



# Memo

To: Clay Pearson, City Manager

From: Skipper Jones, Assistant Director Capital Projects

CC: Trent Epperson, Assistant City Manager  
Robert Upton, Director Engineering and Capital Projects  
Clarence Whittwer, Director Public Works  
David Van Riper, Assistant Director Public Works

Date: August 1, 2019

Re: Surface Water Treatment Plant – Owner’s Representative Master Services Agreement; Task Order #4 Final Design Phase & Construction Phase

7/29/2019  
To: Mayor and City Council members  
Update and heads-up for the next round of professional service contracts in pursuit of our new surface water treatment plant. Clay

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## Purpose

This memo provides Pre-Award notification and information pertaining to the planned award of Task Order #4 to the MASTER Services Agreement for Owner’s Representative services and activities associated with the final design and construction phases of the Surface Water Treatment Plant. This contract award is scheduled for the August 12 Council Agenda.

## Background

In June of 2016 Council awarded the initial Master Service Agreement along with Task Order #1 to Ardurra Group, LLC to begin assisting with the management of the City’s future water supply, production and management efforts. In March 2017 Council awarded Task Order #2 to Ardurra Group for services associated with the AMI Water Meter Change Out also funded under the Drinking Water State Revolving Fund (DWSRF) from Texas Water Development Board TWDB. In April 2017 Council awarded Task Order #3 to assist in development of and coordination of the preliminary design activities and develop the Water Master Plan which is instrumental in determining how and where the Surface Water Plant will deliver that water. In March 2019 Council awarded the first of three contracts for Final Design services to CDM Smith. In early April 2019 Council awarded the contract for Construction Manager at Risk (CMAR) to Pepper Lawson Waterworks (PLW) signaling the movement of the project into the preliminary construction phase.

## Scope of Task 4

With three separate design firms progressing their individual packages and the CMAR beginning to interact and accelerate the design process and regulatory agencies imposing new requirements, the scope of Task 4 is broad and contains a number of planned and expected activities making it a summary Task Order for a large number of work items related to design management, CMAR coordination, regulatory interaction and approval, regulatory document development, operational and maintenance procedure development, monitoring and reporting, budgeting, personnel staffing plan, distribution system improvement and uniform standards and specification creation. The tasks described herein have been arranged in the order presented in the Engineer’s Proposal to organize them in groups of similar purpose.

## **Texas Water Development Board (TWDB) Drinking Water State Revolving Fund (DWSRF)**

First and most important is the continued financial coordination tasks revolving around the funding application process with Texas Water Development Board (TWDB) and the technical approval and permitting processes with Texas Commission of Environmental Quality (TCEQ) to meet deadlines and maintain the flow of project funding and technical approvals for permitting schedules. This work also includes establishing the procurement process for a Materials Testing firm in compliance with TWDB procedures.

There are additional regulatory components that that are required as the project moves forward including:

### **Vulnerability Assessment (VA)**

The Bioterrorism Act 2002 requires that a utility conduct an analysis that consists of a threat identification from inside, outside and cyber sources. This study will conduct a “fault tree” analysis of critical assets to identify single points of failure. It assesses the site security and conducts a risk assessment in order to provide risk reduction recommendations.

### **Health and Safety Plan (HSP)**

The HSP will be focused on operational aspects looking at recognized hazards within the operations, identifying personal protective requirements, procedures for decontamination of equipment and personnel, emergency medical capabilities, training programs. This document is required for EPA and regulations and subsequent approval.

### **Risk Management Plan (RMP)**

The RMP is required by the federal government through the EPA to be updated when the drinking water system changes or is modified to keep current with new activities and facilities. It includes reviews of the potential effects of accidental chemical releases, accident histories and details prevention programs, safety precautions and maintenance procedures and defines an emergency response program detailing employee training and procedures for informing the public.

### **Risk Resilience Assessment (RRA)**

The RRA study is required to comply with Safe Drinking Water Act and is submitted to the EPA. The study assesses the risks from malevolent acts as well as natural hazards such as storms. It assesses piping, physical barriers, source water exposure, water collection and intake structures, pretreatment, treatment, storage and distribution facilities as well as electronic and automated systems. It will also review the use and storage of specific chemicals and operations and maintenance plans for the facility.

### **Emergency Response Plan (ERP)**

The update will consist of the certification that a Risk & Resiliency Assessment was completed and that all identified issues were addressed. The certification must be submitted to the EPA.

### **Corrosion Control Study Update (CCS)**

The CCS is required by TCEQ to model the effects of mixing multiple source waters (surface water from multiple sources with ground water from multiple wells) within a single distribution system. It will require sampling over the course of one year to assess the presence and levels of lead and copper from these entry points in the system. The results are then used to develop blending strategies, water

age maintenance and disinfectant residuals with the ultimate goal to develop optimal corrosion control and treatment strategies for City implementation. The report is then submitted for approval to TCEQ.

The following items below are customary design phase and early construction phase scope items typically associated with every design and construction project.

### **Final Design Activities**

The Engineer will chair progress meetings for each design package, specialty coordination and joint workshops for SCADA, Process Control and Instrumentation, Electrical power and distribution, and architectural standards. This includes coordination with Gulf Coast Water Authority, Brazoria Drainage District and the CMAR. The work includes critical plan reviews and comments and comment coordination of the 60, 90 and 100% plans from all three designers as well as nearly continuous coordination meetings with the CMAR and coordination of the early out work packages. The Engineer will provide coordination among the design packages to standardize specifications as well as standard equipment throughout the plant. Other activities include conducting constructability reviews with the CMAR and value engineering with designers, reviews of proposed alternative solutions and procedures reviews of submittals for quality control.

### **Equipment Procurement**

The activities include conducting workshops among the staff and the multiple consultants to set and agree on standardized bid packaging, set timelines, review and amend schedules, determine delivery methodologies and review and approve proposed vendor lists. Other tasks include supervising the breaking up of work package into logical bid and work packages, reviewing and approving delivery methodologies. These are critical items for the development of the membrane procurement methodology and development of the technical requirements to become the basis of selection criteria. Review and recommendation for acceptance of bid packages and ultimately the Guaranteed Maximum Price from the CMAR are also part of this work.

### **Project Management**

The activities include conducting routine monthly progress meetings and chairing ad-hoc or special meetings to resolve issues and coordinate team efforts. Assist the City in providing public outreach, providing progress updates and status reports, maintaining a master project schedule and providing updates, budget tracking and management, assessing value earned metrics, maintaining and updating project document control and generating monthly status reports.

### **Construction Phase Engineering Scope Definition and Negotiation Assistance**

This item includes participation and assistance in scope refinement and fee negotiation for Construction Phase Services from the three design firms managing Packages 1, 2 and 3.

The following work items below are more unique to the project relating to plant construction, testing and certification and distribution system operational improvements.

### **Design Standards Development**

The task includes the effort to identify the most beneficial and accurate design standards and specifications from all three design firms, coordinating and combining to produce a single set of details and specifications for use on this project and to become the future City Standards.

## **Plant Commissioning**

The Engineer will begin with the development of a plant start-up and acceptance testing plan. The plan is developed by the CMAR and reviewed and approved by the Owner's Representative. The plan will define testing phases, outline key components to be tested, testing procedures and schedules, develop water quality monitoring and sampling plans and develop any special testing requirements such as electrical line failure/ emergency power testing. The Owners Rep' will prepare an inventory of consumables and monitor for compliance with design expectations. The work includes coordinating with regulatory agencies as well as water and chemical suppliers.

## **Operational Plan**

The Operational plan is a guide for the operation of the plant so as to produce water meeting Federal and States regulatory requirements. This defines that activities and tasks required to implement surface water treatment and produce safe drinking water. This includes review and updating of the current water quality monitoring procedures, identifying new procedures for the treatment plant and systems.

## **Staffing Benchmark Study**

The study will be developed to help determine the number, qualifications, pay rates and work schedules of operational staff beginning with a comparative review of similar facilities elsewhere performing similar tasks. This task is based on expressed direction from Senior Staff seeking specific information regarding plant operations and staffing requirements encountered in 4 to 6 other cities for guidance in developing personnel requirements for the overall system.

## **ON-Call Modeling and Support Services**

This is an on-demand task to assist Staff with modeling scenarios to address localized pressure and flow conditions within the city-wide distribution system, estimate water production demands, and model alternative system scenarios to assist staff as the system is readjusts to new source waters and changed supply capabilities.

## **Operational Philosophy and Water Quality Management**

This task is intended to develop an Extended Period Simulation water model of the City's distribution system beginning with the existing model and adding the detailed accuracy provided by the Advanced Metering Infrastructure (AMI), updated SCADA system and new water quality monitoring data to develop an overall operational plan for managing the dual pressure plane distribution system while meeting regulatory compliance requirements and maintaining water quality management. This includes updating the water model, integrating the data from new SCADA equipment at the plant and distribution booster plants, including GIS and Utility Billing data to bring the model up to real-time scenario information to improve water quality maintenance procedures such as Unidirectional Flushing, identifying and evaluating measures to maintain and improve water circulation within Elevated Storage Tanks.

## **Regulatory Coordination and Oversight**

This sub-task consists of the coordinating the design package submittals among the three designers to insure that they address TCEQ or TWDB requirements or specific questions. In some instances submittals will be required from more than one designer to address technical questions or provide evidence for approval of exceptions. This includes reviews for completeness and appropriateness

and properly addressing of the issues. This also requires coordination of comments back to designers. Consultant will maintain direct communications with regulatory agencies to ensure timely transmittal, responses and approvals or exceptions. .

### **Construction Management for Early-out Work Packages**

The item includes construction coordination with TWDB funding, field document control, coordination with all three design firms for field activities, submittal review schedules and problem resolution, routine progress meetings, construction management and field inspections, management of material testing schedules and reporting and pay application review and management.

### **Task Order #4 Fee Summary**

Task Order 4 is the final anticipated Task Order for the Owner’s Representative (Ardurra Group). Sub-Task 3.8 for Construction Management for Early Work Packages will require an amendment once full construction begins to extend that work through to the final completion, commissioning and start-up of the plant.

A complete breakdown of fees by sub-task is provided in Exhibit A, Table A-1 Summary of Services and Fees. All Fees for each sub-task (outlined above) included in the Task 4 are based on an Hourly, Not to Exceed basis. The total proposed compensation for Task 4 is \$2,961,434.34. This Task Order extends these services through completion of construction and commissioning of the plant in late 2022.

### **Next Steps**

Upon approval and award of this contract, Ardurra will begin work on the TWDB required consultant procurement process to select a Materials Testing firm that will work on the project for its duration. As that progresses Staff will finalize negotiations for final design contracts with Package 1 and Package 3 providers employing Ardurra’s services with that task. In the meantime design work and reviews will continue on Package 2 and Ardurra will provide technical reviews and coordination with the CMAR as well as communication and coordination with TCEQ and TWDB. Work must start on the Vulnerability Assessment and Risk and Resiliency Assessment quickly as this report must be completed by the end of 2020 as required by Federal Regulations.

Final Design contracts with Freese and Nichols for Package 1 (Raw Water Intake, Pump Station and Site Detention) and Stantec for Package 3 (High Service Pump Station, Finished Water Storage, Transmission Lines) are planned to be brought to Council in late August or early September for award and will allow those packages to move forward with minimal interruption and take full advantage of the input from the CMAR.

### **Recommendations**

Staff will recommend that Council approve and award Task 4 of the Master Service Agreement with Ardurra Group on the August 12, 2019 Agenda.

### **Budget Info:**

<b>Funding Sources</b>	<b>Series</b>	<b>To Date</b>	<b>Future</b>	<b>Total Budget</b>
W/S Revenue Bonds	2017B	6,012,500		6,012,500
Impact Fee - Debt	2017B	6,012,500		6,012,500
W/S Revenue Bonds	2018A	4,325,000		4,325,000

Impact Fee - Debt	2018A	4,325,000		4,325,000
W/S Revenue Bonds	Future		79,725,000	79,725,000
Impact Fee - Debt	Future		63,350,000	63,350,000
Cash				-
Other Funding Sources				-
<b>Total Funding Sources</b>		<b>20,675,000</b>	<b>143,075,000</b>	<b>163,750,000</b>

<b>Expenditures</b>	<b>To Date</b>	<b>Future</b>	<b>Total</b>
PER	9,378,750		9,378,750
Land		915,000	915,000
Design	5,207,827	6,960,434	12,168,262
Construction Contract		145,351,000	145,351,000
Construction Management/Inspection			-
Construction Materials Testing		350,000	350,000
FF&E			-
<b>Total Expenditures</b>	<b>14,586,577</b>	<b>153,576,434</b>	<b>168,163,012</b>

<b>Project Balance/Contingency</b>	<b>(4,413,012)</b>
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The negative balance shown above is based on early budget figures from the engineers preliminary cost estimates and 30% plans. The project budget is being adjusted in the FY2020 CIP.

**Schedule Info:**

	<b>Base Line</b>	<b>Current</b>
<b>Design Start - Package 1</b>	August-19	
<b>Design Start - Package 2</b>	February-19	March-19
<b>Design Start - Package 3</b>	August-19	
<b>Bid Start</b>	March-20	January-19*
<b>Construction Start</b>	May-20	
<b>Proposed Construction Completion</b>	December-22	

Rain Days: N/A

\*This project was procured through the Construction Manager at Risk (CMAR) process. The original / base line schedule was projected using the design-bid-build process. In January 2019 the City advertised for a CMAR contractor.

# Project Location Map

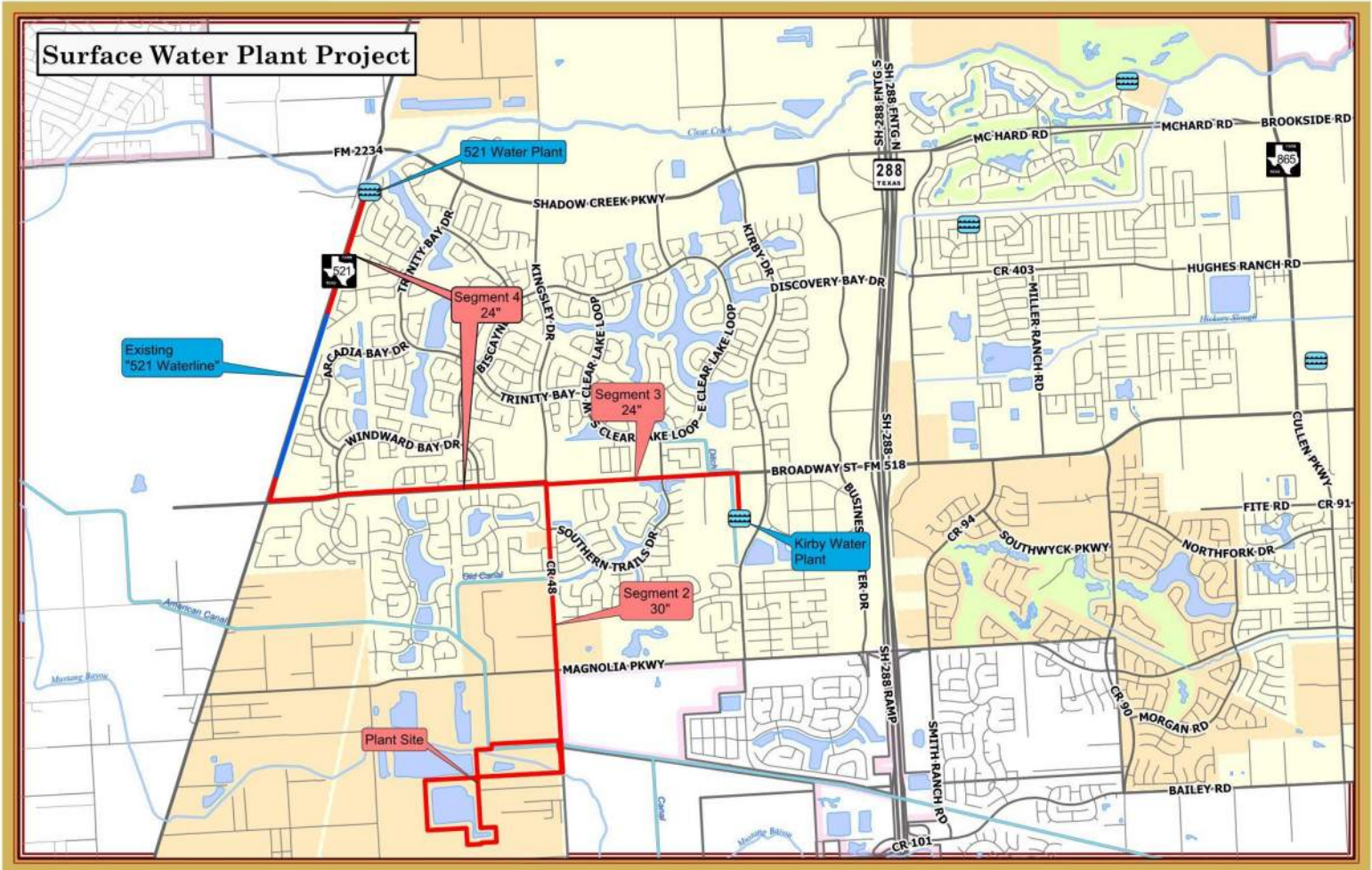


EXHIBIT A

Task Order No. 4  
Detailed Scope of Services



TABLE A-1  
TO AGREEMENT BETWEEN ENGINEER AND OWNER FOR PROFESSIONAL SERVICES  
FOR  
CITY OF PEARLAND  
OWNER'S REPRESENTATIVE SERVICES  
10 MGD SURFACE WATER TREATMENT PLANT  
  
SUMMARY OF SERVICES AND FEES

TASK NO.	TASK DESCRIPTION	AMOUNT
<b>1</b>	<b>Continued and Additional Required Regulatory Components (HNE)</b>	
1.1	TWDB DWSRF Funding Application Assistance	\$78,864.00
1.2	Vulnerability Assessment	\$76,044.40
1.3-1.4	Health and Safety Plan (HSP) & Risk Management Plan (RMP) Update	\$34,619.60
1.5	Risk and Resilience Assessments	\$86,962.40
1.6	Emergency Response Plan Update	\$53,190.80
1.7	Corrosion Control Study Update for Lead and Copper Rule (LCR) Compliance	\$95,771.00
<b>Subtotal – Task 1</b>		<b>\$425,452.20</b>
<b>2</b>	<b>Customary Final Design and Early Construction Phase Services (HNE)</b>	
2.1	Final Design Consultant Activities	\$846,659.10
2.2	CMAR Package Procurement (Bidding)	\$182,911.48
2.3	Project Management Services	\$249,789.00
2.4	Construction Engineering Phase Scope Review and Negotiation Assistance	\$52,448.80
<b>Subtotal – Task 2</b>		<b>\$1,331,808.38</b>
<b>3</b>	<b>Additional and Special Services (HNE)</b>	
3.1	Design Standards Development	\$329,210.56
3.2	Overall Plant Commissioning and Operational Plan	\$37,354.40
3.3	Water Treatment Plant Operational Plan	\$56,943.20
3.4	Staffing Benchmark Study	\$36,233.98
3.5	On-Call Modeling and Support Services	\$117,350.48
3.6	Overall Operational Philosophy and Water Quality Management	\$217,897.84



## Task Order No. 4 Detailed Scope of Services



TASK NO.	TASK DESCRIPTION	AMOUNT
3.7	Regulatory Coordination and Oversight	\$58,045.60
3.8	Construction Management for Early Work Packages	\$351,072.00
<b>Subtotal – Task 3</b>		<b>\$1,204,108.06</b>
<b>Total</b>		<b>\$2,961,369.64</b>

HNE – Hourly Not to Exceed  
Sub Consultants Mark-up – 5%