Drivers of a Sustainable Stormwater Funding Source

- Flooding;
- Aging/failing infrastructure;
- Development pressures;
- Water/environmental quality;
- Regulatory Mandates

- Quality of Life;
- Property values;
- Drinking water protection/replenishment;
- Recreation (fishing, boating, swimming);
- Erosion of stream/creeks;
- Lawsuits
Three Funding Truths

(and one strongly held opinion)

- It is cheaper to protect than to restore;
- Taking action today is cheaper than taking action tomorrow;
- There is not, has never been, and never will be enough grants - public or private - to fund water resources protection and restoration;
- *Local problems require local solutions*

“Courtesy Dan Nees Environmental Finance Center
University of Maryland”

So, What’s the Problem?
**Stormwater Management is Complex**

- **Multiple regulations:**
  - MS4 - Zoning
  - RDA - Subdivision
  - TMDL - WPA
  - CSO

- **And regulators:**
  - Federal
  - State
  - Local

**Stormwater is Complex**

- **Multiple issues:**
  - Flooding and drainage
  - Water quality
  - Groundwater recharge
  - Habitat/resource protection
  - Drinking water protection
Stormwater Management Costs Money

- Capital infrastructure;
- Operations and maintenance;
- Administration and enforcement; and
- Education and outreach.

Is Stormwater so Different?
In MA Current Stormwater Requirements
Under the Wetlands Protection Act
and 2008 Stormwater Standards

NOI with Stormwater Form (Checklist) - 10 Standards:
- No untreated discharges to wetlands;
- Peak Rate Attenuation (2, 10 & 100);
- Recharge;
- Water Quality (80% TSS removal game);
- LUHPPLs, Critical Areas...
- Redevelopment
- E & SC
- O & M
- No Illicit Discharges exist on site

A Typical Application?

<table>
<thead>
<tr>
<th>BMP</th>
<th>TSS Removal Rate</th>
<th>Starting TSS Load</th>
<th>Amount Removed</th>
<th>Remaining Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Widget</td>
<td>60%</td>
<td>1.0</td>
<td>0.60</td>
<td>0.40</td>
</tr>
<tr>
<td>Underground Ext Det.</td>
<td>50%</td>
<td>0.4</td>
<td>0.20</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Total TSS Removal = 80%

Proprietary Treatment Device (50-77% TSS Removal Claimed)

Underground Detention Chambers (50% TSS Removal)
Outlet Level Spreader (Uncertain TSS Removal)
Range of Stormwater Management Services

- Flood reduction/protection;
- Stream channel erosion protection/restoration;
- Street sweeping;
- Catch basin cleaning;
- Culvert repair/replacements;
- Improved stormwater planning/watershed management;
- Leaf litter pick-up/disposal

- Public education, outreach and engagements;
- Maintenance of drainage systems;
- Construction and post construction inspections;
- Construction of new capital facilities;
- Maintenance of existing and new stormwater practices

Gravel Wetlands  Sand Filters
Permeable Pavements  Open Channels
In the spring of 2005, nearly all homeowners in Madison and Dane County had to purchase phosphorus-free yard fertilizers like this from area stores.

2008 Grand Rapids MI, Spokane WA Detergent Phosphorus ban
**Enhanced Non-Structural Controls**

- Leaf/Lawn Litter Control
- Enhanced Street Sweeping
- More Freq. CB Cleaning
- Animal Waste Reduction

**Watershed Planning**

(subwatershed prioritization and practice identification)
Failed Sand Filter

Construction of new sand filter completed
Before Maintenance

![Before Maintenance Image]

03/10/2004

After Maintenance

![After Maintenance Image]
**Typical Public Maintenance Program**

- Includes maintenance of both public and private stormwater facilities
- Public facilities - parks, libraries, fire stations, DPW facilities, schools and others
- Private facilities - Municipality typically performs structural maintenance, property owners will perform aesthetic maintenance
Example of Future Cost Items

- Update written Stormwater Mgmt Plan;
- Increased reporting/record keeping on annual reports;
- Targeted public education (2 messages to 4 audiences) and report results;
- Illicit discharge priority catchment assessments (including SSOs);
- Detailed outfall monitoring for both dry and wet weather;
- Written IDDE program with mapping and prioritization of problem catchments;
- Complete stormwater system mapping (all pipes/manholes/inlets/structures. Catch basin inspection/cleaning/inspection data;

Future Cost Items (continued)

- Track # of site plan reviews, inspections, enforcement actions;
- ID/rank retrofit opportunities for municipally owned facilities;
- Develop a SWPPP for municipally owned facilities;
- Complete a code review and update/report;
- Impervious cover/DCIA tracking;
- Street sweeping optimization(2 times/yr);
- Written O&M procedures for municipal activities for trash, pet wastes, leaf litter control, fertilizer use & yard wastes;
- Pet waste & waterfowl mgmt plans.
Resources, Funds & Revenue

- **Resources** are generally free such as volunteer labor or goods; technical information available for no cost;
- **Funds** are one-time $, not dependable, not predictable, likely limited;
- **Revenue** is regular, predictable, dependable, provide cash flow (can be borrowed against)

The Universe of “Funding” Methods

- Modify local programs (fees/changes);
- Share Resources with other entities;
- Partner with non-profit organizations;
- Federal Programs
  - FEMA, COE, USGS, NRCS
  - FHWA (TEA 21)
- Corporate Sponsorship
  - Corp Wetland Partnership
  - Advertising
- State/Regional Programs;
  - Clean Water State Revolving Loan Fund Programs (SRF);
  - 319 Nonpoint Source;
  - 604(B) WQ Planning;
  - 104(b)3
  - NOAA Coastal Pollution Remediation
- Fees for Service
- General Fund (sales/income tax)
- Stormwater Utility Fees
Massachusetts State Revolving Fund

- SRF money is not free, but it is affordable.
- SRF loans have low interest rates and cover up to 100% of a project’s costs with no matching requirement on behalf of the borrower (grants, typically require the grantee to provide matching funds that must be available at the start of a project).

MA SRF Eligible Projects

“planning and construction of projects, including CSO mitigation, new wastewater treatment facilities and upgrades of existing facilities, infiltration/inflow correction, wastewater collection systems, and nonpoint source pollution abatement projects, such as landfill capping, community programs for upgrading septic systems (Title 5), brownfield remediation, pollution prevention, and stormwater remediation”
### MA SRF Eligible Projects

“**non-structural projects** are eligible for SRF funding; e.g., planning projects for nonpoint source problems which are consistent with the MassDEP’s Nonpoint Source Management Plan and that identify pollution sources and suggest potential remediation strategies.

http://www.mass.gov/dep/water/wastewater/cwsrffs.htm

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### Tenets of a Stormwater Utility

**Flexible**
- Primary source for the **whole** program;
- Other fees still exist to provide equity;
- Credits to encourage/promote desired behavior;
- Geographically based?
- Can take into account variable environmental costs

**Equitable**
- Costs a function of:
  - Runoff volume
  - Runoff rate
  - Pollutant loading
- Each of the above are directly related to amount of impervious cover.
Massachusetts Legal Considerations

- **Clear provisions in MGL 83 Sec. 1A and 16**
  - Construct drains or sewers to reduce nutrient impacts;
  - Charge for the use of sewers and main drains.

- **But not fully vetted in wide-spread application**
  - What are “drains” and “sewers”?
  - What is the definition of “use” of these systems?
  - There is a “due diligence” process required by local government to establish the fee.

- **Regulatory Fees:**
  - Needed to regulate activities for the public good;
  - Not related to the cost of providing the service;
  - Typically a secondary funding method for specific purpose (e.g., peer review fees).

- **User Fees requirements:**
  - Be able to be identified separately from other services (not general funds);
  - Be “voluntary” in that there is a way to reduce or avoid the fee (through credits);
  - Be related to the level of “use” of the services (rational nexus).

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How are Fees Typically Calculated?
Equivalent Residential Unit (ERU)

- **Average single-family residential impervious cover (based on best GIS or statistical sample) = 1 ERU**
- **Impervious area = house, patio, garage, driveway, and on-lot sidewalk**
- **Typical value = 2,700 sq ft to 3,500 sq ft**
Residential Tiers

- Allows for variations in ERU fee structure for the range of development patterns and demand on municipal stormwater service;
- Tier analysis required (assessor’s data, zoning info, review required services/cost);
- Typically no more than 3 tiers (high, medium, low density residential) - for example.
  - HDR = 1.5 ERU
  - MDR = 1.0 ERU
  - LDR = 0.75 ERU
**Non-Residential Properties Billed as Multiples of the ERU**

- Total site impervious area/ERU = # of ERUs

**Example:**
Total commercial site IA = 47,260 sf / 3,500 sf = 13.5 use 14 ERUs.

[Graphic courtesy AECOM Pewaukee Feasibility Study]

**Or Graphically**

**Non Single Family Residential ERU Calculation**

- Building Footprint = 10,000 sq ft
- Parking Lot = 14,000 sq ft
- Total Impervious Area = 24,060 sq ft
- ERU = 3,000 sq ft
- Total = 24,060 / 3,000 = 8 ERUs
Adjustments and Credits

- Adjustments:
  - For added or removed impervious cover
  - To correct data (where better/more accurate information is provided)

- Credits:
  - Required per state law (legal challenges);
  - Properties that don’t drain to the MS4;
  - For created/mitigative conditions
    - On-site water quality treatment systems;
    - On-site flood controls
    - On-site operation & maintenance is occurring

Establishing the Fees

ERU rate ($/ERU) = \[
\frac{\text{Total $ Needed for Services}}{\text{Total ERUs in Municipality}}
\]

For Example: Assume annual service requirements = $1.25M, and community has 11,000 ERUs;

ERU = $1,250,000/11,000 = $113/yr or approx. $10/month
Cost Assessment

- Staff time and Materials $
- Supplies $
- Contract labor $
- Vehicle maintenance $
- Equipment maintenance $
- Capital investments $
- Mapping and Monitoring $
- Planning $
- Consultants $

What are the potential revenues?

In General:

- For every $1 dollar per month per ERU
- A utility can typically generate about $20 to $35 per developed acre per year.
- The National “Average” ≈ $4.00/mo
Stormwater Utility Options

Obviously there are lots of them:
- Add-on to an existing entity (e.g., Wastewater Management District)
- Entirely new entity in each municipality;
- Entirely new regional entity.

Advantages of a Regional Approach

- Some things have no geographic boundaries (e.g. education);
- Some things will benefit from more opportunities to do them (e.g. potential phosphorous reduction sites);
- Some things have administrative fixed costs which could be spread across a bigger base.
A Case for a Regional Entity

• Economies of scale;
• Better able to gain outside funding;
• Watershed consistency - cross jurisdictional;
• Less local politics;
• Better access to talent;
• Local governments perhaps not as much resources;
• Can undertake bigger projects;
• Would match regulatory programs’ geography

Who might not like a stormwater utility?

• Tax exempt property owners;
• Properties with very large impervious surfaces;
• Those on fixed incomes;
• Some developers;

• And as my colleague Andy Reese likes to say: “Maybe Everyone”
Implementation Details

Setting up a successful utility will require the community to pay particular attention to the details.

- Governance and consensus across municipal departments;
- The “Program” is clearly defined and a strong argument is made;
- Public and Political Education and Support;
- Financial procedures and policies; and
- Accurate and complete database and customer service is provided.

Process for Utility Implementation

- Advisability Study (background-case-cost/revenue);
- Feasibility Study (business plan);
- Implementation
  - Public outreach
  - Develop/adopt utility ordinance
  - Adopt rate and credit resolutions
  - Incorporate into billing process
Additional Resources

- Black and Veatch 2010 Stormwater Utility Survey:

- EPA Fact Sheet: Funding Stormwater Programs:
  [http://www.epa.gov/region1/npdes/stormwater/assets/pdfs/FundingStormwater.pdf](http://www.epa.gov/region1/npdes/stormwater/assets/pdfs/FundingStormwater.pdf)

- Charles River Watershed Association: Assessment of Stormwater Financing Mechanisms in New England:


- U.S. Environmental Protection Agency, Watershed Academy. Catalog of Federal Funding Sources for Watershed Protection
  [http://cfpub.epa.gov/fedfund](http://cfpub.epa.gov/fedfund)

- 2011 Rhode Island LID Site Planning and Design Guidance Document