

AGREEMENT FOR ENGINEERING SERVICES
for
The City of Deer Park Surface Water Treatment Plant
Clearwell Transfer Pump, GST and Disinfection Improvements
Project 3763-18

This Agreement is made and entered into in Deer Park, Harris County, Texas on this 19th day of May, 2020; by and between **The City of Deer Park**, a Municipal Corporation in the State of Texas, and **Ardurra Group** ENGINEER(s) duly licensed, and practicing under the laws of the State of Texas.

Said Agreement being executed by the City pursuant to the City Charter, Ordinances, and Resolutions of the City Council, and by the Engineer for engineering services hereinafter set forth in connection with the above-designated Project for the City of Deer Park.

DEER PARK retains **Ardurra Group** to perform engineering services related to the above mentioned project, in return for consideration to be paid by DEER PARK under terms and conditions set forth below.

ARTICLE 1. SCOPE OF WORK

- 1.1 ENGINEER will provide engineering, design, consultation, project management, and other services as required to perform and complete the Scope of Work & Services specifically identified in Exhibit A of this Agreement. The Services Scope of Work (the “Work”) and the time schedules set forth in Exhibit A are based on information provided by DEER PARK and ENGINEER. The schedule of milestones and deliverables are essential terms of this Agreement.
- 1.2 If this information is incomplete or inaccurate, or if site conditions are encountered which materially vary from those indicated by DEER PARK, or if DEER PARK directs ENGINEER to change the original Scope of Work shown in Attachment A, a written amendment equitably adjusting the costs, performance time and/or terms and conditions, shall be executed by DEER PARK and ENGINEER.

ARTICLE 2. COMPENSATION

- 2.1 ENGINEER bills for its services on a time and materials basis using the Schedule of Rates and Terms entitled Estimated Level of Effort (“Schedule of Rates”) attached as Exhibit A of this Agreement. As requested, ENGINEER has provided an estimate of the fees for the Work amounting to \$677,809.50 ENGINEER will not exceed that estimate without prior approval from DEER PARK. ENGINEER will notify DEER PARK, for approval, of any proposed revisions to the Schedule of Rates and effective date thereof which shall not be less than thirty (30) days after such notice.
- 2.2 ENGINEER will submit monthly invoices for Services rendered, and DEER PARK will make payment within thirty (30) days of receipt of ENGINEER’S invoices. If DEER PARK objects to all or any portion of an invoice, it will notify ENGINEER of the same within fifteen (15) days from the date of receipt of the invoice and will pay that portion of the invoice not in dispute, and the parties shall immediately make every effort to settle the disputed portion of the invoice. Prices or rates quoted do not include state or local taxes.

ARTICLE 3. DEER PARK’S RESPONSIBILITIES

- 3.1 DEER PARK will designate in writing the person or persons with authority to act on DEER PARK’S behalf on all matters concerning the work to be performed.
- 3.2 DEER PARK will furnish to ENGINEER all existing studies, reports, data and other information available to DEER PARK necessary for performance of the Work, authorize ENGINEER to obtain additional data as required, and furnish the services of others where necessary for the performance of the Work. ENGINEER will be entitled to use and rely upon all such information and services.
- 3.3 Where necessary to performance of the Work, DEER PARK shall arrange for ENGINEER to have access to any site or property.

ARTICLE 4. PERFORMANCE OF SERVICE

- 4.1 ENGINEER’S services will be performed within the schedule and time period set forth in Exhibit A.
- 4.2 ENGINEER shall perform the Work, and any additional services as may be required, for the development of the Project to completion.
- 4.3 If required, additional services will be performed and completed within the time period agreed to in writing by the parties at the time such services are authorized.
- 4.4 If any time period within or date by which any of ENGINEER’S services are to be performed is exceeded for reasons outside of ENGINEER’S reasonable control, all rates, measures and

amounts of compensation and the time for completion of performance shall be subject to equitable adjustment.

ARTICLE 5. CONFIDENTIALITY

- 5.1 ENGINEER will hold confidential all information obtained from DEER PARK, not previously known by ENGINEER or in the public domain.

ARTICLE 6. STANDARD OF CARE & WARRANTY

- 6.1 Standard of Care. In performing services, ENGINEER agrees to exercise professional judgment, made on the basis of the information available to ENGINEER, and to perform its engineering services with the professional skill and care of competent design professionals practicing in the same or similar locale and under the same or similar circumstances and professional license. ENGINEER also agrees to perform its engineering services as expeditiously as is prudent considering this standard of care. This standard of care shall be judged as of the time and place the services are rendered, and not according to later standards.
- 6.2 Warranty. If any failure to meet the foregoing standard of care Warranty appears during one year from the date of completion of the service and ENGINEER is promptly notified thereof in writing, ENGINEER will at its expense re-perform the nonconforming work.
- 6.3 The foregoing Warranty is the sole and express warranty obligation of ENGINEER and is provided in lieu of all other warranties, whether written, oral, implied or statutory, including any warranty of merchantability. Engineer does not warrant any products or services of others. ENGINEER, however, expressly acknowledges that these warranty obligations do not eliminate the applicability of the standard of care to all of its work and that the OWNER may still retain remedies against ENGINEER following the expiration of the warranty period in contract, tort, or otherwise as the law allows.

ARTICLE 7. INSURANCE

- 7.1 ENGINEER will procure and maintain insurance as required by law. At a minimum, ENGINEER will have the following coverage:
- (1) Workers compensation and occupational disease insurance in statutory amounts.
 - (2) Employer's liability insurance in the amount of \$1,000,000.
 - (3) Automobile liability in the amount of \$1,000,000.

(4) Commercial General Liability insurance for bodily injury, death or loss of or damage to property of third persons in the amount of \$1,000,000 per occurrence, \$2,000,000 in the aggregate.

(5) Professional errors and omissions insurance in the amount of \$1,000,000.

7.2 ENGINEER has provided a Statement of Insurance to DEER PARK demonstrating and reflecting that ENGINEER has procured and maintains insurance coverage in accordance with the requirements stated above. That Statement of Insurance is Attachment C of this Agreement.

ARTICLE 8. INDEMNITY

8.1 **THE ENGINEER SHALL INDEMNIFY AND HOLD HARMLESS THE CITY, ITS OFFICERS, OFFICIALS, AGENTS AND EMPLOYEES FROM AND AGAINST ALL CLAIMS, CAUSES OF ACTION, LOSSES, LAWSUITS, JUDGMENTS, FINES, PENALTIES, COSTS, DAMAGES, OR LIABILITY OF ANY CHARACTER, TYPE OR DESCRIPTION INCLUDING WITHOUT LIMITATION, ALL EXPENSES OF LITIGATION, INCLUDING EXPERT OR CONSULTANT FEES, COURT COSTS, AND ATTORNEY'S FEES, RESULTING FROM PERSONAL INJURY (INCLUDING DEATH), PROPERTY DAMAGE OR OTHER HARM, BUT ONLY TO THE EXTENT THAT SUCH PERSONAL INJURY, PROPERTY DAMAGE OR HARM IS CAUSED BY OR RESULTS FROM AN ACT OF NEGLIGENCE, INTENTIONAL TORT, INTELLECTUAL PROPERTY INFRINGEMENT, OR FAILURE TO PAY A SUBCONTRACTOR OR SUPPLIER COMMITTED BY THE ENGINEER OR THE ENGINEER'S AGENT, CONSULTANT UNDER CONTRACT, OR ANOTHER ENTITY OVER WHICH THE ENGINEER EXERCISES CONTROL.**

IF THE CITY DEFENDS AN ACTION, CLAIM, LAWSUIT OR OTHERWISE INCURS ATTORNEY'S FEES AS A RESULT OF AN INDENMIFIED CLAIM AS STATED ABOVE, ENGINEER AGREES TO REIMBURSE THE CITY IN PROPORTION TO THE ENGINEERS LAIBILITY.

8.2 ENGINEER agrees to and shall contractually require its consultants and subcontractors of any tier to assume the same indemnification obligations to Indemnities as stated herein.

ARTICLE 9. OWNERSHIP OF DOCUMENTS

9.1 As long as DEER PARK is current in the payment of all undisputed invoices, all work product prepared by the ENGINEER pursuant to this Agreement, including, but not limited to, all Contract Documents, Plans and Specifications and any computer aided design, shall be the sole and exclusive property of DEER PARK, subject to the ENGINEER's reserved rights.

- 9.2 ENGINEER's technology, including without limitation customary techniques and details, skill, processes, knowledge, and computer software developed or acquired by ENGINEER or its Consultants to prepare and manipulate the data which comprises the instruments of services shall all be and remain the property of the ENGINEER.

ARTICLE 10. INDEPENDENT CONTRACTOR

- 10.1 The ENGINEER is an independent contractor and shall not be regarded as an employee or agent of the DEER PARK.

ARTICLE 11. COMPLIANCE WITH FEDERAL, STATE AND LOCAL LAWS

- 11.1 The ENGINEER shall observe all applicable provisions of the federal, state and local laws and regulations, including those relating to equal opportunity employment.

ARTICLE 12. SAFETY

- 12.1 DEER PARK shall inform the ENGINEER and its employees of any applicable site safety procedures and regulations known to DEER PARK as well as any special safety concerns or dangerous conditions at the site. The ENGINEER and its employees will be obligated to adhere to such procedures and regulations once notice has been given.
- 12.2 ENGINEER shall not have any responsibility for overall job safety at the site. If in ENGINEER's opinion, its field personnel are unable to access required locations or perform required services in conformance with applicable safety standards, ENGINEER may immediately suspend performance until such safety standards can be attained. If within a reasonable time site operations or conditions are not brought into compliance with such safety standards, ENGINEER may in its discretion terminate its performance, in which event, DEER PARK shall pay for services and termination expenses as provided in Article 18.

ARTICLE 13. LITIGATION

- 13.1 At the request of DEER PARK, ENGINEER agrees to provide testimony and other evidence in any litigation, hearings or proceedings to which DEER PARK is or becomes a party in connection with the work performed under this Agreement, unless DEER PARK and the ENGINEER are adverse to one-another in any such litigation.
- 13.2 Any litigation arising out of this Agreement between DEER PARK and ENGINEER shall be heard by the state district courts of Harris County.

ARTICLE 14. NOTICE

- 14.1 All notices to either party by the other shall be deemed to have been sufficiently given when made in writing and delivered in person, by electronic mail, facsimile, certified mail or courier to the address of the respective party or to such other address as such party may designate.

ARTICLE 15. TERMINATION

- 15.1 The performance of work may be terminated or suspended by DEER PARK, for any reason. Such suspension or termination shall be subject to notice of DEER PARK's election to either suspend or terminate the Agreement fifteen (15) days' prior to the effective suspension or termination date. The Notice shall specify the extent to which performance of work is suspended or terminated and the date upon which such action shall become effective. In the event work is terminated or suspended by DEER PARK prior to the completion of services contemplated hereunder, ENGINEER shall be paid for (i) the services rendered to the date of termination or suspension and reasonable services provided to effectuate a professional and timely project termination or suspension.

ARTICLE 16. SEVERABILITY

- 16.1 If any term, covenant, condition or provision of this Agreement is found by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of this Agreement shall remain in full force and effect, and shall in no way be affected, impaired or invalidated thereby.

ARTICLE 17. WAIVER

- 17.1 Any waiver by either party or any provision or condition of this Agreement shall not be construed or deemed to be a waiver of a subsequent breach of the same provision or condition, unless such waiver is so expressed in writing and signed by the party to be bound.

ARTICLE 18. GOVERNING LAW

- 18.1 This Agreement will be governed by and construed and interpreted in accordance with the laws of the State of Texas.

ARTICLE 19. CAPTIONS

- 19.1 The captions contained herein are intended solely for the convenience of reference and shall not define, limit or affect in any way the provisions, terms and conditions hereof or their interpretation.

ARTICLE 20. ENTIRE AGREEMENT

20.1 This Agreement, its articles, provision, terms, and attached Schedules represent the entire understanding and agreement between DEER PARK and ENGINEER and supersede any and all prior agreements, whether written or oral, and may be amended or modified only by a written amendment signed by both parties.

This Agreement is effective on the last day signed.

By _____
Name _____
Title _____
Date _____

The City of Deer Park
By _____
Name _____
Title _____
Date _____

EXHIBIT 'A'

May 7, 2020



Mr. Bill Pedersen
Director of Public Works
City of Deer Park
710 East San Augustine
Deer Park, Texas 77536

Subject: Proposal to Provide Professional Engineering Services
City of Deer Park Surface Water Treatment Plant
Clearwell Transfer Pump, GST, and Disinfection Improvements

Dear Mr. Pedersen:

Ardurra Group, Inc ("Ardurra") is excited to have the opportunity to submit this proposal to the City of Deer Park to provide professional engineering services for design, bidding, and construction phase of the Clearwell Transfer Pump, GST, and Disinfection Improvements project for city's surface water treatment plant.

Please find the attached Exhibit A - Detailed Scope of Services which provides a detailed description of engineering and professional services for the proposed improvements.

Based on the scope of services described in Exhibit A, we proposed to complete the work under a lump sum basis in the following amount:

Basic Services	\$603,173.00
Additional Services	\$74,636.50

In addition, please find the attached level of effort fee tabulation.

We look forward to beginning work on this importance project and appreciate the opportunity to serve the City of Deer Park. Should you have any questions or require additional information, please feel free to contact me at (713) 208-9463 or Jeff Peters at (713) 385-5601.

Very truly yours,

Yue Sun, P.E., BCEE
Senior Project Manager/Water Treatment Practice Leader
TBPE Firm Registration No F-17004

cc: Jeff Peters, PE, BCEE, Client Account Manager, File

Ardurra Group
2032 Buffalo Terrace
Houston, TX 77019
www.ardurra.com

Exhibit A / Detailed Scope of Engineering Services

SCOPE OF SERVICES FOR CITY OF DEER PARK WATER TREATMENT PLANT CLEARWELL TRANSFER PUMP, GST, AND DISINFECTION IMPROVEMENTS

The City of Deer Park surface water treatment plant was constructed in 1989 and treats raw water from the Trinity River via Lake Livingston. The plant a conventional treatment plant and currently rated for 8 mgd production capacity.

The existing transfer pump station consists of six vertical turbine pumps, 950 gallons per minute (gpm) each. The station provides a total pumping capacity of 8.21 mgd, and a firm pumping capacity of 6.84 mgd. Therefore, City desires to improve the clearwell transfer pump station to provide a firm station capacity of 8 mgd as required by TCEQ.

Additionally, the current CT study defines four disinfection zones for the plant, including the raw water pipeline from CWA. Plant staff indicated there had been some challenges to meet disinfection CT requirement when the “CWA” A system delivers a low chlorine residual or water temperature is low. City desires to add baffle walls inside existing ground storage tanks (GSTs) to improve CT for TCEQ compliance.

The plant presently uses gas chlorine and aqua ammonia to form chloramine for disinfection. To improve operator safety during chemical handling, and reduce risks of public exposure due to potential chemical release during transportation, Ardurra performed an alternative evaluation to assess improvement options, including gas chlorine with Chlortainer secondary containment, bulk deliverable sodium hypochlorite solution, and onsite sodium hypochlorite generation. As a result of the evaluation, it was recommended to replace the existing gas chlorine system with an onsite hypochlorite generation system.

The general scope of the improvements for this project includes the following:

1. Install a new transfer pump, motor, and associated piping, fittings, and valves to supplement existing station capacity and provide a firm capacity of 8-mgd. The new pump will be vertical turbine pump to match existing pump type.
2. Expand the existing clearwell to house new pump and interconnect with current clearwell.
3. Modify existing pump suction and discharge piping headers.
4. Install baffle walls inside the ground storage tanks to improve plant disinfection CT.
5. Install a new on-site sodium hypochlorite generator system including two 200 ppd generators, a brine storage tank, hypochlorite product tanks, metering pumps, blowers and auxiliary equipment.
6. Modify existing chlorine storage room to house the new generator equipment.

Exhibit A / Detailed Scope of Engineering Services

7. Replace existing aqua ammonia storage and feed system with a new liquid ammonium sulfate (LAS) storage and feed system that includes bulk storage tanks and metering pumps.
8. Construct chemical containment and chemical piping system.
9. Construct associated structural, ancillary architectural, electrical, instrumentation control and SCADA, HVAC and plumbing, site civil, and yard piping work for proposed improvements.

Ardurra Group, Inc. (Engineer) will perform necessary tasks to complete design, bid phase and construction phase engineering services for proposed improvements as defined in this scope document. The work associated with these engineering services is separated into the following tasks:

PART 1 - BASIC SERVICES

- Task 1 General Project Management and Coordination
- Task 2 Design Phase
- Task 3 Bidding Phase
- Task 4 Engineering Services during Construction Phase

PART 2 - ADDITIONAL SERVICES

- Task 5 On-Site Topographic Survey
- Task 6 Geotechnical Investigation
- Task 7 Drainage Study and Analysis
- Task 8 Off-site Survey for Drainage Study
- Task 9 Disinfection CT Study Update

PART 1 - BASIC SERVICES

Task 1 General Project Management and Coordination

- 1.1 Conduct a project kick-off meeting with City staff. The project kick-off meeting will discuss project expectations, schedule, deliverables and confirm project goals.
- 1.2 Conduct monthly progress meetings during the project phase with City staff to review work completed to date, project schedule, and other issues. These meetings will be approximately 1-hour in duration. It is assumed a maximum of four (4) project progress/coordination meetings will be held.
- 1.3 Coordinate with project team to complete project tasks and meet project objectives.
- 1.4 Perform quality assurance/quality control procedures during the project phase. Those procedures will include a technical internal review of all interim deliverables (including Basis of Design Technical Memorandum for Clearwell Transfer Pump improvements, 60 percent and 90 percent design milestones) and Final Bid-Ready documents.
- 1.5 Coordinate client review meetings in accordance with City procedures. Reviews are anticipated at Basis of Design Technical Memorandum for Clearwell Transfer Pump improvements, 60 percent, 90 percent, and 100 percent completion of design. Engineer will review, consolidate and prepare

Exhibit A / Detailed Scope of Engineering Services

written response to City's review committee. The review meetings may be combined with monthly progress meetings.

- 1.6 Coordinate external regulatory review with the TCEQ. Meet requirements for notification and submission to the TCEQ for review/approval of documents and design.
- 1.7 Perform miscellaneous project management and coordination duties throughout the project, maintain and update project schedule, tracking budget, and prepare invoicing and progress reports.

Task 2 Design Phase

- 2.1 Engineer will review the existing plant drawings and previous reports to gather plant operation data. Conduct up to two (2) site visits/meetings with plant staff to field-verify conditions.
- 2.2 Basis of Design Technical Memorandum for Clearwell Transfer Pump and GST improvements. The proposed improvements will involve expansion of the existing clearwell, installation of one new pump to meet the firm capacity as required and installing baffle walls inside the ground storage tanks.

Engineer will develop a basis of design to present proposed design criteria, and equipment sizing.

Review piping layout of the existing pump station and compare with the latest Hydraulic Institute (HI) Pump Intake and Piping Design Standard to validate compliance.

Engineer will develop new pump, clearwell expansion, and piping layout in accordance with the HI design Standard.

Engineer will develop yard piping modifications and address constructability concerns and potential impacts on plant operation.

Engineer will develop an electrical load list and one-line diagram for proposed improvements.

A Basis of Design Technical Memorandum will be developed to present the basis of design and submitted for city review.

- 2.3 Design and Plans
 - 2.3.1 The Engineer will prepare complete design drawings for constructing the proposed improvement work. Plans will be developed at 60 percent, 90 percent, and Final Bid-Ready Documents.
 - 2.3.2 Instrumentation, control and SCADA upgrades necessary to accommodate the proposed improvements, and integration of new equipment control and PLCs with plant SCADA system.
 - 2.3.3 Site civil design including grading, paving, drainage pipe velocity considerations, piping sizing and placement, and hydraulic gradient, and a stormwater pollution prevention plan (SWPPP) to address erosion and sediment control strategies during construction, prepare TCEQ Notice of Intent (NOI) forms, and develop construction costs for SWPPP measures.

Exhibit A / Detailed Scope of Engineering Services

- 2.3.4 Structural and ancillary architectural design for clearwell expansion, GST baffle wall installation, building modifications, chemical secondary concrete containment, and piping supports etc.
- 2.3.5 Electrical upgrades to handle additional electrical loads and accommodate the proposed improvements.
- 2.3.6 Ventilation and plumbing improvements for the existing chlorine storage room, chlorine feed room, and ammonia feed room.
- 2.4 Specifications: The Engineer will prepare complete contract documents, bid form, and technical specifications for constructing the proposed improvement work. Specifications will be developed at 60 percent, 90 percent, and Final Bid-Ready Documents. Engineer will use a combination of City and Ardurra's standard specifications modified as necessary to accommodate local conditions. Specification format will be Ardurra standard format.
- 2.5 Cost Estimate. Develop a quantity take-off and prepare an opinion of probable construction cost (OPCC) and include it with each submittal.
- 2.6 Engineer will coordinate with City building permit department to obtain review and approval for the proposed improvements.

Deliverables:

- Basis of Design Technical Memorandum for Clearwell Transfer Pump and GST Improvements to present design criteria, equipment sizing, preliminary layouts etc.
- Three (3) 11"x17" (half-size) copies of the submittal drawings, Technical Specifications, and OPCC for each deliverable
- One electronic copy containing the Plans, Technical Specifications and OPCC in PDF format for each design milestone

Task 3 Bidding Phase

Upon completion of the Contract Documents, Engineer will assist the City in the bidding phase and provide the following services:

- 3.1 Attend the pre-bid meeting and site walkthrough.
- 3.2 Respond to questions during bidding, prepare and issue addenda if necessary.
- 3.3 Prepare bid tabulation, evaluate bids, and submit a letter of recommendation of award.
- 3.4 Prepare conformed documents.

Deliverables:

- Addenda as Required to Response to Bidder's Questions;
- Bid Tab;

Exhibit A / Detailed Scope of Engineering Services

- Engineer Letter of Recommendation of Bid Award;
- Conformed Documents including
 - a) One 11"x17" (half-size) set of plans and specifications for use by the city
 - b) Three full size sets of plans and specifications for use by the Contractor
 - c) One electronic copy of plans and specifications

Task 4 Construction Phase

4.1 General

- 4.1.1 Attend pre-construction meeting to provide information & answer questions.
- 4.1.2 Attend eighteen (18) construction monthly progress meetings and site visits. It is assumed that construction duration will include sixteen (16) months from start to substantial completion, and two more months to final acceptance. Per discussion with the City, construction management and field inspection will be provided by the City.
- 4.1.3 Additional site visits up to four (4) to assist city with addressing field construction issues.
- 4.1.4 Perform project management and contract administration duties similar to those in the previous phases, throughout construction.

4.2 Substantial Completion and Final Acceptance

- 4.2.1 Review progress of work for Substantial Completion (in the form of a Substantial Completion walkthrough inspection); with production of punch list; substantiation that items are completed; and issue Certificate of Substantial Completion with concurrence of the City.
- 4.2.2 Conduct a final inspection to substantiate that the completed work of Contractor is acceptable to certify work completion and issue Certificate of Final Acceptance with concurrence of the City.

4.3 Submittal, RFI, CO Review

Engineer will review and comment on Contractor's submittals, RFIs, RCOs including coordination with the City on Change Directives and Change Orders.

It is assumed shop drawings and other submittals will be reviewed no more than twice and Preliminary and Final O&M Manual will be reviewed once. It is assumed 25% resubmittals. Engineer will proactively work with the City and Contractor to address technical deficiencies of submittals in order to minimize multiple reviews. This would be accomplished by way of notification of serious noted deficiencies upon initial receipt of a submittal where the defective submittal would be promptly returned.

Engineer will provide interpretive guidance for Contractor and City in resolution of problems.

4.4 Record Drawings

Engineer will coordinate with general contractor and sub-contractors to obtain complete record of As Built "redlines".

Exhibit A / Detailed Scope of Engineering Services

Engineer will prepare Record Drawings from Contractor's As Built "redlines" in electronic format (CD) & hard copy format.

Deliverables:

- One full-size hard copy and one electronic copy of Record Drawings.

PART 2 - ADDITIONAL SERVICES

Task 5 Site Topographic Survey

Conduct a site topographic survey of project improvements area to locate existing utilities, structure elevations, and locate geotechnical borings on the topographic survey maps.

Task 6 Geotechnical Investigation

Perform a geotechnical investigation and develop geotechnical report for structural foundation and design recommendations. The geotechnical investigation will include six (6) borings in the proposed project area. This include two borings, 45 ft deep each for the proposed clearwell expansion, and three borings, 25 feet deep each outside the GST perimeter, and one boring in the chemical containment area.

Task 7 Drainage Study and Analysis

Harris County has recently issued interim guidelines and updated criteria for ATLAS 14 Implementation. Rainfall intensity design criteria has been increased in the updated guidelines. Areas impacted by this have already adopted the updated criteria or are in the process of adopting for new improvements. Considering proposed impervious cover from Clearwell Transfer Pump, GST, and Disinfection Improvements, it is recommended a drainage study be performed using the updated rainfall intensity design criteria for proper design of on-site grading and subsurface drainage facilities to ensure that no adverse impact occurs 2,000 linear feet downstream.

The drainage study and analysis includes the following:

- 1) Delineation of Drainage Basin (off-site).
- 2) Preparation of ultimate on-site developments from both Clearwell, Transfer Pump, and GST Improvements, and Disinfection Improvements projects.
- 3) Determination of Runoff.
 - a) Design Rainfall Events.
 - b) Application of Runoff Calculation assuming that drainage area is less than 640 Acres.
 - c) Determine Coefficients for Rational Method. The study will use Rational Method and HEC-HMS/HEC-RAS Model will not be performed.

Should any off-site improvements be identified, the improvements will be implemented by the city via a separate project.

Task 8 Off-site for Drainage Study

In support of the drainage study, Engineer shall perform a survey of off-site stormwater system cross sections from the point of improvements to 2,000 feet downstream to ensure no adverse impacts are created downstream. Survey of cross sections shall be taken at an interval of 100 feet along the downstream storm water conveyance. Sections shall be located at flow line at 25 feet or 50 feet

Exhibit A / Detailed Scope of Engineering Services

intervals to properly characterize the conveyance system. Survey shall include all found monuments and set off-site horizontal, control points. Research off-site abstract information used. City will assist and coordinate for accessing to downstream survey of cross-sections.

Task 9 Disinfection CT Study Update

In conjunction with clearwell expansion and GST baffle wall addition, the plant disinfection CT study will need to be updated. Engineer will review current CT study and plant monthly operating reports. The CT study will be updated to incorporate clearwell transfer pump and GST baffle wall improvements. Engineer will submit updated CT study to TCEQ for review and approval.

Exhibit A / Detailed Scope of Engineering Services

TABLE A-1
TO AGREEMENT BETWEEN ENGINEER AND OWNER FOR PROFESSIONAL SERVICES
FOR
CITY OF DEER PARK
WATER TREATMENT PLANT
CLEARWELL TRANSFER PUMP, GST, AND DISINFECTION IMPROVEMENTS

BASIC AND ADDITIONAL SERVICES FEES

Task No.	Task Description	Amount
PART 1 Basic Services		
TASK 1	Project Management and Coordination (LS)	\$41,654.00
TASK 2	Design Phase (LS)	\$423,799.00
TASK 3	Bid Phase (LS)	\$20,687.00
TASK 4	Engineering Services During Construction (LS)	\$117,033.00
Subtotal Basic Services		\$603,173.00
PART 2 Additional Services		
TASK 5	On-Site Topographic Survey (LS)	\$8,717.50
TASK 6	Geotechnical Investigation (LS)	\$24,438.00
TASK 7	Drainage Study and Analysis (LS)	\$12,350.00
TASK 8	Off-site Survey for Drainage Study (LS)	\$13,941.00
TASK 9	Disinfection CT Study Update (LS)	\$15,190.00
Subtotal Additional Services		\$74,636.50
Total Contract Amount		\$677,809.50

LS – Lump Sum

Exhibit A-1 Level of Effort Fee Estimate

Project: City of Deer Park WTP Clearwell Transfer Pump, GST, and Disinfection Improvements
Consultant: Ardurra Group
Date: 5/6/2020/2020

			Ardurra Estimated Man-hours												Subconsultants											
Position			Project Director	QA/QC	Sr. PM	Sr. Proj. Eng. (Process Mech)	Proj Eng.5/6 (Process Mech)	Proj Eng. 3/4 (Process Mech)	Sr. Proj. Eng. (Instru. & Control)	Proj Eng. Instru. & Control)	CAD Designer	Word Processor	Contract Administrator	Admin	Ardurra - Total Hours (Hrs)	Ardurra Subtotal Labor Cost (\$)	ODCs (\$)	Ardurra Subtotal (\$)	Briones (Survey) (\$)	AACE (HPF) (\$)	Wekiva (Structural/ Arch) (\$)	Kalluri (Electrical) (\$)	Geotest (Geotech) (\$)	Total Hours (Hrs)	Ardurra Sub Mark-up (10%) (\$)	Total Cost (Ardurra + Subs) (\$)
Task	Subtask	Task Description	\$ 275.00	\$ 275.00	\$ 240.00	\$ 230.00	\$ 180.00	\$ 160.00	\$ 230.00	\$ 160.00	\$ 150.00	\$ 120.00	\$ 120.00	\$ 90.00												
PART 1 - BASIC SERVICES																										
Task 1. GENERAL PROJECT MANAGEMENT AND COORDINATION																										
	1.1	Project Kick-off Meeting, Agenda and Meeting Minutes			4			4				2			10	\$ 1,840.00		\$ 1,840.00						10	\$ -	\$ 1,840.00
	1.2	Project Progress Meetings, Agenda and Meeting Minutes (up to 4)	4		8			12				8			32	\$ 5,900.00		\$ 5,900.00						32	\$ -	\$ 5,900.00
	1.3	Internal Project Team Coordination and Meetings			8		8	24						8	48	\$ 7,920.00		\$ 7,920.00						48	\$ -	\$ 7,920.00
	1.4	QA/QC and Technical Review (60%, 90%, & Final Bid-Ready)	6	40											46	\$ 12,650.00		\$ 12,650.00						46	\$ -	\$ 12,650.00
	1.5	City Review (BOD, 60%, 90%, 100%) and Submittal Comments Incorporation, Comments-Response Log Preparation			4			12						8	24	\$ 3,600.00		\$ 3,600.00						24	\$ -	\$ 3,600.00
	1.6	TCEQ Regulatory Coordination and Document Submission			8			12						4	24	\$ 4,200.00		\$ 4,200.00						24	\$ -	\$ 4,200.00
	1.7	Project Schedule, Filing, Invoicing, Progress Report & Contract Administration (Final Design Phase)			4			8					8	4	24	\$ 3,560.00		\$ 3,560.00						24	\$ -	\$ 3,560.00
		Project Task Expenses (5% on Subtotal Hrs Cost)															\$ 1,984.00	\$ 1,984.00							\$ -	\$ 1,984.00
Task 1. GENERAL PROJECT MANAGEMENT AND COORDINATION			10	40	36	0	8	72	0	0	0	10	8	24	208	\$ 39,670.00	\$ 1,984.00	\$ 41,654.00	\$ -		\$ -			208	\$ -	\$ 41,654.00
TASK 2. DESIGN PHASE																										
	2.1	Site Visits			2			8		8					18	\$ 3,040.00		\$ 3,040.00						18	\$ -	\$ 3,040.00
	2.2	Basis of Design Development																								
		Improvement Evaluation and Basis of Design				8		16							24	\$ 4,400.00		\$ 4,400.00						24	\$ -	\$ 4,400.00
		Review existing Piping Layout and Develop new				8		24		16					48	\$ 8,080.00		\$ 8,080.00						48	\$ -	\$ 8,080.00
		Yard Piping modifications and Constructability Review	2			8		24		16					50	\$ 8,630.00		\$ 8,630.00						50	\$ -	\$ 8,630.00
		Basis of Design TM	2		4			20							26	\$ 4,710.00		\$ 4,710.00						26	\$ -	\$ 4,710.00
	2.3	Plans (60%, 90% & Bid-Ready)																								
	2.3.1	Process Mechanical Design																								
1	G-1	Cover Sheet			0.5			1			2				3.5	\$ 580.00		\$ 580.00						3.5	\$ -	\$ 580.00
2	G-2	Drawing Index and General Notes			0.5			1			4				5.5	\$ 880.00		\$ 880.00						5.5	\$ -	\$ 880.00
3	G-3	General Legend and Abbreviations			0.5			1			1				2.5	\$ 430.00		\$ 430.00						2.5	\$ -	\$ 430.00
4	P-1	Overall Process Flow Diagram			1			6			4				11	\$ 1,800.00		\$ 1,800.00						11	\$ -	\$ 1,800.00
5	P-2	Clearwell and Transfer Pump Partial Hydraulic Profile			0.5			8			4				12.5	\$ 2,000.00		\$ 2,000.00						12.5	\$ -	\$ 2,000.00
6	C-1	Existing Site Plan			0.5			4			4				8.5	\$ 1,360.00		\$ 1,360.00						8.5	\$ -	\$ 1,360.00
7	C-2	Proposed Improvement and Dimension Control Plan			1			6			8				15	\$ 2,400.00		\$ 2,400.00						15	\$ -	\$ 2,400.00
8	C-3	Overall Yard Piping Plan			1			6			12				19	\$ 3,000.00		\$ 3,000.00						19	\$ -	\$ 3,000.00
9	C-4	Yard Piping Modifications Plan I			1			12			10				23	\$ 3,660.00		\$ 3,660.00						23	\$ -	\$ 3,660.00
10	C-5	Yard Piping Modifications Plan II			1			12			10				23	\$ 3,660.00		\$ 3,660.00						23	\$ -	\$ 3,660.00
11	C-6	Yard Piping Modifications Plan III			1			12			10				23	\$ 3,660.00		\$ 3,660.00						23	\$ -	\$ 3,660.00
12	C-7	Yard Piping Modifications Plan IV			1			12			10				23	\$ 3,660.00		\$ 3,660.00						23	\$ -	\$ 3,660.00
13	C-8	Yard Piping Modifications Sections			1			8			10				19	\$ 3,020.00		\$ 3,020.00						19	\$ -	\$ 3,020.00
14	C-9	Yard Piping Modifications Details			1			8			8				17	\$ 2,720.00		\$ 2,720.00						17	\$ -	\$ 2,720.00
15	D-1	Existing Chemical Building No.2 Demolition Overall Plan			1			8			12				21	\$ 3,320.00		\$ 3,320.00						21	\$ -	\$ 3,320.00
16	D-2	Chlorine Storage Room Demolition Enlarged Plan, Sections and Details			0.5			8			12				20.5	\$ 3,200.00		\$ 3,200.00						20.5	\$ -	\$ 3,200.00
17	D-3	Chlorine Feed Room Demolition Enlarged Plan, Sections and Details			0.5			8			12				20.5	\$ 3,200.00		\$ 3,200.00						20.5	\$ -	\$ 3,200.00
18	D-4	Ammonia Feed Room Demolition Enlarged Plan, Sections and Details			0.5			10			12				22.5	\$ 3,520.00		\$ 3,520.00						22.5	\$ -	\$ 3,520.00
19	M-1	Clearwell Transfer Pump Improvements Plan			1	4		8			12				25	\$ 4,240.00		\$ 4,240.00						25	\$ -	\$ 4,240.00
20	M-2	Clearwell Transfer Pump Improvements Sections			1	4		8			10				23	\$ 3,940.00		\$ 3,940.00						23	\$ -	\$ 3,940.00
21	M-3	Clearwell Transfer Pump Piping Modifications Plan			0.5	4		8			8				20.5	\$ 3,520.00		\$ 3,520.00						20.5	\$ -	\$ 3,520.00
22	M-4	Clearwell Transfer Pump Piping Modifications Sections and Details			0.5	2		6			8				16.5	\$ 2,740.00		\$ 2,740.00						16.5	\$ -	\$ 2,740.00
23	M-5	Ground Storage Tank Baffle Wall Plan			1	3		16			12				32	\$ 5,290.00		\$ 5,290.00						32	\$ -	\$ 5,290.00
24	M-6	Ground Storage Tank Baffle Wall Sections and Details			1	3		12			10				26	\$ 4,350.00		\$ 4,350.00						26	\$ -	\$ 4,350.00
25	M-7	Misc. Mechanical Improvements Plan			0.5			8			8				16.5	\$ 2,600.00		\$ 2,600.00						16.5	\$ -	\$ 2,600.00
26	M-8	Misc. Mechanical Improvements Section and Details			0.5			8			8				16.5	\$ 2,600.00		\$ 2,600.00						16.5	\$ -	\$ 2,600.00
27	M-9	Chemical Building No. 2 Overall Modification Plan			1		4	12			16				33	\$ 5,280.00		\$ 5,280.00						33	\$ -	\$ 5,280.00

Exhibit A-1 Level of Effort Fee Estimate

Project: City of Deer Park WTP Clearwell Transfer Pump, GST, and Disinfection Improvements
Consultant: Ardurra Group
Date: 5/6/2020/2020

			Ardurra Estimated Man-hours																Subconsultants								
			Project Director	QA/QC	Sr. PM	Sr. Proj. Eng. (Process Mech)	Proj Eng.5/6 (Process Mech)	Proj Eng. 3/4 (Process Mech)	Sr. Proj. Eng. (Instru. & Control)	Proj Eng. Instru. & Control)	CAD Designer	Word Processor	Contract Administrator	Admin	Ardurra - Total Hours (Hrs)	Ardurra Subtotal Labor Cost (\$)	ODCs (\$)	Ardurra Subtotal (\$)	Briones (Survey) (\$)	AACE (HPF) (\$)	Wekiva (Structural/ Arch) (\$)	Kalluri (Electrical) (\$)	Geotest (Geotech) (\$)	Total Hours (Hrs)	Ardurra Sub Mark-up (10%) (\$)	Total Cost (Ardurra + Subs) (\$)	
Position Rate			\$ 275.00	\$ 275.00	\$ 240.00	\$ 230.00	\$ 180.00	\$ 160.00	\$ 230.00	\$ 160.00	\$ 150.00	\$ 120.00	\$ 120.00	\$ 90.00													
Task	Subtask	Task Description																									
28	M-10	OSHG Room Enlarged Plan			1		8	16			16				41	\$ 6,640.00		\$ 6,640.00						41	\$ -	\$ 6,640.00	
29	M-11	OSHG Room Sections			1		8	16			16				41	\$ 6,640.00		\$ 6,640.00						41	\$ -	\$ 6,640.00	
30	M-12	OSHG Product Solution Tank and Brine Tank Plan			1		6	16			16				39	\$ 6,280.00		\$ 6,280.00						39	\$ -	\$ 6,280.00	
31	M-13	OSHG Product Solution Tank and Brine Tank Sections			1		6	16			16				39	\$ 6,280.00		\$ 6,280.00						39	\$ -	\$ 6,280.00	
32	M-14	OSHG Metering Pump Room Enlarged Plan			1		8	16			16				41	\$ 6,640.00		\$ 6,640.00						41	\$ -	\$ 6,640.00	
33	M-15	OSHG Metering Pump Room Piping Isometric			1		6	12			16				35	\$ 5,640.00		\$ 5,640.00						35	\$ -	\$ 5,640.00	
34	M-16	LAS Storage Tank Plan and Sections			1		6	16			16				39	\$ 6,280.00		\$ 6,280.00						39	\$ -	\$ 6,280.00	
35	M-17	LAS Metering Pump Room Enlarged Plan			1		8	16			16				41	\$ 6,640.00		\$ 6,640.00						41	\$ -	\$ 6,640.00	
36	M-18	LAS Metering Pump Room Piping Isometric			1		6	12			16				35	\$ 5,640.00		\$ 5,640.00						35	\$ -	\$ 5,640.00	
37	M-19	Chemical System Valve Schedule					2	8			10				20	\$ 3,140.00		\$ 3,140.00						20	\$ -	\$ 3,140.00	
38	M-20	Mechanical Standard details I						4			4				8	\$ 1,240.00		\$ 1,240.00						8	\$ -	\$ 1,240.00	
39	M-21	Mechanical Standard details II						4			4				8	\$ 1,240.00		\$ 1,240.00						8	\$ -	\$ 1,240.00	
40	M-22	Mechanical Standard details III						4			4				8	\$ 1,240.00		\$ 1,240.00						8	\$ -	\$ 1,240.00	
41	M-23	Mechanical Standard details III						4			4				8	\$ 1,240.00		\$ 1,240.00						8	\$ -	\$ 1,240.00	
	2.3.2	Instrumentation, Control, and SCADA Design																									
42	I-1	Instrumentation Legend								2	4				6	\$ 920.00		\$ 920.00						6	\$ -	\$ 920.00	
43	I-2	SCADA System Architecture							2	12	16				30	\$ 4,780.00		\$ 4,780.00						30	\$ -	\$ 4,780.00	
44	I-3	Clearwell Transfer Pump P&ID							2	12	16				30	\$ 4,780.00		\$ 4,780.00						30	\$ -	\$ 4,780.00	
45	I-3	OSHG P&ID I - Generators							2	16	20				38	\$ 6,020.00		\$ 6,020.00						38	\$ -	\$ 6,020.00	
46	I-4	OSHG P&ID II - Brine System							2	16	20				38	\$ 6,020.00		\$ 6,020.00						38	\$ -	\$ 6,020.00	
47	I-5	OSHG P&ID III - Blowers							2	8	10				20	\$ 3,240.00		\$ 3,240.00						20	\$ -	\$ 3,240.00	
48	I-6	OSHG P&ID IV - Product Solution Tanks & Metering Pumps							2	12	20				34	\$ 5,380.00		\$ 5,380.00						34	\$ -	\$ 5,380.00	
49	I-7	LAS System P&ID							2	12	16				30	\$ 4,780.00		\$ 4,780.00						30	\$ -	\$ 4,780.00	
50	I-8	Instrumentation Details								4	4				8	\$ 1,240.00		\$ 1,240.00						8	\$ -	\$ 1,240.00	
	2.3.3	Site Civil Subdiscipline Design (grading, paving, drainage etc., 10 sheets estimated)													0	\$ -		\$ -	\$ 28,674.00					0	\$ 2,867.40	\$ 31,541.40	
	2.3.4	Structural/Ancillary Architectural Subdiscipline Design (11 sheets estimated)													0	\$ -		\$ -			\$ 20,017.50			0	\$ 2,001.75	\$ 22,019.25	
	2.3.5	Electrical Subdiscipline Design (19 sheets estimated)								16					16	\$ 2,560.00		\$ 2,560.00				\$ 59,410.58		16	\$ 5,941.06	\$ 67,911.63	
	2.3.6	HPF Subdiscipline Design (9 Sheets estimated)													0	\$ -		\$ -		\$ 26,811.00					\$ 2,681.10	\$ 29,492.10	
	2.4	Contract Documents, Bid Form, and Technical Specifications (full specs for 60%, 90%, and Final Bid-ready)	6		8	12		90	6	40		24		12	198	\$ 32,470.00		\$ 32,470.00						198	\$ -	\$ 32,470.00	
	2.5	Cost Estimate Development & Review (BOD TM, 60%, 90%, & Final bid-ready)			2	6		40		30					78	\$ 13,060.00		\$ 13,060.00						78	\$ -	\$ 13,060.00	
	2.6	City Building Permit Review & Approval			2			12						4	18	\$ 2,760.00		\$ 2,760.00						18	\$ -	\$ 2,760.00	
		Project Task Expenses (5% on Subtotal Hrs Cost)															\$ 13,114.00	\$ 13,114.00							\$ -	\$ 13,114.00	
TASK 2. DESIGN PHASE			10	0	48	62	68	611	20	188	565	24	0	16	1612	\$ 262,280.00	\$ 13,114.00	\$ 275,394.00	\$ 28,674.00	\$ 26,811.00	\$ 20,017.50	\$ 59,410.58		1612	\$ 13,491.31	\$ 423,799.00	

Exhibit A-1 Level of Effort Fee Estimate

Project: City of Deer Park WTP Clearwell Transfer Pump, GST, and Disinfection Improvements
Consultant: Ardurra Group
Date: 5/6/2020/2020

			Ardurra Estimated Man-hours											Subconsultants												
			Project Director	QA/QC	Sr. PM	Sr. Proj. Eng. (Process Mech)	Proj Eng.5/6 (Process Mech)	Proj Eng. 3/4 (Process Mech)	Sr. Proj. Eng. (Instru. & Control)	Proj Eng. Instru. & Control)	CAD Designer	Word Processor	Contract Administrator	Admin	Ardurra - Total Hours (Hrs)	Ardurra Subtotal Labor Cost (\$)	ODCs (\$)	Ardurra Subtotal (\$)	Briones (Survey) (\$)	AACE (HPF) (\$)	Wekiva (Structural/ Arch) (\$)	Kalluri (Electrical) (\$)	Geotest (Geotech) (\$)	Total Hours (Hrs)	Ardurra Sub Mark-up (10%) (\$)	Total Cost (Ardurra + Subs) (\$)
Position Rate			\$ 275.00	\$ 275.00	\$ 240.00	\$ 230.00	\$ 180.00	\$ 160.00	\$ 230.00	\$ 160.00	\$ 150.00	\$ 120.00	\$ 120.00	\$ 90.00												
Task	Subtask	Task Description																								
TASK 3. BIDDING PHASE																										
	3.1	Attend Pre-bid Meeting and Site Walkthrough			4									4	\$ 960.00		\$ 960.00						4	\$ -	\$ 960.00	
	3.2	Respond to Bidder Questions, Prepare & Issue Addenda			4			16	2	8	12	4		46	\$ 7,540.00		\$ 7,540.00	\$ 1,235.25	\$ 1,793.00	\$ 1,100.00	\$ 1,543.50		46	\$ 567.18	\$ 13,778.93	
	3.3	Bid Evaluation, Bid Tabulation, & Recommendation of Award			2			6						8	\$ 1,440.00		\$ 1,440.00						8	\$ -	\$ 1,440.00	
	3.4	Prepare Conformed Documents						8		2	12	2		26	\$ 3,820.00		\$ 3,820.00						26	\$ -	\$ 3,820.00	
		Project Task Expenses (5% on Subtotal Hrs Cost)											2			\$ 688.00	\$ 688.00							\$ -	\$ 688.00	
TASK 3. BIDDING PHASE			0	0	10	0	0	30	2	10	24	6	0	2	84	\$ 13,760.00	\$ 688.00	\$ 14,448.00	\$ 1,235.25	\$ 1,793.00	\$ 1,100.00	\$ 1,543.50		84	\$ 567.18	\$ 20,687.00
TASK 4. ENGINEERING SERVICES DURING CONSTRUCTION PHASE																										
	4.1	General																								
	4.1.1	Attend pre-construction meeting	2		4									6	\$ 1,510.00		\$ 1,510.00						6	\$ -	\$ 1,510.00	
	4.1.2	Attend construction progress meetings/site visits (up to 18)			18			18						36	\$ 7,200.00		\$ 7,200.00						36	\$ -	\$ 7,200.00	
	4.1.3	Additional Site Visits (up to 4)					8							8	\$ 1,440.00		\$ 1,440.00						8	\$ -	\$ 1,440.00	
	4.1.4	Project management & coordination, invoicing, progress report, subconsultant management, and contract management			6			18				18		42	\$ 6,480.00		\$ 6,480.00						42	\$ -	\$ 6,480.00	
	4.2	Substantial Completion and Final Acceptance																					0	\$ -	\$ -	
	4.2.1	Substantial completion walkthrough and punch list			8			8		8			4	28	\$ 4,840.00		\$ 4,840.00						28	\$ -	\$ 4,840.00	
	4.2.2	Final completion inspection and final acceptance			4			6				2		12	\$ 2,160.00		\$ 2,160.00						12	\$ -	\$ 2,160.00	
	4.3	Submittal, RFI, CO Review																					0	\$ -	\$ -	
	4.3.1	Submittals, estimated 25% resubmittals ¹			8			100	4	40			12	164	\$ 26,320.00		\$ 26,320.00	\$ 6,845.25	\$ 11,907.00	\$ 8,685.00	\$ 12,214.13		164	\$ 3,965.14	\$ 69,936.51	
	4.3.2	RFI Review and Response			6		8	8	2	4		4		32	\$ 5,740.00		\$ 5,740.00						32	\$ -	\$ 5,740.00	
	4.3.3	Change Order review and response	2		4		8		4	8	8	2		36	\$ 6,590.00		\$ 6,590.00						36	\$ -	\$ 6,590.00	
	4.4	Review contractor as-built redlines and Prepare Record Drawings			2			16		4	24		4	50	\$ 7,640.00		\$ 7,640.00						50	\$ -	\$ 7,640.00	
		Project Task Expenses (5% on Subtotal Hrs Cost)														\$ 3,496.00	\$ 3,496.00								\$ 3,496.00	
TASK 4. ENGINEERING SERVICES DURING CONSTRUCTION PHASE			4	0	60	0	24	174	10	64	32	8	18	20	414	\$ 69,920.00	\$ 3,496.00	\$ 73,416.00	\$ 6,845.25	\$ 11,907.00	\$ 8,685.00	\$ 12,214.13		414	\$ 3,965.14	\$ 117,033.00
TASK 2. DESIGN PHASE			14	0	118	62	92	815	32	262	621	38	18	38	2110	\$ 345,960.00	\$ 17,298.00	\$ 363,258.00	\$ 36,754.50	\$ 40,511.00	\$ 29,802.50	\$ 73,168.20	\$ -	2110	\$ 18,023.62	\$ 561,519.00
TOTAL BASIC SERVICES			24	40	154	62	100	887	32	262	621	48	26	62	2318	\$ 385,630.00	\$ 19,282.00	\$ 404,912.00	\$ 36,754.50	\$ 40,511.00	\$ 29,802.50	\$ 73,168.20	\$ -	2318	\$ 18,023.62	\$ 603,173.00
PART 2 - ADDITIONAL SERVICES																										
TASK 5		On-Site Topographic Survey												0	\$ -	\$ -	\$ -	\$ 7,924.50					0	\$ 793.00	\$ 8,717.50	
TASK 6		Geotechnical Investigation												0	\$ -	\$ -	\$ -					\$ 22,216.00	0	\$ 2,222.00	\$ 24,438.00	
TASK 7		Drainage Analysis and Study												0	\$ -	\$ -	\$ -	\$ 11,227.00					0	\$ 1,123.00	\$ 12,350.00	
TASK 8		Off-site Survey for Drainage Study												0	\$ -	\$ -	\$ -	\$ 12,673.00					0	\$ 1,268.00	\$ 13,941.00	
TASK 9		Disinfection CT Study Update	2		16		16	40					8	82	\$ 14,390.00	\$ 800.00	\$ 15,190.00						82	\$ -	\$ 15,190.00	
TOTAL ADDITIONAL SERVICES			2	0	24	0	16	48	16	24	0	4	0	8	142	\$ 25,590.00	\$ 1,400.00	\$ 26,990.00	\$ 31,824.50	\$ -	\$ -	\$ -	\$ 22,216.00	142	\$ 5,406.00	\$ 74,636.50
TOTAL BASIC + ADDITIONAL			26	40	178	62	116	935	48	286	621	52	26	70	2,460	\$ 411,220.00	\$ 20,682.00	\$ 431,902.00	\$ 68,579.00	\$ 40,511.00	\$ 29,802.50	\$ 73,168.20	\$ 22,216.00	2,460	\$ 23,429.62	\$ 677,809.50

Notes:

1. Subdiscipline LOE listed herein includes engineering services during Construction Phase.