To:	Susan Grant, Acting City Manager
From:	Alan Dodd, Director – Public Works
Date:	September 17, 2024
Re:	Change Order # 5 for Project #12765 PO 6189

Job Description:	Project #12765, Prospect Lake Clean Water Center
Contractor:	Prospect Lake Water, L.P.
Amount:	Total amount of Change Order # 5 $5,790,004 plus 0 additional days
Funding:	*10-494-7999-536-60-6599-P12765*

The purpose of this Change Order is:

The Project Company performed an Optimal Corrosion Control Treatment (OCCT) study, as part of the work required to obtain the FDEP permit to construct the PLCWC. Change Order #3 under PO 6189 was issued due to the Project Company's analysis of the study which concluded additional and larger equipment was needed to meet the recommended water quality parameters to minimize corrosion in the distribution system.

Change Order No. 5 is to perform a Pipe Loop Test as recommended by the OCCT study. The test will confirm and verify the appropriate corrosion inhibitor type and dose to be used for the PLCWC to minimize the metals released from the distribution piping. The pilot unit and pipe loops will remain with the City and will be used for future testing. The results of the test will assist the City in staying in compliance with federal and state water quality standards

NEW AND EXISTING CONTRACT ITEMS ARE UTILIZED – TOTAL ADDITIVE COST $3,178,772

Item No. 1	New Item #1 – Construction of 54-inch Feedstock Watermain and Project Company Administration Fees Adjust Contact Item – Lump Sum ADDITION $5,790,004

NET AMOUNT OF THIS CHANGE ORDER **$5,790,004**

ADDITIONAL CONTRACT TIME BEING REQUESTED– **ZERO (0) CALENDAR DAYS**

THE TOTAL AMOUNT OF THIS CHANGE ORDER	**$5,790,004**

This change Order provides for all costs and schedule adjustments associated with completing the work, including materials, labor, equipment, bond, insurance, overhead, profit, impacts, and any and all related items or associated costs incurred or resulting from the items listed above, and is provided in accordance with Article VIII – Changes in the Work of the Contract.

IN WITNESS OF THE FOREGOING, the parties have set their hands and seals the day and year first written below.

Prospect Lake Water, L.P.

Approved: _____

Michael Albrecht, President, Prospect Lake Water, L.P.
Print Name and Title

_____
Date

C: Scott Teschky , Division Manager – Engineering
Daniel Fisher, Senior Project Manager
Financial Administrator
Project File

CITY

CITY OF FORT LAUDERDALE, a municipal corporation of the State of Florida.

By:_____
SUSAN GRANT
Acting City Manager

Date: _____

ATTEST:

By:_____
DAVID R. SOLOMAN
City Clerk

(CORPORATE SEAL)

Approved as to legal form and correctness:
Thomas J. Ansbro, City Attorney

By:_____
RHONDA MONTOYA HASAN
Senior Assistant City Attorney

C: Scott Teschky, Division Manager – Engineering
Daniel Fisher, Senior Project Manager
Financial Administrator
Project File

CHANGE ORDER SUMMARY SHEET

ORIGINAL CONTRACT AMOUNT (PO 6189 + 6191)		$411,567,380
COST OF CHANGE ORDERS ON PO 6189 TO DATE		$5,429,261
COST OF THIS CHANGE ORDER		$5,790,004
COST OF CHANGE ORDERS ON PO 6191 TO DATE		$3,431,125
COST OF THIS CHANGE ORDER		$0
	TOTAL:	**$426,217,770**
ORIGINAL CONTRACT TIME		1,278 calendar days
TIME ADDED TO DATE		0 calendar days
TIME ADDED TO THIS CHANGE ORDER		0 calendar days
	TOTAL:	**1,278** calendar days

SCHEDULE OF CHANGE ORDERS TO DATE ON PO 6189

C.O.#	DATE	DESCRIPTION	AMOUNT OF COST OR CREDIT
1	8/23/2023	PFAS	$371,644
2	10/23/2023	Temporary Power for Construction	$445,504
3	12/3/2023	OCCT Construction Updates	$1,336,774
4	8/20/2024	Feedstock Watermain	$3,275,339

SCHEDULE OF CHANGE ORDERS TO DATE ON PO 6191

C.O.#	DATE	DESCRIPTION	AMOUNT OF COST OR CREDIT
1	12/19/2023	Administration and Nano Building	$4,167,756

2	4/9/2024	Administration Building Deduction	$(736,631)

PUBLIC WORKS DEPARTMENT
101 NE 3RD AVENUE, SUITE 2100, FORT LAUDERDALE FL
TELEPHONE (954) 828-5772, FAX (954) 828- 5074
WWW.FORTLAUDERDALE.GOV

March 14, 2024

City of Fort Lauderdale, Florida
101 NE 3rd Avenue Suite 2100, Fort Lauderdale, FL 33301
Attn: City Manager and Public Works Director
Phone: 954-828-5000

With a copy to:

City of Fort Lauderdale, Florida
One East Broward Boulevard Suite 1320, Fort Lauderdale, FL 33301
Attn: City Attorney
Phone: 954-828-5000

VIA ELECTRONIC MAIL

RE: Prospect Lake Clean Water Center Project – City-Initiated Changes

CHANGE PROPOSAL

Reference is hereby made to that certain Comprehensive Agreement, dated as of February 14, 2023 (as amended or otherwise modified from time to time, the "Comprehensive Agreement") between, *inter alia*, Prospect Lake Water, L.P. (the "Project Company" or "we") and the City of Fort Lauderdale, Florida (the "City" or "you"). Except as otherwise expressly provided herein, capitalized terms used and not defined herein shall have the meanings ascribed to such terms in the Comprehensive Agreement, and, if not defined therein, the DB Contract.

We acknowledge that we are in receipt of your Request for Change Proposal RFP 007 dated October 27, 2023 (the "Request for Change Proposal") and, further to our subsequent discussions with you and your consultants, we understand that at this time the City has requested the Project Company to implement those City Changes described in Section 1 (*Description of City Changes*) below. This is a Change Proposal under Section 8.04(a) of the Comprehensive Agreement, which relates to such City Changes. Upon the City's execution and delivery of this Change Proposal (such date, the "Effective Date"), this Change Proposal shall constitute the agreement of the City and the Project Company required by Section 8.02(c) (*City-Initiated Changes*) of the Comprehensive Agreement in respect of such City Changes, this Change Proposal shall become a valid and binding part of the Comprehensive Agreement and all other terms and conditions of the Comprehensive Agreement shall remain in full force and effect, as modified by this Change Proposal.

1. Description of City Changes

In the Request for Change Proposal, you instruct us to prepare a proposal to arrange for the provision from a qualified consultant for the benefit of the City of a pipe loop study to test corrosion control treatment alternatives and evaluate potential start-up strategies for the Project to minimize the potential for release of pipe scales within the City's distribution system.

Attached to this Change Proposal as Annex I is the proposal (the "Pilot Pipe Loop Test Task Order") of Jacobs Engineering Group Inc. ("Qualified Consultant") to perform such pipe loop study in accordance with the scope, timeline and assumptions set out in Sections 2, 4 and 5 thereof (the "Pilot Pipe Loop Test SOW").

The City acknowledges that the Request for Change Proposal arose from the recommendations provided by the optimal corrosion control treatment study prepared by the Qualified Consultant in respect of the Feedstock Water available from the City Wellfield ("OCCT Study"), and the Project Company arranged for the Qualified Consultant to provide the OCCT Study for the benefit of the City. By executing and delivering this proposal, the City further acknowledges and agrees that:

(a) (i) The Pilot Pipe Loop Test SOW shall be fully performed by the Consultant, (ii) the City shall perform the obligations set out in the Pilot Pipe Loop Test SOW as obligations of the City, (iii) the City shall be solely responsible for coordinating the performance of the Pilot Pipe Loop Test SOW directly with the Qualified Consultant and (iv) the deliverables set out in the Pilot Pipe Loop Test Task Order will be provided by Consultant to the City directly;

(b) The sole items of Work required to be provided by the Project Company in connection with this Change Proposal are (i) the engagement of the Qualified Consultant for the benefit of the City and (ii) subject to the prior receipt of funds therefor from the City in accordance with Section 2 below, the payment of the Qualified Consultant's fees, costs and expenses, in each case of (i) and (ii) in accordance with the Pilot Pipe Loop Test Task Order;

(c) Except as set out in preceding clause (b), the Project Company (i) has no obligations and assumes no responsibility or liability in respect of the OCCT Study or the Pilot Pipe Loop Test SOW, including for any inaccuracy or other deficiency in the OCCT Study or the deliverables under the Pilot Pipe Loop Test SOW, and for the Qualified Consultant's lack of performance, or delay in performing, the Pilot Pipe Loop Test SOW, and (ii) shall assume no risk in connection with the findings of the OCCT Study or the Pilot Pipe Loop Test SOW, including any delay to the Completion Deadlines or Extra Work arising from the conclusions and recommendations in any of the deliverables set out in the Pilot Pipe Loop Test Task Order, except to the extent mutually agreed between the City and the Project Company in this Change Proposal or any new Change Proposal;

(d) The City acknowledges the City has requested the Project Company to retain the Qualified Consultant for the benefit of the City with knowledge of the risks involved (including those risks described in preceding paragraph (c)), and *the City hereby* (i) agrees to accept and assume all such risks and (ii) *waives and releases any and all claims, now known or hereafter known, against the Project Company arising out of or attributable to the OCCT Study or the Pilot Pipe Loop Test SOW*;

(e) The Pilot Pipe Loop Test Task Order provides for certain rights of the City, as a third-party beneficiary of the Pilot Pipe Loop Test Task Order, in connection with the Qualified Consultant's performance of the Pilot Pipe Loop Test SOW and the OCCT Study (the "City Rights"); and

(f) In the event of any inaccuracies or deficiencies in the OCCT Study or the Qualified Consultant's performance, or breach, of the Pilot Pipe Loop Test SOW, the City may elect to enforce the City Rights against the Qualified Consultant directly, and the City shall not have any right to pursue any remedies against the Project Company, whether under the Comprehensive Agreement, in law, equity or otherwise.[1]

[1] **Note to City:** The exemption of Project Company liability in respect of the OCCT Study used to be set out in Section 8.01(c)(iii) of the Comprehensive Agreement, but this Section was removed from the Comprehensive Agreement after implementation of the Required Scope Work.

2. Description of the Impact on the Project of the Requested City Changes

a. Extra Work Costs

The Extra Work Costs associated with the Project Company arranging for the performance of the Pilot Pipe Loop Test SOW by the Qualified Consultant (the "Pilot Pipe Loop Test Extra Work Costs") shall consist of: (a) the Qualified Consultant's costs in an amount not to exceed **$5,467,652**, a breakdown of, and backup for, which are set out in Annex II, (b) the DB Contractor's costs in an amount not to exceed **$147,352**, which shall account for the costs of time and materials actually expended by DB Contractor in supporting the delivery by the Qualified Consultant of the Pilot Pipe Loop Test SOW, a breakdown of, and backup for, which are set out in Annex III, and (c) the Project Company's administrative costs in the amount of **$175,000**.

The Project Company will invoice the City for the Pilot Pipe Loop Test Extra Work Costs in accordance with Section 10.04(a)(iv) (*Availability Payment Impacts; Monetary Compensation*) of the Comprehensive Agreement.

b. Completion Deadlines

No changes to the Scheduled Commercial Operation Date or the Commercial Operation Longstop Date are proposed in connection with Project Company's arranging for the performance of the Pilot Pipe Loop Test SOW by the Qualified Consultant.

[*Signature Page Follows*]

Very truly yours,

PROSPECT LAKE WATER, L.P.

By: _____

Name: Michael Albrecht
Title: President
Date: March 18, 2024

Accepted and agreed:

CITY OF FORT LAUDERDALE

By: _____

Name:
Title:
Date:

]

Annex I
Task Order No. 3: Phase 2 OCCT Study – Bench Immersion and Pilot Pipe Loop Testing

[*Attached*.]

Annex II
Qualified Consultant's Pilot Pipe Loop Test Extra Work Costs Backup

[*Attached*.]

Annex III
DB Contractor's Pilot Pipe Loop Test Extra Work Costs Backup

[*Attached*.]

TASK ORDER

Effective Date March 18, 2024 Task Order No. 3

Project Company Project No. _____ Consultant Project No. _____

This Task Order No. 1 (this "Task Order") is entered into on the date first written above pursuant to that certain Master Agreement for Professional Services" dated July 17, 2023 (the "Agreement") between Prospect Lake Water, L.P. ("Project Company") and Jacobs Engineering Group Inc. ("Consultant"). The Agreement is incorporated herein and forms an integral part of this Task Order. However, in case of conflict between the Agreement and this Task Order, the terms of this Task Order shall control.

Services Authorized

Project Company authorizes Consultant to perform the services described in Appendix 1 attached hereto and incorporated herein, which Appendix 1 is marked with the above noted Task Order No. and consists of 15 pages.

Pricing

____X____ Time and Expense per Article 2 of the Agreement and Table 1 of this Task Order.

_____ Firm Fixed Price of $_____.

_____ Other (Describe):

Schedule

Services may commence on _____March 18, 2024_____.

Services will cease by _____December 31, 2026_____.

Other

PROSPECT LAKE WATER, L.P.

By: _____

JACOBS ENGINEERING GROUP INC.

By: _____

Vice President

Task Order No. #3

Professional Services for Phase 2 Optimal Corrosion Control Treatment (OCCT) Study – Bench-Scale Immersion and Pilot-Scale Pipe Loop Testing

The City of Fort Lauderdale (the "City") requested Prospect Lake Water, L.P (the "Project Company" or "PC"), in accordance with Section 8.02 (*City-Initiated Changes*) of the Comprehensive Agreement, dated as of February 14, 2023, between the City and the Project Company, to arrange for the procurement of a qualified consultant acceptable to the City to complete the scope of work described herein (the "Pilot Pipe Loop Test SOW"). Jacobs Engineering Group Inc. (the "Consultant") is pleased to provide the professional consultancy services described herein for the benefit of the City, in accordance with the terms and conditions of the Master Agreement for Professional Services between Prospect Lake Water, L.P. and Jacobs Engineering Group Inc., executed on July 17, 2023 (the "Contract"), and this Task Order No. 3 (this "Task Order").

This Task Order was developed as a response to RFP 007 issued by Hazen and Sawyer on behalf of the City, dated October 27, 2023 ("RFP 007"). This Task Order comprises all the work required to be completed by a qualified consultant under RFP 007.

Under RFP 007, the City requests the completion of follow-up work, including pipe loop testing, related to the optimal corrosion control treatment (OCCT) study prepared by Consultant in respect of the Feedstock Water (as defined in the Comprehensive Agreement) available from the City Wellfield (as defined in the Comprehensive Agreement) (the "OCCT Study"). Consultant prepared the OCCT Study for the sole benefit of the City under the terms of that certain Master Agreement for PM/CM and Other Professional Services, dated January 24, 2023, among the Project Company, Consultant, Ridgewood Infrastructure and IDE Americas, Inc. (the "Initial Contract"), as supplemented by Task Order No. #1 'Professional Services for Testing and Evaluation of the Prospect Wellfield and Corrosion Control Study', dated January 24, 2023, executed between the Project Company and Consultant under the Initial Contract (the "OCCT Task Order").

1. PROJECT BACKGROUND

In February 2023, the City executed the Comprehensive Agreement with PC for the equity financing, design, construction, and operation of a new 50 million gallon per day (mgd) Water Treatment Plant ("WTP") to be located at City's Prospect Lake wellfield site to replace the aging lime softening Fiveash WTP. The new Prospect Lake WTP includes state-of-the-art nanofiltration ("NF") and ion exchange ("IX") treatment processes.

Per the OCCT Task Order, PC, on behalf and for the benefit of the City, contracted Consultant to evaluate historical finished and distribution water quality, assess the City's distribution system, and develop the OCCT Study for the treatment change from lime softening at the Fiveash WTP to membrane softening and IX treatment at the Prospect Lake WTP. The final deliverable of the OCCT Study, including recommendations for optimal finished water quality, was issued to the City and the City's representatives, and accepted by the City on October 17, 2023.

In addition, Consultant recommended pilot pipe loop testing to validate the proposed optimal finished water quality ranges and verify the following:

- Confirm that the treatment change from Fiveash WTP to Prospect Lake WTP does not destabilize internal pipe scales and increase metal release, particularly lead, copper and iron in the finished water within the distribution system. This covers the current Prospect Lake WTP design with 70% NF and 30% IX treatment and will evaluate shifting treatment to a greater percentage of NF (as

specified in Subtask 4.2 under Section 2 (*Scope of Services*) below) to confirm operational flexibility with the treatment processes is considered.

- Identify the maximum chloride levels, and therefore, the calcium chloride dose limit before the Larson Ratio ("LR") and Chloride to the Sulfate Mass Ratio ("CMSR") may adversely affect metal corrosion within the system.
- Determine the best corrosion inhibitor type, formulation and target dose.
- Evaluate the effect of water blending on metal release where water from the Prospect Lake and Peele-Dixie WTPs interface in the distribution system.
- Develop effective corrosion control strategies when water production is transitioned from Fiveash WTP to Prospect Lake WTP and in areas in the distribution system with water blending from the Peele Dixie WTP and Prospect Lake WTP.

Under the United States Environmental Protection Agency ("USEPA") Lead and Copper Rule ("LCR") published in 1991, its subsequent December 2021 Lead and Copper Rule Revision ("LCRR") and upcoming Lead and Copper Rule Improvements ("LCRI"), the City is required to implement an effective OCCT strategy, while continuing to meet other regulatory and non-regulatory water quality requirements. As defined by USEPA in 40 C.F.R. § 141.2, an OCCT minimizes lead and copper concentrations at users' taps while ensuring that the treatment does not cause the water system to violate any national primary or exceed secondary drinking water regulations. Common sources of lead and copper in drinking water are water service lines and premise plumbing, including lead goosenecks, brass fittings and lead solder. The City is investigating service line materials under a separate task order with another consulting firm. Consultant will utilize the results of such service line investigation to the extent possible to confirm the status of lead in the City's distribution system and support pipe harvesting by the City for use in the OCCT pilot study.

The scope of services is described below with the proposed deliverable schedule and compensation presented later in this document.

2. SCOPE OF SERVICES

Consultant will provide professional engineering services to assist the City with the Phase 2 OCCT Pilot Pipe Loop Study as follows:

- Task 1 – Project Quality and Management
- Task 2 – Consecutive Systems Assessment and Water Quality Modeling
- Task 3 – Bench-Scale Testing
- Task 4 – Pilot-Scale Testing
- Task 5 – Final Report

These tasks are detailed below.

Task 1 – Project Quality and Management

Consultant will manage the delivery of the project technical services and work products to meet the schedule and budget as outlined below. Consultant will develop a project execution plan for the project delivery and will make updates to that during the execution of the work to reflect revisions to the schedule and scope. Project instructions addressed include the following:

- Detailed scope of services and project deliverables

- Task assignments and budgets; project schedule
- Communication, health and safety and quality management plans

Upon Consultant's receipt from Project Company of the notice to proceed ("NTP") provided by the City, Consultant will coordinate with the City to commence the work hereunder and prepare and hold a project kick off meeting with the City to discuss the project execution plan, including staffing plans, performance schedule and sequence of deliverables. Prior to the kickoff meeting, Consultant will provide the City with a written list of the information that the City will make available to Consultant at the kickoff meeting. This includes historic lead and copper sampling results from consecutive systems and information on pipeline materials in the distribution system for selecting pipes to be harvested.

Consultant will maintain communication with the City through regular project progress meetings, telephone calls, and emails. In addition, Consultant will submit project activity reports to the City simultaneously with Consultant's submission of each monthly invoice to the Project Company. Consultant will conduct quality assurance and quality control ("QA/QC") reviews of the project deliverables, including report submittals and review completed work at project milestones.

Task 1 Deliverables

- List of requested information
- Project Execution Plan
- Monthly progress reports with invoices
- Kickoff, progress and meeting agendas, handouts, and summaries
- QA/QC sheets of deliverables

Task 2 – Consecutive Systems Assessment and Water Quality Modeling

Consultant will conduct on-site distribution water quality assessment in several portions of consecutive distribution systems to characterize existing scales in the distribution lines. During the OCCT Study the water quality assessment was limited to the City's distribution system, but under this Task Order the assessment will be extended to consecutive systems, as requested by the City. The consecutive systems include Wilton Manors, Oakland Park, Sea Ranch Lakes, Lauderdale-by-the-Sea, Davie, Dania Beach, Port Everglades Authority, North Lauderdale, Lauderhill as well as portions of East Tamarac and unincorporated Broward County.

Consultant will collect and review historic LCR compliance sampling for these consecutive systems, as well as pipe age and pipe materials used in the distribution system for mains, service lines and premises plumbing. Consultant will provide an assessment testing plan and sampling protocols for the consecutive systems based on the documents from the OCCT Study.

The estimated number of sample locations in the consecutive systems is around 24 total or 2 to 3 per consecutive system, divided into: at the distribution system Point of Entry (POE): 2; in areas with older pipe (i.e., asbestos cement pipes, iron-based pipes): 5; dead-end(s): 4; areas of discolored water and odor complaints: 4; areas with the most common pipe material: 4; and areas of low and high water age: 5.

For each of these locations, Consultant will take low and high flow water samples on which Consultant will perform a standard water quality analysis including pH, temperature, oxidation reduction potential (ORP), conductivity, turbidity, color, alkalinity, total iron, sulfate, calcium hardness, dissolved calcium hardness, orthophosphate, total phosphate, nitrite, free ammonia, total chlorine, free chlorine, total dissolved solids (TDS), total manganese and total aluminum.

Consultant will perform, on up to five of the above samples, a detailed water quality and metals analysis, including mercury, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, selenium and thallium. [Due to limitations of available service line material types and ability to harvest water mains and

service lines, pipe scale analysis is not recommended at this time and may be considered as service line materials such as lead or galvanized iron requiring replacement are identified from parallel efforts.

Consultant will organize the data collected during the system assessment and compare such data to data from the OCCT Study technical memorandum ("TM") to identify potential water quality constraints for corrosion control treatment alternatives that may impact regulatory requirements including modification of pH and alkalinity ranges, and addition of corrosion control chemicals such as orthophosphate or ortho/polyphosphate blends.

This assessment will incorporate the latest information on projected finished water quality covering final blend ratio between NF and IX and membrane selection and final pre- and post- chemical treatment strategies and water quality data from PC's short-term pilot, which is being performed by PC's design-build contractor for purposes of membrane selection. The assessment will also include review of Pourbaix charts and solubility curves of metals found in the system.

Consultant will document the system assessment and water quality modeling results in a draft Consecutive Systems Assessment and Water Quality Modeling TM. Consultant will organize a review meeting with the City to discuss the draft TM. Consultant will prepare a meeting summary to document the conclusions and actions of the meeting. Consultant will incorporate the comments made by the City into the final version of the TM.

Task 2 Deliverables

- Draft Consecutive Systems Assessment and Water Quality Modeling TM
- Final Consecutive Systems Assessment and Water Quality Modeling TM

Task 3 – Bench-Scale Testing

The intent of the bench-scale testing is to narrow down the number of variables for the pilot-scale pipe loop testing. The "immersion test method" will be used per the Lead and Copper Corrosion Bench-Scale Testing Guidance Manual of the Colorado Department of Public Health and Environment, April 26, 2019 (Hazen).

Consultant will arrange for the tests to be performed by an offsite third-party laboratory, either Virginia Polytechnic Institute and State University or University of Colorado-Boulder. Raw water from the Prospect Wellfield, ion exchange water and membrane treated water, if available, will be shipped by Consultant to the third-party laboratory and will be modified to simulate the finished water quality produced by the Prospect Lake WTP under various treatment assumptions. This modified water will be used for testing. Also, finished waters from Fiveash and Peele Dixie WTPs will be shipped by Consultant to the third-party laboratory.

Consultant will develop a Bench-Scale Test Plan for the City's input and approval. The plan will confirm the immersion option, either immerse coupons in jars or fill pipe sections with water. Consultant will organize a review meeting with the City to discuss the draft Plan. Consultant will prepare a meeting summary to document the conclusions and actions of the meeting. Consultant will incorporate the comments made by the City into the final version of the Plan.

The Bench-Scale Test Plan will refine the OCCT alternatives to be tested, select coupon material, provide the design, installation, startup and field operational guidelines (e.g., batch water formulation, chemical dosing), recommend test apparatus maintenance requirements, and provide procedures for water sampling and analyses. The Bench-Scale Test Plan will include installation sketches for the test apparatus and will cover location of source water, treatment procedures to create different feed water qualities and disposal methods. The Bench-Scale Test Plan will also address apparatus functional test and startup requirements.

Consultant will test up to 23 feed water conditions, including control/baseline conditions for Fiveash and Peele Dixie finished waters. This initial estimate was based on the following assumptions:

- 9 finished water quality conditions covering three different blends, including 70%NF/30%IX, 100%NF/0%IX and one blend in between, with ambient and elevated CSMR and LR values; two baseline conditions from Fiveash and Peele Dixie, as control jars; and one condition that iterates between Peele Dixie and Prospect Lake finished water to reflect the blending in the distribution system. The CSMR and LR values will be varied with calcium chloride. As part of developing the Bench-Scale Test Plan, the City will confirm finished water blend ratios.
- 3 corrosion inhibitor formulations / blends for each finished water quality condition, including a similar blend as currently used at Peele Dixie (80%ortho/20% poly blend), a 100% zinc orthophosphate and a 100% orthophosphate. It is assumed that all tests use the same orthophosphate dose for a relative comparison. As part of developing the Bench-Scale Test Plan, the City will confirm corrosion inhibitor blend ratios.

Consultant will test 4 pipeline materials in triplicate per test covering lead, copper with lead solder, cast iron, and galvanized iron. As mentioned, Consultant will develop a Bench-Scale Test Plan and that may adjust the initial estimate of feed water quality conditions, corrosion inhibitor formulations and pipeline materials. Cast iron is included to provide additional information on discolored water issues associated with the change. The pipeline materials will be new and will be purchased by Consultant as part of this Task Order.

During the bench-scale tests, Consultant will not review and optimize the corrosion inhibitor dose or evaluate options for optimizing the transition from Fiveash to Prospect WTP. Consultant will assess these variables in the follow-up pilot-scale pipe loop tests.

The bench-scale tests will include a 4-week conditioning phase and a 12-week testing phase, which Consultant considers to be a conservative estimate.

Consultant has developed an initial estimate in terms of number of samples and analytics. Consultant will take water quality samples from a maximum of 276 immersion testing jars per week, based on 23 waters to be tested, of which two are control (7 filtrates x 3 corrosion formulations + 2 control), 4 pipeline metals and performing water quality tests in triplicate, as indicated above (23 waters x 4 materials x 3 triplicate). Consultant will collect weekly composite samples for each test specimen (lead, dissolved lead, copper, dissolved copper, iron, dissolved iron, manganese and aluminum). Consultant will test for iron, manganese and aluminum due to the presence of iron water mains in the City's distribution system and the ability of manganese to accumulate in iron pipes. Changes in water quality can impact iron and manganese speciation, solubility, and release into bulk water.

Consultant will perform immersion testing water changes three times per week, resulting in stagnation periods of 48 to 72 hours. Consultant will measure the water quality for each change with available local instruments and through third-party laboratory covering multiple analytes (pH, temperature, ORP, conductivity, alkalinity, nitrite, free ammonia, total and free chlorine, orthophosphate, total phosphate, total hardness, calcium and dissolved calcium, TDS, sulfate, chloride, total manganese and total aluminum). As part of developing the Bench-Scale Test Plan, Consultant will confirm the sampling methods and analytics.

The intent of the bench-scale tests is to narrow down the number of variables for the pilot-scale pipe loop testing to one or two baseline conditions, two or three finished water quality conditions, two corrosion inhibitor formulations/dosages (one for each blend) and one CSMR and LR value. As mentioned above, additional variables during pilot testing will include the corrosion inhibitor dose and transition options.

Consultant will conduct quality control review of data collected and prepare periodic summaries for the City's review. Consultant will organize regular monthly progress meetings through Teams to provide the

City with an update on the testing. Consultant will share performance information from the bench-scale tests during the meeting.

Consultant will summarize the results of the tests in a draft Bench-Scale Test TM. Consultant will organize a review meeting with the City to discuss the draft TM. Consultant will prepare a meeting summary to document the conclusions and actions of the meeting. Consultant will incorporate the comments made by the City into the final version of the TM.

Task 3 Deliverables

- Draft Bench-Scale Test Plan, including installation sketches for the bench-scale test apparatus, piping and instrumentation diagrams, layout & isometric drawings and sampling methods
- Final Bench-Scale Test Plan
- Draft Bench-Scale Test TM summarizing test results and recommendations for pipe loop testing
- Final Bench-Scale Test TM

Task 4 – Pilot-Scale Testing

Following the bench-scale testing, Consultant will perform pilot-scale pipe loop testing. Information gathered and conclusions made by Consultant during the bench-scale testing will be used by Consultant to develop the pilot-scale Pipe Loop Testing Plan. This plan cannot be fully defined yet, and Consultant has made assumptions based on Consultant's experience to develop the scope description below. Consultant considers the pipe loop conditioning and test durations, as well as number of pipe loops and pipeline materials to be tested, to be conservative estimates.

The "Flow-Through Pipe Loop test method" will be used per the Lead and Copper Corrosion Bench-Scale Testing Guidance Manual of the Colorado Department of Public Health and Environment, April 26, 2019 (Hazen).

Pipe loop testing involves the following sub-tasks:

- Subtask 4.1 – Pipe Harvesting Assistance
- Subtask 4.2 – Design and Construction of Pipe Loop Apparatus
- Subtask 4.3 – Water Sampling, Data Analysis and Pipe Loop Report

The subtasks are described in more detail below.

Subtask 4.1 – Pipe Harvesting Assistance

Most materials for the pipe loop apparatus will be new and purchased by Consultant as part of this Task Order. In addition, Consultant will obtain materials from the bench-scale tests from the offsite third-party laboratory for use in the pipe loop apparatus. If pipeline materials from the City's water distribution system are known by that time and can be made available by the City to Consultant, some pipes may be harvested by the City (or the City's designated contractor) for installation by Consultant in the pipe loop apparatus. Consultant will coordinate this effort with City and its LCRR compliance consulting firm.

Consultant will develop a Pipe Harvesting Plan for the City's input. Consultant will work with the City to develop criteria for selecting harvested pipes in the system and bench-scale materials, including but not limited to pipe material of construction, pipe location, water age, and customer water use pattern. The Pipe Harvesting Plan will address how to preserve the pipe material's condition during removal; recording in-situ field information; and instructions for loading, transport, and installation in the test apparatus. The Pipe Harvesting Plan will also cover pre-harvesting water quality sampling procedures and analytical methods to determine how the harvesting location and overall distribution system water quality compare to anticipated pipe loop test conditions.

Consultant will develop the Pipe Harvesting Plan and share with the City for review. Consultant will organize a review meeting with the City to discuss the draft Harvesting Plan. Consultant will prepare a meeting summary to document the conclusions and actions of the meeting. Consultant will incorporate the comments made by the City into the final version of the Plan.

Pre-harvesting water quality sampling will be conducted by Consultant. Customer coordination for sampling access will be coordinated by City. Pre-harvesting water quality results of pipe loops will be summarized by Consultant and provided to the City. Consultant will not perform pre-harvesting testing for the bench-scale materials as water quality information is available from the bench-scale testing.

Consultant will observe pipe harvesting and replacement pipe installation, perform associated pre-harvesting sampling and coordinate water quality analyses. City will harvest the pipes and install replacement pipes. Pre-harvesting water quality analyses by the offsite laboratory will be managed and paid for by Consultant. City will transport the harvested pipes to the pilot location for installation by Consultant into the pipe loop apparatus.

Subtask 4.1 Deliverables

- Pipe Harvesting Plan, field documentation forms and pre-harvesting water quality sampling plan
- Pre-harvesting water quality results summary

Subtask 4.2 – Design and Construction of Pilot Plant and Pipe Loop Apparatus

Consultant will develop a Pipe Loop Test Plan for the City's input. The Pipe Loop Test Plan will refine the OCCT alternatives to be tested, select pipe loop materials, provide the design, installation, startup and field operational guidelines (e.g., flow, pressure, chemical feed rates), recommend test apparatus maintenance, and provide procedures for water sampling and analyses. This Pipe Loop Test Plan includes installation sketches for the pipe loop test apparatus, bill of materials, covers location of source water and disposal methods, and addresses apparatus functional test and startup requirements.

Consultant will organize a review meeting with the City to discuss the draft Pipe Loop Test Plan. Consultant will prepare a meeting summary to document the conclusions and actions of the meeting. Consultant will incorporate the comments made by the City into the final version of the Plan.

Consultant will use treated water from Fiveash WTP, obtained from a close-by fire hydrant, for conditioning the pipe loops for approximately six months or until water quality parameters stabilize (pH, turbidity, lead, iron, etc.), whichever happens first. Consultant will derive water for the testing period following conditioning from the Consultant's pilot systems, for the remainder of the study. The pilot systems will provide NF permeate and IX treated waters. Prior to transitioning to the testing phase, Consultant will validate steady state water quality conditions for approximately 2 weeks.

Consultant will provide, install and startup the pilot treatment system covering membrane treatment, sand filtration and ion exchange, intermediate storage, transfer pumping, chemical pre- and post-treatment, degasification, disinfection and conditioning. Consultant will also provide multiple chemical systems to dose the target chemical dosages in each pipe loop module.

The pipe loop apparatus will be located in an existing building provided by the City at the Prospect Wellfield. Consultant will coordinate with the City and the City will provide raw water, electricity, drainage water, remote access, building mechanical and plumbing. The City will provide raw water and electricity up to the building, and drainage water will be transferred by Consultant pilot system to the City provided waste pipe connecting to a near-by lift station or alternative location.

Consultant anticipates testing up to 6 pilot-scale pipe loop modules based on the following assumptions:

- 1 baseline condition with Fiveash finished/distribution water quality.

- 1 condition iterating between Peele Dixie (from pilot equipment) and Prospect Lake (with 70%NF/30%IX) finished water to reflect the blending in the distribution system.
- 2 finished water qualities (selected from bench-scale testing; either 70%NF/30%IX blend, 90%NF/10%IX blend with low calcium chloride dose or 90%NF/10%IX blend with high calcium chloride dose).
- 2 orthophosphate dose rates, covering a low or high dose (for instance 0.4 mg/L or 1.0 mg/L orthophosphate as PO_4-P) of the preferred corrosion inhibitor formulation/blend for each of the above finished water qualities (selected from bench-scale testing; either 80%ortho/20% poly blend, 100% zinc orthophosphate or 100% orthophosphate). The pipe loop testing will not look at different vendors for the same corrosion inhibitor formulation/blend.

Each pipe loop module will contain up to 3 pipeline materials in triplicate (selected from the bench-scale testing: lead, copper with lead solder and possibly another worst performing pipeline material). Consultant will also subject the pipe loop modules to transition strategies from Fiveash to Prospect Lake WTP. Consultant will do so with available pipe loop modules at the end of the pilot study and may include (1) stepwise transition of pH, alkalinity and hardness, (2) orthophosphate dose ahead of transition, and/or (3) high orthophosphate dose during transition.

In the Pipe Loop Test Plan referenced before, Consultant may adjust the initial estimate of the number of pipe loops and pipeline material selections as presented above. As mentioned before, the details of the Pipe Loop Test Plan depend on the results of the bench-scale testing and will be finalized by Consultant once that information is available.

Consultant will assemble the pilot equipment and pipe loop apparatus. Prior to adding materials, Consultant will conduct functional testing to confirm it is ready for pipe installation and subsequent conditioning. Consultant will install harvested pipes into the pipe loop apparatus within 48 hours of harvesting.

Subt***ask 4.2 Deliverables***

- Draft Pipe Loop Test Plan, including water sampling standard operating procedures, technical specification and safety data sheets, preliminary installation sketches for test apparatus, covering piping and instrumentation diagrams, layout and isometric drawings.
- Final Pipe Loop Test Plan

Subtask 4.3 – Water Sampling, Data Analysis and Pipe Loop Report

Consultant will operate the additional pilot equipment systems and pipe loop test apparatus, sample for water quality, provide water quality analysis, manage data collection and organization, and keep track performance in tables and graphics. Two full-time onsite staff members will operate and maintain the treatment systems and pipe loop test apparatus for 78 weeks. Consultant will conduct water quality sampling and analysis events based on the sampling schedule included in the Pipe Loop Test Plan covering parameters measured onsite using field equipment, and parameters analyzed by the offsite certified laboratory. Data received from the offsite laboratory will be in electronic format and may require a 3-to-4-week turnaround time from the sampling date.

The tests will include a 26-week conditioning phase and a 52-week testing phase.

Consultant developed a preliminary estimate for the number of samples and analytics. Consultant will take stagnant water quality samples from each pipe segment on each pipe loop module per week based on 6 pipe loop modules having each 9 materials (three materials in triplicate). Consultant will take flowing water quality samples once a week from each set of materials segment for each pipe loop. A comprehensive list of analytes will include pH, temperature, ORP, conductivity, alkalinity, nitrite, free ammonia, total and free chlorine, orthophosphate, total hardness, calcium and dissolved calcium, TDS,

sulfate, chloride, total manganese, total aluminum, lead, dissolved lead, copper, dissolved copper, iron, and dissolved iron. Consultant will include in the Pipe Loop Test Plan details of the frequency and location of the analyte collection.

Consultant will conduct quality control review of data collected and prepare periodic summaries for the City's review. Consultant will coordinate and pay for water quality analyses conducted in the field and by the offsite laboratory. Consultant will hold monthly progress meetings through Teams with the City to review test data, discuss results and operations, and troubleshoot issues as needed. Consultant will share and document in meeting summaries performance information from the pilot-scale tests.

Consultant will summarize the results of the pipe loop tests in a draft Pipe Loop Test TM. Consultant will organize a review meeting with the City to discuss the draft TM. Consultant will prepare a meeting summary to document the conclusions and actions of the meeting. Consultant will incorporate the comments made by the City into the final version of the TM.

Subtask 4.3 Deliverables

- Draft Pipe Loop Test TM providing a description of the summarizing the pipe loop tests and issues/comment log and presenting the results.
- Final Pipe Loop Test TM.

Task 5 – Phase 2 OCCT Report

Consultant will prepare for review by the City a draft Phase 2 OCCT Report to summarize the findings from the consecutive systems assessment, water quality modeling, bench-scale testing, and pilot-scale pipe loop testing and provide conclusions and recommendations for OCCT strategy, and specifically on the impact of the source water change on lead release. Consultant will insert the TMs developed under the previous tasks as chapters in the report and add an executive summary.

Consultant will hold a review meeting with the City to present the findings and conclusions and discuss review comments by the City on the draft Phase 2 OCCT Report. Subsequently, Consultant will also facilitate a meeting with the FDEP to discuss the draft Phase 2 OCCT Report and present findings and recommendations and agree on the format of the submission documents for the final Phase 2 OCCT Report. Depending on timing and progress, if necessary to assist with meeting the Prospect Lake WTP substantial completion by September 26, 2026, the submission of the OCCT Report to the FDEP will be based on an interim OCCT report.

Consultant will incorporate the review comments and FDEP's feedback in the final Phase 2 OCCT Report for submission to the City. Consultant will finalize the submission of the final Phase 2 OCCT Report including cover letter to the FDEP and respond to one Request for Additional Information (RAIs).

Task 5 Deliverables

- Draft Phase 2 OCCT Report
- Final Phase 2 OCCT Report
- OCCT submission documents for the FDEP and response to RAIs.

3. BASIS OF COMPENSATION:

For the Pilot Pipe Loop Test SOW, the Consultant will be compensated on a time and materials basis, in accordance with the Contract. The not-to-exceed fee for the Pilot Pipe Loop Test SOW is $5,467,652, as summarized below.

Task/SubTask	Hours	Labor	Expense	T&M Estimated Costs
Task 1 – Project Quality and Management	2,212	$370,720	$2,502	$373,222
Task 2 – Consecutive System Assessment and Water Q	*392*	$61,780	$16,934	$78,714
Task 3 – Bench-Scale Testing	412	$80,860	$372,491	$453,351
Task 4 – Pilot-Scale Testing	12,308	$1,835,755	$2,575,180	$4,410,935
SubTask 4.1 Pipe Harvesting	*312*	*$45,840*	*$21,449*	*$67,289*
SubTask 4.2 Design, Construct Pipe Loop				
Pilot planning	544	$97,140	$1,315	$98,455
Procure / install pipe loop pilot equipment	356	$65,968	$836,162	$902,130
Procure / install post treatment pilot equipment	78	$14,444	$180,997	$195,441
Procure / install NF/IX pilot equipment	168	$31,108	$389,808	$420,916
SubTask 4.2 Total	*1,146*	*$208,660*	*$1,408,283*	*$1,616,943*
SubTask 4.3 Operate Pilot, WQ, Report				
Operate pipe loop pilot	1,968	$331,280	$19,775	$351,055
Operate post-treatment pilot equipment	903	137,744	4,650	$142,394
Operate NF/IX Pilot	1,945	296,656	10,015	$306,671
Pipe loop WQ analysis	5,082	$636,095	$1,109,008	$1,745,103
Pilot Progress and Pipe Loop TM	952	179,480	2,000	$181,480
SubTask 4.3 Total	*10,850*	*$1,581,255*	*$1,145,448*	*$2,726,703*
Task 5 – Phase 2 OCCT Report	732	$144,360	$7,070	$151,430
Project Total	**16,056**	**$2,493,475**	**$2,974,177**	**$5,467,652**

4. TIME OF PERFORMANCE

The Consultant will complete tasks on the Pilot Pipe Loop Test SOW according to the following schedule of execution of this Task Order. Consultant may revise this schedule depending on availability of information and reviews by the City as well as conditions encountered during testing.

Task	Deliverable	Time from NTP
Task 1 – Project Quality and Management	List of requested information Kickoff meeting summary	2 weeks 3 weeks
	Progress meeting summaries Monthly progress reports and invoices QA/QC sheets of deliverables	As required
Task 2 – Consecutive Systems Assessment and Water Quality Modeling	Draft Consecutive Systems Assessment TM	8 weeks
	Final TM	12 weeks
Task 3 – Bench-Scale Testing	Draft Bench-Scale Test Plan	4 weeks
	Final Bench-Scale Test Plan	6 weeks
	Start Bench-Scale testing	6 weeks
	Finish Bench-Scale testing	22 weeks
	Draft Bench-Scale Test TM	26 weeks
	Final Bench-Scale Test TM.	30 weeks
Task 4 – Pilot-Scale Testing		
Subtask 4.1 – Pipe Harvesting Assistance	Pipe harvesting procedures plan	12 weeks
	Pre-harvesting water quality results summary	16 weeks
Subtask 4.2 – Design and Construction Pipe Loop Apparatus	Draft Pipe Loop Test Plan	8 weeks
	Final Pipe Loop Test Plan	12 weeks

Task	Deliverable	Time from NTP
Subtask 4.3 – Water Sampling, Data Analysis and Pipe Loop Report	Start Pipe Loop conditioning	22 weeks
	Start Pipe Loop testing	48 weeks
	Finish Pipe Loop testing	100 weeks
	Draft Pipe Loop Test TM	104 weeks
	Final Pipe Loop Test TM	108 weeks
Task 5 – Phase 2 OCCT Report	Draft Phase 2 OCCT Report	116 weeks
	Final Phase 2 OCCT Report	120 weeks
	OCCT submission documents for FDEP	128 weeks

5. ASSUMPTION(S):

Task 1 – Project Quality and Management

- Consultant will hold up to 32 progress and update meetings via Microsoft Teams during the duration of the project (in-person meetings may be held periodically when mutually agreed by both the City and Consultant).
- The City will provide Consultant electronically with available information on the consecutive systems and pipeline materials in distribution system for harvesting. The City will provide information requested by Consultant within 2 weeks of request.
- Consultant will reasonably rely upon the accuracy and completeness of the information/data provided by City.
- The City will assign a project manager who will be Consultant's main point of contact during the project and provide feedback on progress and results.
- Presentation materials, meeting agendas and summaries, test plans, TMs and reports will be provided by Consultant in Adobe format. Excel spreadsheets will be provided by Consultant for all lab data (including field data) results and charts at project completion.
- This scope does not include representation of the City in public, community outreach or commission meetings.

Task 2 – Consecutive Systems Assessment and Water Quality Modeling

- Scope of system assessment is limited to 24 sample locations. Based on available information, and other similar systems, Consultant considers this sufficient.
- Consultant will provide analytical equipment, reagents and glassware to analyze most corrosion assessment water quality parameters with exception of sulfate, chloride and a scan of heavy metals including arsenic, selenium, and antimony. It is expected that up to five samples with these analytes will be analyzed by a qualified laboratory.

Task 3 – Bench-Scale Testing

- Bench-Scale testing will follow the "immersion test with jars" method as described in Lead and Copper Corrosion Bench-Scale Testing Guidance Manual of the Colorado Department of Public Health and Environment, April 26, 2019 (Hazen).

- The tests will be performed by Consultant offsite at an industry recognized facility or laboratory. Raw water, ion exchange and membrane treated water if available, Five Ash finished water and Peele Dixie finished water will be sampled and shipped by Consultant to that facility and treated by Consultant to the different test water quality conditions as defined by the Bench-Scale Test Plan.
- Based on an initial estimate, bench-scale testing will be limited to 23 feed water conditions and 4 pipeline materials in triplicate. The Bench-Scale Test Plan will determine the exact number of tests.
- Each pipeline material of the bench-scale apparatus will be similar in design, size and scale, and will be located parallel to each other. New pipeline materials will be used for tests and will be purchased by Consultant as part of this Task Order.
- The bench-scale tests will include a 4-week conditioning phase and a 12-week testing phase, which are considered conservative estimates. Actual duration will depend on pipe scale stabilization and water quality results.
- The tests will be performed by an offsite third-party laboratory, either Virginia Polytechnic Institute and State University or University of Colorado-Boulder.

Task 4 – Pilot-Scale Testing

- New pipeline materials will be used by Consultant for the pipe loop apparatus unless harvested coupons from the bench-scale testing or harvested pipes from the distribution system can be made available by the City, which the City will use reasonable efforts to provide within an acceptable time for the testing.
- To estimate the pre-harvested water quality sampling and pipe harvesting supervision level of effort, Consultant assumes that up to 36 pipe sections of each 4-5 ft will be harvested from the system. Consultant will provide two staff professionals for up to 7.5 days (60 hours) to witness and coordinate the pre-harvesting sampling and supervise pipe harvesting. The City (or a contractor designated by the City) will provide all materials, labor, and equipment to harvest pipes and to replace harvested pipes with new water service pipes. A qualified plumber from Consultant will install the harvested pipes in the pipe loop apparatus.
- Based on an initial estimate, pipe loop testing will be limited to 6 pipe loop modules in the test apparatus, one for each OCCT option. Each pipe loop contains up to 3 materials in triplicate. Consultant considers the number of pipe loops and materials to be conservative estimates.
- The formulation of corrosion inhibitors to be used by Consultant for each pipe loop will be based on the bench tests results. The pipe loop testing will not look at different vendors/brands for the same corrosion inhibitor formulation.
- Pipe loop test apparatuses will be similar in design, size and scale, and Consultant will locate them parallel to each other. Assuming a pipeline diameter of 0.75-inch and a flow velocity of 1.5 ft/sec, the flow rate for each pipe loop module will be around 18 gpm. Assuming that some of the pipes are harvested and may have a diameter of 1.0-inch, the flow rate for each pipe loop module can be as high as 27 gpm. Therefore, Consultant has built some flexibility into the pilot equipment.
- Feed water for the pipe loop apparatus will be obtained from Consultant's pilot equipment to produce reliably sufficient and continuous water flow to feed the pipe loops. The pipe loop test apparatus will be designed by third party contracted by Consultant for automatic operation in terms of flowing and stagnant periods and pipe loop modules staggering. Flow rates through pipe loops and chemical systems will be on/off controlled and set by Consultant during startup and verified by Consultant throughout testing.

- Pilot equipment and materials will cover media filters, sand strainer, ion exchange system, membrane skid, chemical systems, degasifier storage tanks and booster pumps, leased or purchased by Consultant from pilot equipment system suppliers. Post treatment pilot equipment involving chemical systems, piping, valving and tankage, to blend different waters and treat feed water to the required test conditions will be purchased by Consultant. Based on above pipe loop flow rates, the capacity of the sand strainer, membrane skid and degasifier will be around 60-80 gpm and of the media filters and IX system 10-12 gpm. Sizes of booster pumps will vary between 0.5 and 1.5 HP while the diameter of interconnecting pipelines will be between 1 inch and 3 inch. Subject to Consultant's hydraulic calculations, the raw water pipe and waste transfer pipe to lift station may need to be upsized to 4-inch.
- Consultant will install the pilot equipment and pipe loop apparatuses within a building with adequate support structure/media and proper access. The building will be provided by City (or City's assigned contractor) at the Prospect Wellfield, or alternative location. The approximate dimensions of the building are 50 ft wide, 80 ft long and minimum of 12 ft heigh. The building should be equipped with at least 2 overhead doors to move equipment in and out and at least one human access door. A small laboratory area will be added by the Consultant, including workspace area.
- Consultant will install the pilot plant equipment, pipe loop apparatus and associated materials within the building. This includes but is not limited to installation of equipment, storage tanks, booster pumps, chemical systems, PVC pipework, discharge pipelines, flow meters, flow control valves, and isolation valves. City (or City's assigned contractor) will provide the connections for feed water, drainage water and electricity and provide offloading/loading of pilot equipment (with for instance forklift) for delivery, pick-up, and onsite services associated with equipment and material deliveries. Consultant will coordinate all deliveries with City with sufficient notice of 3 business days. The City will supply sufficient power to the pilot area. Power within the building will be distributed to the individual pilot equipment by the Consultant assuming multiple connections including one 480 V connection for NF skid, 230 V connections for larger booster pumps and multiple 110 V connections for smaller booster pumps, chemical feed pumps and other low amperage pilot equipment.
- Consultant will provide the pilot consumables, including treatment chemicals, ion exchange resin, filter media, membrane elements, cartridge filters and reagents for instruments. City will provide electricity free of charge.
- Following the pipe loop testing, Consultant will decommission the pilot equipment, disconnect utilities and remove from site. Leased equipment will be sent back to pilot equipment system suppliers. Purchased equipment will remain the property of Consultant.
- Consultant will operate the test apparatuses, including the main and post treatment systems with an estimated effort of two full time equivalent for the 76 weeks duration of the test (covering up to 26 weeks conditioning and 52 weeks testing). Consultant considers these pipe loop conditioning and testing durations to be conservative estimates. Actual duration will depend on pipe scale stabilization and water quality results. Durations that exceed those shown in the attached schedule will require a commensurate adjustment in Consultant's total fee, payment of which will be subject to the City compensating Project Company for such fee adjustment.
- Consultant will provide analytical equipment, instruments and reagents to measure field water quality parameters. Water quality parameters that cannot be measured in the field will be analyzed by an offsite qualified laboratory with the sampling and sample shipment performed by Consultant. The offsite qualified laboratory will be paid for by Consultant.
- City will provide site access to the pilot location within the wellfield.

- The presence or duties of Consultant's personnel at a construction site, whether as onsite representatives or otherwise, do not make Consultant or Consultant's personnel in any way responsible for those duties that belong to City including, but not limited to, means, techniques, sequences, and procedures necessary for coordinating and completing all portions of the work and any health or safety precautions required by such work.

Task 5 – Phase 2 OCCT Report

- Preparation of the permit application documents to FDEP to modify the OCCT is included in this scope of work. Consultant assumes that a pre-application meeting will be organized and that the FDEP has up to one round of Request of Additional Information (RAI).

6. ACKNOWLEDGEMENTS AND AGREEMENTS IN RESPECT OF THE OCCT TASK ORDER AND THIS TASK ORDER:

Consultant acknowledges and agrees that, solely for purposes of the OCCT Task Order and this Task Order and notwithstanding anything to the contrary set out in the Initial Contract or the Contract:

(a) The professional services comprising the Pilot Pipe Loop Test SOW and those set out in the OCCT Task Order shall be or have been, as applicable, provided by Consultant for the exclusive benefit of the City;

(b) The sole obligation that Project Company shall have under the Contract, as supplemented by this Task Order, in connection with the Pilot Pipe Loop Test SOW shall be to pay Consultant the fees set out in Section 3 (*Basis of Compensation*) of this Task Order in accordance with Section 2.3 (*Payment*) of the Contract, subject in all cases to the prior receipt by the Project Company of sufficient funds therefor from the City;

(c) Except as set out in paragraph (b) above, the Project Company does not assume any obligations or liabilities in respect of the Pilot Pipe Loop Study SOW, including the City's lack of performance or any delay, inaccuracy or other deficiency in the City's performance of its obligations thereunder, and the deliverables set out in this Task Order will be provided by Consultant to the City directly;

(d) The Project Company has no outstanding obligations or liabilities under the Initial Contract, as supplemented by the OCCT Task Order, in connection with the services performed by Consultant thereunder or the OCCT Study, and the Project Company has no responsibility for any deficiency or inaccuracy in the information, materials or other assistance provided to Consultant by the City connection with Consultant's performance of the OCCT Task Order or the OCCT Study;

(e) Consultant's duty of care, warranty and other obligations set out in Section 6.1 (*Standard of Care*) of each of the Initial Contract and the Contract shall, solely to the extent related to the OCCT Task Order and this Task Order, respectively, run for the benefit of and be enforceable by the City, who is a third party beneficiary thereof; and

(f) The City is a third-party beneficiary of the Contract, as supplemented by this Task Order, and of the Initial Contract, as supplemented by the OCCT Task Order, with the ability to enforce, and solely for purposes of enforcing, the rights of the City set out in paragraphs (a) and (e) above.

EXHIBIT 1.

Detailed Fee Schedule

Engineering Cost Summary
Professional Services for Phase 2 Optimal Corrosion Control Treatment (OCCT)
Bench Scale Immersion and Pilot-Scale Pipe Loop Testing

	Administrative Assistant 3	Administrative Assistant 3	Technician 5	Engineer 1	Engineer 2	Engineer 3	Engineer 5	Engineer 6	Engineer 7	Engineer 8	Travel	Equipment and Materials	Laboratory Analyses	Repographic and Other Expenses
Per Diem Rate:	$105.00	$105.00	$160.00	$110.00	$125.00	$140.00	$190.00	$220.00	$260.00	$300.00	$1	$1	$1	$1

Task 1 – Project Quality and Management

SubTask	Hours	Labor	Expense	Task Total												
Project management, invoices, progress	2,008	$318,880	$450	$319,330	128	256				600	1024							450
Kickoff meeting/site visits/collect and review information	80	$17,960	$2,052	$20,012						16	20	16		28	1802			250
QA/QC and Health, Safety and Environmental Plan	124	$33,880	$0	$33,880	8						16			100				
Subtotal for Task 1	**2,212**	**$370,720**	**$2,502**	**$373,222**	**136**	**256**	**0**	**0**	**0**	**616**	**1,060**	**16**	**0**	**128**	**1,802**	**0**	**0**	**700**

Task 2 – Consecutive System Assessment and Water Quality Modeling

SubTask	Hours	Labor	Expense	Task Total												
Data review consecutive systems	64	$10,160	$0	$10,160					32	16	8			8				
Update sampling plan / protocol	20	$3,640	$100	$3,740						12	4			4				100
Distribution system assessment	76	$9,600	$15,825	$25,425				32	32	4	8				1869		13,956	
Water Quality evaluation	56	$9,600	$0	$9,600					24	16	4			12				
Corrosion control treatment development	44	$7,400	$0	$7,400					16	16	4			8				
Draft system ass., WQ modeling TM, and review meetings	100	$16,120	$759	$16,879	16				32	24	12			16	509			250
Final cons. system ass., WQ modeling TM	32	$5,260	$250	$5,510	4				8	8	8			4				250
Subtotal for Task 2	**392**	**$61,780**	**$16,934**	**$78,714**	**20**	**0**	**0**	**32**	**144**	**96**	**48**	**0**	**0**	**52**	**2,378**	**0**	**13,956**	**600**

Task 3 – Bench-Scale Testing

SubTask	Hours	Labor	Expense	Task Total												
Draft bench-scale test plan	80	$15,280	$100	$15,380	16					16	16	16		16				100
Final bench-scale test plan	26	$4,820	$100	$4,920	4					8	4	6		4				100
Water samples collection and transport	34	$4,380	$2,630	$7,010				16		16	2				130			2500
Perform bench testing and WQ analysis	80	$15,120	$368,661	$383,781			16			24	8	24		8	1315		367,346	
Draft bench-test TM	44	$8,800	$500	$9,300						16	8	12		8				500
Review meetings and Update Meetings with Stakeholders	136	$30,040	$0	$30,040						32	28	32		44				
Final bench-test TM	12	$2,420	$500	$2,920						4	2	4		2				500
Subtotal for Task 3	**412**	**$80,860**	**$372,491**	**$453,351**	**20**	**0**	**16**	**16**	**0**	**116**	**68**	**94**	**0**	**82**	**1,445**	**0**	**367,346**	**3,700**

Task 4 – Pilot-Scale Testing

SubTask 4.1 Pipe Harvesting	Hours	Labor	Expense	Task Total												
Draft pipe harvesting plan and review meetings	108	$19,480	$100	$19,580	16					38	12	30		12				100
Final pipe harvesting plan	24	$4,220	$100	$4,320	4					8	4	6		2				100
Pre-harvesting water quality sampling	56	$7,280	$13,833	$21,113				16	32		8				468	1,000	12,365	
Observation pipe harvesting, replacement pipe	124	$14,860	$7,416	$22,276				60	60		4				936			6480
Subtotal for Task 4.1	*312*	*$45,840*	*$21,449*	*$67,289*	*20*	*0*	*0*	*76*	*92*	*46*	*28*	*36*	*0*	*14*	*1,404*	*1,000*	*12,365*	*6,680*
SubTask 4.2 Design, Construct Pipe Loop	**Hours**	**Labor**	**Expense**	**Task Total**												
Draft pilot-scale test plan and review meetings	488	$87,480	$1,065	$88,545	16				136	96	96	56	40	48	815			250
Final pilot-scale test plan	56	$9,660	$250	$9,910	4				16	12	12	4		8				250
Identify and procure pilot equipment	206	$34,400	$1,397,440	$1,431,840			80		40	40	8	12	24	2		1,397,440		
Assemble pilot equipment and pipe loops	396	$77,120	$9,528	$86,648					160	16	40	4	160	16	9528			
Subtotal for Task 4.2	*1,146*	*$208,660*	*$1,408,283*	*$1,616,943*	*20*	*0*	*80*	*0*	*352*	*164*	*156*	*76*	*224*	*74*	*10,343*	*1,397,440*	*0*	*500*
SubTask 4.3 Operate Pilot, WQ, Report	**Hours**	**Labor**	**Expense**	**Task Total**												
Operate pipe loop (conditioning and steady-state periods)	1,968	$331,280	$19,775	$351,055						1312	328	164		164	19775			
Water quality sampling / analysis pipe loops	5,082	$636,095	$1,109,008	$1,745,103			16		5062		4					0	1,109,008	
Operate treatment pilot during steady-state period	2,848	$434,400	$14,665	$449,065					160	2240	224	112		112	14665			
Draft pilot-test TM	368	$60,680	$0	$60,680	16				40	200	40	40		32				
Review meetings amd Update Meetings with Stakeholders	504	$106,560	$0	$106,560						144	144	72		144				
Final pilot-test TM	80	$12,240	$2,000	$14,240	8				8	40	16	8						2,000
Subtotal for Task 4.3	*10,850*	*$1,581,255*	*$1,145,448*	*$2,726,703*	*24*	*0*	*16*	*0*	*5,270*	*3,936*	*756*	*396*	*0*	*452*	*34,440*	*0*	*1,109,008*	*2,000*
Subtotal for Task 4	**12,308**	**$1,835,755**	**$2,575,180**	**$4,410,935**	**64**	**0**	**96**	**76**	**5,714**	**4,146**	**940**	**508**	**224**	**540**	**0**	**46,187**	**1,398,440**	**1,121,373**	**9,180**

Task 5 – Phase 2 OCCT Report

SubTask	Hours	Labor	Expense	Task Total												
Draft OCCT phase report and review meetings	508	$100,480	$2,500	$102,980	32					184	72	104		116	2500			
Final OCCT phase report	144	$25,800	$2,000	$27,800	8					80	16	16		24				2,000
Pre-application meeting with FDEP	16	$3,920	$2,570	$6,490							8			8	2570			
Prepare OCCT submission and Respond to RAI/RFIs	64	$14,160	$0	$14,160							40	8		16				
Subtotal for Task 5	**732**	**$144,360**	**$7,070**	**$151,430**	**40**	**0**	**0**	**0**	**0**	**264**	**136**	**128**	**0**	**164**	**5,070**	**0**	**0**	**2,000**
Grand Total	**16,056**	**$2,493,475**	**$2,974,177**	**$5,467,652**	**280**	**256**	**112**	**124**	**5,858**	**5,238**	**2,252**	**746**	**224**	**966**	**56,882**	**1,398,440**	**1,502,675**	**16,180**

EXHIBIT 2.

Pilot Equipment Estimate

Pilot Equipment Estimate

5% Contingency

Total: $1,397,440

Sand Strainer (Hydac)	No.	Unit Rate	Subtotal	Notes
Mobilization - days	2	$1,050	$2,100	
Lease	12	$750	$9,000	
Freight	1	$750	$750	
Tax	7%		$830	
Sub-Total			*$12,680*	

RO/NF. Skid (Purchase 'used' skid)	No.	Unit Rate	Subtotal	Notes
Mobilization - days	5	$1,719	$8,595	
Lease	12	$10,000	$120,000	Alternative is to purchase 'used' skid (Water Surplus)
Freight	2	$4,000	$8,000	
Cartridge Filters	12	$500	$6,000	
Tax	7%		$9,982	
Sub-Total			*$152,577*	

Degasifier	No.	Unit Rate	Subtotal	Notes
Mobilization - days	3	$1,050	$3,150	
Lease	24	$2,500	$60,000	Two units; on NF permeate degasifier and upstream of IX
Freight	1	$750	$750	Estimate
Tax	7%		$4,473	
Sub-Total			*$68,373*	

Sand Filters / Ion Exchange vessels	No.	Unit Rate	Subtotal	Notes
Flter vessels	6	$7,500	$45,000	New 2 - 2.5 ft vessels
Freight	6	$1,250	$7,500	
Media - Anthracite/Sand	2	$750	$1,500	New 2 - 2.5 ft vessels
Ion Exchange	4	$2,250	$9,000	Estimate
Freight	6	$250	$1,500	
Data loggers, flow & pressure indicators	6	$6,694	$40,164	
PVC pipes, valves, miscellaneous	1	$5,000	$5,000	
Tax	7%		$7,677	
Sub-Total			*$117,341*	

Membrane Elements	No.	Unit Rate	Subtotal	Notes
Dupont/Hydranautics/Toray	1	$68,400	$68,400	Assumes membrane replacements.
Freight	108	$35	$3,780	
Tax	7%		$5,053	
Sub-Total			*$77,233*	

Electrical	No.	Unit Rate	Subtotal	Notes
Electrical	1	$6,500	$6,500	Kiewit does Electrical connections. Minor miscellaneous electrical/I&C costs assumed.
Contingencies	0	$2,000	$0	
Tax	7%		$455	
Sub-Total			*$6,955*	

Chemical / Storage / Blending Systems	No.	Unit Rate	Subtotal	Notes
Chemical Tanks	4	$150	$600	Estimate (H2SO4, Scale Inhibitor, Calcium chloride, other); Totes
Freight	4	$0	$0	
Storage Tanks	5	$1,500	$7,500	Estimate (Raw, Waste, Backwash, Other)
Freight	5	$500	$2,500	
Booster Pumps	5	$2,500	$12,500	2 raw water booster pumps; 1 waste pump, 1 intermediate IX pump, 3 chemical pumps
Chemical Feed / Booster Pumps	4	$750	$3,000	
Freight	9	$100	$900	
Data loggers, flow & pressure indicators	9	$6,694	$60,247	
PVC pipes, valves, miscellaneous	1	$5,000	$5,000	
Tax	7%		$6,457	
Sub-Total			*$98,704*	

Pipe Loops	No.	Unit Rate	Subtotal	Notes
Frame	1	$695,994	$713,141	Includes Phosphate and Calcium Chloride dosing pumps. Freight included.
Booster Pump, data loggers, bladder tank, flow indicators				Included
Tax	7%		$49,920	
Sub-Total			*$763,061*	

Consumables	No.	Unit Rate	Subtotal	Notes
Sulfuric acid	1	$10,000	$10,000	
Scale inhibitor and NaOCl	1	$10,000	$10,000	
Ammonium sulfate	1	$1,250	$1,250	
Sodium hydroxide	1	$2,500	$2,500	
Corrosion Inhibitors (1 and 2)	1	$3,000	$3,000	
Calcium Chloride	1	$5,000	$5,000	
Tax	7%		$2,223	
Sub-Total			*$33,973*	

EXHIBIT 3.

Water Quality Analysis Estimate

Water Quality Analysis Estimate **Number of pipe loops:** 6

Water Quality Parameter	Anticipated Method	Flowing Samples per Pipe Loop per Week	Stagnant Samples per Pipe Loop per Week	Total Weekly Samples from 6 Pipe Loops	Total Samples Estimated for Conditioning (26 weeks)	Total Samples Estimated for Testing (52 weeks)	Total Number of Sample Results for Study (78 weeks)	Unit Cost (from Pace)	Unit Cost (from AEL)	Total Cost (from Pace)	Total Cost (from AEL)
pH	Hach SL1000 PPA Probe	2	9	66	1,716	3,432	5,148	Reagents		$100,000	$100,000
Temperature	Hach SL1000 PPA Probe	2	9	66	1,716	3,432	5,148	Incl	Incl	Incl	Incl
Oxidation Reduction Potential (ORP)	Hach SL1000 PPA Probe	2	9	66	1,716	3,432	5,148	Incl	Incl	Incl	Incl
Conductivity	Hach SL1000 PPA Probe	2	9	66	1,716	3,432	5,148	Incl	Incl	Incl	Incl
Alkalinity	Hach SL1000 Chem Key	2	9	66	1,716	3,432	5,148	Incl	Incl	Incl	Incl
Nitrite	Hach SL1000 Chem Key	2	9	66	1,716	3,432	5,148	Incl	Incl	Incl	Incl
Free Ammonia	Hach SL1000 Chem Key	2	9	66	1,716	3,432	5,148	Incl	Incl	Incl	Incl
Total Chlorine [4]	Hach SL1000 Chem Key	2	9	66	1,716	3,432	5,148	Incl	Incl	Incl	Incl
Free Chlorine	Hach SL1000 Chem Key	2	9	66	1,716	3,432	5,148	Incl	Incl	Incl	Incl
Orthophosphate	Analytical Lab	2	9	66	1,716	3,432	5,148	$25	$196	$128,700	$1,009,008
Total Phosphate	Analytical Lab	2	9	66	1,716	3,432	5,148	$27		$138,996	
Total Hardness	Analytical Lab	2	9	66	1,716	3,432	5,148	$20		$102,960	
Dissolved Calcium Hardness	Analytical Lab	2	9	66	1,716	3,432	5,148	$25		$128,700	
Calcium	Analytical Lab	2	9	66	1,716	3,432	5,148	incl			
Total Dissolved Solids (TDS)	Analytical Lab	2	9	66	1,716	3,432	5,148	$15		$77,220	
Sulfate	Analytical Lab	2	9	66	1,716	3,432	5,148	$18		$92,664	
Chloride	Analytical Lab	2	9	66	1,716	3,432	5,148	$18		$92,664	
Total Lead	Analytical Lab	2	9	66	1,716	3,432	5,148	$55		$283,140	
Dissolved Lead	Analytical Lab	2	9	66	1,716	3,432	5,148	$22		$113,256	
Total Copper	Analytical Lab	2	9	66	1,716	3,432	5,148	incl			
Dissolved Copper	Analytical Lab	2	9	66	1,716	3,432	5,148	incl			
Total Iron	Analytical Lab	2	9	66	1,716	3,432	5,148	incl			
Dissolved Iron	Analytical Lab	2	9	66	1,716	3,432	5,148	incl			
Total Manganese	Analytical Lab	2	9	66	1,716	3,432	5,148	incl			
Total Aluminum	Analytical Lab	2	9	66	1,716	3,432	5,148	incl			
Pickup/Courier fee								$40	$35	$9,360	$8,190
								Sub-total		$1,267,660	$1,109,008
								Tax	7%	$88,736	$77,631
								Total		$1,356,396	$1,186,639

Total Weekly Analyses 594

Total Weekly Samples for offsite analysis 1056

Pace		AEL	
$225	equivalent to	$196	Unit cost est.

EXHIBIT 4.

Pipe Loop Skids Equipment Proposal

January 12, 2024

GJ Schers
Jacobs
550 W. Cypress Creek Rd., Suite 400
Fort Lauderdale, FL 33309

Subject: **Pipe Loop Apparatus Proposal**

GJ,

We are pleased to provide a proposal to supply a pipe loop pilot system. A cost summary is shown below. These costs are in U.S. dollars, are based on the following Scope of Work, and are subject to the attached Terms and Conditions. This proposal supersedes all previous offers.

Cost Summary

DESCRIPTION	PART NUMBER	COST
BLENDING AND CONDITIONING MODULE	CUSTOM	$252,832
FEED/ CHEMICAL/ HMI MODULE	CUSTOM	$155,623
PIPELOOP TRAIN 1	CUSTOM	$47,893
PIPELOOP TRAIN 2	CUSTOM	$47,893
PIPELOOP TRAIN 3	CUSTOM	$47,893
PIPELOOP TRAIN 4	CUSTOM	$47,893
PIPELOOP TRAIN 5	CUSTOM	$47,893
PIPELOOP TRAIN 6	CUSTOM	$47,893
STARTUP - 1 DAYS		$6,193
SHIPPING		$11,134
SUB-TOTAL		$713,141
TAX (ZIP 33309 EST. 7%)		$49,920
TOTAL		$763,061

Scope of Work

Intuitech

1. Provide one Blending and Conditioning Module with the following major components
   A. NF Storage blending and conditioning system
      1. One 300 GAL, 35"DIA X 79"H, HDLPE, tank
      2. Three chemical addition points
      3. One centrifugal pump, 80 gpm @ 30 psi (Grundfos CM)
   B. IX Storage blending and conditioning system
      1. One 300 GAL, 35"DIA X 79"H, HDLPE, tank
      2. Three chemical addition points
      3. One centrifugal pump, 80 gpm @ 30 psi (Grundfos CM)
   C. One Fiveash storage and pumping system
      1. One 160GAL, 28"DIA X 69"H, HDLPE, tank
      2. One centrifugal pump, 20 gpm @ 10 psi (Grundfos CM)
   D. One Peele Dixie storage and pumping system
      1. One 160GAL, 28"DIA X 69"H, HDLPE, tank
      2. One centrifugal pump, 20 gpm @ 10 psi (Grundfos CM)
   E. One Blending System
      1. Pressurized Inlets from NF and IX systems
      2. Four flow control valves with PID flow tuning

3. Four magnetic flow meters, 0.4…198GPM
4. Two blended outlets

F. Chemical Feed System, including
1. Three, two position chemical cabinet with leak detection
2. Three, two position chemical storage containment
3. Six 0.02 ... 16.5 mL/min chemical feed pumps
4. Six calibration assemblies
5. Six 3.75 gal chemical storage tank with level indication

G. Water quality instrumentation
1. On-line sensors to be displayed on HMI and data logged
2. Filtrate One, anticipated blend 70% NF and 30% IX
   a. pH, Temperature, Total Cholrine, and Free Chlorine (ENDRESS & HAUSER)
3. Filtrate Two, anticipated blend 90% NF and 10% IX
   a. pH, Temperature, Total Cholrine, and Free Chlorine (ENDRESS & HAUSER)
4. Prospect Lake
   a. pH, Temperature, Total Cholrine, and Free Chlorine (ENDRESS & HAUSER)
5. Dixie WTP
   a. pH, Temperature, Total Cholrine, and Free Chlorine (ENDRESS & HAUSER)

H. Schedule 80 PVC Pipe

I. One Module Control System with
1. Programmable Logic Controller with EthernetIP SCADA interface (Schneider Electric TM251MESE)
2. Four Variable Frequency Drives
3. Human Machine Interface with Data Logging and Trending (Phoenix Contact 24 04 84 6-12"/ Windows IOT/ Indusoft 8.1)
4. One multi-function alarm beacon
5. Cellular remote access through networked cellular modem and 15 months of Data from Date of Manufacture

J. One spare part kit

2. Provide one Feed/ Chemical/ HMI module with the following major components

A. One powder-coated stainless-steel skid with HDPE instrumentation panel and deck

B. Four Water Supply Inlet Connections

C. Six Pipe loop flow measurement and conditioning systems
1. Phosphate One, Low Dose
   a. One 0.05…26.4GPM magnetic flow meter
   b. One chemical addition point, static mixer, and 2.8 gallon storage tank
2. Phosphate One, High Dose
   a. One 0.05…26.4GPM magnetic flow meter
   b. One chemical addition point, static mixer, and 2.8 gallon storage tank
3. Phosphate Two, Low Dose with Calcium Chloride
   a. One 0.05…26.4GPM magnetic flow meter
   b. Two chemical addition point, static mixer, and 2.8 gallon storage tank
4. Phosphate Two, High Dose with Calcium Chloride
   a. One 0.05…26.4GPM magnetic flow meter
   b. Two chemical addition point, static mixer, and 2.8 gallon storage tank
5. No Chemical Loop 1
   a. One 0.05…26.4GPM magnetic flow meter
6. No Chemical Loop 2
   a. One 0.05…26.4GPM magnetic flow meter

D. Chemical Feed System, including
1. Three, two position chemical cabinet with leak detection
2. Three, two position chemical storage containment
3. Six 0.02 ... 16.5 mL/min chemical feed pumps
4. Six calibration assemblies
5. Six 3.75 gal chemical storage tank with level indication

E. Schedule 80 PVC Pipe

F. One Module Control System with
    1. Programmable Logic Controller with EthernetIP SCADA interface (Schneider Electric TM251MESE)
    2. Human Machine Interface with Data Logging and Trending (Phoenix Contact 24 04 84 6-12"/ Windows IOT/ Indusoft 8.1)
    3. One multi-function alarm beacon
    4. Cellular remote access through networked cellular modem and 15 months of Data from Date of Manufacture
G. One spare part kit

3. Provide six Pipe Loop Modules with the following major components
    A. One powder-coated stainless-steel skid
    B. Pipe rack flow range expected to be 9-18 gpm
    C. Three Copper Pipe with Leaded Solder loops, each with
        1. One ¾" diaphragm valve
        2. One ¾" check valve
        3. One 0.5…5.0 gpm rotometer
        4. One five segment copper pipe assembly
        5. One sample Valve
        6. One ¾" Isolation Valve
    D. Six Harvested Pipe loops, each with
        1. One ¾" diaphragm valve
        2. One ¾" check valve
        3. One 0.5…5.0 gpm rotometer
        4. Removable PVC "blank" segments in place of harvested pipe segments. Each replicate shall have one 5-foot long blank downstream of one 12-inch long blank. PVC blanks shall be factory-installed and will used for testing and startup of the Pipe Loop. Following startup, the Owner will remove PVC blanks and install harvested pipe segments.
        5. One sample Valve
        6. One ¾" Isolation Valve
    E. One 1 ½" modulating valve for rack flow control. Valve to be connect to Feed/ Chemical/ HMI module for control.

4. Preliminary Engineering for Custom Modules includes
    A. Piping and instrumentation diagram
    B. General arrangement drawings for individual skid
    C. Hydraulic grade line drawings
    D. Electrical one-line diagram
    E. Deliverable: Conceptual Drawing Package

5. Detailed Engineering Custom Modules includes
    A. Mechanical Shop Drawings
    B. Electrical Shop Drawings
    C. Deliverable: Shop Drawing Package

6. Program PLC and HMI for proper operation

7. Provide QA/QC testing of system at Intuitech shop prior to shipment

8. Provide two copies of drawings

9. Provide two hard copies of drawings and O&M manuals

10. Provide two soft copies of drawings, O&M manuals, and component manuals in PDF format on USB drive

11. Arrange and pay for shipping to
    550 W. Cypress Creek Rd., Fort Lauderdale, FL 33309

12. Provide three days (8 hours) of onsite labor for commissioning and training

By Others
1. Unload and install equipment
2. Provide and install harvested pipe
3. Provide water treatment chemicals
4. Arrange for operator training during regular work day

Schedule
Shop drawings will be provided eight (8) weeks after receipt of written order.
Equipment will be ready to ship sixteen (16) weeks after receipt of written order.

Changes to the proposed design will result in delayed delivery and cost additions.

If you have any questions or concerns, please let me know. We appreciate your consideration of our proposal.

Best Regards,

Brock A. Emerson, PE

Voice: 801-487-9255 X17
Fax: 801-487-9256
Mobile: 801-232-4960
Email: bemerson@intuitech.com
Web: www.intuitech.com

AUTHORIZATION

_____
NAME

_____
SIGNATURE

_____
DATE

EXHIBIT 5.

Water Quality Analysis – AEL Quotation

Quotation

Advanced Environmental Laboratories, Inc.

P.O. Box 551580
Jacksonville, FL 32255-1580
Phone (904) 363-9350
Fax (904) 363-9354

Quote #: 75661
Date: 11/21/2023
Description: Pilot WQA - Fort Lauderdale
Deliverable: Review and Report WO

Contact: Jacobs

Customer Service Contact: Mikelle Chong
Advanced Environmental Laboratories, Inc.
10200 USA Today Way
Miramar, FL 33025
United States
Phone 954-889-2288
Email MChong@aellab.com

Item	Test	Description	Matrix	TAT	Unit Price	Qty	Extended Price
1		Water	Water		$196.00	5148	$1,009,008.00
	3000-W	EPA 300.0		10	$36.00		
	CL-300FEE	Chloride EPA 300.0		10	$0.00		
	SO4-300FEE	Sulfate EPA 300.0		10	$0.00		
	OP-300FEE	Orthophosphate EPA 300.0		10	$0.00		
	TP-3654-W	Total Phosphorus,365.4,Aqueous		10	$24.00		
	H-2340B-W	Hardness, Total (SM 2340B)		10	$5.00		
	SM2540C-W	Total Dissolved Solids,SM2540C,WA		10	$13.00		
	FILTFEE	Filter Fee		10	$15.00		
	EMF	Env Maint Fee (per sample)		10	$3.00		
	CA2007-W	Calcium,EPA 200.7,ICP,Aqueous		10	$55.00		
	PB2007-W	Lead,EPA 200.7,ICP,Aqueous		10	$0.00		
	FE2007-W	Iron,EPA 200.7,ICP,Aqueous		10	$0.00		
	MN2007-W	Manganese,EPA 200.7,ICP,Aqueous		10	$0.00		
	AL2007-W	Aluminum,EPA 200.7,ICP,Aqueous		10	$0.00		
	MG2007-W	Magnesium,EPA 200.7,ICP,Aqueous		10	$0.00		
	HC2007-W	Calcium Hardness,EPA 200.7,ICP,Aqueous		10	$5.00		
	PB2007-F	Lead,EPA 200.7,ICP,Dissolved		10	$40.00		
	FE2007-F	Iron,EPA 200.7,ICP,Dissolved		10	$0.00		
2		Courier	Water		$35.00	234	$8,190.00
	COURF	Courier Fee		10	$35.00		

Quotation

Quote #: 75661
Date: 11/21/2023

Item	Test	Description	Matrix	TAT	Unit Price	Qty	Extended Price
					Total		**$1,017,198.0**

Quote Details

Analyte	Units	Reg Limit	MDL	PQL
Line Item 1 - Water				
EPA 300.0		**SAMPLE**		
Chloride				
Orthophosphate				
Sulfate				
Aluminum,EPA 200.7,ICP,Aqueous		**SAMPLE**		
Aluminum				
Calcium,EPA 200.7,ICP,Aqueous		**SAMPLE**		
Calcium				
Iron,EPA 200.7,ICP,Dissolved		**SAMPLE**		
Iron				
Iron,EPA 200.7,ICP,Aqueous		**SAMPLE**		
Iron				
Hardness, Total (SM 2340B)		**SAMPLE**		
Total Hardness (as CaCO3)				
HARDNESS,CA,200.7,WA,ICP		**SAMPLE**		
Calcium Hardness				
MG,200.7,WA,ICP		**SAMPLE**		
Magnesium				
MN,200.7,WA,ICP		**SAMPLE**		
Manganese				
Lead,EPA 200.7,ICP,Dissolved		**SAMPLE**		
Lead				
Lead,EPA 200.7,ICP,Aqueous		**SAMPLE**		
Lead				
TOT DISSOLVED SOLIDS,SM2540,WA		**SAMPLE**		
Total Dissolved Solids				
Total Phosphorus,365.4,Aqueous		**SAMPLE**		
Total Phosphorus (as P)				

Terms

Prices reflect a 40% discount.

Accepted By:

Signed: _____ **Title:** _____

Name: _____ **Date:** _____

Quotation

Quote #: 75661
Date: 11/21/2023

Quotation

Quote #: 75661
Date: 11/21/2023

TERMS AND CONDITIONS
The following terms and conditions apply to all work performed by Advanced Environmental Laboratories, Inc. (AEL), unless specifically exempted in writing by an officer of AEL.
1. CONTRACT AGREEMENT/TERMS AND CONDITIONS:
The Client, when placing an order with AEL, agrees that AEL`s quotation, Terms and Conditions, the Client`s purchase order, and AEL`s agreement to perform testing shall constitute the entire contract between the Client and AEL. A purchase order issued to AEL shall not constitute a binding contract until it is accepted and acknowledged by AEL. It is assumed the Client accepts AEL`s Terms and Conditions in lieu of the Client`s Terms and Conditions on any orders placed with AEL.
2. GOVERNING LAW:
All contracts between AEL and the Client shall be deemed to be made and governed by the Laws of the State of Florida. Any legal action brought by either the Client or AEL shall be brought in a court of competent jurisdiction in Duval County, Florida, or if the action is to be in federal court, in the U.S. District Court for the Middle District of Florida - Jacksonville District.
3. QUOTATION PERIOD AND PRICING:
Prices quoted by AEL remain in effect for thirty (30) days and are subject to change after that period. The prices contained in a quotation supplied by AEL apply specifically to the test or project named on the quote in accordance with stated specifications and documentation provided to AEL at the time of quotation. AEL shall not be bound to this pricing for any subsequent testing, repeat testing, additions, and omissions to the test program or parts thereof.
4. PRICING REVISION:
The Client representative requesting any testing quotation by AEL shall be considered an agent of the client and authorized to make technical and/or cost changes of any nature to the test procedures, specifications, or other Client documents. If AEL is required to submit a quotation without first receiving and reviewing applicable test specifications, any pricing submitted shall be subject to change when such specifications are made available to AEL.
5. CREDIT TERMS AND PAYMENT:
The acceptance of any purchase order by AEL shall be contingent upon approval of the Client`s credit. Unless otherwise determined, terms of AEL`s invoices shall be Net 30 days and payable in U.S. funds. Payment for the services rendered is the obligation of the Client issuing the purchase order or accepting the proposal. This obligation is not contingent upon payment to the Client by any third party or on any specific result from AEL`s services and may not be assigned without the written permission of AEL. If the Client fails to make payment within the agreed terms, AEL shall have the right to cease work, withhold data/reports, and make all invoices immediately due and payable. In addition, AEL shall have the right to charge interest on all amounts not paid by the due date at the rate of 1.5% interest per month, compounded monthly, from the due date of payment. Client agrees to pay all cost of collections including attorney`s fees.
6. STANDARD PROCEDURES AND ACCREDITATION:
AEL represents to the client that testing is done in accordance with standard procedures as applicable and that reported test results are accurate within generally acceptable commercial ranges of accuracy, unless another measure of accuracy has been agreed to in writing by AEL and the client. AEL`s testing laboratories are accredited by NELAP by the Florida Department of Health. It is the client`s responsibility to ensure AEL is aware of any testing requiring accreditation. AEL makes no claims or guarantees that reported MDLs, PQLs, and/or MRLs will meet a Client`s requirements, be they regulatory, commercial, industrial, or otherwise. It is the complete and full responsibility of the Client to determine if AEL MDLs, PQLs, and/or MRLs will satisfy a Clients needs.
7. WARRANTIES:
AEL performs services and hence its work and reports are not governed by the Uniform Commercial Code. Except as stated in paragraph 6, AEL disclaims all warranties, express or implied, including any warranties of merchantability or fitness for a particular purpose. AEL shall have no liability for incidental or consequential damages of any nature whatsoever.
8. Cancellation of Testing:
AEL begins testing upon receipt of samples from the Client. If for any reason the testing is interrupted by the Client, the completed portion of the work, including (but not limited to) supplies, materials, labor, and equipment utilization shall be billed to the Client and be payable within the agreed upon payment terms. In such circumstances where AEL agrees to place samples on hold, AEL may bill the Client stand-by charges, up to the full cost of established testing rates, until the testing resumes or is terminated by the client. If the testing is terminated by the client, AEL may impose a cancellation fee of no less than 10% of the unbilled portion of the project.
9. PROGRAM DELAYS:
AEL shall not be liable for any failure or delay in performance which is caused in whole or in part by acts of God (fire, flood, earthquakes, etc.), strikes or other labor disturbances, shut-downs, equipment breakdowns, unforeseen engineering problems, fuel shortages, Government priorities, or any other cause beyond the control of AEL.
10. ACCEPTANCE OF TEST REPORTS:
AEL reports apply only to the specific samples tested under stated test conditions and test results are not necessarily indicative of the qualities of apparently identical or similar test or operating conditions. AEL shall have no liability for any deductions, inferences or generalizations drawn by the client or others from AEL reports. If the Client requests verification of any part of the test report, AEL shall be notified within thirty (30) days of submission of the report to the Client. Failure to notify within this thirty (30) day period acknowledges acceptance of the report. Should additional work be required for verification purposes, AEL shall be entitled to the reasonable value of the additional work involved providing the original findings are verified. Payment for any test report or other AEL invoice shall not be contingent upon acceptance and/or approval of a third party.
11. SAMPLE/DATA RETENTION
Samples will be destroyed thirty (30) days after the date of the final report, unless the client indicates otherwise in writing and prepays before the expiration of said thirty (30) day period the entire cost of any storing, packaging and shipping the sample(s) by AEL. AEL shall have no obligation to retain its test reports or related data and documents beyond its normal retention periods.
12. SHIPPING/TRANSPORTATION
The Client shall be responsible for the transportation and any associated shipping costs of Client`s property to and from AEL`s laboratories.

Terms and Conditions

Intuitech, Inc. (hereinafter referred to as "Intuitech") intends the present Proposal to be an offer to enter into a binding contract with JACOBS. (hereinafter referred to as "Buyer"). The Buyer's Purchase Order or another document requesting Intuitech to proceed with the work discussed in the present Proposal shall be considered as the Buyer's acceptance of Intuitech's offer to enter into a binding contract and the following terms and conditions. This Proposal and Purchase Order or other responsive document shall constitute the contract between the parties, which is hereinafter referred to as the "Agreement."

Attorney's Fees: In the event that a suit or action arises from the terms of the Agreement, the losing party agrees to pay the prevailing party's reasonable attorney fees. The trial court shall determine the amount of reasonable attorney fees incurred by the prevailing party through the completion of trial court litigation and the appellate court shall determine the amount of reasonable attorney fees during any appeal.

Copyright Ownership: All software programming, drawings, documentation or any other form of original authorship of Intuitech is copyrighted material owned by Intuitech and may not be reproduced, modified or distributed, in whole or in part, without the prior written permission or license from Intuitech.

Delay in or Failure to Enforce: No delay or omission in the exercise of any right or remedy of Intuitech on any default by the Buyer shall impair such right or remedy or be construed as a waiver.

Entire Agreement: The Agreement contains the entire agreement between the parties and shall not be modified in any manner except by a written instrument executed by the party to be charged therewith.

Expiration: This Proposal is valid for 30 days from the date printed hereon.

Governing Law: The terms of the Agreement shall be governed by and construed in accordance with the laws of the State of Utah.

Limitation of Liability: In no event shall Intuitech be liable for any incidental, consequential, general, direct, or special damages, including damages to third parties, resulting from Intuitech's performance or failure to perform the scope of work outlined in this Proposal.

Force Majeure: Neither Party shall be liable for any failure or delay in the performance of its obligations due to fire, flood, earthquake, elements of nature, acts of God, acts of war, terrorism, riots, civil disorder, rebellions, or other similar cause beyond the reasonable control of the Party affected, provided that such default or delay could not have been prevented by reasonable precautions and cannot reasonably be circumvented, and, provided further, that the Party hindered or delayed immediately notifies the other Party describing the circumstances causing the delay. This provision shall not act to delay or defer the payment of any sums which may be due and owing.

Paragraph Headings: The paragraph headings are inserted only as a matter of convenience and in no way, define, limit or prescribe the scope or intent of the Agreement or in any way bear upon the interpretation thereof.

Payments: Twenty percent of the cost will be invoiced after delivery of conceptual drawings. Twenty-five percent of the cost will be invoiced after delivery of shop drawings. Forty-five percent will be invoiced after completion of fabrication. The remaining ten percent will be invoiced after factory testing by Intuitech, or on-site commissioning by Intuitech, or sixty days after completion of fabrication, whichever is first. Payment terms are net 30 days from the invoice date. On any amounts not paid within terms, Buyer agrees to pay interest at a rate of 1 ½% per month (18% per year). Buyer also agrees that Intuitech will provide an operation enabling code only after all payments, including interest, have been received in full, and understands that the equipment will become inoperable sixty days after shipment unless the enabling code is applied.

Relationship of the Parties: Nothing contained in the Agreement shall be deemed or construed to create the relationship of principal and agent, or of partnership, or of joint venture, or of any other association between the parties.

Successors and Assigns: The terms of the Agreement shall be binding upon the parties, their personal representatives, successors and assigns.

Taxes: For goods and taxable services shipped or provided within the United States the Buyer shall pay all applicable taxes. If the Buyer is tax exempt in the origin or destination jurisdiction then the Buyer shall provide appropriate exemption documentation to Intuitech. For goods and taxable services shipped outside of the United States, the buyer or their assigned agent/broker is, by definition, the importer of record responsible for payment of all duties, taxes, and fees as a result of the importation.

Termination: The Buyer shall pay Intuitech in full for all of Intuitech's expenses as of the date of termination, including costs incurred in the performance of services to the date of termination.

Waiver in Writing: Any waiver by Intuitech of any default must be in writing. One or more waivers by Intuitech of a breach by the Buyer of any term or condition of the Agreement shall not be construed as a waiver by Intuitech of a subsequent breach by the Buyer of the same term or condition.

Warranties: Equipment manufactured by Intuitech is warranted to be free from defects in materials and workmanship for a period of (15) months from the date of manufacture, unless otherwise agreed upon in writing. In the event of any defect in materials or workmanship, Intuitech will repair or replace, at its option, part(s), which are proven to have been defective, provided the Buyer provides written notice of the defect during the warranty period. The Buyer shall notify Intuitech of the preferred method of repair stated below.

Part Replacement by Buyer at Buyer's Site
If the defective part(s) are to be replaced by the Buyer at the Buyer's site, the Buyer shall be liable for all costs associated with removal and re-installation of the part(s), and Intuitech shall be liable for the shipping of the part(s). The Buyer must return defective part(s) within 7 days after receipt of the replacement part(s) or be liable for the cost of the replacement part(s).

Equipment Repair by Intuitech at Buyer's Site
If the defective equipment is to be repaired by Intuitech at the Buyer's site, the Buyer shall be liable for travel costs, including, but not limited to, airfare, auto rental, hotel, meal per diem, and transit time to and from the site charged at a rate of $150 per hour. The Buyer must provide a purchase order to Intuitech for the amount of the estimated charges before travel arrangements will be made.

Equipment Repair by Intuitech at Intuitech's Manufacturing Facility
If the defective equipment is to be repaired at Intuitech's manufacturing facility, the Buyer shall be liable for all costs associated with removal, shipping, and re-installation of the equipment. The Buyer must obtain authorization from Intuitech prior to return of the equipment.

If the defect has resulted from improper storage, installation, operation or maintenance of the equipment, Intuitech reserves the right to reject the warranty claim. Intuitech makes no warranty, express or implied, other than the foregoing express warranties, which apply only for the warranty period.

EXHIBIT 6.

Virginia Tech Bench-Scale Immersion Testing Proposal

Office of Sponsored Programs
North End Center, Suite 4200
300 Turner Street NW
Blacksburg, Virginia 24061
P: (540) 231-5281 F: (540) 231-3599
www.osp.vt.edu

November 28, 2023

GJ Schers, PMP
Jacobs
550 W. Cypress Creek Rd., Suite 400
Fort Lauderdale, FL 33309

Dear GJ Schers:

Enclosed please find the research proposal entitled "Optimizing Corrosion Control at a Florida Utility." This proposal is being submitted by Dr. Marc Edwards of the Department of Civil & Environmental Engineering at Virginia Tech. The proposed period of performance for this effort is 01/01/2024 through 05/31/2024 with an estimated cost of $307,170.

All correspondence related to this proposal should reference Proposal Number **PECZTGXF**.

This proposal is considered confidential/proprietary information of Virginia Tech and is being provided to you for evaluation purposes for funding this work at Virginia Tech. No other use of the information contained in this proposal is authorized until such time as an award is made.

Virginia Tech reserves the right to negotiate mutually agreeable terms and conditions at the time of award. Please note that as a public university there are several terms and conditions that are legally unacceptable or otherwise problematic for Virginia Tech. For your convenience we have attached a term sheet to facilitate negotiations.

Should you wish to initiate an agreement based on the enclosed proposal, please convey acceptance of the submitted proposal and request agreement initiation in the form of an email sent directly to ospcontracts@vt.edu. Please reference the Proposal Number noted above.

The University appreciates the opportunity to submit this proposal. If fiscal or budgetary questions arise please contact Joanne Zhang at 540-230-7328 or joanne21@vt.edu. Technical questions should be directed to the principal investigator.

Sincerely,

Lauren P. Maguder for

Trudy M. Riley
Associate Vice President for Research and Innovation, Sponsored Programs

Enclosures
University File

Virginia Tech Term Sheet

In order to facilitate and expedite the execution of a final agreement, Virginia Tech strongly prefers to use its Standard Research Agreement as the model for agreements with non-federal sponsors. Please contact ospcontracts@vt.edu to request an agreement.

If your organization prefers to use its own template to negotiate a final agreement, please be aware of Virginia Tech's underlying principles and limitations:

Publication

Virginia Tech's mission is centered on the creation and dissemination of new knowledge. Additionally, it is essential for students assigned to projects to be able to publish and present research findings in order to graduate. Therefore, it is critical that Virginia Tech retain the right to disseminate research results within a reasonable time period.

Virginia Tech generally allows sponsors a review period in order to protect their intellectual property and redact its proprietary information. Other options for publication rights may be determined on a project-by-project basis.

Intellectual Property

Sponsors are generally granted a non-exclusive license for internal use for intellectual property that is generated in the course of research, as well as an exclusive option period to negotiate a commercial license. Other options for intellectual property rights are determined on a project-by-project basis.

Reasonable Efforts

Since research by its nature is inherently unpredictable and results cannot be guaranteed, Virginia Tech conducts research on a reasonable-efforts basis.

Warranty

Virginia Tech does not provide a warranty for intellectual property or research results.

Indemnification

Under Virginia law, Virginia Tech is precluded from providing indemnity to other parties.

Governing Law

Under Virginia law, Virginia Tech's contracts and agreements cannot be interpreted under the laws of another state or country.

Binding Arbitration

Virginia Tech cannot legally agree to binding arbitration, but other forms of alternative dispute resolution, such as mediation, are acceptable.

Created 1/24/19

Bench Scale Testing Scope

The overall scope of the work involves coupon preparation and bench scale testing. Specifically, Virginia Tech will test samples of 1) galvanized iron pipe (GIP), 2) cast iron pipe, 3) lead pipe, and 4) new copper pipe with lead solder. This makes 5 materials for testing total, considering that the solder coupons with copper pipe are tested together.

The detailed scope of work is explained as below:

1) Virginia Tech will build an ion exchange column with input from Jacobs 1 month before the start of this project.
    - All the needed raw water, including the nanofiltered water, will be mailed to Virginia Tech at the expense of Jacobs.
2) Virginia Tech will prepare testing coupons for the four test samples (5 materials) listed above for bench scale testing.
    - In total 120 coupons will be prepared of each material for a 1 month conditioning test.
    - From these a total of 69 lead coupons, 69 unlined cast iron coupons, 69 GIP coupons and 69 copper: lead solder joints will be selected for the 3-month long bench scale test. Outliers that are anomalously high or low metal release will be removed from the study.
    - All selected coupons (except copper: lead solder joints) will be glued to the bottom of a 125 mL glass jar using epoxy.
    - Virginia Tech will perform bench scale testing using a dump and fill protocol, in the 3 months after receiving the harvested pipe.
    - All bench scale testing will be conducted at Virginia Tech with 9 different water quality conditions (see table below).

Water Condition	Description
1) Prospect Lake Control #1 (or conditioning water)	Existing distribution system water
2) Water 1 treated by 70% nanofiltration/30% IX	70% nanofiltered water, 30% ion exchange treatment, no extra $CaCl_2$.
3) Water 1 treated by 90% NF/10% IX with ambient calcium	90% nanofiltered water, 10% ion exchange treatment, no extra $CaCl_2$
4) Water 1 treated by 90% NF/10% IX with high added $CaCl_2$ to be determined.	90% nanofiltered water, 10% ion exchange treatment, extra $CaCl_2$
5) 100% nanofiltration water	100% nanofiltered water with no $CaCl_2$
6) 100% nanofiltration water	100% nanofiltered water with extra $CaCl_2$
7) 100% nanofiltration water	100% nanofiltered water with extra high $CaCl_2$
8) Combination of Peele Dixie and Prospect Lake WTP (w/ Water 1 treated by 70% nanofiltration/30% IX)	Mimic areas in distribution system that are fed from both Prospect Lake and Peele Sourcewaters

9) Peele Dixie distribution system water-Control	Second source of water tested as is (no variations of inhibitors)

- All glass jars with selected coupons will be placed on orbital shaker table for gentle mixing.
- Water will be changed two or three times a week to ensure that scale is exposed to freshly made water frequently.

3) Waters 2-8 above will be tested with a range of corrosion control options including:

80% ortho, 20% poly at a dose of 1 mg/L as PO4-P
100% ortho at a dose of 1 mg/L as PO4-P
100 zinc ortho, with a dose of 1 mg/L as PO4-P and 0.3 mg/L Zn

Thus, the total number of waters to be tested is 23 (= 2 waters for control condition 1 and 9, plus 3 levels of corrosion control x 7 waters).

The total number of coupons and jars is 276 (= 4 metals x 3 replicates x 23 waters)

4) Virginia Tech will conduct bench scale related analytical analysis.
   - GIP and cast iron coupons will be selected and grouped based on turbidity, iron leaching; copper: lead solder joints will be selected and grouped based on lead and copper leaching; lead coupons will be selected based on lead leaching.
   - Composites of replicate samples will be combined and analyzed every two weeks, and individual replicate samples will be analyzed at the end of each month to generate results with statistical confidence.
   - During bench scale testing, for GIP and cast iron coupons, Virginia Tech will monitor turbidity, color, iron, manganese, zinc, lead and cadmium levels in water once every two weeks from composite samples.
   - During bench scale testing, for copper: lead solder joints, and for the lead pipe, Virginia Tech will measure lead, copper and tin levels once every two weeks from composite samples, and for each individual replicate at the end of each month of the project.

5) Virginia Tech will conduct data analysis and provide a final report.
   - Virginia Tech will conduct all necessary data analysis for the bench scale testing and scale analysis results.
   - Virginia Tech will write a report on the experimental methods, interpretation of the results and suggestions on pipe loop design and conditions for testing (from bench testing results) in the pipe loop study if needed.

6) Virginia Tech will follow the rough schedule as indicated below.

Month	Build NF and IX treatment apparatus	Harvested Pipe Preparation and Conditioning	Bench Testing	Data Analysis	Draft Final Report	Final Report
April 2023						
May 2023						
June 2023						
July 2023						
August 2023						
September 2023						
October2023						
November 2023						

Budget justification.

Over two years of person effort is budgeted to execute this intensive research plan testing 276 jars in a scheduled six months. Four independent teams will execute the work, including teams to treat the raw at water bench scale using suitable protocol: 1) a metal coupon preparation and analysis team to generate and analyze test samples, 2) a water treatment team to prepare ion exchange water using a suitable protocol, 3) a corrosion control team to modify the water to achieve corrosion control targets, and 4) an analysis team to examine water chemistry and metal release in the samples. Funds are requested as follows to execute this work:

Personnel:

- Dr. Edwards will supervise the project with 0.30 months funded effort. Total requested: $10,565 plus fringe benefits at Faculty rate of 32.78%.
- Dr. Jeff Parks will assist the research (0.15 CY months), supervising and assisting participating Graduate Research Assistants. Total requested: $1,186 plus fringe benefits at Research Faculty rate of 35.52%.
- Funding is requested for Environmental Laboratory Manager AJ Prussin (0.21 CY months) for supervision of lab activities. Total requested: $2,087 plus fringe benefits at Faculty rate of 32.78%.
- 4 graduate research assistants with each committed full-time (20 hours per week) to the project during the 8-month project period. One and a half GRAs are M.S. level, 2.5 are Ph.D. level students. The GRAs are tasked with constructing the treatment apparatus and coupons, treating the water, preparing coupons, conducting analysis,

running metals on the ICP-MS, analyzing data and preparing the reports. Total requested for all GRAs: $90,312 plus fringe benefits at GRA rate of 9.19%.

- Three and a half undergraduate hourly students will each commit 20 hours/week for the 26-week project period at $13/hour. The undergraduates will assist with treating the water, tending the rigs and making pH adjustments, . Total Requested for all undergraduates $20,020. Fringe benefits are not applicable to AY undergraduate hours.During the Summer period, fringe benefits on the summer hours total are at the university wage rate of 6.34%.

Supplies: Total $19,000 as follows:

- $6,000 pumps, resin, tanks to treat the water onsite.
- $13,000 in supplies is budgeted for expendables including glassware, epoxy, filters, shaker tables, metals samples (copper, steel, galvanized iron, lead solder, lead pipe), pH probes, HACH supplies.

Contractual Services: The ICP-MS costs center budget includes funding for about 2095 samples with multi-element analysis, acidification, filtration at a cost of about $10.50 per sample. This budget is sufficient for the weekly composite analysis to determine overall trends in metal release and corrosion control, along with determination of soluble and particulate metals, and then measurement of metal release from every sample at the beginning to select coupons and at three other points of the study to generate data with statistical rigor. Representative numbers for said testing include the initial sampling to select coupons, and testing each coupon after 1, 2 and 3 months of exposure. Total requested: $22,000.

Tution: Tuition and academic fees for 4 graduate research assistant(s) during the entire duration of the project are requested. Per Virginia Tech's policy, in-state tuition is budgeted annually for the GRAs in proportion to the amount of time they work on the project. Academic year tuition plus technology, library, and engineering fee is budgeted for engineering students. For budget preparation purposes only, a 4.9% escalation factor is included in GRA tuition calculation, which occurs every August 16th; actual tuition cost in place during the time of the award are charged. The total amount requested is $35,993.

Total Direct Costs: $214,504

Indirect costs: Virginia Tech's federally-negotiated rate for on-campus research for commercial sponsors is 63% MTDC. A copy of VT's current federally negotiated indirect rate agreement can be found here: https://osp.vt.edu/resources/rates/indirect-costs.html. The base for IDC calculation does not include tuition. Base used for this project: $161.719. Total indirect costs requested: $101,883.

Total Project Costs: $326,966

		On Campus Research, DoDContracts/Commercial								
		PREPARED BY:	Dalton Bodtke			REVISION #:	4			
		DATE BUDGET CREATED:	11/14/2023			REVISED DATE:	12/21/2023			
		SPONSOR:	Jacobs							
		FILENAME:	[Revised New Budget _Edwards_Jacobs_Florida Utility_12-28-2023_PECZTGXF_R4.:							
		PRIN. INVESTIGATOR:	Marc Edwards							
		BUDGET PERIOD:	4/7/2024	through	11/15/2024					
		DUE DATE:								
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY										
					04/07/24-11/15/24					
					Period 1					TOTAL
				%	REQUESTED	CAL				REQUESTED
	NAME			EFFORT	SALARY	MONTHS	FRINGES			
1.	Marc Edwards (CY)			4%	$10,565	0.304	$3,475			$10,565
2.	Jeffrey Parks			2%	$1,186	0.150	$418			$1,186
3.	AJ Prussin			3%	$2,087	0.218	$686			$2,087
4.	2.5 TBN GRA (Ph.D., Step 17, AY)			250%	$33,317	11.250	$3,204			$33,317
5.	2.5 TBN GRA (Ph.D., Step 17, SMR)			250%	$21,495	7.500	$2,044			$21,495
6.	1.5 TBN GRA (M.S., Step 15, AY)			150%	$19,084	6.750	$1,835			$19,084
7.	2 TBN GRA (M.S., Step 15, SMR)			200%	$16,416	6.000	$1,561			$16,416
8.	3.5 TBN Undergraduate (AY, $13/hour)			350%	$18,200	15.750	$0			$18,200
9.	3.5 TBN Undergraduate (SMR, $13/hour)			350%	$1,820	10.500	$118			$1,820
	TOTAL PERSONNEL SALARIES				$124,170					$124,170
	FRINGE BENEFITS:									
		See rates in table below			$13,341					$13,341
	TOTAL SALARIES AND FRINGES				$137,511					$137,511
	EQUIPMENT (greater than or equal to $2000 per item)				$0					$0
	TRAVEL				$0					$0
	MATERIALS/SUPPLIES				$19,000					$19,000
		Supplies		$19,000						
	PUBLICATION COSTS				$0					$0
	CONTRACTUAL SERVICES				$22,000					$22,000
		ICP-MS Cost Center		$22,000						
	TUITION COSTS				$35,993					$35,993
	TOTAL DIRECT COSTS				$214,504					$214,504
	F&A COSTS				$112,462					$112,462
		FY 19 (7/1/18-6/30/19) MTDC @	64.10%	$0						
		FY 20 (7/1/19-6/30/20) MTDC @	63.50%	$0						
		FY 21 (7/1/20-Project End) MTDC @	63.00%	$112,462						
	TOTAL COSTS				$326,966					$326,966

March 1st, 2024 LTR No. LTR0051 – Kiewit to Project Co.

Prospect Lake Water, L.P.
c/o Ridgewood Infrastructure
14 Philips Parkway
Montvale, NJ 07645
Attn: Legal Department

Subject: Prospect Lake Clean Water Center Design Build Contract
Response to Scope Change Order Proposal Request – OCCT Pipe Loop Study

Dear Maria,

Reference is hereby made to that certain Design-Build Contract, dated as of February 14, 2023 (as amended or otherwise modified from time to time, the "DB Contract") between Prospect Lake Water, L.P. ("Project Company") and Kiewit Water Facilities Florida Co. ("Kiewit"). Except as otherwise expressly provided herein, capitalized terms used and not defined herein shall have the meanings ascribed to such terms in the DB Contract and, if not defined therein, in the Comprehensive Agreement

This letter ("Scope Change Order Proposal Response") is in response to the Scope Change Order Proposal Request from Project Company to provide rates for staff, craft and equipment to be used to support construction of the OCCT Pipe Loop Study.

Section 10.03 (b) of the Design Build Agreement states that *"Design-Build Contractor shall promptly review the Scope Change Order Proposal Request and notify Project Company in writing of the options for implementing the proposed Scope Change (including, if possible, any option that does not involve an extension of time) and the effect, if any, each such option would have on the DB Contract Price, the Guaranteed Substantial Completion Date, the Project Progress Milestone Dates, the Payment Schedule, the Project Schedule, and the Performance Criteria"*.

Kiewit hereby offers the requested rates for resources necessary to support this scope of work.

Change to the DB Contract Price

- Exhibit 1 outlines the proposed record keeping procedures for managing the time and materials work
- Exhibit 2 includes the proposed Time and Materials Daily Timesheet to be used for tracking all costs on a daily basis.
- Exhibit 3 includes detailed rate tables for both staff and craft that may be needed to support Project Company in the construction of the equipment and infrastructure required for this OCCT Pipe Loop Study. The staff and craft rates include all overhead and profit and reflect the total billable rates. The construction equipment table reflects the Blue Book Rates for equipment that may be needed to support this scope of work. All equipment will be invoiced at these rates plus a fee of 20%.

- Any additional materials, equipment, and subcontractor cost that may be requested of Kiewit to provide will be invoiced at cost plus a fee of 20%.

Change to Guaranteed Substantial Completion Date

- There is currently no change to the Guaranteed Substantial Completion Date.

Change to the Project Progress Milestone Dates

- There is currently no change to the Project Progress Milestone Dates in connection with this Scope Change.

Change to the Payment Schedule

- The revised Payment Schedule will be provided once Project Company develops a specific scope of work or upon completion of work as directed.

Change to the Project Schedule

- There are currently no major schedule impacts expected in connection with this Scope Change.

Change to the Performance Criteria

- There is no change to the Performance Criteria associated with any of the options priced in this Scope Change.

If you have questions or comments about this information, please contact me at Matthew.Allen@Kiewit.com.

Sincerely,

Matthew Allen
Project Manager
Kiewit Water Facilities Florida Co.

CC Via Email: Chris Turnbull, Matt Allen, Dolly Mirchandani, Mark Janay, Lihy Teuerstein

Exhibit 1

Recordkeeping for Work performed on a Time & Material Basis

Exhibit 1 <u>Recordkeeping for Work performed on a Time & Material Basis</u>

1. While the Design-Build Contractor or any of its Subcontractors is performing any Work (including Scope Change Work) on a time and material basis as may be required by Project Company or the City ("T&M Scope Work"), or where the Design-Build Contractor believes that it or any of its Subcontractors is performing extra work but a final determination by Project Company or the City has not been made as to the method or reimbursement Design-Build Contractor and Project Company will follow the following process:
    a. Design-Build Contractor shall submit to Project Company the "Time and Material Sheet"daily with the written statement attached as Exhibit 2 signed by a Design-Build Contractor representative at the site showing:
        i. the name, position, of each craft or staff worker employed on such Work, the number of hours employed, and the character of the Work each is doing; and
        ii. the nature and quantity of any supplies, materials or equipment furnished or used in connection with the performance of such Work.
    b. A copy of the written statement will be countersigned by a Project Company Authorized Representative, who may note any items not agreed to or questioned. This copy will be returned to the Design-Build Contractor within two (2) days after submission.
    c. All "Time and Material Sheets" will be sent to Project Company via Teambinder with the Project Company Authorized Representative cc'd on this correspondence. These records will be transmitted no later than 10 business days after the work has been performed.
2. Design-Build Contractor will include the executed daily written statements and invoices substantiating rented or purchased items with its request for payment for the Work.
3. Rates for craft and staff personnel and equipment anticipated for the Work are agreed by Project Company and attached as Exhibit 3. All equipment will be invoiced at these rates plus a fee of 20%.
4. Additional materials, equipment, and subcontractor cost that may be required to complete the work will be invoiced at cost plus a fee of 20%.
5. Rates for Subcontractor personnel will be submitted for review by Project Company within five (5) days of Design-Build Contractor's engagement of such Subcontractor to perform the Work.

Exhibit 2

Time and Material Sheet

DAILY TIME SHEET

DOCUMENT NUMBER: 00001-PLCWC-02/27/24 (MO/DA/YR)

DATE:

CLIENT:

AUTHORIZATION:

PROJECT: OCCT Time Loop Study

JOB / AREA:

WORK PERFORMED:

CATEGORY - STAFF

STAFF POSTION	EMPLOYEE NAME	PERNER	RATE		HOURS		REG AMT	OT AMT	SUB	TOTAL
			REG	OT	REG	OT				
				0.00			$0.00	$0.00	$0.00	$0.00
				0.00			$0.00	$0.00	$0.00	$0.00
				0.00			$0.00	$0.00	$0.00	$0.00
				0.00			$0.00	$0.00	$0.00	$0.00
							$0.00	$0.00	$0.00	$0.00
							$0.00	$0.00	$0.00	$0.00
							$0.00	$0.00	$0.00	$0.00

CATEGORY - CRAFT

CRAFT POSTION	EMPLOYEE NAME	PERNER	RATE		HOURS		REG AMT	OT AMT	SUB	TOTAL
			REG	OT	REG	OT				
				0.00			$0.00	$0.00	$0.00	$0.00
				0.00			$0.00	$0.00	$0.00	$0.00
				0.00			$0.00	$0.00	$0.00	$0.00
				0.00			$0.00	$0.00	$0.00	$0.00
									$0.00	$0.00
									$0.00	$0.00
									$0.00	$0.00
									$0.00	$0.00
			TOTALS				$0.00	$0.00		$0.00

NOTE: CHECK FORMULAS FOR PRIOR TO SUBMITTING TO CLIENT - DELETE THIS CELL

EQUIPMENT

EQUIPMENT	SIZE	UNIT	QTY	DAILY	WEEKLY	MONTHLY	AMOUNT
							$ -
							$ -
					TOTAL		$ -

SUBCONTRACTOR *(ATTACHED BACKUP)*

INVOICE #	SUBCONTRACTOR	AMOUNT
		$ -
		$ -
	TOTAL	$ -

MATERIAL *(ATTACHED BACKUP)*

INVOICE#	VENDOR	AMOUNT
		$ -
		$ -
		$ -
		$ -
		$ -
		$ -
		$ -
		$ -
	TOTAL	$ -

COMMENTS:

LABOR	$0.00
EQUIPMENT	$ -
MATERIAL	$ -
SUBCONTRACTOR	$ -
TOTAL	$ -

SUPERINTENDENT

AUTHORIZED BY

Form No.01 T&M

03/01/24

Exhibit 3

Kiewit T&M Rates 2024

Prospect Lake Clean Water Center	
Category: Staff	**Straight Time Rate ($/HR)**
Sponsor / Construction Manager	$ 347.00
Project Manager 2	$ 299.00
Project Manager 1	$ 285.00
General Superintendent	$ 303.00
Area Superintendent	$ 280.00
Discipline Superintendent	$ 254.00
Project Engineer	$ 244.00
Sr. Engineer	$ 154.00
Field Engineer 2	$ 115.00
Field Engineer 1	$ 103.00
Startup Manager	$ 289.00
Business Manager	$ 147.00
Safety Manager	$ 254.00
Quality Manager	$ 254.00
Quality Inspector	$ 89.00
Environmental Manager	$ 254.00
Survey Manager	$ 254.00
Surveyor	$ 153.00
Notes:	
1. Staff billable rates are inclusive of all overhead and profit and are valid valid through 2024. After 2024, Kiewit reserves the right to amend and update the rates.	

Prospect Lake Clean Water Center	
Category: Craft	**Straight Time Rate ($/HR)**
Labor Foreman	$ 158.00
Laborer	$ 78.00
Laborer Pipelayer	$ 80.00
Operator Foreman	$ 158.00
Equipment Operator	$ 101.00
Crane Operator	$ 109.00
Warehouseman	$ 134.00
Concrete Finisher Foreman	$ 158.00
Concrete Finisher	$ 85.00
Ironworker	$ 91.00
Carpenter Foreman	$ 158.00
Carpenter	$ 91.00
Electrical Foreman	$ 166.00
Electrician	$ 96.00
Pipe Foreman	$ 166.00
Pipefitter	$ 103.00
Pipe Welder	$ 99.00
Millwright Foreman	$ 166.00
Millwright	$ 103.00
Notes:	
1. Craft billable rates are inclusive of all overhead and profit and are valid valid through 2024. After 2024, Kiewit reserves the right to amend and update the rates.	

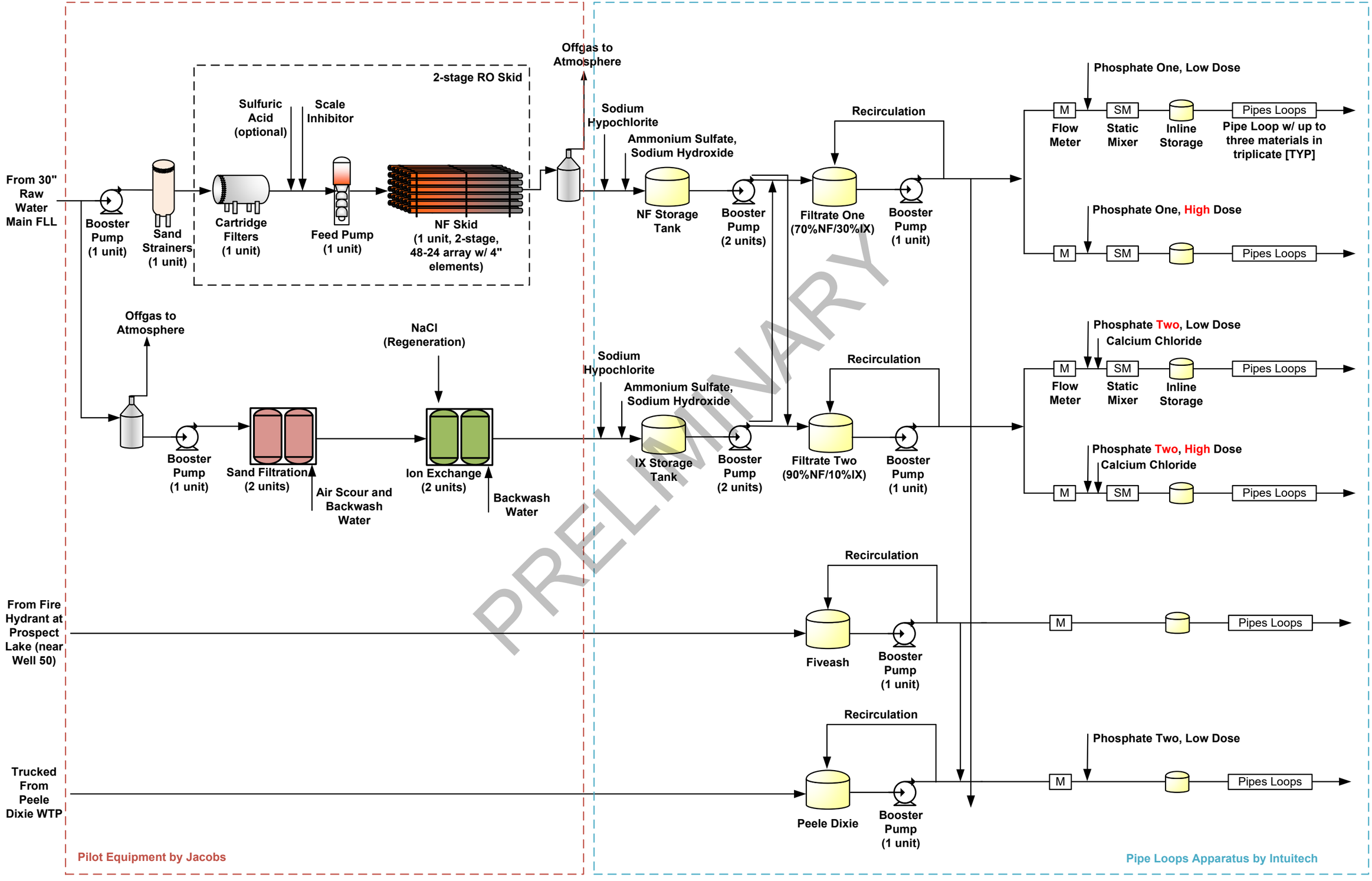
Prospect Lake Clean Water Center				
Equipment	**Size Class**	**Daily**	**Weekly**	**Monthly**
On-Highway Water Tankers	200 hp & Over	$ 632	$ 3,159	$ 13,678
Tractor-Loader-Backhoes	14.5 - 15.4 ft	$ 918	$ 4,588	$ 19,866
Crawler Mounted Hydraulic Excavators	16.5 - 19.4 mt	$ 1,333	$ 6,663	$ 28,849
Crawler Mounted Hydraulic Excavators	21.5 - 24.4 mt	$ 1,206	$ 6,028	$ 26,099
Crawler Mounted Hydraulic Excavators	28.5 - 33.4 mt	$ 1,543	$ 7,716	$ 33,410
Single Drum Vibratory Compactors	2.5 - 4.4 mt	$ 1,219	$ 6,095	$ 26,389
Single Drum Vibratory Compactors	4.5 - 7.4 mt	$ 1,962	$ 9,811	$ 42,482
Trench Compactors	26 - 34 in	$ 1,066	$ 5,332	$ 23,088
Rough Terrain Hydraulic Cranes	80.5 - 110.4 mt	$ 3,673	$ 18,363	$ 79,510
Portable Rotary Screw Air Compressors	125 - 249 cu ft/min	$ 453	$ 2,264	$ 9,801
Portable Welders	201 - 300 A	$ 101	$ 507	$ 2,195
Portable Light Towers	To 7 kW	$ 92	$ 462	$ 2,000
4-Wd Articulated Wheel Loaders	175 - 199 hp	$ 676	$ 3,381	$ 14,638
Skid Steer Loaders	2,501 - 2,900 lbs	$ 1,003	$ 5,013	$ 21,706
Compact Track Loaders	2501 - 2850 lbs	$ 816	$ 4,082	$ 17,675
Electric Self Propelled Scissor Lifts	To 20 ft	$ 310	$ 1,551	$ 6,716
I.C. Self Propelled Scissor Lifts	31 - 40 ft	$ 1,050	$ 5,249	$ 22,728
I.C. Self-Propelled Articulating Boom Aerial Lifts	31 - 40 ft	$ 1,071	$ 5,355	$ 23,187
I.C. Self-Propelled Articulating Boom Aerial Lifts	41 - 50 ft	$ 1,152	$ 5,758	$ 24,930
I.C. Self-Propelled Articulating Boom Aerial Lifts	51 - 60 ft	$ 1,558	$ 7,789	$ 33,726
Telescoping Boom Rough Terrain Lift Trucks	5.0 mt & Over	$ 1,748	$ 8,739	$ 37,838
Notes:				
1. All Equipment will be invoiced at Blue Book rates shown in this table plus a fee of 20% valid through 2024. After 2024, Kiewit reserves the right to amend and update the rates.				

Cost Summary
Kiewit Support for Phase 2 Optimal Corrosion Control Treatment (OCCT) Study Pilot-Scale Pipe Loop Testing

	Operator Foreman	Equipment Operator	Pipe Welder	Pipefitter	Pipe Foreman	Electrician	Electrical Foreman	Field Engineer 1	Field Engineer 2	Project Engineer	Discipline Superintendent	Construction Manager	Electrical Equipment and Materials
Per Diem Rate:	$158.00	$101.00	$99.00	$103.00	$166.00	$96.00	$166.00	$103.00	$115.00	$244.00	$254.00	$347.00	$1

Task 1 – Pilot Support Services

SubTask	Hours	Labor	Expense	Task Total													
Pilot support	292	$37,352	$110,000	$147,352	10	10	20	40	8	40	10	80	40	20	8	6	110,000
Subtotal for Task 1	**292**	**$37,352**	**$110,000**	**$147,352**	**10**	**10**	**20**	**40**	**8**	**40**	**10**	**80**	**40**	**20**	**8**	**6**	**110,000**
Grand Total	**292**	**$37,352.00**	**$110,000.00**	**$147,352.00**	**10**	**10**	**20**	**40**	**8**	**40**	**10**	**80**	**40**	**20**	**8**	**6**	**$110,000.00**


From 30" Raw Water Main FLL
Booster Pump (1 unit)
Sand Strainers (1 unit)
2-stage RO Skid
Sulfuric Acid (optional)
Scale Inhibitor
Cartridge Filters (1 unit)
Feed Pump (1 unit)
NF Skid (1 unit, 2-stage, 48-24 array w/ 4" elements)
Offgas to Atmosphere
Sodium Hypochlorite
Ammonium Sulfate, Sodium Hydroxide
NF Storage Tank
Booster Pump (2 units)
Recirculation
Filtrate One (70%NF/30%IX)
Booster Pump (1 unit)
Phosphate One, Low Dose
M
Flow Meter
SM
Static Mixer
Inline Storage
Pipes Loops
Pipe Loop w/ up to three materials in triplicate [TYP]
Phosphate One, High Dose
Offgas to Atmosphere
NaCl (Regeneration)
Booster Pump (1 unit)
Sand Filtration (2 units)
Air Scour and Backwash Water
Ion Exchange (2 units)
Backwash Water
Sodium Hypochlorite
Ammonium Sulfate, Sodium Hydroxide
IX Storage Tank
Booster Pump (2 units)
Recirculation
Filtrate Two (90%NF/10%IX)
Booster Pump (1 unit)
Phosphate Two, Low Dose
Calcium Chloride
Phosphate Two, High Dose
From Fire Hydrant at Prospect Lake (near Well 50)
Fiveash
Booster Pump (1 unit)
Trucked From Peele Dixie WTP
Peele Dixie
Booster Pump (1 unit)
Phosphate Two, Low Dose
Pilot Equipment by Jacobs
Pipe Loops Apparatus by Intuitech
PRELIMINARY