FAST FACT
Protecting Receiving Waters

The Johns River, the waterbody which the Whitefield Wastewater Treatment Facility (WWTF) effluent discharges to, flows from the source waters of Cherry Pond and through the Towns of Jefferson, Whitefield, and Dalton before joining the Connecticut River. The Johns River was named after John Glines, an eighteenth-century hunter and trapper who frequented the area. With this WWTF upgrade, the Town has invested significant efforts in keeping the Johns River waterway safe for humans and wildlife for years to come.

FAST FACT
Energy Savings

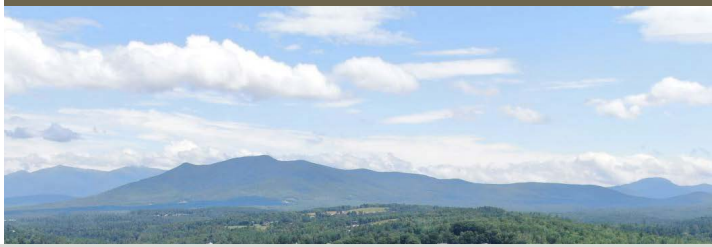
WWTFs designed for biological nutrient removal—Total Nitrogen (TN) and Total Phosphorus (TP)—are typically one of the highest energy users for any municipality. As part of the upgrade, the Town of Whitefield carefully evaluated process and equipment selections with the goal of significantly reducing energy consumption. This approach led to implementation of a variety of energy-related improvements to provide long-term electrical cost savings. These measures included installation of variable speed drives; selection of high-efficiency boilers and water heaters; selection of energy-efficient LED lighting; installation of an energy-efficient influent screen; and implementation of a new computerized control system, which enables Town staff to limit power consumption as treatment demand fluctuates throughout the day.

Town of Whitefield, NH
Wastewater Treatment Facility

56 Littleton Road
Whitefield, NH 03598
www.whitefieldnh.org/public-works

WRIGHT-PIERCE
Engineering a Better Environment

Brochure prepared by Wright-Pierce | Portsmouth, NH



Wastewater Treatment Facility Upgrade

Town of
Whitefield
New Hampshire
Incorporated 1804

Facility History

Built in the early 1980s, the Whitefield WWTF provides sewer service to approximately 600 residential and commercial users with an annual average design treatment capacity of 0.185 million gallons per day. The original Facility consisted of aerated lagoons, positive displacement blowers, and ultra-violet (UV) disinfection. Over the years, several Facility improvements have been completed, including lagoon aeration upgrades, lagoon sludge removal, and UV disinfection updates.

Secondary & Tertiary Treatment Process

To bring the facility into compliance with new, stringent TP standards, the Town evaluated various upgrade scenarios with the main goal of providing a WWTF capable of meeting current requirements and providing flexibility to upgrade the new process to meet potential future requirements. The selected secondary treatment process upgrade included a full WWTF process conversion of the lagoon process to a mechanical, activated sludge process consisting of sequencing batch reactors. To meet the stringent TP requirements, a tertiary filtration system was implemented using cloth disc filters.

Aging Infrastructure Upgrade

In addition to meeting new TP standards, the upgrade also addressed general equipment replacement and long-term reliability of the Town's major wastewater treatment assets, including the preliminary treatment processes for grit removal and influent screening. Portions of the existing Facility had been in continuous service for over 30 years and required replacement or rehabilitation to maintain reliable operation.

Upgrade Highlights

1. **Control Building**
   Existing building rehabilitated to include a new permanent office space, updated lab equipment, and new SCADA system. A standby generator for the new WWTF process was installed adjacent to the structure.

2. **Process Building**
   New building constructed to house all support equipment for the new process, including dewatering equipment, aeration blowers, tertiary filters, effluent pumps, chemical systems, UV disinfection, and electrical distribution room.

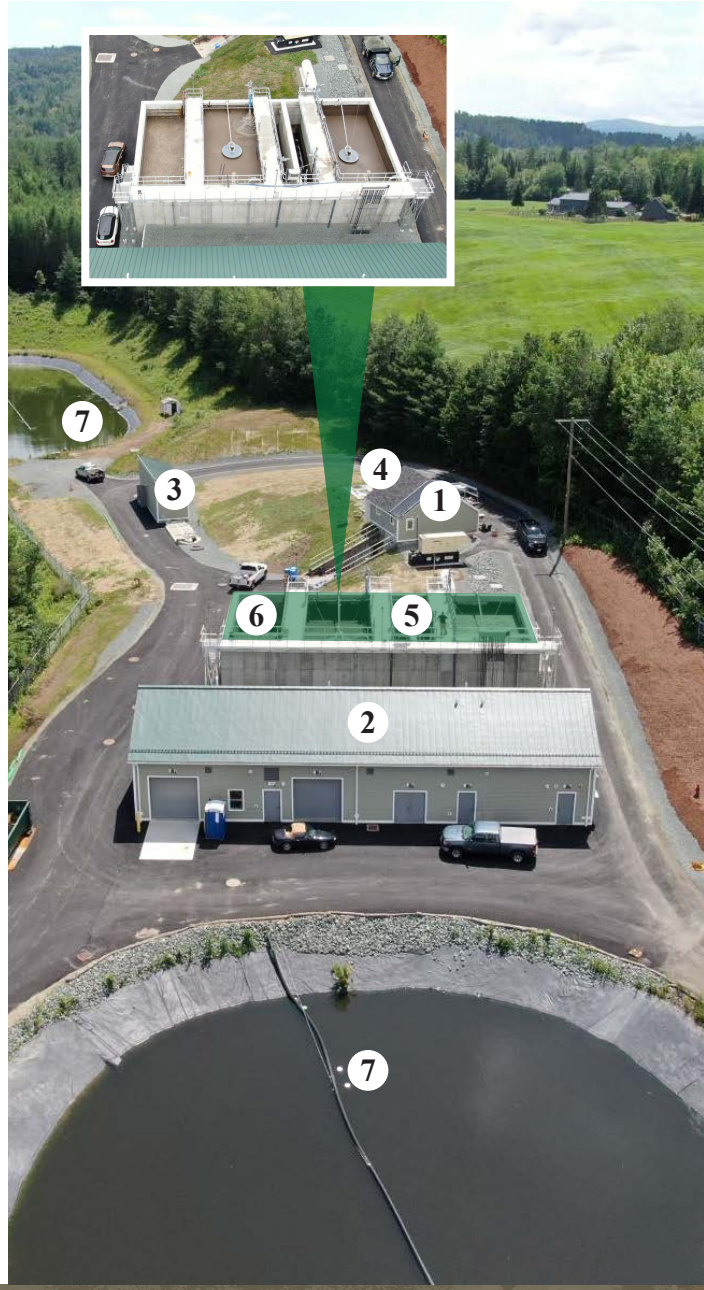
3. **Headworks**
   New building designed to include influent mechanical fine screening and a new influent pump station. This process is preceded by rehabilitated grit removal channels.

4. **Septage Receiving**
   Upgraded manual septage receiving station to allow the WWTF to receive septage from local sources.

5. **Sequencing Batch Reactors (SBRs)**
   New process tankage for two alternating SBR tanks and a common effluent equalization tank between the SBRs. These SBRs provide biological treatment of biochemical oxygen demand (BOD), ammonia, TN, and TP.

6. **Sludge Holding Tank**
   A new sludge holding tank was constructed adjacent to the SBR tanks to allow for common wall construction. The large sludge tank volume allows the Town's operations staff to store waste activated sludge and, in turn, to dewater sludge less frequently.

7. **Aerated Sludge Lagoons**
   The existing lagoons remain online to act as influent wastewater equalization in the event of peak wastewater flows.



Town of Whitefield