



# Public Facilities Committee Report

## City of Newton

### In City Council

**Wednesday, February 20, 2019**

**Present:** Councilors Crossley (Chair), Leary, Norton, Kelley, Gentile, Danberg, Laredo, Lappin, Downs, Greenberg

**City Staff Present:** Chief Operating Officer Jonathan Yeo, Director of Utilities Ted Jerdee, DPW Director of Streets Shane Mark, Associate City Engineer John Daglian, Senior Environmental Engineer Maria Rose

#### Referred to Public Facilities and Finance Committees

**#83-19** HER HONOR THE MAYOR requesting amendment to Section 17-3 of the City of Newton Ordinances adopting the Federal Communications Commission's presumptively reasonable application fees for wireless attachments and new pole construction and conduct cost studying in the coming months to document the City's time and expenses regarding these applications.

**Action:** Public Facilities Approved 6-1-1 (Gentile Opposed, Lappin Abstaining)

**Note:** Committee members reviewed the attached memo from the Law Department describing the conflict between the current FCC ruling and our ordinances, and recommended actions. Chief Operating Officer Jonathan Yeo explained that the Federal Communications Commission (FCC) took action in 2018 after the City Council had taken steps to increase the fee for grants of locations of wireless telecommunication equipment. The Public Facilities Committee recommended an increase in the fee from \$35 to \$500 per location, with no reduction for "batched" applications. At both the Public Facilities and Finance Committee meetings, Atty. Mandl suggested that the \$500 fee, was based on labor estimates provided by several City departments and would be consistent with fees in other municipalities. At the Finance Committee he added that the estimates did not account for loading fees (benefits, etc.). It was noted that the loading fees typically add about 30%. To account for the added cost of benefits, The Finance Committee amended the fee increase to \$750 per location, with no reduction for batched applications. The FCC ruling, which had been adopted about the same time, determined that reasonable fees for wireless telecommunication equipment are \$500 per application, FOR up to five locations.

At this time, the Engineering Department has met with utility companies to review "pre-applications" for wireless facilities, but they are waiting to file their petitions pending the City's response to the FCC order. Mr. Yeo noted that the City has been working to evaluate options for moving forward knowing that there is a critical need for improved service for the public as well as to meet public safety needs. He stated that when the costs were estimated and submitted to the Council for review, they were approximations based on Associate City Solicitor Alan Mandl's research and input from involved City Departments. Mr. Yeo explained that DPW has reviewed the time estimates again and believes the process can be streamlined and the costs lowered. He noted that a legal battle with the utility companies can be costly and

unproductive and confirmed that it is at the Mayor's request and the Law Department's recommendation that the City adopt the presumptively reasonable fees as ordered by the FCC, for the time being.

Mr. Yeo continued, noting that it is the intent to carefully measure the City's time spent processing wireless telecommunication equipment applications in an effort to recover actual costs. He noted that the FCC will allow for cost recovery is defensible, requiring documentation of actual scenarios. Because no applications have been filed since the City fee Ordinance was amended, the City has not had an opportunity to document the actual time and costs used to process one or several applications.

Some Committee members felt that the estimates produced by the Law Department and City Departments should be considered defensible and suggested that it is unlikely that carriers are holding off based on the cost of the filing fee. Additionally, it was noted that the FCC's order pertains to Massachusetts communities generally and suggested that Newton's expenses may be more than average due to higher salaries and benefits. Most Committee members, however, agreed that the City should accept the City recommendations to both amend the ordinance to the presumptively reasonable fees as ordered by the FCC and carefully document the actual time used to process wireless applications, with the goal being to fully recover the City's costs, wherever applicable. If cost based on real applications is fully documented, the City may be able to justify an increase to the fees, while avoiding costly litigation. Councilor Leary motioned to approve the administration's recommendation to amend the ordinance and reduce the fee to the FCC's presumptively reasonable fees, while assertively documenting the actual cost of installations and applications. Committee members voted 6 in favor, 1 opposed (Gentile) and 1 abstaining (Lappin).

### **Referred to Finance and Appropriate Committees**

#### **#542-18      Submittal of the FY 2020 to FY 2024 Capital Improvement Plan**

HER HONOR THE MAYOR submitting the Fiscal Years 2020 to 2024 Capital Improvement Plan pursuant to section 5-3 of the Newton City Charter.

**Action:**      **Public Facilities Held 7-0 (Gentile not Voting)**

**Chairs Note: The Committee heard a presentation relative to the Sewer Infrastructure Improvement Plan**

**Note:** DPW Director of Utilities Ted Jerdee and Senior Environmental Engineer Maria Rose presented details of the Stormwater Infrastructure Improvement Plan (SIIP) as shown on the attached presentation. Committee members were appreciative of the thorough presentation and commended the quality of work occurring in the Utilities Division to advance this plan. Projects to rebuild drainage culverts that have been completed and which are proposed in the five-year CIP were outlined. Councilors asked questions, received responses and provided comments(C) as shown below.

**Q: What do we need to do to map out and understand the full scope of the work inside the culverts? We have a 20-year plan and a critical need. What would we need to expedite the process? It may be beneficial to increase stormwater fees incrementally for a short period of time for long term benefits.**

A: This will take approximately 5-10 years. Chief Financial Officer Maureen Lemieux is looking at the state requirements and has included enough money to undertake some additional investigation and assessment? Programs to meet the NPDES (National Pollutant and Discharge Eliminations System) requirement, as well as capital projects. When we begin the phosphorus removal plan, we will need a lot of money. We are just beginning to evaluate the scope of phosphorus removal.

**Q: What, if any interaction have you had with Planning as they work on Zoning and Stormwater management changes?**

A: We are meeting with them and working to update post construction and soil control ordinances. We will weigh in on Zoning requirements that should be imposed on developers. Some stormwater work may fall into the City's Engineering Ordinances as well.

C: It might be good to have educational outreach on NewTV or as part of the Green Newton Speaker series.

**Q: It would be better not to put phosphorus into the water, rather than working to remove it. What work is being done to limit phosphorus seeping the water? Is there more we could do to remediate on commercial properties?**

A: Phosphorus is naturally occurring, so it is difficult to prevent it entirely. The larger credit on the stormwater fee for businesses who implement mitigation measures will help us achieve our phosphorus load goals. They will want the credit and will work to incorporate improved systems. As commercial properties are redeveloped, the City will require various improvements to the parking lot runoff as well.

**Q: The amount of plastic litter that gets into the Charles River near Hyde Brook is problematic. Who is responsible for maintaining that?**

A: We will provide additional information on this.

**Q: Is there a way this information can be caught during Zoning Review or at a DRT?**

A: Engineering has a detail manual for reference and are part of the Design Team with the Planning Department. The design team is being educated to identify opportunities and the Planning Department is very supportive of low impact development.

**Q: The SIIP plan is a twenty-year plan. Has expediting it been considered?**

A: The only part of the plan that goes out twenty years, is the phosphorus control plan which we are just beginning. We are looking at Crystal Lake for the pilot and will spread lessons learned elsewhere. It will take some time to put together a plan.

**Q: Have we thought about ways to educate businesses on how to reduce their impact (on storm water quality)?**

A: Some of the large businesses have already contacted us and we will be offering multiple incentives to reduce square footage of impervious cover and provide treatment. There will be multiple incentives and we are thinking about this.

**Q: What are the one or two things that would be most important around Crystal Lake and Bulloughs Pond that would make a difference in water quality?**

A: A vegetative buffer. If we had more vegetative buffers, it would be helpful. There's not a lot of useful land around our ponds. Plantings would help trap sediments. The Livingston Cove project, when developed, may be a good model for others to see.

**#638-18 Evaluation of street sweeping policies and protocols**

COUNCILORS LEARY, LAREDO, AND GREENBERG requesting an evaluation of the City's street sweeping policies and protocols including but not limited to (a) whether we should increase the frequency of our street sweeping program; (b) how we notify Newton residents when street sweeping will occur and otherwise provide information about the program; (c) how we evaluate the effectiveness of the program; (d) identifying barriers to possible program improvements including vehicles parked on city streets that hinder the operation of street sweeping activities.

**Action: Public Facilities Held 7-0 (Gentile not Voting)**

**Street Sweeping**

Committee members noted that cars parked on the streets prevent street sweepers from sweeping curb to curb. Residents have expressed concerns that the City's sandwich boards are being ignored, resulting in catch basins collecting debris.

Mr. Mark noted that the City previously swept streets from April 15 – November 15, regardless of weather conditions. He confirmed that the City is now sweeping year-round with a goal of sweeping each of the 17 sweeping areas in the City 6 times. He noted that the City is on track to meet six sweeps this year. While the message boards help to reduce the cars parked on the street, some cars remain during street sweeping, forcing sweepers to sweep around cars. Mr. Mark noted that DPW has worked with residents to reduce cars parked during street sweeping operations. He stated that DPW intends to purchase additional signage and provide a real time street sweeping map. He noted that if the City were interested in pursuing an Ordinance amendment to issue fines or implement towing, an enforcement plan would have to be identified. He suggested that DPW would consider street sweeping at night, but noted that the street sweepers do generate noise, which may generate neighborhood complaints.

Mr. Mark noted that DPW will be purchasing their first vacuum street sweeper this summer. The vacuum street sweeper will vacuum up debris and will be beneficial for the City working to meet NPDES (National Pollutant Discharge Elimination System) goals.

Committee members agreed that permanent signage and night towing may not be the best option. Committee members voted unanimously in favor of holding the item with a motion from Councilor Leary.

**Referred to Public Facilities and Finance Committees**

**#84-19 Approve a \$500,000 for snow and ice removal**

HER HONOR THE MAYOR requesting authorization to transfer the sum of five hundred thousand dollars from the Budget Reserve – Snow and Ice Removal Account to the following accounts:

|  |           |
|--|-----------|
| Rental - Vehicles<br>(0140110-5273) .....  | \$350,000 |
| Regular Overtime<br>(0140110-513001) ..... | \$150,000 |

**Action:** **Public Facilities Approved 7-0 (Laredo not Voting)**

**Note:** DPW Director of Streets Shane Mark presented the request to appropriate \$500,000 for snow and ice removal. Mr. Mark noted that the City has measured 22.3” of snow and ice over 18 events this year, equaling \$136,585 per inch. A Committee member questioned whether there has been an increase in the cost per inch. Committee members questioned whether the increase in cost per inch might be due to a change in the way that the City is charging contractors (hourly rather than per inch). Mr. Mark stated that factoring in start-up expenses for salt and equipment purchases have inflated the snow and ice removal costs but noted that it is expected that those costs will decrease as additional events occur. He noted that contractors have been employed for three events this year. For the first event, the City saved \$84,000 by charging hourly. For the second event the City spent \$54,000 more than would have been spent if paying by the inch. Mr. Mark noted that data from the third event is not yet available, but the City has saved \$35,000 overall by paying by the hour. Committee members noted that the City’s cost per inch over the past few years had been approximately \$100,000 per inch and suggested that at the end of the season DPW should provide a post audit comparing expenditures.

Mr. Mark noted that another factor contributing to the City’s costs is the amount of salt that is being used to treat the icy conditions. He noted that there have been several events requiring a significant amount of salt application, which is the only way to prevent ice bonding with the pavement. He confirmed however, that DPW has decreased the rate that salt is being used from 1200 lbs. per mile five years ago to 400 lbs./mile. Additionally, the City is applying brine to the roads before snow and ice events, further decreasing the amount of salt applied from 400 lbs. (granular application) to 92 lbs. per mile (brine). A Committee member questioned why DPW switched from using sand to salt during snow and ice events. Mr. Mark noted that while sand provides traction, it creates silting and clogging in the City’s catch basins. He confirmed that the City’s trucks are now calibrated to more carefully control the amount of salt, which is verified by reports after each storm.

A Committee member questioned how frequently DPW evaluates the efficiency of plowing operations. Mr. Mark stated that the department is constantly evaluating the effectiveness of snow removal operations. He stated that plows may repeat streets in order to meet the current requirement of clearing curb to curb, keeping catch basins clear to catch stormwater and prevent flooding and assure storage for future storms, if necessary. Mr. Mark confirmed that the City will add markers to the storm drains as streets are repaved.

Committee members questioned how snow operations are addressing snow dumped on corners. Mr. Mark noted that while the corners of streets are the easiest places to put snow, the City has been working with staff and contractors to ensure that snow is placed around the corners. If chasers find snow piled on a corner, the responsible plow driver is not released until the situation is rectified. Committee members noted that there have been many potholes this year. Mr. Mark noted that the freeze-thaw cycle this year has created difficult conditions for repairing potholes but stated that DPW is working to repair small portions of streets; limiting potholes wherever possible.

Committee members thanked the department for its hard work expressed no concerns relative to the request for funds. Councilor Lappin moved approval and the Committee voted unanimously in favor.

The Committee adjourned at 10:20 pm.

**Respectfully submitted,**

**Deborah Crossley**



Ruthanne Fuller  
Mayor

City of Newton, Massachusetts  
Office of the Mayor

#83-19

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Honorable City Council  
Newton City Hall  
1000 Commonwealth Avenue  
Newton Centre, MA 02459

Honorable City Councilors,

I write to request that your Honorable Council amend Sec. 17-3 of the City Code to adopt the FCC's presumptively reasonable application fees for wireless attachments and new pole construction and to conduct cost studies in the coming months to document the City's time and expenses regarding these applications.

Attached is a background and recommendation memo from the City Solicitor. The memo details the current wireless attachment fees, the FCC's order limiting fees, xxxx

Thank you for your consideration of this matter.

Sincerely,

Mayor Ruthanne Fuller

February 13, 2019

RECEIVED  
Newton City Clerk  
2019 FEB 13 PM 3:10  
Ruthanne Fuller, ONM  
Newton, MA 02459

**CITY OF NEWTON  
LAW DEPARTMENT**

**INTEROFFICE MEMORANDUM**

To: Deborah Crossley, Chair - Public Facilities Committee  
Leonard Gentile, Chair - Finance Committee

cc: Maureen Lemieux - Chief Financial Officer  
Jonathan Yeo - Chief Operating Officer

From: Alissa Giuliani - City Solicitor

Date: February 13, 2019

Re: Wireless Grant of Location Application Fees

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The Law Department provides its recommendations to the City Council regarding the current wireless grant of location application fee under City Code Sec. 17-3.

The Law Department recommends that the City Council (1) amend Sec. 17-3 of the City Code to adopt the FCC's presumptively reasonable application fees for wireless attachments to existing poles and for construction of new poles for wireless purposes and (2) conduct cost studies in the coming months to document the City's time and expenses regarding these applications.

Current Wireless Grant of Location Application Fee

On September 17, 2018, the City Council amended Sec. 17-3 of the City Code to establish a wireless grant of location application fee of \$750 per pole location. This charge was based on two components: (1) \$500 in labor costs, exclusive of any costs based on loading factors (based on a wireless working group cost study); and (2) \$250 intended to capture costs associated with loading factors (the Law Department has not seen any documentation in support of the cost of loading factors). We understand that the Finance Committee regards the \$750 fee per location fee as conservative, i.e., below the City's actual costs.

Federal Communications Commission Order Limiting Small Cell Application Fees

On September 27, 2018, just a few days after the City Council amendment, the Federal Communications Commission ("FCC") adopted an Order in which it created guidelines for municipal wireless application fees for small cell installations located within the public ways:

- The fee must be a reasonable approximation of the municipality's actual and direct costs
- The fee can only include objectively reasonable costs



- The fee can be no higher than the fees charged to similarly-situated competitors in similar situations; and
- The fees must be publicly disclosed

The FCC did not mandate any specific accounting methods for documenting actual and direct costs. The FCC did not expressly determine whether “actual and direct costs” are limited to labor hours x labor rates plus disbursements or whether they may include labor-related overheads, such as fringe benefits, and additional costs such as common overheads, e.g., administrative costs.

The FCC adopted the following “presumptively reasonable fees” (fees not prohibited under federal law) as benchmarks:

- A \$500 application fee that applies to 1-5 small wireless facilities (a \$500 fee that applies to 1 location and covers up to 5 locations) attached to existing poles
- A \$100 fee for each small wireless facility in excess of 5 attached to existing poles
- A \$1000 application fee for permission to erect a new pole for wireless attachments
- The FCC allows a municipality to charge *higher* application fees *if* it can satisfy the 4 requirements listed above: (1) the fee must be a reasonable approximation of the municipality’s actual and direct costs; (2) the fee can only include objectively reasonable costs; (3) the fee can be no higher than the fees charged to similarly-situated competitors in similar situations; and (4) the fees must be publicly disclosed.

The FCC’s Order became effective as of January 14, 2019.

The Current City Fees Are Not In Line With the FCC’s “Presumptively Reasonable” Fees

The current application fee in the City of Newton (1) exceeds the FCC’s presumptively reasonable fee for attachments to existing poles and (2) appears to be less than the presumptively reasonable fee for new pole applications.

The City’s \$750 fee per location for wireless attachments to existing poles is greater than the FCC’s “presumptively reasonable” application fee:

|              | <u>City</u> | <u>FCC</u> |
|--------------|-------------|------------|
| 1 location:  | \$750       | \$500      |
| 2 locations: | \$1500      | \$500      |
| 3 locations: | \$2250      | \$500      |
| 4 locations: | \$3000      | \$500      |
| 5 locations: | \$3750      | \$500      |
| 6 locations: | \$4500      | \$600      |

These fees are not currently supported by documentation of the City’s actual and direct costs and a demonstration that its costs are objectively reasonable costs.

The City’s \$750 fee for a new pole application per location is less than the FCC’s “presumptively reasonable” application fee of \$1000.

### City Council Options

The City Council has 3 primary options:

1. Amend Sec. 17-3 of the City Code to track the FCC's presumptively reasonable small wireless application fees and conduct a more thoroughly documented analysis of the City's actual and direct costs, based on a review of inputs and assumptions
2. Amend Sec. 17-3 of the City Code to track the FCC's presumptively reasonable small wireless application fees and conduct no further cost analysis
3. Take no action regarding the currently effective \$750 application fee per location and conduct no further cost analysis

### Law Department Recommendations

The Law Department recommends that the City Council pursue Option 1 above, namely (1) amend Sec. 17-3 of the City Code to adopt the FCC's presumptively reasonable application fees for attachments to existing poles and for construction of new poles and (2) and conduct updated cost studies regarding these applications.

Our recommendation takes into account the following considerations:

- Service Quality and Public Safety Considerations: Two expected applicants have expressed serious reservations about the existing application fee; the ripple effect of accepting fees above the FCC's presumptively reasonable fees exposes these parties to the risk of higher, non-cost based fees in Newton and other communities; an applicant may decide not to proceed with a planned attachment, such as one moving forward in Waban near the Zervas School that is needed to improve service quality and public safety.
- Risks and Costs of Litigation: Adoption of the FCC's presumptively reasonable fees limits the City's exposure to the risks and costs of litigation. If the City does not do so, an applicant may decide to challenge the City's fee as inconsistent with current FCC standards. The costs of defending such a challenge could be substantial, including retention of expert witnesses or special counsel to defend the cost basis for its fee. It is possible that the City's cost analysis performed to derive \$500 labor costs may not be sufficient under the FCC's guidelines. The City would be subject to discovery (interrogatories, requests for production of documents, depositions) regarding the basis for the \$500 labor costs. The incremental \$250 also would be subject to discovery (at this time, the Law Department is unaware of cost inputs, assumptions and calculations which support the increase in the application fee amount to cover loading factors and it does not know what specific loading factors were taken into account). Moreover, FCC guidelines do not expressly address

whether loaded labor rates fall under “actual and direct cost” so defending fees based on such costs may pose even more challenging and costly.

In addition, the time involved in such litigation is likely to be substantial. Critical work will likely force a long delay, work that has public safety implications as cellular service quality (e.g., adequate coverage and capacity) will continue to be spotty.

A further litigation risk exists if the actual handling of applications is different than the handling assumed when the \$500 labor cost estimate was derived. The \$500 labor cost relied upon labor time estimates for a number of departments that were expected to play a role in the review of applications for completeness and compliance with the City Council’s standards. At present, it does not appear that the application review process will be consistent with the inputs and assumptions used to derive the \$500 labor cost. DPW has determined that it can effectively review the applications in a form that is more streamlined than originally discussed. This issue can be discussed further with DPW.

- Batch Application Issues: The FCC has required municipalities to accept “batch” applications; the City declined to allow batch applications. The City has not yet conducted a specific cost study regarding the processing of batch applications or a group of separate applications for each location.
- Ability to Increase the Application fee for New Poles: Amending Sec. 17-3 would allow the City to increase the application fee for a new pole primarily used for wireless communications (an amendment would enable the City to clarify what fee applies where the attachment requires the replacement of an existing pole).
- Benefits of Reviewing the Cost Support for the Application Fee: A review of the cost basis for the application fee would allow the City to evaluate it based upon any criteria that it applies in determining all cost-based City fees. This review also would enable the City to fully document and demonstrate that the fee is a reasonable approximation of the City’s costs and that only objectively reasonable costs are factored into the fees. In other words, once we document our costs, we will be able to charge the fee in the future that meets the FCC requirements.
- The Additional Revenue Derived from the Existing Fee does not Offset the Significant Drawbacks Associated with Taking No Action: The potential costs associated with taking no action are not offset by the potential revenue derived by the existing fee. Moreover, taking time to improve upon the cost support for application fees may result in defensible fees which are above the FCC’s currently established presumptively reasonable levels.

We would be glad to discuss our recommendations and answer any questions. We also would be glad to provide you with an excerpt from the FCC’s September 27, 2018 Order relating to municipal fees.

# Stormwater Management Update



**City of Newton, MA**  
Public Facilities Committee  
February 20, 2019

## Agenda

- Stormwater Infrastructure and Improvement Plan Overview
- Projects and Studies completed with SW Fees
- Projects and Studies in progress and proposed
- Municipal Separate Storm Sewer System (MS4) Permit Overview
- Stormwater (SW) Fees support O&M, capital projects and MS4 Permit requirements
- Questions & Comments

# Stormwater Infrastructure Improvement Plan (SIIP) Purpose

Develop a Stormwater Infrastructure Improvement Plan (SIIP) to efficiently invest City resources by planning & prioritizing stormwater projects to address the City's evolving stormwater needs.

## Problems We Are Trying to Solve



Water Quality



Capacity



## Problems We Are Trying to Solve



Cheesecake Brook

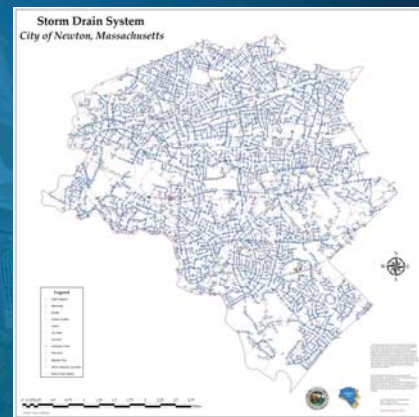


Cheesecake Brook

## Infrastructure Improvements

## Stormwater System

- 320 miles of drain pipe
- 12,750 catch basins
- 2 Pump stations
- 183 exterior outfalls/interconnections
- 201 interior outfalls
- 14 miles of streams
- Stormwater fee established in 2006 to partially fund stormwater costs
  - \$25 residential; \$150 commercial



# Why Does Newton Need a Stormwater Infrastructure Improvement Plan?

- Comply with Federal Stormwater NPDES MS4 Permit
- Reduce Localized Flooding
- Identify & Rehabilitate Failing Drainage Infrastructure
- Establish Predictive Maintenance



Flooding at Library Parking Lot

## Plan Development Process

- Project Prioritization
- Stormwater Infrastructure Improvement Plan Development

• [www.newtonma.gov/civicax/filebank/documents/64365](http://www.newtonma.gov/civicax/filebank/documents/64365)  
Section 2-Project Prioritization



# What Did We Find?

- Extensive Cleaning/Maintenance Required
  - Debris on Embankments
  - Severe Overgrowth
  - In-Stream Obstructions
  - Sediment at Culverts & In Stream
- Structural Deficiencies
- Unmapped Outfalls/Dry Weather Flow

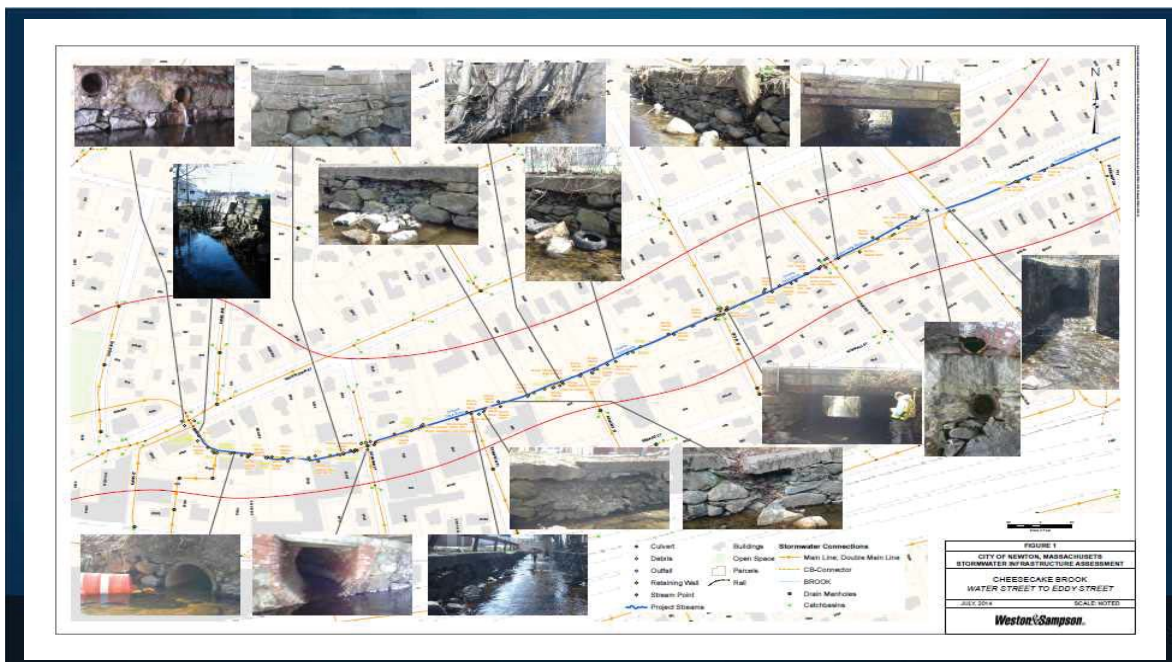


Paul Brook at Parker Street



Cheesecake Brook

Field Reconnaissance





## What We Do Not Know “Data Gaps”

- Structural Condition of Road-Width Culverts
- Condition of Critical Drainage Infrastructure
- Phosphorus Total Maximum Daily Load Compliance / Illicit Discharge Detection & Elimination (IDDE)



Needs Assessment

## Stormwater Infrastructure Improvement Plan Components

- Federal Stormwater Permit Compliance
- Localized Flooding Projects
- Stream Cleaning Projects
- Culvert & Critical Infrastructure Projects



Culvert at Runaway Brook Near Grove Street

Needs Assessment

# Federal Stormwater Permit Compliance

- Evaluated Draft Permit Requirements
- Annual Compliance Costs
- Annual Illicit Discharge, Detection & Elimination Compliance Costs



Needs Assessment

# Localized Flooding Projects

- Develop Projects to Reduce the Risk of Flooding
- Developed Planning Level Costs
  - Evaluation
  - Design
  - Construction



Drain Manhole Overflowing at Dedham Street

Needs Assessment

# Stream Improvement Projects

- **Recommended Improvements**

- Remove debris within stream bed/embankments
- Remove sediment in stream bed and at culverts
- Cut back overgrowth
- Repair retaining walls

- **Permitting/Design/Construction Costs**



At South Meadow Brook Between  
Winchester & Needham

Needs Assessment

# Culvert Projects

- **Known Culvert Rehabilitation & Replacement Projects**
- **Unknown Culvert Rehabilitation & Replacement Projects**



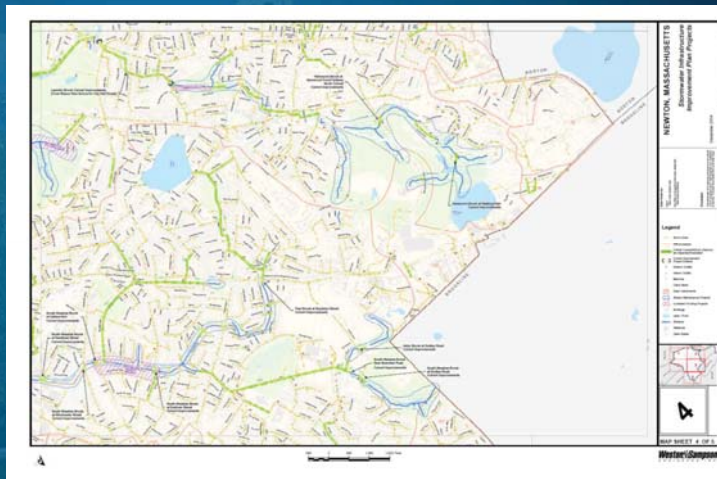
Needs Assessment

| **Weston&Sampson**



# Comprehensive Project List

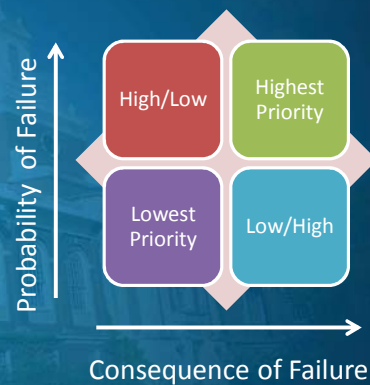
- Identified Projects
- Developed Project Costs
- Documentation & Geo-Referencing



Needs Assessment

# Risk Rating

- Risk = Probability of Failure x Consequence of Failure
- Risk Rating Calculated for each Project
- Prioritized Stream Cleaning, Localized Flooding & Culvert Projects numerically based on Risk Rating
- Permit Compliance Work Federally Mandated



Project Prioritization

# Risk Rating

## Stormwater Infrastructure Improvement Plan - Prioritization Newton, MA

| Project Type       | Project   | Project Description / Justification   | Drainage Basin | Estimated Project Cost | Overall Condition<br>0- Worst to 10: Best | CONSEQUENCE OF FAILURE CATEGORIES & WEIGHTS -<br>0 (No Impact) to 10 (High Impact) |                               |                              |                           |                    |                                       | Likelihood of Failure | Conseq. Factor | Risk Factor | Opportunity for Natural Drainage Enhancement |
|--------------------|---|---|----------------|------------------------|---|--|-------------------------------|------------------------------|---------------------------|--------------------|---------------------------------------|-----------------------|----------------|-------------|--|
|                    |   |   |                |                        |   | Impact to Public Health & Safety   | Potential for Property Damage | Cost of Deferred Maintenance | Number of People Impacted | Impacts to Traffic | Impact on City Development Priorities |                       |                |             |  |
|                    |   |   |                |                        |   | Weight<br>10.0   | Weight<br>10.0                | Weight<br>9.0                | Weight<br>6.0             | Weight<br>6.0      | Weight<br>4.0                         |                       |                |             |  |
| Localized Flooding | South Meadow Brook at Dedham Street - Design & Construction | Improvements to the drainage system on Dedham Street / the property at 8229 Dedham Street and properties on Round Brook Road & Heatherland Road flood during heavy rain events. Drain manholes on Dedham Street overflow. | 11             | 5,750,000              | 1   | 10   | 10                            | 3                            | 8                         | 8                  | 0                                     | 0.90                  | 7.18           | 64.6        |  |

Project Prioritization

# What is Included?

- Compliance with EPA MS4 Federal Stormwater Permit
  - Six Minimum Control Measures
  - Allowance for Phosphorus Total Maximum Daily Load Compliance Implementation



Stormwater Infrastructure Improvement Plan Development

## What is Included?

- **Localized Flooding**
  - Evaluation, Design, and/or Construction at 10 locations



Backyard Flooding at Beethoven Ave

Stormwater Infrastructure Improvement Plan Development

## What is Included?

- **Stream Improvements**
  - 14,000 CY of Sediment Removal
  - Debris Removal for 34,000 LF of Stream
  - Cut Back Overgrowth for 26,000 LF of Stream
  - Repair 70,000 SF of Retaining Wall
  - Rebuild 3,000 CY of Retaining Wall
  - Pond Dredging



Cheesecake Brook Behind Oldham Rd.

Stormwater Infrastructure Improvement Plan Development

## What is Included?

- **Culverts**

- Structural Evaluation of All Road-Width Culverts
- TV Inspection of 100,000 lf of critical storm drains
- 29 Known Culvert Rehabilitation/Replacement Projects
- 5 Unknown Culvert Rehabilitation Projects
- 2 Unknown Culvert Replacement Projects
- Unknown Point Repairs at 32 Locations
- Allowance for Culvert Cleaning



Culvert at Cheesecake Brook  
at Parsons Street



Culvert at Runaway Brook at  
Grove Street

Stormwater Infrastructure Improvement Plan Development

## Stormwater Infrastructure Improvement Plan

- 22-Year Plan
- Annual Investment \$1 to \$3 million
- Total Investment \$41 million Over 22 Years
  - Federal Stormwater Permit Compliance - \$11.0 million
  - Localized Flooding - \$3.0 million
  - Stream Improvements - \$12.3 million
  - Culverts - \$14.3 million
- Assessment of Annual Operation & Maintenance Needs

Stormwater Infrastructure Improvement Plan Development



# Completed Projects with SW Fee Revenue

| Completed Stormwater Projects<br>Funded by Stormwater User Fees FY 2007 through Feb. 2019 |   |                                   |                           |
|---|---|-----------------------------------|---------------------------|
| Project Name  | Description   | Dates                             | Expenditures <sup>1</sup> |
| Hammond Pond Stormwater Improvement Project   | The improvements included the removal of paved swales, and the construction of five bio-retention cells, two sand filters and vegetated buffer areas. | Jul 2006 to Aug. 2007             | \$ 30,000.00              |
| Crystal Lake Bath House Project <sup>1</sup>  | Construction of stormwater collection and treatment measures for the existing parking lot & roof leaders.   | Oct. 2007 - April 2012 (2 phases) | \$ 35,000.00              |
| Ashmont Ave Drainage Study  | Assessment of existing drainage infrastructure and flooding in the area.  | June - Dec. 2007                  | \$ 15,500.00              |
| Cheesecake Brook at Albemarle Rd  | Conceptual design for brook wall restoration  | Jan - April 2008                  | \$ 8,000.00               |
| City Hall Ponds Sediment  | Sediment Testing Contract   | May - Oct. 2008                   | \$ 21,000.00              |
| Ashmont Ave Drain Replacement and Upgrades <sup>1</sup>                                   | Construction contract to replace 24" diameter drain pipes and with twin 30" SDR 35 pipes  | Jun - Sept. 2009                  | \$ 178,000.00             |
| Culvert Inspections   | Contract with FST to inspect road culverts and present findings in a report   | Sept 2009 - Feb. 2010             | \$ 23,000.00              |
| Stormwater Rate Evaluation Study  | Contract with CDM to evaluate our current stormwater rates and develop a new rate structure based on impervious area                                  | 2010 -2011                        | \$ 30,000.00              |
| City Hall Ponds Dredging and Restoration  | Survey, Design and Permits for the three ponds sediment removal project   | Dec. 2011- Sept. 2012             | \$ 61,500.00              |
| Webster and Rowe Street Drainage Project <sup>1</sup>                                     | Construction and implementation of our design to replace and upgrade to 24" drainage pipe   | Sept - Dec. 2012                  | \$ 180,000.00             |
| City Hall Ponds Dredging and Restoration  | Construction Contract to dredge ponds and restore disturbed banks   | Jan - June 2013                   | \$ 320,000.00             |
| Catch Basin Inserts   | Furnish and install water quality inserts for storm drains located in the Crystal Lake Watershed  | April - July 2013                 | \$ 25,000.00              |
| Stormwater Infrastructure Improvement Plan (SIIP)   | Develop multi year plan SIIP including project costs, data gap analysis, project rating criteria and financial analysis and cash flow                 | April 2014 - Jan. 2015            | \$ 100,000.00             |
| Hammond Brook Culvert   | Geotechnical Investigation  | Sept. 2014                        | \$ 9,000.00               |
|   |   |                                   | \$ 4,996,791.50           |

|   |   |                        |                 |
|---|---|------------------------|-----------------|
| Hammond Brook Culvert Replacement       | Survey, Engineering Designs, Bid Specifications and Permitting support for: Replacement of 24" diameter drain pipe next to MBTA Green line.                           | Sept 2014 - Sept. 2018 | \$ 108,431.50   |
| Stormwater Impervious Area Assessment   | Calculate impervious area for 1100 non-residential properties based on 2013 GIS data.   | July 2015              | \$ 49,500.00    |
| Trowbridge St (near Crystal Lake)       | Engineering Design and survey to infiltrate stormwater roadway runoff into bio-filters  | May 2016 - Oct. 2017   | \$ 15,500.00    |
| Adams and Dedham Street Drainage Design | Engineering Design, Survey and Construction Administration  | Oct 2016               | \$ 217,260.00   |
| Adams Street Drain Replacement          | Replace 200 LF-12" storm drain due to structural failure  | April 2017             | \$ 200,000.00   |
| Dedham Street Drain Replacement         | Replace 450 LF-12" storm drain with 36" to increase capacity and abate surcharging conditions at the Countryside School.  | Aug. 2017              | \$ 475,000.00   |
| EHS Audit and Supplemental services     | Conduct an Environmental, Health & Safety Audit of the DPW Yards and Rumford Ave Recycling Center. Conduct Job Hazard Analysis, Update SPPC Plans, prepare new SWPPP. | Dec. 2016 - Feb. 2019  | \$ 38,900.00    |
| Laundry Brook Culvert Replacement       | Engineering Design and Construction Services  | Dec 2017 - Sept. 2018  | \$ 256,200.00   |
| Laundry Brook Culvert Replacement       | Replace 400 LF of 5'x10' concrete box culvert due to structural failure adjacent to Cabot School  | Sept. 2018             | \$ 2,600,000.00 |
|   |   |                        | \$              |
|   |   | Total                  | \$ 4,996,791.50 |

Notes:

Modest flat rate stormwater fees began in July 2006

# Current and Proposed Projects

| Current and Proposed Stormwater Projects-February 2019<br>Funded by Stormwater User Fees |  |                                       |                        |
|--|--|---------------------------------------|------------------------|
| Project Name   | Description  | Dates                                 | Projected Expenditures |
| Stormwater Infrastructure Improvement Plan   | City wide assessment of our drainage infrastructure condition and recommendations-update   | Pending                               | \$ 2,500.00            |
| Crystal Lake Watershed   | Develop Crystal Lake Watershed Assessment and Phosphorus Control Plan  | March 2019 - June 2020                | \$ 86,500.00           |
| Hammond Brook Culvert Replacement at Glen Ave and MBTA tracks                            | Replace/line 24" RCP culvert, install new inlet & outlet structures  | March 2019 - June 2020                | \$ 479,198.00          |
| South Meadow Brook culvert at Needham Street   | Sediment removal, inspection & assessment, design and rehabilitation of 6' x 12" concrete box culvert  | May 2019- August 2020                 | \$ 750,000.00          |
| Forest Grove Pump Station  | Rehabilitation for roof, HVAC, doors & windows, electrical service, bar rack and SCADA   | April 2019 - Dec. 2019                | \$ 175,800.00          |
| City Hall Ponds  | Sediment removal & disposal from Pond #1 of Homer Street   | Oct. - 2019                           | \$ 120,000.00          |
| Edmunds Brook Drainage Basin   | Survey, Inspection & Assessment, Hydraulic modeling to determine R&R of pathway culvert, bank stabilization and MS4 BMP's  | April 2019 - Dec. 2019                | \$ 104,000.00          |
| IDDE Investigation program   | Targeted sampling and investigations in drainage basins where water quality issues persist based upon our stormwater outfall sampling program  | Spread over 10 years. \$80 k per year | \$ 800,000.00          |
| IDDE Corrective Measures   | Based upon IDDE testing and investigation results: design and construction costs to remedy infrastructure defects causing water body impairments. Assumption: 25% of our drainage basins require corrective actions & impairments can be traced back to either illegal sewer services or cross-connections of sewers and drains. | Spread over 5 to 7 years              | \$ 3,000,000.00        |
| Phosphorus Control Plan (Phase 1)  | Develop a Phosphorus Control Plan pursuant to requirements in Draft Phase II MSA NPDES Permit.   | Needs to be completed 2023            | \$ 100,000.00          |
| Implement Phosphorus Control Plan  | Costs unknown until the plan is developed  | Implement over 10 to 15 years         |                        |
| Implement Recommendations from the Stormwater Infrastructure Improvement Plan            | Costs unknown until the plan is developed  | Implement over 10 to 20 years         |                        |
|  |  | Total                                 | \$ 5,617,998.00        |



# NPDES MS4 Permit Overview

MS4 – Municipal Separate Storm Sewer System  
NPDES – National Pollutant Discharge Elimination System

IDDE – Illicit Discharge Detection and Elimination  
Illicit Discharge – Any discharge not composed of stormwater unless exempt or covered under another NPDES Permit

SWMP – Stormwater Management Plan

BMP – Best Management Practice

TMDL – Total Maximum Daily Load

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
GENERAL PERMIT FOR STORM WATER DISCHARGES  
FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Authorization to discharge under the National Pollutant Discharge Elimination System

In accordance with the provisions of the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq. (the Act)) operators of small municipal separate storm sewer systems, located in the areas specified in Parts I.A.2., 3., and 4 are authorized to discharge in accordance with the conditions and requirements set forth herein.

Only operators of storm water discharges from small municipal separate storm sewer systems in the general permit area who submit a Notice of Intent and a storm water management program in accordance with Part I.E. of this permit and obtain written authorization from EPA are authorized under this general permit.

This permit becomes effective on May 1, 2003.

This permit and authorization to discharge expire at midnight five years from the effective date.

Signed this 18 day of April, 2003

## Clean Waters Act - 1972

- The goal of the Clean Water Act is to reduce pollution in all U.S. waters to “restore and maintain the chemical, physical, and biological integrity of our nation’s waters.” The law called for “zero discharge of pollutants into navigable water by 1985, and fishable and swimmable waters by 1983.
- 1987 Amendment mandated that stormwater be regulated under NPDES.



Cuyahoga River Fire in 1969. “The River that sparked a revolution”

# Charles River History



1965  
**The Charles River in 1965: Industrial Waste**

Factories along the Charles often discharge directly into the river. Here, production waste from the West Medway Dye Company runs through Charles River tributaries in the upper watershed.



1965  
**The Charles River in 1965: Poor Aquatic Habitat**

Years of pollution takes its toll as the Charles is left unable to support aquatic wildlife. Portions of the river suffer from depleted dissolved oxygen levels, which result in fish kills like this one pictured near the Perkins School in Watertown.



1965  
**The Charles River in 1965: Sewage Contamination**

Combined sewer overflow (CSO) pipes, designed to carry both stormwater and wastewater, discharge excess raw sewage and other toxic elements directly into the Charles during periods of heavy rain.



1965  
**The Charles River in 1965: Dumping, Trash and Debris**

Automobiles, furniture and other debris are often found submerged in the Charles, and many town landfills, like this one pictured in Milford, are located directly on the banks of the river.

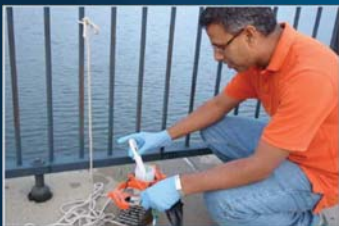
Photos and history from Charles River Watershed Assoc.



**CRWA**

Saving the Charles River since 1965

# Charles River History



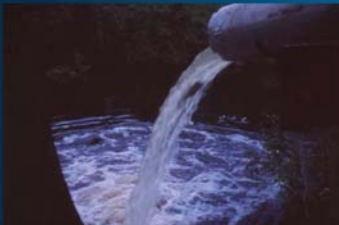
1994  
**CRWA Begins the Scientific Water Quality Monitoring Program**

CRWA launches a comprehensive monitoring and computer modeling program to gain a thorough and accurate understanding of the river system. Through this monitoring, CRWA quickly deter-



1995  
**EPA Initiates the Clean Charles Initiative**

Using CRWA science, EPA's Regional Administrator John DeVillars exercises the agency's regulatory authority aggressively, issuing Consent Orders to 10 watershed communities and fining academic institutions and businesses with



**MWRA Launches the Combined Sewer Overflow Program**

Driven by CRWA science, the Massachusetts Water Resource Authority (MWRA) develops the Combined Sewer Overflow (CSO) Control Plan that will reduce MWRA's CSO activations by



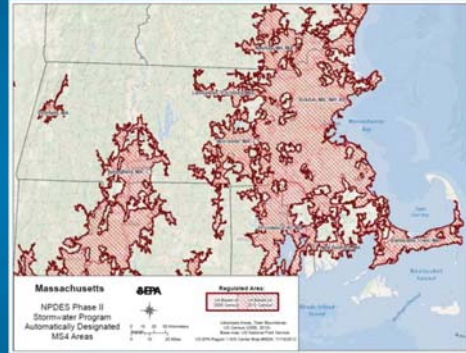
2014  
**Charles Receives First A- for the Charles River Report Card**

EPA presents the Charles River with its first A- in improved water quality for calendar year 2013, the highest grade awarded since reporting began in 1995. Read more at <http://blog.crwa.org>

CRWA formed in 1965

# NDPES MS4 Permit

- Urbanized Areas
- 260 Municipalities Covered in MA
- 1<sup>st</sup> MS4 Permit: May 2003
- New permit: July 1, 2018
- Newton's NOI submitted on Sept. 29, 2018
- Awaiting EPA Authorization



EPA administers NPDES permits in Massachusetts

# Six Minimum Control Measures

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





# Public Education and Outreach

- Eight (8) Educational Messages over Permit Term.  
Two for each target audience:
  - Residents
  - Businesses / Institutions
  - Developers / Construction
  - Industrial Facilities
- Three messages per year for phosphorus
- Annual message for bacteria
- Measure outreach and message effectiveness



Visit our stormwater webpage: [www.newtonma.gov/stormwater](http://www.newtonma.gov/stormwater)

# Public Involvement and Participation

- Public review and comment on SWMP
- Annual Reports available to the public
- Report on public participation activities, for example:
  - Website
  - Hotline / customer service
  - Charles River / stream clean-ups
  - Storm drain stenciling
  - Crystal Lake Conservancy



Local boy scouts marking storm drains in Newton

# Statewide Stormwater Campaign



<https://www.thinkbluemassachusetts.org/>

Click to watch 30-second video

## IDDE

- Ordinance to prohibit & eliminate\*
- System Mapping\*
- Outfall / Interconnection Inventory\*
- Written IDDE Plan\*
- Assessment & Priority Ranking of Catchments
- IDDE Program Implementation
- Document IDDE Program Progress
- Sanitary Sewer Overflow inventory\* and elimination
- Employee Training



\*Complete

# Construction Site Stormwater Runoff Control

- Implement / Enforce program for land disturbance > 1 acre\*
- Construction Site Runoff Controls\*
- Ordinance requiring construction site sediment & erosion control
- Requirements for construction site operators
- Written procedures for site plan review, inspections and enforcement



\*Complete

# Post Construction Stormwater Management

- Implement & enforce program to address post-construction stormwater runoff >1 acre
- Retain volume of runoff  $\geq 1$ " for all new impervious surfaces; and remove 90% TSS and 60% of Phosphorus – *new development*
- Retain 0.8", Remove 80% TSS and 50% TP for *redevelopment*
- Develop or modify ordinance
- Require As-builts
- Require Long-term Operations & Maintenance Plans
- Assess current street design and parking lot guidelines & develop report
- Assess existing local regulations with respect to promoting LID Practices
- Identify 5 City properties that can be retrofitted

## Good Housekeeping & Pollution Prevention

- Develop written O&M procedures for City-owned facilities – goal of preventing and reducing pollutant runoff and protecting water quality
- Ensure Spill Prevention Plans are in place, where required
- Schedule and prioritize Catch Basin (CB) cleaning
- Investigate CBs >50% full, after two consecutive cleanings
- Document plan for optimizing CB Cleaning in SWMP
- Report CB Cleaning statistics in the Annual Report



## Good Housekeeping & Pollution Prevention

- Develop procedures for street sweeping
- Develop Stormwater Pollution Prevention Plans (SWPPP) for DPW yards, maintenance garages and recycling center
- Establish and implement procedures for winter road maintenance (salt storage, minimize use)
- Establish and implement procedures for City-owned stormwater treatment structures (i.e., swales, infiltration, Stormceptors, etc)
- Conduct employee training on SWPPP and SPCC plans

# Phosphorus Control Plan (PCP)

Develop a multi-phase plan to achieve TMDL goal.  
Reduce Total Phosphorus by 50% = 4279 lbs

- Complete legal analysis (July 2020)
- Complete funding source assessment (July 2021)
- Develop Phase I PCP (by 2024)
  - Planned structural and non-structural control measures

Milestones and targets for first 5 years; planning & implementation over 20 years

## What is Phosphorus?

- It's a naturally-occurring element present in rock, soil and organic matter. Plants require it during photosynthesis.
- Sources include: Agriculture, stormwater runoff, lawn fertilizers, pet waste, faulty septic systems / wastewater.
- Too much phosphorus can cause cyanobacteria (algae) in lakes and rivers with adverse ecological and human health effects.

<https://www.youtube.com/watch?v=vCicSNnKUvM>



### Distribution of Annual Phosphorus Load to the Charles River by Source Category (1998-2002)

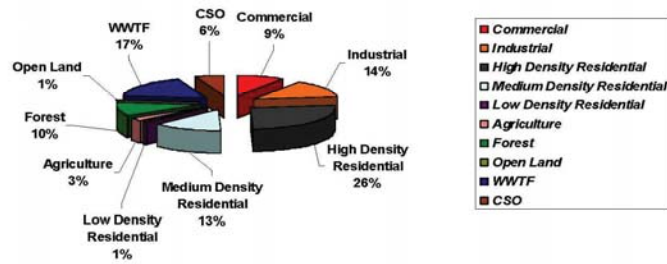


Figure 6-3. Distribution of estimated phosphorus load by source category with actual load from WWTFs for 1998 -2002.

Graph from Final TMDL for Nutrients in the Lower Charles River Basin, MassDEP and EPA, June 2007

## Street Sweeping and P Removal

- Mechanical Broom Sweepers = 38 lbs/yr
- Vacuum Assisted Sweepers = 51 lbs/yr
- HE Regenerative Air Vacuum = 102 lbs/yr

Appendix F Attachment 2

**(1) Enhanced Sweeping Program:** The permittee may earn a phosphorus reduction credit for conducting an enhanced sweeping program of impervious surfaces. Table 2-2 below outlines the default phosphorus removal factors for enhanced sweeping programs. The credit shall be calculated by using the following equation:

$$\text{Credit}_{\text{sweeping}} = \text{IA}_{\text{sweep}} \times \text{PLE}_{\text{K-land use}} \times \text{PRF}_{\text{sweeping}} \times \text{AF} \quad (\text{Equation 2-1})$$

**Where:**

- $\text{Credit}_{\text{sweeping}}$  = Amount of phosphorus load removed by enhanced sweeping program (lb/year)
- $\text{IA}_{\text{sweep}}$  = Area of impervious surface that is swept under the enhanced sweeping program (acres)
- $\text{PLE}_{\text{K-land use}}$  = Phosphorus Load Export Rate for impervious cover and specified land use (lb/acre/yr) (see Table 2-1)
- $\text{PRF}_{\text{sweeping}}$  = Phosphorus Reduction Factor for sweeping based on sweeper type and frequency (see Table 2-3).
- $\text{AF}$  = Annual Frequency of sweeping. For example, if sweeping does not occur in Dec/Jan/Feb, the AF would be 9 mo./12 mo. = 0.75. For year-round sweeping, AF=1.0.

Street Sweeping is a non-structural control measure to remove phosphorus from stormwater

# Stormwater Fees pay for our needs

CITY OF NEWTON #288-15138

BOARD OF ALDERMEN  
ORDINANCE NO. A-76  
May 2, 2016

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF NEWTON AS FOLLOWS:

That the provisions of the Revised Ordinances of the City of Newton, Massachusetts, 2012, as amended, be and are hereby further amended as follows:

Delete subsection 22-80B(1), Stormwater rates, in its entirety and insert in place thereof the following, effective July 1, 2016:

**FY 2017 Storm Water Fees**

|   |             |
|---|-------------|
| 1-4 family dwellings                    | \$75.00     |
| All other properties:                   |             |
| Source: feet of impervious surface area | Annual rate |
| 0 - 4,999                               | \$250.00    |
| 5,000 - 7,499                           | \$500.00    |
| 7,500 - 9,999                           | \$750.00    |
| 10,000 - 14,999                         | \$1,000.00  |
| 15,000 - 19,999                         | \$1,250.00  |
| 20,000 - 24,999                         | \$1,500.00  |
| 25,000 - 29,999                         | \$1,750.00  |
| 30,000 - 34,999                         | \$2,000.00  |
| 35,000 - 39,999                         | \$2,250.00  |
| 40,000 - 44,999                         | \$2,500.00  |
| 45,000 - 49,999                         | \$2,750.00  |
| 50,000 and greater                      | \$3,000.00  |

Questions, Comments?