

CITY OF HALLANDALE BEACH, FLORIDA
MEMORANDUM
CM18-153

DATE: March 08, 2018

TO: Honorable Mayor and City Commission

FROM: Roger M. Carlton, City Manager

SUBJECT: Sanitary Sewer Infiltration and Infiltration Evaluation Update

Staff is pleased to provide the results of Phase I of the Sanitary Sewer Evaluation Survey funded by State Revolving Loan Program Agreement # WW061720.

Background:

The City of Hallandale Beach is responsible for planning, constructing and maintaining of its pumping stations and collection (piping network) systems. City crews are responsible for insuring the reliability of sewage pumping stations and accompanying force mains and gravity lines throughout the City. Maintenance and repair of the sewer force main piping and gravity collection system includes excavation and repair of manholes, gravity piping, service connections and force mains.

Wastewater from the City is transmitted through 1,097 manholes, nearly 50 miles of gravity mains and 20 miles of force main piping to the wastewater treatment plant, located in Hollywood. These pipelines range from 8 to 27 inches in diameter. Sanitary sewer lines serve a vital role in the health and safety of the public, but these collection systems can be taken for granted because they are out of sight.

Sanitary sewer lines must be regularly maintained in order to reduce the flow of water that is unrelated to sewer systems, entering the sewer system. This unwanted water, known as inflow and infiltration, increases the load on sewage systems and increases the amount that the City pays the City of Hollywood for wastewater treatment. In the City of Hallandale Beach, over a third of the flows are infiltration and/or inflow. This is due to the fact that many of the pipes are vitrified clay, over 50 years old and submerged in water most of the year. Age, pipe type, roadway conditions and other factors affect the capacity of the sewer system by creating the potential for infiltration and inflow, this compromises capacity and increases the potential for overflows. Ongoing infiltration and inflow detection and elimination efforts are required to minimize excess water moving into the system.

Manholes and clean-outs are required for access and removal of material that may build up in the piping system. Manholes are used where there are changes in direction and/or size of the sewer pipe. They also serve as access sites for workers to perform maintenance or cleaning. Manholes are traditionally pre-cast concrete or brick. Brick was the method of choice until the 1960s. Most of the City's 1097 manholes are brick manholes. Rainwater inflow can occur when a manhole is not sealed properly.

History:

On May 21, 2014, the City Commission approved Resolution 2014-48, authorizing the City Manager to submit the Water, Wastewater and Stormwater Facilities Plan to the Florida Department of Environmental Protection (“FDEP”) for approval and to initiate the State Revolving Fund (“SRF”) process.

The Water, Wastewater and Stormwater Facilities Plan was prepared to update the planning and coordination of the city’s utility systems improvements. This Facilities Plan placed a heavy emphasis on the infiltration/inflow remediation to the sanitary sewer collection system.

On December 2, 2015, the City Commission approved Ordinance No 2015-16 approving the State Revolving Fund loan program, authorizing the City Manager to make findings, authorize the loan application and agreement, establish pledged revenues and designate authorized representatives for the loan.

The City along with FDEP fully executed the loan agreement on March 1, 2016. A total amount of state financial assistance was awarded in the amount of \$550,000.

An amendment was executed extending the loan repayment period to start on August 15, 2018.

The City Commission awarded the RFP # FY 2016-2017-001 CCNA Inflow & Infiltration Study and Analysis to Public Utility Management & Planning Services, Inc. at the City Commission meeting on March 15, 2017.

The City issued a Notice to Proceed to the Consultant on June 13, 2017.

Current Situation:

The Sanitary Sewer Evaluation Survey (“SSES”) has been completed and the Consultant has turned in their report and recommendations to City Staff. As part of the contract, the Consultant is to prepare the application and assist the City in securing the SRF loan for Phase II (construction or rehabilitation) of the project. Based on the report, Public Utility Management & Planning Services estimates that this phase of the project will cost \$3,300,000.

To maintain the original interest rate of 1.38% and delay repayment of the original SRF loan, the Consultant has advised City staff to immediately convert the original loan from a Planning loan to a Construction loan. However, the State Request for Inclusion Form must be filled and signed by the City Manager to submit to the State along with the Bid Package for Phase II before March 16th, 2018.

The Procurement Department is developing a Bid Package and the City Manager has signed the Inclusion Form.

Outcome/Benefits of the Phase I Survey:

The Phase I investigation of the City's sewer system yields the following results.

- Inspection of 1097 sanitary sewer manholes.
- Installation of Elasti-seal in 1097 manholes.
- Defender inflow dishes have been installed in 1097 manholes
- There was no apparent need to repair manhole benches.
- There was no apparent need to repair manhole walls although several liners were noted as leaking
- 800,000 feet of smoke testing was completed in November with 176 openings on the City's right-of-way
- 5% of services had issues noted during smoke testing.
- 176 LDL plugs and caps were installed in the public right-of-way
- Over 100 smoke sources outside the right-of-way were noted that need repairs
- A midnight run identified that 32% of the sewer system should be further investigated for infiltration from pipe breaks or service lines. Of the total, over 80% of the pipes to be televised are 8-inch gravity lines, many of which are dead ends.
- Documentation of all problems in a report to City that identifies problem, location and recommended repair

This evaluation gives City staff well documented information on where and what type of issues exist in the system and the cost to mitigate those problems.

Outcome/Benefits of the Phase 2:

The City will benefit in many ways by addressing these deficiencies:

- Reduction of flow to the City of Hollywood (translates into real savings).
- Reduction of pump station pumps runtime because of reduced flow.
- Reduction of sand intrusion into the system, thereby reducing damages to the pump impellers.
- Reduced power consumption.
- Reduced overtime.
- Reduced complaint of sewer backups

Recommendation:

This project is a major endeavor and is a wise investment for the City of Hallandale Beach. Once the bid process for the repairs and the actual price is known, the Return On Investment (ROI) to implement the project could be approximately five years given the cost to treat the I and I water added to the sewage. Further the avoidance of sewage breaks by completing the repairs is critically important. The success of this project not only guarantees the benefits and savings outlined above, but the City also benefits from the ability to use a very low interest rate SRF Loan Program. There is also the potential that a portion of the loan could be forgiven based on legislative action.

Prepare by:

James Sylvain

James Sylvain, P.E.

A handwritten signature in blue ink, appearing to read 'S. Parkinson', is written over a horizontal line.

Approved by:

Steven Parkinson, P.E.