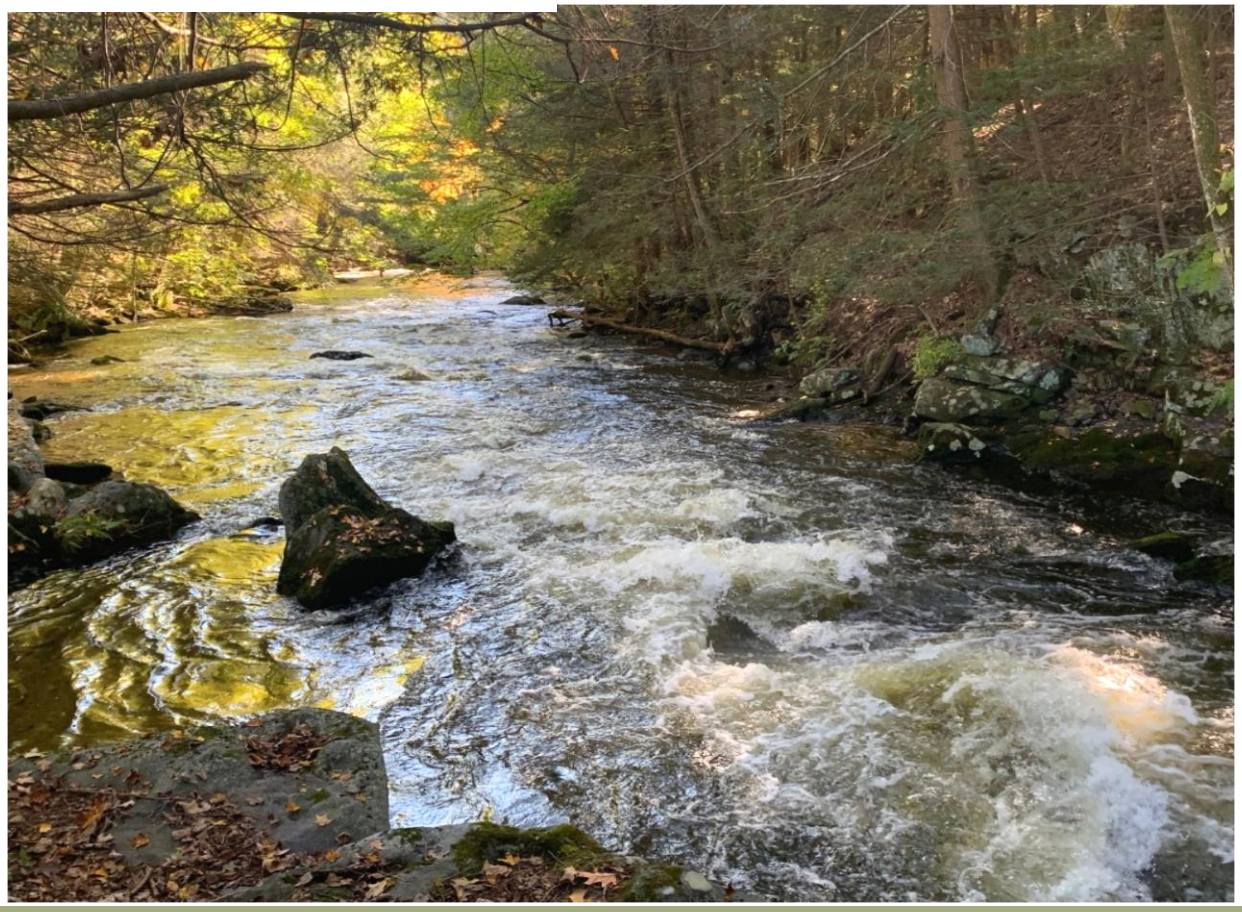
Litchfield Water Pollution Control Authority 2021 Report



JUNE 2022

Town of Litchfield Water Pollution Control Authority
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Calendar Year 2021

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 much of this debt subsequently paid off by the Sewer Users.

> **In 2021 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 based on 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 2021 included the following.

- The purchase of a new impeller and wear rings for RAS pump #2. Cost $2043.
- The refurbishment of two electric motors, and the installation of a new vacuum pump at the Northfield pumps station. Preventative maintenance cost $4880. This station came online back in 1996.
- 5 new cutter blades for our wastewater grinder (Dimminutor), located at the headworks. Cost $8,140.

- All 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 also 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 serve 203 customers with an average flow of 25,000 gallons per day (GPD).
Similarly, the Thomaston WPCA accepts sewage from our Northfield area, servicing 80 customers, averaging 3,300 GPD. This sewage is pumped through a pressure line from our only 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, averaging 25,000 GPD.

Engineering Evaluation & ARPA Requests:

In October of 2020, the WPCA voted to publish a Request for Qualifications (RFQ) for on- call engineering services, to include a standalone engineering study. The current facility plan will reach its event horizon in 2024. In November of 2020 when the WPCA published the Request for Qualifications (RFQ) notice-nine engineering firms responded, and five were selected for interviews. In April of 2021, the engineering firm Woodard & Curran was selected to conduct an engineering study of the treatment plant. A proposed contract, which was reviewed by the Town's attorney, should be signed by both the WPCA Chairman and the 1st Selectman in July of 2022. It is anticipated the engineering study will take a minimum of nine months to complete.

We also reapplied for our NPDES permit with the CT DEEP in February of 2021. No major changes in the new permit are anticipated regarding treatment process limits. The renewed permit will be valid for a period of five years.

In the March of 2021, the CT DEEP issued a letter to the Litchfield WPCA-along with the Town of Litchfield, seeking to call attention to the Facility's historic and ongoing operations and compliance issues. The details to these issues to include, but are not limited to, chronic high sludge volume index leading to ongoing violations of Biochemical Oxygen Demand (5 day) and Total Suspended Solids Limits. The DEEP suggested that "*the Town commence a Facilities Plan to evaluate and recommend options to address operations issues and Permit non-compliance*." They further noted "*Should it be determined that an upgrade is necessary, DEEP's Clean Water Fund offers grant and loan opportunities."* The letter went on to say, "*Additionally, the Town should also seek to discuss cost share options related to a Facility upgrade with neighboring communities. Based on DEEP's discussions with the Woodridge Lake Sewer District related to its existing pollution problem, we understand the District contacted the Town to discuss the opportunity to connect to the Faculty and craft an agreement that mutually benefits both communities in addressing existing water quality concerned."*

In the fall of 2021, the Litchfield WPCA decided that a stand-alone evaluation of the current treatment plant must commence first-and be completed before any additional study that would include Woodridge Lake Sewer District would be considered. It was also decided that the WPCA Commission directed Woodard & Curran to submit two potential projects to the CT DEEP's Clean Water Priority List-by a December 10th, 2021, deadline. These projects include Biosolids Handling and Secondary Treatment. The submittal of these two projects in not a commitment to do them, but the WPCA was advised to submit the projects, so that they could be considered for future funding through the Clean Water Fund (CWF)-as the next CWF Priority List covers a two-year period.

Finally, the Litchfield WPCA requested that four (4) projects be considered for funding under the grant the Town received from the American Rescue Plan Act (ARPA). These four items totaled $453,000 and will need to be approved at a Town Meeting.
They include the following, which were approved at a Town Meeting on March 3rd, 2022

- $150,000 for a new mechanical bar screen for the headworks.
- $35,000 for a flood resiliency study for the treatment plant.
- $18,000 for a new polymer mixing station for our biosolids process.

One other item was recommended for consideration for Fiscal Year 23.

- $250,000 for the purchase of a new Ultraviolet Disinfection System.

Water Pollution Control Facility:

The plant's performance for the 2021 calendar year was consistent with prior years. The average daily flow was 571,000 GPD, a 27 % increase from 2020. Biochemical oxygen demand (BOD) removal rates averaged 98 % and Total Suspended Solids (TSS) removal rates averaged 98%. Our permit requires a minimum of 85% removal rates. Monthly discharges of Total Nitrogen were 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-tying with our results from 2020, since the program began 20 years ago. We attribute this improvement to a new dissolved oxygen (DO) control setting that was initiated back in January of 2020. The seasonal loading of Total Phosphorous was 7.8 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 one or more part of the treatment process at the plant. We reported no events in 2021.

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 6 effluent non- compliant events in 2021. 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 3/1/21 and 3/12/21, were for exceeding the BOD & TSS maximum daily limits caused by high flows and poor settling conditions in our secondary clarifiers.
- The events on 7/6/2021 for loss of UV disinfection for 50 minutes- due to a generator failing to run during a power outage.
- The events on 7/9/21, 9/1/2021, and 9/24/21 were for exceeding the daily maximum limit for BOD, TSS, and E. coli.

In 2021 we reported 2 Monitoring Equipment failures as well.

- On 1/7/2021 the program on the influent composite sampler crashed and the sampler did not run properly.
- On 3/13/2021 the transfer switch failed to switch over when the generator was called to run during a power outage.

A chart in Appendix A presents monthly plant data, septage that was received and processed, and total precipitation for 2021.

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 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 2022:

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

- Work with the engineering firm- Woodard & Curran, for on call engineering service work. The first task will be performing a flood resiliency study, followed by the standalone engineering study of the treatment plant.
- 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 ultraviolet disinfection system to treat the final effluent for the 2023 disinfection season.
- Utilize ARPA funds toward a mechanical bar screen for the headworks.
- Utilize APRA funds toward a new polymer mixing station for our biosolids process.

Summary:

We plan to implement a new Inter-municipal agreement with the Torrington WPCA. We will work with Woodard & Curran to perform on call engineering service work, including developing a flood resiliency and engineering study 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, smoke testing, and jetting field work to find any issues that need to be addressed.

The WPCA will continue to 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.