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# Final Report: Section 5. Recommendations

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## SECTION 5

### RECOMMENDATIONS

#### 1.0 RECOMMENDATIONS FOR NEXT STEPS

Based upon the results of the Phase I water budget and ecological analyses, the Phase II engineering demonstration and code reform projects, and numerous public hearings and workshops over the past three years, HW has developed the following recommendations for the next steps in the Taunton River Watershed. These recommendations are designed to apply what we have learned to date broadly throughout the watershed, scaling up the targeted work performed under Phase II to apply to the watershed as a whole. It is also intended to address the public comments that we heard and to be responsive to both today's economic realities and tomorrow's changing climate.

This document does not define who is specifically responsible for undertaking and implementing these recommendations to be included in Phase III of the watershed management effort, and this is for good reason. Future management efforts in the Taunton River Watershed will require participation, initiative and collaboration from a broad spectrum of watershed stakeholders. These recommendations could be championed and funded by any number of interested parties, including local citizens within strong advocacy networks, students and institutions of higher education, local municipalities, non-profit organizations, or state or federal agencies.

#### 1.1 Education/Training

Objective: Educate local officials on watershed science and management techniques to significantly reduce the impact of land development projects and to optimize opportunities for restoration. The cumulative effect of thousands of permit decisions by planning boards, boards of appeals, boards of health and conservation commissions within the 43 member communities have a significant effect on water quality, hydrology, and ecological values within the watershed. This work should be coordinated with local watershed and environmental institutions, such as Massachusetts Audubon Society, TNC, the Massachusetts Association of Conservation Commissions, the Manomet Center for Conservation Sciences, the Taunton Watershed Alliance, and the Massachusetts Rivers Alliance, as well as possibly the Massachusetts Municipal Association, the regional planning agencies, or other municipal staff networks.

Strategies:

- Develop targeted training programs for local decision-makers (boards, commissions) through a formal certification process or a voluntary training program. Workshops can include watershed science, smart growth, LID, stormwater management, and wastewater management.

Tools:

- Utilize the Massachusetts Smart Growth and Smart Energy Toolkit and potentially model after the Rhode Island LID Certification Program.

## **1.2 Local Regulatory Code Reform**

Objective: Develop regulatory revisions at the local level to encourage or require sustainable development.

Strategies:

- Develop toolkit with guidance and model codes to encourage more compact mixed-use development using LID, Transfer of Development Rights (TDR), and other smart growth techniques with specific adaptation to the Taunton River Watershed.
- Perform individual municipal audits of existing land use codes and recommend amendments.
- Provide assistance in adopting and implementing code reform changes.

Tools:

- Massachusetts Smart Growth & Smart Energy Toolkit.

## **1.3 Balance Water Locally**

Develop strategies to preserve a water balance in those subwatersheds currently in equilibrium, and to restore a water balance in those subwatersheds with deficits and surpluses.

Strategies:

- Expand and apply the Phase I Water Balance model to develop and assess strategies to restore natural flow regimes/water budgets. This could include a planning level quantitative assessment of a broad range of restoration projects and integrated water management initiatives involving water supply, wastewater, stormwater, and land use initiatives.

Tools:

- Phase I Water Balance Model.

## **1.4 Coordination with Narragansett Bay Management Plan Update**

Objective: Develop integrated strategies for the management of the Taunton River Watershed that would also benefit the downstream estuarine waters of Narragansett Bay. This will include strategies to reduce nutrient loading that results in eutrophication.

Strategies:

- Conduct nitrogen-loading assessment of the Taunton River Watershed and determine the major sources and locations (subwatersheds) of nitrogen loadings. The nitrogen loading assessment could be conducted as an amended GIS component of the existing Phase I water balance model.
- Identify management alternatives to reduce nitrogen loading. These could include wastewater and/or stormwater management strategies and a possible incentive-based nitrogen trading process.

Tools:

- Phase I Water Balance Model.
- Nitrogen Loading or Models (such as the MA DEP NO3 Model and the Cape Cod Commission Nitrogen Loading Model).

## 1.5 **Economic Development**

Objective: Develop economic incentives to encourage progressive watershed management and restoration. Economic development can be achieved through both private and public sector initiatives. In the private sector, develop economic incentives to preserve and restore flow, water quality, and habitat values in the Taunton River Watershed. This could include density bonuses to developers who achieve stringent smart growth and LID standards in exchange for providing “neighborhood solutions” for wastewater, stormwater, and water supply infrastructure. For example, a new shopping mall project could provide wastewater treatment for surrounding residential properties that are currently using marginal Title 5 systems. This wastewater treatment could be provided at a significantly reduced cost as a result of the economy of scale in providing neighborhood wastewater solutions to a broader range on participants.

Public initiatives include a broad range of infrastructure projects such as road repairs, public transit enhancement, bridge repairs, parking solutions and dam safety evaluations for repair or removal as well as wastewater and stormwater remediation projects that can provide both jobs and restoration opportunities. These projects need to be fully coordinated and integrated to maximize and optimize the benefits associated with these public investments. The “Complete Streets” program provides a model that is being implemented in many urban locations throughout the nation including Boston, whereby a full range of transportation-related and stormwater remediation benefits are simultaneously planned (see [www.bostoncompletestreets.org](http://www.bostoncompletestreets.org)). The affordability of these projects is largely related to timing relative to other infrastructure projects and the possibility of cost sharing with such projects. For example, when a road resurfacing project or bridge repair is planned, stormwater remediation improvements could be constructed at a substantially reduced cost. A stormwater and wastewater infrastructure contingency plan should be developed to identify needs and preliminary solutions such that when a development project is proposed, adjacent needs are addressed in a coordinated and cost-shared manner.

Strategies:

- Develop density bonus incentives to provide more compact, mixed-use developments and off-site mitigation including preserved open space as zoning code amendments.
- Interview prospective developers to evaluate possible demonstration projects.
- Compile a prospective infrastructure project list and evaluate opportunities for coordination.

Tools:

- Complete Streets Program as a model.

## **1.6 Documentation of Phase II Demonstration Projects**

Objective: Develop a monitoring strategy to measure and document the success of the Phase II engineering demonstration projects. This could include influent and effluent water quantity and quality measurements and observations at individual demonstration sites to verify pollutant removal and runoff volume reduction at the individual site scale. This data can then be used to predict possible future outcomes that could be achieved through the broader adoption of similar restoration projects throughout the watershed.

Strategies:

- Develop proposed monitoring plans for each of the Phase II demonstration projects.
- Install wells, pressure transducers, and water quality auto samplers.

Tools:

- Coordinate monitoring with Bridgewater State University.

## **1.7 Water Sustainability Pilot Project**

Objective: Develop a pilot project to test sustainable water management strategies that are currently being developed as part of the MA Executive Office of Energy and Environmental Affairs Sustainable Water Management Advisory Committee. Possible strategies include an incentive-based “blue communities program”, similar to the “green communities” (energy) program and the application of new stream flow criteria and safe yield goals.

Strategies:

- Develop a pilot project strategy utilizing the proceedings and preliminary recommendations of the Massachusetts Sustainable Water Management Advisory Committee.
- Meet with water suppliers, wastewater treatment managers and other town officials to discuss the pilot project and to identify interested participants.

Tools:

- Draft recommendations developed by the Massachusetts Sustainable Water Management Advisory Committee.

## **1.8 Climate Change**

Objective: Develop climate change adaptation strategies to address sea level rise, associated groundwater elevation changes, migrating wetlands, wastewater compliance, and stormwater management design standards (associated with new design storms).

Strategies:

- Determine new design storms for a range of climate change projections.
- Develop a hydrologic model (component added to Phase I Water Balance Model) that simulates groundwater (water table) rises associated with sea level rise.
- Evaluate the impacts of groundwater rises associated with wastewater infrastructure.

- Map potential wetland migration areas associated with projected sea level rise.
- Monitor wetland migration in flat coastal areas.
- Develop adaptation strategies.

Tools:

- Cornell University precipitation data and IPCC climate change projections.
- Utilize USGS water levels from several monitoring wells to track groundwater changes in coastal areas.
- Add additional monitoring wells in coastal areas as needed.

## **1.9 Habitat Protection and Restoration**

Objective: Increase the targeted conservation and restoration of important and unique habitats in the Taunton River Watershed, many of which are sensitive to minor changes in the watershed's groundwater levels, base flow and flow regime.

Strategies:

- Collaborate with TNC and the Massachusetts Audubon Society's Shaping the Future of Your Community outreach program, as well as other local conservation organizations to provide outreach to citizens throughout the watershed.
- Review local codes to evaluate and provide recommendations for improving the protection of riverfront areas and wetland buffers.
- Develop a watershed-wide plan to evaluate flow impediments, including dams and culverts, and identify dam removal and culvert replacement opportunities. Educate dam owners and abutters about the dam removal feasibility study process.

Tools:

- TNC's Priority Habitat Area maps.
- MassAudubon's Shaping the Future of Your Community outreach program.

## **2.0 INFORMATIONAL TOOLS TO SUPPORT THE IMPLEMENTATION OF RECOMMENDATIONS**

In order to apply the methods above, there are additional informational tools that we recommend should be developed. These are:

### 1. Economic Analysis:

A set of actual local economic cost data and information about the economic costs and benefits of choosing between various development patterns and their effects on availability of healthy water resources for humans and wildlife (centralized versus decentralized wastewater, LID stormwater design versus more conventional closed drainage systems, wastewater reuse options, climate change adaptation, and water efficiency). The evaluated costs and benefits would include direct construction, maintenance, and economic development costs, and would be evaluated under

past/existing conditions as well as projected future climate change and population growth scenarios.

2. Integrated Watershed Model:

Expansion of the water budget model to integrate climate change scenarios, future development impacts and to evaluate the potential benefits of watershed management recommendations. This could include variables for sea level rise, associated water table rises (in near-tidal areas), and new design storms associated with climate change projection. The model could integrate and calibrate with known observation points including long-term groundwater observation wells, stream flow gauging stations, Phase II demonstration project monitoring, wetland boundary migration monitoring, and water quality monitoring. It could then be used to develop and optimize management solutions for the restoration and preservation of the Taunton River Watershed.