

Annual Report to MAAM and Subcommittee:

The following is a report of the Structural & Non-structural BMP's implemented during the last year, and those planned for next year.

Planned Structural BMPs – The following list includes projects that are already planned in CIP, design phase, etc.

Year	Project	Description	Estimated Load Reduction Potential (lbs TN/yr)	Costs	2021 progress update	2022 anticipated progress
2021	Chesley Street BMP	Add BMP at base of Chesley Street capturing runoff from Mt. Vernon and Chesley Neighborhood	<u>28 lbs TN/yr</u>	\$80,000	A PO has been made for \$60,000 worth of construction, and approximately \$15,000 worth of materials have been purchased. Final work pending contractor schedule.	Work to be finalized fall 2021.
2022-2026	Court, Union, and Middle Streets	Capital Improvement work to improve drainage to include BMP's	43 lbs TN/yr	\$1,125,000	\$293,925 has been awarded to a design consultant.	At this point, it is anticipated that the project will be bid out for construction in early 2022 with construction beginning that summer season.
2022-2024	Fifth and Grove Streets	Capital Improvement work to improve drainage to include BMP's	26 lbs TN/yr	\$275,000	Engineering Staff is preparing RFQ for design work	Anticipate design work to be completed in 2022
2022-2025	Oak, Broadway, Central neighborhood reconstruction	Capital Improvement work to improve drainage to include BMP's	412 lbs TN/yr	\$250,000 (actual costs will be much higher)	Broadway culvert project located directly downstream of the neighborhood is currently wrapping up (over \$8,000,000)	Neighborhood project temporarily on hold pending closeout of Broadway Culvert project with contractor.
2021	Lower Henry Law and River Street	Capital Improvement work to improve drainage to include BMP's	TBD	\$260,000	Engineering Staff is preparing RFQ for design work	Anticipate design work to be completed in 2022
2027	Tanglewood	Capital Improvement work to improve drainage to include BMP's	47 lbs TN/yr	\$900,000	City involved in litigation over drainage connection across an existing property.	Legal resolution is looking promising, if settled, city will move this project forward.
2021	Climate Adaptation Grant	As part of Climate Adaptation work with the SRPC, city committed to installing a new catch basin filtering device with a tree - similar to a tree-box filter but with improved maintenance capacity	5 lbs TN/yr	\$10,000	Deputy Director Boulanger has selected a location on Main Street for install, adjacent to the recently installed water line and near 3 existing tree-box filters.	Final design (in field), and construction to be completed fall 2021, a video of the process will be taken. Additionally, the city may offer a tour to other NGP municipalities and stakeholders to look at various BMP's in dover.
Planning	Henry Law Park	City is actively looking for funding opportunities to design and construct an innovative, Nitrogen focused Water Quality BMP in the Henry Law Park area. This would be able to capture and provide treatment for approx. 120 acres of highly urbanized commercial and residential areas in the City's Downtown.	568 lbs TN/yr	\$6,000,000	As of August 2021, City has applied to have design work completed as part of the UNH Civil Engineering Capstone project program. Design would be done with a team of students along with the expert faculty at the UNH Stormwater Center.	unknown
Planning	Chapel Street Ravine	Using NHDES SRF loan program to design a plan to incorporate water quality treatment and flood management downstream of substantial stormwater culvert	TBD	TBD	Consultant on board, testing outfall water quality and analyzing design options through SRF Planning Grant. \$41,740 spent to date	Anticipate continue to spend full \$75,000 on analysis and preliminary design.

Non-structural BMPs – The following list includes existing ongoing and future planned efforts:

Anticipated Year of initial implementation (ongoing work)	Project	Description	Estimated Load Reduction Potential (lbs TN/yr)	Costs	2021 progress update	2022 anticipated progress
Ongoing	Street Sweeping	Mechanically sweep downtown area (50 miles) once a week for 9 months of the year	<u>43 lb TN/yr</u>	Mostly Staff Time - looking to incorporate into workorder program to track full cost.	400 lane miles have been swept + frequent re-sweep of approximately 100 lane miles of urban corp area. City spent \$244,316 on new High Performance Mechanical Street Sweeper in spring.	Continue to sweep using available equipment, sweeping will be substantially more than minimum MS4 permit requirement.

Ongoing	Sidewalk/Urban Corp Sweeping	Rider sweeper with vacuume	<u>5 lb TN/yr</u>	Mostly Staff Time - looking to incorporate into workorder program to track full cost.	City continually vacuumed assisted sweeps approximately 5 miles of sidewalk area through non-snow season.	Continue to sweep using available equipment, sweeping will be substantially more than minimum MS4 permit requirement.
Ongoing	Leaf Litter Management	Leaf pick up for 6 weeks in the fall	<u>95 lb TN/yr</u>	-	City has include \$55,620 in contract with Waste Management for the leaf collection in the fall	City will contract out services again in 2022.
Ongoing	Leaf Litter Management	Provide location for residents to drop off leaf and yard waste year-round	<u>95 lb TN/yr</u>	-	City has a \$37,500 contract with Dr. Dirt to chip yard waste and remove from our recycling center. Yard waste and leaf removal for composting is paid for with in-kind services.	City will coordinate services again in 2022.
Ongoing	Catch Basin Cleaning	CB's are cleaned in accordance with MS4 requirements	<u>17 lb TN/yr</u>	-	City has \$72,152 contract for CB cleaning for 2021. Cleaning beginning August 16th and expected to take three month to complete.	City will contract out services again in 2022.
In Place	Wetland Buffer	Ordinance has increased wetland buffers (see credit for going green project)		-	Major buffer restoration project is being completed in association with the Bellamy Dam Removal - approximately 1,500 lf of buffer restored. TN removal rate TBD	Continue to require buffer preservation and reestablishment as part of development requirements.
In Place	Stormwater Regulations	Site Plan Regulations include SWA recommendations for development and redevelopment (reduction = 0.012 * baseline)	<u>1,011 lb TN/yr</u> 0.012 * 84,312 lbs TN	-	Per PTAP, approx. 119 lb TN have been removed from three projects submitted	Continue to require stormwater regulations as part of development
In Place	Slow Release nitrogen requirement for all new projects	As part of Site Plan approval, a maintenance plan shall be in place and "Best practices to minimize environmental impacts, such as the use of low-phosphorus"	<u>350 lb TN/yr</u>	-	City of Dover through the Seacoast Stormwater Coalition is working with City	Continue to improve and implement checks on long-term O&M of private
Planning	Leaf Litter Management	Enhanced street leaf pick up - Assume 80% of areas adjacent to city roads would be picked up	766 lbs TN/yr		Deputy Community Services Director participating in expert panel to establish removal credits.	
Ongoing	City Organic Fertilizer Program	The city is committed to using only organic, slow-release fertilizers on city owned and maintained properties (1,000,000 sf and 80% reduction).	<u>800 lb TN/yr</u>	\$80,000	Contract for PJC to provide organic turn maintenance \$80,000	Continue to fund organic alternatives to turn maintenance.
Ongoing	Fertilizer Bans and Reductions	Supporting a statewide ban of high nitrogen synthetic fertilizers				
Ongoing	Fertilizer Outreach and Education Program	Provide and promote landscaping for water quality initiatives and programs			City hosted an organic gardening class at the Dover Public Library. 248 virtual attendees.	Continue outreach.
2021	Rain Barrel initiative	Rain Barrel Distribution			Assisted the Dover Democrats in advertising and distributing over 70 rain barrels to residents.	
Ongoing	Pet Waste Outreach and Education Program	Provide pet waste management educational materials with every dog license.			City mailed PREP messaging to every registered dog owner. Amy Perry from the Conservation Commission gave presentation on proper pet waste management.	Continue outreach.
Ongoing	Leaf and Yard Waste Outreach and Education Program	Promote proper leaf and yard waste management.			Yard Waste Messaging in the fall	Continue outreach.
Ongoing	Septic System Outreach and Education Program	Participate and promote NHDES Septic Smart Week. Send septic smart information to private septic system owners.			Participate in and promote NHDES Septic Smart Week.	Continue outreach.
Ongoing	Outreach and Education	The City outreach and education exceeds what is required by the MS4. Staff regularly hold tours or presentations of the innovative BMP's being implemented. Additionally, we are working on a video for the installation of a filtering catch basin BMP. Staff also regularly speak at conferences about technologies and particularly focus on maintenance and long-term performance.				
Planning	Septic System Performance Requirements	Advocate for a state-wide requirement to remove nitrogen in septic systems.	381 lbs TN/yr		Environmental Projects Manager scheduled to meet at end of August with NHDES and members of other communities (Durham, Milton, and others) regarding this topic	Continue to advocate that the State, who currently runs the septic program, incorporate regulations for enhanced nitrogen removal in watershed of nitrogen impaired waterbodies

Other Efforts – The following list includes innovative efforts

Anticipated Year	Project	Description	Estimated Load Reduction Potential (lbs TN/yr)	Costs	2021 progress update	2022 anticipated progress
2021 and ongoing	Inflow/Infiltration	Inflow and infiltration into the sewer collection system resulting elevated peak flows through the WWTP biological system which can affect the nutrient reduction capacity during those events.	1,750 lbs TN/yr Assume a storm event causes an effluent peak of 14 mg/l, seven times a year for 24 hrs. at a time. Assume the storm flow is 5 mgd.	\$300,000/yr	While typically the city devotes \$300k per year to I/I, the city is currently in the process of a \$700,000 rehabilitation of a conveyance sewer line below the Spaulding Turnpike and a down-town roof leader removal project, totaling approximately \$1.4 million of I/I work. Also, subsidizing investment on private property where appropriate to ensure I/I is removed from system.	Continue to aggressively focus on I/I reductions to improve performance at the WWTF.
Planning	Extending Sewer to Septiced areas	Continually assessing opportunities			City is completing utility master plan, where extending sewer into septiced areas has been identified as a high priority. Working into the master plan is a first step towards brining projects into the CIP.	
Ongoing	Commitment to exploring new BMP's and participating in innovative initiatives	Berry Brook and the continuation of bringing new BMP's into urban redevelopment settings and working with UNHSWC to test the effect, Volunteering to work with the NHDES/Prep Fellowship team to investigate SAFE strategies for Stormwater Funding, Volunteer to work with SRPC to analyze urban trees and innovative tree box filters, Volunteer to work with SRPC to look at BMP's v/s socioeconomic disparities, participating in the PTAP program, participating in multiple credit for going green projects lead by PREP			Through and SRF program, focusing on innovative ways to easily preform IDDE testing, the City is working with the UNH stormwater center to use and create an SOP for nitrogen sample testing. This will eliminate the need to go out for testing and enable municipality's to test TN in water at any point just to check in on status.	
Ongoing	Training and Commitment to Innovation	Leadership in NEWEA/ Biological Nutrient Removal Classes - Our WWTP staff are at the forefront of discussions for WWTP practices. Ray Vermette acts as president of NEWEA and has traveled around the world looking at innovative technologies and bring them to Dover.				
Ongoing	Professional Staff	The City has created an Environmental Project Manager Position. This positions focus is dedicated entirely to environmental improvements, including a commitment to the protection and improvement of the Great Bay. This person is taking an active role in organizing regional commitment and implementation of the MS4 permit and the new NGP permit. Just this year, this person participated and was acceded through the NOFA Organic Land Care Program. Additionally, other staff members, particularly Bill Boulanger, is regularly recognized for contributions to innovative stormwater quality improvements and environmental stewardship.			City has created and almost filled a new sustainability coordinator position. The primary focus will be on energy, however, the person chosen for the position was recently a UNH Sustainability Institute Fellow, during which he focused on compiling and writing a combined greenhouse gas and nitrogen footprint report for Dover New Hampshire, making Dover the first municipality in the United States to release such a report	
Ongoing	Water Quality BMP's as standard practice for city reconstruction projects	This is the language from our standard RFQ for design of reconstruction projects: <i>"As part of the drainage improvements, the City wishes to enhance the drainage system and incorporate easily maintainable, low impact development strategies to provide conveyance, treatment, and infiltration where practical. The Consultant shall make recommendations for an improved drainage system."</i> The commitment to implementing the water quality work is demonstrated in several recent redevelopment projects.			The design of the reconstructed lower central avenue corridor between Stark Avenue and Silver Street includes two new, sub-surface infiltration areas.	Construction for this project is anticipated in 2022 depending on funding availability.
2020-2021	City of Dover - Stormwater and Resiliancy Ad-Hoc Committee	Dover City Council has tasked an ad-hoc committee with exploring and recommending Secure, Adequate, Fair and Equitable funding for our current and future stormwater and resilience needs.			10 meetings held, with excellent participation from community members.	Recommendation due to City Council by end of 2021, with follow-up actions in 2022.

Pilot Projects – The following list includes pilot projects:

Anticipated Year	Project	Description	Estimated Load Reduction Potential (lbs TN/yr)	Costs	2021 progress update	2022 anticipated progress
2021	Stakeholder Committee Project	MAAM communities fund \$45,000 towards Great Bay water quality-related project as selected by the Stakeholder Committee (CLF)	?	\$15,000 (from Dover)	Pending request from Stakeholders for specific project.	
Under Construction	Catch Basin Spoils Facility	Remove decant water from sump and treat at WWTF to 5-8 mg/l	<u>195+ lbs TN/yr</u>	\$3,500,000	Project is under construction	Project Complete

Initiatives at WWTFs – The following list includes efforts aimed at reducing TN output from WWTFs during the eelgrass growing season. Such efforts may include optimization of plants, projects aimed at reducing inflow/infiltration, facility upgrades, or similar measures.

Anticipated Year	Project	Description	Estimated Load Reduction Potential (lbs TN/yr)	Costs	2021 progress update	2022 anticipated progress
Nutrient Load Reduction	Reductions below 167 lb/day during growing season	Assume the plant is running on average at 5 mg/l or 104 lb/day	<u>22,512 lbs TN/yr</u>	\$12,000,000 upgrade cost in 2015 + added annual operating expenses. May need additional \$3,000,000 in the near future to offset lost capacity when switching system type.	As demonstrated in reporting, the TN levels have remained lower than an 8 mg/l	
Nutrient Load Reduction	Reductions below 167 lb/day during non-growing season	Assume the plant was operating at a 14 mg/l and city is currently operating at 10 mg/l or less. Note that this is an extremely conservative estimate of actual reduction.	<u>12,517 lbs TN/yr</u>	\$12,000,000 upgrade cost in 2015 + added annual operating expenses. May need additional \$3,000,000 in the near future to offset lost capacity when switching system type.	As demonstrated in reporting, the TN levels have remained low through the non-growing months	