Uxbridge “Does It Make Sense” Study

Town of Uxbridge, MA

GHD | 1545 Iyannough Road, Hyannis MA, 02601

11134317 | Report No 1 | September 2017

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List of Common Acronyms

CIP	Capital Improvements Plan
DCIA	Directly Connected Impervious Area
DIMS	Does It Make Sense
DPW	Department of Public Works
EPA	Environmental Protection Agency
ERU	Equivalent Residential Unit
IA	Impervious Area
MS4	Massachusetts Small Municipal Separate Storm Sewer Systems
NHDES	New Hampshire Department of Environmental Services
NPDES	National Pollutant Discharge Elimination System
SFR	Single Facility Residential
SF	Square Feet
SWMP	Stormwater Management Plan
TMDL	Total Maximum Daily Load

1. Introduction

1.1 Background

The Town of Uxbridge, Massachusetts is home to approximately 13,900 people and occupies 30 square miles in central Massachusetts on the Blackstone River. The City currently manages a multi-faceted stormwater management program, which includes ownership of a stormwater system as well as responsibility for stormwater impacts such as flooding and water quality. Stormwater program management and funding are currently decentralized, and are primarily implemented and funded through the Town's DPW Highway Division budget.

The Town's stormwater discharges are subject to the National Pollutant Discharge Elimination System (NPDES) program, which is administered by the Environmental Protection Agency (EPA) in Massachusetts. Key changes between the existing 2003 Massachusetts Small Municipal Separate Storm Sewer Systems (MS4) permit and the upcoming 2016 MS4 permit (which has a stay on its effective date until July 1, 2018) are expected to significantly increase the staffing and funding resources necessary to maintain permit compliance in future years.

The Town is in need of a defensible, stable, and equitable approach to fund the stormwater program. As a result, the Town has undertaken a "Does it Make Sense" (DIMS) Study to explore the development of a stormwater utility as a funding source for its municipal stormwater program.

1.2 Scope

The scope of services provided by GHD in connection with this assignment included the following:

Task 1 – Kick-off Meeting. A kickoff meeting was conducted for the project on December 19, 2016.

Task 2 – Assess current stormwater-related activities and costs (operational and administrative). GHD and the Town reviewed current Town stormwater-related activities during the kickoff meeting.

Task 3 – Assess problems, issues, and needs related to stormwater activities. Immediate needs for the stormwater conveyance system, stormwater treatment, and flooding concerns were identified by the Town.

Task 4 – Develop, in conjunction with the Town, a draft list of stormwater program priorities necessary for change. A draft list of stormwater program priorities was compiled and reviewed with the Town during this project.

Task 5 – Review current and future capital improvements and other future expenses like new MS4 permit and Total Maximum Daily Load (TMDL), if applicable. Current and future stormwater-related needs were reviewed with the Town.

Task 6 – Conduct a Stakeholder Workshop. A stakeholder committee was formed and the concept of a stormwater utility was reviewed through a workshop conducted on June 8, 2016.

Task 7 – Document findings in a draft report. A draft report was submitted to the Town for review.

Task 8 – Present findings at a Board of Selectman Meeting. During the project it was decided that a presentation of findings would be made to the Town's Stormwater Committee, in lieu of at a Board of Selectman Meeting.

Task 9 – Provide a final draft copy of the report that incorporates comments compiled from the Town.

1.3 Report Organization

The Uxbridge "Does It Make Sense" (DIMS) Study is divided into 5 chapters:

Chapter 1 presents general introductory information about the project.

Chapter 2 provides an overview of stormwater runoff and the importance of stormwater management.

Chapter 3 describes the current stormwater management program in the Town of Uxbridge including current stormwater related activities and costs; problems, issues, needs related to stormwater activities and a draft list of stormwater program priorities necessary for change; and current and future capital improvements and other future expenses.

Chapter 4 outlines funding alternatives for a stormwater management system, including a stormwater utility.

Chapter 5 summarizes the Stakeholder Meeting and outlines next steps.

2. Stormwater Runoff Overview

In an undeveloped watershed, approximately 50 percent of precipitation from rainfall and snowmelt infiltrates into the ground soils, where it accumulates as groundwater. Approximately 40 percent of precipitation in natural watersheds is taken up by vegetation through transpiration processes or evaporated into the atmosphere. The remaining 10 percent flows over land to nearby surface water bodies as surface runoff (NHDES, 2008)[1].

When water infiltrates into the ground, it must travel through multiple layers of vegetation and soil, where natural filtration occurs and potential pollutants are removed from the water. Similarly, water that travels as surface runoff in the natural environment is slowed by vegetation, allowing pollutants that may be carried along by the precipitation to settle out. The root structures of vegetation found in the natural environment also assist in maintaining the integrity of soils by providing structural

[1] New Hampshire Department of Environmental Services (2008). *New Hampshire 2008 Section 305(b) and 303(d) surface water quality report and RSA 485-A:4.XIV report to the Governor and General Court (R-WD-08-5).* Prepared by G. Comstock and K. Edwardson, NHDES Watershed Management Bureau.

support, reducing erosion. This in turn, minimizes the amount of sediment transported in surface runoff (University of New Hampshire, 2008)[2].

In a developed watershed, vegetated surfaces are often covered or replaced with man-made impervious materials which water cannot penetrate. Precipitation that falls on an impervious surface cannot infiltrate into the ground as would typically occur in an undeveloped watershed. Instead, precipitation that falls on impervious surfaces flows over land to nearby surface water bodies. As a result, a higher proportion of precipitation in a developed watershed exists as surface runoff as compared to an undeveloped watershed. This surface runoff picks up and transports pollutants such as microbial contaminants, sediment, excess nutrients, and chemical pollutants that may be present on surfaces it encounters as it moves. Surface runoff in a developed watershed encounters less vegetation than in an undeveloped watershed, further reducing the amount of natural filtration to remove the pollutants and sediment that accumulate as the runoff travels over land. Because runoff in developed watersheds does not have the benefit of these natural filtration processes, it tends to be of poorer quality than runoff found in natural environments. Poor quality runoff can contaminate nearby surface water bodies and groundwater by introducing pollutants. Water quality impacts associated with stormwater runoff can include algal blooms, reduced dissolved oxygen levels, and impacts to aquatic habitats (University of New Hampshire, 2008). The following table summarizes pollutants commonly associated with stormwater runoff, their sources, and potential impacts.

Table 2.1 Stormwater Pollutants, Sources, and Impacts

Pollutant	Sources	Impacts
Nutrients (nitrogen, phosphorus)	Fertilizer, wastewater effluent (septic systems), agricultural and pet waste and sediments (erosion and scour)	Cause algal blooms in lakes, bays and ponds; reduced dissolved oxygen levels
Sediments (sand, silt)	Soil erosion, road sand	Transport contaminants to receiving waters; reduce water clarity; impact aquatic habitat
Pathogens (viruses, bacteria, etc.)	Agricultural and pet waste, wastewater effluent (septic systems)	Degrades drinking water, fish and shellfish consumption, recreation
Toxics (heavy metals, polycyclic aromatic hydrocarbons, volatile organics)	Petroleum products, paints, solvents, herbicides, pesticides and other household, commercial and industrial products	Poisonous to living organisms, persistent in the environment
Chloride (salts)	De-icing salts, water softeners	Impacts plants and animals in freshwater aquatic systems
Temperature	Heated water from manufacturing process waters or runoff from warm surfaces suck as parking lots	Reduces dissolved oxygen, affects fish and other aquatic organisms

[2] University of New Hampshire (2008). *Protecting Water Resources and Managing Stormwater: A Bird's Eye View for New Hampshire Communities.* Prepared by Julia Peterson, Amanda Stone, and James Houle, University of New Hampshire.

In addition to contributing to water quality issues, the increased surface runoff observed in developed watersheds can cause significant flooding issues. The quantity of water found as surface runoff is greater in developed watersheds. Further, because runoff in developed watersheds may not encounter as much vegetation as it travels, it tends to flow more quickly. This results in larger volumes of water moving more quickly over land than typically observed in the natural environment, which contributes to the flooding problems frequently observed in developed watersheds. This flooding can cause scoring and erosion, further increasing the quantity of sediment and potential pollutants present in the runoff and degrading water quality.

3. Current Stormwater Program

The Town of Uxbridge currently owns and operates an extensive stormwater management system aimed at mitigating the potential impacts associated with unmanaged stormwater. This section reviews current stormwater components and identifies priorities for stormwater management.

3.1 Current Program Structure and Funding Mechanisms

Because stormwater management functions and funding are decentralized, stormwater-related costs are spread among various portions of the Town budget. Current stormwater-related costs include:

- Personnel Services. The stormwater program is implemented by a variety of staff. Personnel Services costs include pay, insurance, retirement, staff development, and worker's compensation.
- Purchased Services. Purchased services include maintenance charges, equipment rentals, property insurance, vehicle and equipment insurance, public liability insurance, and telecommunications.
- Supplies. Supplies budget includes office supplies, operating supplies, clothing and uniforms, vehicle fuels, maintenance supplies, fleet maintenance charges and minor equipment, furniture, and fixtures.
- Capital Outlay. Capital outlay includes land improvements, general street and sidewalk improvements, general drainage improvements, machinery, and equipment.

The primary department responsible for stormwater management is the Department of Public Works (DPW). The Department of Public Works oversees the Town's Highway & Parks, Water, and Wastewater Divisions. The DPW maintains the stormwater drainage system and implements the Illicit Discharge Detection and Elimination Program.

Maintenance of the storm drainage system is funded from the General Fund portion of the Town budget. Large-scale stormwater improvements are financed through the Capital Improvements Plan (CIP) budget process also under the General Fund.

3.2 Regulatory Compliance

Stormwater discharges within the Town of Uxbridge are regulated by the United States EPA under the NPDES Phase II Stormwater Permit Program. The Town was issued a General Permit for MS4s by EPA in May 2003. This permit regulates stormwater management activities for Phase II MS4s in Massachusetts and New Hampshire. The MS4 Permit requires specific activities to be undertaken in the following areas:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Pre- and Post-Construction Site Stormwater Runoff Control
- Pollution Prevention and Good Housekeeping in Municipal Operations

In addition, the Town must prepare a written Stormwater Management Plan (SWMP) outlining how they will meet the criteria outlined above. The Town is also required to submit an annual report outlining how they are meeting Permit requirements.

A draft 2016 MS4 permit is anticipated to become effective in July 2017. The Town anticipates stormwater management costs to increase in order to comply with the upcoming Permit.

3.3 Estimated Current Program Activities and Costs

The Town of Uxbridge is an active participate in the Central Massachusetts Regional Stormwater Coalition (Coalition). The Coalition was formed to provide member communities with resources to assist them in meeting the requirements of the MS4 permit in a timely and cost-effective manner.

One of the tools that the Coalition has prepared is the '2015 Master Stormwater Program Cost Spreadsheet'. The spreadsheet allows a community to estimate costs associated with complying with their MS4 permit. In conjunction with the Town, an estimated program cost of $237,000 was estimated for the Town's current stormwater related activities using the Coalition spreadsheet tool.

Current stormwater related activities and operational and administrative costs were reviewed with the Town. Immediate needs for the stormwater conveyance system, stormwater treatment, and flooding concerns were also reviewed. The Town identified the following needs:

- The current stormwater program is underfunded
- Update the existing GIS database for stormwater infrastructure
- Complete an outfall inventory
- Increased staffing resources for stormwater system maintenance

3.4 Future Stormwater Program Needs

The Town anticipates a significant increase in costs associated with MS4 permit compliance in coming years. The 2016 MS4 permit is currently being challenged. Future stormwater program

funding needs should be determined once the permit challenges have been settled since the permit requirements may change.

4. Funding Analysis

4.1 Funding Alternatives

Like other municipalities in Massachusetts and throughout the United States, the Town is faced with a compelling need to fund stormwater improvement and budgetary constraints that threaten the Town's ability to adequately maintain the existing system.

The majority of the Town's stormwater management functions are currently supported by the General Fund. Because the General Fund is funded primarily through property taxes, the reliability of funding varies from year-to-year. Further, multiple Town expenses compete for General Fund funding, including schools and public safety. Stormwater-related expenses have traditionally been viewed as being of lower priority than competing expenses, and often do not receive the attention they require.

There is a variety of potential mechanisms for funding stormwater improvements. Many available funding mechanisms can be used to fund either one-time capital expenses or ongoing operations and maintenance costs. The following table presents many of the funding alternatives available to stormwater-related capital and operating expenses, and the type of costs they can typically be used to cover.

Table 4.1 Stormwater Funding Options

Funding Source	Type of Costs Funded	
	Capital	Operations and Maintenance
Grants	✓	
State Loan Programs	✓	
Developer Contributions	✓	
Collaboration with other Agencies	✓	
Selling Bonds	✓	✓
General Fund	✓	✓
Streets / Road Fund	✓	
Local Improvement District	✓	
System Development Charges	✓	
Utility Rates	✓	✓
Inspection Fees		✓

Only three of the options outlined in the table above provide funding for both capital and operations and maintenance—selling bonds, general fund, and utility rates. Of these potential funding mechanisms, bonds are not typically advisable for ongoing operations and maintenance costs.

In order to provide sustainable funding to maintain regulatory compliance and quality of life for residents through the reduction of flood risk, a financing mechanism for the stormwater program should be:

- Sufficient to cover costs
- Stable/dependable from year to year
- Legal and defensible
- Easy to understand and implement
- Fair and equitable to Uxbridge's residents

General fund revenues vary from year to year. Further, multiple Town expenses compete for General Fund funding, including schools and public safety, and stormwater-related expenses are often viewed as a lower priority than competing expense. As a result, the general fund does not meet the objective of providing sufficient and stable revenue.

Of the funding mechanisms available to fund ongoing costs, only "utility rates" meet all of the criteria listed above. Utility rates, if structured correctly, provide a stable, reliable revenue source that is sufficient to cover costs. There are currently over 1,200 stormwater utilities nationwide. In Massachusetts, stormwater utilities have been implemented in multiple communities including Northampton, Reading, Newton, Fall River, Westfield, Chicopee, and Milton.

In the Commonwealth of Massachusetts, M.G.L Chapter 83, Section 16 and M.G.L Chapter 40, Section 1a allows municipalities to create stormwater utilities and charge utility fees for managing stormwater. Because stormwater utility rates are based primarily on use of the stormwater system, they represent an equitable and logical means of assessing user fees for a public service.

4.2 Rate Structures

Stormwater user fees are assessed based on a predetermined rate structure. The most common approach for establishing fees is to develop a rate structure based on the amount of impervious area that a customer maintains. Typically, the average quantity of impervious area for a single facility residential (SFR) property is calculated to define an equivalent residential unit (ERU). The ERU is then used as a unit of measure for assessing fees to non-SFRs. A SFR would be charged a flat rate and non-SFRs would be charged based on the number of ERUs of impervious surface maintained.

4.3 Rate Modifiers

Stormwater utilities, like other utilities, commonly employ rate modifiers. Rate modifies are charges or credits applied to rates to account for special circumstances. For example, a flat fee may be applied to each bill to assist in covering fixed costs associated with billing. Conversely, credits may be given to recognize implementation of onsite stormwater retention, which reduces the load on the stormwater system. Common rate modifies include the following:

- Base Fee: A base fee may be added to bills to assist in covering fixed costs associated with utility operations, billing, etc. A base fee is fairly straightforward to implement, and requires minimal data.
- Senior/Disabled Discount: Discounts may be provided to individuals determined to be disproportionally impacted by a new user fee, such as elderly or disabled individuals.
- Water Volume Reduction Credit: A credit may be granted to system users with onsite stormwater management controls that reduce the volume and/or velocity of stormwater leaving the parcel. A water volume reduction credit would reduce the charges assessed to the parcel in recognition of the impact of the onsite control on the quantity of stormwater leaving the parcel.
- Water Quality Improvement Credit: In areas with stormwater treatment requirements, credits may be granted to system users with onsite stormwater treatment controls that reduce the concentration and/or load of specific pollutants of concern in stormwater leaving the parcel.

Rate modifiers either increase or decrease the revenues collected by utilities. In order to generate sufficient revenue to cover projected expenses, a utility should develop an estimate of the impact of rate modifiers on the revenue stream as part of rate structure development.

4.4 Billing Approaches

Once a preferred rate methodology and modifiers have been identified, a preferred billing approach must be selected. Typically, stormwater use fees are either billed independently or are added to an existing bill, as follows:

- Water/Sewer Billing: Most commonly, the stormwater user fee is added to the existing water and/or sewer bill as an additional line item. Because many parcels may have impervious area without having water or sewer, water/sewer/stormwater bills would need to be sent to parcel owners with impervious area but no water or sewer service. Data needed for this approach would include the capacity of the billing system to accommodate an additional line item, and the number of stormwater customers not on public water or sewer.
- Property Tax Billing: Some stormwater utilities add the stormwater user fee as a line item to the existing property tax bill. Tax-exempt properties with impervious area would require stand-alone stormwater bills. Data needed for this approach would include the capacity of the billing system to accommodate an additional line item, and the number of tax-exempt stormwater customers.
- Standalone Billing: Some utilities elect to send a standalone stormwater bill. This approach has the benefit of reaching all parcels with impervious area. Data needed for this approach would include a preferred billing system and billing information for all customer accounts.

4.5 Stormwater Utility Rate Example

A stormwater utility rate example has been included in this report to outline how a stormwater utility fee could be determined. In order to determine the total rate base and projected fees associated with a new utility, it is necessary to estimate the number and extent of impervious area of Town parcels.

Town parcels were divided into the following three classifications:

- Single Family Residential
- Other Residential (condominiums and multi-family residential)
- Non-residential (all other parcels – including commercial, industrial, institutional, and municipal properties)

MassDEP has developed a comprehensive list of impervious area (IA) and Directly Connected Impervious Area (DCIA) statistics for all regulated communities, which is available on their website (https://www3.epa.gov/region1/npdes/stormwater/ma.html). The MassDEP dataset was used to calculate an ERU for Uxbridge.

The median impervious cover of all single family parcels was calculated as approximately 8,300 square feet. Town provided GIS data (dated 2014) and Town Assessors data (dated 2014) was used to determine the number of ERUs for each land clarification in Uxbridge, as summarized in Table 4.2.

Table 4.2 Total ERUs by Land Classification

Land Use Classification	ERUs
Single Family Residential	3,296
Other Residential	654
Non-Residential	5,554
Total	9,504

The stormwater utility rate example is summarized in Table 4.3. The rate example is included as a demonstration of how a stormwater fee could be calculated. Stormwater rate fees will be affected by the desired required utility revenue, which is anticipated to increase upon the effective date of the 2016 MS4 permit. If the Town decides to proceed with the formation of a stormwater utility a Town specific rate methodology should be established with more refined land use types (the Town may decide not to establish a stormwater utility for all land use types), a more refined stormwater budget, and any rate modifiers that the Town may decide to implement.

Table 4.3 Stormwater Utility Rate Example

	Example Program[1]
Required Utility Revenue	$390,000
ERU	8,300 square feet
Total ERUs in Utility	9,504
Estimated Monthly Stormwater Utility Fee (per ERU)	$3.42
Estimated Yearly Stormwater Utility Fee (per ERU)	$41.04

Notes:

(1) The calculations in this table are a rate example which demonstrate how a stormwater utility fee could be calculated. If the Town decides to proceed with the formation of a stormwater utility a Town specific rate methodology should be established with more refined land use types, a more refined stormwater budget and any rate modifiers that the Town may decide to implement.

For reference, stormwater utility fees for neighboring communities are outlined in Appendix A and summarized in Table 4.4.

Table 4.4 Stormwater Utility Fees in Massachusetts Communities

Community	Fees (as of April 2016)
Northampton	Residential • $63.94/year for impervious area <2,250 SF • $91.05/year for impervious area 2,250 – 3,056 SF • $125.60/year for impervious area 3,056 – 4,276 SF • $259.07/year for impervious area >4.276 SF Other (including residential properties over 4 units) • Based on actual impervious and pervious area
Reading	Single Family and 2-Family • $40/year Other • $40/each 3,210 SF of impervious area/year
Newton	Residential • $18.75/quarter Commercial, Institutional & Industrial • $50/quarter
Fall River	Residential • $140/year Other Developed Areas • $140/2,800 SF of impervious area/year
Westfield	Residential • $20/year Non-Residential • $0.045/SF of impervious area/year • Minimum fee of $100/yr • Maximum fee of $640/yr
Chicopee	Single Family • $25/quarter Industrial/Commercial/Multi-Family • $0.45/100 SF/Quarter • Minimum fee of $25/quarter • Maximum fee of $1160/quarter
Source: 'Massachusetts Stormwater Utility v.2 (as of April 2016), prepared by the Massachusetts Rivers Alliance – Creating a Revenue Stream for Stormwater Management	

5. Summary of Stakeholder Meeting and Next Steps

5.1 Summary of Stakeholder Meeting

The Town of Uxbridge identified members of the Town's Stormwater Committee as the Stakeholder Group for this project. A Stakeholder Meeting was held on June 8, 2017 at 5:00 p.m. at the Department of Public Works. The concept of implementing a stormwater utility, requirements for a successful program, and potential funding options were discussed at the meeting. A copy of the meeting presentation is included in Appendix B. The group indicated that the Town should consider exploring the feasibility of implementing a stormwater utility to fund the requirements of its existing and upcoming MS4 Permit.

5.2 Next Steps

To assist the Town in continuing to explore the feasibility of a stormwater utility, the following next steps are recommended:

1. Consider formation of a broader stakeholder group comprised of members of the Uxbridge Stormwater Committee, residents, businesses, and environmental groups to advise on program development and implementation.
2. Initiate a Stormwater Utility Feasibility Study, consisting of the following components:
    - Implement a public outreach campaign.
    - Develop a stormwater utility framework, which includes an organization structure, rate policies, and procedures.
    - Develop a methodology to establish rates based on a financial and funding analysis.
    - Develop billing policies and procedures.
3. Prepare and adopt rules of the stormwater utility.
4. Implement the stormwater utility.

Appendix A
Massachusetts Stormwater Utility Fees Summary

Massachusetts Stormwater Utilities v. 2

(as of April 2016)

Community	Northampton	Reading	Newton
Established	2014	2006, small fee increase 2010	2006, rates increased July 2015
Fees	Residential: $63.94/yr imperv area < 2,250 sq ft $91.05/yr imperv area 2,250-3,056 sq ft $125.6/yr imperv area 3,056-4,276 sq ft $259.07/yr imperv area > 4,276 sq ft Other: (incl residential > 4 units) based on actual impervious & pervious area (cap of 1 acre for pervious area)	SF/2-Fam: $40/yr Other: $40/each 3,210 sq ft impervious area/yr Billed quarterly No fee on undeveloped property (no impervious surfaces)	Residential: $18.75/Q (separate charge for each meter in multifamily) Commercial, Institutional & Industrial: $50/Q Billed on quarterly water-sewer bill
Credits & Discounts	Credits and Incentives available for: Small residential BMPs (max 25% credit) Non-resid & large resid: BMPs credits & credits for properties s.t. NPDES permit (% credits & requirements vary) Commonly-owned undevelop. property Educational programs (max 10%) Senior (needs-based), low income & protected land credits (credit %s vary) Max 50% credit	Single & 2-family residential: Up to 50% abatement for installation & maintenance of infiltration systems or other means to reduce runoff Comm/Ind/Multi-family: Up to 50% abatement for installing & maintaining state-of-the-art treatment & infiltration systems	Credits for specific BMPs: • Roof runoff captured/infiltrated: 25 - 50% • Driveway / parking lot captured and infiltrated: 15 to 25% (res) 25 to 50% (other) • Pre-treatment prior to entering public drainage system: Max total credit 75% 30% discount for elderly residents
Structure	DPW Stormwater & Flood Control Utility	DPW Stormwater Enterprise fund	DPW Stormwater Enterprise fund
2010 Population	28,495	24,747	85,146

Massachusetts Rivers Alliance
Creating a Revenue Stream for Stormwater Management

Community	Fall River	Westfield	Chicopee
Established	2008	2010	1998, fees increased 2003
Fees	Residential: $140/yr Other developed areas: $140 per 2,800 sq ft impervious/yr	Residential: $20/yr Non-residential: $0.045/sq ft imperv./yr • min $100/yr • max $640/yr Paid quarterly Not applied to undeveloped land.	Single Family: $25/Q Ind/Comm/Multi-Family: $0.45/1000 sf/Q • min $25/Q • max $160/Q Gradual further fee increases over 5 years being considered.
Credits & Discounts	Up to 25% credit for approved non-residential properties based on reduced volume runoff volume to SW system or CSO Min fee of $140/yr (one ERU) Exemption for properties not discharging directly or indirectly to city SW facilities	Upon application to DPW: *e.g* up to 50% credit for full onsite retention at commercial site *e.g.* residential rain barrel & other BMPs – max 25% credit Credit policy currently under review.	
Structure	Sewer Commission SW fee (also funds CSO abatement)	DPW Stormwater Enterprise fund	Water Pollution Control Dept. SW Fee
2010 Population	88,857	41,094	55,298

For more information:		***Pending:***
Northampton	http://www.northamptonma.gov/726/Stormwater-Flood-Control-Utility	***Milton*** adopted a Stormwater Utility at a Special Town Meeting in Feb 2016. A budget and fees will be established by the Board of Selectman, with input from several public meetings. The fees will be paid by all residential and nonresidential properties and deposited in the Stormwater Enterprise Fund. The fee is expected to take effect in July 1, 2016.
Reading	www.readingma.gov/collector/pages/storm-water-faqs	
Newton	www.newtonma.gov/gov/dpw/stormwater.asp	
Fall River	http://ecode360.com/documents/FA3556/FA3556-074.pdf (Section 74-140)	
Westfield	http://www.cityofwestfield.org/DocumentCenter/View/394	***Gloucester*** passed a Stormwater Utility ordinance in 2009, and the City passed accompanying Regulations in 2011. The City Council has not yet established an enterprise fund or user fees.
Chicopee	http://chicopeema.gov/DocumentCenter/Home/View/1494 http://ecode360.com/6480186?highlight=stormwater#6480186 (Sections 230-22 and 230-23)	

Appendix B
Stakeholder Presentation Summary

Uxbridge– DIMS Study
Does it Make Sense? Stormwater Study

June 8, 2016

Introduction

- “Does it Make Sense” Stormwater Study
- Overall Goal
  - Discussion of whether the concept of a Stormwater Utility should be pursued further for the Town of Uxbridge
- Overview of Topics
  - Stormwater Overview
  - Regulatory Compliance
  - Current Stormwater Related Activities and Costs
  - Stormwater Utility Structure
  - Stormwater Utility Feasibility Discussion

Stormwater Infrastructure

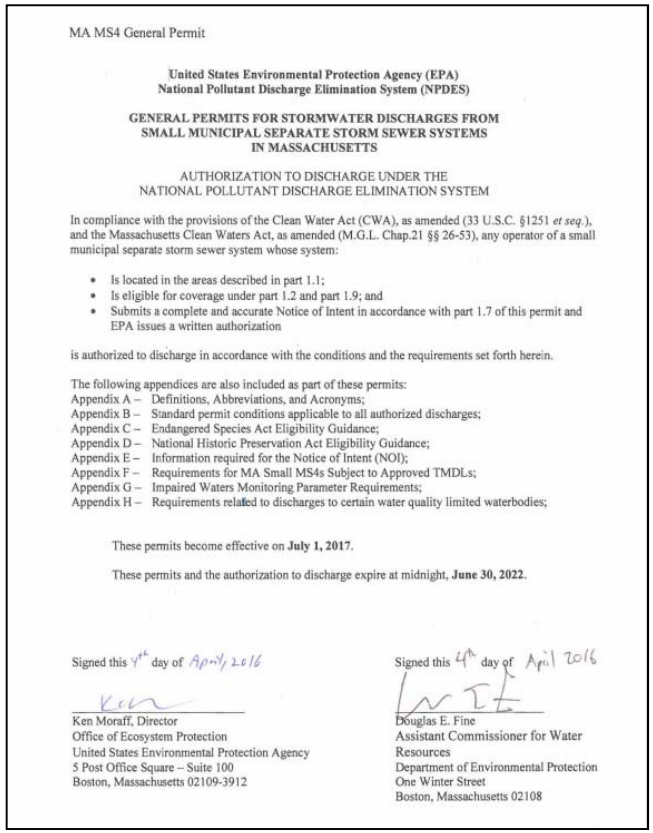
- Undeveloped watershed
  - ~ 50% of precipitation infiltrates ground soils
  - ~ 40% taken up by vegetation or evaporation
  - ~ 10% surface runoff

- As watershed is developed
  - Amount of impervious area increases
  - Increased surface runoff

- Town owned stormwater management system
  - Catch basins (1673)
  - Collection system (pipes)
  - Manholes (761)
  - Culverts (167)
  - Outfalls

Regulatory Compliance

- Stormwater discharges regulated by EPA under the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Permit Program.
- Town issued a General Permit for SW discharges for Small Municipal Separate Storm Sewer Systems (MS4) in May 2003
- Draft updated 2016 MS4 permit effective July 2017 (currently being challenged)



MA MS4 General Permit

United States Environmental Protection Agency (EPA)
National Pollutant Discharge Elimination System (NPDES)

GENERAL PERMITS FOR STORMWATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS IN MASSACHUSETTS

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act (CWA), as amended (33 U.S.C. §1251 *et seq.*), and the Massachusetts Clean Waters Act, as amended (M.G.L. Chap.21 §§ 26-53), any operator of a small municipal separate storm sewer system whose system:

- Is located in the areas described in part 1.1;
- Is eligible for coverage under part 1.2 and part 1.9; and
- Submits a complete and accurate Notice of Intent in accordance with part 1.7 of this permit and EPA issues a written authorization

is authorized to discharge in accordance with the conditions and the requirements set forth herein.

The following appendices are also included as part of these permits:
Appendix A – Definitions, Abbreviations, and Acronyms;
Appendix B – Standard permit conditions applicable to all authorized discharges;
Appendix C – Endangered Species Act Eligibility Guidance;
Appendix D – National Historic Preservation Act Eligibility Guidance;
Appendix E – Information required for the Notice of Intent (NOI);
Appendix F – Requirements for MA Small MS4s Subject to Approved TMDLs;
Appendix G – Impaired Waters Monitoring Parameter Requirements;
Appendix H – Requirements related to discharges to certain water quality limited waterbodies;

These permits become effective on **July 1, 2017**.

These permits and the authorization to discharge expire at midnight, **June 30, 2022**.

Signed this 4th day of April, 2016

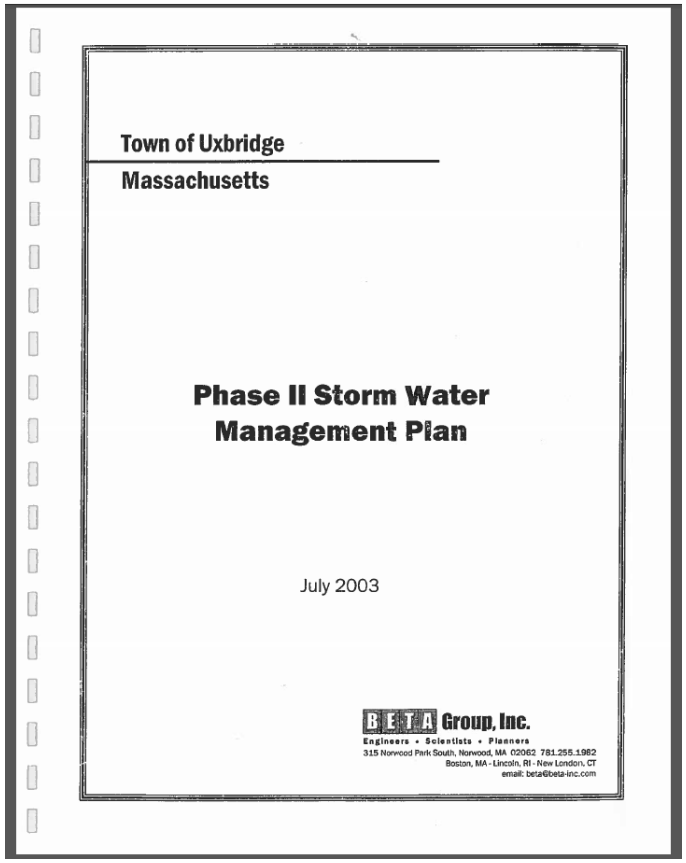
Ken Moraff, Director
Office of Ecosystem Protection
United States Environmental Protection Agency
5 Post Office Square – Suite 100
Boston, Massachusetts 02109-3912

Signed this 4th day of April 2016

Douglas E. Fine
Assistant Commissioner for Water Resources
Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

MS4 Permit Requirements

- Town required to develop Stormwater Management Plan to outline how it will meet Permit requirements (2003)
- Town required to submit annual report outlining how they are meeting 6 Permit requirements
- Non-compliance with any permit requirements constitutes a violation of the Permit and Clean Water Act
  - Grounds for enforcement actions, injunctive relief and/or penalties



MS4 Permit Requirements

Permit Requirement	Example Best Management Practice (BMP)
Public Education and Outreach	Material from EPA, BRWA, and DEP distributed to public school.
Public Involvement and Participation	Earth Day stream cleanup and monitoring events
Illicit Discharge, Detection and Elimination	Following up on calls received from residents reporting illegal dumping activities
Construction Site SW Runoff Control	Conduct construction inspections
Post-Construction Site SW Runoff Control	Inspection of Town maintained structural BMPs biannually
Pollution Prevention and Good Housekeeping in Municipal Operations	Cleaning catch basins (1673) and sweeping streets (200 curb miles)

Current Stormwater Related Activities & Costs

- Current costs estimated using 2015 Master Stormwater Program Cost Spreadsheet
  - Developed by Central Massachusetts Regional Stormwater Coalition
- Current estimated annual cost - $237,000
- Budget supported by General Fund
  - Reliability of funding varies from year to year
  - Multiple Town Expenses compete for General Fund funding (including schools and public safety)
- Costs anticipated to increase when new MS4 permit becomes effective
  - Future funding needs should be determined once permit challenges have been settled.

What is a Stormwater Utility?

- Similar to a water or wastewater utility (permitted services in Town)
- Funds collected are dedicated to addressing stormwater issues
- Rates based on use of the stormwater system
  - Use typically determined by impervious area (ie. sidewalks, driveways, pavement)
- Develop system that is:
  - Sufficient to cover costs
  - Stable / dependable from year-to-year
  - Legal and defensible
  - Easy to understand and implement
  - Fair to Uxbridge’s residents

Stormwater Utility structure

- Stormwater user fees assessed based on a predetermined rate structure (developed by community)
- Most common approach is to develop a rate structure based on the amount of impervious area that a customer maintains
- Average quantity of impervious area for a single family residential property is calculated to define an equivalent residential unit (ERU)
- ERU used as a unit of measure for assessing fees

Massachusetts Communities with SW Utilities

- Northampton (2014)
- Reading (2006)
- Newton (2006)
- Fall River (2008)
- Westfield (2010)
- Chicopee (1998)
- Milton (2016)

Rate Modifiers

- Charges or credits applied to rates to account for special circumstances:

- Examples:
  - **Base fee** – added to bills to assist in covering fixed costs associated with utility operations, billing, etc.
  - **Senior/Disabled Discount** – may be provided to individuals determined to be disproportionally impacted by a new user fee, such as elderly or disabled individuals.
  - **Water Volume Reduction Credit** – granted to system users with onsite stormwater management controls that reduce the volume and/or velocity of stormwater leaving the parcel.
  - **Water Quality Improvement Credit** – granted to system users with on-site treatment controls that reduce the concentration and/or load of specific pollutants of concern in stormwater leaving the parcel.

Billing Approaches

- **Water/Sewer Billing** – separate stormwater bill would need to be developed for parcels with impervious are but no water or sewer service.

- **Property Tax Billing** – tax exempt properties would required stand-alone stormwater bill.

- **Standalone Stormwater Bill**

Rate Example

- Calculations based on MassDEP Impervious Area Statistics for Uxbridge

- Median impervious cover for all single family parcels calculated as approximately 8,300 square feet

Rate Example

- Rate example based on existing budget
- Rates required for new MS4 are likely to be **HIGHER**
- Rates would be adjusted based on desired modifiers (likely higher if rate multipliers utilized)

	Current Program Costs
Estimated Current Stormwater Budget	$237,000
ERU	8,300 square feet
Total ERU's in Utility	9,504
Estimated Monthly Stormwater Utility Fee (per ERU)	$2.08
Estimated Annual Stormwater Utility Fee (per ERU)	$24.94

Stormwater Utility Feasibility Discussion

- Discussion of whether the concept of a Stormwater Utility should be pursued further for the Town of Uxbridge

- Discussion of Disadvantages and Advantages

Disadvantages

- Potentially high administrative costs
- Potential negative perception

Advantages

- Dedicated, stable source of funding
- Reliable source of funding enables more credible long-term planning
- Equitable: increased system use results in an increased fee
- Provides economic incentive to reduce the amount / improve the quality of stormwater generated by a property
- Provide more control to avoid penalties and fines resulting from non-compliance


Questions
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Stormwater Pollutants, Sources and Impacts

Pollutant	Sources	Impacts
Nutrients (nitrogen, phosphorus)	Fertilizer, wastewater effluent (septic systems), agricultural and pet waste and sediments (erosion and scour)	Cause algal blooms in lakes, bays and ponds; reduced dissolved oxygen levels
Sediments (sand, silt)	Soil erosion, road sand	Transport contaminants to receiving waters; reduce water clarity; impact aquatic habitat
Pathogens (virus, bacteria, etc)	Agricultural and pet waste, wastewater effluent (septic systems)	Degrades drinking water, fish and shellfish consumption, recreation
Toxics (heavy metals, polycyclic aromatic hydrocarbons, volatile organics)	Petroleum products, paints, solvents, herbicides, pesticides, and other household commercial and industrial products	Poisonous to living organisms, persistent in the environment
Chlorides (salts)	De-icing salts, water softeners	Impacts plants and animals in freshwater aquatic systems
Temperatures	Heated water from manufacturing process water or runoff from warm surfaces such as parking lots	Reduces dissolved oxygen, affects fish and other aquatic organisms

Total ERU's by Land Classification

Land Use Classification	Equivalent Residential Units (ERUs)
Single Family Residential	3,296
Other Residential	654
Non-Residential	5,554
Total	9,504

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