



Rhode Island Bays, Rivers, & Watersheds Coordination Team



FY 2014 Work Plan

Rhode Island Bays, Rivers, and Watersheds Coordination Team

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Sustaining Rhode Island's Bays, Rivers, and Watersheds

Rhode Islanders treasure the diverse and abundant fresh and marine water resources of their state and region. It is evident to many informed citizens and visitors to the Ocean State how essential these resources are to local communities, the economy, and the state and region's history and cultures. We strongly hope that these aquatic bounties will be abundant and indispensable too for our children and grandchildren. The economic struggles that Rhode Island continues to endure in the continuing aftermath of the Great Recession has not deterred Rhode Islanders from contributing to the protection, management, and restoration of the state's water resources and their human values. In November 2012, two environmental bond ballot questions were approved by 70% margins; one to invest \$20 million in wastewater and drinking water system enhancements and the second to provide \$20 million for greenspace preservation and outdoor recreation.

Nevertheless, the resources and capabilities of federal and state water agencies remain modest when compared to the water preservation, restoration, and sustainability challenges facing Rhode Island.¹ For example, the U.S. Clean Water Act (CWA) mandates that all U.S. waters are to be rendered "fishable and swimmable," a goal that will be achieved through the steady elimination of point and nonpoint source pollutant discharges. Yet, although point source and stormwater discharge standards have tightened over time, for decades federal and state funding has remained static or declined for wastewater treatment facilities and practices.² In addition, the definition and standards of "fishable and swimmable" waters can be surprisingly difficult to define in a manner that multiple interests will endorse while providing sufficient clarity and guidance on the required pollution controls and waterbody restoration needs that state and municipal authorities can rely upon and feasibly execute.

In addition to the fundamental goals of U.S. and Rhode Island water law to reduce and eventually eliminate all major water pollutants and their many sources, mandates that will still take decades to attain fully, we face emergent or worsening issues, such as accelerating sea-level rise, shoreline erosion, and coastal shoreline and wetland inundation, aquatic invasive species, loss of open space, cyanobacteria outbreaks in lakes, ponds, and surface reservoirs, new contaminants of concern, shifting climatic zones, more intense floods and storms.

Additionally, many infrastructure and socioeconomic issues for our lakes, rivers, coasts, and ocean present major challenges and/or opportunities. As a densely populated state with an especially historic legacy of industrial and urban development, Rhode Island needs to accelerate state, regional, and municipal investments in the renovation of aging water and wastewater infrastructure. This need is very similar to the renovating and rebuilding of the state's transportation infrastructure, from ports, to rail, to highways and major arteries.

Rhode Island also needs to promote and guide the redevelopment of its historic and still valued industrial waterfronts, particularly in upper Narragansett Bay. Finally, our iconic and economically vital commercial marine fisheries need greater support in their efforts to adapt to rapidly changes in fish populations, increased operating costs, evolving seafood markets, and complex, demanding regulatory schemes, management and science initiatives at the state, regional, and federal level. Rhode Island should respond proactively to these fresh, coastal, and marine issues. Inadequate responses or deferring action will multiply the short-term and long-term harms and risks to individuals, communities, economies, and aquatic ecosystems. We

must in addition address these challenges to the state public and socio-economic interests with less and less federal budgetary support, both in terms of critical, long-running federal agency programs and targeted initiatives funded by Congress and state legislatures.

How will we address these challenges to Rhode Island's fresh and marine waters, both the inherent and cumulative risks they pose? How will we do so in the context of shrinking federal and state budgets? First, Rhode Islanders and their elected leaders must arrive at a fuller appreciation of these challenges and the risks they pose to Rhode Island's well-being and future. Social, ecological, economic dimensions of these challenges must be closely examined, and their interactions explored in a manner that helps us see how the interests and goals of individual agencies (and the public and private interests they uphold) fit together into a coherent, credible, and cost-effective whole for water resources management and sustainability in Rhode Island and the entire Narragansett Bay watershed. Second, Rhode Islanders must understand, feel confident about, and come to trust the most strategic and economically efficient means to address these challenges, via government in close partnership with the private and non-profit sectors. Both of these approaches require strategic collaboration and balanced, informed interconnections between state and federal executive agencies and programs, and robust partnerships between government, public and private interests, and technical, managerial, and scientific experts.

In FY 2014, the BRWCT will begin two important stakeholder facilitation projects in upper Narragansett Bay water quality and stormwater management; it will make major investments in water quality and quantity monitoring; it will complete an implementation review of the Bays, Rivers, and Watersheds Systems-Level Plan and initiate a SLP update process. The BRWCT will continue to support the work of the RI Environmental Monitoring Collaborative, launch a new Narragansett Bay Science Advisory Committee in partnership with the Narragansett Bay Estuary Program, launch a statewide Freight Planning process in partnership with RI Statewide Planning with a focus upon maritime port development, and work with RI Statewide Planning and RI Economic Development Corporation (EDC) to foster renewed attention to baseline and targeted economic monitoring for Rhode Island's water-reliant economy.

The Rhode Island Bays, Rivers, and Watersheds Coordination Team

Established in 2004 by the Rhode Island General Assembly, the BRWCT is to coordinate "the functions, programs, and regulations that affect the bays, rivers, and watersheds" as "the most effective way to transcend the limited responsibilities and jurisdictions of each agency, address complex issues using an ecosystem-based approach, and provide for continuity over time".³ Thus the mission of the Rhode Island Bays, Rivers, and Watersheds Coordination Team (BRWCT) is to foster strategic, collaborative, systems-based planning and action by state and municipal water and economic development agencies. The RI BRWCT pursues this mission via interagency strategic planning, interagency coordination, stakeholder engagement, and targeted investments. The BRWCT must:

- *Prepare and adopt . . . a Bays, Rivers, and Watersheds Systems-Level Plan (SLP).*
- *Coordinate the projects, programs, and activities carried out by the members of the team and its committees that pertain to the implementation of such plan.*
- *Coordinate with other state agencies, local governments, federal agencies, other states, and non-government entities . . . to prepar[e] and implement[] the systems-level plan.*⁴

The BRWCT:

- Builds consensus among state agencies and their partners on water resources management and sustainable development goals and strategies.
- Facilitates the balancing of environmental and economic values in state decision-making.
- Synthesizes and connects multiple strategic plans and their evaluation.
- Ensures that research, monitoring, and outreach by external stakeholders align and support state strategic plans and implementation priorities.
- Allocates state funds to high-priority projects that advance SLP implementation.
- Cultivates additional funding for water resources management and sustainable development in partnership with state, university-based, and NGO stakeholders.

The statutory members of the BRWCT are the:

- [Coastal Resources Management Council](#) (CRMC)
- [Department of Environmental Management](#) (DEM)
- [Department of Administration's Division of Planning](#) (Statewide Planning)
- [Economic Development Corporation](#) (EDC)
- [Narragansett Bay Commission](#) (NBC)
- [Rivers Council](#) (RIRC)
- [Water Resources Board](#) (WRB)

The BRWCT Chair is a gubernatorial appointee whose responsibilities are to lead development of the SLP, annual work plans, and administer BRWCT meetings, funded projects, standing committees, targeted policy analyses, and other functions.⁵ The BRWCT also provides policy analyses and advisory support for the RI Climate Commission, the Narragansett Bay Estuary Program, the Coastal Institute's Watershed Counts program, the Northeast Regional Ocean Council, the Northeast Sea Grant Consortium, RI Sea Grant, and other organizations and initiatives.

The BRWCT currently utilizes two advisory committees to cultivate input and guidance from governmental, university-based, NGO, and public representatives and interests, the RI Environmental Monitoring Collaborative, and a Narragansett Bay Science Advisory Committee to be re-established in FY 2014. FY 2014 priorities for BRWCT advisory committees are discussed on pp. 18-21.

The Rhode Island Bays, Rivers, and Watersheds Systems-Level Plan

The BRWCT develops and implements the Rhode Island Bays, Rivers, and Watersheds Systems-Level Plan (SLP). The purpose of the SLP is to:

*Establish overall goals and priorities for the management, preservation, and restoration of the state's bays, rivers, and watersheds, and the promotion of sustainable economic development of the water cluster.*⁶

The SLP addresses:

- *Reduction of pollution from point and nonpoint sources*
- *Protection and restoration of shellfish, finfish, aquatic and terrestrial habitats;*
- *Conservation of open space and promotion of smart growth practices;*
- *Management of aquatic nuisance species;*
- *Management of dredging and dredged material disposal;*
- *Identification of research needs and priorities;*
- *Promotion of education and outreach;*
- *Promotion of equitable public access; and*
- *Promotion of sustainable economic development of the water cluster.*⁷

SLP development and implementation is coordinated with local and federal efforts in Massachusetts and Connecticut, and potentially with any New England region that connects with Rhode Island's water-reliant economy. The SLP includes specific strategies for attaining its goals and assigns responsibilities for implementation among the BRWCT agencies, other state agencies, and federal-state partnership programs.⁸

Strategic planning for the public sector is particularly challenging. For example, state agencies cannot simply select which of their statutory responsibilities they will pursue actively. And they must maximize a "triple bottom-line" of environment, economy, and social equity in every decision and action they take. Rhode Island water agencies must respond to new mandates from the General Assembly, as well changing mandates from their federal agency partners and funding sources. There are many reasons why Rhode Island water agencies seek to work strategically and collaboratively to better assess and direct their initiatives and decisions. The widely-held expectation is that state agencies should and do pursue all essential water resources management mandates. But trying to do so without thoughtful, adaptive strategy risks the outcome that little to no discernable progress will be made across the spectrum of water mandates. On the other hand, if state agencies, consciously or by default, focus narrowly upon a subset of water mandates, they risk neglecting critical, inadequately appreciated issues, lack of attention to which may undermine progress toward the goals they do prioritize.

Static or diminishing budgets, arduous, complex statutory missions and regulatory programs, and emergent risks such as climate change only multiply the difficulty of agency capacity allocation, management, and decision-making. Through the SLP and other strategic planning processes, the BRWCT should help state, federal, and municipal agencies more consciously choose which of many "goods" in water resources management and sustainability should be pursued at which timeframe. The BRWCT will work to ensure that the SLP and any agency and interagency strategic planning effort for Rhode Island's water resources will focus on communicating and justify difficult decisions and new initiatives to legislative authorities, funding sources, public and private interests, and the public? If the public and elected leaders don't appreciate fully the challenges to the viability, sustainability, and resilience of our water resources, and what it will truly take to meet these challenges. Only then will they be sufficiently motivated to work with and support executive leaders in building effective, democratic aquatic environmental governance for Rhode Island in the 21st century.

In July 2008, BRWCT issued the first iteration of the SLP for the five-year period of FY 2009-FY 2013 (July 2008 to June 2013). The SLP consists of eighteen goals across eight policy domains (Table 1). In the fall of 2008, the BRWCT agreed to a Statement of SLP Implementation Priorities that highlighted twenty priority action areas for FY 2009 –FY 2013. The BRWCT has issued

Table 1: Summary of SLP Policy Domains and Goals

Policy Domains	Goals			
Waterfront & Coastal Development	Goal 1	Goal 2	<p style="text-align: center;">Rhode Island Bays, Rivers, & Watersheds Systems-Level Plan: 2009 - 2013</p> <p style="text-align: center;">8 Policy Domains -- 18 Goals</p>	
	<i>Sufficient quantity and quality of industrial waterfront lands to foster marine and waterfront economic development.</i>	<i>Waterfront, riverine, and coastal developments that incorporate design standards sensitive to the environmental and cultural values of their surroundings.</i>		
Watersheds	Goal 3	Goal 4		
	<i>Significant progress toward all water quality standards for RI waters and the prevention of water quality degradation for RI's rivers, streams, lakes and ponds.</i>	<i>Future land-uses and development that fully protect and restore watershed resources, habitats, and freshwater resources.</i>		
Economic Development	Goal 5	Goal 6	Goal 7	Goal 8
	<u>Recreation and Tourism</u> : A thriving tourism industry based on RI's environmental and cultural offerings. Diverse marine and freshwater recreational resources for RI's citizens and visitors.	<u>Boat-building & Ship-building</u> : Continued global leadership in marine trades.	<u>Water-based Transportation</u> : Expanded, competitive water-based transportation of people and goods to, from, and within RI.	<u>Commercial Fisheries & Aquaculture</u> : Profitable, sustainable businesses in commercial and recreational fishing, and in aquaculture.
Natural Hazards	Goal 9			
	<i>Significantly reduced natural hazard risks to coastal and riverfront residents, infrastructure, and development.</i>			
Freshwater Supply	Goal 10	Goal 11	Goal 12	
	<i>Efficient Water Use.</i>	<i>Reliable Water Supplies.</i>	<i>Integration of land-use and water-use management.</i>	
Water Quality	Goal 13	Goal 14	Goal 15	
	<i>Significant progress toward all water quality standards for RI waters, including fishable, swimmable water quality in upper Narragansett Bay and the Blackstone River by 2015.</i>	<i>Significantly Improved water quality in sensitive coastal regions including the south shore coastal ponds, state beaches, and Greenwich Bay.</i>	<i>Restoration of shellfish resources in historically closed areas throughout RI's estuarine and marine waters.</i>	
Fisheries & Aquaculture	Goal 16	Goal 17		
	<i>Sustainable and profitable commercial fish harvests.</i>	<i>A flourishing aquaculture industry that respects traditional & commercial fisheries and cultures.</i>		
Aquatic Habitats & Invasive Species	Goal 18			
	<i>Enhanced aquatic biodiversity due to successful aquatic nuisance species control and habitat restoration and conservation.</i>			

annual work plans that delineate the projects it has funded and pursued, as well as activities and initiatives undertaken by the standing committees. All of these documents are available at www.coordinationteam.ri.gov.

As of June 2013, the current SLP requires review and revision, efforts which should be completed by the latter half of 2014. A one-year 'hiatus' in the SLP planning timeframe is necessary in large part due to recent completion of other interagency strategic plans for water that reaffirm goals and strategies advanced by the SLP, and to current strategic planning efforts that will generate important findings for the next iteration of the SLP. Key planning efforts include:

- The State Guide Plan (SGP) Element *Water 2030*, a consolidation and update of several previous SGP Elements completed July 2012
- The update to the Narragansett Bay Region Comprehensive Conservation and Management Plan, completed in December 2012
- The RI Water Resources Board Strategic Plan, completed in March 2012
- The development of a new State Guide Plan Element for watershed management and water quality, scheduled for completion in early 2014
- Economic development, housing and transportation planning led by Statewide Planning's Rhode Map RI
- The update to the 2005 RI Wildlife Action Plan led by RI Department of Environmental Management's Division of Fish and Wildlife

The BRWCT continues to work out how the SLP will link with the State Guide Plan (SGP). There is consensus that the SLP should draw from the long-term goals, policies, and strategies for water resources management and sustainable development contained in the SGP, as well as other plans such as CRMC Special Area Management Plans (SAMP's). The SLP will not be incorporated into the SGP. The SLP will continue to utilize a five-year timeframe and detail interagency strategic imperatives at shorter time-scales than SGP Elements. The BRWCT will finalize specific requirements and functions for the SLP in late 2013 and intends to launch an SLP update process in 2014. The BRWCT will also issue a review of SLP Implementation for the period of FY 2009 to FY 2013 that would support efforts to update the SLP for the period of FY 2016-FY 2021.

FY 2014 Priorities

This Work Plan specifies the BRWCT's priorities, actions, and funded projects for FY 2014. The SLP articulates eighteen goals and specific policies and strategies for each goal. Of the twenty Implementation Priorities the BRWCT established in 2008 for the first iteration of the SLP, it has devoted funding and staff support recently to five priority areas, and will continue to do so in FY 2014:

- Stormwater management
- Climate change adaptation
- Estuarine and ocean science and management
- Freshwater resources management
- Water-reliant economic development

These areas have come to the fore for the BRWCT for numerous reasons: the central importance of stormwater control and management to eliminating continued water quality impairments in Narragansett Bay and Rhode Island's rivers, streams, and lakes; years of cuts in agency operations funds and federal funding for environmental monitoring; the need for advanced scientific understanding regarding the causes of hypoxia in Narragansett Bay, a major pollutant impact difficult to ameliorate; growing concerns regarding climate change and sea-level rise impacts upon all water resources; and renewed interest in potential and current economic values generated by Rhode Island's maritime ports.

The following sections specify the projects and priorities of the BRWCT for FY 2014, connecting them to SLP implementation priorities.

Stormwater Management

(SLP Implementation Priorities established by the BRWCT for the current iteration of the SLP are listed at the beginning of this and the following four sections discussing the BRWCT's priorities and actions for FY 2014.)

SLP Implementation Priority 5: Significantly enhance stormwater control and management state-wide (SLP Policy 13.8)

FY 2014 Actions:

- Fund and help to implement a DIMS study for the Town of West Warwick
- Fund Phase II of the Upper Bay Regional Stormwater Utility Feasibility Study
- Fund Middletown SUD Assessment Project contingent upon satisfactory progress with project implementation

The BRWCT will continue to emphasize the importance of comprehensive stormwater management for the protection and restoration of Rhode Island's fresh and marine waters. The SLP (pp. 134-136) calls for better partnering between the state and RI municipalities to develop financing strategies and technical support municipal and regional stormwater management. It never will be easy for Rhode Island cities and towns to allocate adequate local funding for stormwater facilities and operations. Resolving the fiscal challenges facing our cities and towns has been a priority for Governor Chafee and he has urged state agencies to work with local officials to ensure that unacceptable fiscal burdens are not placed upon them. Nevertheless, Rhode Island will continue to work toward statutory goals for stormwater management. Partnering and cost-sharing (versus top-down mandates) will grow in importance. Rhode Island, EPA and federal and municipal partners will work with municipalities to cultivate consensus on which projects for stormwater, as well as water quality and water supply, should be implemented first, and the longer timeframes to fully meet fundamental federal and state clean water mandates.

Comprehensive stormwater management is a massive endeavor for municipalities and RI state government, particularly with regard to state roads and transportation infrastructure. Every RI community and many state agencies possess significant responsibilities for the capture, conveyance, treatment, and wise disposal or re-use of stormwater. The BRWCT has focused its efforts since 2011 on the design and establishment of municipal and regional stormwater utility districts (SUD's). SUD "feasibility analyses" for Westerly, Bristol, Cranston, and Middletown have been developed. Work continues with Middletown; a new initiative is being launched with West Warwick; and the BRWCT will fund "phase II" of a feasibility analysis for an

inter-municipal SUD in upper Narragansett Bay, a project that has engaged the Cities of Providence, Pawtucket, Central Falls, East Providence, and Cranston, with support from DEM and other stakeholders.

West Warwick “Does It Make Sense” SUD Assessment

The Town of West Warwick is considering whether to establish a SUD. The Town is coping with aging stormwater infrastructure and has experienced significant, repeated flooding of public and private properties due to inadequate stormwater infrastructure. Town Manager Fred Presley estimates that West Warwick faces about \$10 million in emergency repairs to its stormwater infrastructure.

In the spring of 2013, DEM completed an initial impervious cover analysis for West Warwick. Subsequently, the Town of West Warwick (sponsored by DEM) submitted a proposal to the BRWCT to conduct a “does it make sense” (DIMS) SUD feasibility study. This study will be an important basis for the BRWCT, DEM, and others to work with West Warwick on its future development of a local funding source for stormwater management and infrastructure.

Upper Narragansett Bay Regional Stormwater Utility Feasibility Study

The municipalities of upper Narragansett Bay are committed to pursuing a two-phased feasibility evaluation for a regional stormwater utility. The first phase is a “DIMS” study that will 1) broadly characterize stormwater issues, costs, and other drivers in each of the participating municipalities; and 2) begin exploring the organizational, programmatic and legal characteristics of a regional stormwater management authority. The Phase I DIMS study will also identify obstacles to development of a regional stormwater utility, gauge the level of interest from municipalities, and secure municipal commitments (financial and otherwise) to take the next steps in formation of a regional authority.

Phase II of the Study, which the BRWCT has agreed to fund (\$75,000 in FY 2014, and a commitment in principle to provide \$75,000 in FY 2015), entails a more comprehensive study that will involve those municipalities that decide to continue with considering development of a regional stormwater utility at the conclusion of the DIMS study. Phase II will address program needs, organizational and legal issues, financing strategies, stakeholder engagement; and implementation issues (such as billing, customer service, and administration). The feasibility study will last for 12-18 months beginning in early 2014. In addition to the City of Providence and DEM, the municipalities and agencies invited to participate include:

- Central Falls
- Cranston
- East Providence
- Johnston
- Lincoln
- North Providence
- Pawtucket
- Smithfield
- Warwick
- Cumberland
- Narragansett Bay Commission (NBC)

The Study's project team has begun to develop the political support among community leaders and organizations to support the Study and proposed regional utility. Because participation in the feasibility study will need to be approved by each city and town council, local advocates must make the case to elected officials regarding the benefits of investing in stormwater management. In addition to seeking funds to advance the technical analysis of a stormwater utility, the project team is separately requesting support from the Rhode Island Foundation to fund an outreach coordinator to cultivate the necessary political will.

The City of Providence will act as the fiscal sponsor for Phase I and II of the study. Each participating municipality will designate their representative to the committee that will steer the process and develop the final recommendations and report.

Middletown

Middletown is one of three towns located on Aquidneck Island. The majority of Middletown relies upon the City of Newport for its drinking water supply. Four of Newport's nine drinking water supply reservoirs are located entirely or partially in Middletown and are fed by rivers and streams that flow in a southerly direction through the town. These rivers, Bailey's Brook (and North Easton's Pond which it flows into), Maidford River and Paradise Brook, are all impacted by untreated stormwater and are included on the state's 303d list of impaired waters. Untreated stormwater also contributes to closures at Easton's Beach and Atlantic Beach Club as well as at Third Beach. Furthermore, the town experiences flooding along Bailey's Brook and localized flooding in several neighborhoods.

The Town of Middletown operates a municipal separate storm sewer system (MS4) and is implementing its Phase II Stormwater Management Program Plan, consistent with the Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit (also known as a Phase II stormwater permit). In 2011, a BRWCT intern completed an initial SUD Feasibility Study for Middletown, gathering data about stormwater program costs, stormwater quality and flooding concerns, current and future capital improvement projects and needs, and other anticipated future expenses. The study also provided an updated impervious cover GIS data layer.

Maintaining and enhancing Middletown's stormwater infrastructure, treatment systems, and management and education efforts will entail significant infrastructure and treatment investments, public outreach and education, and additional administrative requirements. Middletown has to respond to state water quality restoration requirements, address flooding problems and infrastructure replacement needs, design and implement stormwater infrastructure retrofits, and implement new stormwater best management practices for new development or major renovations.

Per its approval of a proposal from DEM in 2012, the BRWCT has contracted with the consulting firm AMEC to lead the Middletown Stormwater Management Assessment Project (total project cost: \$40,000). Project goals are:

- Facilitate local and regional stakeholder understanding and support for enhanced stormwater management
- Assess Middletown's stormwater management needs, current and future level of stormwater services provided town-wide, needed stormwater infrastructure upgrades

and replacements and equipment, the costs of those services, infrastructure and other capital expenditures, and financing options

- Provide detailed guidance and tools for establishing a Middletown SUD that equitably and adequately finances the town's stormwater management program and infrastructure needs.

Climate Change Adaptation

SLP Implementation Priority 4: Adapt current and design future waterfront infrastructure to accommodate sea-level rise. (SLP Policy 1.3)

FY 2014 Actions:

- Support the work of RI Climate Change Commission, and possibly the State Planning Council, to assess climate change impacts and articulate climate adaptation priorities for the state.
- Fund the URI Coastal Resources Center to spearhead development of Shoreline Change Special Area Management Plan for CRMC.
- Fund a comprehensive risk assessment of Rhode Island Wastewater Treatment Facility (WWTF) vulnerabilities to Climate Change and sea-level rise (SLR).

Rhode Island Climate Change Commission

Climate change and ocean acidification pose considerable risks to Rhode Island's aquatic environments and their human uses. In 2009, BRWCT called for attention to assessing and adapting to the many climate change impacts upon Rhode Island's waters and their human values. In 2010, the BRWCT supported the passage of the Rhode Island Climate Change Risk Reduction Act (RIGL 23-84) which established the Rhode Island Climate Change Commission. In 2011 and 2012, the BRWCT Chair worked to establish the Rhode Island Climate Change Commission, and helped to write the Commission's first annual report released in November 2012.

The General Assembly in 2013 eliminated the statutory requirement that the Commission be led by two legislative co-chairs and assigned the task of chairing the Commission to the Director of the RI Department of Administration. The BRWCT Chair will continue to work as a member of the RI Climate Change Commission by helping to develop its second annual report scheduled for release in December 2013, and seeking external funds to support the administration of the Commission.

Rhode Island Shoreline Change Special Area Management Plan

In Rhode Island's coastal communities, shoreline erosion and inundation are compromising the integrity of major portions of their undeveloped and developed shorelines. Recent storms, especially Hurricane Irene and 'Super-storm' Sandy, damaged Rhode Island's densely settled coast, with storm waves eroding the shoreline and storm surge inundating low-lying coastal areas. Sandy produced washover fans that buried primary roads in the town of Westerly, and left parking lots and businesses buried under as much as 8 feet of sand. Climate change and sea level rise impacts are expected to increase their threat to the developed coastline, posing harm to people and their property, public and private infrastructure, and transportation and communication systems. Shoreline erosion and inundation pose immediate and long-term problems for community safety, economic

development and land-use planning. The goal of CRMC Shoreline Change Special Area Management Plan (SAMP) is to ensure that Rhode Island and its coastal communities are prepared to address shoreline erosion and inundation due to sea-level rise and climate change.

State and municipal policies will not be adequately responsive to state and community needs until state and local decision-makers understand the risks to the state and its coastal communities posed by shoreline erosion and inundation. The Shoreline Change SAMP will seek to inform state and local planning discussions with better knowledge regarding sea-level rise and coastal inundation, shoreline erosion, and storm hazards. It will engage with stakeholders to clarify how the public has traditionally perceived shoreline protection and management what are their expectations for the future as sea-level rise intensifies and climate adaptation becomes increasingly necessary.

In 2012 the CRMC proposed that the BRWCT fund a stakeholder process lead by the URI Coastal Resources Center that would help to develop a Shoreline Change Special Area Management Plan (SAMP) designed to ensure that Rhode Island and its coastal communities are prepared to address the changes inherent with climate change and sea level rise, especially shoreline erosion and inundation. The BRWCT agreed to do so and has established a grant agreement with URI to provide \$50,000 in FY 2014, with commitments in principle to provide the same amount in FY 2015 and in FY 2016. The Shoreline SAMP development process began in April 2013, and will continue for 3 years.

Climate Vulnerability Assessment for Rhode Island WWTF's

Flooding, sea-level rise, erosion, and inundation threaten our wastewater infrastructure. In Rhode Island, these infrastructures were generally designed on the assumption of four-inch average monthly rainfalls (for all months of the year). Now, increased precipitation variability due to climate change must be factored in to the rebuilding of state and local wastewater infrastructure. In 2012, BRWCT agreed to fund a DEM proposal for \$59,000 to conduct a comprehensive risk assessment of wastewater treatment facility (WWTF) vulnerabilities to Climate Change and sea-level rise. In the spring of 2013, the RI Division of Planning Office of Housing and Community Development agreed to contribute another \$100,000 to the project and a Request for Proposals to contract out the performance of this risk assessment will be issued in early fall 2013. The Risk Assessment will assess nineteen major wastewater treatment facilities in Rhode Island, possibly including the Narragansett Bay Commission's Combined Sewer Overflow Abatement Facilities, large pump stations in Providence, Cranston, Westerly, West Warwick, Warwick, Bristol, Narragansett and South Kingstown, and Newport's combined sewer overflow facilities. This Assessment will be coordinated with a similar project funded by the RI Department of Health to assess climate change risks to Rhode Island's drinking water supplies and infrastructure.

Estuarine and Ocean Science and Management

SLP Implementation Priority 7: Identify and implement pollution abatement actions necessary to restore water quality in impaired waters. (SLP Policy 13.6)

SLP Implementation Priority 19: Rebuild fisheries stocks in conformity with state and federal law. (SLP Policy 16.1)

SLP Strategy 13.4.5: Evaluate ambient and watershed-scale water quality conditions to track consequences of wastewater treatment facility upgrades for biological nutrient removal.

FY 2014 Actions:

- Fund and help to implement the Upper Narragansett Bay Water Quality Stakeholders Process
- Fund the URI Graduate School of Oceanography's Coastal Hypoxia Research Program
- Fund the Rhode Island 2013 regional lobster vent-less trap survey
- Fund a portion of the New England Marine Invasives Rapid Assessment Survey
- Support the work of the Northeast Regional Ocean Council

Upper Narragansett Bay Water Quality Stakeholders Process

A critical water quality management goal for upper Narragansett Bay is to reduce and over time eliminate severe eutrophication and hypoxia in the water column and benthos of upper Narragansett Bay and the Seekonk River.⁹ Eutrophic symptoms include macroalgae and phytoplankton blooms, decreased dissolved oxygen (DO), reduced water clarity and light penetration, loss of submerged aquatic vegetation, nuisance/toxic algal blooms, and contamination and/or die-off of fish and shellfish.¹⁰ DEM has categorized the waters of upper Narragansett Bay and the Seekonk River as "impaired" due to dissolved oxygen loss. While nutrient loading is a major driver for the onset of eutrophication that in turn often lead to DO reductions, other factors govern DO concentrations in the water column and the benthos, such as freshwater fluxes, water column stratification, temperature, tidal mixing, plankton community dynamics, and storms. Numerous sources introduce nutrients into Narragansett Bay and its watershed, including municipal wastewater treatment facilities (WWTF's), stormwater, on-site wastewater treatment systems, and atmospheric deposition. In recent decades, water quality management authorities have focused on WWTF discharges, estimated to contribute 62-73% of the total nutrient loadings to Narragansett Bay. In 2005, DEM issued a *Plan for Managing Nutrient Loadings to Rhode Island Waters* that stipulated how to achieve a 50% reduction in nitrogen loadings from WWTF's. Considerable progress has been made toward this goal via consent agreements between DEM and RI WWTF's. Attainment of the 50% reduction goal will be accomplished in the next couple of years as WWTF biologic nutrient removal treatment comes fully on-line. State and federal water quality management goals and regulatory programs have also worked to reduce nutrient fluxes from other sources such as stormwater.

Despite these accomplishments in reducing nitrogen discharges into Narragansett Bay, it is likely that additional efforts will be needed to achieve water quality goals for upper Narragansett Bay. Through the efforts of DEM since 2005, most RI WWTF are now providing or will soon provide enhanced nutrient removal, it is particularly important now to assess holistically the additional causes and symptoms of eutrophication throughout the Narragansett Bay watershed with the goal of identifying and evaluating additional sustainable, cost effective strategies to continue to improve water quality in upper Narragansett Bay. There are however significant concerns about the cost and efficacy of additional nutrient removal processes, particularly at the two largest WWTF's, NBC's Fields Point and Bucklin Point facilities. Much more needs to be learned about the feasibility, cost, and efficacy of innovative nutrient removal treatment approaches and strategies that would target the underlying causes of eutrophication and hypoxia in upper Narragansett Bay.

To better assess the efficacy and feasibility of different water quality management strategies for Narragansett Bay, a systems-based perspective is required. Systems-based approaches to

water quality management in upper Narragansett Bay would build from water quality models and decision support systems currently under development. The BRWCT, NBC, and DEM will via this project assess these modeling and decision support tools to help lead a facilitated stakeholder process that will identify and evaluate a range of strategies and treatment technologies to address upper Narragansett Bay water quality. The project will engage experts in water quality modeling, aquaculture, fisheries, wetlands, estuarine hydrodynamics and science, and wastewater engineering. Practices to be examined include beneficial re-use of nutrients, expanded aquaculture, constructed wetlands and/or other natural buffers and changes in fertilizer use across the watershed. In addition, the project will evaluate the effects of possible physical alterations to the upper Bay, such as improved circulation through dredging.

This is a 3-year project, with years 2 and 3 devoted to detailed assessments of the viability of the most promising new water quality protection and management strategies, possibly including the execution of selected pilot projects and the continued gathering of data needed for further evaluation. The BRWCT has committed \$60,000 to this project in FY 2014, and made commitments in principle totaling \$90,000 for FY 2015 and 2016.

Year 1 of this project will convene a stakeholder group to assess and refine the initial outputs of an expert working group to identify different treatment options, build consensus on the scientific basis and technical merits of these options, conduct preliminary feasibility analyses of the most viable options (where existing data allows) and identify information gaps to be filled in order to fully assess alternative treatment and management strategies. Project year 1 will also begin to identify legal and regulatory constraints or issues for the assessed treatment options, and produce preliminary cost information.

Coastal Hypoxia Research Program

Hypoxia is the episodic depletion of dissolved oxygen concentrations to levels that “profoundly affect the health of an ecosystem and cause physiological stress, and even death, to associated aquatic organisms.”¹¹ An important science question for Narragansett Bay is how key parameters for water quality and estuarine ecology respond to seasonal reductions in WWTF nutrient discharges. Thus, in 2011 the BRWCT agreed to fund a multi-year research project called the “Observations and Modeling of Narragansett Bay Hypoxia and Its Response to Nutrient Management” led by the URI Graduate School of Oceanography and funded primarily by the Center for Sponsored Coastal Ocean Research (CSCOR) of the National Ocean Service of the National Ocean and Atmospheric Administration (NOAA). This project is advancing scientific understanding of the nutrient loading and bay circulatory processes that govern the occurrence and spatial and temporal extent of hypoxia in Narragansett Bay and embayments such as Greenwich Bay.

The BRWCT committed \$25,000 annually for four years, conditional upon availability of funds and satisfactory progress toward the project’s research goals. FY 2014 will represent the third year of this funding commitment, which entails support for hydrodynamic modeling being undertaken by Dr. Dave Ullman of the URI Graduate School of Oceanography, and support for an intern to support field surveys of dissolved oxygen concentrations in upper Narragansett Bay.

Monitoring Southern New England Lobster Populations

The commercial lobster fishery is Rhode Island's most valuable commercial fishery with a total landed value of \$12.4 million in 2010. It is also a fishery in peril, given growing evidence that the southern New England lobster population is experiencing recruitment failure. In 2006, a regional ventless trap survey¹² was initiated to establish estimates of relative abundance and recruitment for lobsters throughout their range from Maine to New York. Although trawl surveys provide important fishery-independent data for assessing lobster stocks, trawl sets only capture lobsters outside of their rocky habitats. Ventless traps may be set in any type of benthic habitat and thus may improve the empirical basis for lobster stock assessments. The ventless surveys are undertaken in partnership with commercial lobstermen and thus boost industry acceptance and understanding of the science and monitoring data underlying regional stock assessments.

From 2006-2011, a variety of funding sources supported Rhode Island's participation in the regional ventless trap survey. By 2012, those sources were no longer available, and the DEM Division of Marine Fisheries requested "stop-gap" support from the BRWCT for that year's survey. The BRWCT agreed to do so, but also expressed concern that its support for the ventless trap survey in 2012 would engender future funding requests due to continued shortfalls in other state and federal funding sources. Nevertheless, after extended discussion, the BRWCT agreed to fund a proposal from DMF to support the 2013 ventless trap lobster survey for an amount not to exceed \$49,000.

As with its "stop gap" support for stream flows and water quality monitoring, because of shrinking support from other state and federal sources, BRWCT funding continues to be used to fill budget gaps instead of supporting projects that advance fulfillment of the SLP's overall goals. The DMF acknowledges this concern and is working with the National Marine Fisheries Service and the RI Congressional Delegation to ensure that federal funding is restored in federal FY 2014 for this and other lobster monitoring programs.

2013 Marine Invasives Rapid Assessment Survey

The introduction of non-native species into coastal, estuarine, and marine ecosystems often leads to significant and very difficult to remedy socio-economic and ecological impacts. Once an aquatic invasive species has become established, they are almost impossible and extremely expensive to eradicate. Thus, early detection of new invaders is critical for successful management, as, in general, a relatively small window of opportunity exists between when an invasive species is introduced and when it becomes fully established.

The Northeast Marine Invasives Rapid Assessment Survey helps scientists and managers discover the presence of marine invasives as early as possible through a close inspection of flora and fauna by an expert taxonomic team. Previous Rapid Assessment Surveys have been conducted in the Northeast in 2000, 2003, 2007, and 2010 through the collaboration of the MIT Sea Grant College Program, the Mass Bays National Estuary Program, The Narragansett Bay Estuary Program, the Rhode Island Coastal Resources Management Council (CRMC), and the Massachusetts Office of Coastal Zone Management. During these surveys, newly detected species such as an invasive tunicate, a non-native isopod and the European Rock Shrimp have been identified.

In 2013, the survey will add new dimensions to the long-term tracking of marine invasives in Rhode Island waters. Previous surveys have concentrated exclusively on docks and piers,

and most recently rocky intertidal habitats located adjacent to sampled docks and piers. Given the concern that artificial substrates may facilitate invasions and serve as stepping stones for broad dispersal of marine invasives, in 2013 the survey will sample benthic infauna beneath the floating docks to compare the species present in this habitat with species and community assemblages found on adjacent floating structures. The BRWCT agreed to CRMC's request to provide \$5,000 in funding for the 2013 marine invasives regional survey.

Northeast Regional Ocean Council

In 2004, the U.S. Commission on Ocean Policy called for the development of regional ocean partnerships that would foster and organize management relative to "whole ecosystems, rather than arbitrary political boundaries, [and] provide[] an opportunity for decision makers at all levels to coordinate their activities, reduce duplication of efforts, minimize conflicts, and maximize limited resources."¹³

New England responded quickly to this call for Regional Ocean Partnerships. Starting in 2006, the RI CRMC and the BRWCT Chair worked with representatives from other New England states and the federal government to establish the Northeast Regional Ocean Council (NROC). In 2012, NROC received about \$2.5 million from NOAA and the Gordon and Betty Moore Foundation to fund work in climate adaptation, ocean ecosystem health, and coastal and marine spatial planning (CMSP).¹⁴ The BRWCT's continued support and engagement with NROC and CMSP, as well as the Shoreline Change SAMP discussed above, is appropriate given that its planning jurisdiction extends three miles offshore.¹⁵ The RI CRMC has, with the development of the Ocean SAMP and its leadership of NROC, assumed primary responsibility for ocean management planning for Rhode Island, as well as the regional ocean planning initiative of the new Northeast Regional Planning Body. Correspondingly, the BRWCT has focused upon ensuring that other RI agencies and ocean interests, such as DEM's Division of Marine Fisheries, are engaged with and helping to shape the priority actions of NROC.

Freshwater Resources Management

SLP Implementation Priority 17: *Integrate management of land use and water use, and promote water use efficiency and conservation.* (SLP Policy 12.1)

SLP Implementation Priority 20: *Restore a diverse array of fresh and marine aquatic habitats.* (SLP Policy 18.2)

SLP Implementation Priority 7: *Identify and implement pollution abatement actions necessary to restore water quality in impaired waters.* (SLP Policy 13.6)

SLP Strategy 10.1.3: *Maintain the state's streamflow gage network, and expand as needed to fill critical data gaps as resources allow.*

FY 2014 Actions:

- Fund U.S. Geological Survey contractual agreements to monitor stream flows, large rivers, and groundwater
- Fund the Water Resources Board's effort to develop a water supply and utilization database for data supplied to it by RI's major water suppliers.
- Continue to work with Save the Lakes, DEM, and the RI General Assembly to establish an RI Lake Management Program

Streamflow and Water Quality Monitoring

Since FY 2007, the BRWCT has funded core ambient water monitoring programs and will continue to do so in FY 2014. These data are used by numerous state and local authorities to manage water quality, conduct drought and flood response and planning, restore aquatic habitats, and manage drinking water supplies. BRWCT will continue to provide major support to US Geological Survey contracted programs for water quality monitoring stations on large rivers, groundwater level observations, and the RI Stream Gage Network. For further discussion of this monitoring priority, please see pp. 18-19 below.

Water Resources Board Database Development

Sustainable use of freshwater resources requires careful assessment of water availability in relation to the amounts consumed by human uses. Previously, water use data was assembled from the Water Supply System Management Plans (WSSMP's) generated by RI's water suppliers. WSSMP submissions of water use data has varied considerably in terms when reporting periods and types of data provided, presenting significant difficulties in regional and statewide water supply and utilization information.

The Water Resources Board (WRB) now collects monthly data from the state's major water suppliers. In 2012, suppliers submitted three years of data (for fiscal years 2010, 2011, and 2012) utilizing Excel spreadsheets. This spreadsheet data must be incorporated into a database in order to provide the data that is usable in multiple formats and for multiple end users.

The WRB worked with the US Geological Survey in 2004 to design and populate a WSSMP water supply and utilization database. However, technology and the formats for the collected data have changed over time, requiring revisions to the initial database design. The next generation of database design optimally should offer the ability to collect and populate the data, and design customized data queries and summary reports. The goal is to provide accessible and accurate information to planners, state water managers, government officials and the public for evaluating trends in water use, assessing water availability, and tracking water conservation and demand management initiatives.

The WRB will work with the RI Division of Information Technology, and the RI Division of Planning to evaluate options for the new database design through a non-binding request for letters of interest, and its own internal research. This first phase of the project will identify new technologies and products that best meet the needs of the WRB. Once the best option is determined, a more detailed scope of work will be submitted to the BRWCT for review and approval. The BRWCT committed up to \$80,000 to this project in FY 2014.

Managing Lakes and Ponds: Invasive Plants and Water Quality

In February 2012, DEM released a report to the Governor and the General Assembly entitled: [Rhode Island Freshwater Lakes and Ponds: Aquatic Invasive Plants and Water Quality Concerns](#). It notes that 63% of assessed lake and pond acreage suffers from one or more water quality impairments, the most important being aquatic invasive plants, but there are also impairments caused by fish tissue contamination (mercury), nutrients, metals, and pathogens. The report also identifies cyanobacteria blooms as a growing water quality problem, likely aggravated by increasing water temperatures due to anthropogenic global warming and nutrient fluxes from septic systems and stormwater.

The report calls for the creation of a DEM Lakes Management Program to promote lake stewardship and work with lake associations and related interests to address water quality and aquatic invasives in Rhode Island's lakes and ponds. The BRWCT will continue to support any efforts to establish a new RI lakes management program.

Water-Reliant Economic Development

SLP Implementation Priority 3: *Develop clear policy statements for marine transportation and the maintenance and development of key port facilities. (SLP Policy 1.2)*

SLP Implementation Priority 13: *Boat and Ship Building. Develop strategies to recruit new workers into marine-related careers.*

SLP Implementation Priority 15: *Boat and Ship Building. Support the development of marine industry sites on portions of the surplus Navy land on the west side of Aquidneck Island.*

SLP Goal 7: *Boatbuilding, Shipbuilding, and Boating- Related Businesses. Ensure that Rhode Island continues to be a world leader in marine trades.*

SLP Goal 8: *Water-based Transportation. Expand competitive water-based transportation of people and goods to, from, and within Rhode Island.*

FY 2014 Actions:

- Fund development of the maritime port component of the RI freight planning effort launched in response to the federal MAP-21 act.
- Facilitate statewide port marketing and development.
- Foster continued development of credible means for assessing the economic benefits of large marine events; promote the use of such assessments to improve large marine event planning, management, and development of requisite waterfront infrastructure such as Fort Adams State Park.

RI Freight Planning in Response to MAP-21

Rhode Island's transportation facilities, ports, highways, railroads, airports, and pipelines, play critical roles in the efficient movement of goods and materials. Rhode Island's advantageous mid-point location between Boston and New York City represents an economic advantage for freight movement and logistics. The most recent federal transportation authorization *Moving Ahead for Progress in the 21st Century* (MAP-21) strongly encourages each state to develop a comprehensive multi-modal State Freight Plan that outlines immediate and long-range plans for freight transportation investments, particularly those freight exports. Under MAP-21, the federal share payable for any project has been increased to 95% for projects on the Interstate Highway System and 90% for any other project. But this new funding formula requires that the US Department of Transportation certifies that any proposed project contributes to the efficient movement of freight and is identified in a State Freight Plan developed pursuant to MAP-21.

Therefore, Statewide Planning will lead an effort to advance coordinated and rational use of the state's transportation resources for freight movement through the development of a State Freight Plan. The BRWCT has agreed to provide \$65,000 in FY 2014 to develop the port and marine transportation component of the State Freight Plan. The ports, together with the other transportation modes, air, highway, and rail will be viewed holistically as part of the state's overall freight transportation system. Historically, freight transportation planning

has evolved around independent modal networks. By encouraging the integrations of modal systems, Rhode Island can focus on balancing the need for convenient passenger transportation with the need for efficient, high-quality freight transportation. In this way, Rhode Island should increase its share of intermodal traffic and economic activity.

Developing Rhode Island's Maritime Ports

The BRWCT will continue to support the efforts of the General Assembly, the Governor's Office, the RI Congressional Delegation, the US Maritime Administration (US Department of Transportation) and maritime transportation interests to enhance statewide development of RI's maritime port facilities.

The Economic Benefits of Large Marine Events

In February 2012, the RI Economic Development Corporation (EDC) issued the final report of the BRWCT-funded development of a model for assessing the economic benefits of large marine events (LME), such as the July 2012 America's Cup Regatta in Newport. The BRWCT will work with EDC and LME stakeholders to apply the results of this project to enhancing the economic benefits of LME's in Rhode Island and targeting future investments in marine and coastal tourism offerings and infrastructure.

Other Projects

Governor's Bay Day: July 28 2013

At its June 5, 2013, meeting the BRWCT approved a request to fund the picnic lunch as part of the celebration and bay education events planned for Colt State Park during Governor Chafee's Narragansett Bay Day and in conjunction with DEM's Great Outdoors Pursuit.

Provision of Match to the Narragansett Bay Estuary Program

The BRWCT Chair is a member of the Narragansett Bay Estuary Program (NBEP) Management Committee. Representatives from three BRWCT agencies, DEM, CRMC, and Division of Planning, also are members of the NBEP Management Committee. With regard to Narragansett Bay and its watershed, the NBEP and BRWCT possess very similar responsibilities for interagency water resources strategic planning and implementation. In the course of the reorganization of the NBEP, ongoing since December 2012, the BRWCT and the NBEP Management Committee reached several agreements regarding joint science advisory functions and the provision of BRWCT match for NBEP's funding from EPA's National Estuary Program and EPA Region I's Office of Coastal and Ocean Programs. A joint Science Advisory Committee proposal is discussed in detail below, pp. 22-23. The BRWCT Chair in consultation with the NBEP Management Committee agreed to provide in-kind match to the NBEP for its FY 2013 Work Period (July 1, 2013 to June 30, 2014) totaling, \$233,995. This match consists of FY 2014 funding for SLP Implementation projects (names) and approximately 660 hours of staff time from the BRWCT Chair.

BRWCT Advisory Committees

Rhode Island Environmental Monitoring Collaborative

Systems-based approaches to aquatic resources management and economic development require substantial, ongoing investments in science, baseline monitoring, and strategic planning. Such knowledge development is expensive and time-consuming and, as such, difficult to justify within annual public budget cycles that tend to prioritize knowledge

creation for major regulatory decisions (sewage plant permitting) or issues with substantial public visibility (saltwater beach closures). Recognizing the tendency to underfund science and monitoring efforts, the General Assembly passed the Comprehensive Watershed and Marine Monitoring Act of 2004, calling for an:

Integrated mechanism by which individual monitoring efforts can be coordinated and managed as a system in which the functionality of Narragansett Bay and its watersheds is measured and individual planning and management efforts are adjusted to the needs of this marine environment.

This Act established the Rhode Island Environmental Monitoring Collaborative (RIEMC) for “the purposes of organizing, coordinating, maintaining, and supporting the watershed and marine monitoring system of the state.” The Act the Collaborative’s membership, powers and duties, and designates the URI Coastal Institute Director as Chair.¹⁶ Additionally, the RIEMC functions as a BRWCT standing committee.¹⁷

URI Coastal Institute Director Dr. Judith Swift will work with the BRWCT to replace Dr. Q. Kellogg who is stepping down from the RIEMC Chair position in June 2013 after three years of dedicated leadership. Thomas Uva, Director of Planning, Policy, and Regulations at the Narragansett Bay Commission, and Sue Kiernan, Deputy Chief of RI DEM’s Office of Water Resources, continue to serve as RIEMC Co-Chairs

In partnership with the BRWCT, the RIEMC has reviewed and identified Rhode Island’s aquatic monitoring priorities and developed costs estimates for fulfilling baseline monitoring needs. (For additional details, please visit to the [RIEMC webpage](#).)

Based upon recommendations from the RIEMC and BRWCT agencies, for the period of FY 2009 to FY 2013 (July 1, 2008 to June 30, 2013), the BRWCT has allocated hundreds of thousands of dollars to meeting Rhode Island’s most critical aquatic environmental monitoring needs. No other state or federal funding has been available to meet these monitoring imperatives and without support from the BRWCT many essential environmental monitoring programs would have already faltered or disappeared.

The BRWCT has provided funds from its Bays, Rivers, and Watersheds Fund and from the state’s Oil Spill Planning, Administration, and Response (OSPAR) Fund. In 2006, the General Assembly stipulated that the BRWCT allocate \$250,000 annually toward “environmental and economic monitoring” from the OSPAR funds.¹⁸

Nevertheless, there remain growing shortfalls in funding for baseline aquatic environmental monitoring in Rhode Island. The RIEMC 2012 Summary Report (issued in August 2013) reported on an estimated shortfall in annual funding of about \$2 million across for 21 environmental monitoring priorities that the RIEMC and BRWCT have identified.

The BRWCT will work with the RIEMC to report the results of the environmental monitoring programs it has funded in FY 2013, and will issue the next RIEMC annual report in the summer of 2014. The RIEMC will continue to review and refine its list of priority bay and watershed monitoring priorities, particularly in relation to the forthcoming update of the RI Water Quality Monitoring Strategy. Relatedly, as staff time and resources permit, the

RIEMC will review and update the inventory of existing Bay and watershed monitoring programs first issued by the URI Coastal Institute in 2005.

Finally, the RIEMC will work with the URI Coastal Institute, Watershed Counts and other stakeholders to formulate and establish consensus on indicators to assess the environmental health of Narragansett Bay and its watershed, and communicate key findings and concerns to the general public.

The Narragansett Bay Science Advisory Committee

A Partnership between the BRWCT and the Narragansett Bay Estuary Program to Establish a Joint Science Advisory Committee

Dialogue and collaborative learning among agency managers and scientists are essential for watershed management, ecosystem-based management, integrated coastal zone management, adaptive management, and other contemporary models for environmental management and sustainable development.

Under the RIGL 46-31, the BRWCT is responsible for convening and administering a Science Advisory Committee (SAC) to provide science-based advice and guidance to the BRWCT regarding:

- SLP Implementation
- Development and utilization of integrated environmental and economic monitoring systems to track key trends in aquatic resources and their sustainable use, as well as the outcomes of SLP implementation
- The status and efficacy public and non-profit investments in scientific research relevant Rhode Island's aquatic resources and water-reliant economy.¹⁹

In the course of the reorganization of the Narragansett Bay Estuary Program (NBEP), EPA Region I and other members of the NBEP Management Committee called for the establishment of a science advisory committee for the NBEP. In response, the BRWCT Chair, also a member of the NBEP Management Committee, proposed development of a joint or unified science advisory committee that would serve needs and mandates of the two organizations. That proposal was accepted by the NBEP Management Committee and has been incorporated into the NBEP FY 2013 Work Plan issued on June 30, 2013.

This body will focus upon Narragansett Bay and its watershed, its living resources and habitats. It will work to improve how scientific and technical information and insights are used in Bay and Watershed management efforts by state, federal, and local governments. Other areas of concern include the design of monitoring and applied research programs, the assessment and communication of scientific information for managers and the public.

The BRWCT Chair will work with the NBEP Management Committee and the future NBEP Senior Program Manager to build a true partnership between the NBEP and the BRWCT regarding a Science Advisory Committee for Narragansett Bay and its Watershed. Details will be worked out in the coming months on how members will be appointed to the Committee, its administration, and its support of the joint mandates of the BRWCT and the

NBEP. One possible initial task for a joint SAC is to organize and convene one or more workshops on key science research and priorities for Narragansett Bay and its watershed.

The BRWCT recognizes that it may have science advisory needs that extend beyond estuarine water quality and living resources management for Narragansett Bay. For example, the BRWCT is responsible for working to improve the linkages between science, technology development, and Rhode Island's "water-reliant economy" to advance coastal and ocean science and technology for marine economic development. For such science advisory needs, The BRWCT Chair would develop additional science advisory functions that will be linked to the Narragansett Bay Science Advisory Committee.

The BRWCT Economic Monitoring Collaborative

The BRWCT Economic Monitoring Collaborative (EMC) is responsible for "developing and implementing a strategy for an economic monitoring program" that entails "baselines, protocols, guidelines and quantifiable indicators for assessing the economic health and performance of the water cluster."²⁰

The EMC has not been active since the March 2008 when the RI Economic Policy Council was disbanded. The BRWCT Chair continues to discuss with EDC possible next steps on to revive the Collaborative and identify key topics should be addressed, possibly starting with development of Rhode Island's maritime ports, focusing on the Port of Providence and the Port of Quonset/Davisville, and continued promulgation of economic baseline indicators originally developed by the EMC in 2008.

Better Public Stakeholder Engagement Mechanisms

At the BRWCT's June 2013 meeting, Tom Uva of the Narragansett Bay Commission requested that the BRWCT work to establish a formal Public Advisory Committee per the requirements of the BRWCT statute. The BRWCT as a whole agreed that more effort was needed to communicate more widely BRWCT projects and initiatives, and to seek greater public input into BRWCT programming and funding decisions. The BRWCT stipulated that the BRWCT Chair will explore and propose new mechanisms for public input and dialogue including public hearings, focus groups, surveys, and partnership arrangements with related Rhode Island management and planning programs.

Table 2 summarizes BRWCT initiatives, funded projects, and advisory committee functions for FY 2014.

Table 2: Overview of BRWCT FY 2014 Work Plan

Statutory Authority	Actions	Timeframe
<p>I. Implement the SLP</p> <p><i>RIGL § 46-31-6</i></p>	<p>Develop BRWCT Annual Work Plans.</p> <p>Administer BRWCT-funded projects. (See project descriptions in the previous section and the FY 2014 BRWCT budget on page 25.)</p> <p>Outputs:</p> <ul style="list-style-type: none"> • Annual solicitation and review of projects that will advance SLP Implementation Priorities • Timely funding and completion of BRWCT-funded projects • Issue FY 2015 Work Plan to Governor’s Office • Issue BRWCT FY 2013 Annual Report 	<p>March-June 2014 Ongoing December 2013 October 2013</p>
<p>II. Update and revise the SLP</p> <p><i>RIGL § 46-31-6</i></p>	<p>Develop SLP Implementation Overview.</p> <ul style="list-style-type: none"> • <i>Align SLP implementation tracking and the Department of Administration’s Office of Management and Budget’s performance measurement initiative.</i> <p>Initiate an update of the Bays, Rivers, and Watersheds Systems-Level Plan.</p> <p>Outputs:</p> <ul style="list-style-type: none"> • SLP Implementation Overview • Statement of intent and scope for an updated Bays, Rivers, and Watersheds Systems-Level Plan 	<p>March 2014 Spring 2014</p>

Statutory Authority	Actions	Timeframe
<p>III. Convene BRWCT meetings, & support BRWCT standing committees, and related advisory bodies</p> <p><i>RIGL § 46-31-4, § 46-31-9, § 46-23.2-1, § 46-12.7-13, § 46-12.11</i></p>	<p>Organize and chair quarterly BRWCT meetings. Foster the development and productivity of standing advisory committees. Develop and pursue standing committee annual reports and work plans.</p> <ul style="list-style-type: none"> • <u>RI Environmental Monitoring Collaborative (RIEMC)</u> <ul style="list-style-type: none"> ○ Review and update statewide priorities for environmental monitoring. ○ Support the URI Coastal Institute's <u>Watershed Counts</u> to develop environmental indicators and related public communications; encourage linkages between Watershed Counts, state water management goals and strategic priorities. • <u>Narragansett Bay Science Advisory Committee (in partnership with the NBEP)</u> <ul style="list-style-type: none"> ○ Support RIEMC review and update of statewide priorities for environmental monitoring. ○ Work with NBEP to conduct the next iteration of the NBEP's Status & Trends Report. • <u>Economic Monitoring Collaborative</u> <ul style="list-style-type: none"> ○ Seek to re-assess baseline economic indicators previously reported on in 2008 by the former RI Economic Policy Council ○ Work with Rhode Map RI and the RI Freight Planning Process to assess statewide port development strategies and needs, and to assess future development opportunities for RI's water-reliant economy. • <u>Public Advisory Committee</u> <ul style="list-style-type: none"> ○ Identify and propose new mechanisms for public stakeholder engagement by the BRWCT. <p>Support the RI Climate Change Commission with regard to regular meetings of the Commission and its work groups, and issuance of its second report in the spring of 2014.</p> <p>Outputs:</p> <ul style="list-style-type: none"> • Quarterly BRWCT meetings • Meetings, reports and work plans from BRWCT and its standing committees • Roster appointments for the RI Environmental Monitoring Collaborative • Launch the Narragansett Bay Science Advisory Committee with the NBEP • Issue second annual RI Climate Change Commission Report 	<p>Conditional upon available resources</p> <p>Ongoing Ongoing September 2013 September 2013 December 2013</p>

Statutory Authority	Actions	Timeframe
<p>IV. Facilitate coordination of government, university-based, and private and independent sectors programs</p> <p><i>RIGL § 46-31-6(g), § 46-31-8(a)</i></p>	<p>Chair serves on the NBEP Management Committee</p> <p>Chair serves on RI Sea Grant's Senior Advisory Council</p> <p>Chair serves on RI Planning Council's Technical Committee (representing BRWCT and DEM)</p> <p>Chair serves on RI Renewable Energy Task Force (Administered by the US Bureau of Ocean Energy and Management.)</p>	
<p>V. Leverage resources from the federal, private, and non-profit partners</p> <p><i>RIGL § 46-31-8 (a)</i></p>	<p>Increase funding for regional and state water resources management in partnership with the Rhode Island congressional delegation, state agencies, foundations, and federal agencies.</p> <ul style="list-style-type: none"> • <i>Support efforts of DEM, and CRMC, EPA Region I; the RI Congressional Delegation, The Nature Conservancy-RI, the NBEP, and other entities to establish the Southern New England Coastal Waters Restoration Partnership.</i> 	

Coordinated Work Planning and Annual Reporting for BRWCT and its Committees

As summarized in Table Two, a new integrated annual reporting and work planning schedule has been developed to encourage the standing committees to engage regularly with the BRWCT.

Table 3: Annual Schedule for BRWCT and Standing Committee Annual Reports and Work Plans

July	Aug.	September	October	November	December
1: Start date for BRWCT and Committee Work Plans		1: Chair and Committee Chairs submit amended current FY Work Plans (if necessary) to BRWCT	30: Chair submits Annual Report for previous FY to BRWCT		15: Chair submits next FY BRWCT Work Plan To Governor's Office
			Oct.- Nov.: Chair and BRWCT draft next FY BRWCT Work Plan		

January	Feb.	March	April	May	June
BRWCT next FY Work Plan incorporated into Governor's Budget to RI General Assembly			30: Chair and Committees submit to BRWCT draft annual reports for current FY.	30: Committees submit to BRWCT next FY draft Work Plans	30: BRWCT and Committees finalize Current FY Annual Reports and Committee Work Plans for next FY
		Mar. - Apr.: Chair and Committees draft next FY Committee Work Plans			
		March - May: Standing Committee Annual Meetings			

BRWCT Funding Sources, Committees and 2008 SLP Revision

Funding Sources

There are two dedicated fees established to support the work of the BRWCT:

- A fee of 10¢ per 100 gallons of Septage disposed at any of RI's municipal or regional wastewater treatment facilities
- An annual fee of \$40,000 for all actively used trans-Atlantic submarine cables making landfall in Rhode Island (of which there is currently one).

The BRWCT estimates that these fees will generate \$440,000-450,000 in FY 2013.²¹ Thus, the BRWCT has the capacity to fund projects costing up to \$100,000 annually, and is capable of making multi-year commitments (with out year commitments conditional on funding availability).

The BRWCT agencies are responsible for proposing and leading projects funded by the BRWCT. Other entities may be incorporated into the projects, and receive BRWCT funds, but a BRWCT member agency must serve as the project lead and manager.

In FY 2013, the BRWCT initiated a formal proposal submission and review process for development of its annual work plan. The BRWCT agencies must justify project ideas utilizing the SLP and provide detailed budget information for proposal review. The BRWCT will conduct another SLP implementation proposal review process for FY 2015 Workplan beginning in January 2014.

Appendix I: Budgets

RI BRWCT FY 2014 Budget (10/1/13)			
Office of the Chair		Budget	Actual
Personnel		\$ 240,500	
Operations			
Office Space & Supplies		\$ -	
Supplies, Software, Equipment		\$ 500	
Travel		\$ 1,000	
Other		\$ 300	
Total Operations		\$ 1,800	
Grants			
BRWCT Advisory Committees		\$ 10,000	
Total Grants		\$ 10,000	
TOTAL		\$ 252,300	
Funded Projects			
Stormwater Management			
(13-5) RI Impervious Cover Data Update		\$ 16,300	\$ 16,263
(13-6) Middletown SUD Assessment		\$ 40,000	\$ -
(14-9) W. Warwick SUD Assessment		\$ 6,200	\$ -
(14-6) Upper Narr. Bay Regional SUD Feasibility Study		\$ 75,000	\$ -
Climate Change Adaptation			
(13-3) WWTF Climate Vulnerability Analysis		\$ 59,000	\$ -
(13-4) Shoreline Change SAMP		\$ 50,000	\$ -
Estuarine & Ocean Science & Management			
(14-5) Upper Bay WQ Stakeholder Process		\$ 60,000	\$ -
(12-4b) Hydrodynamic modelling for Narragansett Bay		\$ 17,100	\$ 17,100
(12-4a) Dissolved Oxygen Field Survey Intern (2013-2014)		\$ 10,000	\$ 2,725
(14-3) Marine Invasives Assessment		\$ 5,000	\$ -
(14-1) Lobster Ventless Trap Regional 2013 Survey		\$ 45,400	\$ -
Freshwater Resources Management			
(14-2) USGS Contracts: stream gages, large river water quality and groundwater monitoring		\$ 53,000	\$ -
(14-7) Water Resources Board water consumption database		\$ 80,000	\$ -
Water-Reliant Economic Development			
(14-8) Freight Planning for Ports		\$ 65,000	\$ -
Other			
(14-4) Governor's Bay Day (2013)		\$ 8,000	\$ 7,960
Total		\$ 590,000	\$ 44,048
Grand Total		\$ 842,300	\$ 88,096
FY 2014 Cash Flow			
Bal Forward (FY13)	Expenses	Income*	Bal Forward (FY15)
\$512,634	\$ 842,300	\$ 441,000	\$ 111,334
		* Septage- \$ 405,000	
		Cable- \$ 36,000	

**FY 2014 OSPAR Monitoring
Allocation (*Draft*)**

Available	\$ 250,000
USGS Apr-Jun '13	\$ 51,275
USGS July-Sept '13	\$ 66,241
USGS Oct-Dec '13	\$ 66,242
USGS Jan-Mar '14	\$ 66,242
Balance	\$ -

RI BRWCT FY 2013 Budget (FINAL)			
Office of the Chair		Budgeted	Actual
Total Personnel		\$ 237,000	\$ 233,630
Operations			
Supplies, Software, Equipment		\$ 500	\$ -
Travel		\$ 1,200	\$ 663
Other		\$ 1,000	\$ -
Total Operations		\$ 2,700	\$ 663
Grants			
Project Development Funds		\$ 12,000	\$ -
Sponsorships		\$ 1,500	\$ -
BRWCT Advisory Committees		\$ 15,000	\$ -
Total Grants		\$ 28,500	\$ -
Total Office		\$ 268,200	\$ 234,956
Funded Projects			
Coastal Hypoxia Research Program			
(12-4a) DO Field Survey Intern (2012/2013)		\$ 15,000	\$ 12,265
(12-4b) Hydrodynamic modelling for Narragansett Bay		\$ 20,000	\$ 19,221
Economic Indicators			
(13-1) Large Marine Event Benefit Assessment		\$ 100,000	\$ 99,194
Stormwater Management			
(13-5) RI Impervious Cover Data Update		\$ 9,500	\$ 9,461
(13-7) Conservation Law Foundation SUD Analysis		\$ 2,500	\$ 2,500
(12-1) DEM Intern: SUD Feasibility Assessments		\$ 500	\$ 468
Other			
(13-2) USGS Monitoring Contract Support		\$ 17,000	\$ 16,272
(13-6) 2012 Lobster Ventless Trap Regional Survey		\$ 43,900	\$ 35,258
Total Projects		\$ 208,400	\$ 194,639
Grand Total		\$ 476,600	\$ 429,595
FY 2013 Cash Flow FINAL			
Bal Forward (FY12)		Expenses	Income*
\$486,232		\$ 429,595	\$ 455,997
			\$ 512,634
			* Septage
			\$ 399,498
			Cable
			\$ 56,499

Endnotes:

¹ Due to the dynamism and complexity of Rhode Island's aquatic environments, and the substantial investments devoted over the last 50-75 years to their study and assessment, there are numerous monitoring data archives and an extensive scientific literature dedicated to Narragansett Bay and its watershed. Therefore, the public tends to assume that the depth and breadth of scientific, monitoring, and technical understanding of our aquatic environments is sufficient for applying ecosystem-based management principles to water management and sustainable development decisions. There is a tendency to believe that there is sufficient understand about how Rhode Island's aquatic environments function, how they respond to external drivers such as climate change, and how they are impacted by the many ways we utilize them. Unfortunately, for the most part such assumptions are fallacious, if understandable. Significant scientific uncertainties remain, often forcing managers to resort to incremental decision-making in pollution control, allocating freshwater resources to human and non-human uses, living resources conservation and sustainable harvesting of living resources, and other decisions with major consequences for the environment, our economy, and present and future generations.

² The 2009 American Recovery and Reinvestment Act provided to states and municipalities a substantial, one-time infusion of federal funds targeting the state's outstanding capital needs for wastewater and drinking water treatment facility upgrades and maintenance.

³ RIGL 46-31-1.

⁴ RIGL 46-31-4(a).

⁵ RIGL 46-31-7.

⁶ RIGL 46-31-5(b).

⁷ RIGL 46-31-5(d).

⁸ RIGL 46-31-5(c). The BRWCT "may recommend adoption of all or portions of said plan by the state planning council as elements of the state guide plan" (RIGL 46-31-5(a)).

⁹ Eutrophication may be defined as the "increase in the rate of supply of organic matter to an ecosystem" Nixon, S.W. 1995. Coastal Marine Eutrophication: A definition, Social Causes, and Future Concerns. *Ophelia*, Vol. 41: 199-219. Cloen, J.E. 2001. Our Evolving Conceptual Model of the Coastal Eutrophication Problem. *Marine Ecology Progress Series*, Vol. 10: 223-253.

¹⁰ Bricker, S., et al. 2007. Effects of Nutrient Enrichment In the Nation's Estuaries: A Decade of Change. NOAA Coastal Ocean Program Decision Analysis, Series No. 26. National Centers for Coastal Ocean Science, Silver Spring, MD.

¹¹ The National Science & Technology Council. 2003. An Assessment of Coastal Hypoxia and Eutrophication in U.S. Waters.

¹² "Ventless traps" capture all lobsters that enter them.

¹³ U.S. Commission on Ocean Policy. 2004. An Ocean Blueprint for the 21st Century. P. 87.

¹⁴ For additional details on the Northeast Regional Ocean Council's initiatives, please visit the [NROC website](#).

¹⁵ RIGL 46-31-2(4).

¹⁶ RIGL 46-23.2-6

¹⁷ RIGL 46-31-9(e)

¹⁸ RIGL 46-12.7-13(2)

¹⁹ RIGL 46-31-9

²⁰ RIGL 46-31-9(d). The water cluster is: "an economically interconnected grouping of businesses, institutions, and people relying directly or indirectly on the bays, rivers, and watersheds."

²¹ The BRWCT Chair monitors actual fee revenues and reviews with the BRWCT any necessary adjustments to projected revenues.