



Memo

To: Clay Pearson, City Manager
From: Robert D. Upton, PE, Director of Engineering and Public Works
CC: Trent Epperson, Deputy City Manager
Jameson Appel, Assist Director – Projects

Date: July 14, 2022
Re: SWTP Update

14 July 2022

To: Mayor and City Council members
Latest Surface Water Treatment Plant update. Thank goodness for good planning, City staff, and consultant partners as we move steadily and diligently through the work towards bringing online the life-sustaining facility.
Clay

Executive Summary

This memo provides information about the progress on the Surface Water Plant project's current financial and schedule status. The project remains in budget, but the schedule has been impacted by supply chain issues. With partial delivery of long delayed electrical equipment, the schedule has improved. The latest expected completion date (Water into the System) is changing and is revising in a positive direction and is now estimated to be June 2023 with final completion of construction activities in October 2023.

Background

The project entails the design and construction of a 10 million gallon per day (MGD) surface water treatment plant to supplement the City's drinking water supply to meet the demands of current and future population growth. The work includes the construction of a transmission line system to bring water from the plant north along Kingsley (CR48) to Broadway and from there to the Kirby Water Plant to the east and FM521 Water Plant on the west end of town. The work also includes the extension of the City's fiber network to provide connectivity to a redundant Data Center to be housed in the Plant Operations building. This project is being delivered through a Construction Manager At Risk (CMAR) contract with PLW Waterworks. The last change order (#8) approved by Council in March 2022 included Work Change Directives (WCD1, 2 and 3) and adjusted the total construction cost to \$137,075,681.

Schedule Update:

The schedule remains fluid and is the primary issue of concern for the project. The electrical switch gear originally scheduled for delivery in late February began arriving June 10th (first switch gear). The second switch gear arrived June 15th. To meet the latest promised delivery date, both pieces of gear were shipped without some of the critical relays, now scheduled for July 22nd, leaving these to be installed and tested in the field. This increases both time to complete the system and cost to test. No additional costs will be passed on to the City as a result of these field activities but, the time and scheduling with Square D to test the equipment in the field has delayed CenterPoint's original schedule to inspect and make the connection to the grid for permanent power. The connection to the grid is currently scheduled for August 9th.

Once the electrical gear is installed and all cables have been terminated and tested, CenterPoint will be able to make their final inspection and then the connection for permanent power to the facility. Once the facility is on-line preliminary testing and certification of proper installation by factory representatives can begin. This is the first step towards beginning the commissioning and start-up process. While the full schedule has not been completely updated, the team is tentatively planning for the initial commissioning efforts to begin in September/October 2022. The project team is conducting very detailed plant commissioning planning

meetings, working with vendors and sub-contractors to determine approaches, processes, procedures and sequence timelines for each piece of equipment and each system both inside the fence, in the transmission line system and the receiving booster pump stations at Kirby and FM521.

Start-up planning efforts are complicated and are currently being discussed, planned, and vetted by the team and are also compounded by the lack of experienced surface water plant operations staff. Staff are working to recruit plant operations personnel. Interviews for a replacement SWTP plant manager have been scheduled to complete in the second week in July. At the same time, Staff are developing two options for operations of the SWTP. Staff is presenting for the FY23 budget that the City invest in advertising and hiring full-time SWTP employees to staff the plant. The other option that Staff is developing as a back-up is a Request for Qualifications for a professional firm to provide experienced start-up experts to commission and operate the plant for a pre-determined time frame. As City staff is on-boarded they would then begin replacing temporary staff with full-time employees as positions are filled.

The project team is continuing to coordinate with GCWA to work around the annual canal shutdown schedules and maintenance activities. On June 22nd the team met with GCWA to discuss the projected start-up timeline and coordinate that with GCWA's annual October canal shut down. GCWA is now planning the addition of control gates in the canal to provide greater control over raw water supply to the plant. The gates would be installed and owned by GCWA and effectively provide an isolatable volume within the canal to assist with control of floating debris and the ability to quickly close off the raw water intake from the canal should the canal experience a contamination event. GCWA has indicated their intent to pay for these gates in the last meeting and the team will schedule site work around this installation. Currently GCWA is still investigating the work and materials needed and has not provided a schedule for this work. Once the information is gathered by GCWA a schedule will be developed.

Budget Update:

There are No pending Change Orders or Owner Directed Changes with the CMAR at this time.

However, the City will need to amend its contract with Ardurra to extend Owner's Representative Services (Task 5A) as this firm will continue to play a major role in the commissioning and start-up activities for the plant. This amendment will include adding the City's former Project Manager, Skipper Jones to the services provided under the contract. The amendment will also extend existing services including to accommodate the longer construction completion schedule. Timing for this amendment is planned for August.

American Iron and Steel Issues

Previous reports have noted the difficulties surrounding the conformance with American Iron and Steel (AIS) requirements stemming from the Drinking Water State Revolving Fund (DWSRF) providing through Texas Water Development Board (TWDB). This extremely restrictive requirement enforced by the federal Environmental Protection Agency (EPA) requires all iron and steel products to be made in the United States. The City may not purchase non-compliant material for use on the project with TWDB funds OR use its own funds for non-compliant materials. The de minimis rules from previous AIS Regulations no longer provide any relief from these requirements.

Adding to the difficulty of compliance with AIS restrictions, the current market supply chain shortages in the construction material market have made U.S. made steel and iron pipe and fittings, literally impossible to procure with any delivery schedule reliability and in some cases at all. Suppliers are selling existing inventory to the highest bidder, replacements are months behind schedule and prices for both domestic and now imports have risen sharply, in some case by as much as 4 times the original price. This has specifically

impacted the membrane piping and the Granular Activated Carbon (GAC) filter piping, two systems at the very heart of the plant processes. The team initially turned to alternative HDPE materials, but this could only be used in limited components of the piping and required a major re-design of pipe racks and supports, essentially trading one cost increase and delivery delay for another.

Early conversations with TWDB produced no relief from these regulations. Research into possible “waivers” to AIS requirements indicated that approvals under any hardship were rare and usually required 4 to 9 months to obtain. On June 7th the CMAR, Ardurra and City Staff met with the Director of TWDB, Mr. Jeff Walker, to discuss the team’s understanding of the Minor Component rule dealing with non-AIS components.

EPA’s regulations allow for minor components of a manufactured product to contain no more than 5% (by dollars) non-domestic material. The team explained to TWDB that the membrane and GAC piping are manufactured products, having been specifically designed and manufactured (fabricated) for this project and that the small number of non-AIS fittings and flanges included in the product that were sourced from imported products constituted less than the 5% allowed by the rule. Under this ruling the Manufacturer of the product is required to provide substantiating documentation (inventory of parts and associated costs for non-AIS) for the project records. TWDB tacitly agreed with the team’s understanding of the Minor Component rule and its use in this case and noted that an auditor could still disagree in the future. While this option is not without some low level of risk, it is the only option available that will limit schedule impact, reduce the cost of sourcing the materials and avoid costly redesign of these piping systems and the support racks. The CMAR is now pricing out this material and including the reduced fabrication schedule in the calculations. There are no cost implications from this interpretation by TWDB to the City that would result in any Change Orders. In working TWDB this interpretation provides the ability to cope with the AIS requirements and move the work forward after nearly two months of delays trying to source domestic fittings and exploring alternative options. The team believes that this is the only realistic option that will allow the project to move forward and that the future risks associated with it are minor in comparison to the delays to the project and paying up to 4 times the cost for these minor components.

Budget Info:

Funding Sources	Series	To Date	Future	Total Budget
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	2019A	10,500,000		10,500,000
Impact Fee - Debt	2019A	10,500,000		10,500,000
W/S Revenue Bonds	2020A	53,800,000		53,800,000
Impact Fee - Debt	2020A	53,800,000		53,800,000
W/S Revenue Bonds	TBS 2022	13,112,500		13,112,500
Impact Fee - Debt	TBS 2022	13,112,500		13,112,500
Cash				-
Other Funding Sources				-
Total Funding Sources		175,500,000	-	175,500,000

Expenditures	To Date	Future	Total
PER	8,773,058		8,773,058

Expenditures	To Date	Future	Total
Land	173,394		173,394
Design	16,338,003	300,000	16,638,003
Construction	136,146,231	1,500,000	137,646,231
Construction Management/Inspection	4,100,474		4,100,474
Construction Materials Testing	462,860		462,860
FF&E	1,130,812	369,188	1,500,000
Total Expenditures	167,124,832	2,169,188	169,294,020

Project Contingency	3.5%	6,205,980
Project Balance		0

Schedule Info:

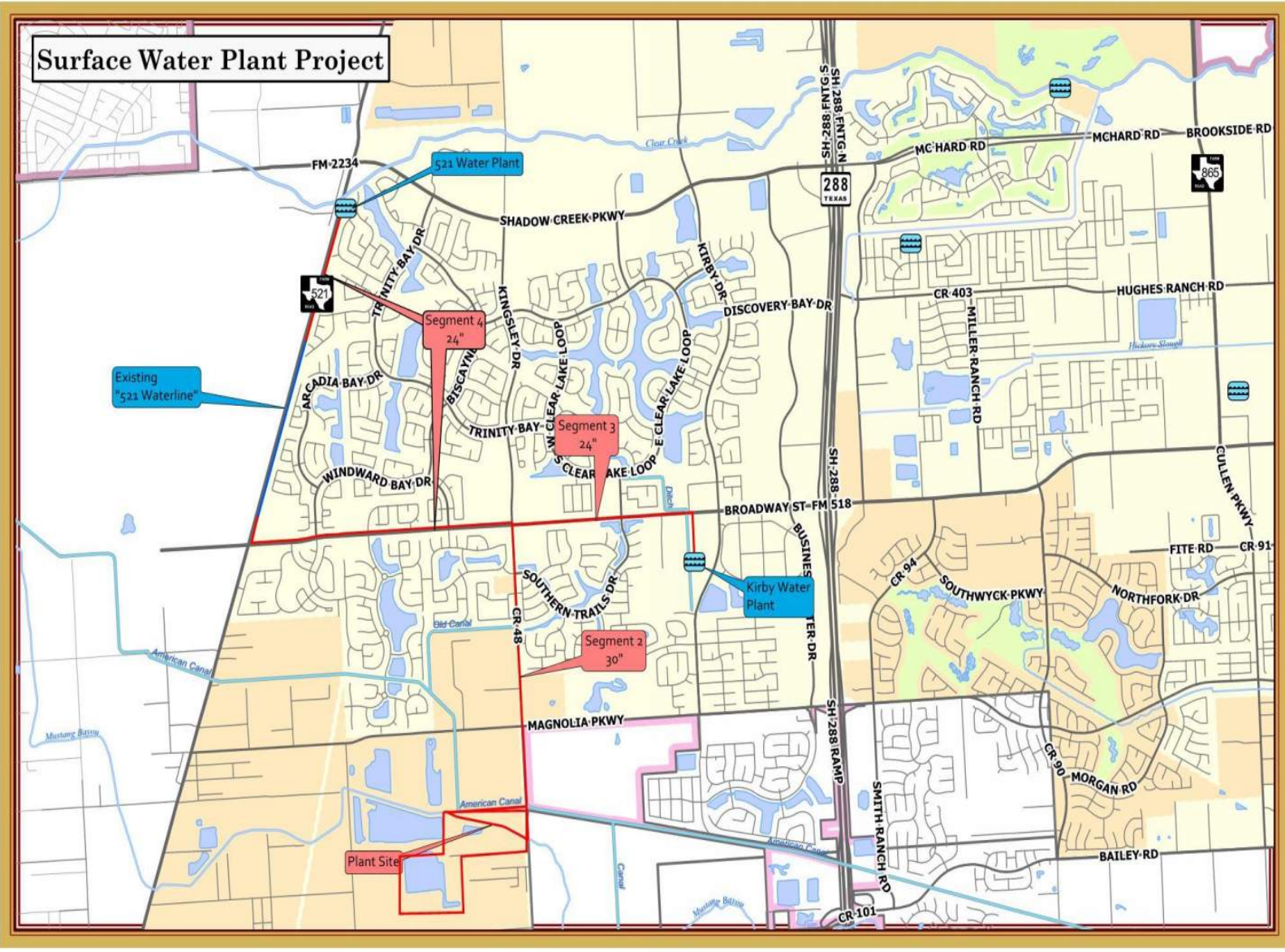
	Base Line	Current
Design Start - Package 1	August-19	September-19
Design Start - Package 2	February-19	March-19
Design Start - Package 3	August-19	September-19
Bid Start	March-20	January-19
Construction Start	May-20	June-20
Construction Completion	December-22	June-23

*June-23 is current schedule for water in the system with substantial completion in Oct-23

Previous Memos:

6/16/16, 2/2/17, 3/9/17, 4/13/17, 3/29/18, 4/19/18, 1/10/19, 2/21/19, 3/28/19, 8/1/19, 8/8/19, 1/23/20, 3/05/20, 4/16/20, 9/17/20, 3/4/21, 6/10/21, 7/29/21, 11/4/21, 3/10/22, 4/14/22, 5/5/22

Project Map:



Project Photos:



Aerial View of the Canal with Raw Water Intake lift Station in the background. GCWA plans to install a gate or gates in the west (near) end and one at the east (far) end within the channel.



High Service Pump and Administration building. Note waterproofing and roof are complete



Group photo showing portions of Main Electrical (lower left) Maintenance (far right) Operations (center right) and Administration (far left) Membrane building is in the far right background.



Granular Activated Carbon (GAC) filter foundation located between the membrane building and the back side of Operations.



Chlorine Building will contain Chlorine gas cylinders, Chlorine Dioxide generator and Chlorine Scrubber



Membrane Building with bulk chemical storage area on close side. This storage area will be covered by a shed roof allowing deliveries to be brought in by truck and unloaded directly to the tank farm



Process chemical storage equipment, pumps and tankage being set inside the membrane building



Membrane racks being installed inside the Membrane Building, note electrical and instrumentation raceways installed against the exterior walls.



Pre-Treatment Basin nearing completion will be one of the first units to begin start-up following the Raw Water Intake Lift Station.



Solids Handling system consisting of Sludge Thickener, Washwater Recovery in the foreground and Belt Press DeWATERing facilities in the fare background.



Raw Water Intake Lift Station and Electrical Building, note the vertical screens in the intake sump and the grated opening into the canal basin to the right.