

Sustainable Stormwater Funding for the Upper Charles River

Steering Committee Meeting #5
Municipal Center, Bellingham, MA
10 Mechanic Street
September 12, 2011



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Agenda

- | | |
|------------------|--|
| 1:00-1:10 | Welcome and Introduction (EPA) |
| 1:10-1:30 | Draft Report Overview |
| | Review Sections 1 - 2: Introduction & Context |
| | Questions and discussion (Q&D) on Sections 1 - 2 |
| 1:30-2:00 | Review Sections 3 - 4: Alternatives & Cost of Services |
| | Q&D on Sections 3 - 4 |
| 2:00-2:30 | Review of Sections 5 - 6: Governance & Funding Options |
| | Q&D on Sections 5 - 6 |
| 2:30-2:50 | Review of Sections 7 - 8: Billing Options & Recommendations |
| | Q&D on Sections 7-8 |
| 2:50-3:00 | Next Steps (submittal of comments and timing for completion of the final report) |



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Draft Report Content

- List of Acronyms
- Executive Summary
- Section 1: Introduction
- Section 2: Stormwater Context
- Section 3: Implementation Alternatives
- Section 4: Estimated Costs of Existing & Future Services
- Section 5: Governance/Admin
- Section 6: Funding Options/Revenue Alternatives
- Section 7: Billing Options
- Section 8: Recommendation
- Section 9: References
- 4 Appendices
 - Comments
 - Permit summaries
 - CMPP Assessment
 - Cost Spreadsheets
 - EPA Future Cost Memo



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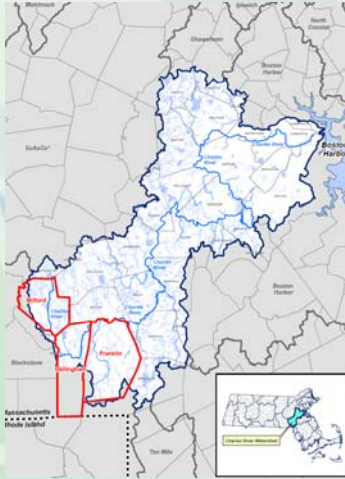
Section 1: Introduction

- Background and reference to Draft MS4 and RDA General Permits
- Purpose of the project and recommendations for funding options to manage stormwater runoff
- Benefits for the reader (e.g., better understanding of)
 - Permit requirements
 - Estimate of the cost of services
 - Program implementation options
- Steering Committee representation



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Section 2: Stormwater Context in the Upper Charles River Watershed

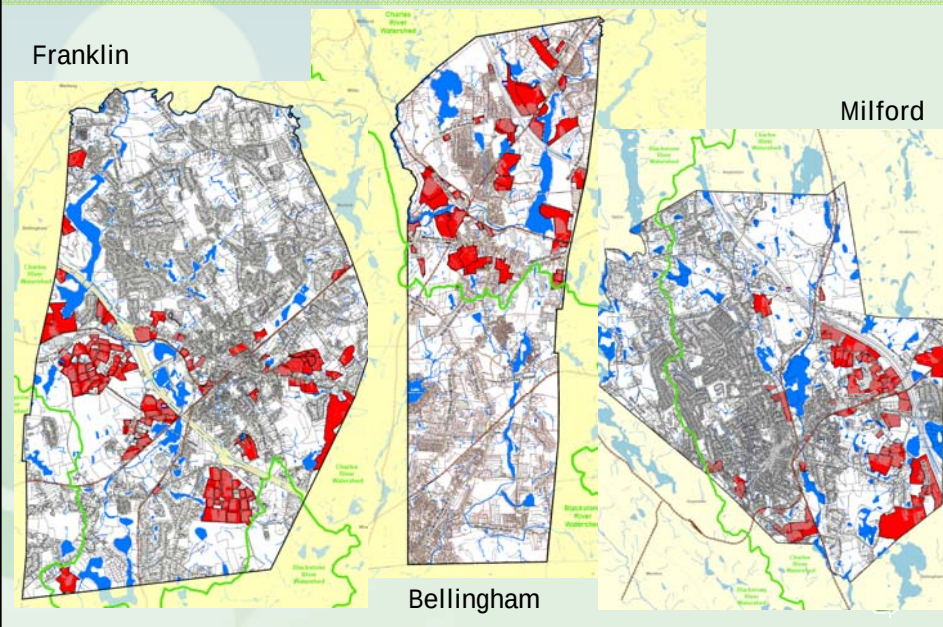


- Impaired waters in each town
- Regulatory drivers (e.g., MS4 and RDA GPs)
- Loading reduction requirements:
 - Bellingham: 52%
 - Franklin: 52%
 - Milford: 57%



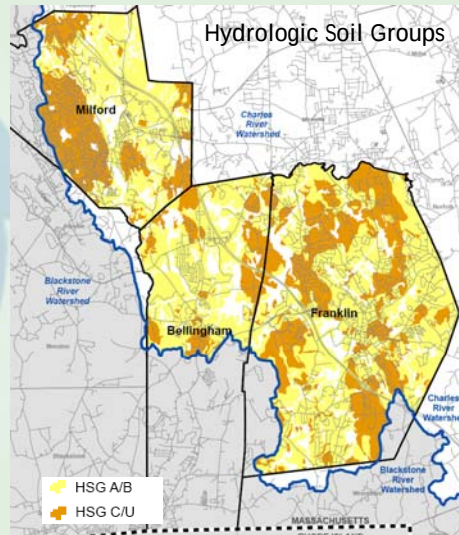
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Designated Discharge Properties



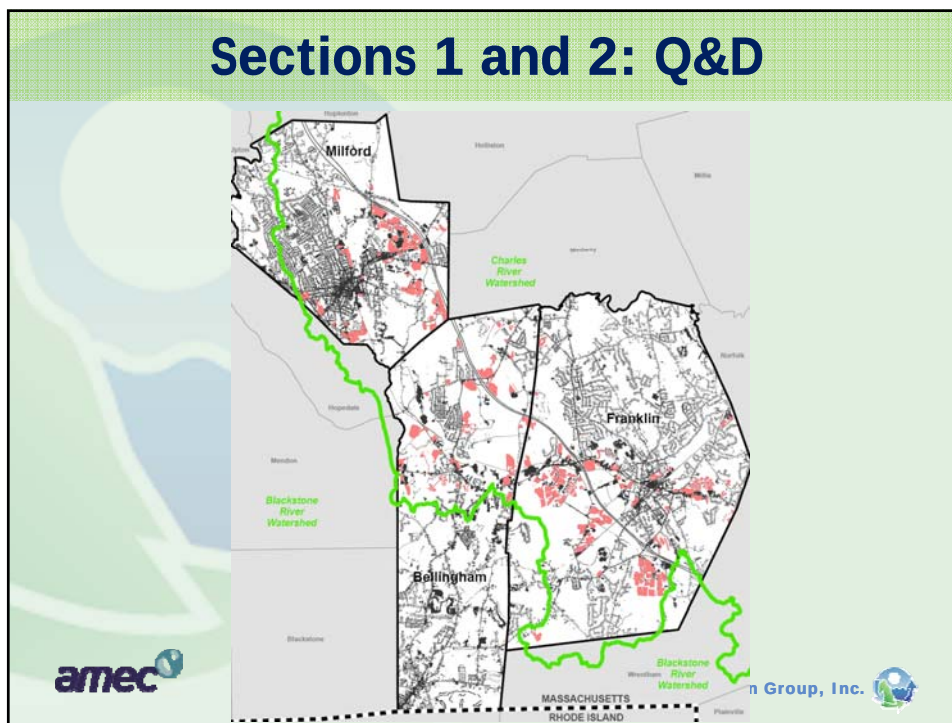
Local Factors Influencing Program Implementation

- Land use
- Existing impervious cover
- Soils
- Existing BMPs
- Existing stormwater program capacity
- Other related programs (Sewer & Water)
- Governance structure



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Sections 1 and 2: Q&D



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Section 3: Stormwater Management Implementation Alternatives

Variables include:

- Timeframe for implementation (10,15, 20 or 25 years);
- Funding mechanisms (Utility or not); and
- Management approach (town-by-town or regional cooperation).

Table 3.1: Stormwater Management Implementation Scenarios Evaluated in this Feasibility Report

Each Town Manages Stormwater Program Individually			
No Stormwater Utility		Scenario 3 Town enacts Stormwater Utility – DDs fully participate in the program	Scenario 4 Regional Stormwater Management Program – DDs fully participate
Scenario 1 DDs on their own	Scenario 2 DDs participate in a CMPP		



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Funding Option: No Stormwater Utility (DDs on their own)

Advantages*

- No new entity or program;
- Residential property owners could possibly deduct additional expenses;
- Program completely within local control.

Disadvantages*

- Costs may exceed General Fund budgets; requiring Prop 2½ Overrides;
- Lacks equity among property owners;
- Shorter implementation timeframe for DDs with potentially higher costs;
- No opportunities for elimination of duplicative costs;
- No opportunities to apply financial incentives to modify behavior.

* From the perspective of the municipalities



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Funding Option: No Stormwater Utility (DDs part of a CMPP)

Advantages

- Longer timeframe for DDs to implement controls;
- Allows for P Trading to maximize reductions at the most cost effective sites;
- Centralized entity likely to a more structured approach; and
- Less fiscal impact to DDs

Disadvantages

- Time and expense to set up and manage CMPP; and
- May divert resources from other programs.



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Funding Option: Stormwater Utility on a Town-by-Town Basis

Advantages

- Equitable distribution of costs across all property owners;
- Consistent & independent funding;
- Longer timeframe for DDs to implement controls;
- P Trading allows for more cost effective implementation;
- Offers potential for fiscal incentives to modify behavior; and
- Compliance with MS4 GP more certain

Disadvantages

- Initial cost to set up and manage utility;
- No opportunities for elimination of duplicative costs;
- Payment of fees will establish expectations of increased services;
- Payment of fees likely not deductible by residential property owners.



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Funding Option: Stormwater Utility on a Regional Basis

Advantages

- Cost savings for administrative and program elements;
- Cost saving potential for BMP implementation across town boundaries;
- Eliminates potential resource conflicts with other municipal programs; and
- Potential for further regionalization and cost savings.



Disadvantages

- Fair share of services debates;
- Potential for loss of control over basic services;
- Potential for new bureaucracy with unnecessary program elements;
- Potential for variable responsiveness.

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Section 4: Cost Estimates for Existing and Future Stormwater Services

- Existing program annual operational costs;
- Future program annual operational costs;
- Future Capital Cost for Phosphorus Reduction; and
- Alternative methods for estimating capital costs.

* Existing costs as reported by municipality.

Future estimates based on Draft MS4 permit requirements



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Stormwater Program Cost Centers

- Administrative
- Billing and Finance
- Regulation/Enforcement
- Engineering/Master Planning
- Operations and Implementation
- Monitoring

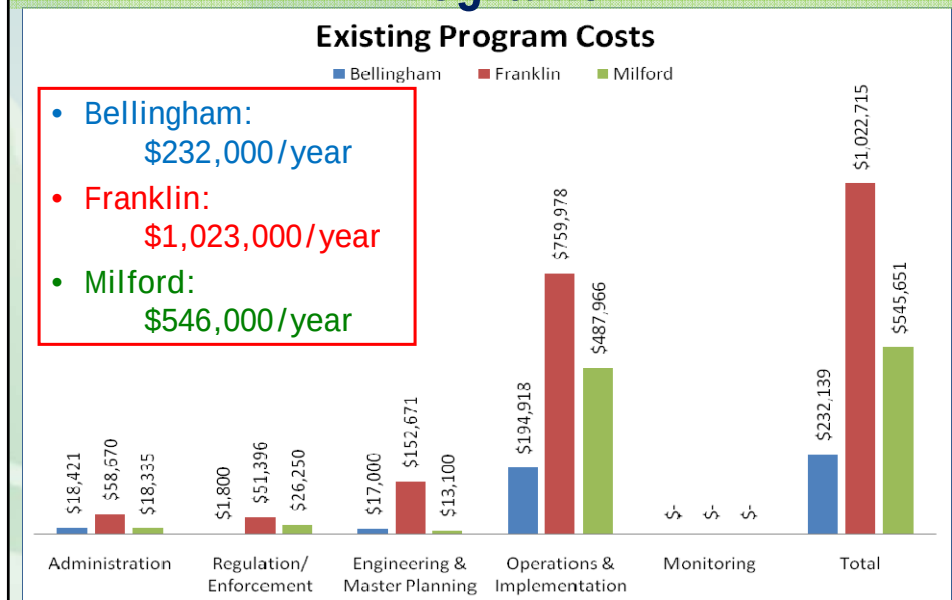


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Operations and Implementation (for example)

<i>Operations and Maintenance Management</i>	construction oversight , project bidding, etc
<i>CIP/Infrastructure Implementation</i>	construction costs (design and engineering in previous section); could be % of large road project (for example)
<i>PCP implementation</i>	retrofitting
<i>Voluntary CMPP/RDA implementation</i>	retrofitting
<i>IDDE</i>	elimination of IDDEs
<i>Storm Sewer and Culvert Maintenance/Repair</i>	equipment, labor, transport and disposal
<i>Inlet, Catch Basin, and Manhole Cleaning</i>	equipment, labor, transport and disposal & repair
<i>Stormwater BMP Facility Maintenance</i>	equipment, materials, labor, transport and disposal associated with maintenance and repair
<i>Street Sweeping</i>	equipment, labor, transport and disposal
<i>Fall Leaf-pickup</i>	equipment, labor, transport and disposal
<i>Maintenance/Repair/Installation of ESC practices</i>	includes cleanup of sediment and repair of eroded areas
<i>Stream Restoration/Stabilization</i>	equipment, materials, labor, transport and disposal
<i>Ditch and Channel Maintenance</i>	equipment, labor, transport and disposal
<i>Waterfowl & Pet Waste Management Programs</i>	equipment, labor, materials
<i>Public Assistance Program</i>	equipment, labor, materials for rainbarrel, disconnection, raingarden programs
<i>Emergency Drainage Repairs</i>	allowance for unexpected repairs
<i>Land, Easement, and Rights Acquisition</i>	

Operational Costs for Existing Programs



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 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
- Phosphorus Load Reduction to comply with TMDL targets



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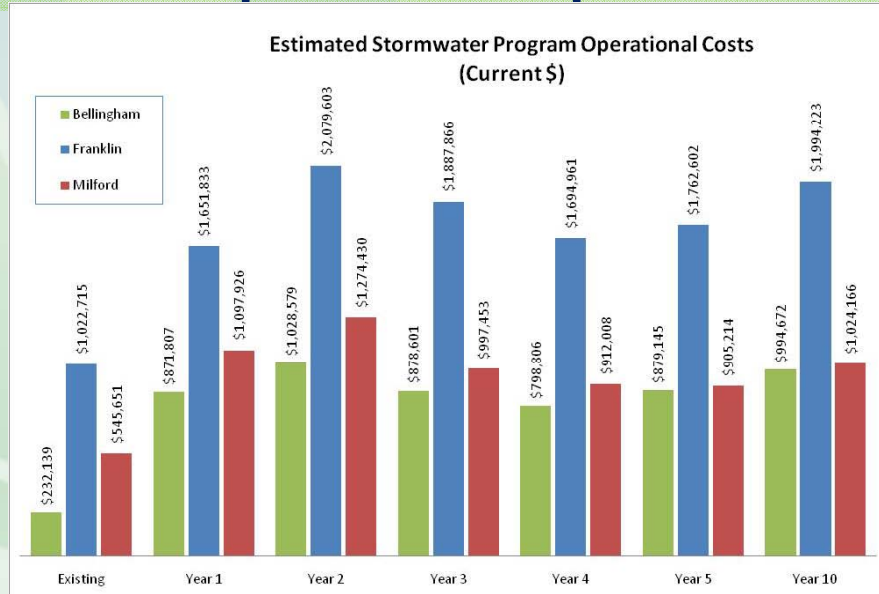
Phosphorus Control Cost Items

- Phosphorus control plan (PCP)
- Phosphorus control mapping of priority areas
- Certified Municipal Phosphorus Plan (CMPP)
- Increased/targeted public education on phosphorus control and increased public involvement



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Future Program Costs for Operational Expenses



Summary of Operational Costs Annual Average First Five Years

- Bellingham: \$ 891,000/year
- Franklin: \$ 1,815,000/year
- Milford: \$ 1,037,000/year

Costs for Phosphorus Reduction Per TMDL Targets

Phosphorus removal requirements:

- Bellingham = 52%
- Franklin = 52%
- Milford = 57%
- DD sites = 65%

Note: DD phosphorus removal is nested within MS4 total removal

Table 4.10: Phosphorus Load Reductions Required (Charles River Watershed)

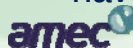
Town	Area (ac)	IA (ac)	Existing load (lbs/yr)	TMDL Allowable Load (lbs/yr)	TMDL Required Load Reduction (lbs/yr)	% Load Reduction		
						Total Required	Assumed met with Non-structural BMPs	Assumed met with Structural BMPs
Bellingham	6,122	922	2,132	1,028	1,104	51.8	15	36.8
Franklin	15,546	2,401	5,428	2,600	2,828	52.1	15	37.1
Milford	8,112	1,741	3,851	1,656	2,195	57.0	15	42

Sources: Impervious areas and loads from EPA spreadsheet derived from TMDL (Voorhees, 2011); areas for each town are from MassGIS shapefile for Charles River Watershed (2011)

Estimated Costs for Phosphorus Reduction

Assume 15% of Total P Load Reduction achieved through non-structural measures:

- Enhanced street sweeping (2% - already accounted for in operational costs);
- Bi-annual catch basin cleaning (2% - also already accounted for in operational costs);
- Organic Waste and Leaf Litter Control (1% - also already accounted for in operational costs); and
- Phosphorus ban on fertilizers (10% - assumed to have no implementation cost).



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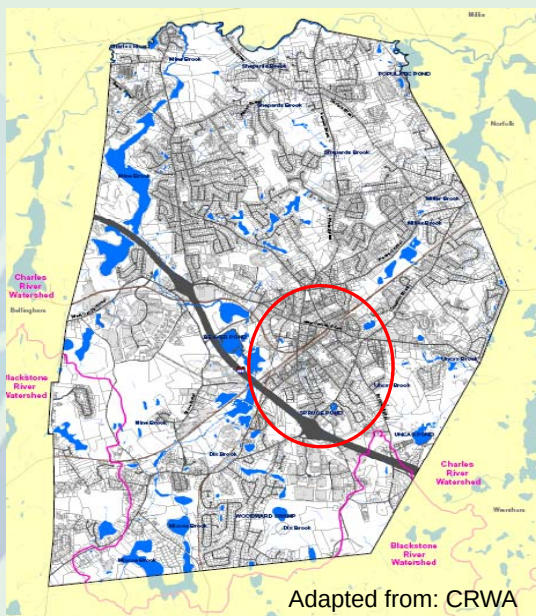
Spruce Pond Brook Franklin, MA

1.1 Square Mile Watershed;

Mix of land use is representative of the Upper Charles Watershed;

Estimated cost to implement structural BMPs to remove 43.1% of P = \$4.92M (\$28,070/Imp Acre; \$31,700/lb of P);

Results calibrated by land use and soil type to scale-up to entire Upper Charles within the 3 communities.



Adapted from: CRWA

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Spruce Pond Brook Subwatershed



- 51 catchments;
- 28 catchments with proposed control practices;
- 2 existing BMPs to be retrofitted
- Management units created based on land use and soil type
- Costs include land acquisition but not design & permitting
- Scaled up to target removals then added 35% for design, permitting and const admin.



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Land Use Distribution Spruce Pond Brook vs Upper Charles

Land Use	Spruce Pond Brook	Upper Charles (3 Towns)
Commercial:	6.1%	4.1%
Industrial:	3.0%	4.2%
HDR:	7.0%	4.2%
MDR:	32.1%	16.5%
LDR:	10.9%	7.9%
Ag:	0.8%	1.7%
Forest:	36.9%	56.4%
Open Land:	8.8%	1.4%
Highway:	2.4%	2.1%



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Treatment Costs/Acre (calibrated from Spruce Pond Brook Watershed Plan)

Table 4.11: Management Unit Treatment Costs for Target Phosphorus Removal

Management Unit (Land Use and Soil Type)	Cost per IA for 37% TP Removal	Cost per IA for 42% TP Removal
Agriculture A/B	\$11,000	\$14,000
Agriculture C/U	\$19,000	\$22,000
Commercial A/B	\$49,000	\$56,000
Commercial C/U	\$74,000	\$81,000
Freeway A/B	\$20,000	\$24,000
Freeway C/U	\$30,000	\$36,000
Industrial A/B	\$34,000	\$41,000
Industrial C/U	\$54,000	\$60,000
High Density Res A/B	\$74,000	\$80,000
High Density Res C/U	\$128,000	\$135,000
Medium Density Res A/B	\$24,000	\$30,000
Medium Density Res C/U	\$46,000	\$51,000
Low Density Res A/B	\$20,000	\$24,000
Low Density Res C/U	\$30,000	\$36,000



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Remaining P Reduction Through Structural Controls

- Bellingham and Franklin = 37% of P Load
- Milford = 42% of P Load
- Comparison to other methods/data:
 - Optimization analysis from Tetra Tech studies (as modified by EPA/HW staff);
 - Published cost for P removal per lb;
 - Comparison to other studies/other regions/actual implementation plans.



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Summary of Capital Costs for Target Phosphorus Reduction

(Based on Calibration against Spruce Pond Brook Subwatershed)

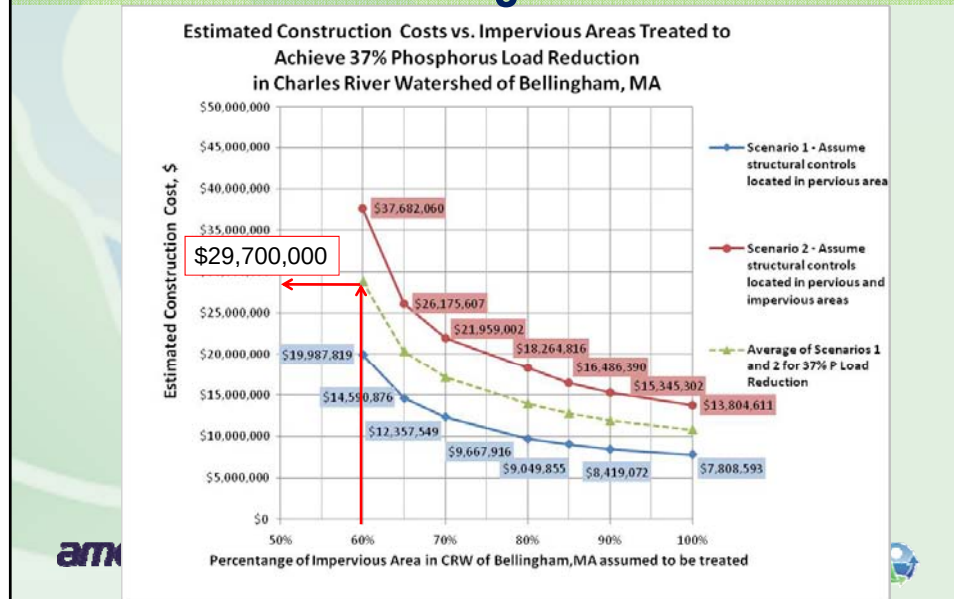
Town	Target P Removal from Structural Controls	Capital Construction Costs in 2011 \$ ¹
Bellingham	37%	\$29,700,000
Franklin	37%	\$74,600,000
Milford	42%	\$75,800,000

¹ Includes: Design, permitting, const. admin., land acquisition costs, & # of existing BMPs

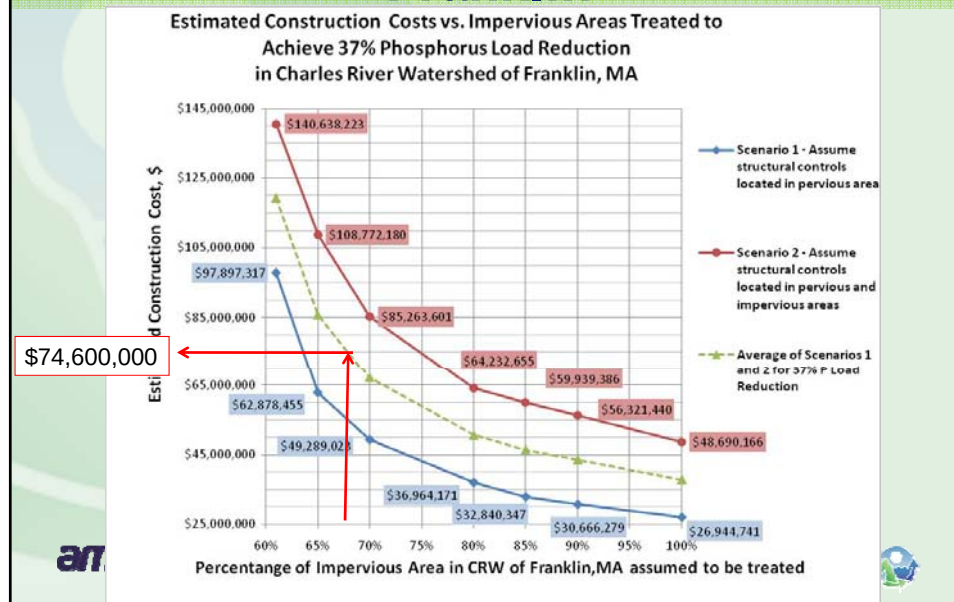


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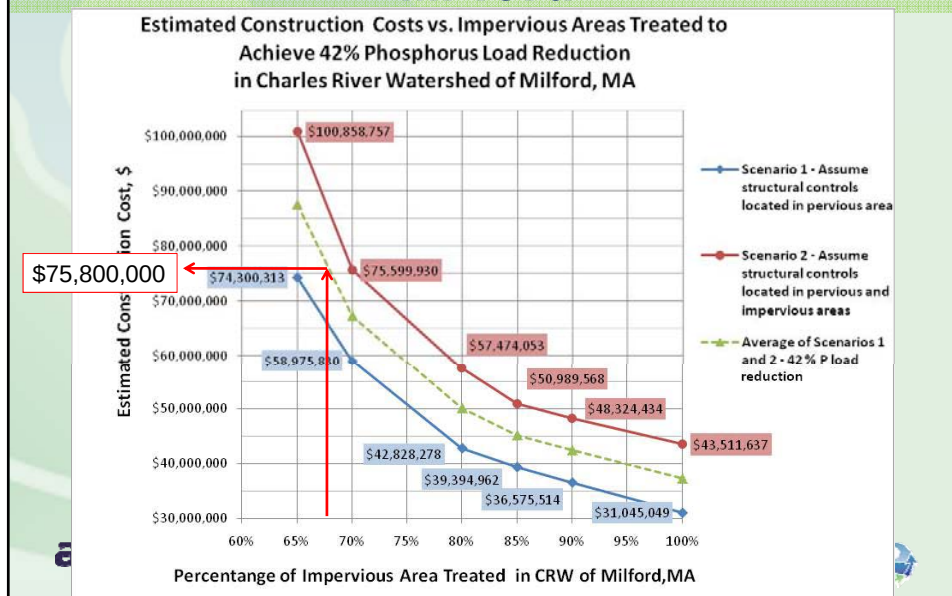
Comparison to Optimization Costs Bellingham



Comparison to Optimization Costs Franklin



Comparison to Optimization Costs Milford



Comparison to Other Studies/Plans (\$/Imp Acre Treated)

- Mid-Atlantic Retrofit Costs: (Schueler, 2011)
 - On-Storage Retrofits = \$32,500
 - site LID Retrofits = \$191,000
- Long Creek Watershed, Maine (LCWM District - Tamara Lee Pinard)
 - Centralized Retrofits (Maine Mall) = \$82,000
 - Street-Level Retrofits = \$137,000
- 15 North Main Street, Bellingham (HW, 2011 - 65% P removal)
 - On-site LID Retrofits = \$101,800
- Milford Library Vicinity, Milford (HW, 2011 - 57% P removal)
 - On-site LID Retrofits = \$150,000



Municipal Costs in the Context of the RDA

DD cost nested within total cost

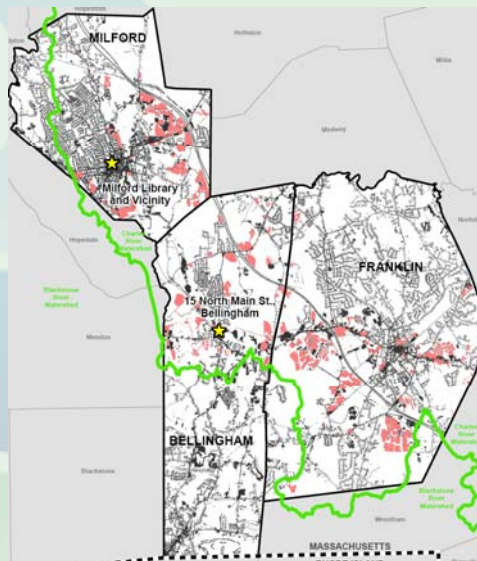
Town	Target P Removal from Structural Controls	Municipal Capital Costs in 2011 \$ ¹	DD Capital Costs to Achieve 50% P Removal in 2011 \$ ²
Bellingham	37%	\$27,100,000	\$2,600,000
Franklin	37%	\$63,700,000	\$10,900,000
Milford	42%	\$64,700,000	\$11,100,000

¹ Includes: Design, permitting, const. admin. & land acquisition costs

² Assumes cost efficiencies through participation in a CMPP



Sections 3 and 4 Q&D



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Section 5: Governance and Administration

- Governance Options
 - Regional Utility approach;
 - Multi-municipal approach (several examples of program sharing already exist); and
 - Independent municipality approach.
- Organizational Assessment Options
 - Governance and administration;
 - Organizational gap analysis;
 - Service area; and
 - Extent and level of service.



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Existing Legislation & Legal Considerations

- MGL Ch 83 Sec.16 - Enabling Legislation for Stormwater Utility
 - Specifies uniform fee structure for residential properties;
 - Allows for a “system of credits.”
- MGL Ch 21, Sec. 28 – Water Pollution Abatement Districts
- MGL Ch 40, Sec. 4A – Inter-Municipal Agreements
- MGL Ch. 40N, Section 4 – Creation of Municipal Water & Sewer Commissions
- MGL Ch 83, Sec. 1A – Regional District for Nutrient Management



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Section 6: Funding Options/Sources

- Resources/Money/Revenue
- Revenue options include:
 - Taxes;
 - Service Charges;
 - Exactions;
 - Assessments.
- Other Sources: Grants & loans, Permit fees, Ch 90 funds, bonds, cost sharing, etc.



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Stormwater Utility (User Fee) a type of service charge

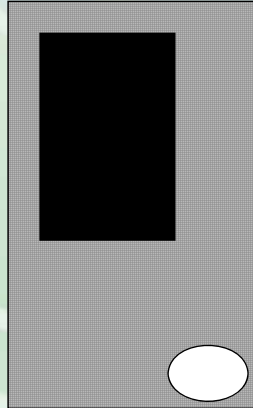
- Rate structure options
- Rate modifiers and class exemptions
- Equivalent Residential Unit (ERU)
 - Values estimated for each town
 - Calculated using MassGIS data as modified based on analysis of Franklin data (more on this in a moment)
 - Total number of ERUs calculated for each town
 - Used as the basis to generate revenue



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How a Fee is Calculated

"the more you pave the more you pay"



= say a typical house pays \$10.00/mo and is 3,200 SF IA

= is 96,000 SF IA
30 * \$10.00/mo
minus credit

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DoubleTree Hotel Example

266,000 sq feet =
84 ERU bucket

Fee = 84 * \$10.00
= \$840.00/mo less
any credit

Assume ERU = 3,200 sf
Fee = \$10.00/ERU/mo



amec 

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IA Adjustments for MassGIS: Franklin's Correction Factor



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Utility Funding Options

Table 6.2: Equivalent Residential Unit (ERU) Values for Each of the Three Towns

Towns & ERU Values in SF	Satellite ERU Value	Manual ERU Value*	Calculated ERU Value
Bellingham	2,693.6	-	3,260
Franklin	2,687.6	3,252.3	-
Milford	2,503.4	-	3,029

*The manually derived ERU for Franklin was used to reconcile discrepancies in the satellite ERU computations for Bellingham and Milford.

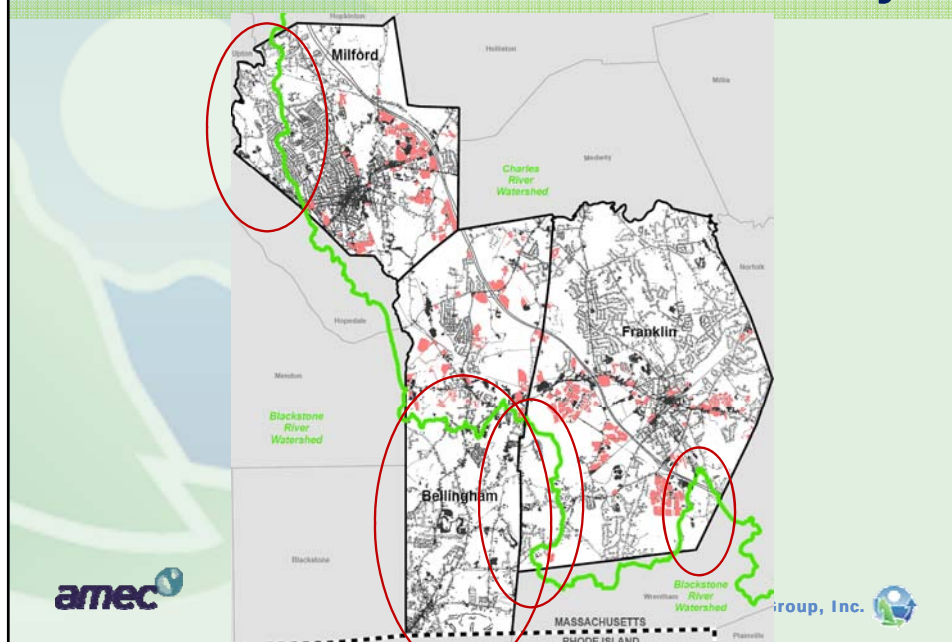
- Timeframe for implementation (10, 15, 20 or 25 years from initial permit);
- Inclusion and exclusion of DDs; and
- Delay in capital construction (i.e., "back-end loaded" construction program).

Assumed to include all ERUs within each town (both inside and outside the CR Watershed)



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Town-wide vs CR Watershed Only



Resulting ERUs Town-wide vs CR Watershed only

Table 6.3: Basic Revenue Capacity Information – ERUs within Each Town and Total for 3 Towns

Town	DD ERUs	Other IA ERUs	Local Road ERUs	State/Fed Roadway ERUs	TOTAL ERUs
Bellingham	3,594	11,205	5,642	748	21,189
Franklin	6,291	15,074	10,903	1,501	33,769
Milford	5,821	14,431	6,997	1,274	28,523
TOTALS	15,706	40,710	23,543	3,522	83,481

Table 6.4: Basic Revenue Capacity Information – ERUs (Charles River Watershed Only)

Town	DD ERUs	Other IA ERUs	Local Road ERUs	State/Fed Roadway ERUs	TOTAL ERU
Bellingham	3,594	5,139	2,934	389	12,055
Franklin	6,291	14,182	9,889	1,361	31,724
Milford	5,821	12,715	6,004	1,093	25,633
TOTALS	15,706	32,036	18,827	2,843	69,412

Final # of ERUs Used for Revenue Calculations (Roads Removed)

Town	Total # of ERUs	# of Road ERUs	# of ERUs used for Revenue Calcs.
Bellingham	21,189	6,390	14,799
Franklin	33,769	12,404	21,365
Milford	28,523	8,271	20,252

Table 6.7: Basic Revenue Capacity Information within Each Town (with Roads Removed) – Annual Revenue for One Dollar/ERU/Mo Including DDs

Town	DD \$\$	DD %	Other IA \$\$	Other IA %	TOTAL \$\$
Bellingham	\$43,128	24%	\$134,460	76%	\$177,588
Franklin	\$75,492	29%	\$180,888	71%	\$256,380
Milford	\$69,852	29%	\$173,172	71%	\$243,024
TOTALS	\$188,472	28%	\$488,520	72%	\$676,992

Total Costs

Table 6.8: Estimated Operational and Capital Costs – Charles River Watershed (2011 dollars)

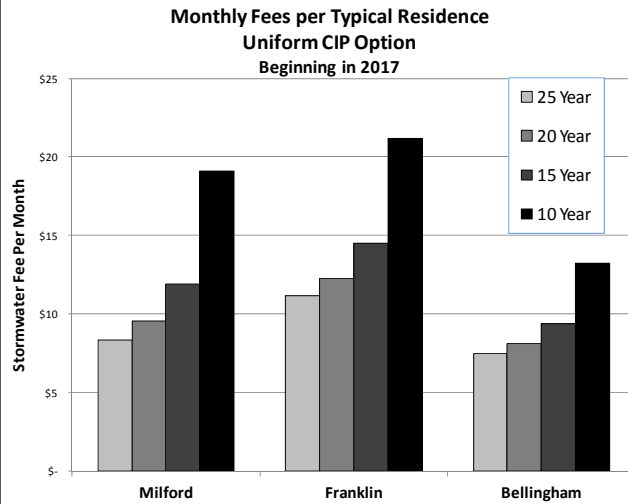
Town	DD CIP	Town CIP	Total CIP	Operating Costs*	Billing and Admin Costs
Bellingham	\$2,600,000	\$27,100,000	\$29,700,000	\$891,000	\$14,000
Franklin	\$10,900,000	\$63,700,000	\$74,600,000	\$1,815,000	\$24,000
Milford	\$11,100,000	\$64,700,000	\$75,800,000	\$1,037,000	\$24,000
TOTALS	\$24,600,000	\$155,500,000	\$180,100,000	\$3,744,000	\$65,000

*Annual Average for first five years

Costs are rounded to the nearest \$1,000 (totals may not add up due to round-off error)



ERU Rate Beginning in Year 5 of the Permit Phase (Entire Town - DDs Included)

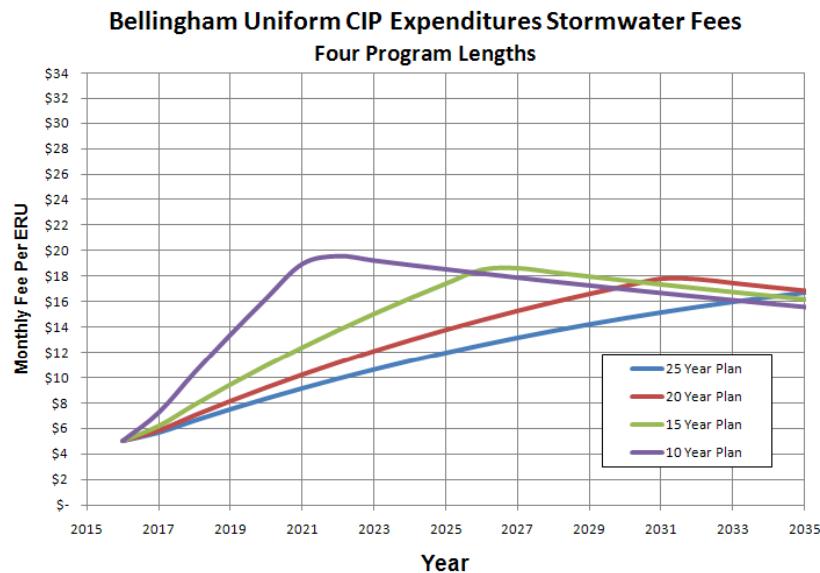


Initial avg. rate first 5 years
to cover operational costs:

Bellingham:	\$ 5.10
Franklin:	\$ 7.20
Milford:	\$ 4.40

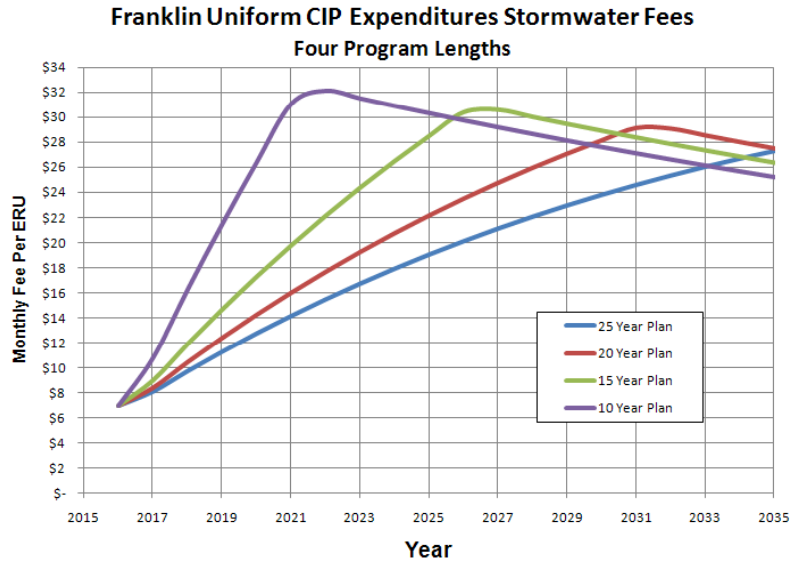
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Bellingham ERU Rate Structure 4 Timeframes for Implementation (Uniform Expenditures)



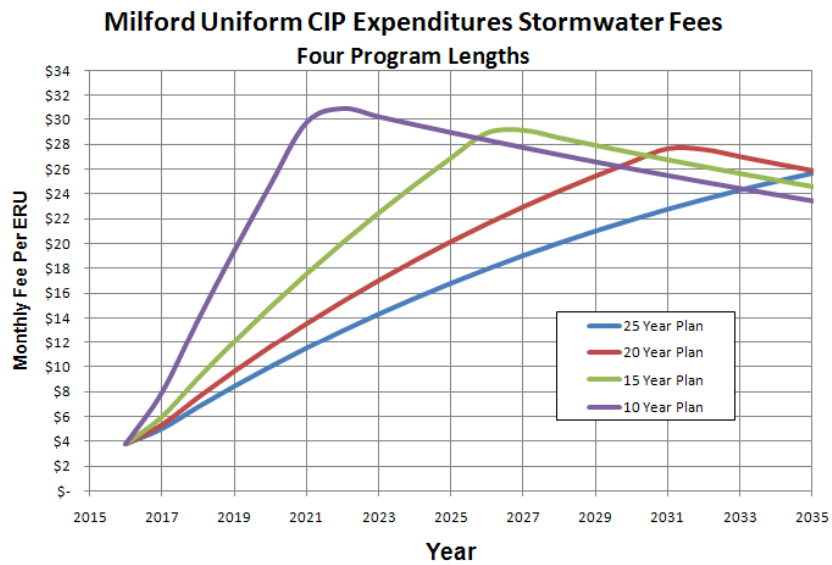
Franklin ERU Rate Structure

4 Timeframes for Implementation (Uniform Expenditures)

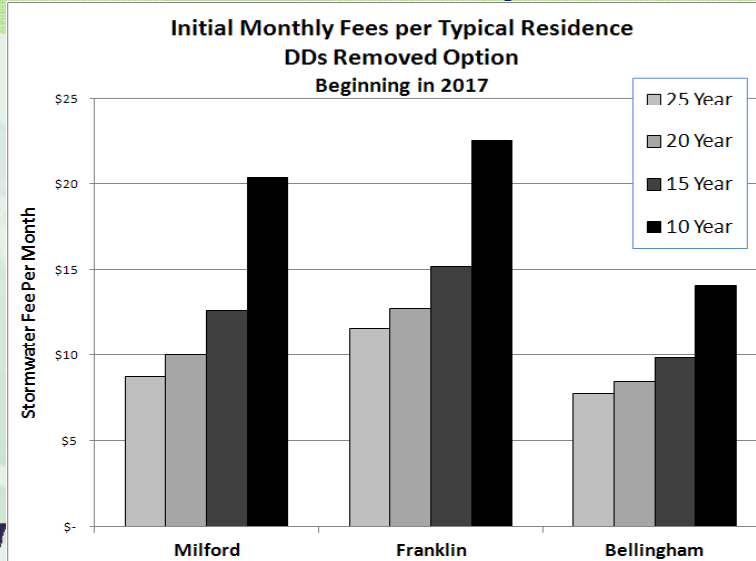


Milford ERU Rate Structure

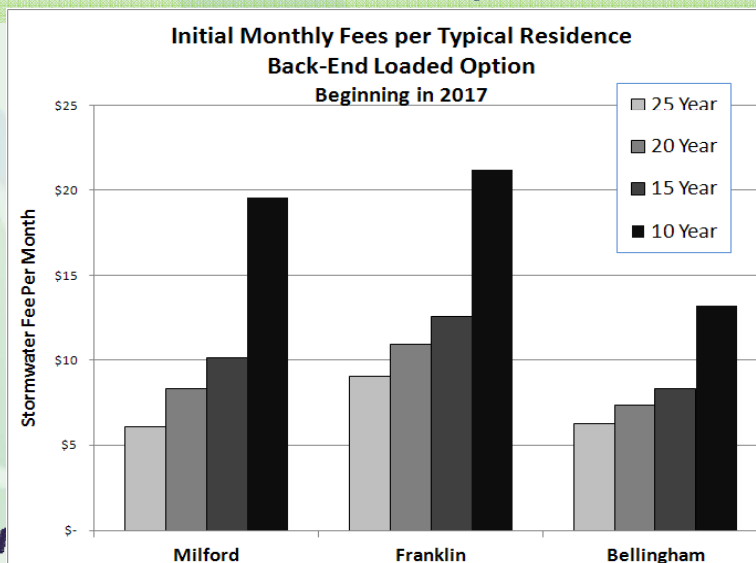
4 Timeframes for Implementation (Uniform Expenditures)



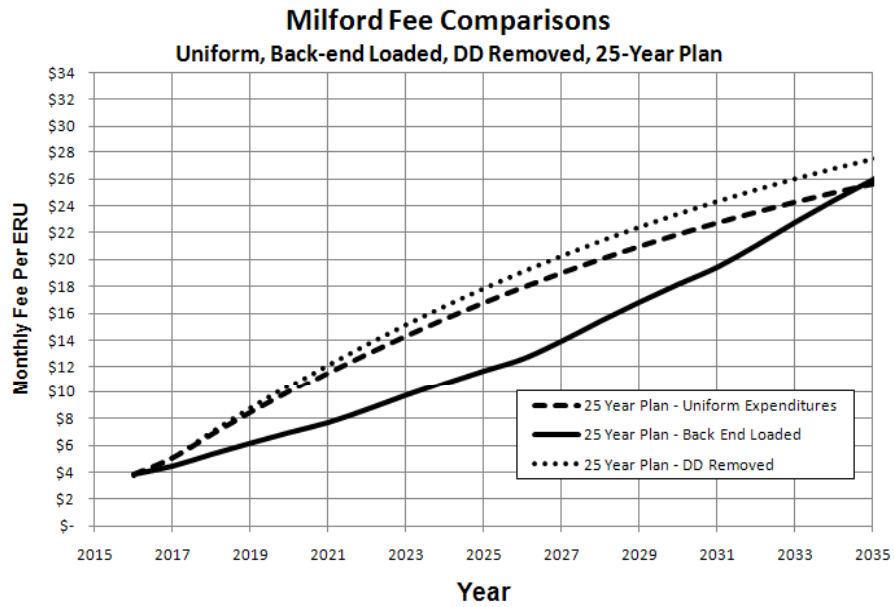
ERU Rate Beginning in Year 5 of the Permit Phase (DDs Excluded)



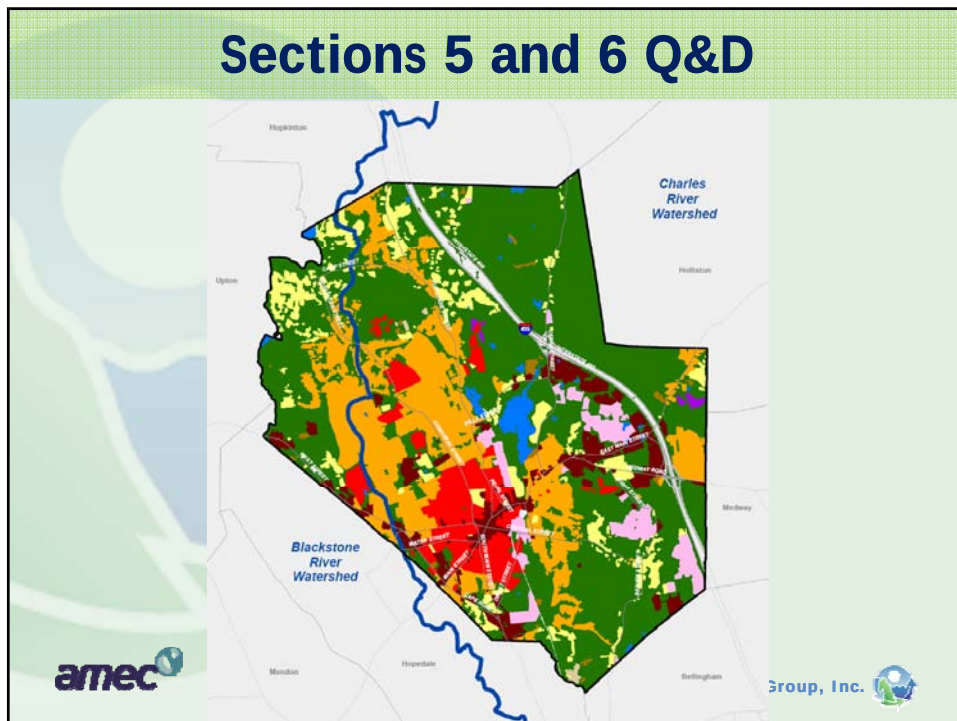
ERU Rate Beginning in Year 5 of the Permit Phase (Back-End Loaded Option)



ERU Comparison for Milford



Sections 5 and 6 Q&D



Section 7: Billing Options

- Master Account File
- Billing System Options
 - Tax bill;
 - Public utility bill (water/wastewater);
 - Private utility bill;
 - New stand-alone bill.



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Available Billing Data

- Bellingham
 - Already operates water & wastewater;
 - MassGIS derived impervious layer only;
 - Absolute parcel area not very accurate in GIS;
 - Parcel data contains numerous property ID errors.
- Franklin
 - Already operates water & wastewater;
 - Impervious area derived from aerial photo, but has some errors;
 - Absolute parcel area is relatively accurate in GIS;
 - Relatively few property ID errors.



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Billing Data

- Milford
 - Water operated by Milford Water Co; town does billing with existing property database;
 - Operates a wastewater utility;
 - MassGIS derived impervious data only;
 - Absolute parcel area not very accurate.



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Billing Considerations

- Feasible to add to existing water/wastewater bills;
- Will require linking billable land parcel data with existing utility accounts (address matching)
- Data and billing account maintenance – requires monitoring and updating changed information (e.g. new impervious cover, changes in fees, credits, etc.)
- Customer service considerations – billing questions, phone hotline, GIS manager, etc.



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Section 8: Recommendations

Conclusions:

- 1) Costs of future programs will be significantly higher than current costs;
- 2) Phosphorus reduction will require a combination of structural and non-structural controls, implemented over time through a comprehensive strategy; and
- 3) Likelihood that the towns' general funds can support implementation is low.



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Six General Recommendations

1. Implement a suite of non-structural controls (e.g., phosphorus ban, enhanced street sweeping, organic waste collection);
2. Periodically petition EPA to review and update P reduction values for non-structural credits;
3. Implement structural controls within the context of a watershed management plan, periodically petition EPA to review and update P removal efficiencies for structural controls;



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Six General Recommendations (Continued)

4. Communities should seek EPA approval for a longer implementation timeframe than currently proposed in the draft General Permits;
5. Communities should seek EPA approval for a back-end loaded implementation approach; and
6. Pursue the implementation of a Stormwater Utility at the individual municipal level, but structured for expansion.



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5 Short-Term Recommendations

1. Review and refine cost estimates and implementation options from this report;
2. Convene an inter-municipal working committee to document areas of agreement – decide to move forward together or separately;
3. Poll DD properties to gauge interest in participation in CMPP and/or Utility;
4. Fund the development of a regional watershed management plan; and
5. Fund a public education and engagement project



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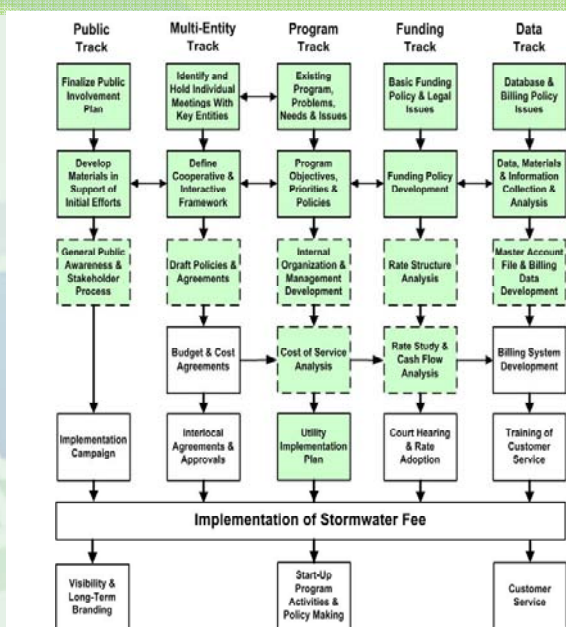
Moving Forward

- Watershed Approach and Adaptive Management
- “The most equitable, adequate, flexible & stable source of funding...is a stormwater utility”
- Roadmap for utility implementation



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Utility Implementation Flow Chart



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Utility Implementation Steps

- Refined program development;
- Update cost of service;
- Updated financial funding analysis;
- Detailed credit analysis;
- Updated rate structural analysis;
- Budget & cash flow model;
- Final organization and governance;
- Final billing analysis;
- Public outreach/education;
- Ordinance/bylaw passage;
- Master account file & billing data; and
- Billing.



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Sections 7 and 8 Q&D

Also:

Does the Executive Summary adequately convey the content of the report?

Do the appendices provide sufficient supporting information?



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