Revolving Fund Policy Guidelines, which the Design-Builder understands includes, among other requirements, that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement" - section 608 or "Build America Buy America Requirement") unless (i) the Design-Builder has requested from GEFA and obtained a waiver from the Environmental Protection Agency pertaining to the Project or (ii) GEFA has otherwise advised Owner in writing that the American Iron and Steel Requirement or the Build America Buy America Requirement is not applicable to the Project.

11. Recordkeeping and Reporting Requirements under the Safe Drinking Water Act

Design-Builder will comply with all recordkeeping and reporting requirements under the Safe Drinking Water Act, including any reports required by the Environmental Protection Agency or GEFA such as performance indicators of program deliverables, information on costs, and project progress. Design-Builder understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) Design-Builder's failure to ensure compliance with the Safe Drinking Water Act will constitute a material breach of the Agreement.

12. Title VI of the Civil Rights Act

Design-Builder will comply with the requirements and obligations of Title VI of the Civil Rights Act in accordance with 40 C.F.R. Part 5 and 7. Among the requirements, Design-Builders must have a nondiscrimination notice, operate programs or activities that are accessible to individuals with disabilities, designate a civil rights coordinator, have a language access services policy, and maintain demographic data on the race, color, national origin, sex, age, or handicap of the population it serves.

13. Whistleblower Rights

The Agreement and persons working under the Agreement will be subject to the whistleblower rights and remedies under 41 U.S.C. § 4712 and other provisions of federal law. Design-Builder shall inform its employees in writing, in the predominant language of the workforce, of employees' whistleblower rights and protections under 41 U.S.C. § 4712.

EXHIBIT E
INSURANCE REQUIREMENTS

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Exhibit E
Insurance Requirements

Unless otherwise indicated in this Exhibit, capitalized terms used but not defined herein have the meaning ascribed to them in the Agreement or General Conditions to Contract. For purposes of this Exhibit only, OWNER-CONTROLLED INSURANCE PROGRAM

1. GENERAL PROVISIONS

Owner has elected to implement an owner-controlled insurance program ("OCIP") that will provide, subject to the terms of the OCIP Manual and OCIP Policies, the insurance described in this Exhibit for Enrolled Contractors. The OCIP is summarized in this Exhibit and the OCIP Manual, which will be provided upon request by the OCIP Administrator. All terms and conditions of this Exhibit and the OCIP Manual are subject to the OCIP Policies.

While the OCIP is intended to provide broad coverages and high limits for Enrolled Contractors for certain activities on the Project, the OCIP is not intended to meet all the insurance needs of such Enrolled Contractors. Design-Builder, Enrolled Contractors, and all other parties providing work, services, or materials for the Project, including but not limited to Ineligible Contractors and Eligible Contractors not enrolled in the OCIP, must provide all other insurance, including but not limited to the Contractor-Provided Insurance Coverages set forth herein.

Eligible Contractors are strongly encouraged to discuss the OCIP with their insurance agents, brokers, or consultants to assure that other proper coverages are maintained. Notwithstanding anything to the contrary in any Contract Document or in this Exhibit, Owner assumes no responsibility or obligation arising out of or related to any insurance coverage or absence of coverage under the OCIP; or enrollment within the OCIP.

2. OWNER-CONTROLLED INSURANCE PROGRAM

2.1 Applicability of the OCIP

Participation in the OCIP is mandatory but not automatic. Each Eligible Contractors must follow the enrollment procedures in the OCIP Manual.

Subject to the terms of the OCIP Policy and OCIP Manual, the following terms are defined below:

"Eligible Contractor" means Design-Builder and all Subcontractors and Sub-Subcontractors of every tier providing direct labor on the Project Site, unless otherwise considered an Ineligible Contractor.

“Enrolled Contractor” means an Eligible Contractor that has completed enrollment in the OCIP and has been accepted as such by the OCIP Administrator.

"Ineligible Contractor" means all designers, consultants, suppliers, or other persons or entities that do not provide, directly or by subcontract, labor on the Project Site. Such term includes vendors, materials

dealers, guard services, non-construction janitorial services, truckers, and any other entity not providing direct labor on the Project Site, including but not limited to:

- Off-site fabricators with no on-site installation
- Other persons or entities who only transport, pickup, deliver, or carry materials, personnel, parts or equipment, or any other items or persons to or from the project site
- Temporary labor services that would traditionally supply temporary labor (for which workers' compensation coverage is provided for those persons by the temporary agency).
- Hazardous material / abatement, or asbestos abatement contractors
- Structural Demolition contractors

Any questions regarding any entity's or person's status as "Eligible Contractor" or "Ineligible Contractor" should be referred to the OCIP Administrator (as defined in the OCIP Manual).

Unless otherwise directed by Owner, Ineligible Contractors not enrolled in the OCIP and Eligible Contractors must maintain their own insurance policies that comply with the coverages and limits set forth in Section 3 of this Exhibit, and will be required to participate in the Project Safety Program. Coverage types and limits are shown in this Exhibit as a minimum. Design-Builder will cooperate with Owner, or its designated representative, to obtain certificates of insurance from Design-Builder itself and all Subcontractors and Sub-Subcontractors evidencing all insurance required by this Exhibit and the Contract Documents.

2.2 Contractor Insurance Cost Identification

No cost of Design-Builder – whether directly incurred or incurred through Subcontractors or Sub-Subcontractors – will be reimbursed as Cost of the Work to the extent such cost includes insurance provided by the OCIP. When submitting the Proposal or any bids, quotes, cost estimates, and any other proposals (including but not limited to the Phase 1B Proposal and Phase 2 Proposal), each Eligible Contractor shall exclude the following insurance costs: General Liability, Excess / Umbrella Liability, and Pollution Liability insurance. Such excluded costs include all insurance costs in these categories, even if the policy premiums are flat rated and not auditable.

2.3 OCIP Coverages

While the terms and conditions of the OCIP are set forth in the OCIP Policies and OCIP Manual, the OCIP will provide the following coverages:

(A) Commercial General Liability Insurance

(1) Each Occurrence Limit: $2,000,000
(2) Personal/Advertising Injury Limit (Each Occurrence): $2,000,000
(3) General Aggregate Limit: $4,000,000
(4) Products and Completed Operations Aggregate: $4,000,000
(5) Products & Completed Operations Extension must extend through the applicable Statute of Repose

(B) Excess Liability Insurance (over Commercial General Liability)

(1) Combined Single Limit - Each Occurrence - $50,000,000

(2) General Annual Aggregate - $50,000,000
(3) Products & Completed Operations Aggregate - $50,000,000
(4) Products & Completed Operations Extension through the applicable Statute of Repose

Notwithstanding anything set forth in this Exhibit or other Contract Documents or the OCIP Manual, the insurance policy limits and coverage terms and conditions set forth in the OCIP Policies shall determine the amount and scope of coverage provided by the OCIP.

2.4 Owner's Insurance

Outside of the OCIP, Owner expects to procure the following insurance, as further described in the OCIP Manual.

(A) Pollution Liability Insurance

(1) Per Occurrence/Aggregate - $5,000,000
(2) Products & Completed Operations Extension through the applicable Statute of Repose

(B) Builder's Risk

(1) All Risks coverage based on replacement cost values, redacted policy available upon request

2.5 Cooperation

Design Builder will cooperate with, and will require Subcontractors and Sub-Subcontractors to cooperate with, Owner and the OCIP Administrator regarding the administration and operation of the OCIP and all other insurance. Such responsibilities will include, but not be limited to, the following:

(1) Compliance with applicable Project Safety Administration
(2) Provision of necessary contract, operations and insurance information including full certified copies of complete insurance policies required hereunder.
(3) Cooperation with any Insurance Company or OCIP Administrator as respects requests for claims, or other information required.

2.6 Design-Builder's Responsibility for Compliance

Design-Builder shall ensure its Subcontractors, Sub-Subcontractors, and Design Consultants comply with the terms of this Exhibit E. Design-Builder shall require all Eligible Contractors to participate in the OCIP (unless Owner or the OCIP Administrator decline to enroll the Eligible Contractor, as provided in the OCIP Manual). Design-Builder shall require all Enrolled Contractors (and all Eligible Contractors seeking enrollment in the OCIP) to comply with all rules and procedures as outlined in this Exhibit and the OCIP Manual.

3. INSURANCE REQUIREMENTS FOR DESIGN-BUILDER

Design-Builder shall procure and maintain, and as applicable shall ensure that all Subcontractors, Sub-Subcontractors, and Design Consultants of any tier purchase and maintain, the types of insurance coverage required and set forth in this Section 3. Coverage shall be in accordance with, and conform to, the requirements of Section 3 and as otherwise set forth in this Exhibit.

3.1 Insurance and Limits Required

Unless provided otherwise herein, for any Work under the Agreement, Design-Builder and each of its Subcontractors, Sub-Subcontractors, and Design Consultants shall procure and maintain until Final Completion and acceptance of the Work, the following insurance and minimum coverages, written on a primary and noncontributory basis.

(A) Workers Compensation and Employer's Liability

(1) Workers compensation in accordance with applicable law. A waiver of subrogation endorsement is required.

(2) Employer's Liability insurance shall be provided in amounts not less than all of the following:

(a) $1,000,000 bodily injury for each accident

(b) $1,000,000 policy limit for bodily injury by disease

(c) $1,000,000 each employee for bodily injury disease

(B) Commercial Automobile Liability Insurance

(1) Limits:

(a) $1,000,000 Combined Single Limit OR

(b) $500,000 per Person; $500,000 per Occurrence; $100,000 Property Damage

(2) $1,000 for Medical Payments (no fault coverage)

(3) Uninsured motorists coverage should be equal to the per occurrence limit except for contracts with other governmental entities

(4) ISO policy form CA0001 or its equivalent liability coverage

(5) Coverage shall be included for any owned, leased, hired, or non-owned autos (ISO symbol 1 is preferred).

(6) Sole proprietors shall provide the same limits as stated above via a personal auto policy plus an umbrella.

(7) For any contracts involving the transportation of hazardous materials, limited pollution endorsement ISO form CA9948 or its equivalent shall be on the policy

(8) If Contractor or its Subcontractors haul hazardous waste, they must carry automobile liability insurance with $1,000,000 combined single limit each occurrence for bodily injury and property damage applicable to all hazardous waste hauling vehicles accompanied by Motor Carrier Endorsement MCS 90 and Pollution Liability – Broadened Covered for Covered Autos CA9948 or its equivalent.

(C) Commercial General Liability Insurance

(1) Policies shall comply with all of the following:

(a) $1,000,000 Bodily Injury/Property Damage Each Occurrence

(b) $2,000,000 Products/Completed Operations Aggregate

(c) $2,000,000 General Aggregate

(d) $50,000 Fire Damage

(e) $5,000 Medical Payments

(2) For Enrolled Contractors, this policy may be written such that it applies only for premises and operations that are not covered by the OCIP General Liability Insurance.

(3) In addition to the foregoing, the terms and conditions for CGL coverage (both primary and umbrella/excess policies) shall comply with all of the following:

(a) Include no limiting modification to the ISO CG 00 01 definition of "Insured Contract"

(b) Include no limitation or exclusion for punitive damages

(c) Include ongoing operations and products-completed operations coverage for the Additional Insureds

(d) Include Independent Contractor's Liability

(e) Contain no exclusions relating to explosion, collapse, and underground hazards

(f) Contain no limitation or exclusion for resulting or consequential property damage

(g) Contain no limitation or exclusion for the Additional Insureds' vicarious liability, strict liability, or statutory liability, including but not limited to liability pursuant to any labor or employment related law

(h) Contain no limitation or exclusion based on the existence or applicability of the Additional Insureds' OCIP program

(i) Contain no professional liability exclusion broader than ISO form CG 22 80

(j) Contain no exclusion relating to (i) gravity-related injuries or (ii) injuries sustained by an employee other than a direct employee of the insured

(k) Contain no exclusion applicable to the insured's scope of work; and

(l) Provide that the general aggregate limits applies specifically to this Project and is not shared with any other location, project, or exposure.

(D) Excess Liability Insurance:

Policies must comply with all of the following:

(a) Limits are:

(i) $5,000,000 Per Occurrence

(ii) $5,000,000 Aggregate

(b) Coverage should apply and follow form over primary coverages shown above. Limits must apply per any one occurrence and general aggregate annually; and Annual Aggregate Products and Completed Operations.

(c) Coverage shall "drop down" for defense and indemnity in the event of exhaustion or insolvency of the underlying insurance.

(d) As of Owner's Notice to Proceed with Phase 2 Services, the policy shall provide that the Commercial General Liability Insurance general aggregate limit applies solely to this Project.

(e) Coverage shall be maintained from the Notice to Proceed with Phase 1A Services until expiration of the period set forth in Georgia's statute of repose for construction, O.C.G.A. Section 9-3-51(a).

(f) Design-Builder will prepay the premium for the duration of the entire coverage period (as provided in the previous sentence) as a condition precedent to Substantial Completion.

(g) Coverages and terms shall include the following:

(i) Excess of General Liability

(ii) Excess of Employer's Liability

(iii) Excess of Products / Completed Operations

(E) Crane Liability and Riggers Legal Liability

If Design-Builder or its Subcontractors or Sub-Subcontractors use a crane in connection with the Work (including, but not limited to, hoisting, lowering, raising, or moving property or equipment), such person or entity shall provide Crane Liability and Riggers Legal Liability insurance, insuring against physical loss of or damage to the property and equipment in the care, custody, or control of the rigger, with limits sufficient for replacement of such property and equipment, or if greater, with limits that comply with state or local law or regulation, but in no case shall such limits be less than $5,000,000 per claim and $5,000,000 aggregate. Such insurance will provide the same additional insureds as required of Design-Builder herein and will additionally name Design-Builder as an additional insured. Before any Work involving a crane begins, and before any transportation or delivery of the crane to the Project begins, Design-Builder will provide evidence of coverage (i.e., policy or certificate of insurance) to Owner.

(F) Cyber Liability Insurance:

Design-Builder shall procure cyber liability insurance with limits of at least $5,000,000 per claim and $5,000,000 aggregate. Cyber liability insurance shall include coverage for security and privacy liability (including, but not limited to, legal liability and attorneys' fees associated with privacy violations, information theft, intentional or unintentional release of private information, and alteration of electronic information), damage to or loss of use of data and equipment (including, but not limited to, media liability), cyber extortion, social engineering, phishing, data breach expenses (including, but not limited to, attorneys' fees, expenses to notify affected individuals and entities, call center expenses, and credit monitoring expenses) crisis-management expenses (including, but not limited to, public relations, reputational damage, and forensic investigations expenses), and business interruption and extra expense.

(G) Unmanned Aircraft Liability Insurance

If Design-Builder or its Subcontractors, Sub-Subcontractors, or Design Consultants use unmanned aircraft (i.e., drones) in connection with the Work, Design-Builder shall procure Unmanned Aircraft Liability Insurance with limits of at least $1,000,000 each claim and $2,000,000 aggregate. The policy required under this section shall provide coverage for (1) all liability because of bodily injury and property damage and invasion of any rights of privacy arising out of all unmanned aircraft utilized in connection with the Work, including, but not limited to, liability arising out of the ownership, maintenance, or use of the unmanned aircraft (this coverage shall also include, but not be limited to, contractual liability coverage, coverage for electronic malfunction or failure of electrical components, accessories, or power equipment, coverage for personal injury, and coverage for hijacking or any wrongful exercise of control by an unauthorized person or entity); (2) coverage for any fine, penalty or sanction sought pursuant to any municipal, state, federal, or regulatory rule, ordinance, regulation, or law, including any related investigatory or defense costs; and (3) all risk physical damage coverage for all unmanned aircraft (and equipment used in connection with the unmanned aircraft, including, but not limited to cameras, video recording devices, audio-visual equipment, remote control devices, etc.) utilized in connection with the Work, for the full value of the property and must include coverage while the aircraft is in flight or in motion, and while the aircraft is not in motion.

Only with Owner's written consent, in lieu of Design-Builder providing coverage under this section, Design-Builder may require its Subcontractors, Sub-Subcontractors, or Design Consultants using unmanned aircraft to procure insurance otherwise required of Design-Builder under this section, and in such case, such insurance will name as additional insureds the same persons and entities required to be named as Additional Insureds by Design-Builder, as set forth herein.

(H) Tools and Equipment Floater Insurance:

Design-Builder, Subcontractors, and Sub-Subcontractors shall procure whatever fire and extended coverage they may deem necessary for protection against loss of owned, rented, or borrowed capital equipment and tools, including, but not limited to, any tools owned by mechanics, and any tools, equipment, scaffolding, staging, trailers, cranes, towers and forms owned, rented, or borrowed by it or its subcontractors. Owner shall have no liability with respect to such equipment and tools.

3.2 Professional Liability Insurance

Design-Builder and its Design Consultants, at every tier, shall procure and maintain professional liability insurance. This policy shall include, without limitation, coverage for the entirety of Design-Builder's and its Design Consultants' professional services for the Project. The policy shall also provide rectification coverage. The policy shall not include exclusions arising out of: (1) contractual liability or liability assumed under contract and shall expressly insure, to the fullest extent permitted by applicable law, the indemnity obligations set forth in the Contract Documents; (2) any guarantees or warranties by Design-Builder; (3) faulty workmanship that is the result of a negligent act, error, or omission in the performance of professional services; or (4) damage to property in the care, custody, or control of Design-Builder. The policy shall provide limits of not less than $10,000,000 per claim/occurrence and $10,000,000 annual aggregate and not be subject to more than a $250,000 deductible, unless approved by Owner in writing. This insurance shall, at a minimum, have a retroactive date which is the same as or predates Owner's Notice to Proceed with Phase 1A Services. This insurance must be maintained through at least ten (10) years after Final Completion of the Project or through Georgia's statute of repose for construction, O.C.G.A. Section 9-3-51(a). Design-Builder shall prepay the premium for the duration of the entire coverage period (as provided in the previous sentence) as a condition precedent to Substantial Completion.

4. GENERAL INSURANCE REQUIREMENTS

4.1 Additional Insureds

All insurance required by this Exhibit (excluding only Workers' Compensation and Professional Liability insurance) shall name the following parties as additional insureds: Owner and each of its directors, board members, officers, employees, agents, representatives, and lenders; all parties required to be indemnified by Section 7.4 of the General Conditions of Contract; and all other parties as reasonably requested by Owner (collectively, the "Additional Insureds").

All policies (including primary, excess, and umbrella) shall state that the insurance provided to the Additional Insureds is primary to, and non-contributory with, any other insurance maintained by, or available to, the Additional Insureds.

With respect to the Commercial General Liability insurance policy required under this Exhibit, additional insured status must be provided on ISO form CG 20 10 11 85, or CG 20 10 10 01 and CG 20 37 10 01 (or their equivalent to be approved in writing by Owner).

(A) Scope of Coverage and Limits of Insurance

The coverage provided to the Additional Insureds must be at least as broad as that provided to the first named insured on each policy. If any policy required by this Exhibit states that the coverage provided to an additional insured shall be no broader than that required by contract, or words of similar meaning, the parties agree that nothing in this Exhibit is intended to restrict or limit the breadth of such coverage.

The limits of insurance provided by Design-Builder shall be the greater of the limits maintained in the normal course of Design-Builder's business or the minimum limits specified in this Exhibit. The limits of insurance stated herein for each type of insurance are minimum limits only. If Design-Builder's policy provides greater limits, then the Additional Insureds shall be entitled to, or to share in, the full limits of such policy, and this Exhibit shall be deemed to require such full limits.

(B) Number of Policies

The limits of insurance required in Section 3 of this Exhibit may be satisfied with a combination of primary, excess, or umbrella policies of insurance, provided that all such policies comply with all provisions of this Exhibit, including, without limitation, the scope of coverage and the naming of the Additional Insureds on a primary and non-contributory basis).

(C) Severability of Interests (Cross Liability)

No cross-liability exclusions are permitted that apply to the Additional Insureds, and there may not be any restrictions in any policy that limits coverage for a claim brought by an additional insured against a named insured.

(D) Waiver of Subrogation

To the fullest extent permitted by law, all insurance furnished by Design-Builder in compliance with this Exhibit shall include a waiver of subrogation in favor of the Additional Insureds.

(E) Insurer Requirements and Owner Approval

All insurance described in this Exhibit shall be written by an insurance company or companies reasonably satisfactory to Owner and licensed or authorized to do business in the state of Georgia and shall be in a form and content reasonably satisfactory to the Owner. Each insurer shall have an A.M. Best rating of A or better. Owner, in its sole discretion, shall have the right to reject any insurance company selected by Design-Builder. No party subject to the provisions of this Exhibit shall violate or knowingly permit to be violated any of the provisions of the policies of insurance described herein.

(F) Subcontractors, Sub-Subcontractors, and Design Consultants

Before performing or providing any Work or entering the Site, each Subcontractor and Sub-Subcontractor shall obtain the insurance, with the same requirements and coverage amounts, required of Design-Builder in Sections 3.1(A) (limited to Workers' Compensation Insurance), 3.1(B), and 3.1(C). However, the duration of such insurance coverage will extend during the time such Subcontractor is performing or providing any Work in connection with the Project or is on the Project Site.

Each Subcontractor and Sub-Subcontractor shall provide evidence of such insurance coverage in compliance with this Exhibit when requested, but in no event later than the Owner's Notice to Proceed with Phase 2 Services. In the event a Subcontractor subcontracts any portion of its Work to a Sub-Subcontractor, then it shall ensure that such person or entity procure the insurance required by this Exhibit and comply with the terms and conditions set forth in this Exhibit.

(G) Deductibles on Policies

The policies Design-Builder furnishes in compliance with this Exhibit shall not be subject to any deductible in excess of $1,000,000 unless approved in writing by Owner. No policies shall have a self-insured retention unless approved in writing by Owner. Design-Builder shall be responsible for any deductible due under any insurance it provides. The coverage afforded to the Additional Insureds shall not be conditioned upon the payment of any deductible.

(H) Certificates of Insurance; No Waiver

Prior to Owner's Notice to Proceed with Phase 1A Services or, if applicable, Owner's Notice to Proceed with Phase 2 Services, or upon execution of any contracts or subcontracts with a Subcontractor, certificates of insurance reasonably acceptable to Owner shall be submitted to Owner. All required insurance shall be maintained without interruption from the date of Owner's Notice to Proceed with Phase 1A Services or, if applicable, Owner's Notice to Proceed with Phase 2 Services until Final Completion of the Work or, if applicable, for such other periods of time as specified in this Exhibit. Certificates of insurance shall be provided to and updated with Owner throughout such periods. Policies required hereunder shall be provided to Owner upon request.

Failure to provide certificates of insurance will not relieve Design-Builder of its obligation to carry and maintain such insurance or to require Subcontractors, Sub-Subcontractors, or Design Consultants to carry and maintain such insurance. Owner assumes no obligation to review the certificates of insurance or other documentation to ascertain compliance with this Exhibit. Owner's review or inspection, or decision to not review or inspect, such certificates of insurance or other documentation – or any failure to identify, object to, or otherwise notify Design-Builder or its Subcontractors, Sub-Subcontractors, or Design Consultants of any discrepancy, errors, or deficiencies thereof or non-compliance with this Exhibit, (i) does not waive any requirement contained in the Contract Documents or this Exhibit, (ii) will not waive Owner's right to require strict compliance with the terms of the Contract Documents or this Exhibit, and (iii) does not relieve, diminish, or discharge any obligation of Design-Builder for its obligations under the Contract Documents or this Exhibit.

Any failure on the part of the Owner to require, or verify, complete and timely performance of Design-Builder's obligations under this Exhibit shall not constitute a waiver of any right of Owner to require compliance by Design-Builder with such obligations or to seek damages resulting from the Design-Builder's failure to comply.

By requiring Design-Builder and its Subcontractors, Sub-Subcontractors, and Design Consultants to procure, and provide evidence of, the insurance required hereunder, Owner assumes no obligation to ensure such insurance is procured or is adequate for losses or damages that may be sustained by anyone. There are no third-party beneficiaries of any obligation of Owner under the Contract Documents or this Exhibit.

(I) Notice of Cancellation

All policies required under this Exhibit shall contain endorsements or provisions within the policy that confirm that said insurance policies shall not be cancelled, not renewed, or materially changed except upon thirty (30) days' prior written notice to Owner. If information concerning cancellation, non-renewal, or material change is not furnished by the insurer, Design-Builder shall, with reasonable promptness, provide written notice thereof to Owner.

(J) Owner's Right to Procure Insurance

In the event of a failure of Design-Builder or its Subcontractors, Sub-Subcontractors, or Design Consultants to furnish and maintain any of the insurance required under this Exhibit or to furnish satisfactory evidence thereof, Owner shall have the right, but not the obligation, to procure such insurance. In such event, Design-Builder and such Subcontractor, Sub-Subcontractor, or Design Consultant shall (i) furnish all information necessary for Owner's procurement thereof and (ii) either pay the costs thereof to Owner immediately upon presentation of a bill therefor, or have the cost thereof deducted from any payment otherwise due under the Agreement, at Owner's option.

(K) Other Insurance by Design-Builder

Any type of insurance or any increase of limits of liability not described in this Exhibit, which Design-Builder requires for its own protection or on account of any statute, law, regulation, or otherwise, shall be its own responsibility and at its own expense. Unless agreed to by Owner in writing, such costs are not Costs of the Work.

(L) No Limitation

The insurance coverages maintained by Design-Builder shall not limit any of Design-Builder's indemnity obligations or other liabilities under the Contract Documents. Owner, by requiring the Design-Builder to purchase insurance, shall not be deemed to waive Owner's right to bring any action, to the fullest extent permitted by law, for any loss that may be covered, completely or in part, by such insurance. The procurement of insurance for a certain risk shall not be deemed to release, relieve, or diminish the liability of Design-Builder to indemnify Owner under the Contract Documents. Damages recoverable by Owner in any action shall not be limited by the amount of coverage specified in the insurance policy or policies required hereunder.

(M) Aggregate Limits

Unless otherwise provided herein, aggregate limits in each of the following insurance policies shall be exclusive to the Project and not shared with any other project: Commercial General Liability (as described in Section 3.1(C)) and Excess Liability (as described in Section 3.1(D)).

4.2 Legal Compliance

(A) IN THE EVENT THAT THE LAW OF THE STATE IN WHICH THE PROJECT IS LOCATED (OR APPLICABLE LAW) LIMITS THE APPLICABILITY OF ANY OF THE INSURANCE COVERAGE THAT OWNER MAY REQUIRE FROM DESIGN-BUILDER, THEN DESIGN-BUILDER SHALL BE REQUIRED TO OBTAIN COVERAGE TO THE FULLEST EXTENT OF COVERAGE AND LIMITS ALLOWED BY APPLICABLE LAW AND THIS AGREEMENT SHALL BE READ TO CONFORM TO SUCH LAW.

(B) Design-Builder agrees to be bound by, and at its own cost, comply with all federal, state, and local laws, ordinances, and regulations (hereafter collectively referred to as "laws") applicable to the Design-Builder's Work including, but not limited to, the Federal Occupational Safety and Health Act ("OSHA"). To the fullest extent permitted by law, the Design-Builder shall be liable to the Owner for all loss, cost, and expense attributable to any acts of commission or omission by the Design-Builder, its employees, and agents resulting from the failure to comply therewith, including, but not limited to, any fines, penalties, or corrective measures. Such costs, expenses, fines, and penalties are not Cost of the Work.

4.3 Project Safety Administration

All entities and persons providing Work for the Project, including but not limited to Enrolled Contractors, Ineligible Contractors, or Eligible Contractors not enrolled in the OCIP (including Subcontractors and Sub-Subcontractors) shall comply with applicable safety regulations intended to reduce the possibility of accidents or injury to persons on or about the Project Site. As applicable to the Work provided by each such entity or person, each such entity or person will erect or cause to be erected and maintained, as required by the conditions and progress of the Project, reasonable safeguards for the protection of laborers and the public. Providing safe working conditions and meeting or exceeding all OSHA

requirements are important to Owner and constitute a material obligation of Design-Builder under the Agreement. Owner desires for the Project to be "Incident Free" each and every day.

In its sole discretion, Owner may retain an OCIP Site Safety Manager to proactively monitor the safe performance of Work by Design-Builder and others on the Project Site. The OCIP Site Safety Manager or a designated representative may conduct periodic reviews of Design-Builder's safety programs, with or without advanced notice. Without diminishing Design-Builder's responsibility for safety at the Project Site, Design-Builder shall address and implement any recommendations provided by, within the timeline set by, the OCIP Site Safety Manager. Owner assumes no liability for any reviews or recommendations of the OCIP Site Safety Manager.

Exhibit F
Form of Contract Price Amendments

Exhibit F
Form of Phase 1B Contract Price Amendment

Owner:	Clayton County Water Authority
Design-Builder:	
Project:	Advanced Water Treatment and Capacity Upgrades
Agreement:	Progressive Design-Build Agreement for Phase 1B Design between the Clayton County Water Authority and the Design-Builder
Effective Date:	

Pursuant to Section 2.3.2.2 of the Agreement, dated _____, 20____, the Owner and the Design-Builder amend the Agreement to (i) establish a Phase 1B Contract Price, (ii) establish the Phase 1B Scheduled Completion Date, as set forth in Section 6.2.2 of the Agreement, and (iii) amend any other terms and conditions of the Agreement, all as provided herein. Capitalized Terms not otherwise defined in this Phase 1B Contract Price Amendment shall have the meaning set forth in the Contract Documents.

1. Phase 1B Contract Price: The Phase 1B Contract Price referenced in Section 7.1.2 of the Agreement is $_____.

2. Contract Times:

   2.1. Pursuant to Section 6.2.2 of the Agreement, the Design-Builder shall complete Phase 1B scope of services on or before _____ [date certain or days after Notice to Proceed with Phase 1B Services], which is the Phase 1B Scheduled Completion Date.

   2.2. Pursuant to Section 6.2.2 of the Agreement, the Design-Builder shall achieve the following activities by the associated Milestone Dates:

Activities	**Milestone Dates**

3. If the parties have agreed to amend any other terms or conditions of the Contract Documents, such agreement is as follows:

   _____

   _____

4. Unless otherwise explicitly provided herein, all terms and conditions of the Contract Documents remain in full force and effect. Unless otherwise explicitly incorporated and referenced herein, neither the Design-Builder's Phase 1B Proposal (as defined in Section 2.3 of the Agreement) nor any portion thereof, nor any document attached thereto or referenced therein, is incorporated herein. The terms and provisions of this Phase 1B Contract Price Amendment constitute the full and complete agreement between the parties concerning the subject matter hereof.

Owner and Design-Builder each individually represents that it has the necessary approvals to execute this Phase 1B Contract Price Amendment. Design-Builder executes this Phase 1B Contract Price Amendment under seal.

OWNER:	**DESIGN-BUILDER:**
Clayton County Water Authority	
(Signature)	*(Signature)* *(Seal)*
(Printed Name)	*(Printed Name)*
(Title)	*(Title)*
Date:	Date:
Attest	Attest

The following Surety or Sureties execute solely for the purpose of consenting to the modifications made by this Phase 1B Contract Price Amendment.

Surety:

_____
(Name)

_____
(Signature)

_____
(Printed Name)

_____
(Title)

_____
Date:

_____
Attest

Exhibit F
Form of Phase 2 Contract Price Amendment

Owner:	Clayton County Water Authority
Design-Builder:	
Project:	Advanced Water Treatment and Capacity Upgrades
Agreement:	Progressive Design-Build Agreement for Guaranteed Maximum Price Design and Construction Services between the Clayton County Water Authority and the Design-Builder
Effective Date:	

Pursuant to Section 2.4.2.2 of the Agreement, dated _____, 20____, the Owner and the Design-Builder amend the Agreement to (i) establish a Guaranteed Maximum Price, as set forth in Section 7.4 of the Agreement, (ii) establish Contract Times for the Work, as set forth in Article 6 of the Agreement, and (iii) amend any other terms and conditions of the Agreement, all as provided herein. Capitalized Terms not otherwise defined in this Phase 2 Contract Price Amendment shall have the meaning set forth in the Contract Documents.

1. Guaranteed Maximum Price:

1.1. The Guaranteed Maximum Price referenced in Section 7.4 of the Agreement is $_____.

1.2. The Basis of Design Documents, as defined in Section 1.2.2 of the General Conditions of Contract, are as follows:

Exhibit	**Basis of Design Document (including Owner-Approved 60% Design)**

1.3. Additional Exhibits: Any additional exhibits incorporated by this Phase 2 Contract Price Amendment are as follows:

Exhibit	**Exhibit Description**
	[Amended or Supplemental Scope of Work Exhibit]
	[Schedule of Values of GMP]
	[Pre-Approved Subcontractors]
	[Additional Performance Standards and Guaranty]
	[Anticipated Weather Days]

1.4. Allowances: Any allowances agreed upon by the parties, as provided in Section 7.5 of the Agreement, are as follows:

Allowance Items	Allowance Values

1.5. Unit Prices: Any unit prices agreed upon by the parties are as follows:

Unit Price Work	Unit Price

2. Other Adjustments to the Phase 2 Contract Price (if any): If the parties have agreed on any change to the Design-Builder's Fee or Design-Builder's General Conditions Percent, or have agreed on any other change to the Phase 2 Contract Price, such agreement is as follows:

Design-Builder's Fee percent, as defined in Section 7.4.1, is amended to be:	%
Design-Builders' General Conditions Percent, as defined in Section 7.4.3, is amended to be:	%
Other Changes:	

3. Contract Times:

3.1. Pursuant to Article 6 of the Agreement, the Design-Builder shall achieve Substantial Completion of the Work on or before _____ [date certain or days after Notice to Proceed with Phase 2 Services], which is the Scheduled Substantial Completion Date, as defined in Section 6.2.1 of the Agreement.

3.2. Pursuant to Section 6.2.2 of the Agreement, the Design-Builder shall achieve the following activities by the associated Milestone Dates:

Activities	Milestone Dates

3.3. Liquidated Damages. As provided in Section 6.4 of the Agreement, Liquidated Damages are established or modified as follows:

Deadline	Liquidated Damages Daily Rate
Failure to achieve Substantial Completion	
Failure to achieve Final Completion	

4. If the parties have agreed to amend any other terms or conditions of the Contract Documents, such agreement is as follows:

_____

_____

5. Unless otherwise explicitly provided herein, all terms and conditions of the Contract Documents remain in full force and effect. Unless otherwise explicitly incorporated and referenced herein, neither the Design-Builder's Proposal (as defined in Section 2.4 of the Agreement) nor any portion thereof, nor any document attached thereto or referenced therein, is incorporated herein. The terms and provisions of this Phase 2 Contract Price Amendment constitute the full and complete agreement between the parties concerning the subject matter hereof.

Owner and Design-Builder each individually represents that it has the necessary approvals to execute this Phase 2 Contract Price Amendment. Design-Builder executes this Phase 2 Contract Price Amendment under seal.

OWNER:	**DESIGN-BUILDER:**
Clayton County Water Authority	
(Signature)	*(Signature)* *(Seal)*
(Printed Name)	*(Printed Name)*
(Title)	*(Title)*
Date:	Date:
Attest	Attest

The following Surety or Sureties execute solely for the purpose of consenting to the modifications made by this Phase 2 Contract Price Amendment.

Surety:

(Name)

(Signature)

(Printed Name)

(Title)

Date:

Attest

This page intentionally left blank.

Exhibit G
Key Design and Supervisory Personnel

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Exhibit G
Key Design and Supervisory Personnel

Key design and supervisory personnel assigned by Design-Builder and its engineering subcontractor, as applicable, to this Project are:

Name	Role/Function

END OF EXHIBIT "G"

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Exhibit H – Form of Payment and Performance Bonds

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Performance Bond

KNOW ALL MEN BY THESE PRESENTS THAT _____ (as principal, hereinafter referred to as the "Principal"), and _____ (as surety, hereinafter referred to as the "Surety"), are held and firmly bound unto the Clayton County Water Authority (as Owner and obligee, hereinafter referred to as the "Authority") in the sum of _____ _____ ($ _____) lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or will enter, into a certain written agreement with the Authority, dated _____, which is incorporated herein by reference in its entirety (hereinafter referred to as the "Agreement"), for the construction of a project known as **Advanced Water Treatment and Capacity Upgrades**, (hereinafter referred to as the "Project").

NOW THEREFORE, the conditions of this obligation are as follows:

1. That if the Principal shall fully and completely perform each and all of the terms, provisions, and requirements of the Agreement, including and during the period of any warranties or guarantees required thereunder, and all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made; and if the Principal and the Surety shall indemnify and hold harmless the Authority from any and all losses, liability and damages, claims, judgments, liens, costs, and fees of every description, including but not limited to any damages for delay that the Authority may incur, sustain, or suffer by reason of the failure or default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Agreement, including all modifications, amendments, changes, deletions, additions, and alterations thereto and any warranties or guarantees required thereunder, then this obligation shall be void; otherwise to remain in full force and effect.
2. In the event of a failure of performance of the Agreement by the Principal, which shall include, but not be limited to, any breach of default of the Agreement:
    a. The Surety shall commence performance of its obligations and undertakings under this Performance Bond no later than thirty (30) days after written notice from the Authority to the Surety;
    b. The means, method, or procedure by which the Surety undertakes to perform its obligations under this Bond shall be subject to the advance written approval of the Authority.

3. If more than one surety executes this Performance Bond, such sureties collectively constitute the "Surety," as used herein, and each such surety will be jointly and severally liable for the obligations of the Surety hereunder.
4. This Performance Bond is issued pursuant to O.C.G.A. § 36-91-70 and shall be construed to provide no less rights to the Authority than provided in the Georgia Local Government Public Works Construction Law, O.C.G.A. Title 36, Chapter 91.

The Surety hereby waives notice of any and all modifications, omissions, additions, changes, and advance payments or deferred payments in or about the Agreement and agrees that the obligations undertaken by this Performance Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, and advance payments or deferred payments. The Parties further expressly agree that any action on this Performance Bond may be brought within the time allowed by Georgia law for suit on contracts under seal.

IN WITNESS WHEREOF, the Principal and Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized officers or attorneys-in-fact, this _____ day of _____, 202_____.

PRINCIPAL: _____

By: _____
(name signed) *(SEAL)*

_____
(name printed or typed)

Title: _____

Address: _____

_____

Attest: _____
(name signed)

_____
(name printed or typed)

Title: _____

SURETY: _____

By: _____
(name signed) *(SEAL)*

_____
(name printed or typed)

Title: _____

Address: _____

_____

Attest: _____
(name signed)

_____
(name printed or typed)

Title: _____

Note: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Georgia.

END OF FORM

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Payment Bond

KNOW ALL MEN BY THESE PRESENTS THAT _____ (as principal, hereinafter referred to as the "Principal"), and _____ (as surety, hereinafter referred to as the "Surety"), are held and firmly bound unto the Clayton County Water Authority (as Owner, hereinafter referred to as the "Authority"), for the use and benefit of any Claimant, as hereinafter defined, in the sum of _____ _____ ($_____) lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or will enter, into a certain written agreement with the Authority, dated _____, which is incorporated herein by reference in its entirety (hereinafter referred to as the "Agreement"), for the construction of a project known as **Advanced Water Treatment and Capacity Upgrades** (hereinafter referred to as the "Project").

NOW THEREFORE, the condition of this obligation is such, that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor, services, and materials used or reasonably required for use in the performance of the Agreement, then this obligation shall be void; otherwise to remain in full force and effect.

A "Claimant" shall be defined herein as any person or entity entitled to recovery against the bond as provided in O.C.G.A. § 36-91-90 and any subcontractor, person, party, partnership, corporation or other entity furnishing labor, services, or materials used or reasonably required for use in the performance of the Agreement, without regard to whether such labor, services or materials were sold, leased, or rented, and without regard to whether such Claimant is or is not in privity of the Agreement with the Principal or any Subcontractor performing Work on the Project.

In the event of any claim made by the Claimant against the Authority, or the filing of a lien against the property of the Authority affected by the Agreement, the Surety shall either settle or resolve the Claim and shall remove any such lien by bond or otherwise as provided in the Agreement.

If more than one surety executes this Payment Bond, such sureties collectively constitute the "Surety," as used herein, and each such surety will be jointly and severally liable for the obligations of the Surety hereunder.

This Payment Bond is issued in conformance with O.C.G.A. § 36-91-90 and shall be construed to provide no less rights to Claimants than provided in the Georgia Local Government Public Works Construction Law, O.C.G.A. Title 36, Chapter 91.

The Parties further expressly agree that any action on this Bond may be brought within the time allowed by Georgia law for suit on contracts under seal.

IN WITNESS WHEREOF, the Principal and Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized officers or attorneys-in-fact, this _____ day of _____, 202____.

PRINCIPAL: _____

By: _____

(name signed) (SEAL)

_____

(name printed or typed)

Title: _____

Address: _____

_____

Attest: _____

(name signed)

_____

(name printed or typed)

Title: _____

SURETY: _____

By: _____

(name signed) (SEAL)

_____

(name printed or typed)

Title: _____

Address: _____

_____

Attest: _____

(name signed)

_____

(name printed or typed)

Title: _____

Note: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Georgia.

END OF FORM

Exhibit I
Form of Waiver of Liens and Bond Claims

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STATE OF GEORGIA
COUNTY OF CLAYTON

WAIVER AND RELEASE OF LIEN AND PAYMENT BOND RIGHTS
UPON INTERIM PAYMENT

THE UNDERSIGNED MECHANIC AND/OR MATERIALMAN HAS BEEN EMPLOYED BY _____
TO FURNISH: _____

_____

[DESCRIBE MATERIALS AND/OR LABOR] FOR THE CONSTRUCTION OF IMPROVEMENTS KNOWN AS: **ADVANCED WATER TREATMENT AND CAPACITY UPGRADES**, WHICH IS LOCATED IN THE CITIES OF JONESBORO AND HAMPTON IN CLAYTON COUNTY, GEORGIA AND THE CITY OF STOCKBRIDGE IN HENRY COUNTY, GEORGIA AND IS OWNED BY THE CLAYTON COUNTY WATER AUTHORITY AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE TERRY R. HICKS WATER PRODUCTION PLANT (WPP), LOCATED AT 1693 FREEMAN ROAD, JONESBORO, CLAYTON COUNTY, GA 30236;

THE UNDEVELOPED PROPERTY FOR THE NEW WPP, LOCATED AT 1791 FREEMAN ROAD, JONESBORO, CLAYTON COUNTY, GA 30236;

THE HUIE WETLANDS HOLDING PONDS, LOCATED NORTHEAST OF THE INTERSECTION OF FREEMAN ROAD AND TARA BOULEVARD IN JONESBORO, CLAYTON COUNTY, GA 30236;

THE SMITH RESERVOIR RAW WATER PUMP STATION, LOCATED ON PANHANDLE ROAD APPROXIMATELY 0.3 MILES SOUTH OF LAKEFORD DRIVE IN HAMPTON, CLAYTON COUNTY, GA 30228 (33°24’52.79”N, 84°22’21.48”W);

THE 30-INCH DUCTILE IRON RAW WATER MAIN TRAVELING FROM THE SMITH RESERVOIR RAW WATER PUMP STATION TO TERRY R. HICKS WPP VIA PANHANDLE ROAD, LOVEJOY ROAD, AND TARA BOULEVARD RIGHT-OF-WAY; AND

THE W.J. HOOPER WPP, LOCATED AT 70 OAKDALE DRIVE, STOCKBRIDGE, HENRY COUNTY, GA 30281.

UPON THE RECEIPT OF THE SUM OF $_____, THE MECHANIC AND/OR MATERIALMAN WAIVES AND RELEASES ANY AND ALL LIENS OR CLAIMS OF LIENS IT HAS UPON THE FOREGOING DESCRIBED PROPERTY OR ANY RIGHTS AGAINST ANY LABOR AND/OR MATERIAL BOND

THROUGH THE DATE OF _____ [DATE] AND EXCEPTING THOSE RIGHTS AND LIENS THAT THE MECHANIC AND/OR MATERIALMAN MIGHT HAVE IN ANY RETAINED AMOUNTS, ON ACCOUNT OF LABOR OR MATERIALS, OR BOTH, FURNISHED BY THE UNDERSIGNED TO OR ON ACCOUNT OF SAID CONTRACTOR FOR SAID BUILDING OR PREMISES.

GIVEN UNDER HAND AND SEAL THIS _____ DAY OF _____, 20___.

_____ (SEAL)

(Signature of Mechanic/Materialman)

_____

(Printed/Typed Name and Title)

_____

(Company Name)

_____ _____

(Witness) (Address)

NOTICE: WHEN YOU EXECUTE AND SUBMIT THIS DOCUMENT, YOU SHALL BE CONCLUSIVELY DEEMED TO HAVE WAIVED AND RELEASED ANY AND ALL LIENS AND CLAIMS OF LIENS UPON THE FOREGOING DESCRIBED PROPERTY AND ANY RIGHTS REGARDING ANY LABOR OR MATERIAL BOND REGARDING THE SAID PROPERTY TO THE EXTENT (AND ONLY TO THE EXTENT) SET FORTH ABOVE, EVEN IF YOU HAVE NOT ACTUALLY RECEIVED SUCH PAYMENT, 90 DAYS AFTER THE DATE STATED ABOVE UNLESS YOU FILE AN AFFIDAVIT OF NONPAYMENT PRIOR TO THE EXPIRATION OF SUCH 90 DAY PERIOD. THE FAILURE TO INCLUDE THIS NOTICE LANGUAGE ON THE FORM SHALL RENDER THE FORM UNENFORCEABLE AND INVALID AS A WAIVER AND RELEASE UNDER O.C.G.A. § 44-14-366.

STATE OF GEORGIA
COUNTY OF CLAYTON

WAIVER AND RELEASE OF LIEN AND PAYMENT BOND RIGHTS
UPON FINAL PAYMENT

THE UNDERSIGNED MECHANIC AND/OR MATERIALMAN HAS BEEN EMPLOYED BY _____
TO FURNISH: _____

_____

[DESCRIBE MATERIALS AND/OR LABOR] FOR THE CONSTRUCTION OF IMPROVEMENTS KNOWN AS: **ADVANCED WATER TREATMENT AND CAPACITY UPGRADES**, WHICH IS LOCATED IN THE CITIES OF JONESBORO AND HAMPTON IN CLAYTON COUNTY, GEORGIA AND THE CITY OF STOCKBRIDGE IN HENRY COUNTY, GEORGIA AND IS OWNED BY THE CLAYTON COUNTY WATER AUTHORITY AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE TERRY R. HICKS WATER PRODUCTION PLANT (WPP), LOCATED AT 1693 FREEMAN ROAD, JONESBORO, CLAYTON COUNTY, GA 30236;

THE UNDEVELOPED PROPERTY FOR THE NEW WPP, LOCATED AT 1791 FREEMAN ROAD, JONESBORO, CLAYTON COUNTY, GA 30236;

THE HUIE WETLANDS HOLDING PONDS, LOCATED NORTHEAST OF THE INTERSECTION OF FREEMAN ROAD AND TARA BOULEVARD IN JONESBORO, CLAYTON COUNTY, GA 30236;

THE SMITH RESERVOIR RAW WATER PUMP STATION, LOCATED ON PANHANDLE ROAD APPROXIMATELY 0.3 MILES SOUTH OF LAKEFORD DRIVE IN HAMPTON, CLAYTON COUNTY, GA 30228 (33°24’52.79”N, 84°22’21.48”W);

THE 30-INCH DUCTILE IRON RAW WATER MAIN TRAVELING FROM THE SMITH RESERVOIR RAW WATER PUMP STATION TO TERRY R. HICKS WPP VIA PANHANDLE ROAD, LOVEJOY ROAD, AND TARA BOULEVARD RIGHT-OF-WAY; AND

THE W.J. HOOPER WPP, LOCATED AT 70 OAKDALE DRIVE, STOCKBRIDGE, HENRY COUNTY, GA 30281.

UPON THE RECEIPT OF THE SUM OF: $ _____, THE MECHANIC AND/OR MATERIALMAN WAIVES AND RELEASES ANY AND ALL LIENS OR CLAIMS OF LIENS IT HAS UPON THE FOREGOING PROPERTY OR ANY RIGHTS AGAINST ANY LABOR AND/OR MATERIAL BOND ON ACCOUNT OF

LABOR OR MATERIALS, OR BOTH, FURNISHED BY THE UNDERSIGNED TO OR ON ACCOUNT OF CLAYTON COUNTY WATER AUTHORITY FOR SAID PROPERTY.

GIVEN UNDER HAND AND SEAL THIS _____ DAY OF _____, 20___.

_____ (SEAL)

(Signature of Mechanic/Materialman)

_____

(Printed/Typed Name and Title)

_____

(Company Name)

_____ _____

(Witness) (Address)

NOTICE: WHEN YOU EXECUTE AND SUBMIT THIS DOCUMENT, YOU SHALL BE CONCLUSIVELY DEEMED TO HAVE WAIVED AND RELEASED ANY AND ALL LIENS AND CLAIMS OF LIENS UPON THE FOREGOING DESCRIBED PROPERTY AND ANY RIGHTS REGARDING ANY LABOR OR MATERIAL BOND REGARDING THE SAID PROPERTY TO THE EXTENT (AND ONLY TO THE EXTENT) SET FORTH ABOVE, EVEN IF YOU HAVE NOT ACTUALLY RECEIVED SUCH PAYMENT, 90 DAYS AFTER THE DATE STATED ABOVE UNLESS YOU FILE AN AFFIDAVIT OF NONPAYMENT PRIOR TO THE EXPIRATION OF SUCH 90 DAY PERIOD. THE FAILURE TO INCLUDE THIS NOTICE LANGUAGE ON THE FORM SHALL RENDER THE FORM UNENFORCEABLE AND INVALID AS A WAIVER AND RELEASE UNDER O.C.G.A. § 44-14-366.

Exhibit J

Form of Consent of Surety to Final Payment

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Exhibit J
Form of Consent of Surety to Final Payment

To Owner:	Clayton County Water Authority	Performance Bond No.:	
		Payment Bond No.:	
Design-Builder:			
Project:		Contract Date:	
	(name and address)		

In accordance with the provisions of the Agreement between the Owner and the Design-Builder as indicated above,

_____,
[insert name and address of Surety]

Surety, on bond of

_____,
[insert name and address of Design-Builder]

hereby approves of final payment to the Design-Builder and agrees that final payment to the Design-Builder shall not relieve the Surety of any of its obligations to the Clayton County Water Authority as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand and seal on this date:_____

SURETY

_____ (SEAL)

_____
(Signature of authorized representative)

_____

_____
(Printed name and title)

Note: Original Current Power of Attorney with Current Certificate shall be attached hereto

Attest:_____

END OF FORM

Attachment C
Forms for Affirmation of Compliance

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Attachment C
Forms for Affirmation of Compliance

Statement of Non-Collusion

In accordance with O.C.G.A. § 36-91-21(e), the Design-Builder and all others required thereunder shall complete the following statement:

STATE OF _____}
}
COUNTY OF _____}

That such person ("Affiant") is the agent authorized by the Design-Builder to submit the attached proposal. Affiant further states that the Design-Builder (i) has not prevented or attempted to prevent competition in such bidding or proposals by any means whatever; (ii) has not prevented or endeavored to prevent anyone from making a bid or proposal therefor by any means whatsoever; (iii) has not caused or induced another to withdraw a bid or proposal for the work; and (iv) has not been a party to any collusion among proposers in restraint of freedom of competition by agreement to propose at a fixed price or to refrain from proposing; or with any state, county, city, or authority official or employee as to quantity, quality, or price in the prospective agreement, or any other terms of said prospective agreement; or in any discussions between proposers and any state, county, city, or authority official concerning exchange of money or other thing of value for special consideration in the letting of a contract.

Affiant further warrants that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by the Design-Builder for the purpose of securing business.

_____
Name of Design-Builder

_____
Design-Builder (Affiant)

Subscribed and sworn to before me this _____ day of _____, 202___.

My commission expires: _____

_____ Notary Public

END OF FORM

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Attachment C
Forms for Affirmation of Compliance

Georgia Security and Immigration Compliance Act Of 2006

Pursuant to the Georgia Security and Immigration Compliance Act of 2006, the Design-Builder understands and agrees that compliance with the requirements of O.C.G.A. § 13-10-91 and Georgia Department of Labor Rule 300-10-.02 are conditions of this Agreement. The Design-Builder further agrees that such compliance shall be attested by the Design-Builder through execution of the contractor affidavit required by Georgia Department of Labor Rule 300-10-1-.07, or a substantially similar contractor affidavit. The Design-Builder's fully executed affidavit is attached hereto as Exhibit A and is incorporated into this Agreement by reference herein.

By initialing in the appropriate line below, the Design-Builder certifies that the following employee-number category as identified in O.C.G.A. § 13-10-91 is applicable to the Design-Builder:

1. _____ 500 or more employees;

2. _____ 100 or more employees;

3. _____ Fewer than 100 employees.

The Design-Builder understands and agrees that, in the event the Design-Builder employs or contracts with any subcontractor or subcontractors in connection with this Agreement, the Design-Builder shall:

1. Secure from each such subcontractor an indication of the employee-number category as identified in O.C.G.A. § 13-10-91 that is applicable to the subcontractor;

2. Secure from each such subcontractor an attestation of the subcontractor's compliance with O.C.G.A. § 13-10-91 and Georgia Department of Labor Rule 300-10-1-.02 by causing each such subcontractor to execute the subcontractor affidavit required by Georgia Department of Labor Rule 300-10-1-.08, or a substantially similar subcontractor affidavit. The Design-Builder further understands and agrees that the Design-Builder shall require the executed subcontractor affidavit to become a part of the agreement between the Design-Builder and each such subcontractor. The Design-Builder agrees to maintain records of each subcontractor attestation required hereunder for inspection by the Clayton County Water Authority at any time.

Design-Builder: _____

Authorized Signature: _____

Title: _____

Date: _____

EXHIBIT A
DESIGN-BUILDER AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned Design-Builder verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm, or corporation which is contracting with the Clayton County Water Authority has registered with, is participating in, uses, and will continue to use for the duration of the Contract, the federal work authorization program – EEV/Basic Pilot Program operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA), commonly known as E-Verify, in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

The undersigned further agrees that, in connection with the physical performance of services pursuant to this Contract with the Clayton County Water Authority, the Design-Builder will only employ or Contract with subcontractor(s) who can present a similar affidavit verifying the subcontractor's compliance with O.C.G.A. 13-10-91. Design-Builder further agrees to maintain records of such compliance and provide a copy of each such verification to the Clayton County Water Authority within five days of the subcontractor(s) presenting such affidavit(s) to the Design-Builder.

_____ _____

EEV / Basic Pilot Program User Identification Number
(Please enter your four to six numeric characters)

Date of Authorization

_____ _____

BY: Authorized Officer or Agent

Date

_____

Title of Authorized Officer or Agent if Design-Builder

_____

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE
_____DAY OF _____, 202___.

_____

Notary Public
My Commission Expires:

_____

EXHIBIT A-1
SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with (name of Design-Builder)
_____on behalf of the Clayton County Water Authority has registered with, is participating in, uses, and will continue to use for the duration of this contract the federal work authorization program – EEV/Basic Pilot Program operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA), commonly known as E-Verify, in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91. The undersigned further agrees that the Subcontractor will maintain records of such compliance and provide a copy of each such verification to the Design-Builder within five days of the subcontractor(s) presenting such affidavit(s) to the Subcontractor.

_____ _____
EEV / Basic Pilot Program User Identification Number
(Please enter your four to six numeric characters)
Date of Authorization

_____ _____
BY: Authorized Officer or Agent
Subcontractor Name
Date

_____
Title of Authorized Officer or Agent of Subcontractor

_____
Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE
_____DAY OF _____, 202___.

_____
Notary Public
My Commission Expires:

_____

END OF FORM

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Attachment C
Forms for Affirmation of Compliance

Certification of Absence of Conflict of Interest

(O.C.G.A. § 36-80-28)

The undersigned Design-Builder, who is entering into a contract or arrangement with the Clayton County Water Authority (CCWA), by signing below acknowledges and certifies to follow the requirements below:

(1) Design-Builder shall avoid any appearance of impropriety and shall follow all of CCWA's policies and procedures related to the project.

(2) Design-Builder discloses below any material transaction or relationship currently known to Design-Builder that reasonably could be expected to give rise to a conflict of interest, including, but not limited to, that of the Design-Builder, Design-Builder's employees, agents or subsidiaries. (Include past, present, or known prospective engagements, involvement in litigation or other dispute, client relationships, or other business or financial interest):

_____
_____
_____
_____
_____

(3) Design-Builder shall immediately disclose any material transaction or relationship subsequently discovered during the pendency of the contract or arrangement.

(4) Design-Builder acknowledges that any violation or threatened violation of the agreement may cause irreparable injury to CCWA, entitling CCWA to seek injunctive relief in addition to all other legal remedies.

_____
NAME OF DESIGN-BUILDER

_____
Name of Design-Builder's Authorized Official

_____
Signature of Design-Builder's Authorized Official

_____
DATE

END OF FORM

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Attachment C
Forms for Affirmation of Compliance

Acknowledgement of Addenda

The Owner will transmit addenda to those Proposers who have registered with the Owner per the provisions of the Request for Proposal and will post all addenda on the Owner Project website at the following address: https://www.ccwa.us/procurement. **It is Proposer's responsibility to obtain all addenda prior to submitting its Proposal.**

The undersigned Design-Builder hereby acknowledges receipt of the following Addenda: ***[insert the number and date of each Addendum; if none, insert "None"]***

Addendum No.	Addendum Date

Respectfully submitted,

_____
[typed name of Design-Builder]

By: _____
[signature]

_____
[typed name and title]

_____
[address of Design-Builder]

(_____) _____
[business telephone number]

_____
[date of execution]

END OF FORM

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Attachment D
Form of Bid Bond

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Attachment D
Georgia Bid Bond

BOND NO. _____

KNOW ALL MEN BY THESE PRESENTS, that _____ _____, as principal, hereinafter called the Principal, and _____ _____, a corporation duly organized under the laws of the State of _____, having its principal place of business at _____ in the State of _____ and authorized to do business in the State of Georgia, as surety, hereinafter called the Surety, are held and firmly bound unto Clayton County Water Authority, as owner, hereinafter called the Obligee, in the sum of _____ DOLLARS ($ _____) for the payment for which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT:

WHEREAS, the Principal is herewith submitting its Proposal for design and construction of the **Advanced Water Treatment and Capacity Upgrades,** said Proposal, by reference thereto, being hereby made a part hereof.

WHEREAS, the Principal contemplates submitting or has submitted a Proposal to the Obligee for the furnishing of all labor, materials (except those to be specifically furnished by the Owner), equipment, machinery, tools, apparatus, means of transportation for, and the performance of the work covered in the Request for Proposals for the Project.

WHEREAS, a condition to the submission of said Proposal is that a bid bond in the amount of 5 percent of the base bid be submitted with said Proposal as a guarantee that the Proposer would, if awarded the Agreement, enter into a written Agreement with the Owner for the performance of said Agreement, within 90 calendar days after written notice having been given of the award of the Agreement.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, within 10 calendar days after written notice of such award, enters into a written Agreement with the Obligee and furnishes a Performance Bond and a Payment Bond, each in an amount equal to 100 percent of the Contract Price, satisfactory to the Owner, then this obligation shall be void; otherwise the sum herein stated shall be due and payable to the Obligee and the Surety herein agrees to pay said sum immediately upon demand of the Obligee in good and lawful money of the United States of America, as liquidated damages for failure thereof of said principal.

Signed and sealed this _ day of _____, 202___.

PRINCIPAL:

_____

By: _____

(name signed) (SEAL)

_____

(name printed or typed)

Title: _____

Address: _____

_____

Attest: _____

(name signed)

_____

(name printed or typed)

Title: _____

Note: Attest for a corporation must be by the corporate secretary; for a partnership by another partner; for an individual by a notary.

SURETY:

_____

By: _____

(name signed)

_____

(name printed or typed) (SEAL)

Title: _____

Address: _____

_____

Attest: _____

(name signed)

_____

(name printed or typed)

Title: _____

Note: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located.

END OF FORM

Attachment E
Fee and Rate Proposal Form

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Attachment E
Fee and Rate Proposal

In compliance with the RFP, the undersigned Design-Builder, having carefully examined the site of the Project, the RFP and all attachments and appendices of the RFP, and having carefully examined the draft Progressive Design-Build Agreement for Guaranteed Maximum Price Design and Construction Services between the Clayton County Water Authority and the Design-Builder (Agreement) and the Owner's standard forms and other documents included or referenced in the RFP and any Addenda thereto, proposes and agrees, if its Proposal is accepted, to enter into the Agreement with the Owner and to perform all of the services as set forth in the Agreement for the Phase 1 Contract Price set forth below, and offers the following proposed compensation and other matters set forth below:

a. Design-Builder's proposed Phase 1A Contract Price, this amount being the lump sum, fixed price (including all costs, overhead and profit) amount (included in Article 7 of the Agreement) is _____dollars ($_____), which must include an Allowance Item for pilot testing, as described in Section 2.3.5 of Exhibit C, at the Allowance Value of $600,000; and

b. Design-Builder's proposed General Conditions Percent, expressed as a percentage of the Cost of the Work, for all Phase 2 Services is _____ percent (___%); and

c. Design-Builder's proposed fee, expressed as a percentage of the Cost of the Work, for all Phase 2 Services is _____ percent (___%).

Design-Builder shall provide labor staff categories and associate labor rates used to develop the Phase 1A Contract Price and shall provide the total labor hours for Key Personnel for Phase 1A Services.

Design-Builder must include its preliminary estimate for Phase 1B Services as a lump sum, fixed price (including all costs, overhead and profit) amount. Include such preliminary estimate for Phase 1B Services in the sealed envelope with this Fee and Rate Proposal, as provided in Section 5.3.7 of the RFP.

The Design-Builder understands that the Owner reserves the right, in its sole discretion, to reject any or all proposals and to waive any technicalities or informalities.

The Design-Builder agrees that this Proposal may not be withdrawn for a period of one hundred twenty (120) calendar days after the date and time fixed for receiving said Proposals.

The undersigned Design-Builder agrees that if it is notified of the acceptance of this Proposal, via Notice of Award or otherwise, within one hundred twenty (120) calendar days after the date and time fixed for receiving said Proposals, the undersigned Design-Builder will execute, within three (3) business days of the date of the notice, the Agreement.

By submission of the Proposal, Design-Builder represents and warrants that:

(a) Design-Builder has read and understands the RFP and all attachments and appendices thereto and

this Proposal is made in accordance therewith;

(b) Design-Builder has read and understands the Agreement;

Design-Builder has visited, examined, and inspected the Site of the Project, obtained first-hand knowledge of existing conditions; and

(c) all facts stated in the Proposal are true and correct.

By submission of this Proposal, the Design-Builder certifies that this Proposal has been derived independently, without consultation, communication, or agreement as to any matter relating to this Proposal with any other design-builder, proposer, or any competitor. The Design-Builder hereby certifies that this Proposal is made without prior understanding, agreement or connection with any corporation, firm or person submitting a proposal for the same Project and is in all respects fair and without collusion or fraud. Included as part of the Proposal is the Bid Bond, Design-Builder's Affidavit of Noncollusion, and the Subcontractor's Affidavit of Noncollusion, all in the form, manner, and number required by the RFP and applicable laws. The Design-Builder agrees to abide by all conditions of the RFP.

Respectfully submitted,

_____
[typed name of Design-Builder]

By: _____[seal]
[signature]

_____
[typed name and title]

_____
[address of Design-Builder]

(_____)_____
[business telephone number]

_____
[date of execution]

END OF FORM

Attachment F
WIFIA Compliance Notice

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ATTACHMENT F:
WIFIA Procurement Compliance Notice

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246) located at 41 C.F.R. § 60-4.2:

1. Proposers' attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the selected Design-Builder's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation in each trade
	21.2%	6.9%

These goals are applicable to all the selected Design-Builder's construction work (whether or not it is federal or federally assisted) performed in the covered area. If the selected Design-Builder performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the selected Design-Builder also is subject to the goals for both its federally involved and non-federally involved construction.

The selected Design-Builder's compliance with the Executive Order and the regulations in 41 C.F.R. part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 C.F.R. § 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the selected Design-Builder shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the selected Design-Builder's goals shall be a violation of the contract, the Executive Order and the regulations in 41 C.F.R. part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The selected Design-Builder shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is Clayton County, Georgia.

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Attachment G
Proposal Submission Package Label

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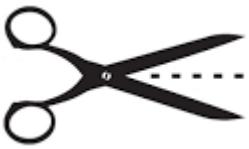
PACKAGE LABEL

Please use below label to properly mark your bid package, which will help route it to the proper location timely.



DELIVER TO: **CLAYTON COUNTY WATER AUTHORITY**
1600 Battle Creek Road
Morrow, GA 30260

***Attention:* PROCUREMENT**

Advanced Water Treatment and Capacity Upgrades

Solicitation ID Number: 2024-WP-11

Due Date and Time: April 12, 2024, at 11:00 a.m. local time

VENDOR NAME: _____

Address: _____

City, State, Zip: _____

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