City of Northampton

Department of Public Works

Stormwater and Flood Control Utility

FY 2021 Annual Report

STORMWATER AND FLOOD CONTROL UTILITY BUDGET & RATES

The FY 2021 Stormwater and Flood Control Utility Budget was set at $1,951,966. The calculation of bills for all properties resulted in a total hydraulic area or usage number of 75,593,147 square feet. Based on the budget and the total hydraulic area, the annual billing rate was determined to be $0.025822 per square foot of hydraulic area.

Quarterly bills were calculated for and issued to 11,251 properties.

As of the end of June 2021, active credits were approved for 1,269 properties for a total annual value of $88,142.

STORMWATER CAPITAL PROJECTS

Reconstruction of Drainage and Improvements at the House of Corrections on Rocky Hill Road
To improve the existing capacity of drainage flows on Rocky Hill Road, Geeleher Construction installed two new manholes and replaced existing drain pipe with a larger diameter pipe. The culvert that ran under the Hampshire House of Corrections driveway was rerouted to one of the new manholes, directing the flow to the second manhole and eventually to the 30 inch outfall south of the roadway.

Drainage Improvements on North Farms Road
Extensive drainage improvements were made as part of the repaving North Farms Road from the Williamsburg Town line to house #430. An outfall that discharged directly to Broad Brook to an upland discharge in the forested area across from Country Way; undersized drainage pipes were replaced; a small culvert was replaced with a three-sided box culvert to allow terrestrial crossing and free water flow under the paved walking surface at the Fitzgerald Lake Conservation Area; and 630 feet of sub-drain was added along the upstream side of the roadway along with a grassed swale leading to two drop structures within the shoulder area to capture the runoff that comes off of the western hillside.

Other Drainage Repairs and Improvements Incorporated into Paving Projects:

Summer Street – State Street to Prospect Street
Trumbull Road – State Street to Prospect Street

Drainage work included but was not limited to the addition of drain pipe, sub-drain, and drain structures in some areas; catch basin replacements; and replacements or resetting of frames and grates and covers for catch basins and manholes, respectively.

Drain Repair Contract
Geeleher Construction was awarded the contract for Deep Sewer & Drain Repairs. On Drury Lane they installed two additional catch basins as well as riprap and sub-drain in the collection swale. They also conducted an emergency stabilization of slope erosion at a location just off Dryads Green, to be more permanently improved in the near future.

FLOOD CONTROL CAPITAL PROJECTS

Hockanum Road Pumping Station Rehabilitation

The Hockanum Flood Control Pumping Station was constructed by the Army Corps of Engineers (USACE) in 1941 as part of the City's flood control system. The station contains the majority of the originally installed equipment, including pumps, engines, and electrical systems. Although the station is in working order and has been maintained throughout the years, some of the equipment is either at the end of its useful life or is outdated and presenting a safety hazard. The City retained the engineering consultant Tighe & Bond to evaluate the pumping station and make recommendations for necessary renovations.

Bay State Regional Contractors, Inc. has been selected for the first phase improvements, which include replacing the station's electrical systems and the electric jockey pump motor, installing a low pressure sewer line to service the restroom in the pumping station, and replacing the 3,000 gallon gas and diesel underground storage tanks with above-ground tanks.

Levee Toe Drain Repairs and Improvements

The City conducted inspections of the levee toe drains and access manholes in September 2015. However, approximately two thirds of the system was not inspected due to pipe obstructions and limited access manholes. Ludlow Construction Co. was selected to install an additional 28 manholes system-wide along the toe drain and clean, repair, and inspect the drains. Several section of the toe drain remain blocked or inaccessible due to collapsed pipe or eroded pipe inverts. Additional work will be necessary to verify the need for and then repair necessary sections of toe drain.

FEMA Levee System Accreditation

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP), which governs flood insurance coverage and floodplain management. The Flood Insurance Rate Maples (FIRMs) are the official maps of a community on which FEMA has delineated flood hazard areas. The FIRMs of the City of Northampton became effective in 1978 and are in the process of being updated by FEMA. The City is responsible for Levee Certification so that the levee-protected area continues to be mapped as a Zone X, moderate-risk area. The Certification process includes detailed engineering analyses related to embankment stability and settlement, freeboard, settlement, closure structures, interior drainage, operations, and other items.

GZE GeoEnvironmental, Inc. has been retained by the City to conduct the Certification of the levee system for FEMA Accreditation. GZE has completed the required survey, field data collection, investigation, and engineering analyses and is currently finalizing the draft Accreditation package to coincide with FEMA's release of the draft FIRMs, expected in June 2022.

STORMWATER OPERATIONS AND MAINTENANCE

Catch Basin Maintenance

- Cleaned 885 catch basins;
- Inspected these catch basins and measured for depth of sump and depth of sediment to collect baseline data for the City's Environmental Protection Agency (EPA) issued National Pollutant Discharge Elimination System (NPDES) MS4 permit.

Catch Basin and Drain Manhole Cover Repairs/Replacements

- Repaired, replaced or reset 13 catch basin frames & grates and drain manhole frames & covers, respectively.

Installation and Repair of Other Stormwater System Components

- Installed, repaired and/or replaced other stormwater system components as needed, including repairing sinkholes that developed at various locations throughout the City and digging a new drainage trench on Drury Lane.

Storm Event Flood Mitigation

- Performed ongoing removal of leaves, snow and debris from catch basin grates before and during storm events to mitigate backups and roadway flooding;
- Cleaned debris from culverts to mitigate drainage backups and roadway flooding.

Street Sweeping

- The Central Business District was swept four times throughout the year;
- The Central Business District was additionally swept before and after special events;
- Florence Center, Baystate Village, Leeds Village, King Street/Damon Road/Bridge Street Area, Glendale Road, West Farms Road were swept by ward list schedule;
- 105 miles of roadway was swept;
- Downtown Parking Lots were swept in coordination with the Parking Department.

Cleaning of Drain Ditches and Swales

- Cleaned sediment and debris from 13 ditches and swales.

Stormwater System Inspections

- Performed pipe video inspections of drain lines and other assets to identify and investigate structural failures, sink holes and other problems in the drainage system;
- 238 stormwater outfalls were inspected. Field and lab samples were completed for 113 of those outfalls, measuring for temperature, specific conductivity, salinity, ammonia, surfactants and e. coli bacteria.

King Street Brook / Barrett Street Marsh Flood Mitigation

- Inspected the King Street Brook at the bike path culvert weekly and during major storms throughout the year;
- Removed vegetation and debris in the brook channel between Barrett Street and the culvert behind CVS;
- Cleaned debris from the grate at the culvert entrance behind CVS weekly.

Development Project Engineering Review

- DPW Engineering staff reviewed all development plans submitted for permitting through the Office of Planning and Sustainability for impacts to the City's drainage system, and reviewed proposed drainage connections and/or alterations to the City drainage system.

Public Drainage Information Requests

- DPW Engineering staff responded to inquiries from designers, contractors, developers and land owners with questions about the drainage system and provided documents and information.

Stormwater Management Permits

- DPW Engineering staff provided ongoing review and inspection of development projects that disturb over one acre in the City under the Stormwater Management Permit program and in accordance with EPA MS4 Permit

Illicit Discharge Investigations and Enforcement

- There were two illicit discharge connections identified and removed;
- DPW staff attended a training workshop on Illicit Discharge Detection and Elimination (IDDE)

DPW Engineering Project Coordination and Development

- DPW Engineering staff provided coordination, development support and construction oversight on projects for stormwater management system capital projects.

EPA NPDES Stormwater MS4 Permit

- The EPA NPDES Stormwater MS4 Permit went into effect on July 1, 2018;
- The DPW implemented various tasks required by the EPA Stormwater MS4 Permit under the six minimum control measures: Public Education, Public Involvement, Illicit Discharge Detection and Elimination, Construction Site Runoff Control, Post Construction Stormwater Management and Good Housekeeping and Pollution Prevention.

FLOOD CONTROL SYSTEM OPERATIONS AND MAINTENANCE

Levee Inspection and Maintenance

- Performed vegetation maintenance and routine inspection of the Connecticut River and Mill River levee systems.

Connecticut River Flood Control – Hockanum Road Pumping Station

- Activated the Connecticut River flood control pumps 21 days during high river levels and major precipitation events;
- Maintained the flood control station including: preventative routine maintenance of pumping systems, gates, trash racks, electrical components, the Nation Weather Service river gauge, and other associated equipment. The pumps are run monthly to ensure that they will operate as required.

Mill River Flood Control – West Street Pumping Station

- Maintained the station including: preventative routine maintenance of the engine, pump, fuel system and other equipment. The pumps are run monthly to ensure that they will operate as required.

DPW Engineering Coordination and Development

- DPW Engineering staff provided coordination and development support for all flood control capital projects.

STORMWATER AND FLOOD CONTROL UTILITY ADMINISTRATION

DPW Utility Billing

- Maintained records and processed quarterly Stormwater and Flood Control Utility bills;
- Processed abatements and credits to Stormwater and Flood Control Utility Fees;
- Communicated with property owners regarding billing questions.

DPW Engineering Division

- Reviewed Stormwater and Flood Control Utility credit applications and administration of the credit program;
- Reviewed Stormwater and Flood Control Utility abatement requests;
- Communicated with property owners regarding technical billing questions;
- Maintained and corrected property data and fee calculations for the Stormwater and Flood Control Utility.

FUTURE PROJECTS

Stormwater Infrastructure Improvements

For FY22-FY23, the City is planning reconstruction of significant portions of roadways to include Loudville Road, Meadow Street, Warfield Place and Pine Street (& Mann Terrace). Stormwater infrastructure improvements will be designed and implemented as part of these projects.

Additionally there will be specific site stormwater infrastructure improvements:

- Locust Street modification of the Smith Vocational School drain system connection to the City's drain system;
- Drury Lane drainage work;
- Mill River bank stabilization;
- Dryads Green outfall repair and stabilization;
- Adare Place drain upgrade.

Hockanum Road Pumping Station Rehabilitation

The construction of Phase 1 of the rehabilitation project is anticipated to be completed in 2023. Future phases of rehabilitation include: design and construction for resizing and replacing the HVAC system, replacing the existing gas and diesel engines and axial lift pumps with new diesel engines and axial lift pumps, and refurbishing components of the existing building structure.

Levee Toe Drains
The City intends to utilize the geotechnical modeling work completed by GZA GeoEnvironmental, Inc. for the FEMA Accreditation process to verify the need for toe drains along certain sections of the levee. Based on these results, strategic toe drain replacements can be made on compromised sections of pipe.

FEMA Levee System Accreditation
The schedule for the system Certification is driven by FEMA's timeline for developing the revised FIRMs and base flood elevations for Northampton. FEMA's current schedule is to have a preliminary mapping complete in June, 2022, followed by final mapping in 2023. GZA GeoEnvironmental is on schedule to provide the Accreditation documents for the flood control system in advance of the FIRMs being finalized.

Vegetation Management
A three year contract has been awarded to Cain's Mechanical, LLC for vegetation management in FY 2023-2025. The contract includes the mechanical removal of unwanted woody growth and grass mowing for certain sections of levee system that are not routinely maintained by the City staff. In addition, the contract includes treatment of Japanese Knotweed, debris removal, fallen tree removal, and placement of rip rap for slope stabilization and erosion control.