Taunton River Watershed Management Plan Potential Demonstration Projects (May 12, 2009)

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Taunton River
Watershed Management Plan
Potential Demonstration Projects

Horsley Witten Group

Demonstration Projects

Goals:
• "Keep Water Local"
• Restore natural water balance and associated habitats
• Demonstrate technology and techniques locally

6 projects to address:
1. Low Impact Design – recharge water locally
2. Wetland/Habitat Restoration
3. Alternative Wastewater Management – recharge water locally
   Plus... water conservation – withdraw less water
What are These Demonstration Projects?

LID Stormwater Retrofits
Habitat Enhancement
Wastewater Management
Water Conservation

What Are Stormwater Retrofits?

- Stormwater retrofits are stormwater management practices in locations where stormwater controls did not previously exist or were ineffective.
Enhance aquatic habitat &
Restore stream channels

Improve water quality
Reduce flood peaks and volumes

Augment groundwater recharge
Correct past mistakes

Demonstration and Education
Watershed Planning

LID Retrofitting occurs within the context of an overall watershed plan. Other pieces of the puzzle include:

- Stream/Riparian restoration
- Discharge prevention
- Pervious area restoration
- Source control
- Municipal practices
- Education

Typical Locations for Storage Retrofits:

- Existing Stormwater Management Facilities
Private parking lot retrofits...
Stormwater Planters

Typical Locations for Nonresidential Retrofits:

Roofs

Typical Locations for Nonresidential Retrofits:

Roofs
Subwatershed Factors to Consider in Retrofitting

- Subwatershed IC (current and future)
- Land use and ownership
- Use designation of receiving water
- Presence of existing stormwater management
- Pollutants of concern
- Drinking water supply (volume and quality)
- Small watershed org./HOA presence (onsite)
- Channel erosion and stream restoration goals
- Physiographic features (e.g., steep slopes)
- Climate considerations
- Implementation Funding

Habitat Rest.

- Streambank Stabilization
- Riparian Restoration
- Invasive Species Management
- Water Conservation
- Education
Root Wad Revetments

Coir Fiber Log
PILOT SCALE WASTE WATER MANAGEMENT

Wastewater Options

- On-Site Systems
- Cluster/Community Systems
  - Max Flow of 10,000 gpd
Critical Wastewater Disposal Areas

- Water Balance
- High Water Table
- Impermeable Soil or Rock
- Flood Zone
- Protection of Groundwater

Wastewater Technology Issues

- Collection
  - Gravity vs. Pumped
- Treatment
  - Primary, Secondary, Tertiary
- Disposal
  - Physical constraints
Recirculating Sand Filter System
Demonstration 8

Weather-Based Irrigation Controllers

Location: Hamilton, Middleton, Peabody, North Reading, Reading

**Purpose:**
- Demonstrate the use of innovative irrigation technology as a means to reduce water use for outdoor landscaping, while maintaining healthy landscapes.
- Reduce overall water demand on public water supplies.
- Quantify the water savings associated with use of innovative irrigation controller switches to deliver water only when needed.

**Description:** A total of 25 weather-based irrigation controller switches were installed in both residential properties and municipal athletic fields in five communities. The devices contain an on-site rain gauge and receive continuous transmitted wireless data on solar radiation, temperature, relative humidity, and wind. Based on this information, the device delivers the optimum amount of water only when needed by the landscape. Fifty-six residential properties in Reading and 17 municipal athletic fields in Hamilton, Middleton, Peabody, and North Reading.

Demonstration 5

Rainwater Harvesting

Location: Wilmington and Hamilton, MA

**Purpose:**
- Demonstrate the use of rainwater harvesting systems on a range of properties from small ones to larger institutional or commercial complexes as a means to conserve potable water while sustaining landscaping.
- Reduce use of (rainwater harvested groundwater source for outdoor watering.
- Quantify the water savings of residents and property managers using rainwater harvesting systems for all or part of their irrigation needs.

**Description:** Rainwater harvesting systems are designed to capture runoff from roofs and store the water for non-potable uses, such as lawn and garden watering. The systems are intended to reduce demand on public water supplies by replacing potable water with rainwater, where appropriate.

This project funded installation of 20 rainwater harvesting systems on residential properties in Wilmington. The systems consist of a storage tank, pressure pump, and in-water distribution system for a house, and a water meter to measure flow. Two different sizes of storage tanks were installed: twenty-eight 200-gallon and five 400-gallon tanks.

Additionally, a large-capacity (3,300-gallon) underground storage vault was installed at the Buckwell Elementary School in Wilmington, to provide water for irrigating the adjacent ballfield, and a 200-gallon system was installed at the Stirling Elementary School in Hamilton as part of an "Outdoor Classroom" educational program.

Reducing lawn watering. If done throughout the entire Ipswich River watershed, could have a significant impact on river flow. According to the analyses completed for the Ipswich River Watershed Action Plan, lawn watering accounts for 13 to 20