EXHIBIT A
SCOPE OF WORK

CITY OF CORPUS CHRISTI

ONSWTP Fluoride System Improvements
CITY PROJECT NO. 24026

INTRODUCTION

The City of Corpus Christi (City) owns and operates the O.N. Stevens Water Treatment Plant (ONSWTP). As part of the plant's process, hydrofluosilicic acid is dosed to meet fluoride residual recommendations. The purpose of this scope of work is to provide engineering services to fully upgrade the hydrofluosilicic acid bulk storage and feed system.

This scope of services includes conducting a condition assessment of the existing system and preparing a preliminary design report (PDR) to summarize key design parameters and design approach. Design services include detailed process-mechanical, structural, plumbing, HVAC, electrical, and instrumentation system design as described below.

SCOPE OF SERVICES

Task 100 – Preliminary Design

This task consists of all subtasks associated with developing a PDR. This task includes the following activities:

- Kickoff Meeting – Hazen will prepare for, attend, and facilitate a project kickoff meeting with the City to identify key personnel, review scope and schedule, early design concepts and decisions, and solicit input/comments from the City.
- Develop preliminary design, including chemical feed rate requirements, general equipment design parameters, preliminary process flow configuration, bulk storage tank(s) location and design parameters, fluoride feed solution hydraulic calculations, chemical yard piping, emergency eyewash and shower facilities, preliminary electrical and instrumentation/integration (i.e., SCADA) design information. The preliminary design shall be documented in a draft report and submitted to the City.
- Develop Engineer's Opinion of Probable Construction Cost (OPCC) based on the preliminary design. OPCC shall be AACE Class 4.
- Perform quality assurance and quality control (QA/QC) review on the PDR
- Prepare for, attend, and facilitate a draft PDR review workshop.
- Update PDR based on the comments received during the draft PDR review workshop and submit the Final PDR to the City. Submit Final Technical Memorandum to TCEQ.

Deliverables

- Draft PDR
- Final PDR

Task 200 – Detailed Design

Hazen will advance the design based on the design decisions made during the preliminary design phase. This scope of work assumes the preparation of a 60% submittal followed by a 100% submittal, and a Final Signed and Sealed (Bid) set.

The 60% design phase services include the following:

- Preparing equipment specifications for mechanical, electrical, HVAC and instrumentation components.
- Preparing drawings to illustrate the scope and character of the work necessary to furnish, install, and commission the fluoride feed system equipment
- Preparing functional control descriptions for updates to the City's SCADA programming
- Updating OPCC
- Performing quality assurance and quality control (QA/QC) reviews on pre-final design submittal.
- Preparing for, attending, and leading a 60% design review workshop with the City to review the design and solicit comments from the City.

The final design phase services include the following:

- Preparing final equipment specifications
- Preparing final drawings
- Preparing final functional control descriptions
- Preparing final OPCC
- Performing final QA/QC procedures
- Conducting a pre-final design review meeting to incorporate final comments from the City prior to issuing final documents
- Preparing and submitting final documents based on City's comments on the final design deliverable

Deliverables

- 60% Set (Drawings and Specifications)
- Pre-Final Set (Drawings and Specifications)
- Final/Signed and Sealed Set (Drawings and Specifications)

Task 300 – Bid Phase Services

Hazen will provide limited services during the Bid Phase of the project. Included in these services are the following activities:

- Virtual attendance to the pre-bid and bid opening meetings
- Responding to bidder's questions. The City will be responsible for receiving and logging questions and issuing responses as prepared by Hazen.
- Issuing documents associated with addenda (if required). Issuance of the compiled addenda (including forms and cover pages) will be done by the City.
- Providing a bid tabulation and letter recommending award

In the event the lowest responsible bidder's bid exceeds the project budget as revised by the Engineering Services in accordance with the engineer's design phase estimate required above, the Engineer will, at its expense, confer with City staff and make such revisions to the bid documents as the City staff deems necessary to re-advertise that particular portion of the Project for bids.

Deliverables

- Conformed Set of Drawings and Specifications

Task 400 – Construction Phase Services

Hazen will provide limited engineering services during construction. It is assumed that the City will provide day-to-day inspection and coordination services for this project. Only a limited number of specialty inspections are included in this scope of work. Generally, the following activities are included in this task:

- Attending pre-construction meeting and monthly progress meetings. It is anticipated that Hazen will attend meetings virtually, although an effort will be made to coordinate the schedule with that of the inspections. In those limited cases, meetings can be attended in-person. Hazen will provide a recommended agenda and prepare meeting minutes. A maximum of 18 one-hour progress meetings are included in this effort.
- Reviewing submittals, shop drawings, sample materials and other documents for conformance with the contract documents. A maximum of 40 submittals (including re-submittals) are included in this effort.
- Reviewing O&M Manuals. A maximum of four O&M Manuals are included in this effort.
- Reviewing field and laboratory tests.
- Conducting the specialty inspections listed below and preparing associated inspection reports. Hazen will review work to evaluate general compliance with the plans and specifications.
    - 20 general inspections
    - 3 structural inspections
    - 3 electrical/I&C inspections
- Responding to RFIs. A maximum of 20 RFIs are included in this effort.

- Reviewing and preparing change orders. A maximum of 4 change orders are included in this effort.
- Conducting a substantial completion inspection
- Conducting a final completion inspection
- Preparing record drawings based on the Contractor's red line drawings and any other information provided by the City's inspector

Task 500 – Additional Services

Additional services will be provided only with written authorization of the City. Additional services include the following:

Task 501 – CFD Modeling

Hazen will provide computational fluid dynamics (CFD) modeling of the fluoride building to determine the most suitable configuration for the HVAC system, including location of exhaust fans. If authorized by the City, CFD modeling results will be incorporated into the PDR. This effort assumes a total of 92 hours.

Task 502 – Additional Site Visits During Construction

Hazen will provide additional Site Visits for up to an additional 192 total hours. These optional site visits are proposed to further support the City's staff in their inspection as follows:

- 20 additional general site visits
- 1 additional structural site visit
- 3 additional electrical site visits

Task 503 – Training

Hazen will provide training for up to an additional 32 hours to supplement the manufacturer's training. This training will be a combination of process mechanical and instrumentation and controls.

Task 504 – Warranty Phase Services

Hazen will provide a maintenance warranty inspection towards the end of the one-year period after acceptance of the project. Hazen will perform the following subtasks:

- Note defects requiring Contractor action to maintain, repair, fix, restore, patch or replace improvements under the warranty terms of the Contract.
- Document the condition and prepare a report indicating locations requiring action with a recommendation to best correct defective conditions. Report shall be submitted no later than 60 days prior to the end of the warranty period.

Hazen will provide warranty phase services for up to one year from substantial completion. A maximum of 32 hours are included in this effort.

Task 505 – Permitting

Hazen will furnish the City with all engineering data and documentation necessary for required permits and will prepare documentation for signatures. Permits shall be prepared and submitted as applicable to the appropriate local, state and federal authorities, including but not limited to the Texas Commission of Environmental Quality (TCEQ). A maximum of 40 hours are included in this task.

Task 506 – Start-up Services

Hazen will provide onsite oversight and verification of procedures during start-up of major components. These services may include conducting a separate walk-thru and reviewing certification of installation as submitted by the equipment manufacturer. A maximum of 120 hours are included in this task.

Task 507 – SCADA Documentation

Hazen will provide standardized SCADA documentation, which includes a process flow diagram (PFD), piping and instrumentation diagram (P&ID), loop sheets, SCADA architecture, PLC input and output (I/O) list, instrument list, tie-in list, and equipment list. A maximum of 24 hours are included in this task.

Task 508 – Risk Management

Hazen will assist the City with their risk management procedure by identifying and documenting risks using the City's Risk Analysis Worksheet. This worksheet will be reviewed at the 30%, 60%, Pre-Final and Final design milestones. A maximum of 24 hours are included in this task.

ASSUMPTIONS

1. Hazen is not responsible for delays outside of its control such as City or other third-party review periods.
2. Hazen has not included any costs for the investigation of hazardous materials, subsurface conditions, or subsurface utilities in the project area.
3. The City's existing fluoride system will be demolished as a part of this construction project.
4. Injection points (location, sizing) will not be modified as part of this project. Those services are included as part of other design and construction projects (by others).
5. Design review workshops will be conducted both virtually and in-person. It is anticipated that only the project manager and one additional support team member will attend in person. Additional staff will attend virtually.
6. Attendance to pre-bid and bid opening meetings will be virtual.
7. City staff shall be responsible for receiving, logging and issuing official responses to bidder's questions and addenda.
8. City staff shall be responsible for evaluating bidder responsiveness. Hazen will assist in determining bidder experience with similar projects. This may include contacting references and requesting feedback on performance.

9. Attendance at construction meetings will be virtual, except in the event that it is possible to schedule meetings around inspections. However, it is expected that most of the construction meetings will be attended virtually.
10. Scope of services does not include daily construction observation services. Only specialty inspections as outlined previously are included.
11. Construction services are based on an 18-month construction duration.

FEE

A. The total fee for Basic Services associated with this scope of work is $398,028 as presented below. The City will reimburse Hazen a fixed fee for providing all Basic Services authorized in accordance with the table below. The fees will not exceed those identified and will be full and total compensation for all services associated with Tasks 100-300 and for expenses incurred in performing these services. Hazen will submit invoices based on the estimate of percentage of work completed at the time of billing for the City's review.
For services associated with Task 400, Hazen will submit monthly invoices for services rendered. The invoice will be based upon actual services rendered.

Task	Fee	Billing Basis
Task 100 – Preliminary Design	$90,799	Lump Sum
Task 200 – Detailed Design	$156,610	Lump Sum
Task 300 – Bid Phase Services	$6,432	Lump Sum
Task 400 – Construction Phase Services	$144,188	Time & Materials
Total for Basic Services	$398,029	

B. The total fee for Additional Services associated with this scope of work is $480,359 as presented below. Additional Services shall be authorized by the Director of Engineering Services. Fees shall be paid for on a not-to-exceed basis.

Task	Fee	Billing Basis
Additional Services (only if authorized)		Allowance
Task 501 – CFD Modeling for HVAC System	$28,621	
Task 502 – Additional Site Visits	$40,511	
Task 503 – Training	$13,309	
Task 504 – Warranty Phase Services	$5,707	
Task 505 – Permitting	$6,227	
Task 506 – Start-up Services	$30,689	
Task 507 – SCADA Documentation	$4,145	
Task 508 – Risk Management	$5,180	
Total for Additional Services	$134,389	

SCHEDULE

The following table summarizes the proposed schedule.

Date	Activity
3 months after NTP	Draft PDR Submittal
3.5 months after NTP	Receipt of City Comments
4 months after NTP	Final PDR Submittal
7 months after NTP	60% Submittal
7.5 months after NTP	Receipt of City Comments
10 months after NTP	Pre-Final Submittal
10.5 months after NTP	Receipt of City Comments
12 months after NTP	Final (Signed and Sealed) Bid Package
13 months after NTP	Proposed Advertisement Date for Bids
18 months after NTP	Construction NTP
36 months after NTP	Construction Completion

If you have any questions or would like to discuss this scope of work in more detail, please feel free to call me at 726 336 2435.

Sincerely,

Hazen and Sawyer
TBPELS Firm No. F-13618

Ana Maria Garcia, PE
Senior Associate

O.N. Stevens Water Treatment Plant - Fluoride Improvements Proposed Drawing List	
1	GENERAL
2	SHEET INDEX, LEGEND, NOTES, AND ABBREVIATIONS
CIVIL	
3	OVERALL SITE PLAN
MECHANICAL	
4	FLUORIDE BUILDING - EXTERIOR DEMOLITION PLAN
5	FLUORIDE BUILDING - INTERIOR DEMOLITION PLAN
6	CHEMICAL BUILDING - INTERIOR DEMOLITION SECTIONS/DETAILS
7	FLUORIDE STORAGE AREA PLAN
8	FLUORIDE STORAGE AREA ELEVATIONS/SECTIONS
9	FLUORIDE STORAGE AREA SECTIONS AND ISOMETRICS
10	FLUORIDE FEED FACILITIES PLAN
11	FLUORIDE FEED FACILITIES ELEVATIONS/SECTIONS
12	FLUORIDE FEED FACILITIES SECTIONS/ISOMETRICS
13	FLUORIDE STORAGE AND FEED FACILITIES DETAILS
14	MECHANICAL DETAILS
15	MECHANICAL DETAILS
ELECTRICAL	
16	LEGEND, NOTES AND ABBREVIATIONS
17	FLUORIDE STORAGE AND FEED FACILITIES PLAN
18	FLUORIDE STORAGE AND FEED FACILITIES SECTIONS
19	SINGLE-LINE DIAGRAMS
20	RISER DIAGRAMS
21	CONDUIT SCHEDULES
22	LIGHTING PLAN
23	ELECTRICAL DETAILS
PLUMBING	
24	LEGEND, NOTES AND ABBREVIATIONS
25	FLUORIDE STORAGE AND FEED FACILITIES PLAN
26	SCHEDULES, DETAILS AND RISER DIAGRAM
HVAC	
27	LEGEND, NOTES AND ABBREVIATIONS
28	FLUORIDE STORAGE AND FEED FACILITIES PLAN
29	SCHEDULES AND DETAILS
INSTRUMENTATION	
30	LEGEND, NOTES AND ABBREVIATIONS
31	FLUORIDE FEED SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM
32	INSTRUMENTATION DETAILS

Exhibit C: FEE SCHEDULE (Lump Sum)
O.N. Stevens WTP Fluoride Improvements
Rev. August 5, 2024

		PD	PM	Process Mechanical			Structural			HVAC			Electrical/I&C				CM/CE	CFD	QC					Totals			
TASK	Staff Name	Garcia	Hudson	Duban	Sparks	CAD	Ford	Masud	CAD	Barrese	Chin	CAD	Zomorodi	Loza	Harris	CAD	Martin	Zhang	HVAC	Constructibility	Process	Mechanical	Structural	Labor Totals		Hazen ODC	Total
	Staff Category	SA	A	SPE	AE	D	A	PE	D	A	E	D	SA	A		D	CM	SA	SA	CM	VP	VP	VP	Hours	Hazen Fee		
BASIC SERVICES																											
TASK 100 - PRELIMINARY DESIGN		**12**	**60**	**32**	**70**	**40**	**2**	**36**	**16**	**-**	**28**	**12**	**10**	**24**		**16**	**10**		**4**	**4**	**4**	**-**	**4**	**384**	**$ 78,079**	**$ 12,720**	**$ 90,799**
101	Project Management for Preliminary Design (30%)	2	8																					10	$ 2,669		$ 2,669
102	Project Kick-off Meetings	2	4		2																			8	$ 1,881	$ 2,740	$ 4,621
103	Condition Assessment Site Visit		8	8	8			8																32	$ 5,501	$ 7,240	$ 12,741
104	Progress Meetings with the City	2	8		8																			18	$ 3,703		$ 3,703
105	Internal Coordination Meetings		4	4	4			4			4			4	4									28	$ 4,974		$ 4,974
106	30% Design		20	20	40	40	2	20	16		20	12	8	16	20	16	8							258	$ 46,482		$ 46,482
111	30% QA/QC	2	4																4	4	4		4	22	$ 6,058		$ 6,058
112	30% Review Workshop	4	4		8			4			4		2	4	2		2							34	$ 6,811	$ 2,740	$ 9,551
TASK 200 - DETAILED DESIGN		**28**	**92**	**40**	**92**	**52**	**8**	**52**	**28**	**8**	**64**	**34**	**26**	**64**	**46**	**42**	**24**		**6**	**6**	**10**	**8**	**8**	**738**	**$ 148,130**	**$ 8,480**	**$ 156,610**
201	Project Management for Detailed Design (60% and Final)	4	24																					28	$ 7,430		$ 7,430
202	Progress Meetings with the City	4	8		8																			20	$ 4,279		$ 4,279
203	Internal Coordination Meetings	4	8		8			8			8		8	8										52	$ 11,080		$ 11,080
204	60% Design		16	20	40	32	4	24	16	4	32	24	4	32	32	24	12							316	$ 57,011		$ 57,011
209	60% QA/QC	4	2																4	4	8	4	4	30	$ 9,064		$ 9,064
210	60% Review Workshop	4	4		8			4			4		2	4	2		2							34	$ 6,811	$ 5,740	$ 12,551
218	Pre-Final Design		20	12	16	16	4	12	8	4	16	8	8	16	8	16	8							172	$ 33,621		$ 33,621
222	Pre-Final Design QA/QC	4	2																2	2	2	4	4	20	$ 6,105		$ 6,105
223	Pre-Final Review Meeting	2	4		4			2			2		2	2										18	$ 3,840	$ 2,740	$ 6,580
224	Final Design	2	4	8	8	4		2	4		2	2	2	2	4	2	2							48	$ 8,888	$ -	$ 8,888
TASK 300 - BID PHASE SERVICES		**4**	**9**	**-**	**17**		**-**	**-**	**-**	**-**	**-**	**-**	**-**			**-**	**-**		**-**	**-**	**-**	**-**	**-**	**30**	**$ 6,432**	**$ -**	**$ 6,432**
302	Pre-Bid Meeting	1	2		4																			7	$ 1,328		$ 1,328
304	Addenda and Responses to Bidder's Questions	1	2		8	4																		15	$ 2,574		$ 2,574
305	Bid Opening Meeting		1		1																			2	$ 391		$ 391
306	Bid Tabulation and Recommendation	2	4		4																			10	$ 2,140		$ 2,140
TASK 400 - CONSTRUCTION PHASE SERVICES (TIME & MATERIALS)		**17**	**122**	**-**	**360**	**24**	**-**	**48**	**4**	**-**	**24**	**4**	**16**	**48**	**8**	**4**	**-**		**-**	**-**	**-**	**-**	**-**	**679**	**$ 127,488**	**$ 16,700**	**$ 144,188**
401	Project Management	2	12																					14	$ 4,143		$ 4,143
402	Pre-Construction Conference	4	4		8																			16	$ 3,497		$ 3,497
403	Review Submittals	4	20		80			12			12		4	12	8									152	$ 27,665		$ 27,665
404	Specialty Inspections		16		104			24						24										168	$ 29,149	$ 10,960	$ 40,109
405	Response to RFIs	5	20		40			4			4		4	4										81	$ 16,485		$ 16,485
406	Progress Meetings		18		54																			72	$ 12,639		$ 12,639
407	Review of Change Orders		8		24																			32	$ 5,617		$ 5,617
408	Review O&M Manuals		8		24																			32	$ 5,617		$ 5,617
409	Substantial Inspection and Final Inspection	2	16		24			8			8		8	8										74	$ 15,860	$ 5,740	$ 21,600
410	Preparation of Record Drawing				2	24			4			4				4								38	$ 6,816		$ 6,816
BASIC SERVICES TOTAL																								**1,831**	**360,128**	**37,900**	**398,029**
ADDITIONAL SERVICES																											
TASK 500 - ADDITIONAL SERVICES (TIME AND MATERIALS)			**82**		**228**			**8**			**28**		**34**	**36**	**12**		**42**	**80**						**550**	**$ 117,948**	**$ 16,440**	**$ 134,389**
501	CFD Modeling for HVAC System		4		8													80						92	$ 28,621		$ 28,621
502	Additional Site Visits		24		104			8			16			24										176	$ 32,291	$ 8,220	$ 40,511
503	Training		16		8								16											40	$ 10,569	$ 2,740	$ 13,309
504	Warranty Phase Services		8		24												2							34	$ 5,707		$ 5,707
505	Permitting		8		32																			40	$ 6,227		$ 6,227
506	Start-up Services		12		40						12		12	12			32							120	$ 25,209	$ 5,480	$ 30,689
507	SCADA Documentation		2		4								6		12									24	$ 4,145		$ 4,145
508	Risk Management		8		8												8							24	$ 5,180		$ 5,180
GRAND TOTAL																								**2,381**	**$ 478,076**	**$ 54,340**	**$ 532,418**