



TOWN OF WAREHAM

Water Pollution Control Facility

6 Tony's Lane Wareham, MA 02571

What is a Pump Station?

A pump station (or lift station) is designed to collect and transport wastewater to a higher point of elevation (GRUNDFOS). The design for a pump station to handle wastewater is fed from underground gravity pipelines and stored in an underground pit or wet well (GRUNDFOS). Some key elements of every pump station include: wet wells, pumps, piping with associated valves and strainers, motors, power supply system, equipment control and alarm systems (The WPCF has SCADA), odor control system and ventilation system (United States Environmental Protection Agency).

Wet Well

A compartment or tank in which wastewater is collected. The suction pipe of a pump may be connected to the wet well or a submersible pump may be located in the wet well.

SCADA System

Supervisory Control And Data Acquisition System. A computer-monitored alarm, response, control, and data acquisition system used to monitor and adjust treatment processes and facilities.



Figure 1: Wareham Water Pollution Control North BLVD Pump Station



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The components of a wastewater pump station are all important in regards to getting wastewater to the wastewater treatment plant and alerting operators of any problems within the system before an [overflow](#) occurs or equipment breaks.

Why are Pump Stations Used?

Pump stations lift wastewater that cannot naturally flow by gravity, an incline being one example. Pump stations are used by hospitals, schools, and other private and public establishments. Pump stations include [technology](#) that record the flows for that pump station, the times the pumps ran/have been running, and more equipment that is vital to the operation, maintenance, and control of that system and station (NHDES).

The Wareham Water Pollution Control maintains 45 pump stations throughout the Town of Wareham. Pump Stations require “raking” or the bar screens to allow the wastewater to flow properly. This is done by taking a rake (meant for wastewater screens) and pulling the material up, and off the rake. The material is then disposed of properly. The WPCF records data from pump stations daily and cleans the screen daily.

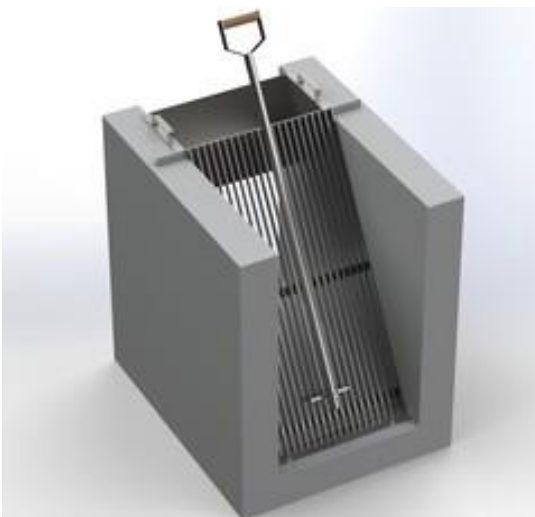


Figure 2: A Diagram Showing A Bar Screen and A Bar Screen Rake (Manual)

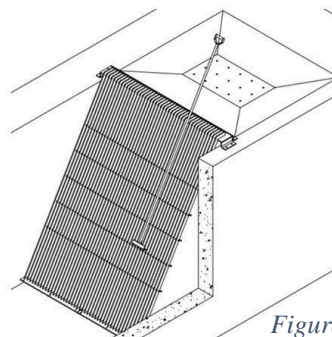


Figure 3: Another Bar Screen and Rake Diagram



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The Linked Video shows how lift stations work to show a simplified version of the above material (Singer).

[How it Works-Lift Stations](#) (Singer).



Figure 4: Another WPCF Pump Station

The Importance of Pump Stations

When coarse material such as sticks, plastic lids, scrap metal pieces, cans, and more, find their way into the sewer system it can seriously damage the pumps and equipment needed to properly operate the wastewater treatment plant. To avoid this, pump stations include bar screens or racks and then grit removal is performed.

These parallel bars are placed at an angle or set vertically in the channel (located in the pump station), to allow the wastewater to flow through but not the large materials or debris. Bar screens do require frequent attention, due to being manually cleaned.

If neglected this can cause the debris and unwanted material to build up on the screen, reducing the sewer flow and possibly back up the materials into the sewer system. Extreme caution should be always be



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taken when raking screens. Water, grease, and other slick debris can cause you to lose your footing and injure yourself severely. The materials removed from the racks are put into a bucket and disposed of at the WPCF properly. The method of disposal depends on the treatment plant, but all methods must not cause any adverse impact on groundwater or surface waters.

Pump stations (or Lift Stations) are fundamental in the wastewater treatment process by screening unwanted materials, pump wastewater to proper points of elevation, and record vital data on the wastewater flow. By pump stations removing debris and large material from the sewer system and the pipes to the wastewater treatment plant, it helps to preserve the equipment at the treatment plant that are essential to the treatment process. Flushing only organic material and white toilet paper is the best way to keep our sewer systems and pump stations from backing up, or becoming damaged.

More Links for Review/Information

1. Mechanical Screen- Front Rake Type
 - a. [YouTube](#)
2. SCADA
 - a. [Webpage](#)
3. Another SCADA Reference
 - a. [Webpage](#)
4. Pumping Station Screens
 - a. [Webpage](#)

This video shows a bar screen being filled with debris and being cleaned ([Video Animation](#)) (Automatic Bar Screen).

Another video showing bar screens being cleaned ([Video Animation](#))

(These links may bring you to YouTube, which will then bring up your web browser update status. Click "Browse YouTube" and it will direct you to the linked video).



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Works Cited

GRUNDFOS. *Wastewater pumping stations*. 13 February 2023.

<<https://www.grundfos.com/solutions/learn/research-and-insights/wastewater-pumping-stations#:~:text=Pumping%20stations%20are%20also%20known,the%20level%20of%20wastewater%20present.>>.

NHDES . "New Hampshire Department of Environmental Services." 10 2020. *Operations and Maintenance Manuals Review Checklist for Pump Stations*. <Operations and Maintenance Manuals Review Checklist for Pump Stations>.

Singer, Olivia. "How Does a Sewer Pump Station Work? | Sewer School." 7 May 2021. *Envirosight*. <<https://blog.envirosight.com/sewer-school-how-does-a-sewer-pump-station-work>>.

United States Environmental Protection Agency. "Wastewater Technology Fact Sheet In-Plant Pump Stations." September 2000. *epa.gov*. <https://www3.epa.gov/npdes/pubs/in-plant_pump_station.pdf>.

Please do not hesitate to call the office for any questions or for a tour of the Wareham Water Pollution Control Facility. We are open Monday – Friday 7am to 3:30pm. (508) 295- 6144.

