

3/31/2020

To: Mayor and City Council members

Further improvements to expand, upgrade, and strengthen the water system underway at Bailey Road. Pictures depict construction of replacement ground storage tank. Design for phase two lines underway to bid this fall. Clay



Bailey Water Improvements

Scope: The Bailey water well has elevated levels of manganese and iron that cause taste, odor and appearance issues though 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 at the Bailey water plant and the 1,000 gallon per minute is critical to provide system water quality maintenance and provisions for drought contingency and peak day demands. 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 occurred when the well is in production.



Project Manager: Cara Davis

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				-
Total Funding Sources		4,860,000	-	4,860,000

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

- 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:

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

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

Rain Days: 9

Phase 1 Highlights:

Since the last project update the contractor, **DN Tanks, has completed the following construction tasks:**

- Casting of tank wall panels were completed and met structural specification.
- 365-ton crane was delivered to the site and staged for wall panel installation.
- On January 29, 2020, the contractor-initiated perimeter wall-panel erection activities and dome panel installation.
- Ground storage tank (GST) erection was completed on February 1, 2020, crane demobilized from job site.
- Completed dome slots that interconnect with each dome panel.
- Completed pouring all panel wall slot-concrete which provides a monolithic seal from panel to panel.
- Completed the wire cover (Prestressing) and shotcrete application over the exterior surface of the ground storage tank.
- Completed exterior paint application around the ground storage tank.
- As of March 16, 2020, the ground storage tank (GST) erecting is complete.

Phase 1 Upcoming Work Items:

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

- DN Tanks' Sub-contractor, Pfeiffer& Sons, will mobilize in the upcoming weeks to begin installing the electrical components of the ground storage tank such as:
 - Running underground conduit.

- Roughing in electrical panels
- Install GST's Level Controller.
- Also, DN Tanks' Sub-contractor, Mesa Contracting, will also be mobilizing to the site in the upcoming weeks to begin the construction of yard piping.

Phase 2 Design Update:

- Draft Basis of Design Report, which is required by TCEQ, was submitted for review in early February. A review meeting was held on February 19th to discuss the report. Outcomes are listed below.
- The bleach storage tank will be located outdoors instead of inside climate control. eHT recommended insulating the tank to help resist degradation of the tank contents.
- The WesTech AERALATOR treatment plant will be located outdoors as well. This option was preferred for accessibility for O&M related items and constructability purposes.
- Additional admin space will not be included at the Bailey site as part of the improvements project. Tentatively, the climate-controlled building will only consist of a small control room, lab, and uni-sex restroom.
- The project will include the installation of a gravity sewer system from the collection line at Veteran's and Bailey. The gravity line will extend to the water plant to remove the need for a lift station to dispose of the backwash water. **The gravity sewer line will also be able to provide sewer service for the future Fire Station #7.**
- The report discusses draining the backwash system to a Lift Station located on-site and then pumping it to a detention pond. The ability to bring a gravity sewer line to the site, will remove the need for a lift station. Due to the volume and high flow for the backwash cycle, eHT and the City discussed gravity flowing from the AERALATOR process units into a backwash pond that will be deep enough to have the capacity to handle the backwash cycle of the units. The perimeter of the pond will be built up slightly above natural grade (i.e. a perimeter berm) to minimize water intrusion during storm events, and the backwash discharge will be controlled in a manner to lengthen out the time of discharge to the gravity sewer system thus reducing surges at the receiving WWTP and associated stations. There is ample land available at the current site to implement this design option and reduces cost impacts to the project by eliminating the lift station and force main. This also removes future O&M costs for another LS.

Phase 2 Upcoming Work Items:

- eHT is currently working toward 60% design on the full-scale treatment plant design which includes: construction of the Ground Water Treatment Plant (GWTP), water transmission line from the Magnolia Water Plant to the Bailey Treatment Plant, a Break Tank that will be used for hydraulic equalization of groundwater flows from the Bailey and Magnolia Wells, a high service pump station (HSPS), Backwash handling system, Chemical Disinfection system, and Control Room building.
- Design of the gravity sanitary sewer line which will carry the backwash discharge from the treatment process equipment to an existing sanitary sewer line at the intersection of Bailey Road and Veterans Drive continues. The line will also provide service to the future Fire Station #7 site.
- The field trip to visit a facility in Arcadia, LA currently operating the proposed AERALATOR process backwash system had to be postponed due to scheduling conflicts. The City will provide several dates to reschedule a site visit and eHT will coordinate a site visit accordingly.

Previous Memos: 11.08.18;08.08.19;11.07.19; 01.30.20

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



Aerial view of the ground storage tank (GST). Wall panel in motion to be installed



Aerial View of Ground storage tank



Aerial View of the proposed GST layout



“Bird’s eye view” of the new ground storage tank



Wall panel erection activity and dome panel placement



Wall panel erection activity and dome panel placement



Staging of the 365-ton crane to hang the tank panels



Ground view of the wall panel erection



Tank crew bracing wall panel



Dome panel being hoisted onto its permanent location



Ongoing progress of the dome-panel installation



Equipment for pre-stress wire (winding) application around GST.



Winding equipment that will be used to run pre-stress cable around GST.



Winding in progress. Site closed during activity.



Shotcrete application in progress.



Shotcrete application in progress along the GST.