

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	FY - 2021 progress update	FY - 2022 progress update	FY - 2023 progress update
2022-2026	Court, Union, and Middle Streets	Capital Improvement work to improve drainage to include BMP's	43 lbs TN/yr	\$ 1,125,000.00	\$293,925 has been awarded to a design consultant.	In Design	At this point, it is anticipated that the project will be bid out for construction in early 2023.
2022-2024	Fifth and Grove Streets	Capital Improvement work to improve drainage to include BMP's	26 lbs TN/yr	\$ 275,000.00	Engineering Staff is preparing RFQ for design work	In Design	At this point, it is anticipated that the project will be bid out for construction in early 2023.
2022-2025	Oak, Broadway, Central neighborhood reconstruction	Capital Improvement work to improve drainage to include BMP's	412 lbs TN/yr	\$ 22,300,000.00	Broadway culvert project located directly downstream of the neighborhood is currently wrapping up (over \$8,000,000)	postpone to out year	Neighborhood project temporarily on hold - Major funding increase in CIP
2022	Oak, Broadway, Central/ Upstream of Broadway Culvert "master plan"	look at drainage upstream of the culvert and come up with a "master drainage plan"	N/A	\$ 100,000.00		Klinfelder under contract to do work	Work Continues
2021	Lower Henry Law and River Street	Capital Improvement work to improve drainage to include BMP's	TBD	\$ 7,700,000.00	Engineering Staff is preparing RFQ for design work	In Design	Anticipate design work to be completed in 2023
2022	Henry Law Park	City is using SRF and ARPA funding to design an innovative, Nitrogen focused Water Quality BMP in the Henry Law Park area. This could provide some level of treatment of up to 120 acres of highly urbanized commercial and residential areas in the City's Downtown. City continues to apply for construction funding.	568 lbs TN/yr	\$ 6,000,000.00	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.	In Design	Design work continuing
2022	Waterfront Development	Development of the former DPW & WWTP site near Cochecho River. Plans include innovative Stormwater Treatment and flood resiliency	TBD	\$ 13,000,000.00			Going out to bid in September
2022	Oxbow narrowing	Reducing excess impervious area as part of regular pavement management plan	2 lbs TN/yr	est. \$20,000			Happening as part of paving
2027	Tanglewood	Capital Improvement work to improve drainage to include BMP's	47 lbs TN/yr	\$ 2,261,000.00	City involved in litigation over drainage connection across an existing property.	postpone to out year	Legal resolution is looking promising, if settled, city will move this project forward. Substantial increase in funding within CIP.
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	310	\$ 1,800,000.00	Consultant on board, testing outfall water quality and analyzing design options through SRF Planning Grant. \$41,740 spent to date	Looking for funding	Anticipate continue to spend full \$75,000 on analysis and preliminary design.
2024	Dredge Cell Closure	Closing and capping a former landfill and dredge cell to include parking for recreational facility and boat launch. Includes innovative Stormwater Management and Snow storage area	TBD	\$ 4,000,000.00			In design. Met with NHDES AoT and Solid West folks.
2024	Cochecho Outfall	Very Old stone box culvert discharging to the Cochecho River to be replaced and upsized to allow for increased flood resiliency.	TBD	\$ 2,500,000.00			In design.
Planning	Lower Central construction	Substantial rehabilitation of Central Avenue from Stark Avenue to Silver Street. Improvements include subsurface infiltration, pavement narrowing and improved stormwater infrastructure.	TBD	\$ 11,134,250.00			Fully designed seeking funding.
2023	round about on Dover Point Road	Reconfiguration of intersection of Dover Point Road and Point Place to include subsurface infiltration units.	TBD	\$ 2,274,000.00			In design.
Planning	Oak Street Reconstruction	Reconstruction of Oak Street and Bridge between Broadway and Portland Ave. Work will include stormwater improvements	TBD	\$ 6,000,000.00			Planning Stages
Planning	Culvert Improvement- Sixth Street over Rayners Brook	Upsize existing box culvert.	TBD	\$ 700,000.00			looking for funding
Planning	Street Reconstruction -Central Ave Washington Street to Silver Street	Reconstruction of street will include pavement reduction and improved drainage and stormwater treatment	TBD	\$ 480,000.00			In CIP but not in design
Planning	Street Reconstruction - Locust Street	Reconstruction of street will include pavement reduction and improved drainage and stormwater treatment	TBD	TBD			In CIP ask - not funded
Planning	Stormwater and Flood Resiliency Utility Development	Staff has been directed to create a stormwater utility for review and vote by the city council	TBD	\$ 100,000.00		Stormwater Funding Unanimous Support of Stormwater and Flood resiliency utility	City secured \$100,000 CFRING grant to complete work

Planning	Storm Sewer System Improvements - Citywide Drainage Model & Master Plan	Work to be done congruently with Stormwater Utility Development	TBD	\$	500,000.00		In CIP ask - not funded
Planning	Atlantic Avenue Reconstruction	Reconstruction of street will include pavement reduction and improved drainage and stormwater treatment	TBD	\$	3,300,000.00		In CIP not in design
Planning	Third Str/Chestnut St Roundabout	Roundabout to include stormwater improvements	TBD				Working with NHDOT
Planning	Varney Brook/Old Dover Point Sewer Extension	Extend Sewer to existing septic area. 25 homes	274 lbs TN/yr	\$	1,302,500.00		looking for funding
Planning	Central Ave Drainage Old Rollins to Sixth Street	Improve drainage system in Central Ave to include Water Quality improvements	TBD		TBD		In CIP ask - not funded
Planning	Pavement Reduction & CB sump improvements now included in pavement management annual work	throughout the city as pavement management plan dictates	TBD		TBD		Ongoing
Planning	Horne Street Reconstruction	Reconstruction of street will include pavement reduction and improved drainage and stormwater treatment	TBD		TBD		In CIP
Planning	Stormwater improvements Old Rochester Road - Indian Brook to Oxbow						In CIP ask - not funded
Planning	Street Reconstruction of Sunset/ Fairfield/ Hartwood neighborhood	Reconstruction of street will include pavement reduction and improved drainage and stormwater treatment	TBD		TBD		In CIP
Planning	North End Sewer Extension	Extend Sewer to existing septic area.	TBD	\$	5,387,000.00		looking for funding
Planning	Street Reconstruction - Rutland Street	Reconstruction of street will include pavement reduction and improved drainage and stormwater treatment	TBD	\$	6,018,000.00		In CIP
Planning	Drew Road Culvert	Improvements to undersized culvert	TBD		TBD		In CIP ask - not funded
Planning	Street Reconstruction - Piscataqua/Back River	Reconstruction of street will include stormwater management	TBD	\$	16,364,250.00		In CIP ask - not funded
2022	skatepark	new raingarden treating existing parking lot & skate park area	TBD	\$	500,000.00		In-house work.
2024	Downtown Vehicular and Ped. Plan	Substantial improvements to do the downtown vehicular and pedestrian traveling. Work to include new street trees and incorporation of innovative stormwater practices with special attention to nutrient uptake	TBD		TBD		in design
On going	Pavement Management	Deep sump catch basins and road narrowing as part of annual pavement management.	TBD		TBD		ongoing
2022	Cornerstone Sewer	Extend Sewer to existing septic area.	285 lbs TN/yr		\$330,000		Completed in 2022
2023	BMP Retrofit initiative	Work with UNH SC to get funding to look at retrofits for existing under-performing BMP's such as detention ponds	TBD		TBD		Project Development - looking for 319 grant funding

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	FY - 2021 progress update	FY - 2022 progress update	FY - 2023 progress update
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.	Ongoing	Continue to sweep using available equipment, sweeping will be substantially more than minimum MS4 permit requirement.
2022	Sweeping Pilot Project	As part of the Credit for Going Green project Dover will work with NH SWC and PREP to really test the nitrogen reduction in street sweeping					Work to begin summer of 2022
Ongoing	Sidewalk/Urban Corp Sweeping	Rider sweeper with vacuumed	<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.	Ongoing	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	Ongoing	City will contract out services again in 2022.
2022	Compost in Dover	Work with local farmer to develop a new composting facility. This partnership will allow us to ramp up our leaf and debris collection					Ongoing
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.	Ongoing	City has worked with private property owner to develop a composting operation.
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.	Ongoing	City will contract out services again in 2023.
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>	-	Per PTAP, approx. 119 lb TN have been removed from three projects submitted sense January 1, 2021		Continue to require stormwater regulations as part of development standards.
In Place	Electric Vehicle planning requirement	Site Plan Regulations require Electric Vehicle Readiness	TBD	-			No credit has been assigned for use of EV, however we know that tailpipe reduction is important
In Place	Roof shall be 30% solar or green roof	Promoting LID development beyond regulations	TBD				Ongoing

In Place	Staff and Planning Board are strongly encouraging extending sewer lines as an alternative to septic even when developments are outside the 100' regulatory requirements	City prepared to use public funds to support sewer line extension as an alternative to septic	TBD				Ongoing
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 fertilizer and slow-release nitrogen, shall be included in the management plan."	350 lb TN/yr			City of Dover through the Seacoast Stormwater Coalition is working with City of Portsmouth to develop better methodology to track private development activities & adherence to approved landscape maintenance plans.	Continue to improve and implement checks on long-term O&M of private developments.
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).	800 lb TN/yr	\$	80,000.00	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.
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.	2000 mailers went out in April 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.	2000 mailers with the NHDES septic smart brochure went out in Feb. 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.					Continue outreach. Developed and hosted the first "Community Conversations" along with CLF and PREP
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	Dover supported bill to allow septic reductions as credit to Stormwater Utility Continue to advocate that the State, who currently runs the septic program, incorporate regulations for enhanced nitrogen removal in watershed of nitrogen impaired waterbodies
Planning	Storm Sewer System Improvements - Citywide Drainage Model & Master Plan	Work to be done congruently with Stormwater Utility Development	TBD	\$	500,000.00		In CIP ask - not funded
planning	idling policy	Continuously look for and implement cutting edge technology and techniques (round-about) to reduce idling and thus reduce tail pipe emissions					Ongoing
2022	Electric Vehicle Fleet	Incorporate electric vehicles into the City fleet	TBD				Now have 4 EV units

Other Efforts – The following list includes innovative efforts

Anticipated Year	Project	Description	Estimated Load Reduction Potential (lbs TN/yr)	Costs	FY - 2021 progress update	FY - 2022 progress update	FY - 2023 progress update
2022 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.
2022	Inflow/Infiltration	Phase A, new pipe under Spaulding turnpike up to Elliot Circle	part of total calculation above	\$ 910,000.00			complete
2022	Inflow/Infiltration	Phase B, grout and seal and lining in downtown area	part of total calculation above	\$ 737,160.00			complete
2023	Inflow/Infiltration	Phase C, new sewer line for Elliot Circle and Stark Ave	part of total calculation above	\$ 2,480,000.00			ongoing
2023	Inflow/Infiltration	City of Dover working on removing roof leaders from sanitary sewer - commercial buildings in downtown	part of total calculation above	\$ 300,000.00			ongoing

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
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
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
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		Dr. Jackson Kaspari PhD - resiliency coordinator
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: "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." 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 Resiliency 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.
2022	Utility Master Plan	updated utility master plan, highlighting commitment to LID and nutrient loading reductions					ongoing

Pilot Projects – The following list includes pilot projects:

Anticipated Year	Project	Description	Estimated Load Reduction Potential (lbs TN/yr)	Costs	FY - 2021 progress update	FY - 2022 progress update	FY - 2023 progress update
2021	Stakeholder Committee Project	MAAM communities fund \$45,000 towards Great Bay water quality-related project as selected by the Stakeholder Committee (CLF)	2	\$15,000 (from Dover)	Pending request from Stakeholders for specific project.		ongoing
2022	Catch Basin Spoils Facility	Remove decant water from sump and treat at WWTF to 5-8 mg/l	195+ lbs TN/yr	\$ 3,500,000.00	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	FY - 2021 progress update	FY - 2022 progress update	FY - 2023 progress update
ongoing	Reductions below 167 lb/day during growing season	Assume the plant is running on average at 5 mg/l or 104 lb/day	22,512 lbs TN/yr	\$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	Dover permitted for 167lb/day. 2021 growing season average = 84 lb/day	Dover permitted for 167lb/day. Current rolling average = 123 lb/day
ongoing	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.	12,517 lbs TN/yr	\$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		