
Litchfield Water Pollution Control Authority 2020 Report



FEBRUARY 2021

**Town of Litchfield Water Pollution Control
Authority**

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Superintendent**

Calendar Year 2020

Overview:

Litchfield's wastewater treatment plant is located at 29 Stoddard Road and began operating in November of 1971. The collection system consists of 27 miles of sanitary sewer lines and 652 manholes. There are 1,300 connections to the system.

The wastewater is fully treated, this includes pretreatment at the head works and primary clarifiers. Biological nutrient and solids removal in our aeration/anoxic zones, followed by final settling and UV disinfection during the summer months, before it discharges into the Bantam River.

Operation of the Litchfield WPCA is self-funded through usage fees. Most major upgrades are bonded by the Town, if bonding is required, with the majority of this debt subsequently paid off by the Sewer Users.

In 2020 the monthly average of Total Nitrogen discharged into the Bantam River was 13 lbs. /day. This amount was 46% less than our permit limit of 24 lbs. /day.

The current user fee is \$408 annually for one Equivalent Dwelling Unit (EDU). The last rate increase of \$12 per EDU was in Sept 2017. Laundromats, car washes, and other higher volume users are billed on the basis of one EDU per 42,500 gallons of metered water flow.

We are continually making upgrades, or replacements, to plant operations and equipment that will improve plant performance and efficiency. This work in 2020 included the following.

- The purchase of a new sludge mixer for the finished sludge tank. Replacement cost \$16,678.
- The replacement of 70 feet of sewer line on Circle Drive. Preventative maintenance cost \$14,500.
- The purchase of a new Anoxic mixer. Replacement cost \$7,988.

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- Repair of damaged PVC sewer line on the Doyle Road/Vanderpoel Ave. easement. Preventative maintenance cost \$7,000.
 - The purchase of new composite sampler, which will sample the incoming raw influent with no side streams mixed in. Investment cost \$6,827.
 - The purchase of the Hach Wims data management software. Investment cost \$4,923.
 - The purchase of a portable composite sampler, which will used drill down potential loading from specific areas of the collections system or from commercial customers. Investment cost \$4,124.
 - The refurbishment of two electric motors, and the installation of a new vacuum pump at the Northfield pumps station. Preventative maintenance cost \$2,965. This station came online back in 1996.
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 - All of these projects were funded through our capital non-recurring fund account, funded by user fees.

Inter-Municipal Agreements:

The Litchfield WPCA has inter-municipal agreements (IMA) with Torrington and Thomaston to process our sewage, from the Northfield area. We have an IMA with the Morris WPCA to accept sewage to be treated at our plant.

Through the Torrington WPCA agreement, The City of Torrington plant accepts sewage from Litchfield. This portion of our collection system includes Torrington Rd/Rt. 202, north of Bertolli Drive, and Hart Drive and includes the Hunter's Chase town house development. These sections serves 203 customers with an average flow of 25,000 gallon per day (GPD).

Similarly, the Thomaston WPCA accepts sewage from our Northfield area, servicing 80 customers, averaging 4,000 GPD. This sewage is pumped through a pressure line from our one pump station, located on Knife Shop Road.

With our IMA with the Town of Morris WPCA, the Litchfield Plant processes sewage from a section of Morris, which includes Deer Island and a portion of Bantam Lake Road, CT Rt. 209, which averages 25,000 GPD.

In July of 2019 the Woodridge Lake Sewer District (WLS D) approached the Litchfield WPCA to consider the possibility of WLS D connecting to the town's treatment plant. The Litchfield WPCA agreed to accept engineering services paid for by WLS D, to determine if the treatment plant and collection system could handle the additional flows. In July of 2020 the WPCA put this process on hold. The WPCA instead agreed to perform our own standalone analysis of future plant needs first, by hiring an independent engineering firm, and not tying it together with any potential project with WLS D. As part of the fact finding process, and to better understand the true loading that enters the treatment plant, we are conducting much more laboratory analysis of the following.

- Raw influent, with no side streams mixed in. This began in June of 2020.
- Biochemical oxygen demand (BOD), Total suspended solids (TSS), fats, oils and grease (FOG), and nutrient analysis of both septage and the filtrate that comes off our sludge dewatering process.
- Composite sampling of our largest commercial customer from July to December of 2020.

With the purchase of the Hatch WIMS data management program we were able to import 20 years of historical plant data, along with the new data we collected this past year. This now makes it much easier to run deeper analysis and to perform valuable and necessary analysis.

In August of 2020 the WPCA voted to publish a Request For Qualifications (RFQ) for on- call engineering services, to include a standalone facility plan. The current facility plan will reach its event horizon in 2024. In November of 2020 we published an RFQ notice. Nine engineering firms responded, and five were selected for interviews to determine which engineering firm is the most qualified for our type of work.

Water Pollution Control Facility:

The plant's performance for the 2020 calendar year was consistent with prior years. The average daily flow was 451,000 GPD, a 23 % reduction from 2019. Biochemical oxygen (BOD) removal rates averaged 98 % and Total Suspended Solids (TSS) removal rates averaged 97%. Our permit require a minimum of 85% removal rates. Monthly discharges of Total Nitrogen was 13 lbs. /day, well below the 24 lbs. /day limit set by the CT DEEP. This was the plant's second lowest nitrogen loading number since the program began nearly 20 years ago. We attribute this success to a new dissolved oxygen (DO) control setting that was initiated back in January of 2020. The seasonal loading of Total Phosphorous was 6.2 lbs. /day which was below our permitted discharge level of 9.97 lbs. /day.

Sewage Bypass Events:

This is an event in which raw untreated sewage enters a receiving water or catch basin. This could result due to an equipment failure, a sewer line blockage or a bypass of a one or more parts of the treatment process at the plant. We reported one sewage bypass event in 2020.

- ON 05/26/20 a sludge truck that just left the plant leaked 100 gallons of bio-solids on Stoddard Road due to an operator error. No bio-solids entered a catch basis or receiving waters.

Effluent Non-Compliance Events:

This is an event in which we exceed the daily maximum limit for one or more parameters, such as biochemical oxygen demand (BOD) or total suspended solids (TSS), which are set in our NPDES permit. These are referred to as plant upsets and are typically the result of an extreme weather event and excessive inflow and infiltration (I & I) of water entering the collection system We reported 7 effluent non-compliant events in 2020. All were related to high rainfall events occurring during high flow periods, which caused us to exceed our daily discharge maximum limit of total suspended solids (TSS) and/or biochemical oxygen demand (BOD).

- The events on 02/13/20, 02/27/20, 03/9/20, 03/19/20, 05/26/20, 11/01/20 and 12/25/2020 were for exceeding the BOD/ TSS limits caused by high flows and poor settling conditions in our secondary clarifiers.

In 2020 we reported 2 Monitoring Equipment failures as well.

- On 09/30/20 a water valve, was left open filling the finished sludge tank with an estimated 50,000 gallons of water. About 1,000 gallons sludge did leak on the ground around the tank, which was cleaned up and removed.
- On 12/8/2020 we reported loss of sampling ability on the effluent composite sampler due to ice building up in the sampling tube.

A chart in Appendix A presents monthly plant data, septage that was received and processed, and total precipitation for 2020.

Sanitary Sewer Collection System:

The Capacity Management Operation & Maintenance (CMOM) plan, which is required by both the EPA and CT DEEP, consists of emergency protocols, standard operation procedures for preventative maintenance work, such as jetting to clean sewer lines, manhole inspections, CCTV pipe inspection, and repair and or replacement work performed on the sewer collection system. An important focus of the plan is to help identify excessive inflow and infiltration (I & I) of clean water that enters the sewer collection system. This is can be caused by deteriorating pipe joints, aging sewer pipes, leaking manholes, illicit connections, (like a sump pump) and ground water that gets into the sewer collection system. We are looking hard for where these leaks are occurring.

Excessive I & I must be identified to preserve the plant's design capacity, currently at 800,000 GPD, and to minimize high volume plant upsets that could potentially violate our NPDES permit. The plant's design capacity can be further stressed during prolonged wet periods after significant weather events, and from seasonal winter/spring melt runoff.

Projects for 2021:

Here is a brief outline of what has already begun for this current year.

- We began a 15 week flow monitoring study in January of 2021, focusing on the subsystem in Bantam to identify areas of I & I.

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- Work with the selected engineering firm for on call engineering service work. The first task will be developing a 20 year facility plan.
 - Utilize Arc-GIS to begin digitizing the preventative maintenance, CCTV work, and repair field work we perform on the collection system.
 - Utilizing CCTV field work to perform internal pipe inspections.
 - Continued preventative maintenance program with our trailer jetter.
 - Manhole inspections and rehabilitation work.
 - Invest in an upgraded ultra violet disinfection system to treat the final effluent for the 2022 disinfection season.
 - Invest in a mechanical bar screen for the headworks.

Summary:

We plan to implement a new Inter-municipal agreement with the Torrington WPCA. We will hire an engineering firm to perform on call engineering service work, including developing a facility plan for our treatment plant. We will continue to focus on the I & I entering our sewer collection system, which will include extensive CCTV work, manhole inspections, and jetting field work to find any issues that need to be addressed.

The WPCA will demonstrate transparent financial performance, which will include developing a capital expenditure plan and an asset management plan. We will move forward with our preventative maintenance plan along with the necessary upgrades to plant equipment, to improve plant performance and ensure continued smooth operations. These combined efforts will enable the WPCA to better serve our customers, protect the environment, control future costs, support economic growth, and ensure financial sustainability.