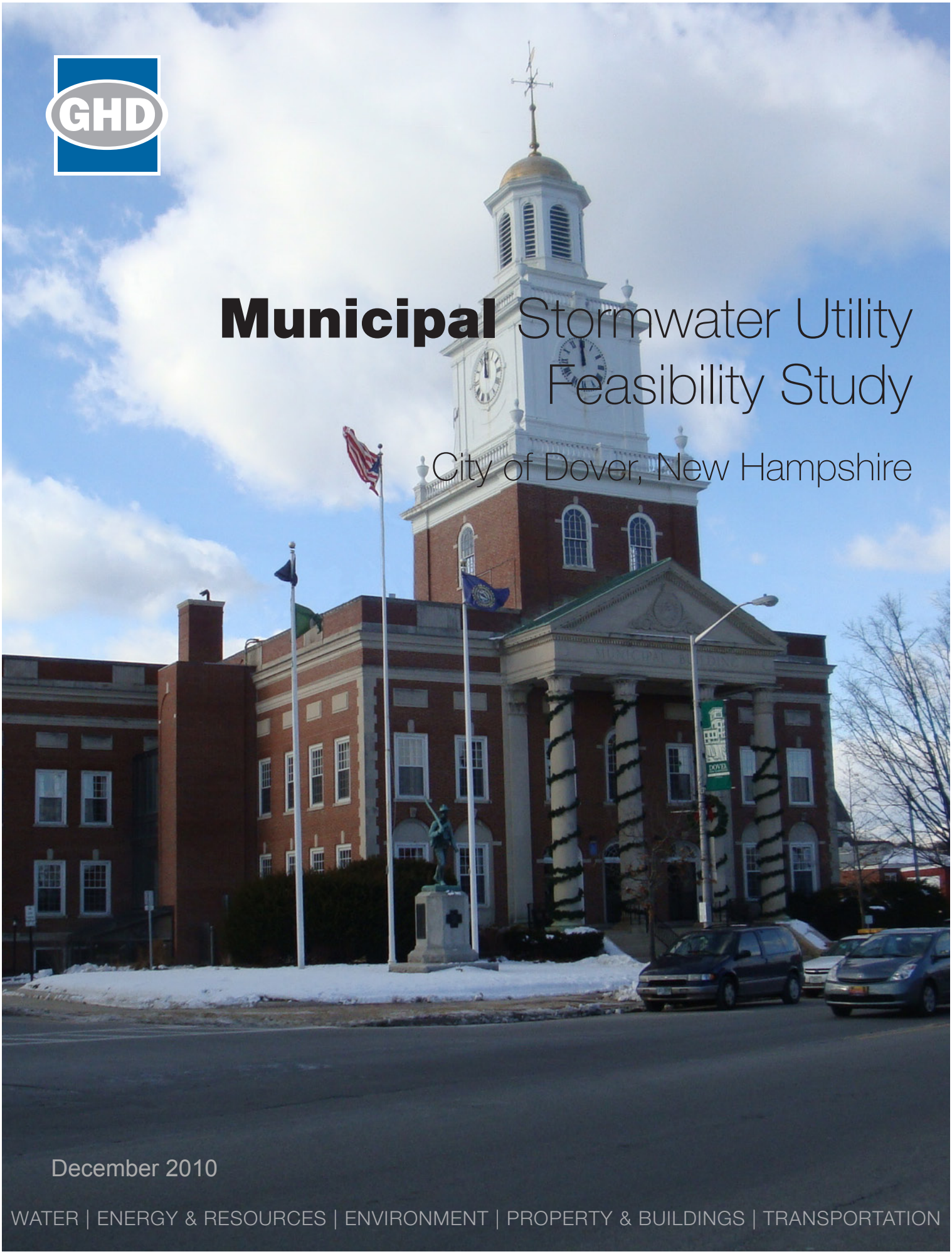

Municipal Stormwater Utility Feasibility Study

City of Dover, New Hampshire

December 2010

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

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1 Introduction

The City of Dover, NH (City) is home to approximately 29,000 people, and occupies approximately 28 square miles in coastal New Hampshire on the Piscataqua 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 implemented and funded through multiple mechanisms. The City's stormwater discharges are subject to the National Pollutant Discharge Elimination System (NPDES) program, which is administered by the Environmental Protection Agency (EPA) in New Hampshire. Key changes between the existing permit and the proposed draft permit are expected to significantly increase the staffing and funding resources necessary to maintain permit compliance in future years. The City is in need of a defensible, stable, and equitable approach to funding the stormwater program.

As a result, the City has sought and obtained funding from the New Hampshire Department of Environmental Services (NHDES) Watershed Assistance Grants Program to evaluate the feasibility of developing a stormwater utility as a funding source for its municipal stormwater program. The Dover Stormwater Utility Feasibility Study was undertaken to evaluate the feasibility of establishing a municipal stormwater utility and identify a preferred approach to funding the City's stormwater program.

Recognizing the importance of public support for the preferred approach, City staff assembled an Ad-Hoc Stormwater Study Committee (Committee). The Committee includes the following members:

- Jan Nedelka (Chairperson)
- Dorothea Hooper (Vice Chairperson)
- Chad Kageleiry
- Jay Stephens
- Dana Lynch
- Gary Green
- Raymond H. Bardwell
- Chris Nash
- Dennis Ciotti

The Committee was formed to analyze the impacts and implementation considerations associated with approaches to funding the stormwater program including establishing a stormwater utility; and to determine the most appropriate funding option for Dover. Five Committee meetings were held to review and discuss topics related to establishing a stable funding mechanism for stormwater improvements. The five meetings covered the following topics:

- Meeting 1: Goals and Objectives. At this meeting, the Committee received background information on the need for effective stormwater management. Stormwater-related water quality and downstream flooding impacts were discussed, and regulatory changes including the revised

NPDES permit was reviewed. The group provided input on goals and objectives for the Feasibility Study.

- Meeting 2: Program Plan and Compelling Case. This meeting involved reviewing the City's existing stormwater program and identifying specific challenges, needs, and issues facing the program. Future program needs were presented. A facilitated discussion was held to brainstorm advantages and disadvantages of a stormwater utility, as well as alternative mechanisms to achieve the program goals.
- Meeting 3: Rate Structure Alternatives. This meeting focused on discussing the benefits and drawbacks of various rate methodologies, including preliminary cost/revenue analyses and potential credit allowances. Stakeholder concerns and preferences were discussed.
- Meeting 4: Recommendations and Draft Report. This meeting involved review of the draft report recommendations. Stakeholders were given the opportunity to comment on the recommendations prior to report finalization.
- Meeting 5: Final Report. The final report was reviewed with the Committee, and City staff requested Committee member support for the recommendations at the upcoming City Council meeting. *(TO BE COMPLETED)*

The Final Report and recommendations reflect the input and discussion generated in the five stakeholder meetings. Notes and presentations from each meeting can be found in Appendix A. This report is includes the following sections:

Chapter 1: Introduction

Chapter 2: Stormwater Program Analysis and Plan

Chapter 3: Compelling Case

Chapter 4: Data Gap Analysis and Compilation Approach

Chapter 5: Rate Structure Methodology

Chapter 6: Billing Summary Methodology

Chapter 7: Recommendations

Chapter 8: Implementation Plan

Additional detail related to program costs presented in Chapter 2 is provided in Appendix B. In addition, a Stormwater Utility Public Outreach Plan was developed as part of this project. This Plan is provided in Appendix C.

2 Stormwater Program Analysis and Plan

This section provides an overview of the current stormwater management program and associated costs. In addition, future stormwater program needs are presented.

2.1 Current Program Elements

The City currently manages a multifaceted stormwater management program, including the following general elements:

- Infrastructure Maintenance
- Planning Board Activities
- Regulatory Compliance
- Pollutant Diversion
- Regional Programs
- Watershed Management

Each element is described in detail below.

2.1.1 Infrastructure

City's stormwater infrastructure includes:

- 650 manholes
- 65 miles of pipe
- 204 discharge locations
- 101 miles of open drainage
- 140 culverts
- 2857 catch basins

The current stormwater system, portions of which date back as far as the late 1800s, is aging and in need of rehabilitation and replacement. Only a very small section of the system has been televised, and the actual condition of much of the system infrastructure is unknown. The City has classified the existing conveyance infrastructure based on age and anticipated condition. Currently, approximately ten miles of drainage infrastructure has been identified as being in immediate need of replacement. The following figure illustrates the current condition of a segment of the City's stormwater infrastructure classified as being in need of immediate replacement.

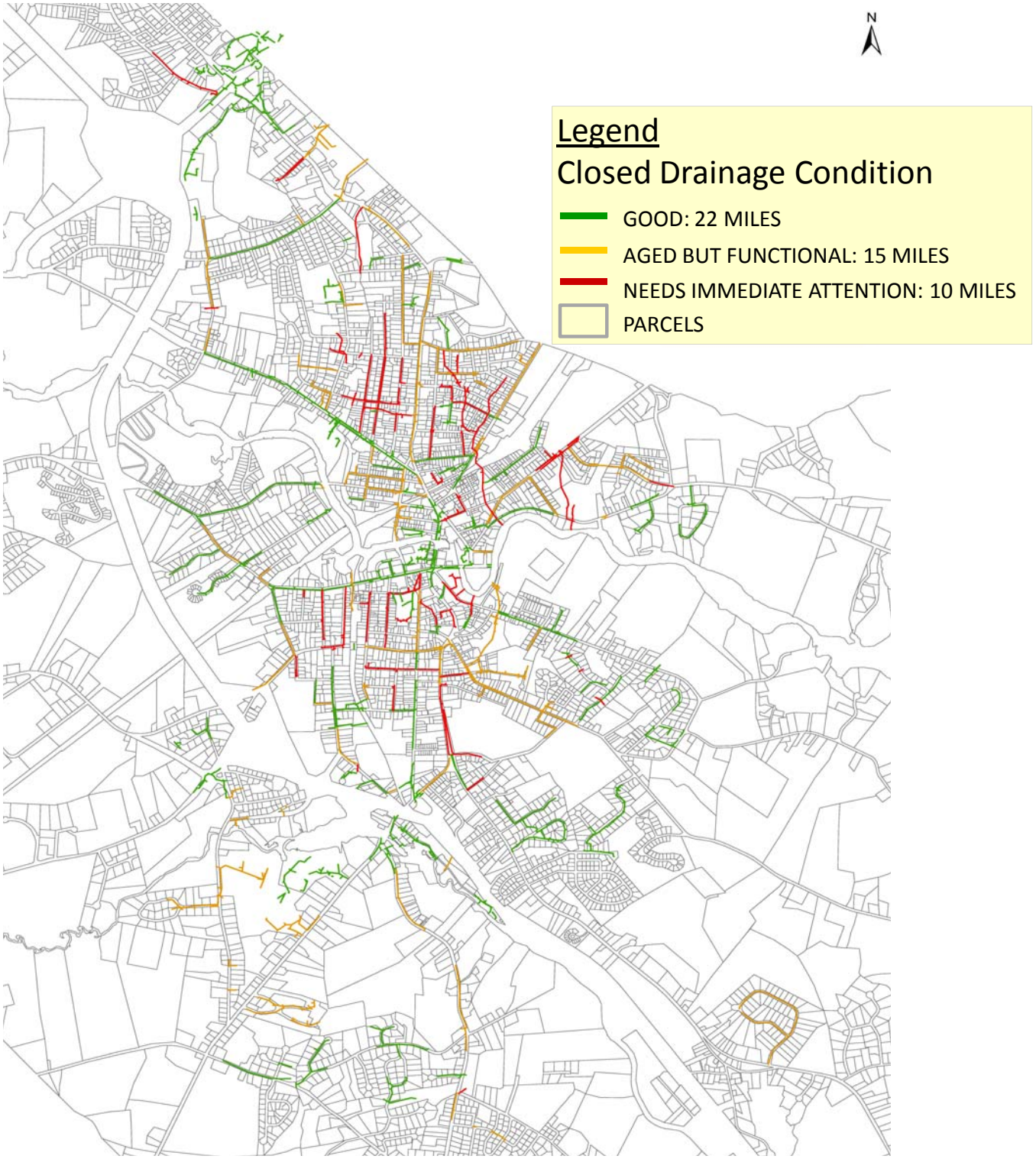
Figure 2-1 Condition of Aging Stormwater Infrastructure

In addition to the ten miles in need of immediate attention, the City has classified an additional fifteen miles of pipeline as being aged but functional. This infrastructure should be prioritized for inspection and renewal following the areas in need of immediate attention. The figure on the following page illustrates the classification of the majority of the City's stormwater conveyance infrastructure based on anticipated condition.

The City's stormwater infrastructure maintenance program includes a significant catch basin cleaning effort, through which approximately half of the catch basins are cleaned each year. In 2009, nearly 1,400 catch basins were cleaned. The City also manages an active illicit discharge detection and elimination (IDD&E) program. Illicit discharges enter the system through either direct connections such as wastewater piping that connects to a storm drain or through indirect connections such as infiltration into the storm sewer from cracked sanitary systems. In its efforts to identify and eliminate such illicit discharges, the City has developed and continues to maintain a map of its infrastructure, including catch basins, drain manholes, pipes, and discharge points. The City has also initiated dry weather sampling of storm water outlets in the downtown area for fecal coliform bacteria, which can be used in combination with techniques such as smoke testing and dye testing to determine the source of potential illicit discharges (City of Dover, 1999).

The City has also partnered with local businesses to implement a catch basin stenciling effort called the "Yellow Fish Road Program". The program involves catch basin stenciling as well as distribution of door hangers, bumper stickers, and articles in both the local media and a local newsletter which discuss the potential water quality impacts of stormwater (City of Dover, 1999).

Figure 2-2 Condition of Closed Drainage[1]



[1] Map reflects approximately 47 miles of closed drainage in the City core. Approximately 18 additional miles of closed drainage are located outside of the mapped area.

2.1.2 Planning Board Activities

A variety of activities undertaken by the City Planning Board assist in reducing the potential impacts of stormwater associated with new development. These activities include:

- Site Plan Review: The City Engineer's office reviews all subdivision and site plan applications. Amendments to the subdivision and site review regulations passed in 2009 strengthen the stormwater requirements by encouraging the use of low impact development (LID) techniques, requiring that all projects disturbing more than one acre of land submit plans to the Planning Board for review and approval, providing the authority to regulate projects disturbing less than one acre of land when they are conducted in proximity to sensitive ecological areas, and establishing a subcommittee to evaluate porous pavement.
- Stormwater Operations and Maintenance Plans: Projects are required to submit stormwater O&M plans for Planning Board review.
- Inspections: The City Engineer's office performs inspections of temporary and permanent erosion control and stabilization measures.

In addition, Zoning Ordinances 170-28.3 and 170-27 establish stormwater controls. Zoning Ordinance 170-28.3 protects groundwater quality by limiting allowable land uses within primary and secondary groundwater protection zones surrounding supply wells. It limits allowable impervious surfaces in poorly drained areas, requires Conservation Commission review for developments that also require Planning Board approval, and it establishes nitrogen and infiltration limits. Zoning Ordinance 170-27 establishes a Conservation District. The Conservation District encompasses areas within 100 feet of the mean high water of any waterbody subject to tidal action; areas within 50 feet of a stream, brook, or other freshwater body; certain parcels owned by the City of Dover; and all areas with slopes in excess of 20 percent. A Conditional Use Permit granted by the Planning Board is required for development within the Conservation District. Planning Board approval will not be granted for development within the Conservation District without Conservation Commission review.

2.1.3 Regulatory Compliance

The City's stormwater discharges are subject to the NPDES program. The NPDES program is administered by the EPA in New Hampshire. It requires regulated entities, including the City of Dover, to comply with the Municipal Separate Storm Sewer System (MS4) General Permit. 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 City must prepare a written Stormwater Management Plan (SWMP). The City's 1999 SWMP outlines how the City will upgrade its system in order to meet permit levels. The statewide MS4 permit is being revised, and the draft permit is currently out for public review and comment. Key changes

between the existing permit and the proposed draft permit, coupled with improvements identified in the City's SWMP, represent a significant increase in the staffing and funding resources necessary to maintain compliance with the MS4 permit in future years.

2.1.4 Pollutant Diversion

The City has several programs in place designed to prevent potential pollutants from coming into contact with surface runoff. This is accomplished primarily by encouraging proper disposal of waste. The City has an extensive recycling program in place that includes curbside pickup as well as onsite recycling. The recycling program includes waste motor oil collection, waste antifreeze recycling, and an annual household hazardous waste collection which includes paints, solvents, pesticides, and other hazardous materials. Fifty-two percent of the City's waste stream is now recycled. In addition, the City has a pet waste pickup program designed to encourage proper disposal of pet waste (City of Dover, 1999).

2.1.5 Participation in Regional Programs

Dover participates in several regional programs that support the stormwater program objectives. These programs include:

- NH Seacoast Stormwater Coalition: This Coalition includes representatives from Dover, Durham, Exeter, Portsmouth, Rochester, Somersworth, and the University of New Hampshire. Participation provides assistance with public awareness, training of staff, bulk pricing, and other benefits.
- Southeast Watershed Alliance: The Southeast Watershed Alliance is a regional organization of municipalities in New Hampshire's coastal watershed. It was formed to establish a regional framework for coastal watershed communities, regional planning commissions, the state, and other stakeholders to collaborate on planning and implementation measures to improve and protect water quality and more effectively address the challenges of meeting clean water standards.
- Natural Resources Outreach Coalition (NROC) Consultation: The City engaged with the NROC program to discuss stormwater management priorities for the City. Stakeholder meetings identified two key target areas: encouraging low impact development techniques in development and redevelopment and exploring the feasibility of a stormwater utility.

Participation in these programs assists the City in efficiently achieving its stormwater management objectives.

2.1.6 Watershed Management

The City has initiated watershed assessment and management efforts aimed at addressing issues in select watersheds that are heavily impacted by runoff. Among these efforts are the Willand Pond Watershed Assessment and Alternatives Analysis and the Berry Brook Watershed Management Plan.

The Willand Pond Watershed Assessment was initiated in response to a cyanobacteria bloom that resulted from a rise in phosphorus levels, caused by periodic flooding of both the pond and the adjacent forest floor. The project was undertaken as a joint study completed by Dover, Somersworth, and the NHDES. The flooding and associated rise in phosphorus were found to be the result of excess precipitation, obstructions blocking the pond's natural outlet, and stormwater runoff from commercial

parking lots constructed in the watershed in recent years. Recommendations included addressing the water level issue by reactivating an abandoned water supply well, and implementing stormwater quality treatment improvements for existing and future development (City of Dover, 2009).

The Berry Brook Watershed Assessment and Management Plan was initiated to address water quality issues in the Berry Brook watershed. Plan recommendations include encouraging LID techniques, stream restoration, and implementation of water quality best management practices (BMPs) at the Horne Street School (City of Dover, 2008).

2.2 Current Program Structure and Cost

The City's current stormwater management program is decentralized, with functions and costs spread among multiple City departments. This section describes the current program structure and associated costs. Additional detail on current and future costs

2.2.1 Program Structure and Funding Mechanisms

The primary department responsible for stormwater management is the Community Services Department. Under Dover's Council-Manager form of government, 9 Councilors serve for a 2-year term and the City Manager is appointed by the Council. The Community Services Department falls under the City Manager's direction. The Community Services Department consists of eight Divisions, including the Highway, Environmental and Sewer Divisions, which are primarily responsible for implementing stormwater management activities. The Highway Division maintains the stormwater drainage system, while the sewer division performs emergency catch-basin cleaning and implements the Illicit Discharge Detection and Elimination program.

Stormwater-related activities undertaken by the sewer department are funded through fees paid by sewer utility users. Maintenance of the storm drainage system implemented by the Highway Division is funded from the General Fund portion of the City budget. Similarly, large-scale stormwater improvements are financed through the Capital Improvements Plan (CIP) budget process also under the General Fund. The following table depicts the general separation of stormwater-related functions and costs.

Table 2-1 Stormwater Program Departments, Functions, and Funding Mechanisms

Department	Stormwater Functions	Funding Mechanism
Highway Division	Storm drainage system maintenance, street sweeping	General Fund
Sewer Department	Emergency catch-basin cleaning, Illicit Discharge Detection & Elimination program	Sewer Rates
Engineering / Utilities	Inspections, Capital Projects	General Fund

2.2.2 Program Costs

Because stormwater management functions and funding are decentralized, stormwater-related costs are spread among the Administrative, Streets and Drains, Sewer, and Water portions of the City budget. By reviewing the specific functions related to stormwater and determining the percentage of each budget dedicated to implementing stormwater programs, the true cost of the current stormwater program can be determined. Costs are typically budgeted in the following categories: Personnel Services, Purchased Services, Supplies, Capital Outlay, and Other Expenses. The following table presents an overview of current program costs based on information contained in the budget for fiscal year (FY) 2011.

Table 2-2 Current Stormwater Program Costs

Cost Category	Stormwater Program Costs (FY 2011)
Personnel Services	$501,800
Purchased Services	$83,800
Supplies	$163,610
Capital Outlay	$150,000
Other Expenses	$900
Total Stormwater Personnel Costs	***$900,100***

Current stormwater-related costs in each area are described in further detail below. Additional detail on current and future costs is provided in Appendix B.

- Personnel Services: The stormwater program is implemented by a variety of staff. Personnel Services costs include pay, insurance, FICA, medicare, retirement, staff development, worker's compensation, and FSA fees.
- Purchased Services: The Purchased Services portion of the existing stormwater program is captured within the Streets and Drains budget. Purchased services include medical and consulting services, water and sewage usage, maintenance charges, equipment rentals, property insurance, vehicle and equipment insurance, public liability insurance, and telecommunications.
- Supplies: The Supplies portion of the existing stormwater program is captured wholly within the Streets and Drains budget. The supplies budget includes office supplies, operating supplies, clothing and uniforms, vehicle fuels, food, maintenance supplies, fleet maintenance charges, and minor equipment, furniture and fixtures.
- Capital Outlay: The Capital Outlay portion of the existing stormwater program is captured within the Streets and Drains budget, and includes land improvements, general street and sidewalk improvements, general drainage improvements, machinery and equipment, and bridges.
- Other Expenses: The Other Expenses portion of the existing stormwater program is captured within the Streets and Drains budget, and includes dam registrations.

2.3 Future Stormwater Program Needs

As described previously, a sizeable portion of the City's stormwater infrastructure is in need of immediate attention, which will require capital investment not currently budgeted. Similarly, the City anticipates a significant increase in costs associated with MS4 permit compliance in coming years. By establishing an estimate of projected future expenses, the City can better prepare for the funding challenges facing stormwater management in the future.

The City's anticipated future program costs are presented in Table 2-8. Future program costs are anticipated to range from approximately $1.9 to $3.2 million per year over the next six years. This represents an average annual cost of approximately $2.7 million per year, for an average increase of $836,000 per year over currently budgeted costs.

The following line items capture the costs associated with currently planned projects that are included in the FY 2011 – 2016 CIP:

- Catch Basin Spoils Facility: This line item includes $30,000 in FY 2011 and $150,000 in FY 2012 for construction of a catch basin spoils facility, which is currently captured in the FY 2011 – 2016 capital budget. In addition, ongoing costs associated with facility maintenance and spoils disposal will be required. A $10,000 per year budget has been included as a placeholder for these ongoing maintenance and disposal costs for FY 2012 - 2016.
- Street Reconstruction Renewal / Replacement Items: A variety of street reconstruction projects included in the FY 2011 – 2016 CIP Budget include stormwater components. Projects budgeted in this line item are summarized in the following table.
- System Expansion and Improvements: There are some areas of the City which are not currently serviced or are underserviced by the stormwater system. The City's CIP Budget includes several street reconstruction projects that will extend or improve stormwater service. The budget for the construction component of these projects is included in this line item. In future years, this line item may be expanded to include required stormwater treatment. Projects budgeted in this line item are summarized in Appendix B.

In addition to the baseline costs associated with maintaining the existing level of service, future budget line items have been included to capture drainage projects that are currently planned and budgeted in the FY 2011 - 2016 CIP Budget, as well as project expenditures not currently captured in the City's budgets. In addition to maintaining the current level of service and implementing the planned projects identified above, the following line items have been included to reflect the increased costs associated with operating the system over the coming six-year period.

- Increased Cost of NPDES Permit Compliance: As described previously, the cost of complying with the revised MS4 permit will represent a significant increase over current compliance costs. This line item captures the anticipated incremental increase in permit compliance costs.
- Stormwater Utility Implementation and Administration: Should the City decide to pursue stormwater utility, costs associated with utility implementation and ongoing administration will be incurred. This line item includes $100,000 for utility implementation and an estimated $5,000 per year for ongoing program administration.

Table 2-3 Estimated Future Program Costs

Cost Category	2011	2012	2013	2014	2015	2016
Current Level of Service	**$900,116**	**$900,116**	**$900,116**	**$900,116**	**$900,116**	**$900,116**
Planned Future Activities	**$330,000**	**$1,025,000**	**$787,500**	**$628,750**	**$1,162,500**	**$302,500**
Catch Basin Spoils Facility	*$30,000*	*$150,000*				
Street Reconstruction Renewal / Replacement Items	*$50,000*	*$625,000*	*$687,500*	*$628,750*	*$825,000*	*$302,500*
System Expansion & Improvements	*$250,000*	*$250,000*	*$100,000*	*$0*	*$337,500*	*$0*
Additional Future Activities	**$1,182,087**	**$1,078,737**	**$1,078,737**	**$392,337**	**$890,737**	**$392,337**
Increased Cost of NPDES Permit Compliance	*$136,000*	*$192,000*	*$191,000*	*$231,000*	*$281,000*	*$281,000*
Ongoing Spoils Management & Disposal Costs		*$10,000*	*$10,000*	*$10,000*	*$10,000*	*$10,000*
Stormwater Utility Implementation & Administration	*$80,000*	*$5,000*	*$5,000*	*$5,000*	*$5,000*	*$5,000*
Stormwater Needs Assessment Identification and Implementation	*$100,000*	*$50,000*	*$50,000*	*$50,000*	*$50,000*	*$50,000*
Pipe rehabilitation / replacement (target renewal of 1% of closed drainage per year)	*$686,400*	*$686,400*	*$686,400*	*$0*	*$498,400*	*$0*
Berry Brook Watershed Improvements	*$259,711*	*$259,711*	*$259,711*	*$259,711*	*$259,711*	*$259,711*
Willand Pond Improvements	*$55,977*	*$67,627*	*$67,627*	*$67,627*	*$67,627*	*$67,627*
TOTAL COST	**$2,548,204**	**$3,195,854**	**$2,957,354**	**$2,152,204**	**$3,234,354**	**$1,875,954**
Average Annual Cost	$2,660,654	$2,660,654	$2,660,654	$2,660,654	$2,660,654	$2,660,654

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- Stormwater Needs Assessment Identification and Implementation: The City has not completed a stormwater management needs assessment, and does not maintain a prioritized list of stormwater action items. It is recommended that such a study be completed and adopted as the basis for future stormwater program implementation. This line item includes $100,000 in FY 2011 for completion of the needs assessment. The line item also includes a $50,000 per year budget placeholder for implementation of plan recommendations.
- Pipe Rehabilitation / Replacement: It is recommended that the City adopt an annual infrastructure replacement program. A general guideline for annual infrastructure replacement programs is to replace one percent of the system per year. This schedule provides for system replacement on a 100-year schedule. For the City's 65 miles of closed drainage, this translates to replacement of 0.65 miles of pipe and associated structures per year. At a cost of $200 per linear foot, this would be expected to cost $686,400 per year in system renewal costs. Several of the street reconstruction projects included in the FY 2011 – 2016 CIP Budget involve stormwater management and drainage components. Where a project budgeted in the CIP includes renewal or replacement of existing closed drainage, the target of 0.65 miles per year was reduced to reflect renewal / replacement already budgeted in the City's CIP and prevent double-counting. Planned pipe renewal projects budgeted in the Street Reconstruction Renewal / Replacement line item are summarized in Appendix B.
- Berry Brook Watershed Improvements: As described previously, the City has completed a watershed assessment and management plan for the Berry Brook watershed. This line item includes funding to implement watershed management plan recommendations. Implementing the recommendations over a six year period would result in an annual cost of approximately $260,000 per year.
- Willand Pond Improvements: This line item includes funding to implement recommendations of the Willand Pond Watershed Assessment and Alternatives Analysis. Implementation and operations and maintenance costs are budgeted as approximately $56,000 in year one and $68,000 per year for the following five years.

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3 Compelling Case

The City of Dover currently owns and operates an extensive stormwater management system aimed at mitigating the potential impacts associated with unmanaged stormwater. This section reviews these potential impacts as they relate to Dover and identifies priorities for stormwater management.

3.1 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 ten percent flows over land to nearby surface water bodies as surface runoff (NHDES, 2008).

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

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 nearly 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 pollutants such as microbial contaminants, sediment, excess nutrients, and chemical pollutants that may be present on surfaces it encounters and transports these pollutants 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 3-1 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 such as parking lots	reduces dissolved oxygen, affects fish and other aquatic organisms

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 scouring and erosion, further increasing the quantity of sediment and potential pollutants present in the runoff and degrading water quality.

3.2 Local Impacts

Dover currently experiences a variety of impacts associated with stormwater runoff. These impacts include water quality degradation, flooding, loss of aquatic habitat, and impaired recreation.

The Federal Water Pollution Control Act (PL92-500, also known as the Clean Water Act) requires that States submit a list to the US EPA every two years that identifies waterbodies that are (New Hampshire Department of Environmental Services, 2008):

- impaired or threatened by a pollutant;
- not expected to meet water quality standards within a reasonable time even after application of best available technology standards for point sources or best management practices for nonpoint sources; and / or
- require development and implementation of a Total Maximum Daily Load (TMDL) study to meet water quality standards.

Several waterbodies within and around Dover are currently included on the 303(d) list due to degraded water quality that impacts potential uses. These waterbodies are listed in Table 3-2, along with the pollutants of concern, and the impaired or threatened uses.

Table 3-2 Waterbodies Listed as Impaired or Threatened in Dover

Waterbody	Threatened Use			
	Aquatic Life	Fish Consumption	Contact Recreation	Shelfishing
Salmon Falls River	Dissolved oxygen, pH	polychlorinated biphenyls (PCBs)	chlorophyll-a, enterococcus, nitrogen	dioxin, mercury, PCBs
Cocheco River	pH, dissolved oxygen, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)pyrene, benzo[a]anthracene, benzo[g,h,i]perylene, biphenyl, chrysene , DDD, DDE, DDT, dibenz[a,h]anthracene, dieldrin, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene	PCBs	E. coli	dioxin, mercury, PCBs
Bellamy River	pH	PCBs	chlorophyll-a, E. coli	dioxin, mercury, PCBs
Upper Piscataqua River	pH	PCBs	-	dioxin, mercury, PCBs
Fresh Creek Pond	dissolved oxygen, pH	-	E. coli	-
Blackwater Brook – Clark Brook	-	-	E. coli	-
Reyners Brook	-	-	E. coli	-
Indian Brook	-	-	E. coli	-
Berry Brook	benthic macroinvertebrate bioassessments	-	E. coli	-
Jackson Brook	-	-	E. coli	-
Varney Brook	-	-	E. coli	-
Garrison Brook	-	-	E. coli	-

Water quality monitoring would be required to demonstrate the contribution of stormwater to the water quality impairments listed above. As a result, the precise contribution of stormwater sources to the

impairments listed above is unknown. However, 83 percent of the water quality impairments listed in the New Hampshire DES 2008 water quality assessment report were attributed wholly or in part to stormwater (New Hampshire Department of Environmental Services, December 2008). As a result, it is anticipated that stormwater treatment may be required in future years to reduce pollutant contributions from stormwater runoff.

In addition to local water quality impacts, flooding has been observed throughout Dover. In addition to flooding in downtown areas, significant flooding has been observed in the Willand Pond watershed, including basement flooding observed in the Strafford Road/Wellington Avenue, Cranbrook/Maplewood Avenue, and "Indian Village" (Apache Street area) neighborhoods, located west of Willand Pond. In 2009, the City undertook and evaluation of the Willand Pond watershed to identify actions to reduce phosphorus levels and periodic flooding of the pond and the adjacent forest floor. In recent years, a combination of excess precipitation, obstructions blocking the pond's natural outlet, and stormwater runoff from commercial parking lots constructed in the watershed have lead to a chronic full condition in the pond. Under this chronic full condition, relatively minor quantities of stormwater runoff can contribute to flooding events. The report recommended a variety of actions to be taken to manage water levels in the Pond to reduce flooding events. Many of the recommended actions are aimed at more effectively managing stormwater runoff in the area to minimize the volume and improve the quality of runoff reaching the Pond.

3.3 Local Priorities

At the second meeting of the Ad-Hoc Stormwater Committee, stormwater-related impacts were discussed, and the group was asked to prioritize impacts to be addressed. The Committee discussion underscored the need to develop and implement an enhanced stormwater management program. The Committee members had personal knowledge and experience of local stormwater impacts. The main challenge for the City will be to identify a stable, sufficient, and equitable approach to funding needed improvements, either through a stormwater utility or other mechanism.

The Committee discussed the variety of stormwater impacts, and determined that water quality and flooding impacts are of greatest concern and constitute the highest priorities for stormwater management in the City. It is anticipated that mitigation of water quality and flooding impacts in and around the City would mitigate many other stormwater impacts, including loss of aquatic habitat and recreation impacts. For example, a reduction in flooding would reduce the scouring and erosion caused by unmanaged stormwater. This would, in turn, reduce sediment loading and improve the quality of the runoff, while minimizing the physical impact of high surface flow volumes on aquatic habitat. Improvements in water quality would not only protect drinking water supplies in the long-term, but would similarly generate improvements in water quality for aquatic habitat and recreation.

The Committee was concerned what impact these increased stormwater improvements (as mandated by federal authorities) would have on: the downtown core, future expansion, existing commercial and industrial usage, farm use, land conservation, and the overall impact on Dover's taxpayers.

3.4 Funding Alternatives

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

The majority of the City'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 City 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. As a result, portions of the City's stormwater system have fallen into disrepair.

There are 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 for stormwater-related capital and operating expenses, and the type of costs they can typically be used to cover.

Table 3-3 Potential Funding Sources For Capital and Operations Costs

	Type of Costs Funded	
Funding Source	**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	✓	✓
Permit Review Fees		✓
Inspection Fees		✓

As shown in this table, the funding mechanisms that can be used to fund ongoing operations and maintenance costs include selling bonds, general fund, utility rates, permit review fees, and inspection fees. 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, 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 for Dover's residents

General fund revenues vary from year to year. Further, multiple City expenses compete for General Fund funding, including schools and public safety, and stormwater-related expenses are often viewed as a lower priority than competing expenses. As a result, the general fund does not meet the objective of providing sufficient and stable revenue. Revenues collected through permit review fees and inspection fees vary from year to year, depending on the number of permits reviewed and inspections completed. As a result, these mechanisms do not provide a stable source of revenue. In addition, the revenues collected from these sources is minimal, and frequently does not cover the true cost of the service being provided, let alone generate sufficient revenue to fund the entire stormwater program. As a result, these mechanisms are not sufficient to cover costs.

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 2008, municipalities in New Hampshire were given legal authority to form stormwater utilities under RSA 149-I, establishing the legal defensibility of the concept. 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.

During the second stakeholder meeting, potential alternatives for funding the stormwater program were brainstormed, along with advantages and disadvantages of each. The results of this exercise are summarized below.

Table 3-4 Program Funding Alternatives, Advantages and Disadvantages

	Stormwater Utility	General Fund (with Funding Recommendation)
Advantages	▪ Stable source of funding ▪ Reliable source of funding enables more credible long-term planning ▪ Independent of political whim ▪ More equitable: increased system use results in an increased fee ▪ High visibility for stormwater as an issue that needs to be addressed ▪ Eliminates competition with other programs, such as education and safety ▪ Not tied to property assessment	▪ Establishes the program a community issue instead of an individual issue
Disadvantages	▪ Potentially high administration costs ▪ Credit scheme could be complicated ▪ Perceived inequity in user rates (could be overcome by forming a board to address potential inequities) ▪ Disparities in individual costs	▪ Subject to a variable political environment ▪ Funding is not reliable (can be moved out of the Streets & Drains budget to fund other projects) ▪ Perceived inequity ▪ Tax exempt properties, which often have a large area of impervious area, cannot be charged ▪ Maintains the status quo funding level ▪ Goes on property assessment

Based on the discussions during the second Committee meeting, it was determined that a stormwater utility may be a potential approach to funding stormwater improvements, provided that a rate structure can be developed which would maximize the equitable distribution of costs while minimizing set-up and administration costs. Potential rate alternatives and billing approaches are discussed in Sections 4 through 7 of this report.

4 Data Gap Analysis & Compilation Approach

Establishing a stormwater utility involves compiling a variety of information related to the potential rate base and billing approach. This section provides an overview of the information and data that would be needed to develop a stormwater utility in Dover, as well as recommended approaches to collecting data as appropriate to support utility development.

4.1 Stormwater Utility Structure and Data Needs

There are a variety of alternative organizational structure, rate methodologies, and billing approaches for a new stormwater utility. In many cases, the specific data needed to establish the utility depends upon the selected approach. Common organizational, rate, and billing approaches are described below.

4.1.1 Program Organization

The proposed organizational structure and utility governing approach will determine necessary staffing needs and revenue requirements. The simplest approach to organizing a new program is to begin by using existing staff. With this approach, staff continues to perform their existing stormwater-related duties and functions, with funding for these activities originating from the stormwater utility, rather than the General Fund, water, or sewer funds. This is the simplest approach to establishing a utility, as it avoids reorganization, eliminates the immediate need for new staff, and minimizes impacts to existing staff. Provided that existing staffing and governance / oversight are sufficient to accommodate a new stormwater utility, the utility may be organized in the same manner as the existing program. However, this approach may not be sufficient in some situations. For example, in a situation where current staffing is non-existent or insufficient to support projected stormwater labor needs; when utility governance and / or oversight is non-existent or insufficient to support stormwater utility governance needs; or when a proposed stormwater utility will cover multiple jurisdictions and require dedicated staff, a new utility structure may be required to support the stormwater utility.

Data needed to establish a new stormwater program are presented in the following table.

Table 4-1 Data Needs for Alternative Program Structures

Approach	Data Needs	Outstanding Data Needs
Model After Existing Program	• Existing program organizational structure • Existing utility oversight approach • Current revenue requirements • Planned future program activities • Future revenue requirements	• None
Establish New Program	• Planned future program activities • Future revenue requirements • Future program organizational structure • Future governing / oversight approach	• Future program organizational structure • Future governing / oversight approach

In the City's case, while a significant increase in stormwater-related needs is projected, current staffing and governance procedures are expected to be sufficient to support a utility. As a result, it is anticipated that the City would model a new stormwater program after its existing program, maintaining the existing program organizational structure and oversight approach.

4.1.2 Rate Structures

Stormwater user fees are assessed based on a predetermined rate structure. Different information may be necessary depending upon the specific rate structure. Common approaches to assessing user fees include the following. Additional detailed information on rate structures is provided in Chapter 5.

- Impervious Area Only: The most common approach currently in use by stormwater utilities, an impervious area-only rate structure assesses user fees to customers based on the amount of impervious area they maintain. Typically, the average quantity of impervious area for a single family residence (SFR) 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. All SFRs would be charged a flat rate, and non-SFRs would be charged based on the number of ERUs of impervious surface maintained. Data needed for this approach includes impervious area for a representative sample of SFR properties and impervious area for all non-SFR properties.
- Impervious Area + Gross Area: The impervious area + gross area approach to establishing stormwater rates incorporates both the impervious and gross area of a parcel in establishing the user fee. Data needed for this approach includes impervious and gross area for all properties. Because significantly more information is necessary for this approach, it is more difficult and costly to implement than the impervious area only approach.
- Intensity of Development: The Intensity of Development approach to setting user fees involves developing a range of charges for varying percentages of impervious area. Parcels with a relatively low ratio of impervious area to gross area are typically charged at a lower rate than parcels with higher percentages of impervious area. Data needed for this approach includes impervious and gross area for all properties. Like the impervious area and gross area approach, this approach is more difficult and costly to implement than the impervious area only approach.

The data requirements of each rate methodology are summarized in the following table.

Table 4-2 Data Needs for Alternative Rate Methodologies

Approach	Data Needs	Outstanding Data Needs
Impervious Area Only	Impervious area mapping • Representative sample of SFR parcels • All other parcels	• 1,431 non-SFR parcels
Impervious Area + Gross Area	Impervious area mapping • All parcels	• 7,107 parcels
	Gross area mapping • All parcels	• 7,107 parcels
Intensity of Development	Impervious area mapping • All parcels	• 7,107 parcels
	Gross area mapping • All parcels	• 7,107 parcels

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 City parcels. As discussed previously, much of the specific information needed varies depending on the selected approach. However, all approaches require measurement of impervious area. At a minimum, impervious area is needed for a sampling of SFRs

In conjunction with development of this Feasibility Study, the City has mapped the impervious area of a selection of residential and nonresidential parcels. The City maintains property assessment information in a Geographic Information System (GIS) database. This database was utilized in conjunction with recent aerial photography to develop estimates of gross area and impervious area by parcel. Relevant information on the extent of parcel mapping completed to-date, as well as a summary of the characteristics of sampled parcels, are provided in Table 4-2 on the following page. Depending upon the rate methodology selected, additional mapping will be required.

4.1.3 Rate Modifiers

Stormwater utilities, like other utilities, commonly employ rate modifiers. Rate modifiers 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 modifiers 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 on fixed incomes. To assess this credit, the utility would need information on potentially eligible user accounts.

Table 4-3 Parcel Mapping Summary

Category	Total # of Parcels	# of Parcels Sampled	% of Parcels Sampled	Total Category Area (Sq Ft)	Total Area Sampled (Sq Ft)	Impervious Area of Sample (Sq Ft)	Average Percent Impervious	Estimated Total ERUs	Average ERUs / parcel
Single Family Residential	5,732	56	1%	316,564,996	2,806,097	219,442	8%	5,732	1.0
Multifamily Residential	1,067	271	25%	34,295,092	5,946,838	1,670,980	28%	2,489	2.3
Condo	199	199	100%	45,001,509	45,001,509	5,361,258	12%	1,368	6.9
Commercial	375	325	87%	29,148,080	24,253,032	9,212,703	38%	2,613	7.0
Governmental	215	115	53%	88,498,821	62,471,470	4,035,172	6%	2,252	10.5
Industrial	123	109	89%	34,465,662	31,610,440	7,528,341	24%	1,960	15.9
Institutional	90	89	99%	19,737,893	19,721,710	3,435,953	17%	881	9.8
Undeveloped	471	1	0%	87,056,524	21,706	0	0%	0	0.0
Miscellaneous	46	46	100%	9,762,844	9,762,844	249,902	3%	64	1.4
TOTAL	**8,318**	**1,211**	**15%**	**674,266,685**	**211,330,909**	**31,713,750**	**15%**	**17,359**	**2.1**

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- 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. To assess this credit, the utility would need information on eligible user accounts.
- 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. A water quality improvement credit would reduce the charges assessed to the parcel in recognition of the benefit of the onsite treatment on the quality of 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. Information and data needed to assess the potential impacts of rate modifiers on the revenue stream are summarized in the following table.

Table 4-4 Data Needs for Alternative Rate Modifiers

Modifier	Data Needs	Outstanding Data Needs
Base Fee	• Estimated fixed costs • Projected revenue requirements • Approximate rate base	• None
Senior / Disabled Discount	• Approximate number of qualifying parcels • Projected revenue requirements • Approximate rate base	• Approximate number of qualifying parcels
Water Volume Reduction Credit	• Process for measuring water volume reductions • Approximate number of qualifying parcels • Projected revenue requirements • Approximate rate base	• Process for measuring water volume reductions • Approximate number of qualifying parcels
Water Quality Improvement Credit	• Process for measuring water quality improvements • Approximate number of qualifying parcels • Projected revenue requirements • Approximate rate base	• Process for measuring water quality improvements • Approximate number of qualifying parcels

4.1.4 Billing Approaches

Once a preferred rate methodology and modifiers have been identified, a preferred billing approach must be selected. Typically, stormwater user 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 also 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.

The data requirements of each billing approach are summarized in the following table.

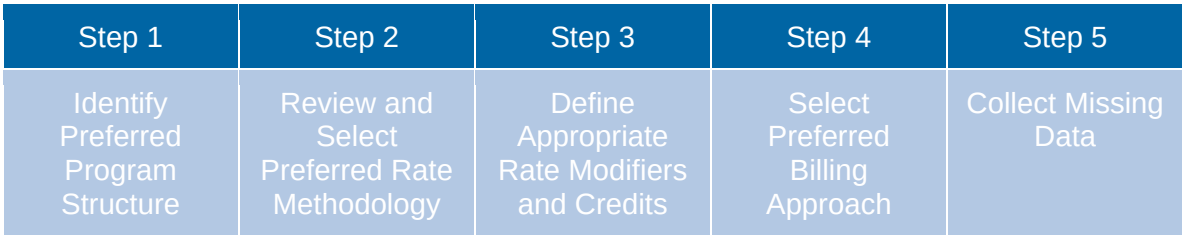
Table 4-5 Data Needs for Alternative Billing Approaches

Billing Approach	Data Needs	Outstanding Data Needs
Property Tax Bill	• Capacity of billing system to accommodate additional line items • Number and parcel ID of tax-exempt parcels	• Number and parcel ID of tax-exempt parcels
Water and/or Sewer Bill	• Capacity of billing system to accommodate additional line items • Number and parcel ID of parcels not connected to City water and/or sewer	• Number and parcel ID of parcels on private water / sewer
Standalone Billing	• Identification of preferred billing system • Information for all parcels	• Identification of preferred billing system

4.2 Approach to Addressing Data Needs

As described previously, the specific data required depends upon the utility approach selected. To maximize efficiency and minimize costs, data collection should be tailored to the selected program. This can be accomplished by determining a preferred approach prior to initiating data collection, as shown in the following figure. While Steps 1 through 4 may be initiated at the feasibility stage to provide sufficient data to support decision-making, additional data collection efforts will be required following a decision to move forward with a utility.

Figure 4-1 Process for Initiating Data Collection



The following table presents a data collection approach for the data needs identified in previous sections, should the City decide to move forward with utility implementation.

Table 4-6 Approach to Filling Data Gaps

Alternative	Outstanding Data Needs	Data Collection Approach
CATEGORY: PROGRAM ORGANIZATION		
Model After Existing Program	• None	N/A
Establish New Program	• Future program organizational structure • Future governing / oversight approach	1. Identify potential organizational and governance structures with City staff and stakeholders 2. Select preferred structure 3. Prepare memorandum detailing new structure
CATEGORY: RATE STRUCTURE METHODOLOGIES		
Impervious Area Only	• 1,431 non-SFR parcels	1. Utilize existing GIS database and orthophotography to digitize impervious area
Impervious Area + Gross Area	• 7,107 parcels • 7,107 parcels	1. Utilize existing GIS database and orthophotography to digitize impervious area
Intensity of Development	• 7,107 parcels • 7,107 parcels	1. Utilize existing GIS database and orthophotography to digitize impervious area
CATEGORY: RATE MODIFIERS		
Base Fee	• None	N/A
Senior / Disabled Discount	• Approximate number of qualifying parcels	1. Review current affordability programs to determine accounts likely to qualify

Water Volume Reduction Credit	• Process for measuring water volume reductions • Approximate number of qualifying parcels	1. Develop approach to measuring reductions in water volume from BMPs (refer to NH Stormwater Manual) 2. Determine recommended level of fee reduction 3. Identify parcels currently implementing stormwater management practices 4. Estimate impact on revenues
Water Quality Improvement Credit	• Not applicable	N/A
Water Education Curriculum Credit	• Approved water education curriculum • Approximate number of qualifying parcels	1. Develop or identify approved water education curriculum 2. Determine recommended level of fee reduction 3. Identify schools likely to adopt approved curriculum 4. Estimate impact on revenues
CATEGORY: RATE MODIFIERS		
Property Tax Bill	• Number and parcel ID of tax-exempt parcels	1. Identify number and parcel IDs of tax exempt properties
Water and/or Sewer Bill	• None	1. Identify number and parcel IDs of properties on private water / sewer
Standalone Billing	• Identification of preferred billing system	1. Develop database of all ratepayers

5 Rate Structure Alternatives

This chapter describes various alternatives for designing a stormwater rate structure and provides a preliminary assessment of rates and revenue requirements.

5.1 Overview

The prevalence of a user fee concept for stormwater services has increased significantly over the past decade. Currently, there are many established utilities across the country that have developed equitable and defensible user fee structures that create a reliable source of revenue to sufficiently operate, maintain, and capitalize a stormwater system. The user-based fee for a stormwater utility differs from fees for gas, electric, water, and wastewater utilities in that there is not a defined usage that can be measured and participation is not voluntary. Each property within a watershed contributes to the volume and water quality in that watershed and the impacts on the receiving bodies of water.

There are a number of advantages in utilizing a user charge system rather than the General Fund to support stormwater program needs. Some of the advantages include, for example:

- Eliminating competition from other programs that utilize the general fund;
- Ability to conduct effective long-term strategic planning and forecasting;
- Potential for being less politically sensitive;
- More flexibility to adapt to changes in the regulatory environment; and
- Establishing a direct causal link between the fee a property owner pays and the impact of their property on the stormwater system or their use of that system.

5.2 Basic Rate Structure and Modification Factors

The rate structure can be defined as the framework for assessing responsibility for the cost of the stormwater program. Although there are many options related to rate design, rate structures are generally considered to be equitable as long as there is a reasonable nexus between the assignment of cost and the demand placed on the system. In the case of stormwater, the relationship between cost and demand is associated with the quantity of runoff and its impact on water quality.

The two major concepts in stormwater rate design include (1) the basic rate structure and (2) rate modifiers. In simplistic terms, the basic rate structure is the mechanism of assessment (e.g. impervious area, gross area). Modifications to the basic rate structure can then be incorporated to help target specific pricing objectives, such as:

- Revenue sufficiency – rates should generate revenue sufficient to meet revenue requirements;
- Revenue stability – rates should generate stable and predictable revenues from year to year;
- Defensibility – rates should be designed according to standard industry practice and in accordance with applicable law such that rate disputes are avoided;
- Simplicity and ease of administration – rates should be readily understandable by customers and be able to be implemented using existing staff and the existing billing and collection system with only minor modifications; and

- Equity among customer classes – rates should be designed such that costs recovered from each customer class are related directly to the way in which class demand characteristics cause the utility to incur costs.

For example, a utility interested in simplicity might establish a flat rate for all residential customers that is based on an average property, or Equivalent Residential Unit (ERU), rather than assigning costs based on some unit of impervious square footage. Nonresidential properties could then be assessed based on the number of ERUs. Other rate modifiers, such as rate tiers (e.g. small, medium, large) for residential customers, could potentially enhance the equity of the rate structure by providing differentiation based on property size. Regardless of the basic rate structure there are many types of modifiers that can be incorporated into the rate design to address a utility's most important pricing objectives.

5.3 Common Rate Structures

Since the conversion of forests and fields to impervious area causes investments in the public drainage system, most legally defensible stormwater utilities use impervious area or some variation of impervious area in their rate structure. However, there are many ways to configure the rate structure or identify rate modifiers to target various property characteristics, such as green space, to achieve certain pricing objectives. Typical rate structures used by stormwater utilities across the country include:

- Impervious area only;
- Impervious area plus gross area; or
- Gross area with an intensity of development factor.

Impervious Area Only

The most common mechanism of assessment for stormwater is by impervious area only. Numerous engineering and hydrologic studies, including data from the National Urban Runoff Program, have clearly demonstrated a high correlation between peak runoff before and after development and identified impervious area as the most important factor in the quantity and quality of stormwater runoff. Impervious area only rate structures are highly defensible and have been demonstrated to be a reasonable basis of assessment in numerous legal challenges across the country. In most cases, there is a general understanding and perception by customers that building structures and paving over pervious land generates an increased quantity and decreased quality of stormwater runoff.

Impervious area only rate structures may be assessed on a per-unit basis (per 1,000 square feet, for example) or, more often, in the form of a flat rate for one ERU (or Equivalent Service Unit [ESU]). Nonresidential customers can then be assessed based on the number of ERUs they represent. A flat rate structure assigns responsibility based on the average residential customer, which can be preferable for reasons of simplicity and customer acceptance. Due to a varying degree of inaccuracy in impervious area measurement, utilities will rarely assess properties of less than 100 square feet on a per unit basis.

Impervious area only rate structures are constrained somewhat in their ability to accommodate differences in property characteristics, particularly the recognition of "green space". Also, impervious area only rate structures are assessed only to developed parcels. This creates some challenges related to planning for future development, as stormwater infrastructure is often sized to meet both current and future demand. However, addressing the challenge of planning for future development can be mitigated through modifying

factors, such as stormwater development or impact fees, which shift the burden of future development to new customers.

For illustrative purposes, Figure 5-1 presents a nonresidential parcel assessed with an impervious area only rate structure.

Figure 5-1 Impervious Area Only Rate Structure (Example Purposes Only)

Assumptions:

1. 10 acre parcel with 33% imperviousness.
2. 1 ERU = 3,919 square feet
3. 158,158 square feet / 3,919 = 40.36 (round to 41 ERUs)
4. Monthly charge per ERU = $7.10
5. $7.10 x 41 = **$291.10 per month**

In this example, the area highlighted in blue is impervious area and the area highlighted in green is pervious area. The property is 10 acres in total with 33%, or 158,158 square feet, impervious surface area (shown in blue). If one ERU is 3,919 square feet, this parcel represents 41 ERUs and would be assessed a monthly charge of approximately $291. In this type of rate structure all properties would be assessed at the same cost per impervious square foot.

Impervious Area Plus Gross Area

Although impervious area is the primary driver of stormwater runoff, the total property area (impervious area plus gross area) influences the level of runoff from a property. However, even undeveloped land contributes a small amount of runoff, particularly during significant storm events. As a result, it can be acceptable to combine both impervious area and gross area into the rate calculation, provided that the service fee is designed appropriately to reflect the cost of service for each parameter. This can be

achieved by assigning a reasonable amount of cost to each parameter consistent with local hydrologic conditions, program structure (e.g. balance of stormwater quantity and stormwater quality in the program costs), and various other considerations, which requires additional data and more detailed analysis. Ultimately, a separate unit cost or ERU can be established for both impervious area and gross area. The level of cost differentiation between the two parameters is usually significant, with gross area being charged at a much lower rate than impervious area.

The most significant benefit of including gross area in the rate calculation is the ability to charge undeveloped property, accounting for the burden undeveloped property places on the stormwater program. This addresses the issue of not charging anything to undeveloped properties which benefit from existing stormwater infrastructure. In addition, it can significantly increase the rate base and revenue-generating potential of the utility. Conversely, assessing even a small charge to undeveloped land can be confusing to customers, as there may be a perception that "green space" should not be charged.

For illustration, Figure 5-2 presents the same parcel identified in Figure 5-1, but this time it is assessed for both impervious area and gross area. It is important to understand that this rate structure would be designed to generate the same amount of revenue as an impervious area only rate structure. However, in order to demonstrate the additional revenue-generating potential of adding gross area to the rate calculation, we have assumed that the impervious area charge would be the same as in Figure 5-1, and there would be a supplemental charge for gross area.

Figure 5-2 Impervious Area Plus Gross Area Rate Structure (Example Purposes Only)

Assumptions:

1. 10 acre parcel with 33% imperviousness (same as Figure 5-1)
2. Impervious area charge of $291.10 per month (same as Figure 5-1)
3. 482,364 square feet of gross area / 3,919 = 123.08 (round to 124 ERUs)
4. Assumes the charge for gross area is 1/20 of impervious area charge or $0.30 per ERU = $124 x $0.30 = $37.20
5. Total charge = $291.10 + 37.20 = **$328.30 per month**

Again, it is possible to design an impervious plus gross area rate structure to generate the same amount of revenue as an impervious area only rate structure. However, the addition of gross area increases the rate base and provides more flexibility to generate revenue by tailoring the cost allocation between multiple parameters. Depending on the balance of costs assigned to each parameter, the impact to specific customer classes could differ substantially.

Intensity of Development

One of the weaknesses of a stormwater charge based on either impervious area only or both impervious and gross area is limited recognition of "green space" and its potential benefit in reducing the quantity and improving the quality of stormwater runoff. As a result, many utilities have been successful developing a rate structure that considers the extent of impervious coverage of a property. This type of rate structure requires that both impervious area and gross area data be collected; however, gross area is used only to establish the percentage of impervious coverage on a particular property. Similar to an impervious area only rate structure, a charge is typically calculated for an ERU based on an average residential property. The average percentage of impervious area per property will change depending on the service area characteristics. Each property is then charged based on the number of ERUs or square feet of impervious area, with the rate per ERU typically increasing with increasing percentages of impervious coverage.

Rate structures that consider the intensity of development may provide a higher level of perceived equity and additional flexibility in allocating costs based on property characteristics. Potential drawbacks of this approach include additional data needs and more detailed cost allocations to justify rate differentials. Additionally, establishing the level of rate differentials based on impervious coverage requires a certain amount of judgment which may be perceived as a weakness from a defensibility perspective. Also, very small properties with a large percentage of impervious coverage will pay more per impervious square foot than large properties with the same impervious area, because the larger gross area results in a lower percentage of impervious coverage. Although this recognition of green space is the primary objective of the rate structure, paying more for the same amount of impervious area can be difficult for customers to accept.

For example purposes, Figure 5-3 illustrates an intensity of development rate structure applied to the same property used in the previous two exhibits.

Figure 5-3 Intensity of Development Rate Structure (Example Purposes Only)

Assumptions:

5. 10 acre parcel with 33% imperviousness (same as Figure 5-1 and Figure 5-2)
5. 1 ERU = 3,919 square feet = 41 ERUs (same as Figure 5-1 and Figure 5.2)
5. Assume that 0-10% is normal for a residential parcel
5. Total charge = 41 x $5.87 = **$240.67 per month**

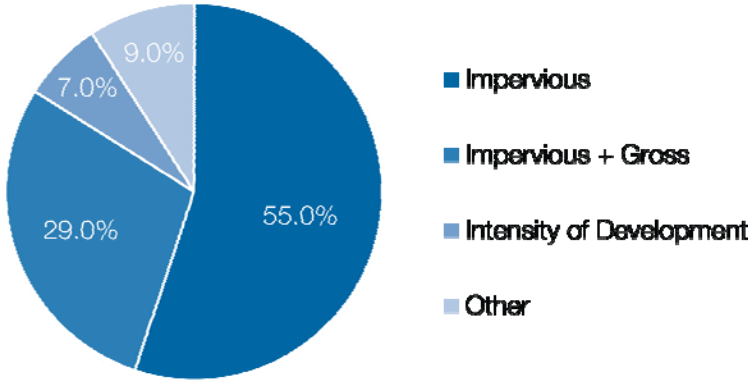
Percent Impervious		
Low+	High	Rate Per ERU
1	5	$2.99
5	10	$3.44
10	20	$4.07
20	30	$4.97
30	40	$5.87
40	50	$6.76
50	60	$7.66
60	70	$8.56
70	80	$9.46
80	90	$10.36
90	100	$11.25

In this example the property has 30-40% imperviousness, which is less than a normal residential parcel, so the rate per ERU is adjusted accordingly. The rate differentials shown in the chart above are for example purposes only. Actual rate differentials should be based on an evaluation and assessment of the particular characteristics of the City's service area and hydrologic conditions.

The sample calculations presented in Figures 5-1 through Figure 5-3 demonstrate the potential variability in customer impacts based on alternative rate structures. As shown above, the level of variability is contingent on multiple factors, particularly cost allocations and other key assumptions that support individual components of each rate structure. Regardless, alternative methodologies for recovering costs for stormwater services can have a material difference on customer bills.

As shown in Figure 5-4, based on a 2010 national survey, an impervious area only based rate structure is the most common method of assessment (Black and Veatch, 2010).

Figure 5-4 Common Methods of Assessment



At the third meeting of the Ad-Hoc Stormwater Committee, the Committee reviewed potential rate structures. The Committee determined that, should a utility be implemented, the impervious area only approach using the ERU approach for single family residences would be preferred. This approach was selected primarily due to its simplicity. In addition, using the ERU would improve equity within the single family residential customer class by establishing a uniform fee for single family residences.

5.4 Rate Modifiers

Modifications to the rate structure can be incorporated to address pricing objectives, enhance equity, improve transparency, or reduce costs. As noted previously, one of the most common rate modifiers is a flat charge per ERU, which is simple to implement and understand, and promotes customer acceptance through perceived equity. Other options, which are discussed in more detail below, include establishing a basic service charge for all customers, incorporating tiers to the residential charges to address differences in property size, and establishing credits for certain customers that demonstrate best management stormwater practices.

Basic Service Charge

Since a portion of a utility's stormwater costs are fixed, it may be appropriate to establish a separate basic service charge (base charge) for all customers to be assessed on a per account basis. Fixed costs typically include components such as customer service, billing and collection, and other administrative costs that do not vary based on the size of the customer. Although less common for stormwater utilities, it may be appropriate to include a small portion of debt service in the base charge, as utilities must maintain capacity in the system. If this capacity is funded through borrowing, it represents a fixed cost that may be recovered through a base charge. From a defensibility perspective, the most important element of developing a base charge is using the charge only to cover those functions that are appropriately assessed on a per account basis as opposed to an impervious area basis.

Residential Rate Tiers

Many utilities implement tiered rates (e.g. multiple flat rates) for residential customers to provide for additional rate equity. For example, a utility could establish an impervious area-based rate for an average

residential customer that would apply to one ERU. Tiers would be developed to identify customers that are substantially smaller or larger than the average customer, and the average rate per ERU would be modified within each tier. In most instances in which tiers are used, it has been found that two to three tiers provide sufficient cost differentiation. It is important to note that if multiple tiers are established, the billing database needs to be designed appropriately to accommodate the additional complexity of categorizing residential customers by property size.

Credits

A properly-structured system of credits can address many of the issues and challenges of implementing a system of stormwater rates and charges. Providing credits toward the stormwater bills can help to maintain equity for customers with onsite stormwater management initiatives. It is important to remember that credits are ongoing reductions in customer charges that are given for activities on the property that reduce the burden on the stormwater system and/or reduce the utility's cost of service. A well-designed credit system tailored to meeting these objectives may include incentives for the following actions:

- Individual communities adopting model stormwater ordinances that include Best Management Practices (BMPs);
- Commercial and industrial property owners reducing or eliminating runoff;
- Individual subdivisions implementing green solutions; and
- Customers advancing other social or environmental objectives.

It should be noted that credits are generally limited to non-single family residential (SFR) properties. SFR parcels are generally smaller and have relatively less impervious area than non-SFR properties, and stormwater management programs implemented on SFR properties typically provide only a minimal reduction in the stormwater flows and/or costs. Additionally, the cost of preparing a credit application and ensuring annual compliance could be significantly higher for an SFR customer than the total cost of stormwater user fees over several years. However, some credits may be offered to entire subdivisions to reward an emphasis on green design or to encourage on-site stormwater management and treatment.

The amount of revenue offset by a credit program can vary significantly by utility; however, in most cases, the reduction in revenue from credits does not exceed 5% of total revenue collected. The extent of the credit offered should be quantified by determining a reasonable relationship with the reduction in program costs. For example, the estimated percent runoff reduction for certain structural BMPs could serve as a basis for a commensurate reduction in the stormwater charge. A similar analysis could be performed for other structural BMPs that target a reduction in pollution. Other types of stormwater credits not associated with infrastructure, or non-structural BMPs, such as stormwater education programs, stormwater system maintenance and cleaning and paved area sweeping, for example, may require more judgment in determining an appropriate level of fee reduction. Since there are fixed costs that cannot be eliminated by a customer's actions, credits are typically capped at a certain level.

It is important to not over-complicate the credit system. If the credit system becomes too administratively cumbersome, the benefits of the program could be reduced significantly. Many utilities simplify the credit system by establishing a systematic process that puts more responsibility on the customer to apply and demonstrate the basis for the credit. A simplified credit system for the City might involve a five-step process where (1) the credit structures are developed by the utility; (2) credits already included in the

billing system, such as affordability programs that target low-income customers, are applied automatically to qualifying customers; (3) customers apply for additional specific credits; (4) the Dover Utilities Commission (DUC) reviews the applications; and (5) approved credits are incorporated into the billing system.

Figure 5-5 presents an example of a simplified credit system.

Figure 5-5 Example of a Simplified Credit System

Step 1	Step 2	Step 3	Step 4	Step 5
Credits & Measurement approach are defined and adopted along with utility	Credits already in billing system are applied automatically	Customers apply for additional, specific credits	Dover Utilities Commission Reviews applications on a case-by-case basis	Approved credits are incorporated into billing system

The full evaluation and identification of a credit program structure should be addressed during the implementation phase of the utility.

At the third and fourth meetings of the Ad-Hoc Stormwater Committee, the Committee reviewed potential rate modifiers, including credit alternatives. The Committee determined that the following rate modifiers should be considered, should a stormwater utility be implemented:

- Basic Service Charge. A basic service charge should be considered to offset fixed costs associated with program administration. Alternatively, this charge may be structured to cover stormwater management costs associated with common areas, such as roads.
- Credits. The Committee felt that a credit system should be implemented to offset program costs. While the Committee initially felt that a credit system should be restricted to non-ersidential customers, consultation with the City Attorney determined that the credit system should be expanded to make appropriate credits available to all customer classes. A limit should be placed on the percentage of stormwater fees that may be offset by credits. Credits should be available for improvements in water quality and for the implementation of non-structural best management practices.

5.5 Preliminary Rate and Revenue Requirements

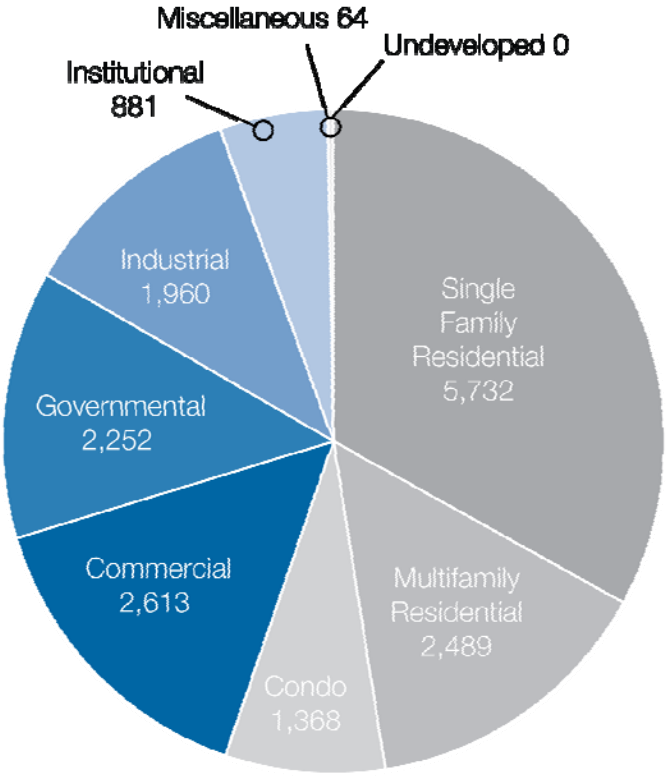
As discussed in Chapter 2.2, the City is currently funding approximately $900 thousand per year in stormwater costs, primarily through the General Fund. In the future, the City will incur additional costs related to infrastructure reinvestment and improvements as well as Phase 2 MS4 permit compliance. Depending on the level of service provided, future program costs are anticipated to range from approximately $1.2 million to $2.5 million on an annual basis.

In order to provide a sense of the potential rate and customer impacts associated with a separate charge for stormwater services, the Project Team developed an initial analysis of impervious area within the City's

service area. The preliminary assessment of impervious area was based on geographic information system imagery and aerial photography for a sample of residential and nonresidential parcels. Although the analysis did not include a full mapping of all service area parcels, it serves as a reasonable basis to assess the potential rate and customer impacts of a direct charge for stormwater services.

Based on the initial mapping data, and using the impervious area only rate model, approximately 17,300 ERUs have been identified in the City's service area. Initial indications also suggest that one ERU equals approximately 3,919 impervious square feet. Figure 5-6 presents the initial breakdown of ERUs by service type.

Figure 5-6 Preliminary Equivalent Residential Units by Service Type



As presented in Chapter 2, the anticipated range of future program costs varies significantly depending on the level of service. At a minimum, funding will need to be increased to approximately $1.2 million to continue the current level of service and meet increased permit compliance and spoils management and disposal costs. Additional reinvestments in existing stormwater infrastructure as well as recommended system improvements increase the annual revenue requirements to approximately $2.0 million. The inclusion of approved stormwater improvements in the City's existing CIP further increases annual revenue requirements to approximately $2.5 million. It is important to note that these initial cost estimates assume that capital expenditures will be funded by annual revenues from stormwater rates. As with existing water and sewer utilities, it is expected the City would secure general obligation bonds for appropriate stormwater projects, with the repayment of such bonds based on collected stormwater fees. While a well-established utility may ostensibly bond as a non-general obligation, such bonds are still

secured based on the full faith and credit of the City of Dover; in addition, such bonds have slightly higher interest rates than general obligation bonds. Thus, the City of Dover secures better value for ratepayers through general obligation bonds. Use of bonds serves to amortize future capital investments over time, reduce revenue requirements from user charges, and provide more flexibility to initiate a more aggressive capital program. However, at this point, it was determined that in order to be conservative it would be more appropriate to develop initial projections based on an assumption that annual capital investments will be funded on a pay-as-you go basis.

Prior to determining a preliminary range of stormwater charges, several additional assumptions were made relative to the level of expected delinquencies as well as total lost revenue from potential implementation of stormwater credits. As such, the revenue requirements associated with the various levels of service described above were adjusted to reflect an allowance for the following adjustments. A 7.5% allowance for uncollectible revenue was used a reasonable assumption to recognize the probability of non-payment, which was based primarily on industry experience with start-up stormwater utilities. Initially, it is prudent to expect a higher level of uncollectible revenue to recognize potential adverse reactions to the concept of a direct payment for stormwater services. For planning purposes, it may take several years to reach a more normalized pattern of non-payment, at a level consistent with other utility services provided by the City (2.0% - 3.0% expected). In terms of credits, even a robust program of credits does not typically exceed 5.0% of revenue requirements. It is likely that a credit program implemented by the City would start at a very moderate level and then increase over time. Initial credits were assumed to represent only 1.0% of revenue requirements and then increased to 3.0% over the next several years.

Based on estimated ERUs and preliminary revenue requirements, the City's stormwater charge for one ERU could range from $4 - $14 per month. Figure 5-7 summarizes the range of charges and estimated revenue for various levels of service.

Figure 5-7 Preliminary Rate Calculations

	Range of Charge (per ERU)	Estimated Revenue
Current Level of Service	$4.00 - $6.00	$900k
Current Level of Service + Required Actions	$6.00 - $8.00	$1.2MM
Current Level of Service + Required Actions + Recommended Actions	$10.00 - $12.00	$2.0MM
Current Level of Service + Required Actions + Recommended Actions + CIP Items	$12.00 - $14.00	$2.5MM

During the third stakeholder meeting, Meeting 3: Rate Structure Alternatives, conducted on October 11, 2010, the Committee recommended that it would be appropriate initially to evaluate an annual revenue

requirement of approximately $2.0 million. This would allow the City to maintain MS4 permit compliance and the current level of service while also reinvesting in its existing infrastructure. Assuming that annual capital investments are funded on a pay-as-you go basis, this funding level would not immediately support all planned CIP activities; these activities would need to be re-evaluated and budgeted if necessary. The Committee also recommended for further consideration a rate structure based on impervious area only with the inclusion of a basic service charge to recover fixed costs that do not vary based on the size of the property. This recommendation, which is discussed in more detail in Chapter 8, was based heavily on the simplicity, prevalence, and proven defensibility of impervious area only rate structures. The rate modification of a basic service charge provides additional equity by segregating specific fixed costs, such as customer service, billing and collection, and other administrative costs, for recovery on a per account basis. The basis for the base charge was further discussed in Committee meetings 4 and 5. It was determined that additional equity could be achieved by covering the impervious are represented by City streets into the base fee. All residents utilize and benefit from public roads. However, public roads comprise approximately 25 percent of all impervious area in the City and therefore contribute a significant portion of the City's stormwater runoff. The Committee was sensitive to the impact that including roads would have on the magnitude of the base fee; as a result, it is recommended that the base fee be structured to cover approximately one half of the total cost of roads, based on their impervious area, or approximately $250,000.

Regardless of the decision to move forward with a separate utility, the City will be required to fund, at a minimum, approximately $1.2M in stormwater costs. If these costs are funded through a separate user charge, there must be an offsetting benefit to the General Fund. However, in order to mitigate the potential impacts on customers, it is recommended that the City consider implementing the stormwater charge in a phased approach over multiple years to generate the revenue necessary to meet its target level of service. For example, the City may wish to design a fee structure that generates revenue initially at a level consistent with its minimum required costs. The City could then increase the fees over a five-year period to provide an opportunity to spread out the customer impacts over multiple years. Figure 5-8 presents a sample program of rates over a five-year planning period. Again, it should be noted that these projections are preliminary and would be refined during the utility implementation phase. Note that these were preliminary estimates for the purpose of Committee consideration.

Figure 5-8 Preliminary Rate Forecast (2011 – 2016)

	Fiscal Year Ending June 30th					
	2011	2012	2013	2014	2015	2016
Projected Net Revenues (1)						
Basic Service Charge	$231,800	$240,135	$255,943	$256,145	$261,714	$270,931
Impervious Area Charge	$854,582	$1,028,025	$1,192,124	$1,381,023	$1,555,269	$1,724,466
Total Net Revenues	**$1,086,382**	**$1,268,160**	**$1,448,068**	**$1,637,168**	**$1,816,983**	**$1,995,397**
Offset to General Fund	$1,086,382	$1,268,160	$1,448,068	$1,637,168	$1,816,983	$1,995,397
Rate Structure (Monthly Charge) (2)						
Basic Service Charge (Per Account)	$2.65	$2.65	$2.65	$2.75	$2.85	$2.95
Impervious Area Charge (Per ERU)	$4.45	$5.25	$6.05	$7.25	$8.25	$9.15

(1) Net revenues exclude uncollectible revenue and credits.
(2) For illustration purposes, calculated charges have been rounded to the nearest nickel.

For illustrative purposes, Figure 5-9 presents a nonresidential parcel assessed with an impervious only rate structure that incorporates a base fee to cover fixed administrative costs and approximately half of public roads. This rate structure has been applied to the same property used Figures 5-1 through 5-3.

Figure 5-9 Impervious Area Only Rate Structure with Base Fee (Example Purposes Only)

Assumptions:

1. 10 acre parcel with 33% imperviousness (same as Figures 5-1 through 5-3)
2. 1 ERU = 3,919 square feet (same as Figures 5-1 through 5-3)
3. 158,158 square feet / 3,919 = 40.36 (round to 41 ERUs, same as Figures 5-1 through 5-3)
4. Monthly base fee per parcel = $2.65
5. Monthly charge per ERU = $4.45
6. $2.65 + $4.45 x 41 = **$185.10 per month**

6 Billing Summary Methodology

This section describes alternative approaches for stormwater billing and collection.

6.1 Billing System Alternatives

There are several mechanisms available to the City to support the process of billing for stormwater services. Three of most common methodologies include: (1) the water and/or sewer bill; (2) a separate stormwater bill; or (3) the property tax bill. Each of these methodologies is a viable option for consideration by the City; however, it is important to evaluate the potential implications of the alternatives prior to determining the most advantageous approach.

Water and Sewer Bill - The City provides water and sewer services within its service area and is in the process of migrating to a new billing system. This process is expected to be complete by the end of the calendar year. Based on discussion with City staff, the new water and sewer billing system is equipped to bill for stormwater with minimal adjustments.

Stormwater Only Bill - The City could consider purchasing a separate stormwater billing system. The system can be designed with a turn-key approach and configured exactly to the City's specifications.

Property Tax Bill – The property tax system is also a viable option for consideration. Based on discussions with City staff, the property tax system is also equipped to bill for stormwater with minimal adjustments.

6.2 Evaluation Criteria

There are a number of evaluation criteria that should be considered prior to selecting a preferred billing methodology. For the purpose of this analysis, the specific criteria included:

- Cost - The overall monetary cost of the system;
- System compatibility – The compatibility of the system with various rate structure alternatives and stormwater database requirements;
- Implementation - The complexity of the process for integrating the stormwater database into the billing system;
- Administration – The level of required ongoing administration and support;
- Delinquency - Impact on the expected level of uncollectible revenue; and
- Customer acceptance – The level of customer acceptance of a charge for stormwater services.

Figure 6-1 summarizes the relative ranking of each billing alternatives based on these evaluation criteria.

Figure 6-1: Evaluation Criteria Matrix

Criteria	Water/Sewer	Stormwater Only	Property Tax
Cost	Low	Medium/High	Low
System compatibility	High	High	High
Implementation	Medium	High	Medium
Administration	Low	Medium	Low
Delinquency	Medium	High	Medium/High
Customer acceptance	Medium	Low	Low

Cost

Since the City maintains both a water and sewer billing system and a property tax billing system, the cost of utilizing these alternatives is relatively low. Conversely, the cost of purchasing a new stormwater only billing system could potentially be high depending on the type of system and configuration requirements. For all of the billing system alternatives, the ultimate cost is contingent on various factors including rate structure design, number of properties to be measured, and the measurement techniques used. Increased data requirements for more complex rate structure alternatives can affect both initial implementation costs and ongoing system maintenance.

System Compatibility

Based on discussions with City staff, both the water and sewer billing system and property tax billing system are equipped to bill for stormwater services with a minimal level of adjustment. In each case, it is likely that the system could extract information directly from the stormwater database, or if necessary, from an external database or spreadsheet application, such as Microsoft Excel®, to serve as a bridge. A stormwater-only billing system would be highly compatible as it could be designed specifically for the utility.

Implementation

Both the water and sewer billing system and the property tax billing system would require some level of effort in the implementation process. The required effort would be contingent on a number of factors, particularly the type of rate structure being employed and related database requirements. A separate

stormwater-only system may require a higher level of effort, as City staff would need to be trained on a new system.

Administration

General administration requirements for both the water and sewer billing system and the property tax system would be relatively low. Because the City is familiar with these platforms, administration requirements would be limited to managing the system adjustments to incorporate stormwater. A stormwater-only system would require a higher level of administration and support initially, which would decline over time. Additionally, a stormwater-only system typically requires more customer service and support, since the property owner receives a completely separate bill for services.

Delinquencies

As discussed in Chapter 6 – Rate Structure Alternatives, the level of delinquency for a new stormwater utility is typically much higher initially than the delinquency rate of ongoing utilities such as water and sewer. This higher delinquency rate can be attributed predominantly to general customer objection to the concept of paying for stormwater services. The actual level of delinquency is contingent on a variety of factors, particularly the amount of the charge and the amount of public outreach conducted during the implementation process. However, it is not uncommon to see a delinquency rate as high as 10% during the first year of operation.

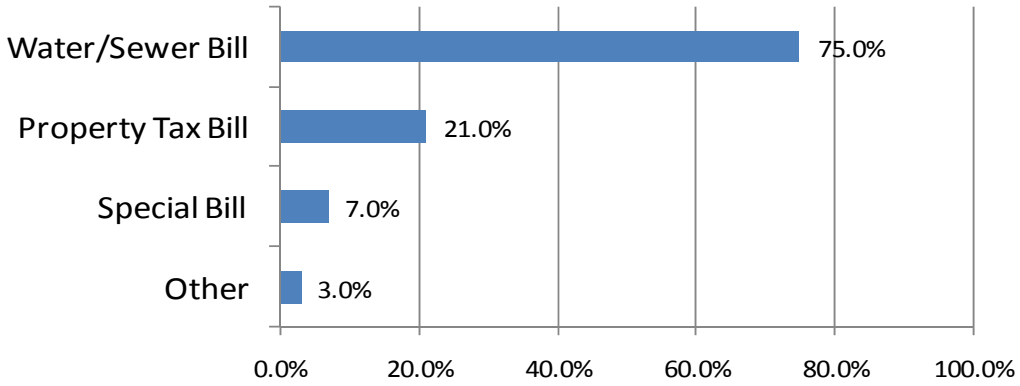
The billing system also impacts the level of delinquency. In most cases, the use of the water and sewer bill provides an opportunity to minimize delinquencies, as the charge for stormwater services appears only as a line item on the utility bill. Since stormwater charges are often substantially lower than water and sewer charges, the additional cost for providing these services may not be readily apparent to customers, at least when compared to a separate utility bill. The use of the property tax bill has a similar benefit of avoiding a separate bill; however, the possibility of the public perceiving a stormwater charge as a tax is increased significantly when the charge is shown on a tax bill. Most stormwater utility legal challenges focus on this “tax” concept. The other major factor that affects ongoing delinquencies is the level of payment recourse associated with a specific billing methodology. Many utilities that utilize the water and sewer bill for stormwater will leverage the ability to shut off water services for non-payment. A lien can be an available recourse under a property tax system; however, this process can be lengthy depending on local laws and jurisdictional requirements, and it is likely that the outstanding balance for stormwater would be subordinated to other obligations. A stormwater-only billing methodology has the least recourse for delinquencies, due to additional challenges assigning property liens and an inability to shut off services for non-payment.

Customer Acceptance

In addition to reduced delinquencies, customer acceptance tends to be higher when the water and sewer bill is used. This is likely due, in part, to the relatively low charges associated with stormwater services; stormwater charges typically represent only a fraction of the total bill for water, sewer, and stormwater services. The use of the property tax bill highlights the potential argument that stormwater charges are a tax, which has been a fatal flaw of many utilities across the country. Although a separate stormwater-only bill would be expected to be for a relatively small charge, separate bills are typically scrutinized more heavily by customers, increasing the level of complaints and decreasing customer acceptance.

As shown in Figure 6-2, based on a 2010 national survey, the use of the water and sewer bill is by far the most common method of billing for stormwater services. It should be noted that the total percentage adds up to more than 100% because customers could respond to more than one category (Black and Veatch, 2010).

Figure 6-2 Common Methods of Billing for Stormwater



During the third and fourth meetings of the Ad-Hoc Stormwater Committee, the Committee indicated that, should a utility be implemented, the overall benefits of lower overall costs, system compatibility, increased customer acceptance, and reduced level of delinquencies support the use of the City's existing water and sewer billing system for the assessment of stormwater services.

7 Recommendations

Through a series of five targeted meetings, the Ad-Hoc Stakeholder Committee has reviewed the current stormwater program and future program needs. The Committee was charged with identifying a funding source for the stormwater program that would achieve the following objectives:

- Revenue sufficiency – the funding mechanism should generate revenue sufficient to meet revenue requirements;s
- Revenue stability – the funding mechanism should generate stable and predictable revenues from year to year;
- Defensibility – the funding mechanism should be designed according to standard industry practice and in accordance with applicable law such that rate disputes are avoided;
- Simplicity and ease of administration – the funding mechanism should be readily understandable by customers and be able to be implemented using existing staff and the existing billing and collection system with only minor modifications; and
- Equity among customer classes – the funding mechanism should be designed such that costs recovered from each customer class are related directly to the way in which class demand characteristics cause the utility to incur costs.
- Maintain financial interests of residents and property owners – the punitive costs associated with non-compliance with EPA mandates rapidly outstrip the costs of a cooperative and responsible position and commensurate action with the appropriate agencies. Fines can reach into the tens of thousands of dollars per day.

Based on the information provided in previous sections of this report, and in consultation with the Ad-Hoc Stormwater Committee, the following series of recommendations for funding the City's stormwater program has been developed.

Rec. 1	Rec. 2	Rec. 3	Rec. 4	Rec. 5
Establish Stormwater Utility as Funding Mechanism, Capture Offset to General Fund	Structure Stormwater Utility Rates to Generate Approx. $2.0 M / Year in Revenue	Structure Fee on Impervious Surface Area, With a Base Charge for Fixed Costs and Credit Scheme	Bill Stormwater Charge with Water and Sewer	Phase in New Charge Over a Six-Year Period to Minimize Impact and Allow for Outreach

These recommendations are described in detail below.

Recommendation #1: Establish a Stormwater Utility

The Committee has determined that the preferred approach to funding future stormwater program activities is to implement a stormwater utility. It is anticipated that the existing stormwater program staffing, organization, and governance structure is adequate to support the program during the planning horizon. Should the current organization prove insufficient to cover future program needs, an alternative program structure, organization, and / or governance approach may be developed in the future. However, the current recommendation is to maintain the existing structure.

The new stormwater utility will collect revenue to fund the stormwater program, which would otherwise be funded through the General Fund. As a result, stormwater program costs must be removed from the General Fund budget to prevent double-counting and prevent financial impacts to customers.

The Committee was concerned what impact these increased stormwater improvements (as mandated by federal authorities) would have on: the downtown core, future expansion, existing commercial and industrial usage, farm use, land conservation, and the overall impact on Dover's taxpayers.If the City Council elects not to establish a stormwater utility, the Committee recommends the Council discretely identify stormwater-related expenses within the budget so as to provide improved clarity to the public.

Recommendation #2: Structure Utility Rates to Generate $2.0 M in Annual Revenue

The Committee reviewed the current and projected future funding needs identified in Chapter 2 to determine an appropriate funding amount. The Committee determined that the program should generate revenue sufficient to continue to provide the current level of service, fund required future activities that extend beyond the current level of service, and complete recommended system rehabilitation and replacement actions. As a result, the Committee recommends that the City structure the utility rates to generate approximately $2.0 M per year in annual revenue.

If the City Council elects not to establish a stormwater utility, the Committee recommends the City Council phase in appropriations to the anticipated $2.0 million needed for ongoing maintenance and regulatory compliance.

Recommendation #3: Structure Fee Based on Impervious Area

At the third meeting of the Ad-Hoc Stormwater Committee, the Committee reviewed potential rate structures. The Committee determined that, should a utility be implemented, the impervious area only approach using the ERU approach for single family residences would be preferred. This approach was selected primarily due to its simplicity. In addition, using the ERU would improve equity within the single family residential customer class by establishing a uniform fee for single family residences. The Committee recommends that undeveloped and vacant parcels not be charged at this time. It is recommended that the DUC revisit this decision during implementation.

The Committee recommends that the City develop a rate structure based on the impervious area only model, with the ERU used as the unit of measure and basis for charges for single family residences. It is further recommended that a base fee be assessed to all parcels to offset costs associated with program administration and / or shared impervious areas such as roads. Finally, the Committee recommends that a credit scheme be developed to offset costs to users. The following guidelines should be incorporated into the credit program:

- Multiple credits may be granted to a single property
- Total credits for a single property shall not exceed 50% of non-base fees
- The minimum fee (with credits) should equal the base fee plus 50% of the rate based on impervious surface for a single family residence
- It should be the responsibility of the customer to apply for credits and provide necessary information
- Credit applications received within one year of the initial bill should be applied retroactively (otherwise they should be applied prospectively)
- Credits should be available for water quality improvements and implementation of enforceable nonstructural best management practices
- The Dover Utilities Commission should be responsible for making credit determinations.

Recommendation #4: Bill Stormwater with Water and Sewer

During the third and fourth meetings of the Ad-Hoc Stormwater Committee, the Committee indicated that, should a utility be implemented, the overall benefits of lower overall costs, system compatibility, increased customer acceptance, and reduced level of delinquencies support the use of the City's existing water and sewer billing system for the assessment of stormwater services. Further, the Committee recommended that the stormwater fee be presented as a line item under the existing sewer charge.

The Committee recommends that the stormwater charge be included on the water and sewer bill as a line item under the sewer charge.

Recommendation #5: Phase in Stormwater Charge Over a Six-Year Period

In order to mitigate the potential impacts on customers, the Committee recommends that the City implement the stormwater charge in a phased approach over multiple years to generate the revenue necessary to meet its target level of service. This involves designing a fee structure that generates revenue initially at a level sufficient to cover the current level of service plus required future costs. The fee is then increased over a six-year period to provide an opportunity to spread out the customer impacts over multiple years. During this time, the Committee recommends that the City implement a full-scale public outreach effort to educate the general public on the importance of stormwater management, the purpose and benefits of the utility approach, and the mechanism for assessing fees.

8 Implementation Plan

Implementation of the recommendations identified above will require completion of the following implementation steps, described in further detail below.

1. Prepare and Adopt Utility Formation Ordinance
2. Assemble Committee to Advise on Program Implementation
3. Implement Public Outreach Campaign
4. Complete Impervious Mapping
5. Develop Formal Financial and Rate Policies and Procedures
6. Refine Financial Plan
7. Develop a Credit Manual
8. Develop Billing Policies and Procedures
9. Prepare and Adopt Rules of the Stormwater Utility

Step #1: Prepare and Adopt Utility Formation Ordinances

Utility formation should be formalized through a stormwater utility ordinance adopted by the City Council.

Step #2: Assemble Implementation Advisory Committee

The City of Dover recognizes the importance of support from key City stakeholders in identifying a preferred approach to funding the stormwater program. Further, City staff recognizes that, by engaging stakeholders in developing a funding program, stakeholder concerns and issues may be better addressed and a more tailored solution may be developed to meet the needs of the stormwater program while minimizing impacts to affected parties. To this end, the City has convened the Ad-Hoc Stormwater Committee, a multi-disciplinary stakeholder group focused on finding the best available solution to addressing the City's stormwater funding needs. The Committee has met five times throughout the course of the Feasibility Study, and has provided direction on key program decisions. All meetings have been publicly noticed, and a Citizens Forum has been held at the beginning of each meeting. All meetings have been recorded and re-played on the local cable channel. It should be noted that, while several other cities in New Hampshire are currently conducting similar studies to evaluate the feasibility of a stormwater utility, only Dover is conducting an open and transparent public process to integrate its citizenry into the decision-making process at the earliest stages.

The Committee was formed to analyze the impacts and implementation considerations associated with approaches to funding the stormwater program including establishing a stormwater utility; and to determine the most appropriate funding option for Dover. Five Committee meetings were held to review and discuss topics related to establishing a stable funding mechanism for stormwater improvements. The five meetings covered the following topics:

- Meeting 1: Goals and Objectives
- Meeting 2: Program Plan and Compelling Case
- Meeting 3: Rate Structure Alternatives

- Meeting 4: Recommendations and Draft Report
- Meeting 5: Final Report

The Committee has discussed program alternatives and funding needs, and different mechanisms for assessing and collecting stormwater-related fees. The Committee has been highly effective in reviewing and discussing information to provide direction to City staff and the consulting team. The result of this process is a series of feasibility-level recommendations that reflect the input of key stakeholder groups.

Should the City proceed with implementation of a utility, it is recommended that a stakeholder committee be convened to provide direction and input during utility implementation. The implementation-phase committee will be tasked with making decisions and providing direction on the details of utility implementation. For example, the current Ad-Hoc Stormwater Committee has recommended that a credit manual be developed, and has provided guidance on what credits should be considered. The implementation phase Committee will be tasked with reviewing and providing input on the credit manual itself. Similarly, as the impervious area mapping is completed for nonresidential properties, the rate structure and financial plan will be further refined. Committee input will be sought in finalizing the rate structure and billing methodology prior to rollout. Perhaps the most important function of the implementation-phase Committee will be to assist in implementation of a public outreach program and communication with the public.

It is recommended that the Committee membership include the members of the current Ad-Hoc Stormwater Committee, with additional representation from the Planning Department and the Dover Utilities Commission.

Step #3: Implement Public Outreach Campaign

As described above, meetings of the Ad-Hoc Stormwater Committee have been publically noticed and broadcasted on the local television channel. However, a full-scale public outreach effort should be implemented to educate the general public on the importance of stormwater management, the purpose and benefits of the utility approach, and the mechanism for assessing fees.

A Public Outreach Plan has been developed as part of the Feasibility Study, and is provided in Appendix C. The Public Outreach Plan focuses on two phases – campaign development and implementation: (1) the theme, messages and designs for a logo and collateral materials are completed in the development phase; and (2) specific strategies for implementing an outreach program are identified in the implementation phase. Property owners and managers are the focus of the outreach campaign, but other decision makers and opinion leaders should be included.

The goals of the public outreach plan are to:

- Build public support for a stormwater utility by educating stakeholders, and
- Prepare property owners and managers for implementation by providing easy-to-understand information about fees and administration to demonstrate accountability.

The objectives of the public outreach plan are to:

1. Identify audiences;
2. Develop a campaign theme and messages, tailored to each audience; and

3. Provide a menu of outreach activities that includes direct and indirect communication methods, traditional and new media.

The Public Outreach Plan included in Appendix C may be used as a starting point for the parties responsible for implementation.

Step #4: Complete Impervious Mapping

In conjunction with development of this Feasibility Study, the City has mapped the impervious area of a selection of residential and nonresidential parcels. The City maintains property assessment information in a Geographic Information System (GIS) database. This database was utilized in conjunction with recent aerial photography to develop estimates of gross area and impervious area by parcel. Relevant information on the extent of parcel mapping completed to-date, as well as a summary of the characteristics of sampled parcels, are provided in Table 4-3.

The Ad-Hoc Stakeholder Committee has determined that the impervious area only rate structure is preferred because it balances simplicity and equity. In order to implement the impervious area only structure, it will be necessary to complete impervious area mapping for the remaining 1,431 unmapped nonresidential properties.

It is recommended that the remaining impervious area mapping be completed immediately following City Council approval to proceed with utility implementation, as data collected in this effort is necessary to complete the financial planning.

Step #5: Develop Formal Financial / Rate Policies and Procedures

Utility implementation will involve formalization of the rate policies and procedures. This will include:

- Detailed description of the rate structure and basis for calculating fees
- Methods for assessing user fees
- Enforcement actions, including policies and procedures for late payment and penalties for nonpayment
- Formal policy statements for the utility enterprise fund

It is recommended that the City develop formal rate policies and procedures as part of utility implementation.

Step #6: Refine Financial Plan

Chapter 2 of this document lays out a preliminary financial plan for the City's future stormwater program. The financial plan serves as the basis for determining necessary revenue and associated user fees. This plan will require refinement and finalization as part of utility implementation.

Step #7: Develop a Credit Manual

As described previously, it is recommended that the City incorporate credits into the utility fee structure. This involves developing a credit manual that clearly defines:

- Definition of qualifying property owners and improvements
- Methods for measuring qualifying improvements

- Identification of parties responsible for applying for and maintaining qualifying improvements
- Application processes and procedures, as well as data requirements to support credit applications
- Process for appealing credit decisions, if any
- Limits on combining credits and maximum credits allowable as a percentage of total fee and as a minimum fee
- Approach to applying credits
- Implementation and maintenance requirements and reporting
- Process for ensuring appropriate operation and maintenance

As the governing body responsible for administering the credit program, the Dover Utilities Commission should play a significant role in developing the Credit Manual in consultation with the stakeholder committee.

Step #8: Develop Billing Policies and Procedures

Billing policies and procedures should be developed. These policies and procedures will be similar to the policies and procedures for water and sewer billing.

Step #9: Prepare and Adopt Rules of the Stormwater Utility

Formal rules and procedures associated with the stormwater utility should be prepared and adopted by City Council.

References

Black and Veatch (2010). *2010 Stormwater Utility Survey.* Sponsored and Administered by Black and Veatch Management Consulting.

City of Dover (1999). *Stormwater Management Plan*.

City of Dover (2008). *Berry Brook Watershed Assessment and Management Plan*. Prepared by The Louis Berger Group.

City of Dover (2009). *Willand Pond Engineering Review: Summary of Watershed Assessment and Alternatives Analysis*. Prepared by S.W. Cole Engineering Inc. and Horsley Witten Group.

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.

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.

New Hampshire Department of Environmental Services (December 2008). New Hampshire Water Resources Primer.

Appendix A

Ad-Hoc Stormwater Committee Meeting Notes and Presentations

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STEARNS & WHELER LLC
Environmental Engineers & Scientists

MEETING MINUTES

TOWN OF DOVER, NH
STORMWATER UTILITY FEASIBILITY STUDY

Stakeholder Meeting 1
Dover Department of Public Works
August 9, 2010 at 6:30 PM

Attendees:
Dean Peschel
Bill Boulanger
Alan Krans
Jan Nedelka, Committee Chair
Dot Hooper, Committee Vice Chair
Gary Green
Jay Stephens
Chris Nash
Ray Bardwell
Dennis Ciotti
Dana Lynch
Chad Kageleiry
Rick Schaefer
Alyson Watson
Anastasia Rudenko

Copies to:
All Attendees
File

1. Introductions were made by committee members.
2. Dean Peschel provided a brief history of stormwater management in Dover, NH.
3. Alan Krans briefed the committee on its legal obligations through four points:
    a. The legal division is available to assist the committee through its undertaking.
    b. Suggested operating guidelines were handed out. It was stressed that all meetings have to be held in open session and that minutes must be kept of the meetings.
    c. Ethics rules were discussed, including conflict of interest and potential for bribery.
    d. Appropriate uses of email were discussed. It was noted that voting over email is prohibited.
4. Rick Schaefer gave an overview presentation explaining the need for stormwater funding. It was clarified that the purpose of the stakeholder committee was to determine a funding source that

would allow the City of Dover to comply with its NPDES permit and meet its ongoing and future needs.

5. The next stakeholder meeting was scheduled for September 13th at 6:30 pm. Subsequent meetings will be scheduled tentatively for the second Monday of every month.
6. Governing Procedures and Ground Rules were discussed. It was noted that there are no committee alternates and members are to notify Jan Nedelka/Dot Hooper if they will be unable to attend a meeting. The following changes were also made.
    a. It was decided to not include a 'neutral' option in committee votes.
    b. Questions from the public will be scheduled at the beginning of the subsequent meetings.
7. Study Goals and Objectives discussion raised elements of development requirements and master planning relevant to Stormwater system performance.
8. Meeting was adjourned.

These minutes are an overview of all pertinent discussions that took place at this meeting. Should anyone take exception to any portion herein, notify this office in writing within ten (10) days of receipt or these minutes shall stand as written.

GHD CLIENTS|PEOPLE|PERFORMANCE

City of Dover, NH
Municipal Stormwater Feasibility Study

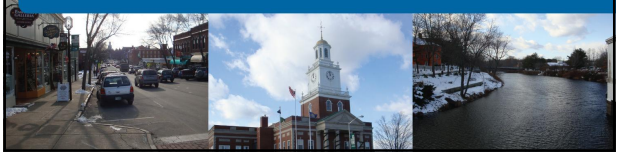
Stakeholder Workshop #1
August 9, 2010

Agenda

- Welcome and Introductions
- Address from City Attorney
- Overview Presentation
- Governing Procedures and Ground Rules
- Meeting Scheduling
- Brainstorming: Study Goals and Objectives
- Next Steps and Action Items
- Public Comment

Feasibility Study Overview

- Stormwater Impacts
- Regulatory Approaches
- Current Management Approach
- Future Issues and Needs
- Funding Options
- Stormwater Utility Feasibility Study
- Role of the Stakeholder Committee
- Planning for our next workshop



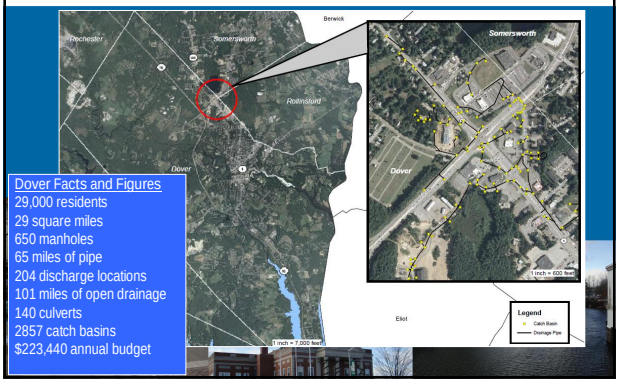
Stormwater Impacts Our Waters and Our Quality of Life

Water Quality and Flooding Impacts in and Around Dover

- Flooding
  - Basements
  - Willand Pond
- Water quality impairments
  - Cocheco River
  - Salmon Falls River
  - Bellamy River
  - Upper & Lower Piscataqua River
  - Lower Little Bay
  - Great Bay

How Are We Managing Stormwater Today?

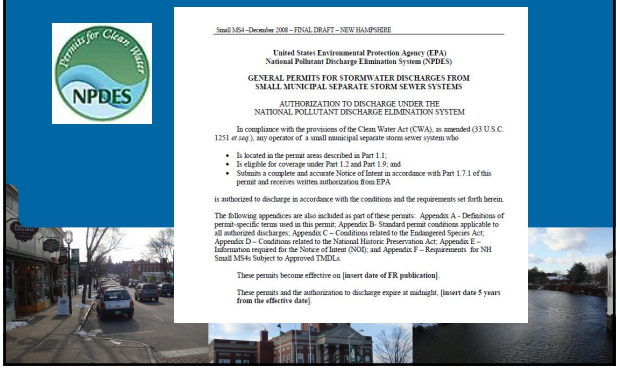
Dover Provides Stormwater Management for Approximately 29,000 Residents



Stormwater Responsibilities and Funding are Decentralized

Who?	Highway Division	Sewer Department	Engineering / Utilities
What?	Storm drainage system maintenance	Emergency catch-basin cleaning, Illicit Discharge Detection & Elimination program	Capital Projects
How?	General Fund	Sewer Rates	General Fund

National Pollutant Discharge Elimination System (NPDES) Permit



Small MS4 –December 2008 – FINAL DRAFT – NEW HAMPSHIRE

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

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

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.*), any operator of a small municipal separate storm sewer system who

- Is located in the permit 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 1.7.1 of this permit and receives written authorization from EPA

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 of permit-specific terms used in this permit; Appendix B- Standard permit conditions applicable to all authorized discharges; Appendix C – Conditions related to the Endangered Species Act; Appendix D – Conditions related to the National Historic Preservation Act; Appendix E – Information required for the Notice of Intent (NOI); and Appendix F – Requirements for NH Small MS4s Subject to Approved TMDLs

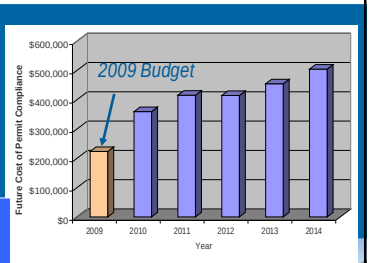
These permits become effective on **[insert date of FR publication]**.

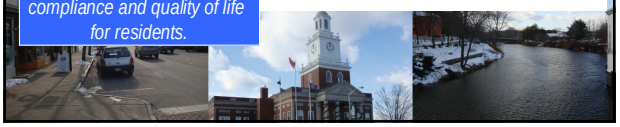
These permits and the authorization to discharge expire at midnight, **[insert date 5 years from the effective date]**.

Future Program Costs will Escalate Significantly

- Costs to:
  - Maintain infrastructure
  - Address new issues
  - Maintain permit compliance

Sustainable funding is critical to maintaining regulatory compliance and quality of life for residents.





For Dover's 8,000 Developed Acres….

Funding Options

- General Fund
- Sewer Fund
- Stormwater Utility
- Service Fees
- Grants/Loans
- Developer Contributions
- Local Improvement Districts
- Mix of Sources

What is a stormwater utility?

- Similar to a water or wastewater utility
- Funds collected are dedicated to addressing stormwater issues
- Rates based on use of the stormwater system

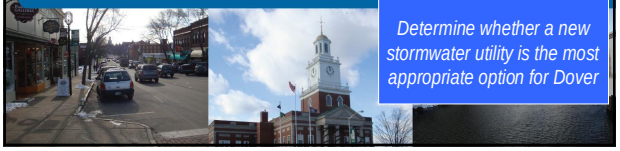
Similar to Pay-As-You-Throw Program

What to consider

- Evaluate alternatives to fund the program
  - Sufficient to cover costs
  - Stable / dependable from year-to-year
  - Legal and defensible
  - Easy to understand and implement
  - Fair to Dover's residents

Grant from NH Department of Environmental Services:

Determine whether a new stormwater utility is the most appropriate option for Dover



Questions the Feasibility Study will answer

- What major stormwater-related issues do we face?
- What are we doing now, and what will we need to do in the future?
- What would it cost?
- How would we pay for it?
- How would it be implemented?

Stormwater Utility Feasibility Study Process

Meeting 1: Goals and Objectives
- Stormwater impacts
- Current approach
- Future needs
- Program goals & objectives

Meeting 2: Program Plan, Compelling Case
- Current program
- Potential funding alternatives (including utility)
- Advantages and disadvantages

Meeting 3: Rate Structure Alternatives
- Benefits and drawbacks of alternative rate structures
- Preliminary cost/ revenue analyses

Meeting 4: Recomm's and Draft Report
- Preliminary recommendations

Meeting 5: Final Report

Mission

Together with City staff and stakeholders, develop a *prioritized stormwater program* with *sufficient and defensible funding* that is *broadly supported*.

Our next workshops

- Agenda
- Materials for Preparation
- Communications between Meetings
- Scheduling
- Action Items
- Suggestions?


GHD

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STEARNS & WHELER LLC
Environmental Engineers & Scientists

MEETING MINUTES

TOWN OF DOVER, NH
STORMWATER UTILITY FEASIBILITY STUDY

Stakeholder Meeting 2
Dover Department of Public Works
August 13, 2010 at 6:30 PM

Committee Members in Attendance:
Jan Nedelka, Committee Chair
Dot Hooper, Committee Vice Chair
Chad Kageleiry
Jay Stephens
Dana Lynch
Gary Green
Ray Bardwell
Chris Nash
Dennis Ciotti

Other Participants:
Bill Boulanger, City of Dover
Dean Peschel, City of Dover
Alyson Watson, GHD

1. Welcome and Introductions.

2. Citizens Forum

   - No citizen comments were received.

3. Approval of minutes

   - Mr. Nedelka made a motion to include presentation materials in the minutes. Motion was passed. The minutes were approved as modified.

4. Presentation: Overview of Stormwater Impacts

   - Alyson Watson (GHD) presented information on the potential impacts associated with stormwater (refer to attached presentation).
   - Bill Boulanger discussed the condition of the existing infrastructure, some of which was originally constructed in the 1930s. The Committee discussed current approaches to cleaning and repairing drainage infrastructure.

- Mr. Green asked where the City currently budgets funds to repair the system. Mr. Boulanger explained most of the money is included in the Streets and Drains operating budget or through portions of the capital improvement program (CIP) for road projects. Often stormwater system repairs are conducted when road replacement work is occurring.
- Mr. Bardwell asked what percentage of the existing system has been surveyed with CCTV. Mr. Boulanger explained that none of the system has been televised yet.

5. Priorities for Stormwater Management
   - The Committee brainstormed priorities for stormwater management, and the following list was developed:

     - Water Quality
     - Flooding
     - Quality of Life (as a function of previously stated priorities)
     - Controlling the City's destiny (by meeting regulations instead of being mandated to comply)
     - Developing a program based on Dover's needs
     - Source identification is needed to clearly define the origins of the problem

   - The Committee consensus was that water quality and flooding are the highest priorities for stormwater management, and that other issues will be addressed through water quality and flooding improvements.
   - The Committee recommended that a source identification study be conducted to clearly demonstrate what portion of the problem is related to Dover's stormwater such that the City can focus its efforts on addressing the problems for which it is responsible.

6. Presentation: Current and Future Program

   - Ms. Watson presented information on the City's current stormwater program, as well as current and projected future program costs.
   - Mr. Nedelka requested that the subset of the CIP that currently funds Stormwater activities be broken out in future versions.
   - The Committee discussed potential credits that should be evaluated by GHD prior to the next meeting. Mr. Nedelka asked the committee if there were any GHD shouldn't investigate. No potential credits were removed from the list proposed for evaluation.
   - The Committee discussed reasons that streets and highways might be included or exempt from the utility.

7. Stormwater Funding Approaches, Advantages and Disadvantages

   - The Committee brainstormed potential ways of funding needed stormwater improvements, as well as the advantages and disadvantages of different approaches. Committee members focused on funding improvements either through the General Fund, or through creation of a stormwater utility, separate from the tax base.

8. Next Steps and Action Items

   - GHD will provide presentation materials before each meeting.

- An additional meeting with the City Engineer will be held September 27th, 2010 at the Dover Department of Public Works building to discuss current procedures related to stormwater aspects of development reviews
- The next committee meeting will be held at 6:30pm on October 11th, 2010 at the Dover Department of Public Works Building

9. Meeting was adjourned.

These minutes are an overview of all pertinent discussions that took place at this meeting. Should anyone take exception to any portion herein, notify this office in writing within ten (10) days of receipt or these minutes shall stand as written.

GHD CLIENTS|PEOPLE|PERFORMANCE

City of Dover, NH
Municipal Stormwater Feasibility Study

Stakeholder Workshop #2
September 13, 2010

1

Agenda

- Welcome and Introductions
- Citizens' Forum
- Approval of Minutes
- Overview of Stormwater Impacts
- *Brainstorming: What are Dover's priorities for stormwater management?*
- Current and Future Program Needs
- *Brainstorming: Advantages / Disadvantages of a Stormwater Utility and Alternate Funding Mechanisms*
- Next Steps and Action Items

2

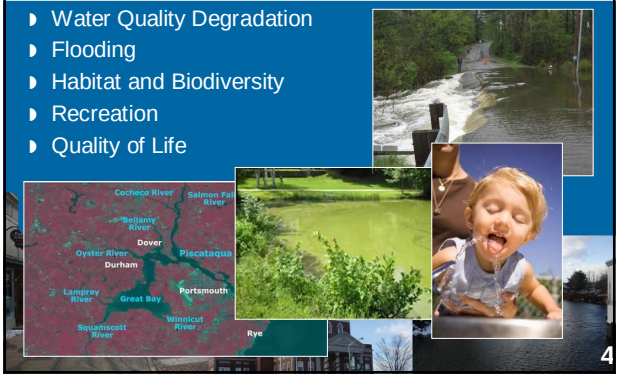
Stormwater Utility Feasibility Study Process

Meeting 1: Goals and Objectives	Meeting 2: Program Plan, Compelling Case	Meeting 3: Rate Structure Alternatives	Meeting 4: Recomm's and Draft Report	Meeting 5: Final Report
•Stormwater impacts •Current approac •Future needs •Program goals & objectives	•Current program •Potential funding alternatives (including utility) •Advantages and disadvantages	•Benefits and drawbacks of alternative rate structures •Preliminary cost/ revenue analyses	•Preliminary recommendations	

3

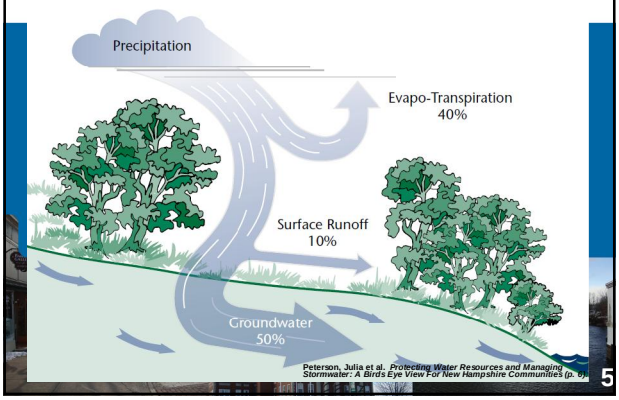
Stormwater Impacts

- Water Quality Degradation
- Flooding
- Habitat and Biodiversity
- Recreation
- Quality of Life



4

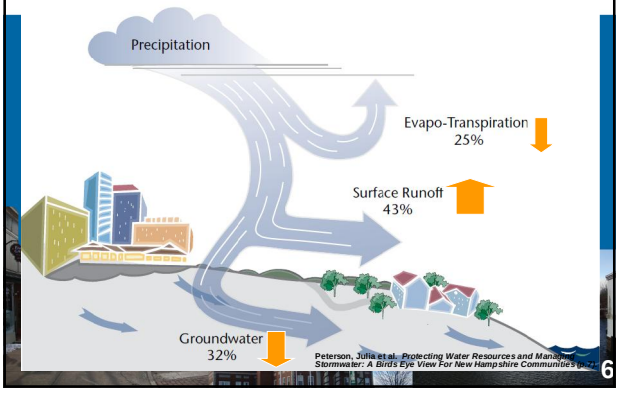
Natural Watersheds Have a Small Percentage of Surface Runoff



Peterson, Julia et al. *Protecting Water Resources and Managing Stormwater: A Birds Eye View For New Hampshire Communities (p. 6)*

5

Developed Watersheds Have a Greater Percentage of Surface Runoff



Peterson, Julia et al. *Protecting Water Resources and Managing Stormwater: A Birds Eye View For New Hampshire Communities (p. 6)*

6

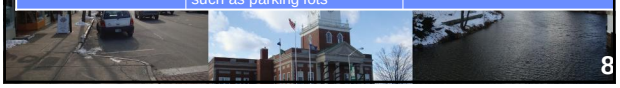
Stormwater Pollutants, Sources, and Impacts

Pollutant	Sources	Impacts
Nutrients (nitrogen, phosphorus)	fertilizer, wastewater effluent, agricultural and pet waste and sediments (erosion and scour)	algal blooms in lakes, bays and ponds; reduced dissolved oxygen levels
Sediments (sand, silt)	soil erosion, road sand	carry contaminants to receiving waters; reduce water clarity; impact aquatic habitat
Pathogens (viruses, bacteria, etc)	agricultural and pet waste, wastewater effluent, septic systems	impacts drinking water, fish and shellfish consumption, recreation

7

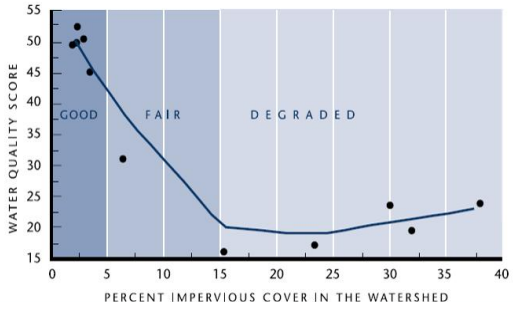
Stormwater Pollutants, Sources, and Impacts, cont'd

Pollutant	Sources	Impacts
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, persist in the environment
Chloride (salts)	de-icing salts, water softeners	impact plants and animals in freshwater aquatic systems
Temperature	heated water from manufacturing process waters or runoff from warm surfaces such as parking lots	reduced dissolved oxygen affects fish and other aquatic organisms



8

Water Quality Typically Suffers in Watersheds with Extensive Impervious Surfaces



Peterson, Julia et al. *Protecting Water Resources and Managing Stormwater: A Birds Eye View For New Hampshire Communities (p. 19).*

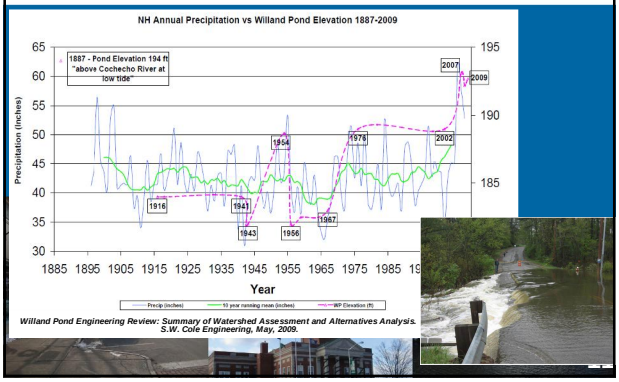
9

Local Water Quality Impairments

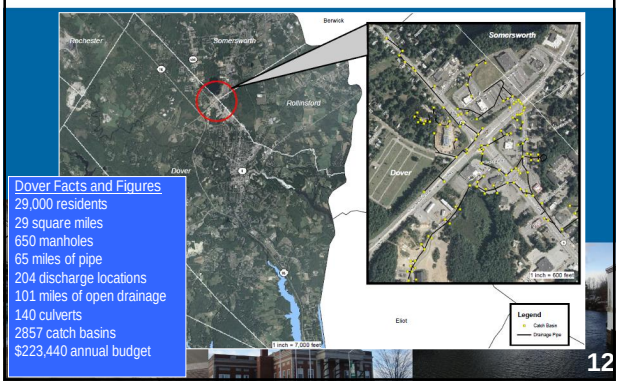
Waterbody	Impairment(s)
Cocheco River	2-methylnaphthalene, acenaphthalene, acenaphthene, benzo(a)pyrene, benzo(a)anthracene, benzo(g,h,i)perylene, biphenyl, chrysene, DDD, DDT, DDE, bibenz(a,h) anthracene, dieldrin, fluoranthene, fluorene, ideno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene, PCBs, enterococcus, mercury
Salmon Falls River	Dissolved oxygen, pH, PCBs, chlorophyll-a, enterococcus, nitrogen, dioxin, mercury
Bellamy River	PCBs, dioxin, fecal coliform, mercury
Oyster River	PCBs, dioxin, fecal coliform, mercury
Piscataqua River	PCBs, dioxin, mercury, enterococcus
Great Bay	Dissolved oxygen, PCBs, , pH, enterococcus, mercury, dioxin

10

Flooding Impacts



Dover Manages an Extensive System of Stormwater Infrastructure



Dover Facts and Figures
29,000 residents
29 square miles
650 manholes
65 miles of pipe
204 discharge locations
101 miles of open drainage
140 culverts
2857 catch basins
$223,440 annual budget

12

The Stormwater Infrastructure is Aging and in Need of Rehabilitation and Replacement

13

The Stormwater Infrastructure is Aging and in Need of Rehabilitation and Replacement, cont'd

14

The Stormwater Infrastructure is Aging and in Need of Rehabilitation and Replacement, cont'd

15

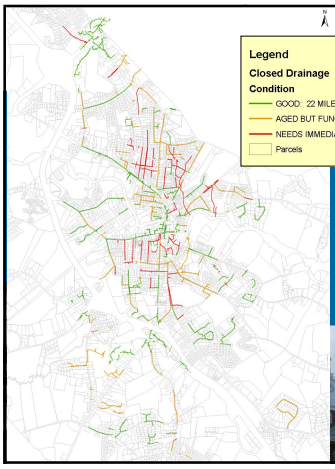
The Stormwater Infrastructure is Aging and in Need of Rehabilitation and Replacement, cont'd

16

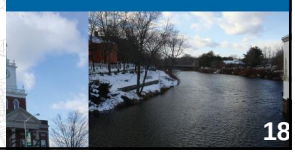
The Stormwater Infrastructure is Aging and in Need of Rehabilitation and Replacement

Stormwater Inspection Footage

17



The System has Known "Hot Spots"



18

Agenda

- Welcome and Introductions
- Citizens' Forum
- Approval of Minutes
- Overview of Stormwater Impacts
- *Brainstorming: What are Dover's priorities for stormwater management?*
- Current and Future Program Needs
- *Brainstorming: Advantages / Disadvantages of a Stormwater Utility and Alternate Funding Mechanisms*
- Next Steps and Action Items

19

Current Program Elements

- Infrastructure Maintenance
- Planning Board Activities
- Regulatory Compliance
- Pollutant Diversion
- Regional Programs
- Watershed Management

20

Current Stormwater Program Elements – Infrastructure Maintenance

- Catch Basin Cleaning
  - Cleaning approx. 50% of catch basins annually (1373 cleaned in 2009)
- Illicit Discharge Detection and Elimination
  - Stormwater system mapping
  - Catch basin stenciling
  - Illicit discharge detection and elimination (one in 2009)

21

Current Stormwater Program Elements – Planning Board Activities

- City Engineers review all subdivision and site plan applications
- Projects required to submit stormwater O&M plans
- Inspections of temporary and permanent erosion control and stabilization measures
- Implemented an electronic tracking system

22

Current Stormwater Program Elements – Planning Board Activities, cont'd

- 2009 amendments to subdivision and site review regulations strengthen stormwater requirements
  - Encourage use of low impact development techniques
  - Require that all projects >1 acre submit plans to Planning Board for review and approval
  - Provide authority to regulate projects <1 acre when in proximity to sensitive ecological areas
  - Subcommittee formed to evaluate porous pavement

23

Current Stormwater Program Elements – Planning Board Activities, cont'd

- Zoning Ordinance 170-28.3: Groundwater Protection
  - Limits land uses within Primary and Secondary Groundwater Protection Zones surrounding supply wells
  - Limits impervious surface in poorly drained areas
  - Requires Conservation Commission review for developments requiring Planning Board approval
  - Establishes nitrogen and infiltration limits

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Current Stormwater Program Elements – Planning Board Activities, cont'd

- Zoning Ordinance 170-27: Conservation District
  - Encompasses:
    - Areas within 100 feet of mean high water of any water body subject to tidal action
    - Areas within 50 feet of a stream, brook or other freshwater body
    - Certain parcels owned by the City of Dover
    - All areas with slopes in excess of 20%
  - A Conditional Use Permit granted by the Planning Board is required for development within the Conservation District
  - Planning Board requires Conservation Commission review

25

Current Stormwater Program Elements – Regulatory Compliance

- MS4 NPDES Permit Compliance
  - 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
    - Staff education

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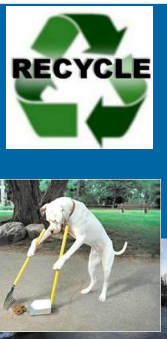
Current Stormwater Program Elements – Pollutant Diversion

- Household Hazardous Waste Pickup
  - One collection day per year
- Curbside Recycling
  - 52% of waste stream recycled
  - Accepts waste oil, tires, metal, yard waste, electronics, used antifreeze- and mercury-containing items, etc
- Onsite Recycling Facility
- Pet Waste Program
  - Scoop the Poop pledge



27

Current Stormwater Program Elements – Regional Programs

- Participation in NH Seacoast Stormwater Coalition
  - Public awareness, training of staff, bulk pricing, etc
- Participation in the Southeast Watershed Alliance
- Natural Resources Outreach Coalition (NROC) Consultation
  - Stakeholder meetings identified two key target areas:
    - Encourage low impact development techniques in development and redevelopment
    - Explore feasibility of a stormwater utility

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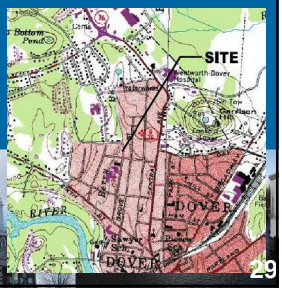
Current Stormwater Program Elements – Watershed Management

- Berry Brook Watershed Assessment and Management Plan Implementation
  - Two grants sought for implementation funding
    - Encourage LID techniques
    - Stream restoration
    - Water quality BMPS at Horne Street School



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Current Stormwater Program Elements – Watershed Management, cont'd

- Willand Pond Cyanobacteria Evaluation
  - Rise in phosphorus levels attributed to periodic flooding of pond and adjacent forest floor
    - Excess precipitation
    - Obstructions blocking pond's natural outlet
    - Stormwater runoff from commercial parking lots constructed in the watershed within the past few years

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Current Stormwater Program Elements – Watershed Management, cont'd

- Willand Pond Cyanobacteria Evaluation, cont'd
  - Joint study completed by Dover, Somersworth, and NHDES
    - Preferred alternative to address water level issue
    - Stormwater quality treatment improvements for existing and future development sites identified
  - NHDES grant negotiated to design and implement stormwater retrofits
  - Reactivation of abandoned water supply well

31

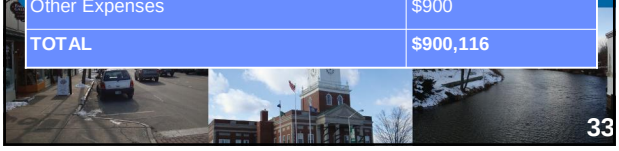
Current Program Funding Needs – Major Stormwater Line Items

Major Stormwater Budget Component	2011 Budget
Groundwater Sampling	$2,500
Catch Basin Cleaning	$60,000
General Drainage Improvements	$150,000
TOTAL	**$212,500**

32

Current Program Funding Needs (Includes Shared Costs)

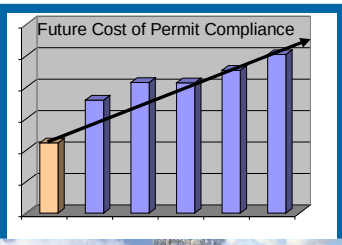
Budget Component	FY 2011 Budget
Personal Services	$501,792
Purchased Services	$83,815
Supplies	$163,610
Capital Outlay	$150,000
Other Expenses	$900
TOTAL	**$900,116**



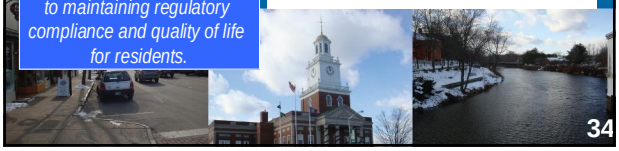
33

Future Program Costs will Escalate Significantly

- Costs to:
  - Maintain infrastructure
  - Address new issues
  - Maintain permit compliance



Sustainable funding is critical to maintaining regulatory compliance and quality of life for residents.



34

Future Funding Needs

Budget Component	2011	2012	2013	2014	2015	2016
Current Service	$900,116	$900,116	$900,116	$900,116	$900,116	$900,116
Catch Basin Spoils Facil.	$150,000	$5,000	$5,000	$5,000	$5,000	$5,000
Phase 2 NPDES Permit	$136,000	$192,000	$191,000	$231,000	$281,000	$281,000
Utility Impl. & Admin	$80,000	$5,000	$5,000	$5,000	$5,000	$5,000
Needs Assess & Impl	$100,000	$50,000	$50,000	$50,000	$50,000	$50,000
CIP Items	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Rehab/replace 1% / yr	$686,400	$686,400	$686,400	$686,400	$686,400	$686,400
System Improvements	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
Watershed Plan Impl.	$315,687	$327,337	$327,337	$327,337	$327,337	$327,337
TOTAL	**$2,448,204**	**$2,245,854**	**$2,244,854**	**$2,284,854**	**$2,245,854**	**$2,245,854**

Funding Mechanism Should Be:

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

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Funding Options Need to Address One-Time Costs as well as Ongoing Costs

One-Time Costs
Capital Improvements

On-Going Costs
Maintenance
Operations
Debt Repayment

Funding Source	Pay for Capital?	Pay for O&M?
Grants	Yes	No
State Loan Programs	Yes	No
Developer Contributions	Yes	No
Collaboration with other Agencies	Yes	Yes
Selling Bonds	Yes	Yes (not advisable)
General Fund	Yes	Yes
Streets / Road Fund	Yes (if $$)	Maybe
Local Improvement District	Yes	No
System Development Charges	Yes	No
Utility Rates	Yes	Yes
Permit Review Fees	No	Yes
Inspection Fees	No	Yes

37

What is a stormwater utility?

- Similar to a water or wastewater utility
- Funds collected are dedicated to addressing stormwater issues
- Rates based on use of the stormwater system

Similar to Pay-As-You-Throw Program

38

Defensible Rate Structures are Based on Area of Impervious Surface

- Private streets
- Rooftops
- Parking Areas
- Driveways
- Sidewalks
- Other hard surfaces

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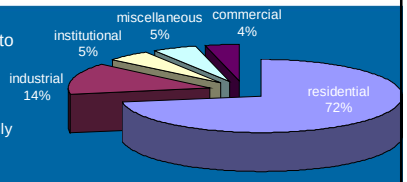
"Equivalent Residential Units" (ERUs) are Typically Used in Rate Calculations for Stormwater Utilities

- Non-residential properties converted to ERU's based on impervious area
- Rate Base Example
  - Average single family impervious area = 3,500 ft² = 1 ERU
  - 9,800 residential parcels (9,800 ERUs)



Sector	Total Area (acres)	Average % Impervious	Total Impervious Area (ft²)	Approx. # of ERUs
Residential	5,800	30%	75,794,400	9,800
Non-residential	2,200	75%	71,874,000	23,958

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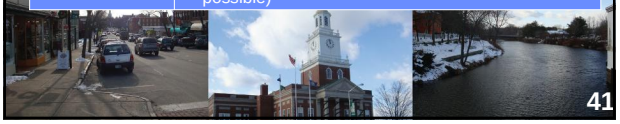
Credits May be Granted to Some Users

Credit	Concept/Reasoning
Senior/Disabled Low-Income Discount	Where consistent with, or mandated by, other City policies granting discounts on service fees
Schools	Credit to schools with environmental stewardship curricula (water quality and riparian habitat)
Low-Impact Development	Credit for implementation of LID techniques or for areas hydrologically disconnected from the drainage system (though 100% disconnection is not possible)



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Credits May be Granted to Some Users, cont'd

Credit	Concept/Reasoning
Private On-Site Runoff Controls	Recently developed parcels with on-site stormwater controls
Individual NPDES Permittees	Industries that are individually permitted under, and complying with, NPDES regulations would make a case for exemption
Streets & Highways	Some states prohibit, or significantly restrict, levying stormwater fees on state highways
Direct Discharges	A partial credit for those parcels which discharge runoff directly to receiving waters and bypass the municipal stormwater system

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Rate per ERU Varies Based on Revenue Needs, Credits, and Willingness to Pay

Sector	# of ERUs	Adjusted # of ERUs (less credits)	Monthly Charge ($/ERU/Month) $2.00 Annual Revenue	$4.00 Annual Revenue	$6.00 Annual Revenue
Residential	9,800	7,885	$223,440	$446,880	$670,320
Non-Residential	23,958	22,760	$468,208	$936,416	$1,404,623
TOTAL	**32,258**	**30,645**	**$691,648**	**$1,383,296**	**$2,074,943**

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Agenda

- Welcome and Introductions
- Citizens' Forum
- Approval of Minutes
- Overview of Stormwater Impacts
- *Brainstorming: What are Dover's priorities for stormwater management?*
- Current and Future Program Needs
- *Brainstorming: Advantages / Disadvantages of a Stormwater Utility and Alternate Funding Mechanisms*
- Next Steps and Action Items

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Upcoming Workshops

Meeting 1: Goals and Objectives (8/9/10)	Meeting 2: Program Plan, Compelling Case (9/13/10)	Meeting 3: Rate Structure Alternatives (10/11/10)	Meeting 4: Recomm's and Draft Report (11/8/10)	Meeting 5: Final Report (12/13/10)
•Stormwater impacts •Current approach •Future needs •Program goals & objectives	•Current program •Potential funding alternatives (including utility) •Advantages and disadvantages	•Benefits and drawbacks of alternative rate structures •Preliminary cost/ revenue analyses	•Preliminary recommendations	

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Next Steps

- Action Items
- Suggestions
- Schedule Meeting with City Planning
- October Meeting Date (Columbus Day)
- Other?

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STEARNS & WHELER LLC
Environmental Engineers & Scientists

MEETING MINUTES

CITY OF DOVER, NH
STORMWATER UTILITY FEASIBILITY STUDY

Stakeholder Meeting 3
Dover Department of Public Works
October 11, 2010 at 6:30 PM

Committee Members in Attendance:
Jan Nedelka, Committee Chair
Dot Hooper, Committee Vice Chair
Chad Kageleiry
Jay Stephens
Dana Lynch
Gary Green
Ray Bardwell
Chris Nash
Dennis Ciotti

Other Participants:
Dean Peschel, City of Dover
Harold Smith, Raftelis Financial Consultants
Alyson Watson, GHD
Rick Schaefer, GHD (by teleconference)
Bart Kreps, GHD (by teleconference)

1. Welcome and Introductions.

2. Citizens Forum

   - No citizen comments were received.

3. Approval of Minutes

   - Minutes from the September 13 meeting were approved.

4. Comments on Draft Report Sections 1-3

   - Mr. Bardwell provided comments on Chapters 1-3 of the Stormwater Feasibility Report,. Comments pertained to the stated age of the system infrastructure, language regarding the implications of the tax cap, and the type of drainage improvements included in planned projects included in the streets and drains CIP.
   - Mr. Green asked for confirmation of the cited percentage of water quality impairments attributed to stormwater. Ms. Watson confirmed that, according to the NH Department of Environmental Services, approximately 83% of impairments are wholly or in part attributable to stormwater.

5. Presentation: Overview of Rate Structure Alternatives (attached).

- Ms. Watson reminded the group of decisions and discussion points from the previous meeting. She noted potential inequity and administrational burden as two of the stakeholder committee's primary concerns regarding a stormwater utility.
- Mr. Smith presented information on several possible rate structure alternatives for a stormwater utility. Three rate structures were discussed: impervious area, impervious area plus gross area, and intensity of development.
- Mr. Smith highlighted that the ideal rate structure would balance simplicity and equity.
- A pie chart, showing the relative frequency of the three different methods of setting stormwater rates nationwide, was presented. Mr. Greene pointed out that Dover likely had a different character (significant impervious area downtown with very rural areas) than many of the cities included in the survey, and that could affect the preferred rate structure.
- Mr. Bardwell asked how much effort would be required to determine the impervious area of individual properties, and how current information would be maintained. Mr. Nedelka answered that the planning department already has records of many of the homes in the City. Ms. Watson indicated that much of the impervious area in the City has been mapped as part of the project to enable reasonably accurate projections of potential revenue. Mr. Peschel explained that when properties apply for foundation permits, this information is recorded in the City's Geographical Information System (GIS).
- Mr. Nedelka asked what percentage of stormwater utilities implement a credit system. Mr. Smith answered that most do.
- Mr. Ciotti asked about the cost of impervious area mapping. Mr. Schaefer replied that over 1,000 parcels of the City's approximately 8,300 parcels have already been mapped, and an average residential unit footprint had already been determined. That effort cost approximately $30,000. If the impervious area only approach was selected, then only the small number of remaining nonresidential parcels would need to be mapped. If another approach was selected, the remaining residential parcels would need to be mapped, which would significantly increase the mapping cost.
- Mr. Kageleiry asked if multi-residential properties were treated as non-residential properties for the study. Mr. Schaefer replied that they are treated as non-residential properties. Mr. Kreps explained that the landlord or property owner could then apportion the costs to tenants consistent with water and sewer costs.
- Mr. Kageleiry asked if any cities use a gross area rate structure. Mr. Kreps replied that such a structure would be hard to defend, because total parcel area does not correlate with stormwater impacts.
- A discussion was held as to whether conservation areas would be included in the stormwater utility structure. Mr. Lynch noted that the City has developed small lots to preserve green space within a sub-development. These small lots would be heavily burdened with an intensity of development option.
- Mr. Nedelka noted a mistake in Slide 19. The slide should read '60 - 70% range is normal for a residential parcel' for consistency with the previous examples. The error has been corrected on the handouts attached to these meeting minutes.

- Mr. Nedelka asked Mr. Stephens whether the water and sewer utility implemented a credit system for low-income and elderly customers. Mr. Stephens replied that they do not currently provide a discount.
- Mr. Lynch suggested the financial penalty for noncompliance with the City's stormwater permit be investigated to demonstrate a compelling financial need to comply.

6. The group discussed what the rate would be to implement the revenue for the various levels of funding, focusing on the four funding levels identified on slide 36 of the attached presentation: 1- the current level of service only (approx. $900 thousand / year), 2- the current level of service plus required actions (approx. $1.2 million / year), 3- the current level of service plus required actions and recommended actions (approx. $2.0 million / year), and 4- the current level of service plus required actions, recommended actions, and planned CIP items (approx. $2.5 million / year).

   Following this discussion, Mr. Nedelka asked each member of the stakeholder committee what level of service they would recommend that a potential utility should cover. The majority of the group felt that the program should be funded at a level of approximately $2M per year, as follows:

   - Mr. Kagaleiry: $2 M
   - Mr. Ciotti: $2 M
   - Mr. Stephens: $2.5 M
   - Mr. Lynch: $2 M
   - Mr. Green: $2.5 M
   - Mr. Bardwell: $2 M
   - Mr. Nash: $2.5 M
   - Ms. Hooper: $2 M
   - Mr. Nedelka: $2 M

   Based on the opinions expressed above it was decided to perform stormwater utility rate calculations using a revenue requirement of $2.0 M per year, which represents approximately an increase in funding of approximately $1.1 million per year above the current funding level. The increased funding will be used to complete required actions such as maintaining regulatory compliance (approximately $300 thousand per year); as well as implementing recommended actions such as a system needs assessment, ongoing system renewal and replacement, and targeted stormwater management projects recommended by City watershed management plans (approximately $800 thousand per year). In the absence of a stormwater utility, the Committee would recommend that the stormwater program be funded through the General Fund. As a result, if the City moves forward with a stormwater utility, stormwater program costs should be backed out of the General Fund.

7. Each committee member was asked whether they prefer the concept of continuing to fund stormwater improvements through the General Fund, or whether a utility should be considered. The majority of the group prefer the concept of a utility, as follows:

   - Mr. Nedelka; Utility
   - Ms. Hooper: Utility
   - Mr. Kageleiry: General Fund
   - Mr. Stephens: Utility
   - Mr. Lynch: Utility
   - Mr. Green: Utility
   - Mr. Bardwell: Utility
   - Mr. Nash: Utility
   - Mr. Ciotti: Utility

   The primary reason for supporting a utility was that it presents an opportunity to collect revenues dedicated to the stormwater program that cannot be redirected for other uses.

8. Meeting was adjourned.

The next meeting will be held at the Dover Department of Public Works on Monday November 8, at 6:30 pm.

These minutes are an overview of all pertinent discussions that took place at this meeting. Should anyone take exception to any portion herein, notify this office in writing within ten (10) days of receipt or these minutes shall stand as written.

City of Dover, NH
Municipal Stormwater Feasibility Study

Stakeholder Workshop #3
October 11, 2010

1

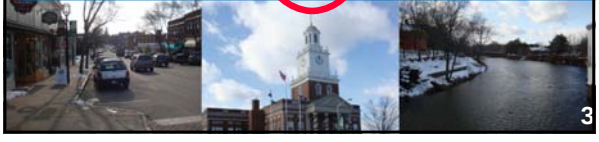
Agenda

- Welcome and Introductions
- Citizens' Forum
- Approval of Minutes
- Comments on Draft Report
- Rate Structure Alternatives
- Discussion: Rate Structure Alternatives and Willingness to Pay
- Next Steps & Action Items

2

Stormwater Utility Feasibility Study Process

Meeting 1: Goals and Objectives	Meeting 2: Program Plan, Compelling Case	Meeting 3: Rate Structure Alternatives	Meeting 4: Recomm's and Draft Report	Meeting 5: Final Report
•Stormwater impacts •Current approach •Future needs •Program goals & objectives	•Current program •Potential funding alternatives (including utility) •Advantages and disadvantages	•Benefits and drawbacks of alternative rate structures •Preliminary cost/ revenue analyse	•reliminary recommendations	



3

Stormwater Impacts and Priorities

- **Water Quality Degradation**
- **Flooding**
- Habitat and Biodiversity
- Recreation
- Quality of Life

4

Current Program Funding Needs

Budget Component	FY 2011 Budget
Personnel Services	$501,800
Purchased Services	$83,800
Supplies	$163,610
Capital Outlay	$150,000
Other Expenses	$900
TOTAL	**$900,100**

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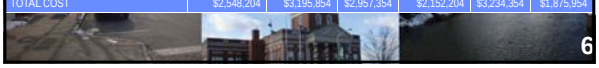
Future Funding Needs

Cost Category	2011	2012	2013	2014	2015	2016
Current Level of Service	$900,116	$900,116	$900,116	$900,116	$900,116	$900,116
Planned / Budgeted Future Activities	$330,000	$1,025,000	$787,500	$628,750	$1,162,500	$302,500
Catch Basin Spoils Facility						
Street Reconstruction Renewal				$628,750	$825,000	$302,500
System Expansion & Improvements	$250,000	$250,000	$100,000	$0	$337,500	$0
Additional Future Activities	$1,182,087	$1,078,737	$1,078,737	$392,337	$890,737	$392,337
NPDES Permit Compliance			$191,000	$231,000	$281,000	$281,000
Spoils Management & Disposal			$10,000	$10,000	$10,000	$10,000
Utility Implementation & Administration	$80,000	$5,000	$5,000	$5,000	$5,000	$5,000
Needs Assessment				$50,000	$50,000	$50,000
Rehabilitation / replacement				$0	$498,400	$0
Watershed Improvements	$315,687	$327,337	$327,337	$327,337	$327,337	$327,337
TOTAL COST	$2,548,204	$3,195,854	$2,957,354	$2,152,204	$3,234,354	$1,875,954

Budgeted In CIP

Required

Recommended



6

Future Funding Needs

Funding Level	2011	2012	2013	2014	2015	2016
Current Level of Service (LOS)	$900,116	$900,116	$900,116	$900,116	$900,116	$900,116
Current LOS + Required Actions	$1,036,116	$1,102,116	$1,101,116	$1,141,116	$1,191,116	$1,191,116
Current LOS + Required Actions + Rec'd Actions	$2,218,204	$2,170,854	$2,169,854	$1,523,454	$2,071,854	$1,573,454
Current LOS + Required Actions + Rec'd Actions + CIP Items	$2,548,204	$3,195,854	$2,957,354	$2,152,204	$3,234,354	$1,875,954

Average Annual Funding Needs Range from $1.1M to Nearly $3M, Depending on LOS

7

Funding Mechanism Should Be:

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

8

Advantages and Disadvantages of Potential Funding Approaches

	Stormwater Utility	General Fund (with Funding Recommendation)
Advantages	• Stable • Reliable • Politically Independent • More equitable (fee related to use) • Visibility for stormwater • Eliminates competition with other programs • Not tied to property assessment	• Establishes the program a community issue instead of an individual issue
Disadvantages	• Potentially high administration costs • Credit scheme could be complicated • Perceived inequity in user rates • Disparities in individual costs	• Restricted ability to fund improvements needed for regulatory compliance and infrastructure relief • Subject to political environment • Not reliable • Perceived inequity • Tax exempt properties not charged • Maintains the status quo funding level • Goes on property assessment

General Fund is not stable or sufficient (or equitable)

9

Rate Structure Alternatives

- What is a Rate Structure?
  - Framework for assessing responsibility for the stormwater system
  - Reasonable nexus between cost and the demand placed on the system (runoff and water quality)
  - Two major concepts: (1) basic rate structure and (2) rate modifiers

10

Pricing Objectives

- Revenue Sufficiency
- Revenue Stability
- Defensibility
- Simplicity
- Ease of Administration
- Equity Among Customer Classes

11

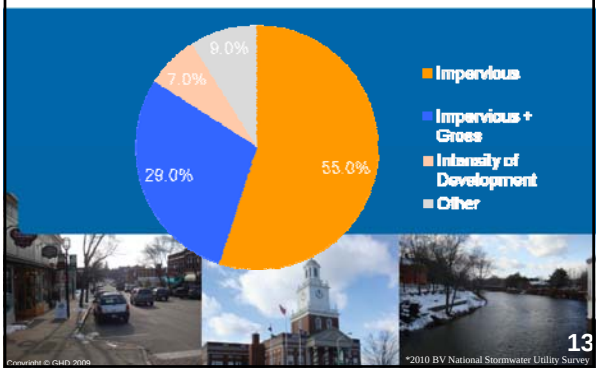
Common Methods of Assessment

Impervious Area	Impervious Area + Gross Area	Intensity of Development
• Charge based on impervious area only	• Charge based on impervious area and a lesser charge for gross area	• Charge based on intensity of development (recognize green space)

Most defensible rate structures utilize impervious area

12

Common Methods of Assessment*



*2010 BV National Stormwater Utility Survey

13

Impervious Area – Strengths & Weaknesses

14

Impervious Area - Example

- 10 acres with 33% impervious
- 1 Equivalent Residential Unit = 3,800 sq.ft.
- 158,158 sq.ft. / 3,800 = 41.62 (round 42 ERUs)
- Monthly charge per ERU = $6.00
- $6.00 x 42 = $252 per month

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Impervious Area + Gross Area – Strengths & Weaknesses

Strengths	Weaknesses
Allows undeveloped properties to be charged	More detailed cost allocations
Larger rate base	Data requirements

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Impervious + Gross Area - Example

- Same parcel
- Impervious area charge of $252 per month
- 482,364 sq.ft. (gross area) / 3,800 = 126.9 (round 127 ERUs)
- Assume charge for gross area 1/20 of impervious area charge or $0.30 per ERU = $38.10
- Total charge = $252 + $38.10 = $290.10 per month

17

Intensity of Development – Strengths & Weaknesses

Strengths	Weaknesses
Higher Perceived Equity	Relies on more judgment
Recognition of Green Space	More detailed cost allocations
Flexibility	Data requirements

18

Intensity of Development - Example

- Assume that 60 – 70% range is normal for a non-residential parcel
- Example property is 33% impervious
- Charge would be $3.43 per ERU x 42 = $144.06 per month

Percent Impervious		
Low +	High	Rate per ERU
1	10	$ 0.86
10	20	$ 1.71
20	30	$ 2.57
30	40	$ 3.43
40	50	$ 4.29
50	60	$ 5.14
60	70	$ 6.00
70	80	$ 6.86
80	90	$ 7.72
90	100	$ 8.57

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Rate Modifiers

- What are Rate Modifiers?
  - Adjustments or factors that can be applied to various components of the rate structure to enhance equity, improve transparency, or reduce costs
- Examples: Fixed Costs (e.g. customer service, billing/collections) Assessed Per Account; Tiered Rates for Residential Customers
- Credits

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Credits

- Actions that Reduce Demand on the System or Lower Program Costs
- Typical credits
  - Retention or detention
  - Water quality best management practices
  - Maintenance of on-site infrastructure
  - Non-structural best management practices (e.g. education)
  - Other rate discount programs for qualifying customers

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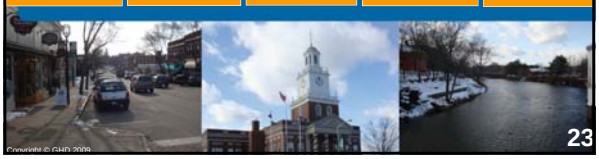
Credits

- How do you calculate a credit?
  - Determine a reasonable relationship to program costs
  - Estimate percent reduction in runoff
  - Usually establish a cap since some program costs are fixed (possible exceptions)
- Who gets a credit?
  - Typically non-residential
  - Including residential more of a policy decision

Simplifying the Credit System

Step 1	Step 2	Step 3	Step 4	Step 5
Credits & measurement approach are defined and adopted along with utility	Credits already in billing system are applied automatically	Customers apply for additional, specific credits	Dover Utilities Commission Reviews applications on a case-by-case basis	Approved credits are incorporated into billing system



Example: Burlington, VT Credit Program

- Only non-residential properties eligible for credits
  - Multiple credits can be granted to a single property
  - Total credit shall not exceed 50% of the fee
  - Minimum fee equal to the flat fee for a residential property
- Responsibility of the customer to apply for credits and provide necessary information
- Applications received within one year of the initial bill are applied retroactively (otherwise applies prospectively)

Example: Burlington, VT Credit Program, cont'd

- Available Credits:
  - Water Quantity Reduction: credit for controlling the rate of runoff release with respect to the predevelopment peak flow
  - Water Quality Treatment: up to 25% credit for 80% TSS removal
  - Non-Structural Treatment: credit granted for non-structural water quantity reductions & water quality improvements
  - MS4 Permitted Facilities: 10% reduction for MS4 entities
  - Water Education Curricula: 10% credit for schools where approved stormwater-related curriculum is taught

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Example: Newton, MA Credit Program

- Credits granted to residential and non-residential customers
- Credits cannot exceed 75% of the stormwater fee
- Responsibility of the customer to apply for credits

Category	Res. Credit	Non-Res. Credit
Roof runoff captured and infiltrated:	25 to 50%	25 to 50%
Driveway / parking lot captured and infiltrated	15 to 25%	25 to 50%
Stormwater Quality (pre-treatment prior to entering public drainage system)	10 to 20%	10 to 20%

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Billing for Stormwater

Water and Sewer Bill

Stormwater Only Bill

Property Tax Bill

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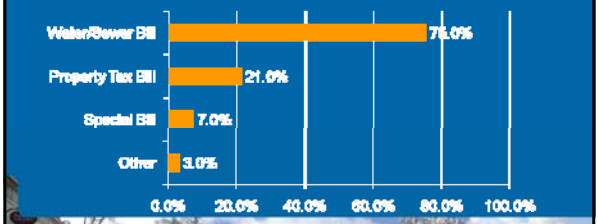
Billing for Stormwater

Criteria	Water/Sewer	Stormwater Only	Property Tax
Cost	Low	Medium/High	Low
System compatibility	High	High	High
Implementation	Medium	High	Medium
Administration	Low	Medium	Low
Delinquency	Medium	High	Medium/High
Customer acceptance	Medium	Low	Low

Billing for Stormwater*



*2010 BV National Stormwater Utility Survey (Respondents could choose more than one category)

Revenue Requirements

Direct and Indirect Operating Costs + Capital = Revenue Requirements

Remember Costs are Preliminary!

Program Funding Needs

- Existing Level of Service (approx. $900k annually)
  - Currently, funding provided through streets and drains budget center (general fund)
- Required Future Activities ($200-300k annually)
  - Increased NPDES compliance and on-going spoils management

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Program Funding Needs

- Recommended Future Activities (approx. $1.1MM in 2011)
  - Stormwater needs assessment, increased infrastructure reinvestment, watershed capital improvements
- CIP Items (average $850k / year)
  - Catch basin spoils facility, street reconstruction, system expansion & improvements

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Other Considerations

- Initial level of accounts receivable delinquency tends to be higher than other utility services
  - Depends on billing methodology, available recourse, etc.
  - Up to 10% not uncommon initially
- Credits, while beneficial, need to be considered when forecasting revenue
  - Moderate program might equate to 2.0-3.0% of total revenue

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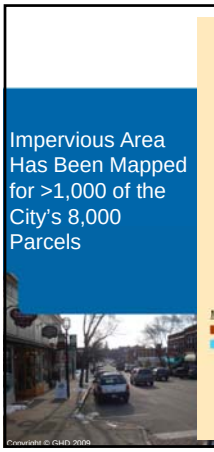
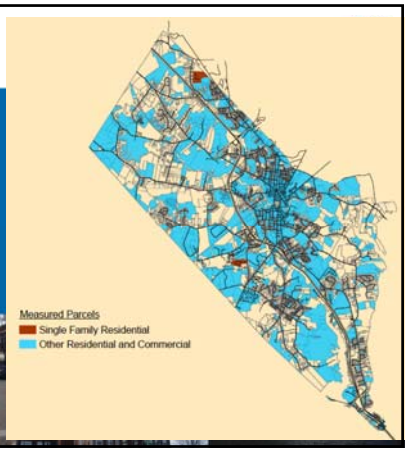
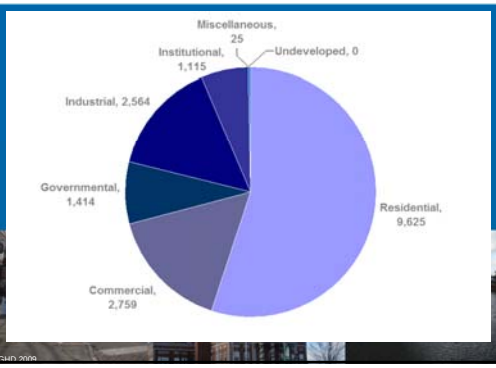
Impervious Area Has Been Mapped for >1,000 of the City's 8,000 Parcels





Approximate Breakdown of Equivalent Residential Units



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Preliminary Calculations

	Range of Charge (per ERU)	Estimated Revenue
Current Level of Service	$3.00 - $5.00	$900k
Current Level of Service + Required Actions	$5.00 - $7.00	$1.2MM
Current Level of Service + Required Actions + Recommended Actions	$9.00 - $11.00	$2.0MM
Current Level of Service + Required Actions + Recommended Actions + CIP Items	$11.00 - $13.00	$2.5MM

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Agenda

- Welcome and Introductions
- Citizens' Forum
- Approval of Minutes
- Comments on Draft Report
- Rate Structure Alternatives
- Discussion: Rate Structure Alternatives and Willingness to Pay
- Next Steps & Action Items

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GHD

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STEARNS & WHELER LLC
Environmental Engineers & Scientists

MEETING MINUTES

CITY OF DOVER, NH
STORMWATER UTILITY FEASIBILITY STUDY

Stakeholder Meeting 4
Dover Department of Public Works
November 8, 2010 at 6:30 PM

Committee Members in Attendance:
Jan Nedelka, Committee Chair
Dot Hooper, Committee Vice Chair
Chad Kageleiry
Dana Lynch
Gary Green
Ray Bardwell
Chris Nash

Other Participants:
Dean Peschel, City of Dover
Bill Boulanger, City of Dover
Dan Barufaldi, City of Dover
Alyson Watson, GHD

1. Welcome and Introductions.

2. Citizens Forum

   - No citizen comments were received.

3. Approval of Minutes

   - Minutes from the October meeting were approved as revised.

4. Comments on Draft Report Sections 4-6 were discussed.

   - Mr. Bardwell recommended that the committee suggest that much of the stormwater program be implemented by contract so as to not overburden the current staff. Mr. Nedelka replied that staffing organization does not fall under the scope of the current project. Ms. Watson agreed to clarify the section to state that the current organization and staffing is anticipated to be sufficient.

   - Mr. Bardwell asked whether Churches will pay stormwater fees. Mr. Nedelka replied that all non-profits and tax-exempt properties would pay a stormwater utility bill.

   - Mr. Green asked which category condominiums fit into in Table 4.3. Typically, each owner is responsible for his own water and sewer bill. Ms. Watson replied that they are currently treated as multi-family structures in the study. Discussion ensued on whether it would make

more sense to bill each resident separately or issue one bill to the condominium association. Ms. Hooper suggested that the bill could be issued to the condominium association.

- Mr. Nash asked which category condominiums fit into in Table 4.3. Ms. Watson replied that they are currently being treated as multi-family structures. If condominiums were treated as single family residences, each property owner would receive a full bill. Condominiums are typically more densely developed than single family residential properties, with less impervious area per unit. As a result, treating each condominium as an individual single family residence would not be as equitable as treating them as multifamily residences, where the cost of the impervious area is divided among the owners.

- Mr. Nedelka commented that in the previous meeting the discussion indicated that each single residence would be charged one ERU to simplify the rate structure. The draft report contains a rate structure where different charges are assigned to each residence. Ms. Watson explained that three different rate structures are presented in the draft report, only one of which is based on a flat fee for residential properties. Mr. Nedelka asked if any committee members would like the other options to be explored. As Mr. Nedelka and Mr. Green were the only members to express interest, the other two rate structures were dropped from discussion.

- Mr. Kageleiry handed out a copy of the New Hampshire State Statute that outlines the legal criteria for setting up a system of fee units (149-I:6-d.) He emphasized that the system must be fair and equitable. Mr. Nedelka indicated that he would ask the City Attorney to sit in on the next meeting to provide a legal perspective.

- Mr. Bardwell asked if it would be helpful to sit through a quick presentation about the current Stormwater Utility in Burlington, Vermont. It was decided that since the population density, makeup, and authorizing legislation of the two cities were radically different it would probably be difficult to compare the two.

5. Presentation: Recommendations and Draft Report.

- Ms. Watson gave a presentation based on GHD's understanding of what the committee had indicated at the October meeting.

- Mr. Kageleiry asked about whether structures, such as porous pavement, would be considered for stormwater credits. Ms. Watson replied that the credit manual, detailing such information, would be developed during the implementation phase of the project.

- Mr. Green asked why reducing runoff rate was being considered for a credit when the actual amount of water leaving the site might not be affected. Mr. Kegeleiry indicated that a property was not allowed any more runoff post-development that they had pre-development.

Mr. Lynch clarified that the rate cannot increase, but the actual volume of stormwater will increase due to additional impervious area (and reduced infiltration) on site.

- Mr. Nash asked if water quality should be considered in this study in addition to water quantity. Mr. Peschel indicated that the utility will be a dynamic program that will evolve as new regulations and permits are issued.

- A slide with GHD's recommendations based on their compiled data was presented. Mr. Lynch asked if the recommendation for a phased implementation approach would meet EPA compliance requirements. Mr. Peschel indicated that the budget recommendation was based on a need to meet compliance regulations.

- Mr. Boulanger suggested that a minimum revenue amount should be established that accounts for potential credits to prevent having to supplement the utility with the General Fund. Mr. Nedelka pointed out that credit programs in other communities only took out approximately five percent of the revenue stream. Ms. Watson indicated that projected revenue needs have been increased to reflect projected delinquencies and credits such that sufficient revenue would be left over to fund the program. In addition, a cap on the fee reduction available through credits could be established to limit the impact of credits on revenue predictability.

- Mr. Green asked if every property in the City would be billed. Ms. Watson replied that each property with impervious area would be billed. Mr. Kageleiry pointed out that farmland has a meaningful impact on stormwater quality even though it has a small percentage of impervious area.

- Ms. Watson indicated that the proposed base fee only covers a portion of the current stormwater budget. The remainder of the budget is covered by impervious area fees.

- Mr. Kagaleiry asked if it would be possible to develop a figure detailing the extent of the City's current stormwater system. Mr. Boulanger indicated that this could be done.

- Mr. Nedelka suggested that since stormwater is a community issue, the base fee could be structured to reflect the contribution from public roads. Ms. Watson indicated that GHD could run calculations to determine what this figure would be.

- Mr. Bardwell asked that condominiums be broken out from multi-residential structures in the pie chart showing ERUs by customer class.

- Mr. Nedelka asked why the phased approach was spread out over six years. Ms. Watson responded that this was done to be consistent with the capital planning timeframe.

- Mr. Lynch indicated the importance of emphasizing the cost of doing nothing (permit non-compliance charges). The group requested that information on penalties be included in the presentation.

- Mr. Green asked Mr. Barufaldi what impact a stormwater utility charge would have on businesses looking to establish themselves in the area. Mr. Barufaldi replied that the answer depends on what surrounding communities are doing but would most likely be minimal. He emphasized a preference to include the utility on the water / sewer bill instead of as a standalone stormwater bill, preferably as a line item on the sewer charge.

- Mr. Lynch asked what the charge equates to in terms of cents per thousand of assessed value, and what that means for a single family residence. Ms. Watson responded that the full program cost equates to approximately $0.75/thousand, and for the average single family residence, that amounts to approximately $15.75 per month. The utility will cost the average single family residence approximately $11.20 per month. As a result, the utility would be expected to generate a minor reduction in costs for the average single family residence.

- Mr. Green suggested multi-family residential structures be eligible for credits if they implement stormwater controls. Mr. Nash added that properties should have to demonstrate stormwater control effectiveness and proper maintenance in order to receive credits. The group determined that credits should be limited to non-residential properties which are expected to have the greatest stormwater charges and therefore stand to gain the greatest benefit from credits. A process should be put in place which disallows credits for onsite management systems that are not maintained.

- It was agreed that the credit cap should be left at fifty percent, as reflected in the calculations. This number can be changed in the implementation phase of the project.

- Ms. Watson asked if the committee wanted to consider a credit for seniors and low income citizens. Mr. Kageleiry stated that the City does not currently provide such credits on water / sewer bills and the stormwater bill should have a similar structure. There was general consensus on the point.

- Mr. Lynch asked why reducing the quantity of water leaving the site was considered a credit opportunity, considering that this is required for new development anyway. He suggested that improving water quality through implementation of best management practices should be rewarded. It was decided to include improving water quality in place of reducing water quantity as a potential credit

- Ms. Watson asked if the committee wanted to consider offering a curriculum credit to schools. It was decided that placing additional curriculum requirements on schools would be excessively burdensome, and the option should not be pursued.

- The group discussed whether the Dover Utilities Commission (DUC) would be able to determine the details of what the credits should be. It was determined that it is appropriate to provide a structure and guidelines, but that the DUC will be capable of determining the details of the system.

- Ms. Watson reviewed implementation steps for establishing a utility. Mr. Nedelka clarified that the rates would be approved in the annual budgeting process, not through a separate ordinance.

- Mr. Nedelka discussed his thoughts on the composition of the implementation phase committee. He suggested that it would make sense to include the current committee members, along with additional representation from the Planning Department as well as members of the DUC. The group agreed.

- Mr. Peschel asked whether the future meetings would be facilitated. The group felt that while staff may be technically capable of completing the meetings without outside assistance, they have limited time to dedicate to the project and outside facilitation would help to keep the process on track. The group agreed that future meetings should be facilitated if possible.

- Mr. Nedelka reiterated his request that all comments on the draft report to be submitted to him by December 4 to allow time for categorization. This will help to keep the group on schedule to complete the project with one additional meeting.

- Mr. Bardwell asked if it was possible to teleconference into the next meeting. It was decided that this would be allowed.

6. Meeting was adjourned.

The next meeting will be held at the Dover Department of Public Works on Monday December 13th, at 6:30 pm.

These minutes are an overview of all pertinent discussions that took place at this meeting. Should anyone take exception to any portion herein, notify this office in writing within ten (10) days of receipt or these minutes shall stand as written.

City of Dover, NH
Municipal Stormwater Feasibility Study

Stakeholder Workshop #4
November 8, 2010

1

Agenda

- Welcome and Introductions
- Citizens' Forum
- Approval of Minutes
- Comments on Draft Report
- Recommendations and Implementation Plan
- Discussion: Recommendations and Implementation Plan
- Next Steps & Action Items

2

Stormwater Utility Feasibility Study Process

Meeting 1: Goals and Objectives	Meeting 2: Program Plan, Compelling Case	Meeting 3: Rate Structure Alternatives	Meeting 4: Recomm's and Draft Report	Meeting 5: Final Report
•Stormwater impacts •Current approach •Future needs •Program goals & objectives	•Current program •Potential funding alternatives (including utility) •Advantages and disadvantages	•Benefits and drawbacks of alternative rate structures •Preliminary cost/ revenue analyses	•Preliminary recommendations	

3

Common Methods of Assessment

Impervious Area	Impervious Area + Gross Area	Intensity of Development
• Charge based on impervious area only	• Charge based on impervious area and a lesser charge for gross area	• Charge based on intensity of development (recognize green space)

Most defensible rate structures utilize impervious area

4

Rate Modifiers

- Base Charge for Fixed Costs
- Senior / disabled discount
- Credits
  - Non-residential only
  - Total credit cannot exceed 50% of the fee, minimum fee equal to the flat fee for a residential property
  - Responsibility of the customer to apply for credits and provide necessary information
- Potential Credits: water quantity reduction, water education curricula

5

Billing for Stormwater

Water and Sewer Bill

Stormwater Only Bill

Property Tax Bill

6

Preliminary Calculations

	Range of Charge (per ERU)	Estimated Revenue
Current Level of Service	$3.00 - $5.00	$900k
Current Level of Service + Required Actions	$5.00 - $7.00	$1.2MM
Current Level of Service + Required Actions + Recommended Actions	$9.00 - $11.00	$2.0MM
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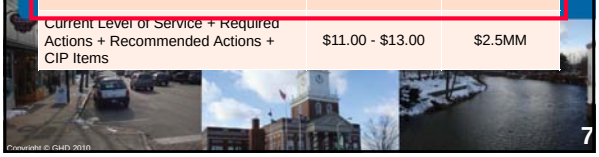

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Major Recommendations

Rec. 1	Rec. 2	Rec. 3	Rec. 4	Rec. 5
Establish Stormwater Utility as Funding Mechanism, Capture Offset to General Fund	Structure Stormwater Utility Rates to Generate Approx. $2.0 M / Year in Revenue	Structure Fee on Impervious Surface Area, With a Base Charge for Fixed Costs and Credit Scheme	Bill Stormwater Charge with Water and Sewer	Phase in New Charge Over a Six-Year Period to Minimize Impact and Allow for Outreach

8

What Would a Utility Look Like?

- Program Structure & Budget
- Customer Base
- Estimated Charges
- Potential Credits

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Program Structure and Budget

- Current structure initially with potential for future expansion
- Utilize Dover Utilities Commission for Oversight

Budget Item	2011	2012	2013	2014	2015	2016
Current Level of Service	$900,116	$900,116	$900,116	$900,116	$900,116	$900,116
Catch Basin Spoils Facility	*$30,000*	*$150,000*				
NPDES Permit Compliance	*$136,000*	*$192,000*	*$191,000*	*$231,000*	*$281,000*	*$281,000*
Spoils Management & Disposal		*$10,000*	*$10,000*	*$10,000*	*$10,000*	*$10,000*
Utility Implementation & Administration	*$80,000*	*$5,000*	*$5,000*	*$5,000*	*$5,000*	*$5,000*
Needs Assessment	*$100,000*	*$50,000*	*$50,000*	*$50,000*	*$50,000*	*$50,000*
Rehabilitation / replacement	*$686,400*	*$686,400*	*$686,400*	*$686,400*	*$686,400*	*$686,400*
Other Investments	*$67,484*	*$6,484*	*$157,484*	*$117,484*	*$67,484*	*$67,484*
TOTAL COST	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**

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Customer Base – Impervious Area

Category	Total # of Parcels	Percent of Parcels Sampled	Average % Impervious Area of Sample (ft^2)	Estimated Total ERUs	Average ERUs / Parcel
Single Family Residential	5,732	1%	8%	5,732	1.0
Multifamily Residential	1,254	37%	13%	3,351	2.7
Commercial	382	87%	30%	2,630	6.9
Governmental	215	53%	6%	2,252	10.5
Industrial	128	89%	23%	2,448	19.1
Institutional	90	99%	18%	881	9.8
Undeveloped	471	0%	N/A	0	0
Miscellaneous	46	100%	2%	64	1.4
TOTAL	**8,318**	**15%**	**15%**	**17,359**	**2.1**

One ERU ~ 3,919 square feet

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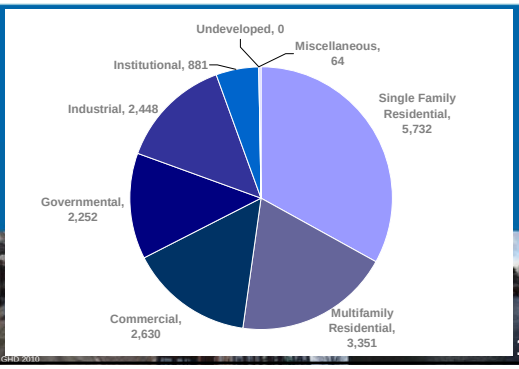
ERUs by Customer Class



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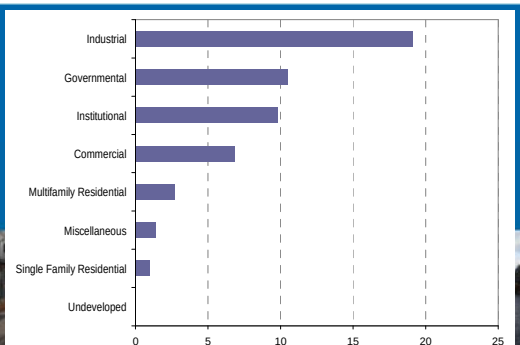
Average Number of ERUs Per Parcel



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Estimated Charges - Assumptions

- Uncollectible revenue allowance of 7.5% initially, decreasing to 3% with some lost revenue collected
- Credit revenue reductions of 1.0% initially, increasing to 3.0% over time
- Phased implementation over a six-year period
  - Year 1 covers current and required expenditures, ramping up to full program costs in Year 6

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Phased Implementation Approach

Year	2011	2012	2013	2014	2015	2016
Revenue - Basic Service Charge	$127,163	$141,569	$139,926	$135,054	$142,437	$142,331
Revenue -Impervious Area Charge	$1,027,323	$1,205,532	$1,376,873	$1,547,137	$1,727,820	$1,905,672
Total Net Revenue	*$1,154,486*	*$1,337,101*	*$1,516,799*	*$1,682,799*	*$1,870,257*	*$2,048,004*
Offset to General Fund	*$1,154,486*	*$1,337,101*	*$1,516,799*	*$1,682,799*	*$1,870,257*	*$2,048,004*
Basic Charge (Per Acct)	$1.45	$1.45	$1.45	$1.45	$1.55	$1.55
Impervious Area Charge (Per ERU)	$5.35	$6.15	$6.65	$7.75	$8.75	$9.65
Total Monthly Charge / ERU	$6.80	$7.60	$8.10	$9.20	$10.30	$11.20

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Average Monthly Charge by Customer Class

Year	2011	2012	2013	2014	2015	2016
Base Fee	$1.45	$1.45	$1.45	$1.45	$1.55	$1.55
Impervious Area Charge / ERU	$5.35	$6.15	$6.65	$7.75	$8.75	$9.65
Single Family Residential	$6.80	$7.60	$8.10	$9.20	$10.30	$11.20
Multifamily Residential	$15.75	$17.89	$19.22	$22.16	$24.94	$27.34
Commercial	$38.29	$43.80	$47.24	$54.81	$61.80	$67.99
Governmental	$57.48	$65.86	$71.09	$82.61	$93.19	$102.61
Industrial	$103.79	$119.09	$128.65	$149.69	$168.92	$186.14
Institutional	$53.84	$61.68	$66.57	$77.34	$87.24	$96.05
Miscellaneous	$8.86	$9.97	$10.66	$12.18	$13.67	$14.91

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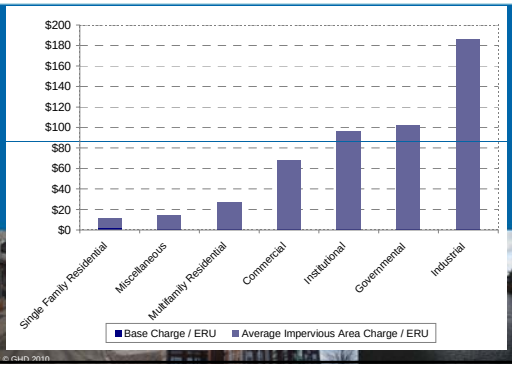
2016 Average Monthly Charge by Customer Class



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Overview of Credit System

- Only non-residential properties eligible for credits
- Multiple credits can be granted to a single property
- Total credit shall not exceed 50% of the fee, minimum fee equal to the flat fee for a residential property
- Responsibility of the customer to apply for credits and provide necessary information
- Applications received within one year of the initial bill are applied retroactively (otherwise applies prospectively)

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Potential Modifiers and Credits

- Senior / disabled discount
- Water Quantity Reduction: credit for controlling the rate of runoff release with respect to the predevelopment peak flow
- Non-Structural Treatment: credit granted for non-structural volume and velocity reductions
- Water Education Curricula: credit for schools where approved stormwater-related curriculum is taught

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Implementation Steps

1. Request City Council Approval to Move Forward with Implementation
2. Assemble Committee to Advise on Program Implementation
3. Implement Public Outreach Campaign
4. Complete Impervious Mapping
   - Remaining non-single family residential properties

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Implementation Steps, cont'd

5. Develop Formal Financial and Rate Policies and Procedures
   - Methods for assessment
   - Formal policy statements around the program
6. Refine Financial Plan
   - Program budget
   - Revenue needs and forecasting

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Implementation Steps, cont'd

7. Develop a Credit Manual
   - Approved credits, program structure, policies and procedures, application, etc
8. Develop Billing Policies and Procedures
9. Prepare and Adopt Utility Formation Ordinances
   - Utility establishment
   - Rate structure and billing
10. Integrate Water, Sewer, and Stormwater Billing

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Agenda

- Welcome and Introductions
- Citizens' Forum
- Approval of Minutes
- Comments on Draft Report
- Recommendations and Implementation Plan
- Discussion: Recommendations and Implementation Plan
- Next Steps & Action Items

23

Next Steps

- Meeting 5
  - Monday, December 13, 2010 @6:30 PM
  - Approval of Feasibility Study Report
  - Public Outreach Plan comments and feedback
- Other?

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Penalties for Noncompliance - 40 CFR 122.41

- Negligent Violations
  - Any person who violates any permit condition or limitation or requirement faces:
    - Civil penalties up to $25,000 per day for each violation
    - Criminal penalties of $2,500 to $25,000 per day, or imprisonment of not more than 1 year, or both
    - Subsequent convictions: criminal penalties of up to $50,000 per day of violation, imprisonment of up to 2 years, or both
- Known Violations
  - Criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both
  - Subsequent conviction: criminal penalties of up to $100,000 per day of violation, or imprisonment of up to 6 years, or both
- Known violation with risk of imminent danger, death, or serious injury:
  - Fine of up to $250,000 or imprisonment of up to 15 years, or both
  - Subsequent conviction: fine of up to $500,000, imprisonment of up to 30 years, or both
- Organization violating the imminent danger provision
  - Fine of up to $1,000,000, $2,000,000 for subsequent convictions

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STEARNS & WHELER LLC
Environmental Engineers & Scientists

MEETING MINUTES

CITY OF DOVER, NH
STORMWATER UTILITY FEASIBILITY STUDY

Stakeholder Meeting 5
Dover Department of Public Works
December 13, 2010 at 6:30 PM

Committee Members in Attendance:
Jan Nedelka, Committee Chair
Dot Hooper, Committee Vice Chair
Chad Kageleiry
Dana Lynch
Gary Green
Ray Bardwell
Chris Nash
Jay Stephens
Chris Nash

Other Participants:
Dean Peschel, City of Dover
Bill Boulanger, City of Dover
Dan Barufaldi, City of Dover
Alan Krans, City of Dover
Alyson Watson, GHD

1. Welcome and Introductions.

2. Citizens Forum

   - No citizen comments were received.

3. Approval of Minutes

   - Mr. Nedelka asked that the slide presented at Meeting 4 showing the penalties for noncompliance with new stormwater permit requirements be incorporated into the minutes.

   - Minutes were approved as amended.

4. Proposed changes to the draft report were discussed. Mr. Nedelka distributed a summary of proposed report amendments (attached).

   a) Proposed technical changes were discussed.

      - Mr. Green and Mr. Stevens pointed out typographical errors in the draft report.
      - The proposed technical changes were approved as amended.

   b) Proposed minor changes were discussed.

      - Ms. Hooper asked that her full name be used in the draft report.

- The proposed minor changes were approved as amended.

c) Proposed major changes were discussed.
   - Mr. Nedelka asked the committee whether the examples on pages 30, 31 and 33 should be updated with more recent rate examples. The committee agreed the examples should be updated.

   - Mr. Nedelka asked the committee whether it wanted to recommend the Public Outreach Plan outlined in the report. It was agreed that the plan should be used as a starting point for the parties responsible for implementation.

   - Major proposed changes were approved, as amended.

d) Other proposed changes were discussed.

   - The second bullet on page 24 states that 'Because Dover is not currently required to treat stormwater, this [water quality improvement] credit does not currently apply.' The committee decided this sentence should be modified to 'Dover is not currently required to treat stormwater' to leave the possibility of future water quality credits open.
   - Mr. Green stated that he had recently attended a Southeast Watershed Alliance where expected future water quality monitoring was discussed.
   - Ms. Hooper asked that discussion of water education curriculum credits be removed completely from the report.
   - Other proposed changes were approved as amended.

5. Ms. Watson presented the powerpoint slides attached.

6. The Committee discussed whether vacant and undeveloped lots should be charged a base stormwater utility fee. Mr. Green presented information obtained from the Assessor's office about the quantity/makeup of the vacant/undeveloped lots in Dover. He suggested that a tiered structure might be adopted, with undeveloped lots being charged on a square footage basis. Mr. Kageleiry questioned how large undeveloped lots would be treated and cautioned that the tier structure should be sensitive to how each property contributes to stormwater issues versus how much benefit they derive from the stormwater system. There was concern that a gross area structure could disproportionately impact owners of large undeveloped lots. Mr. Bardwell pointed out that agricultural land could have a large impact on water quality, even though it had relatively little impervious area. Mr. Lynch and Mr. Kageleiry indicated that there has been a significant effort to encourage developers to offset development impacts by purchasing and conserving land, and charging them for that conserved land would send an inconsistent message.

7. Mr. Bardwell asked if the question of whether undeveloped lots should be charged a user fee could be reviewed by the Dover Utilities Commission (DUC). Mr. Nedelka suggested that the present committee should attempt to make a recommendation on the matter.

8. Mr. Nedelka pointed out that land can be undeveloped and still have a water quality impact. However, according to his calculations, the revenue collected from undeveloped properties would represent less than $10,000 out of the $1.2 million collected through the stormwater utility and might not be worth the overhead cost to administer a program for these parcels. Ms. Hooper also pointed out that the committee had elected to keep the utility structure as simple as possible.

9. Mr. Kageleiry indicated a need to state the definition of what an undeveloped parcel is. Mr. Nedelka suggested that this definition may be determined in the future by the DUC.

10. Ms. Hooper moved to not include undeveloped and vacant land in the current base fee structure. Mr. Green asked that the motion be amended so that the issue of undeveloped and vacant parcels would fall in the scope of the utility committee. Mr. Nedelka requested that Mr. Green participate in the implementation-phase Committee, and Mr. Green agreed. The motion, as amended was passed.

11. The Committee discussed what should be covered by the base fee charge. Three options were presented: a small base fee covering only a portion of the fixed program costs, a large base fee which would reflect the shared cost of City roads, and a medium base fee which would reflect a portion of Dover's roads.

12. Ms. Hooper asked if the small base fee would cover all expenses. Ms. Watson explained that all of the alternatives cover all expenses. In each case, a portion of the needed revenue is collected through the base fee, with the remainder collected through the impervious are fee. When the base fee is smaller, the impervious fee is larger to compensate. The question is what should the base fee incorporate, and what magnitude of "flat fee" is appropriate. In all cases, the revenue collected will be sufficient to cover program expenses, and the amount collected will be backed out of the general fund.

13. Mr. Nedelka mentioned that it might make sense to incorporate at least a portion of the roads in the base fee to emphasize that stormwater is a community issue that affects everyone.

14. Mr. Nash asked if other communities were incorporating road infrastructure into their base fees. Ms. Watson explained that base fees are commonly used, and the magnitude of the fee varies.

15. A motion was made to approve a medium base fee, reflecting the Committee's desire to cover a portion of the City's shared road infrastructure with the base fee. The motion was passed.

16. To achieve consistency with the State Statute, Mr. Krans (Dover City Attorney) recommended that residential properties be allowed to apply for credits. Mr. Green asked why residential

customers would need to be allowed to apply for credits. Mr. Krans indicated that allowing a credit is different from setting the standard for receiving a credit, and the standard for receiving a credit could be difficult to achieve. However, it is likely that in the future there may be a scenario in which a property owner implements a system substantially different from the average resident that truly reduces stormwater impacts from a residential property, and in this case, there should be a mechanism in place to allow a credit to be extended. Mr. Nedelka added that small improvements such as rain-barrels that are difficult to monitor and enforce should not qualify for a credit. Mr. Krans suggested that a system that returns a residential property to the impact level of an undeveloped property may considered for a credit in the future.

17. The proposed Public Outreach Plan was discussed. Mr. Nedelka stated that the proposed plan seemed largely academic and not practical for Dover. He emphasized that there were some good ideas but that the plan should not be adopted as a whole. He pointed out that since Dover is not a very large community, focus groups may not be necessary.

18. Ms. Hooper discussed some ideas on how to disseminate information to the community including broadcasting on Local Channel 22, a city council broadcast, flyers and a writeup in Fosters.

19. Mr. Barufaldi suggested that this type of outreach requires dialogue, not just informational presentations. He suggested 'Dover Discussions' as a model for the type of forum that should be utilized; however, he suggested that dedicated meetings should be held on this topic. Ms. Hooper also suggested a special city wide meeting dedicated to the topic.

20. Mr. Boulanger indicated the importance of educating the City staff so they could handle residents' questions when they are out in the field.

21. Ms. Hooper suggested emphasizing that enhanced stormwater management is mandated and stressing the penalties for non-compliance.

22. Mr. Lynch asked that the Public Outreach Plan avoid being too 'cutesy' as it is dealing with a serious topic and should be perceived as such.

23. The Committee took a voice vote to approve the report as amended. The report was approved unanimously.

24. The meeting was adjourned.

These minutes are an overview of all pertinent discussions that took place at this meeting. Should anyone take exception to any portion herein, notify this office in writing within ten (10) days of receipt or these minutes shall stand as written.

City of Dover, NH
Municipal Stormwater Feasibility Study

Stakeholder Workshop #5
December 13, 2010

1

Agenda

- Welcome
- Citizens' Forum
- Approval of Minutes
- Comments on Draft Report
- Base Fee and Undeveloped / Vacant Properties
- Public Outreach Recommendations
- Next Steps & Action Items

2

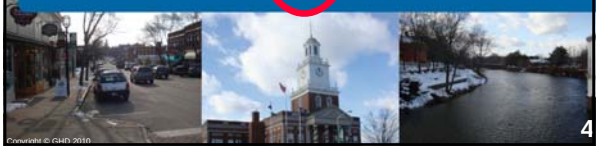
Stormwater Utility Feasibility Study Process

Meeting 1: Goals and Objectives	Meeting 2: Program Plan, Compelling Case	Meeting 3: Rate Structure Alternatives	Meeting 4: Recomm's and Draft Report	Meeting 5: Final Report
•Stormwater impacts •Current approach •Future needs •Program goals & objectives	•Current program •Potential funding alternatives (including utility) •Advantages and disadvantages	•Benefits and drawbacks of alternative rate structures •Preliminary cost/ revenue analyses	•Preliminary recommendations	

3

Major Recommendations

Rec. 1	Rec. 2	Rec. 3	Rec. 4	Rec. 5
Establish Stormwater Utility as Funding Mechanism, Capture Offset to General Fund	Structure Stormwater Utility Rates to Generate Approx. $2.0 M / Year in Revenue	Structure Fee on Impervious Surface Area, With a Base Charge for Fixed Costs and Credit Scheme	Bill Stormwater Charge with Water and Sewer	Phase in New Charge Over a Six-Year Period to Minimize Impact and Allow for Outreach



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Should Vacant / Undeveloped Lots Contribute?

Assessment Approach	Advantages	Disadvantages
No Charge	•Rewards land conservation •Fees related to property development	•Undeveloped parcels still contribute runoff and may impact water quality
Base Fee	•Reflects idea that undeveloped parcels still contribute runoff and may impact water quality •Fee may be relatively small	•Does not reward land conservation
Gross Area Fee Component	•Reflects idea that undeveloped parcels still contribute runoff and may impact water quality	•Does not reward land conservation •Owners of undeveloped land may be disproportionately burdened when runoff and quality impacts are considered

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Base Fee Options

Costs Covered	Fee Magnitude	Approx. Cost ($/month/parcel)
Fixed Billing / Admin Costs	Small (~150k/year)	$1.35 - $1.55
Shared Responsibility for Public Roads	Large (~$500k/year)	$5.05 - $5.95
A Portion of Roads	Medium (~$250k/year	$2.55 - $2.95

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Impervious Area-Based Rates – Summary of SFR Charges

Base Fee	Vacant / Undeveloped Property	2011	2012	2013	2014	2015	2016
Small Base Fee	Vacant / Undeveloped Property Excluded	$6.80	$7.60	$8.10	$9.20	$10.30	$11.20
	Vacant / Undeveloped Property Included	$6.70	$7.50	$8.00	$9.15	$10.20	$11.15
Medium Base Fee	Vacant / Undeveloped Property Excluded	$7.15	$7.95	$8.75	$10.05	$11.15	$12.15
	Vacant / Undeveloped Property Included	$7.00	$7.80	$8.60	$9.90	$11.00	$12.00
Large Base Fee	Vacant / Undeveloped Property Excluded	$8.55	$9.35	$10.15	$11.40	$12.65	$13.65
	Vacant / Undeveloped Property Included	$8.25	$9.05	$9.85	$11.10	$12.25	$13.30

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Agenda

- Welcome
- Citizens' Forum
- Approval of Minutes
- Comments on Draft Report
- Base Fee and Undeveloped / Vacant Properties
- Public Outreach Recommendations
- Next Steps & Action Items

8

Public Outreach Plan Purpose & Structure

- Purpose: Educate the Public Regarding the Importance of Stormwater Management and the Need for and Benefits of a Utility
- Two phases
  - Campaign development : Develop the theme, messages and designs for a logo and collateral materials
  - Implementation: Implement specific outreach strategies

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Goals and Objectives

- Goals
  - Build public support for a stormwater utility by educating stakeholders
  - Prepare property owners and managers for implementation by providing easy-to-understand information about fees and administration
- Objectives
  - Identify audiences
  - Develop a campaign theme and messages, tailored to each audience
  - Provide a menu of outreach activities that includes direct and indirect communication methods, traditional and new media

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Audiences

- Property owners and managers
  - tax-exempt entities
  - buildings with large paved areas
  - fixed-income property owners
  - developers
  - residential and commercial property managers
  - municipal property managers
- Local elected officials
- Community opinion leaders
- Environmental, civic, homeowner and business organizations
- Realtors and property management companies
- News outlets (print, broadcast and internet)
- General public

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Themes and Messages

- Themes
  - Stormwater Stopper
  - Water Wise
- Messages
  - Save our streets from flooding
  - Save our lakes, streams and bays

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Potential Strategies

- *Partners in Education*: develop relationships with environmental and community organizations for widespread education and support
- *Stormwater Day:* collaborate with science teachers in the middle and high schools for educational opportunities
- *Speaker Bureau*: could be developed so individuals learn about the issues and solutions from their peers
- *Depave Dover Day*: involve the community in removing unnecessary and excessive amounts of asphalt to reduce impervious surfaces
- *Stormwater Stopper or Water Wise Club*: open to property owners who have reduced their property's impacts on the City's stormwater system

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Tools

1. *Messaging Group*: Group of 12 property owners from the community who are not knowledgeable about stormwater issues – opportunity to test the effectiveness of messages
2. *Print Materials*: Frequently asked questions, flyer, bumper stickers, pins, refrigerator magnets, stickers, rain barrels
3. *Internet-Based Communications:* webpage with information and related links, social media such as a blog or Facebook

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Tools, cont'd

4. *Press Relations:* editorial board meetings, news releases, opinion pieces, letters to the editor, video and radio Public Service Announcements, appearances on local television and radio shows
5. *Customer Service:* train staff to respond appropriately to questions and concerns from property owners, especially during the initial implementation phase
6. *Public Meetings and Presentations:* public information meetings, neighborhood meetings, and a Speakers Bureau

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Tools, cont'd

7. *Collaborations:* collaborating with other organizations to maximize the reach of the program while keeping costs down (Partners in Education program, Stormwater Day, Water Wise Club)
8. *Distribution List:* email and mailing addresses for distribution of educational materials
9. *Community Events:* provide program information at Coast Sweep and Apple Harvest, or hold a new event such as Depave Dover Day

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Next Steps

- Finalize Recommendations
- Present Recommendations to City Council

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GHD

Appendix B

Supplemental Information – Current and Future Program Costs

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Appendix B: Supplemental Information – Current and Future Program Costs

This Appendix provides additional information on current and future program costs presented in Chapter 2.

1.1 Current Program Costs

Table B-1 presents current stormwater program costs for the following categories:

- Personnel Services
- Purchased Services
- Supplies
- Capital Outlay
- Other Expenses

These costs are described in further detail below.

Table B-1 Stormwater Program Costs

Cost Category	Stormwater Program Costs (FY 2011)
Personnel Services	$501,800
Purchased Services	$83,800
Supplies	$163,610
Capital Outlay	$150,000
Other Expenses	$900
Total Stormwater Personnel Costs	***$900,100***

Personnel Services

The stormwater program is implemented by a variety of staff. The following table identifies specific City staff that complete stormwater functions as a portion of their responsibilities, and the portion of their associated cost attributable to stormwater-related functions.

Table B-2 Stormwater Program Staff and Personnel Costs

Staff Category	Budget Location	Percentage of Cost Associated with Stormwater Program
Public Works and Utility Superintendent	Streets and Drains	50%
Public Works Supervisor	Streets and Drains	50%
Working Foreman	Streets and Drains	50%
Truck Drivers (5)	Streets and Drains	50%
Heavy Equipment Operators (2)	Streets and Drains	50%
Maintenance Mechanic	Streets and Drains	50%
Director of Community Services	Administration	8.3%
Environmental Projects Manager	Engineering	5%
City Engineer	Engineering	15%
Assistant City Engineer	Engineering	15%
Engineering Technician	Engineering	50%
GIS Technician	Water	30%
Office Manager	Administration	12.5%
Secretary I	Administration	15%
Total Stormwater Personnel Costs[1]		***$501,800***

1. Personnel Costs include pay, insurance, FICA, medicare, retirement, staff development, worker's compensation, and FSA fees.

Purchased Services

The Purchased Services portion of the existing stormwater program is captured within the Streets and Drains budget. The following table presents the percentage of each Purchased Services cost dedicated to the stormwater program.

Table B-3 Stormwater Program Purchased Services Costs

Purchased Services Category	Percentage of Cost Associated with Stormwater Program
Medical Services	0%
Consulting Services	
Groundwater Sampling	*50%*
Water and Sewage Usage	50%
Maintenance Charges – Improvements other than Buildings	
Guardrail Repair	*0%*
Roadway markings	*0%*
Center line roadway markings	*0%*
Roadside and curb herbicide spraying	*0%*
Maintenance Charges – Equipment	50%
Maintenance Charges - Office Equipment	
Simplex recorder maintenance	*50%*
Division share PC	*50%*
Rental of Equipment	
Burns Security	*50%*
Equipment rental from private companies	*50%*
Catch basin cleaning	*100%*
Division share of Konica copier	*50%*
Property Insurance	50%
Vehicle and Equip Insurance	50%
Public Liability Insurance	50%
Telecommunications	50%
Total Stormwater Purchased Services Costs	**$83,800**

Supplies

The Supplies portion of the existing stormwater program is captured wholly within the Streets and Drains budget. The following table presents the percentage of each supply cost dedicated to the stormwater program.

Table B-4 Stormwater Program Supply Costs

Supply Category	Percentage of Cost Associated with Stormwater Program
Office Supplies	50%
Operating Supplies	50%
Clothing & Uniforms	50%
Vehicle Fuels	50%
Food	50%
Maintenance Supplies – Buildings	50%
Maintenance Supplies – Improvements Other Than Buildings	
Pothole repairs, pavement for drainage ditches & catch basins	*50%*
Pipes, grates, manholes, bricks, cement, mortar, repair couplings	*100%*
Maintenance Supplies – Vehicles	50%
Fleet Maintenance Charge	50%
Minor Equipment, Furniture and Fixtures	50%
Total Stormwater Supply Costs	***$163,600***

Capital Outlay

The Capital Outlay portion of the existing stormwater program is captured within the Streets and Drains budget. The following table presents the percentage of the Capital Outlay budget dedicated to the stormwater program.

Table B-5 Stormwater Program Capital Outlay Costs

Capital Outlay Category	Percentage of Cost Associated with Stormwater Program
Land Improvements	
General Street & Sidewalk Improvements	*0%*
CM Reduction	*0%*
General Drainage Improvements	*100%*
Machinery & Equipment	0%
Bridges	0%
Total Stormwater Capital Outlay Costs	***$150,000***

Other Expenses

The Other Expenses portion of the existing stormwater program is captured within the Streets and Drains budget. The following table presents the percentage of the Other Expenses budget dedicated to the stormwater program.

Table B-6 Stormwater Program Other Expenses

Other Category	Percentage of Cost Associated with Stormwater Program
Dam Registrations	100%
Total Stormwater Supply Costs	***$900***

1.2 Future Stormwater Program Needs

The City's anticipated future program costs are presented in Table B-7. Individual budget line items are described in further detail below.

- Catch Basin Spoils Facility: This line item includes $30,000 in FY 2011 and $150,000 in FY 2012 for construction of a catch basin spoils facility, which is currently captured in the FY 2011 – 2016 capital budget. In addition, ongoing costs associated with facility maintenance and spoils disposal will be required. A $10,000 per year budget has been included as a placeholder for these ongoing maintenance and disposal costs for FY 2012 - 2016.
- Street Reconstruction Renewal / Replacement Items: A variety of street reconstruction projects included in the FY 2011 – 2016 CIP Budget include stormwater components. Projects budgeted in this line item are summarized in the following table.

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Table B-7 Street Reconstruction Renewal / Replacement Items[1,2,3]

Project	Drainage % of Project	Stormwater-Related Costs					
		2011	2012	2013	2014	2015	2016
Street Reconstruction - Floral Ave / Brick St: design replacement of closed drainage	25%						$12,500
Street Reconstruction - Silver St / Realignment: design replacement of closed drainage	25%					*$100,000*	
Street Reconstruction - Tolend / Watson Road: design replacement of open drainage	25%		$625,000	$625,000			
Street Reconstruction – Atlantic Ave: design & construct replacement of 2,200' of closed drainage	25%	*$50,000*			$450,000		
Street Reconstruction – Richardson Drive: design replacement of open drainage	25%					$118,750	
Street Reconstruction - Roberts: design expansion of closed drainage	25%				*$16,250*		
Street Reconstruction - Tanglewood Drive: design & construct replacement of 2,000' of closed drainage	25%						$83,750
Street Reconstruction - Lisa Beth Dr & Circle: design & construct replacement of 2,600' of closed drainage	25%				$162,500		
Street Reconstruction – Broadway: design & construct replacement of closed drainage	25%						$75,000
Street Reconstruction - Oak / Ham / Ela Area: design & construct replacement of closed drainage	25%					$125,000	
Street Reconstruction – Piscataqua / Rabbit Rd: design & construct replacement of open drainage	25%			*$50,000*		$375,000	
Street Reconstruction - Nelson St: design & construct replacement of 940' of closed drainage	25%			$12,500		$106,250	

Project	Drainage % of Project	Stormwater-Related Costs					
		2011	2012	2013	2014	2015	2016
Washington St Extension: design & construct replacement of 400' of closed drainage	25%						$75,000
Street Reconstruction – Union St: design & construct replacement of 1,550' of closed drainage	25%						$56,250
TOTAL		**$50,000**	**$625,000**	**$687,500**	**$628,750**	**$825,000**	**$302,500**

1. Design costs are shown in italics.
2. Construction costs associated with system expansions are budgeted under System Expansion and Improvements.
3. Specific drainage approaches have not yet been established. Determination of closed or open drainage was made based on existing area infrastructure for budgeting purposes.

- System Expansion and Improvements: There are some areas of the City which are not currently serviced or are underserviced by the stormwater system. The City's CIP Budget includes several street reconstruction projects that will extend or improve stormwater service. The budget for the construction component of these projects is included in this line item. In future years, this line item may be expanded to include required stormwater treatment. Projects budgeted in this line item are summarized below.

Table B-8 System Expansion and Improvement Items[1,2]

Project	Drainage % of Project	Stormwater-Related Costs					
		2011	2012	2013	2014	2015	2016
Street Reconstruction - Pineview & Pearson: expansion of existing drainage, conversion from open to closed drainage	25%			$100,000			
Street Reconstruction – Roberts: expansion of existing drainage system	25%					$125,000	
Street Reconstruction - Applevale Area: expansion of existing closed drainage system	25%	$250,000	$250,000				
Street Reconstruction - Henry Law Final Phase: expansion of existing closed drainage system	25%					$212,500	
TOTAL		**$250,000**	**$250,000**	**$100,000**	**$0**	**$337,000**	**$0**

In addition to maintaining the current level of service and implementing the planned projects identified above, the following line items have been included to reflect the increased costs associated with operating the system over the coming six-year period.

- Increased Cost of NPDES Permit Compliance: As described previously, the cost of complying with the revised MS4 permit will represent a significant increase over current compliance costs. This line item captures the anticipated incremental increase in permit compliance costs.
- Stormwater Utility Implementation and Administration: Should the City decide to pursue stormwater utility, costs associated with utility implementation and ongoing administration will be incurred. This line item includes $100,000 for utility implementation and an estimated $5,000 per year for ongoing program administration.

- Stormwater Needs Assessment Identification and Implementation: The City has not completed a stormwater management needs assessment, and does not maintain a prioritized list of stormwater action items. It is recommended that such a study be completed and adopted as the basis for future stormwater program implementation. This line item includes $100,000 in FY 2011 for completion of the needs assessment. The line item also includes a $50,000 per year budget placeholder for implementation of plan recommendations.
- Pipe Rehabilitation / Replacement: It is recommended that the City adopt an annual infrastructure replacement program. A general guideline for annual infrastructure replacement programs is to replace one percent of the system per year. This schedule provides for system replacement on a 100-year schedule. For the City's 65 miles of closed drainage, this translates to replacement of 0.65 miles of pipe and associated structures per year. At a cost of $200 per linear foot, this would be expected to cost $686,400 per year in system renewal costs. Several of the street reconstruction projects included in the FY 2011 – 2016 CIP Budget involve stormwater management and drainage components. Where a project budgeted in the CIP includes renewal or replacement of existing closed drainage, the target of 0.65 miles per year was reduced to reflect renewal / replacement already budgeted in the City's CIP and prevent double-counting. The following table summarizes planned pipe renewal projects budgeted in the Street Reconstruction Renewal / Replacement line item.

Table B-9 Pipe Renewal Included in Expansion and Improvement Items[1,2]

	Feet of Closed Drainage Renewed / Replaced					
Project	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Street Reconstruction - Atlantic Ave				2,200		
Street Reconstruction - Tanglewood Drive						2,000
Street Reconstruction - Lisa Beth Dr & Circle				2,650		
Street Reconstruction - Nelson St					940	
Washington St Extension						400
Street Reconstruction - Union St						1,550
TOTAL	**0**	**0**	**0**	**4,850**	**940**	**3,950**

- Berry Brook Watershed Improvements: As described previously, the City has completed a watershed assessment and management plan for the Berry Brook watershed. This line item includes funding to implement watershed management plan recommendations. Implementing the recommendations over a six year period would result in an annual cost of approximately $260,000 per year.
- Willand Pond Improvements: This line item includes funding to implement recommendations of the Willand Pond Watershed Assessment and Alternatives Analysis. Implementation and operations and maintenance costs are budgeted as approximately $56,000 in year one and $68,000 per year for the following five years.

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Appendix C

Public Outreach Plan

Dover, NH Stormwater Utility Implementation

PUBLIC OUTREACH PLAN

October 2010

Submitted by GHD
and Regina Villa Associates, Inc.

Table of Contents

Introduction and Purpose of the Public Outreach Plan

Introduction

The City of Dover, New Hampshire's, Community Services Department (CSD) is studying the feasibility of creating a stormwater utility. As the cost of complying with the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit grows, communities struggle with how to pay for them. In addition, because stormwater management is often viewed as a lower priority public service, many communities have had to defer maintenance to direct scarce financial resources to other services.

The CSD worked with the regional Natural Resources Outreach Coalition (NROC) to identify appropriate strategies for meeting stormwater management priorities. NROC recommended the City target two key areas: encouraging low impact development techniques for new and redevelopment projects and exploring the feasibility of a stormwater utility. Through its Planning Board, the City has implemented a number of zoning changes that encourage low impact development, and it is now evaluating the feasibility of a stormwater utility.

Many communities have created stormwater utilities that charge user fees to collect revenue to maintain the stormwater system. A user system of rates and charges spreads the cost of system maintenance, improvements and regulatory compliance equally among a number of property owner categories (e.g., single family residential, multifamily residential, nonresidential). Fees are generally calculated based on square footage of impervious surfaces on a property. Charging the City's Public Utilities Commission with addressing potential or perceived fee structure inequities could make the concept more acceptable to those who will be affected by it. A utility would provide a funding source that is not tied to the General Fund, establishing a stable, dedicated revenue stream that would allow CSD staff to plan for the long term.

Purpose of the Plan

The Public Outreach Plan focuses on two phases – campaign development and implementation: (1) the theme, messages and designs for a logo and collateral materials are completed in the development phase; and (2) specific strategies for implementing an outreach program are identified in the implementation phase. The plan is flexible as there may not be enough time to implement an education campaign prior to the City Council's vote on creating a utility. It also may not be necessary if opposition is not expected. Once the utility is established, property owners will still need to understand why they are being asked to pay the user fee even after the measure has passed to avoid legal challenges and appeals. Property owners and managers are the focus of the outreach campaign, but other decision makers and opinion leaders should be included. If opposition to City Council action becomes more likely, CSD could reconsider this approach and spend more time on educating the public about the need for action in advance of a vote.

Public Outreach Program Goals and Objectives

Assumption: A thorough and comprehensive public outreach program is essential to gaining support for implementing a stormwater utility. Educating the public on the compelling need for a utility and its resulting benefits will result in more widespread acceptance of the concept and more support once the utility begins operating.

The goals of the public outreach plan are to:

- Build public support for a stormwater utility by educating stakeholders, and
- Prepare property owners and managers for implementation by providing easy-to-understand information about fees and administration to demonstrate CSD accountability and reduce the risk of legal challenges or appeals once the program begins.

The objectives of the public outreach plan are to:

1. Identify audiences;
2. Develop a campaign theme and messages, tailored to each audience; and
3. Provide a menu of outreach activities that includes direct and indirect communication methods, traditional and new media.

The CSD has been consulting with the Ad-Hoc Stormwater Committee, which is comprised of residents, business owners and others who represent the interests that will be affected by forming a stormwater utility. The Committee has identified **protecting water quality** and **reducing flooding** as two priority concerns for the stormwater management program, believing that addressing these issues will enhance residents' quality of life. Complying with more stringent regulatory requirements and improving stewardship of the City's infrastructure system are two additional issues of concern.

This plan provides a menu of recommended outreach tools the CSD can implement. We have included recommendations for prioritizing the tools depending on budget, staffing and timeline.

Audiences and Campaign Theme and Messages

Audiences

Broad consensus and support for forming a stormwater utility will be more successful by establishing that property owners and managers (1) are educated on the need for action; (2) understand how action will be taken; and (3) have confidence that the CSD will be accountable and the fee structure fair. There are a number of stakeholder groups who need to be involved in the process:

- City staff
- Property owners
- Local elected officials
- Community opinion leaders
- Environmental, civic, homeowner and business organizations
- Realtors and property management companies

- News outlets (e.g., broadcasting on Local Channel 22, a city council broadcast, flyers, writeup in Fosters, communication to condominium associations)
- General public

There are important sub-groups of the property owner and manager category who may need to be targeted with specialized messages and assistance. These include:

- tax-exempt entities
- buildings with large paved areas
- fixed-income property owners
- developers
- residential and commercial property managers
- municipal property managers

Targeting these audiences has strategic purposes. Elected officials and staff make the policy and funding decisions that will be necessary to implement and maintain the utility. Opinion leaders and community organizations influence decision-makers and the public. Community organizations also influence their members and help reach a larger audience. Environmental organizations, such as the Cocheco Watershed Association, can be important allies because the program will support their goals of improving water quality and habitat. Civic organizations, such as the Friends of Willand Pond, can also be allies. The Chamber of Commerce's Government Affairs Committee is another important group to coordinate with.

Property owners are less likely to object to a utility if they fully understand its need, benefits and implications. Property managers are included because their management practices may affect the volume of runoff and nutrients reaching the City's system. Some members of the public may not be property owners; however, their behavior and habits as tenants, for example, may be part of the problem and solution.

Campaign Theme and Messages

A successful campaign theme will reinforce the importance of taking action to protect the City's water resources. Campaign messages address a variety of concerns for specific stakeholders. Many people are most concerned about the economy and personal finances, while others are thinking beyond today to the future. The campaign has a sample message for each.

Message testing is an important element of developing a campaign. It tests the theme and variations before committing to print and other materials. We recommend testing the campaign messages with a *Messaging Group* prior to developing final campaign materials. The Messaging Group is discussed in more detail in the Strategies and Tools section.

The campaign theme and messages will help reinforce a call to action through education, group identify and reinforcement. We have included a suggested theme and messages below. The overall campaign theme is the overarching message. The messages for each phase are targeted to priority concerns (flooding and water quality) and audiences.

Sample Theme – The Water Wise Campaign

Two examples of overall themes are to be a **Stormwater Stopper** or to be **Water Wise**. The themes permit a number of variations, addressing the need to stop stormwater from entering the City's system or being wise about property management choices to reduce water resource and other impacts, including cost – *Be a stormwater stopper and save, or Be water wise and save* – as well as sub-messages. Some of these are suggested below.

Each message is a call to action around specific areas of concern. The messages are meant to move the campaign to a personal level of individual responsibility while considering cost consciousness, environmental support and other local concerns.

Sample Messages

- Be a Stormwater Stopper (or Water Wise) Today: Save our streets from flooding
- Be a Stormwater Stopper (or Water Wise): Save our lakes, streams and bays
- Be a Stormwater Stopper (or Water Wise) Today and Save (with the "S" in the form of a dollar sign)

There are many potential variations of the message. Campaign supporters can sign up for materials and get "I'm a Stormwater Stopper" or "I'm Water Wise" buttons. The promotional materials will outline "How to stop stormwater" or "How to be Water Wise." "Stormwater Tips" or "Wise Water Tips" and other themes will be developed. There can be "Water Wise Tips on Rate Saving," "How to be Water Wise with Your Lawn," etc.

These sub-messages can be developed in more detail after the initial logo and materials are designed.

Phases, Strategies and Tools

The Campaign

The campaign builds the theme into a logo, messages and materials for the outreach program. The theme and messages are relevant and easy to remember and translate into visuals. The materials are visually appealing, have a consistent look and feel, and include the CSD utility webpage address and contact information.

Implementing the Campaign

The implementation phase uses the campaign messages and materials to help property owners and other stakeholders understand the need and benefits of a utility, how it is structured and operates and who to contact for questions or concerns. It introduces them to program details, such as what the user fee bill will look like, how the utility will be administered and how to get help with questions or concerns.

Strategies

In the 1990s, Dover implemented a recycling program – Pay-As-You-Throw. The program has been very successful, due in large part to the fact that the *connection* between individual action and the amount of household trash generated is quite obvious. For most people, it is not clear how their properties and individual actions contribute to stormwater issues such as pollution and flooding. The campaign materials will make this connection, so people understand the solutions are within their individual control (e.g., limiting the amount of impervious surface, picking up pet waste, reducing or eliminating the use of fertilizers).

The program seeks to leverage impact and resources by building on existing programs and developing strategic collaborations with other organizations. For instance, the effectiveness of the stormwater utility outreach program can be maximized by coordinating with and building upon existing NPDES MS4 and stormwater management plan activities, such as the Yellow Fish Road Program, which includes catch basin stenciling, bumper stickers, door hangers and press outreach. Other collateral materials increase campaign visibility, such as pins, refrigerator magnets and stickers for display in windows of homes and businesses and on student backpacks or notebooks.

The CSD could implement a *Partners in Education* campaign where it develops relationships with environmental and community organizations to create widespread support. A *Stormwater Day* could be designated each year to collaborate with science teachers in the middle and high schools. Working with schools educates students and brings the message home to parents. A *Speaker Bureau* could be developed so individuals learn about the issues and solutions from their peers. People like to support establishments that are "green" and respect their community's quality of life. A *Stormwater Stopper or Water Wise Club* would be open to property owners who have implemented practices to reduce their property's impacts on the City's stormwater system. Collateral materials would identify Club members, and an annual award ceremony would recognize those who have made the most progress in implementing best practices – good stewards.

The outreach program will use direct communications including mailings and in-person conversations such as at community events or public meetings. Any utility-related mailings should be separate from City tax bills to avoid the perception that user fees are taxes. Appropriate mailings might include the CSD's quarterly water bills. Indirect communications include a project website, e-blasts, press releases and opinion pieces. These are the traditional means of reaching stakeholders. Non-traditional methods include internet-based social media such as blogs, Facebook and Twitter, which can be developed further if the CSD decides to pursue them.

Tools

The following sections describe recommended tools and activities, which are listed in order of priority beginning with #1 – the highest priority task. The outreach tools are designed to reach the broadest audience possible and maximize cost-effectiveness. If time, budget, and/or available staff are limited, we recommend implementing the higher priority activities first or re-evaluating and re-prioritizing the program.

#1: Print Materials

Frequently Asked Questions (FAQ)
An FAQ would include a description of the stormwater issue, the need for a utility, a list of planned projects and programs that would result from a stable, dependable revenue source, and the benefits of the utility. It should answer the most common questions about the utility such as how the fees are calculated, how funds are used and who should be contacted to appeal a fee or for questions. It could be produced and distributed to US Mail and email lists, including local media (Foster's Daily Democrat), posted on the website, and made available at community gathering spots such as City Hall, the Chamber of Commerce, senior centers and the library.

Flyer
An easy to understand, graphically appealing flyer should succinctly summarize the main points about the issues, need and benefits. The flyer could be distributed in a mailing, but we do not recommend including it in tax bills to avoid the perception that the user fee is a tax. The flyer could also be reproduced in the local newspaper.

Collateral Materials
Bumper stickers, pins, refrigerator magnets and stickers for display in windows of homes and businesses, and on student backpacks and notebooks could be produced using the message – "I'm a Stormwater Stopper" or "I'm Water Wise." The CSD could also offer rain barrels at a discounted price for collecting roof runoff to water gardens. The barrels could have the campaign logo and "I'm a Stormwater Stopper" or "I'm Water Wise" printed on them, or a sticker affixed to them.

#2: Internet Based Communications

While an effective outreach program cannot ignore traditional information channels such as print materials and public meetings, the use of internet based outlets is widespread and growing. The CSD's website should have a section dedicated to the feasibility study and stormwater utility. The page should include background information on stormwater impacts, a description of the utility and its benefits, how it is administered, projects and programs implemented, and contact information. Links to other relevant information and materials should be included. If budget and staffing permit, social media such as a blog or Facebook page could be investigated.

#3: Press Relations

The local media (Foster's, channel 22 and the City website) are an important news source for community members and influence public opinion. The CSD must ensure that editors and reporters are educated, just like the rest of the community. Media can be an ally in the process, especially if they understand the issues and need and are kept informed by CSD staff. Editorial board meetings are helpful to brief editorial writers. News releases provide new information as it becomes available. Opinion pieces and letters to the editor campaigns can be effective in getting the word out. In addition, video and radio Public Service Announcements and appearances on local cable television and radio shows can broaden the program's reach.

#4: Customer Service

The City will need to train staff to respond appropriately to questions and concerns from property owners, especially during the initial implementation phase. It may be most helpful to have one staff person who is the key contact for utility questions. The contact name and phone number should be displayed on all materials. The City should also utilize the Dover Utilities Commission to address potential or perceived fee inequities.

#5: Public Meetings and Presentations

Public Information Meetings should be scheduled at key milestones in the process, for instance, when the Feasibility Study is complete. The meeting should provide background on why the City embarked on the Study and what the results are, including an explanation of how the utility would be implemented, if adopted.

CSD staff should consider scheduling *Neighborhood Meetings similar* and work with local neighborhood groups, homeowner associations, real estate management companies, the Chamber of Commerce, senior centers, condominium associations and others to schedule targeted meetings or present at organizations' meetings. These meetings would be an opportunity for property owners to discuss questions and concerns with CSD staff in a small group setting. In addition, it is recommended that multiple sessions of *Dover Discussions*, or a similar forum, be dedicated to informing the public about the benefits and impacts of a new stormwater utility.

A *Speaker Bureau* should be developed and program spokespeople identified who will make presentations at business and civic group meetings and community events. The speakers should be drawn from groups such as the Chamber of Commerce, Parent Teacher Organization or a senior citizen group. It is important for the speakers to be peers of the audiences they are reaching out to, to increase the likelihood that the message is accepted. A half-day or one-day training would be conducted prior to launching the bureau to ensure the speakers' messages and materials are consistent.

#6: Collaborations

Collaborating with other organizations is a cost-effective way to maximize the reach of the program while keeping costs down. *UNH's stormwater program* is a valuable resource. A *Partners in Education* program where staff partner with environmental and other community organizations expands the program's reach. Campaign materials include the logos of participating organizations to show widespread support. A *Stormwater Day* reaches into the schools and educates students, while also taking the message home to parents. CSD staff can coordinate with the City School Department and provide middle school and high school science teachers with materials to work into a lesson plan for the day, or students are given a stormwater related assignment that might include a poster contest or video. The City library may also have space to devote to an exhibit.

People like to support establishments that are "green" and respect their community's quality of life. A *Stormwater Stopper Club* or *Water Wise Club* would be open to property owners who have implemented practices to reduce their property's impacts on the City's stormwater system. Criteria would be established for becoming a Club member (perhaps based on the percent square feet of

impervious surface removed, gallons of runoff removed by installing rain barrels or collection systems, pound reduction of fertilizer used, etc.). Collateral materials such as a sticker for a window would identify homes and businesses that have excelled in dealing with the issues. The CSD could collaborate with the Chamber of Commerce and community and environmental organizations to partner with club members to promote their leadership, and each year the CSD could hold an annual *Stormwater Stopper* or *Water Wise Award Ceremony* to recognize those individuals or businesses that have made the most progress to reduce their impacts during the preceding 12 months. Bumper stickers, pins, certificates, refrigerator magnets and stickers for display in home and business windows would use the "I'm a Stormwater Stopper" or "I'm Water Wise" message.

#7: Distribution List

We do not recommend distributing program information in tax bills due to the perception of some in the community that the stormwater utility fee is a tax. Instead a program specific database should be developed using the CSD water bill or Assessor's lists to form the basis for a distribution database. The distribution list will include email addresses, so updates and project materials can be distributed more cost-effectively. Recipients would be encouraged to circulate materials further by emailing or posting links on websites. The distribution list can be supplemented by adding people who have expressed an interest in CSD's NPDES MS4 or other stormwater management programs, meeting attendees, frequent voters identified in City Clerk records, and others who are active in the community or request to be added as a result of the outreach program.

#8: Community Events

Numerous community events are held each year, such as Coast Sweep and Apple Harvest, among others. An exhibit table or booth at the events would display information about stormwater and Feasibility Study and utility materials. A staff person would be available to discuss specific questions or concerns of participants.

Summary

The goal of public outreach is to educate and involve the communities of interest to support the formation and use of a stormwater utility. This plan outlines two potential campaign themes and tools to test and implement the campaign. We have not focused on phasing the campaign since the steps are very similar in one or two phases. The outreach tools should be ready for roll-out soon after the utility proposal is approved.