

Press Release

Suffield Doing It's Part to Save the Sound

New monitoring equipment and process improvements at Suffield's Sewage Treatment Plant have resulted in a significant reduction in nitrogen discharge to the Connecticut River which ultimately impacts Long Island Sound. As measured by nitrogen removal, Suffield has the best performing municipal wastewater treatment facility in the state of Connecticut, according to a report prepared for the Suffield Water Pollution Control Authority (WPCA) by The Water Planet Company located in New London, CT. The process improvements implemented at the Suffield plant may have application to other treatment facilities in New England and beyond. Additional analysis is underway to verify the nitrogen reduction results to date, as well as to explore if these process improvements could be used as a model for other treatment facilities to adopt.

Long Island Sound is an estuary, a place where salt water from the ocean mixes with fresh water from rivers and the land. Due to its importance, Long Island Sound was designated as a National Estuary in 1987. According to the Environmental Protection Agency Region 1 website, "The Sound provides feeding, breeding, nesting and nursery areas for a diversity of plant and animal life, and contributes an estimated \$5.5 billion per year to the regional economy from boating, commercial and sport fishing, swimming, and sight-seeing." More than 8 million people live in the Long Island Sound watershed and increased development has impacted the health of the Sound.

Every summer, the bottom waters of the western half of Long Island Sound experience very low levels of dissolved oxygen, a condition known as hypoxia. Extensive monitoring of Long Island Sound has identified the excess discharge of nitrogen from human activities as the primary pollutant causing hypoxia. Nitrogen fuels the growth of algae in the Sound, which eventually decays, consuming oxygen in the process. Low levels of dissolved oxygen can result in the suffocation of fish, the loss of seagrass that provides valuable nursery habitat, and shifts in biological communities. Nitrogen reduction helps ensure a healthy recreational resource and a stronger water-dependent economy.

Though the problem of hypoxia was recognized in the early 1970s, concerted efforts to understand the problem and address it did not occur until the mid 1980's. In 1985, the Environmental Protection Agency (EPA), Connecticut, and New York formed the Long Island Sound Study (LISS), a bi-state partnership consisting of federal and state agencies, user groups, concerned organizations, and individuals dedicated to restoring and protecting the Sound (<http://www.longislandsoundstudy.net/index.htm>). The LISS has adopted reduction targets for nitrogen loads.

A significant source of nitrogen discharge comes from sewage treatment plants. As such, each State has invested millions of dollars on sewage plant upgrades including Suffield's which was completed in 2006 at a cost of \$5.3 million. After 2½ years of operating the

treatment plant in accordance with Suffield's design engineer's recommendations with no impact on nitrogen removal, Suffield staff implemented several changes, beginning mid-2009.

Suffield WPCA staff purchased new equipment, such as dissolved oxygen meters, oxidation-reduction potential (ORP) meters, variable frequency drives for internal recycle pumps, and a nitrate-nitrogen analyzer in order to improve their ability to monitor and control the upgraded treatment plant. In regards to process management, one of the two internal recycling pumps has been turned off and the second pump is operated only 18 hours per day. Also, mechanical aeration mixer settings were changed to provide less aeration in the first pass and more in the second. Finally, the sludge holding tank blower had operated continuously but is now used only when the sludge press is in operation; approximately 3½ hours daily.

These operational changes in essence have affected the efficiency of the biological process by which naturally occurring microbes clean the waste water and remove harmful pollutants such as nitrogen and phosphorous.

Prior to the changes, the Suffield treatment plant was not able to meet the 2009 nitrogen discharge limit of 52 pounds per day. Now, the facility is not only meeting the more restrictive 2014 target of 45 pounds per day, since mid-August, the discharge has averaged 14 pounds per day of nitrogen. Suffield's nitrogen discharge is more than three times better than it needs to be to comply with Connecticut Department of Environmental Protection's 2014 discharge target.

Connecticut initiated an innovative Nitrogen Credit Exchange program in 2002 among the 79 sewage treatment plants located throughout the state. All the municipal sewage treatment plants fall under a single general permit, and only the aggregate of the plants must meet nitrogen reduction goals. An individual plant can meet its allocated reduction, or Waste Load Allocation (WLA), either through actual reductions or by purchasing credits generated from other treatment plants that succeed in reducing nitrogen below their discharge requirements. For 2009, due to the process improvements implemented during the second half of the year, Suffield removed more nitrogen than was required in the General Permit and so it will receive a check for \$1,259 from the CT DEP by August 2010.

Because the process changes that brought about improved treatment involve reduced pumping and less aeration, Suffield is spending less for better treatment. A preliminary review of electrical consumption indicates annual savings of approximately \$30,000. The reduced electrical consumption means less CO₂ is emitted; thus, the Suffield plant is also operating with a lower carbon footprint.

In January of 2010, Grant Weaver, president of the Water Planet Company, spoke to 150 people at the New England Water Environment Association conference in Boston and Suffield was featured in a presentation titled "Nitrogen Removal: Lessons Learned." The Suffield process improvements are now being considered for presentation before the Water Environment Federation's annual conference in New Orleans this October.

More improvements are under consideration. Now that monitoring equipment and better controls have been installed, Suffield staff is working with the Water Planet company to gain an even better understanding of current conditions, so that further process refinements can be made in order to further reduce ratepayer costs, CO₂ emissions, and provide ever more consistent, higher quality effluent.

For more information contact Suffield WPCA Superintendent, Bernie Gooch at 860-668-3856.

A copy of the March 9, 2010 report to the Suffield Water Pollution Control Authority prepared by The Water Company is posted to the Town's website at www.suffieldtownhall.com.