

Regular Workshop – September 21, 2015
Agenda Item 16

Agenda Item: Subaqueous Wastewater Forcemain Pipeline Condition Assessment Report

Presenter: Town Manager and Staff

Summary: Consistent with Town Commission direction provided at the March 23, 2015 Regular Workshop Meeting, staff selected Greeley and Hansen to perform a two-phase assessment of the 40-year-old, 20-inch diameter ductile iron pipeline that carries all of the Town's wastewater to a treatment facility in Manatee County.

The pipeline begins at the most downstream lift station for the Town (Lift Station D) and flows under Sarasota Bay directly to the wastewater treatment facility. Approximately 2 miles of the pipeline is a subaqueous crossing of Sarasota Bay.

The 120-day project is estimated to cost approximately \$501,238.

Attachments: 9-14-15 Memo, Public Works Director to Manager.

Recommended

Action: Pending discussion, provide direction to Manager.

MEMORANDUM

Date: September 15, 2015

TO: Dave Bullock, Town Manager
FROM: Juan Florensa, Public Works Director
SUBJECT: Subaqueous Wastewater Forcemain Condition Assessment Report

Background

At their March 23, 2015 Regular Workshop Meeting, the Town Commission directed Staff to conduct a comprehensive assessment of the existing subaqueous force main. Staff developed and issued a RFP for conducting a condition assessment. The firm of Greeley and Hansen, an environmental engineering firm specializing in water and wastewater engineering with local offices in Tampa and Sarasota, was selected to perform the condition assessment of the 20-inch diameter ductile iron force main that carries all of the Town's wastewater to a treatment facility in Manatee County.

The subject forcemain begins at the most downstream lift station for the Town (Lift Station D, Gulf Bay Road) and traverses Sarasota Bay directly to the wastewater treatment facility. Approximately 2 miles of the forcemain is a subaqueous crossing of Sarasota Bay. This pipeline cannot be taken out of service for any significant amount of time because there is very limited storage capacity. Therefore, there is limited flexibility in conducting the condition assessment.

Progression of Assessment

Town Staff is prepared to begin Phase 1 and Phase 2 assessment of the forcemain as described in the paragraphs below. Data will be collected from the two phases: the over the line resistance survey (Phase 1) and the *SmartBall* assessment (Phase 2). This data will determine the number of locations to collect ultrasonic thickness measurements. The assessment data from both phases and the ultrasonic thickness testing results will be presented to the Town in a written report. The results will include recommendations for repair, if necessary, and an estimated remaining service life of the forcemain. There are four proposed main tasks with a fifth to present the results and recommendations.

Task 1.0 Project Management, Permitting and Meetings

The Project Manager (PM) will attend a kick-off meeting with the Town and provide draft and final meeting notes. PM will provide written progress updates every 2 weeks for the length of the project and advise the Town of any upcoming field work. The PM will attend up to two other meetings as requested to address the Town staff or the Commission. PM will manage monthly invoicing, schedule,

coordinate with subconsultants and subcontractors, attend up to 1 permitting agency meeting and 1 public meeting. The project is estimated to span up to 4 months.

Task 2.0 Phase 1 – Resistance Survey and Hot Taps

Consultant will contract with Corrosion Control Inc. (CCI) (a firm that specializes in assessing and managing corrosion in pipelines) to perform the resistance survey to determine and locate external corrosion over the top of the forcemain. The consultant will also contract with Coastal Engineering Consultants (CEC) to provide and operate a boat with a GPS guidance system from which CCI will work. Prior to performing the resistance survey, CEC will perform a minimum of 3 spot checks of the GPS coordinates from the 2007 forcemain inspection report. CEC will verify the forcemain location at quarter length increments along the subaqueous crossing (about 4) concentrating at the points of inflection and then use any remaining time in the day to verify additional GPS locations.

Consultant will contract with a Tapping Services provider to perform two hot taps on the active 20-inch diameter force main. One hot tap will be on the ball and socket (subaqueous) portion of the force main near the shoreline. The second hot tap will be located on the upland portion of the forcemain north of Sarasota Bay.

Consultant will contract with a local contractor to perform excavations required for the resistance survey, and to install the hot tapping sleeve and valve. The excavations are expected to take place either in undeveloped dirt roads or at the shoreline. There are no permits anticipated for the excavation work. Daily field reports will be provided for up to 10 days during this task.

Task 3.0 Phase 2 – *SmartBall* Pipe Wall Assessment (PWA)

SmartBall PWA is an internal free-swimming acoustic air pocket and leak detection tool for large diameter transmission pipelines. *SmartBall* is composed of a water-tight, aluminum core that contains the power source, electronic components and instrumentation (including an acoustic sensor, accelerometer, magnetometer, GPS synchronized ultrasonic transmitter, and temperature sensor). The core is encapsulated inside a protective outer foam shell or sphere.

The *SmartBall* is inserted into the water flow of a pipeline and it simply travels the pipeline – propelled by the hydraulic flow - and is captured at a point downstream. The device records acoustic activity and positional data as it traverses the pipeline, which is evaluated to report the presence, approximate size, and location of leaks and gas pockets. This data is then utilized to generate reports that allow accurate determination of the locations where cracks have developed (even if they are not completely through the wall), where the pipe has been damaged or pitted externally or internally, where the pipe is under severe bending, compressive, tensile or torsional stress, where the original construction of the pipe wall is anomalously thin.

Many miles of pipeline can be tested during a single deployment. Pure Technologies utilizes a proprietary SmartBall Acoustic Receiver (SBR) to track the location of the device as it traverses the pipeline.

Task 4.0 Ultrasonic Thickness (UT) Testing

After the data from Tasks 2 and 3 has been analyzed, the consultant will meet with the Town to discuss the locations where CEC intends to perform ultrasonic thickness testing. The UT location will be finalized after this coordination with the Town and CEC will perform the work until completion. Ten days of UT testing have been assumed and budgeted for in order to obtain the most representative samples and to be able to focus on specific sections of the pipeline based on initial UT results.

Task 5.0 Report and Recommendations

The consultant will compile the results of Tasks 2 through 4 and present a draft report that includes recommendations for the expected remaining reliable life of the forcemain and any rehabilitation of the pipeline recommended. The consultant will meet with the Town to go over the draft report comments prior to finalizing the report and present the results and be available to present recommendations to the Town Commission.

Fee and Schedule

The consultant has proposed a fee of \$501,238 for this project. This is an upper limit estimate of the costs based on a conservative estimate of days of involvement or unit costs they have been provided by the subcontractors. A more precise cost will be provided once the field conditions are confirmed. The quoted amount is a not to exceed cost unless approved by the Town. The consultant has indicated that the work can be completed 120 days from the issuance of the notice to proceed.

Funding for this effort is in the subaqueous project account.



End of Agenda Item