

EXECUTIVE SUMMARY

The City of Hallandale Beach is responsible for the planning, construction and maintenance of its lift stations and collection systems. City crews are responsible for insuring the reliable service of sewage lift stations and accompanying force mains and gravity lines throughout the City of Hallandale Beach. 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. 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 are usually taken for granted because they are out of sight. These systems are designed to convey wastewater from its source to wastewater treatment plants. The City sends its wastewater to Hollywood for treatment. The City's service area comports with the City's corporate limits.

For the City of Hallandale over a third of their flows are infiltration and/or inflow. Since 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 sewer system capacity by creating the potential for infiltration and inflow into the sewer system, compromising capacity and increasing the potential for overflows. Ongoing infiltration and inflow detection and elimination efforts are required to minimize excess water moving into the system since the total flows through the pipes directly translates to the size of the wastewater bill from the City of Hollywood.

The 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. In addition, the manhole cover may not seal perfectly, becoming another source of infiltration during a rain event or even from normal irrigation runoff.

A Phase 1 Investigation of the City's sewer system was undertaken. The results are as follows:

- Inspection of 1097 sanitary sewer manholes was performed
- Installation of Elasti-seal in 1097 manholes was performed
- Defender inflow dishes have been installed in 1097 manholes – note that a number needed special fits due to a series of riser rings of the configuration of the riser ring (see manholes reports)
- There was no apparent need to repair benches in poor condition or exhibiting substantial leakage
- There was no apparent need to repair manhole walls in poor condition or exhibiting substantial leakage although several liners were noted as leaking
- 800,000 ft 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

An estimate for the Phase 2 work –cleaning, televising, lining and service line repairs was just under \$3 million. The payback estimated is under 6 years. Note that the Phase 1 work will save a minimum of \$320,000 in pipe that does not need to be cleaned or televised in Phase 2.