

Capital Improvement Plan

for the

Williamsburg Water and Sewer System

Developed by:

Williamsburg Water and Sewer Commission

Town of Williamsburg, Massachusetts

141 Main Street

PO Box 447

Haydenville, MA 01039

(413) 268-8430

June 2017



Purpose

This Capital Improvement Plan (CIP) is intended to provide a basis to make planned decisions about the construction, renewal and maintenance of the water & sewer infrastructure in the Town of Williamsburg, Massachusetts. This CIP is intended to provide the following benefits:

- Provides information for decision-making regarding major infrastructure expenditures.
- Facilitates the coordination between capital expenditures, operating budget and retained earnings.
- Deters sudden changes in debt service requirements.
- Communicates information to the public and other town departments about future needs and projects related to the water & sewer system.
- Reduces costs by identifying and consolidating duplicative expenditures across municipal departments.

Williamsburg's Water & Sewer System

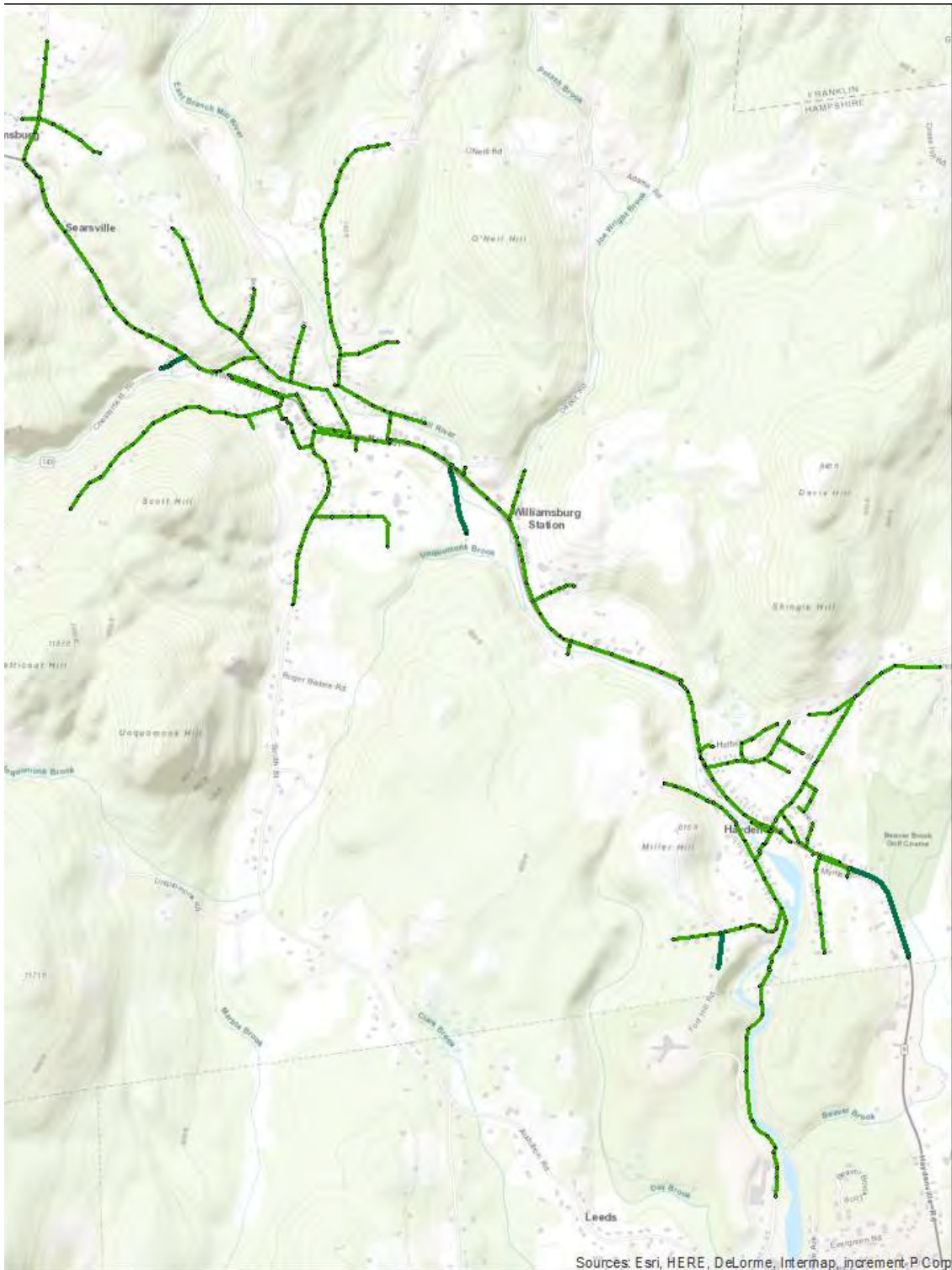
The Williamsburg *water* system (Figure 1) consists of service to approximately 1562 residents and includes 14.3 miles of water lines, 592 service connections and 105 fire hydrants. The average daily water demand is about 0.1 mgd (million gallons per day). The system also includes two (2) groundwater supply wells, and two (2) 0.4 million-gallon glass lined steel storage tanks. Sections of the water system date from 1903, 1952 and 1992.

The Williamsburg sanitary *sewer* system (Figure 2) consists of 680 sanitary system connections, 360 manholes and 14.6 miles of pipe. There are six (6) siphons on the sewer system that provide sewer line passage under rivers, and four (4) force-mains that are used to connect portions of the sewer system to the gravity mains. The majority of the sanitary sewer system was completed in the late 1970s.

The entire sanitary system of Williamsburg flows directly into Northampton's sanitary sewer system at a single point near the Williamsburg-Northampton town line on South Main Street in Williamsburg. The City of Northampton operates a sewage flow Metering Station at the connection point and all of the sanitary flow goes to the Northampton Waste Water Treatment Facility.



Figure 1: Williamsburg Water System with Proposed Capital Projects



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp.

Figure 2: Williamsburg Sewer System

Recent Work

The following is a brief summary of the Water & Sewer (W&S) Commission recent work to-date on the development of this CIP.

- The W&S Commission, supported by the Williamsburg Highway Department and HyGround Engineering, completed GPS-based inventory survey of the entire water and sewer system and developed GIS mapping for both systems.
- The W&S Commission completed an initial cursory Inflow & Infiltration (I&I) study of the sewer system in March 2015.
- The W&S Commission issued an RFP for engineering services in support of developing this CIP in the spring of 2016. The W&S Commission selected and contracted with Tighe & Bond (T&B) to perform the following tasks: 1) develop hydraulic model of Williamsburg's water system, 2) perform inventory and condition survey of sewer manholes, and 3) perform assessment of Williamsburg sewer system.
- T&B developed a hydraulic model of Williamsburg Water System, based on GIS map provided by the W&S Commission, and developed a proposed hydrant testing program. The Williamsburg Highway Department, W&S Commission and T&B performed hydrant flow testing at 9 locations in early Spring 2017.
- The Williamsburg Highway Department, W&S Commission and T&B's subcontractor (EST) began Flow Monitoring of Williamsburg sewer system in the Spring of 2017, and began performing condition inspection of all sewer manhole on the Williamsburg Sewer System in May 2017.

Ongoing Work

The following is a brief summary of the Water & Sewer (W&S) Commission on-going work on this CIP.

- Updating and detailing of existing asset information and GIS mapping of the water and sewer systems.
- Hydraulic modeling of anticipated future changes to the water system.
- Ongoing visual inspections of sewer manholes and portions of the sewer mains.
- Ongoing flow monitoring and flow analysis of sewer system (anticipated completion of sewer monitoring in June 2017).
- Determining the adequacy of the existing water distribution system to meet current and future demands during peak period of consumption and to provide adequate fire protection.
- Identifying locations where evidence of I/I is problematic, and performing CCTV inspection of up to 500 linear feet of sewer for conditional assessments and infiltration sources.

Capital Improvement Project Summary

The W&S Commission has identified three major capital projects, as shown in Figure 1. The Fort Hill Road project is on-going through 2018. The Route 9 Water Main Replacement is tentatively scheduled for 2026 during Mass Highway’s renewal of the Route 9 corridor in this vicinity. Table 1 presents a summary of the Williamsburg Water & Sewer Commission’s capital improvement projects.

The ongoing assessment work, being led by Tighe & Bond, is scheduled to be completed in the fall of 2017. The projects and funding illustration in Table 1 may change once the results of the waste & sewer system assessment is complete at the end of 2017.

Table 1: Capital Improvement Projects and Anticipated Costs (in Thousands)

Project	FY'18	FY'19	FY'20	FY'21	FY'22	FY'23	FY'24	FY'25	FY'26	FY'27
Fort Hill Road Water Main Replacement	\$60 ¹									
Burgy Center Rt. 9 Water Main Replacement						\$100 ¹ \$200 ²	\$100 ¹ \$200 ²	\$100 ¹ \$200 ²	\$100 ¹ \$200 ²	\$100 ¹ \$200 ²
Inflow & Infiltration Control for Sewer System	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²	\$10 ¹ \$15 ²
South Street Water Main Replacement		\$10 ¹ \$30 ²	\$10 ¹ \$30 ²							

¹Operating Budget, ²Retained Earnings

Funding Plan

The Williamsburg W&S Commission operates as an Enterprise Fund. Revenues from water/sewer usage fees that are not spent on operating expenses become Retained Earnings at the end of the fiscal year. The Retained Earnings are then available for future capital improvements to the system or for emergency repairs that may come up in excess of operating revenue in a given year.

After the W&S Commission paid-off its long-term Debt Note in 2015, the W&S Commission did not lower its usage fees, so as to build-up the Retained Earnings. Our combined Retained Earnings for Water and Sewer have grown from \$463K in FY 2014 to \$821K in FY 2017. It is typical that future water or sewer main capital projects are funded from Retained Earnings. It is our projection that we will have roughly half of the funding for water main replacement under Route 9 in retained earnings by the time Mass Highway is estimated to rebuild it in 2026. We expect to borrow the remainder at that time.