

1/29/2020

To: Mayor and City

Council members

Update on water infrastructure improvements, new tank and filtration system, supporting systems, on Bailey Road west of SH 35. CIP dollar amounts to be updated and adjusted reflecting findings to date. Clay

# Bailey Water Improvements

**Scope:** The Bailey water well has elevated levels of manganese and iron that cause taste, odor and appearance issues through the water product itself remains safe for consumption. Phase 1 of this project is under construction and Phase 2 is in design. Phase 1 of this project is the installation of a new 1 MG concrete Ground Storage Tank to replace the existing welded steel tank. Phase 2 will include: a gravity sanitary sewer line from the Natatorium to the Bailey, a waterline to transport water from the Magnolia Water Plant to the Treatment Plant, and the "green sand" filtration system to treat the manganese and iron issues at the Bailey Plant.

**Justification:** The 2,000 gallon per minute well is critical to provide system water quality maintenance and provisions for drought contingency. The City of Pearland has maintained a log of customer complaints regarding water quality. Complaints regarding brown/rusty colored water indicate problems with iron and manganese have been occurring in the water months.

**Project Manager:** Mahagony Isabell

**Construction Manager:** Jaime Dino

**Designer:** Enprotec/Hibbs & Todd

**Contractor:** DN Tanks

**Budget Info:**



Funding Sources	Series	To Date	Future	Total Budget
General Revenue - Cash				-
Certificates of Obligation				-
Certificates of Obligation				-
General Obligation Bonds				-
W/S Revenue Bonds	2018B	620,000		620,000
W/S Revenue Bonds	2019B	4,240,000		4,240,000
Impact Fee - Debt				-
Other Funding Sources				-
<b>Total Funding Sources</b>		<b>4,860,000</b>	-	<b>4,860,000</b>

Expenditures	To Date	Future	Total
PER			-
Land			-
Design	533,610		533,610
Construction (Tank)	1,581,785	14,785	1,596,570
Construction (Pretreatment)		6,928,000	6,928,000
Construction Materials Testing	35,125	14,875	50,000
FF&E			-

<b>Total Expenditures</b>	<b>2,150,520</b>	<b>6,957,660</b>	<b>9,108,180</b>
<b>Project Balance/Contingency</b>			<b>(4,248,180)</b>

- As the project is further designed the cost estimates will be refined and additional funds will be requested, if necessary, during the appropriate CIP funding process.

**Schedule Info:**

<b>Phase 1</b>	<b>Base Line</b>	<b>Current</b>
<b>Design Start</b>	December-18	January-19
<b>Bid Start</b>	August-19	June-19
<b>Construction Start</b>	August-19	November-19
<b>Proposed Construction Completion</b>	May-20	

<b>Phase 2</b>	<b>Base Line</b>	<b>Current</b>
<b>Design Start</b>	December-18	January-19
<b>Bid Start</b>	August-20	
<b>Construction Start</b>	October-20	
<b>Proposed Construction Completion</b>	June-21	

**Rain Days: 3**

**Phase 1 Highlights:**

The Notice to Proceed (NTP) for the new ground storage tank (GST) and on-site piping construction project was issued for November 4, 2019. Since the NTP, the contractor has completed the following:

- Contractor mobilized on site.
- Submitted all submittals associated with the project for Engineer review/approval.
- Contractor’s excavation crew cut out the proposed GST’s 89-foot diameter layout and excavated down 7 feet from natural ground.
- Imported and compacted structural fill (TXDOT-Flex base) as specified in the project’s geo-tech report.
- Formwork for foundation slab and perimeter footing was completed and concrete was placed on January 7, 2020.
- Tank crew began to build wall “casting beds” out of lumber. After which, the proposed GST walls were formed and casted with concrete from within the casting bed.
- Tank crew also formed and poured the dome panel segments subsequent to the wall panels.
- Installed the proposed 18” ductile iron inlet yard piping and prepped-formwork for concrete encasement.

**Phase 1 Upcoming Work Items:**

In the upcoming weeks, the contractor, DN Tanks, will be working on the following:

- Complete casting remaining wall panels. Once wall panel strength has reached 3,000 psi, the contractor will then be able to erect the wall panels into place. The City’s material testing firm, QC

Labs, will be administering the concrete strengths and will inform project staff once wall strengths are achieved.

- DN Tank has scheduled for delivery of 365-ton crane that will be utilized to erect the wall panels beginning the week of January 27, 2020. Vertical setting of the wall panels will take up to 3 working days, weather permitting.
- Installation of the dome panels will follow after the wall panels have been slotted together with non-shrink grout.

#### **Phase 2 Design Update:**

- The pilot testing for the green sand filter was completed in July 2019. The resulting recommendation was to install a “green sand” filtration system at the Bailey Plant to remove the iron and manganese from the ground water.
- EHT is currently working on the full-scale treatment plant design which includes: the construction of a Water Treatment Plant (WTP) and the installation of a waterline to transport water from the Magnolia Water Plant to the Treatment Plant. The Treatment Plant building will include a lab and office space.
- This project also consists of the design and installation of a gravity sanitary sewer line which will carry the backwash discharge from the Bailey WTP site to an existing sanitary sewer line at the intersection of Bailey Road and Veterans Drive. The line will also provide service to the future Fire Station 7 site.
- EHT completed survey for the Bailey Water Plant Site at the beginning of the month.

#### **Phase 2 Upcoming Work Items:**

- EHT is in the process of drafting a Basis of Design Report which is required by TCEQ, the report will be submitted for review in February.
- The project team is evaluating the need for all treatment equipment to be contained and completely enclosed, a design meeting will be held with to discuss further.
- The design team is working with the engineer to set up a field trip to visit a facility currently operating the proposed backwash system. In the meantime, a design meeting will be held to answer any question or concern Staff may have about the proposed system.
- Once these meetings have been held, the design will continue with the sewer line, water line from Magnolia well and the treatment system.

**Previous Memos:** 11.08.18;08.08.19;11.07.19

Project Location Map:

VICINITY MAP



Bailey WTP 1.0 MG Prestressed Concrete GST



1:9,000  
1 inch = 750 feet

**NORTH**  
This product is for informational purposes only and may not be prepared or be suitable for legal, engineering, or surveying purposes.  
MAP PREPARED: JULY 30, 2019

Excavation cut out of the proposed 89-foot diameter layout for the ground storage tank (GST).



Different angle of the proposed GST layout



Working TXDOT Flex-base material.



Grading and compacting TXDOT Flex-base.



Flex-base delivery by tandem loader.



Filter fabric barrier placement that will separate the flex-base and leveling base.



Leveling base being spread throughout the proposed foundation subgrade.



Additional leveling base layered.





Proposed 18" Ductile Iron inlet piping



18" ductile iron piping encased in concrete.



Foundation form work and rebar placement.



Depiction of rebar setting sequence for the perimeter footing.



Rebar complete and ready for concrete casting/placement.



Concrete being placed on GST floor.



Finished slab elevation.



Post concrete pour. Slab is under water for optimum curing.

