ADAPTIVE MANAGEMENT FRAMEWORK PROPOSAL

City of Somersworth, New Hampshire

INTRODUCTION

EPA Region 1 issued a Great Bay Total Nitrogen General Permit for Wastewater Facilities in New Hampshire ("General Permit") (NPDES General Permit: NHG58A000) for 13 eligible wastewater treatment facilities (WWTFs). The General Permit was issued on November 24, 2020 and became effective beginning on February 1, 2021.

The General Permit establishes total nitrogen effluent limitations, monitoring requirements, reporting requirements and standard conditions. The discharge of all pollutants other than nitrogen from these WWTFs is authorized by each WWTF's respective individual NPDES permit. EPA developed the General Permit, as part of an Adaptive Management Framework (AMF), to comprehensively regulate nitrogen loading from the 13 WWTFs at watershed-wide scale. It also incorporates an innovative and adaptive approach to achieve reductions in total nitrogen loads to the Great Bay estuary through a combination of mandatory load limits at the WWTFs and voluntary nonpoint source nitrogen reductions.

The General Permit is one aspect of the AMF with other elements being ambient monitoring, pollution tracking, reduction planning, and review. Implementation of an adaptive management approach would include collaboration between EPA, the State of New Hampshire, and public and private stakeholders. The collaboration entails participating in a) ambient water quality monitoring in the Great Bay; b) tracking loads of total nitrogen; c) planning for overall source reductions; d) evaluating a load-based threshold, 0.32 milligrams per liter instream total nitrogen criterion, or other threshold for demonstrating attainment of water quality standards; and e) establishing a timeline for completing a total nitrogen total maximum daily load (TMDL) for the Great Bay. This detailed proposal demonstrates the City of Somersworth's ("the City" or "Somersworth") election to opt into the voluntary AMF option.

BACKGROUND

Somersworth understands the value of the Great Bay Estuary as a resource for the NH Seacoast communities. The City has been working to improve water quality to the receiving waters to which we discharge and ultimately to the Great Bay. The City is committed to continuing these efforts and looking for additional opportunities to further improve water quality from point and non-point sources.

Wastewater Treatment Plant

As part of the City's ongoing commitment to infrastructure investment and asset renewal, the City is under construction for a $13.44 Million upgrade to the WWTF. Currently the project is at 86% completion. This is a targeted upgrade focused on equipment systems that have exceeded their useful lifespan. Major project element upgrades include influent screening, aeration tank internals within both aeration tanks, construction of a new secondary clarifier, sludge handling and sludge dewatering systems. Another important part of the infrastructure investment are many building and life safety improvements necessary to bring existing spaces up to current codes, including new fire suppression systems.

Municipal Separate Storm Sewer System Permit

Since 2003, the City has been regulated under the National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) permit. The MS4 permit regulates stormwater point source discharges in the urbanized area of the City (as defined by the US Census). The City has submitted Annual Reports[1] under the 2003 permit from 2004 through 2018. In 2017, a new MS4 Permit was issued to replace the 2003 permit, with an effective date of July 1, 2018. The City has been complying with this permit and submitting Annual Reports[2] to EPA since 2019.

Under the MS4 program, the City conducts catch basin cleaning, street sweeping and leaf/yard waste collection. Under the leaf/yard waste collection program the City collects residential curb side leaves and yard waste two times in both the spring and fall. Residents are also permitted to drop off leaves and yard waste to Malley Farm from April to late November.

Seacoast Stormwater Coalition

The City has been an active participant in the Seacoast Stormwater Coalition. The Coalition is made up of regulated communities under the Phase II MS4 Permit. Communities use this platform to collaborate and share resources to effectively work together to comply with the MS4 Permit.

Tracking and Accounting

Since 2015, the City has participated in the development of a tracking and accounting framework for total nitrogen through the Pollution Tracking and Accounting Project (PTAP). PTAP is being developed by NHDES and UNH, with significant input from EPA, the City and other Great Bay municipalities. Per the PTAP website, PTAP "will result in the creation of guidelines and recommendations for tracking and accounting systems and identify potential tools that will enable municipalities to perform a quantitative assessment of pollutant load reductions associated with nonpoint source management activities in the Great Bay region." (https://www.unh.edu/unhsc/ptapp).

Stormwater Assets

Through implementation of the MS4 program, the City maintains a GIS database, with assistance from the Strafford Regional Planning Commission, of their storm drain infrastructure including catch basins, outfalls, pipe network and manholes. The City updates the assets on a regular basis to ensure the system reflects current conditions.

Monitoring Efforts

The City participates in the Salmon Falls Watershed Collaborative[3], since 2009, whose goal is to improve watershed planning and management and to protect water supply sources - in the Salmon Falls River watershed.

Stormwater Regulations

[1] 2003 MS4 Permit Annual Reports
[2] 2017 MS4 Permit Annual Reports
[3] Salmon Falls Collaborative | Piscataqua Regional Estuaries Partnership (prepestuaries.org)

The City has Site Plan[4] and Subdivision Regulations[5], which were revised in 2021 to include updates to the post-construction stormwater management requirements to be consistent with the State and MS4 Permit requirements. Under these regulations, applicants for both new and redevelopment projects are required to provide treatment of runoff from impervious surfaces to achieve at least 80% removal of total suspended solids and 50% removal of both total nitrogen and total phosphorus.

These regulations ensure that as private development moves forward in the City, that water quality improvements are being made to existing impervious cover through the redevelopment process and that new development projects are providing water quality treatment for changes in land cover.

The City also hires a third-party consultant to review and provide comments on site plan and subdivision plans as well as conduct construction inspections on behalf of the City. The fees are paid by the applicant but allow the City to ensure that projects are being constructed in accordance with the approved plans and permit conditions.

Fertilizer Efforts

New Hampshire State Statute (RSA: 431) as modified in 2013 states that no turf (lawn) fertilizer sold at retail shall exceed 0.9 pounds per 1,000 square feet of total nitrogen per application when applied according to the instructions on the label. Furthermore, no turf fertilizers sold at retail shall exceed 0.7 pounds per 1,000 square feet of soluble nitrogen per application when applied according to the label. This new law applies to synthetic (manufactured) fertilizers, natural inorganic fertilizers (from a mineral nutrient source), and natural organic fertilizers (derived from either plant or animal products). The guaranteed analysis of a lawn fertilizer is listed on the product label. Nitrogen sources and their solubility are listed individually[6].

Further, fertilizer cannot legally be applied to vegetation or soils located within 25 feet of the reference line of any public waters. Beyond 25 feet, slow or controlled release fertilizer may be used, but must be applied by horticultural professionals who have a pesticide application license issued by the New Hampshire Department of Agriculture[7].

Slow or controlled release fertilizer means fertilizer that is guaranteed, as indicated on the package label, to contain:

- At most 2 percent phosphorous, and
- A nitrogen component which is contains at least 50% slow release nitrogen.

The City has a limited program and currently applies slow release fertilizer on two of the thirteen public parks/recreational areas.

Pet Waste Stations

[4] 2021 Site Plan Regulations
[5] 2021 Subdivision Regulations
[6] unh-nh-turf-law-fact-sheet.pdf
[7] Protected Shoreland FAQ | NH Department of Environmental Services

The City has a pet waste disposal ordinance which requires pet owners to pick up their waste and dispose of it in trash receptacles[8]. The City also owns and maintains pet waste stations which provide bags to picking up pet waste and a disposal receptacle.

Structural Stormwater Best Management Practices

The City evaluates opportunities for structural stormwater best management practices aimed at improving water quality from existing impervious cover for all capital improvement projects. The following are a list of current capital improvement projects that the City is committed to improving water quality.

Cemetery Road Complete Street ($3,800,000) - Currently under construction

Project involves the replacement of potable water, sanitary sewer, and stormwater utility infrastructure, installing new sidewalks and reconstructing the roadway surface along Cemetery Road from West High Street to Maple Street. Improvements will result in reducing water or sewer line breaks, improved pedestrian and vehicular access at the schools, address drainage issues, and improve commuter use of this segment of Cemetery Road.

Main Street Complete Street ($6,403,100)

Project involves the replacement of potable water, sanitary sewer, and stormwater utility infrastructure, installing new sidewalks, bike lanes and reconstructing the roadway surface along Main Street from Indigo Hill Road to John Parsons Drive. Design to compliment planning outcomes for the redevelopment of the Somersworth Plaza site. Improvements will result in reducing water or sewer line breaks, improved pedestrian and vehicle accidents, address drainage issues, and improve commuter use of this segment of Main Street. The main outfall from the Main Street drainage system conveys approximately 600 acres, or 10% of the City's drainage. The outfall flows directly to the Salmon Falls River and is a focus of water quality improvements as part of this project.

Constitutional Way Complete Street ($1,086,900)

Project involves the replacement of potable water, sanitary sewer, and stormwater utility infrastructure, installing new sidewalks and reconstructing the roadway surface along Constitution Way from High Street to Washington Street. Improvements will result in reducing water or sewer line breaks, improved pedestrian and vehicle accidents, address drainage issues, and improve commuter use of this segment of Constitutional Way.

Septic Systems

Each spring, as part of the Manager's newsletter, the City sends out information to residents about the importance of keeping their septic systems in good working order.[9]

PROPOSAL

[8] Help Us Keep Stormwater Clean
[9] May 2021 Manager's Newsletter

This AMF Proposal describes the steps, activities, and measures that the City will take to improve water quality from nonpoint sources into Great Bay from the City during this General Permit term. As outlined in the General Permit, this AMF Proposal is broken up into five areas:

A. Ambient Water Quality Monitoring
B. Track Reductions and Additions of Total Nitrogen
C. Overall Source Reduction
D. Load Based Threshold
E. Completion of a total nitrogen TMDL

The City's proposed approach for each of these categories is outlined in the sections below. This proposal will be a living document that will be reviewed, updated and/or modified on an annual basis to reflect the current understanding of the Great Bay and the progress made by the City and other relevant parties. The updates and modifications will be informed based upon the outcomes from implementation of the efforts outlined in this proposal and collaboration with the other Seacoast communities and key stakeholders (PREP, NHDES and EPA).

A. AMBIENT WATER QUALITY MONITORING IN GREAT BAY

Part 3-1.a. of the General Permit recommends an outline of an approach to monitor the ambient water quality in the Great Bay estuary to determine project trends.

Under this AMF Proposal, the City will work closely with PREP, or an alternative entity, to develop and support an annual ambient water quality monitoring initiative and ensure they align with the requirements under the General Permit.

B. TRACK REDUCTIONS AND ADDITIONS OF TOTAL NITROGEN

Part 3-1.b. of the General Permit recommends an outline of the method(s) to track reductions and additions of the total nitrogen over the course of the permit.

Under this AMF Proposal, the City will track the implementation of non-point and point source efforts to reduce total nitrogen loads. The City will estimate the reductions and additions of TN from developed lands and present this on an annual basis. The City anticipates tracking the efforts outlined in **Section C** below.

The City will continue to work with NHDES, UNH, other Great Bay communities, and consultants to develop a tracking and accounting system to perform a quantitative assessment of pollutant load reductions. Currently, PTAP does not have the capability to estimate nitrogen loads. If PTAP does not have these capabilities before the first annual report is due, the City is committed to using EPA's BMP Tracking and Accounting Tool (BATT).

C. OVERALL SOURCE REDUCTION

Part 3-1.c. of the General Permit recommends an outline or plan for overall source reductions of TN over the course of the General Permit.

Under this AMF Proposal, the City will implement point and nonpoint source reduction strategies to reduce TN. On an annual basis, the City will review the strategies implemented and update the list to reflect progress.

Point Source Reduction Strategies

The City is planning additional WWTF upgrades over the next 2 years based on outcomes from the Facility Assessment Plan, which will identify system improvements and equipment replacements due to age.

The City is also planning to prepare a request for proposal for a consultant to conduct a sewer collection system assessment which will be aimed at determining areas where inflow and infiltration can be reduced and identifying infrastructure upgrade needs.

Non-point Source Reduction Strategies

A variety of nonpoint source (stormwater and groundwater) nitrogen reduction measures will be evaluated as part of this AMF Proposal. The strategies evaluated, the targeted land use/source and a description of how the City will implement these strategies is summarized in **Table 2**.

Table 1. Proposed Reduction Strategies

STRATEGY	TARGET LAND USE/SOURCE	DESCRIPTION OF IMPLEMENTATION
Fertilizer Program	Pervious Developed Land	The City will continue to provide outreach to residents through the Managers Newsletter on fertilizer use best management practices.
Post-Construction Regulations	Impervious	The City recently updated their Site Plan and Subdivision regulations to incorporate post-construction stormwater controls optimized for removal of nitrogen. All private development stormwater projects that require a Site Plan or Subdivision approval will be required to reduce total nitrogen by 50%. The City will continue to ensure during the Site Plan and Subdivision Review process that applicants are meeting the regulatory requirements. The City currently utilizes a third-party consulting firm to review applications and provide comments to the City and applicants, specific to the stormwater post-construction requirements. The third-party consultant also provides construction inspections on behalf of the City to ensure compliance with the regulations. The City will track and account for the implementation of post-construction stormwater BMPs on private development.
Infrastructure Maintenance Program	Impervious	The City will continue to develop and implement a program detailing the activities and procedures to maintain storm drainage infrastructure in a timely manner. The program will include routine inspections, cleaning, and maintenance of catch basins to maintain 50% free-storage capacity in the catch basin sump. The City also provides focused cleaning in areas with reports of flooding or backups. Further, the City typically has a contractor clean all catch basins following road reconstruction or paving efforts.
Infrastructure Upgrade/Improvement Program	Impervious	The City will continue to implement a program to identify inadequacies in the storm drain infrastructure system. The City will work to establish drainage easements where they don't exist to ensure adequate maintenance can be

STRATEGY	TARGET LAND USE/SOURCE	DESCRIPTION OF IMPLEMENTATION
		performed. The City will also identify areas where infrastructure is inadequate to convey storm flows and where water quality improvements can be made.
Organic Waste and Leaf Litter Collection Program	Developed Pervious Impervious	The City will continue to perform gathering, removal and proper disposal of landscaping wastes, organic debris, and leaf litter from City owned impervious roadways and parking lots. The gathering and removal will occur immediately following any landscaping activities. The City will continue to collect residential landscaping wastes, organic debris, and leaf litter twice in both the spring and fall. Residents also have the ability to bring landscaping waste, organic debris, and leaf litter to Malley Farm between April and November. The City will continue to send out annual messages in the Managers Newsletter reminding residents of these programs.
Enhanced Street/ Pavement Cleaning Program	Impervious	The City will continue to implement a street sweeping program to clean all curbed impervious cover (i.e., directly connected impervious cover) two times per year (spring and fall). The City will continue to provide enhanced street sweeping of the downtown areas. The City will also continue to provide enhanced sweeping before and following event driven needs including school graduation, holidays, and festivals.
Septic System Program	Septic	The City will support efforts that improve inspection, maintenance and/or upgrade of private septic systems within a specific distance to a water body (both tidal and freshwater).
Stormwater Structural BMP Construction	Impervious	As part of Complete Streets design efforts, the City evaluates capital improvement projects for the implementation of structural stormwater best management practices targeted at improving water quality from existing impervious areas.
Pet Waste	Developed Pervious Impervious	The City currently promotes a Pet Waste program through information flyers, PSA's, and dog licensing. The City will continue to send out a reminder to residents about the program in the Managers Newsletter.
Evaluate City-Owned and Right-of-Way Properties for Stormwater Structural BMP Sites	Impervious	The City will conduct a City-wide assessment for implementation of structural stormwater BMPs to reduce the frequency, volume and pollutant loads of stormwater discharges. The City will develop a City-wide plan that identifies conceptual BMP locations and designs for retrofit of existing impervious cover.
Atmospheric Deposition	Pervious Impervious	The City will work with EPA and NHDES to understand how levels of nitrogen from atmospheric deposition are changing over time. The City will work to account for changes in the atmospheric load as part of the tracking and accounting framework on an annual basis (or as data becomes available).

D. LOAD-BASED THRESHOLD

Part 3-1.d. of the general permit recommends an inclusive and transparent process for comprehensively evaluating any significant scientific and methodological issues relating to the permit, including the choice of a load-based threshold of 100 kg ha-1 yr-1 versus any other proposed threshold, including a concentration-based threshold of 0.32 mg/L.

At this time, the City is not committed to recommending a process for evaluating a load-based threshold. What the City is committed to is funding, reviewing and interpreting monitoring initiatives; implementing nonpoint and point source projects targeted at reducing TN in the Great Bay; tracking and accounting for our implementation efforts; and revising this AMF Plan to ensure that the efforts the City is taking will have the greatest benefit to water quality. The City is committed to working with EPA, NHDES, PREP, and watershed stakeholders to ensure that the science and recommended next steps for continued improvement in water quality of the Great Bay and its tributaries are understood.

E. COMPLETION OF TMDL

Part 3-1.c. of the general permit recommends a proposed timeline for completing a TMDL for Total Nitrogen in Great Bay and for submitting it to EPA for review and approval.

At this time, the City is not committed to developing a timeline for completion of a TMDL. What the City is committed to is activities that can inform a future TMDL including funding, reviewing and interpreting monitoring initiatives, implementing nonpoint and point source projects targeted at reducing TN in the Great Bay, tracking and accounting for implementation efforts, and revising this Plan to ensure that efforts will have the greatest benefit to water quality. The City is committed to working with EPA, NHDES, PREP, and watershed stakeholders to ensure that the science and recommended next steps for continued improvement in water quality of the Great Bay and its tributaries are understood.