



Sewer Works

Newsletter of the Hull Sewer Department Summer 2020

Operations Message

First off, thank you all for your continued support in approving another \$9.5 million at the June Town Meeting as part of our capital improvement program. Over the past year there has been an active and aggressive effort in a number of projects; the most visible being the Nantasket Avenue interceptor sewer rehabilitation and the Atlantic Avenue sewer improvements. Both projects are complete except for minor punch list items. We took advantage of favorable weather, an innovative contractor and good timing with other operations at the treatment facility to rehabilitate the main pipeline that takes flow from the front end of the treatment facility, known as the headworks, to the influent wet wells that then pump flow to get further treated. The hard work of both contractors, dealing with the challenges in the work, demonstrated their diligence, ingenuity and tenacity to get the work done. It was nice to hear favorable comments from many townspeople acknowledging the work efforts of these crews. As a result of this work, we now have essentially a new interceptor sewer that should last for at least 50 to 75 years, or longer, before work like this is needed again. If this work wasn't performed, we would be dealing with pipe collapses and the many complications and disruptions that we would rather not describe. Likewise, the Atlantic Avenue sewer also replaces an outdated and undersized sewer that also should last several generations. As a result of both projects and the comprehensive, systematic approach taken, we estimate that we have reduced the extraneous infiltration that enters the sewer system via groundwater and rain events by approximately 25 to 30 percent and possibly more. It has also been a dry year so far and water table levels are low which could be partially attributable to the reduction in flows. There were many active leaks that were found and sealed, and we will monitor flow trends over a greater time period to better determine the effectiveness in reducing groundwater infiltration in our system.

It is a credit to everyone that all this and much more occurred during the COVID-19 pandemic. Work restrictions, PPE, safety protocols and social distancing all needed to be followed and continue to be in place for all work activities. As indicated previously, all Town operations have been modified, remote meetings are typical, and electronic bidding has been found to be straightforward, more efficient and liked by contractors and professionals who bid on our work. We expect the system to be integrated in other Town government bidding processes especially if the pandemic risks continue.

While we have completed much of the major sewer work in town, the next few months will be focused on making sewer repairs within the roads to be paved this year and next. These repairs will be made in the streets summarized in the Construction Updates on the reverse page. Expect to see regular public notifications and traffic detour plans on the Town website, DPW and Sewer Department Facebook pages, **Like us** to keep in the loop. We thank you for your understanding and patience and ask for your continued cooperation during construction.

John J. Struzziery, P.E., Director of Wastewater Operations

Hull Sewer Department COVID-19 Protocol:

The Sewer Department is open during normal business hours during the COVID-19 pandemic however please note that our office and treatment facility currently remains CLOSED TO THE PUBLIC. To contact the Sewer Department please use:

Office Phone: 781-925-1207

Email: sewer@town.hull.ma.us

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Sewer Bill Reminder: This quarterly billing period maintains the Town Meeting approved increase of 7.5% in the sewer user rate.

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Grants Update:

CZM Facilities & Resiliency Design: We submitted an Environmental Notification Form (ENF) with our 50% Design that completed work for this grant period. We applied for a new grant to continue funding this project through the Office of Coastal Zone Management (CZM) and hope to on continue funding availability by the end of the summer.

CEC: An Artificial Intelligence platform is being implemented to analyze and forecast treatment facility flow and load data, which will be used to improve energy efficiency in our operations. We have launched the modules for the collection system, influent pumping, effluent pumping, and recently added a module to track laboratory sample data. We are now working on our aeration and solids management modules. The entire program is scheduled to be up and running by the end of October.

FEMA: FEMA is continuing their review our project that will relocate critical electrical equipment and controls to the second floor of the administration building to maintain treatment system functionality during a significant storm event.

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Check the status of construction projects and updates on our web page
<https://www.town.hull.ma.us/sewer-department>



Weekly project updates on the ongoing construction projects are on our Facebook page- check us out and **Like us**.

Other Ongoing Project Updates:

The **collection system** rehabilitation efforts continue in assessing the condition of much of the older pipes and manholes in various areas of town. Information is being reviewed to determine the extent of any remedial work prior to roads being paved. **Remedial sewer and drain construction** is being performed in many of the Hull Hill roads and will soon move onto Nantasket Avenue between A Street and Kenberma Street, Revere Street, Kenberma Street, Newport Road, Farina Road, Standish Avenue, L and N Streets, Bay Street, Park Avenue, Berkeley Road and possibly portions of Central Avenue before these roads are paved this year.

A major focus of our work going forward is on capital improvements at the treatment facility and pump stations. One project is about to start construction in rehabilitating deteriorated concrete in the **headworks**; other portions of the treatment facility; and at the **Marginal Road, Draper Avenue, Valley Beach Road, and Pemberton pumping stations**. Another project is currently advertised for construction bids that will provide pump replacements and improved piping at the **Draper Avenue pumping station** and installation of an isolation valve at the **treatment facility** that will allow flexibility of operations for emergency and future operations. Other ongoing work includes replacement of gear drives and other corroded equipment in several treatment process tanks; **aeration system repairs**; **underground sludge piping replacement**; and **design of improvements for the influent pumps replacement, grit and clarifier treatment process improvements and control building improvements**. The control building **HVAC system** replacement project will be advertised for bidding later this Summer. Work will continue based on risk, consequence of failure, priority, need, and funding availability on other treatment system improvements

Design Projects:

- Pump Station 9 Replacement (Pemberton Point) – we are working on a preliminary design to replace this pump station which has reached its useful service life. The preliminary design concept for the new pumping station will be presented to the public in the Fall.
- Influent Process, Secondary Treatment, and Control Building Upgrades – this design project addresses many critical upgrades to our treatment facility. We expect a 9 month design period to be followed by bidding in the Spring.
- Facilities and Resiliency Plan Update – We received the final plan earlier this summer which provides the assessment of our processes and infrastructure, and serves as a basis for and prioritizes our Capital Improvements Plan for the many upgrades needed at the treatment facility. Many of the current and future Capital Improvements Projects will be based on the recommendations of this plan.

Sewerology: This Newsletter we highlight the major processes used in treating the wastewater:

Headworks: Wastewater enters the facility at this point and undergoes pretreatment screening and grit removal to remove/reduce floating material, debris and grit from the wastewater.

Influent Pumping Station: The wastewater then enters a wet well where it is pumped to the primary clarifiers or aeration tanks.

Primary Clarifier: Here, heavier solids settle out of the wastewater while grease and other floating material are skimmed from the surface.

Aeration Tanks: Oxygen is then pumped into the wastewater to promote growth of microorganisms that help achieve effective treatment. Additional pollution removal organisms are added by recycling them from the secondary clarifiers.

Secondary Clarifier: Any remaining solids settle out in these tanks with some of the solids recycled back to the aeration tanks to be mixed with the incoming wastewater and some wasted for removal and disposal.

Effluent Pumping Station: Wastewater then flows to the effluent pumping station where it is pumped to the chlorine contact tanks for disinfection.

Chlorine Contact Tanks: Here wastewater is mixed with hypochlorite for disinfection to kill any remaining bacteria before it is discharged to the ocean.

Ocean Outfall: The treated effluent then flows into the underwater outfall approximately one half mile in Nantasket Roads channel and is dispersed by diffusers into the ocean.

