



The Rhode Island Bays, Rivers, and Watersheds Coordination Team

**RHODE ISLAND BAYS, RIVERS, AND WATERSHEDS
SYSTEM-LEVEL PLAN:
2009-2013**

EXECUTIVE SUMMARY

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BRWCT Strategic Planning Work Group

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VISION AND GOALS

Numerous socioeconomic uses and values are thriving, including commercial and recreational fishing, recreational boating, renewable energy generation, ocean and bay monitoring, water-dependent transport and industry, maritime technologies, recreation and tourism.

State and regional governance of Rhode Island's waters and watersheds fully incorporates systems perspectives, particularly the principles of ecosystem-based management, and is based upon world-class programs in monitoring, research, education and outreach, and strategic planning and evaluation.

A high level of biodiversity and a wide range of marine, estuarine, and freshwater habitats are protected, restored, and managed holistically. Development along shorelines, waterfronts, and floodplains is designed to mitigate the risks of coastal storm hazards and sea-level rise, and increase community resilience. Rhode Island's bays, rivers, and watersheds are widely perceived as desirable, attractive places to live, work, and play, with clean water, exceptional beaches, abundant public access, thriving living resources, and vital harbors and waterfronts.



Systems-Level Planning and Evaluation Goals

- ◆ Develop and apply ecosystem-based management principles to protect and restore Rhode Island's fresh, estuarine and marine waters and watersheds, and the human and economic values that derive from them.
- ◆ Guide the development of Rhode Island's "water-reliant economy" so that natural resources, including renewable energy are utilized sustainably, and enhanced in their utilization.

Systems-Level Management Goals: 2009-2013

Waterfront and Coastal Development:

Rhode Island's shorelines and waterfronts will be characterized by balanced, well-designed development that accommodates marine-related industry, transportation, recreation, housing, and conservation.

Watersheds:

Rhode Island's watershed ecosystems will be healthy and their natural functions maintained.

Rhode Island's Water-Reliant Economy:

Rhode Island businesses that rely upon aquatic resources and/or waterfronts will thrive and have the opportunity to grow sustainably.

Natural Hazards:

Human life, property, infrastructure, and natural resources will be protected against the hazards of storms and floods.

Freshwater Supply:

Rhode Island will maintain and equitably distribute ample, reliable safe fresh water supplies for the future.

Water Quality:

Rhode Island's fresh, estuarine, and marine waters will support aquatic habitats, biological diversity, and their traditional and emerging human uses.

Biodiversity - Aquatic Habitats and Invasive Species:

Rhode Island's freshwater, coastal, estuarine, and marine habitats will support healthy aquatic ecosystems for native fish and wildlife.

Fisheries and Aquaculture:

Rhode Island will nurture and maintain sustainable and vital freshwater and marine fisheries, as well as a diverse, thriving aquaculture industry.

Education, Training, and Technical Assistance for Local Governments:

Training, technical assistance, and continuing education will enhance how local and regional governments, citizens, and non-profits utilize, protect and manage aquatic resources and the economic values that derive from them.



Introduction

The waters and watersheds of Rhode Island are resilient, productive, and offer a wealth of future opportunity. Rhode Island's maritime culture, development patterns, and major sectors of its economy stem directly from its estuarine geography and fresh water resources. Rhode Islanders identify deeply with the state's water environments and their historic legacies of human use. Our rivers, coasts, and marine waters signify far more to us than rocky shorelines and historic river valleys, delectable shellfish, coastal forests, ocean beaches, marinas, commercial ports, fishing wharves, and treasured summer homes. Our coasts and watersheds are home to all of these and more. The slender boundary between land and sea that we live within sustains extraordinary resources, unparalleled ecological diversity, and irreplaceable socioeconomic and cultural values. It is land and ocean, fresh water and salt. It is a place of manifold connections.

How we utilize and interact with the rivers, streams, and groundwater of our coastal watersheds inexorably influences Rhode Island's marine coast and waters. In turn, our rivers and streams are endowed with spawning and nursery habitats for marine fish that migrate offshore and along our seaboard.

Much has been accomplished to protect and restore Rhode Island's aquatic environmental quality and maintain the economies that depend upon them. Yet, a host of physical, chemical, and biological stressors continue to threaten Rhode Island's natural waterbodies, exacerbating their vulnerability to rapid, deleterious alterations in their functions and resource values.

Rhode Island's water-reliant economy, from tourism to fisheries, demonstrates equal mea-

asures of promise and peril. Coastal real estate continues to boom, but water-dependent industries struggle to maintain vital shoreline facilities. Commercial fishing fleets are burdened by high operating costs (particularly fuel), while regional and national fisheries management regimes work through substantial reforms that are generating continued operational uncertainties and controversy for fishermen. Shellfish aquaculture, while small relative to commercial and recreational fishing, has grown rapidly in recent years, sometimes engendering disputes with other users of Rhode Island's coastal waters. Recreational fishing and other forms of outdoor recreation continue to be very popular with their advocates increasingly influencing state and local policy and management.

In August 2003 a large fish kill occurred in Greenwich Bay. The interaction of high water temperatures, reduced water column mixing due to neap tides, and eutrophic conditions resulted in the accumulation oxygen-deprived waters in the western portion of Greenwich Bay. As a consequence, about one million juvenile menhaden and hundreds of small crabs, blackfish, clams, and horseshoe crabs were trapped in the hypoxic waters and killed. This fish kill, in combination with an unusually high number of saltwater beach closings that summer (caused in turn by significant rainfall that led to flows of pathogen-laden stormwater into recreational swimming waters) created a spike in public concern and political interest regarding the health and productivity of Rhode Island's coastal waters. Despite all the multi-decadal efforts to improve water quality and restore fresh and marine aquatic habitats, was Narragansett Bay's health and productivity still in jeopardy? What more needed to be done to ensure the well-being and resilience of Rhode Island's coastal waters, and the freshwaters that feed into them?

In 2004, Rhode Island State Government acted concertedly to address these questions. Governor Carcieri created a blue ribbon commission which issued in early 2004 recommendations on reducing hypoxia in upper Narragansett Bay and swimming closures at Rhode Island's treasured saltwater beaches. The Rhode Island General Assembly convened two study commissions that issued recommendations on governance reforms and "habitat-based management." Building upon the recommendations of these three commissions, the General Assembly based legislation to strengthen watershed-based management approaches by state agencies, mandate reductions in nutrient discharges into Narragansett Bay from municipal sewage treatment plants, and through creation of the Rhode Island Bays, Rivers, and Watersheds Coordination Team (BRWCT), increase strategic coordination of state environmental and economic development agencies via application of ecosystem-based management principles to Rhode Island's waters and watersheds.

There are many fine ideas on what Rhode Island should do for its aquatic resources and water-reliant economy. But in this first decade of the new millennium, government at all levels is struggling to retain and acquire the necessary funds and expertise. And new, very difficult challenges continue to arise, multiplying the risks and future costs of inaction. The BRWCT must help Rhode Island devise and pursue new strategies to address the following imperatives:

- Mitigate and adapt to the environmental and economic consequences of climate change including sea-level rise, intensifying coastal hazards, ambient water temperature increases, and alterations in precipitation patterns and quantities.

- Ensure that coastal waterfront development and redevelopment foster marine economic vitality, public access, and the protection and restoration of critical habitats.

- Continue to cultivate high-quality public access to Rhode Island's shorelines and coastal waters.

- Redevelop waterfront brownfields and urban coastlines to eliminate toxic contamination and restore recreational, environmental, and economic values.

- Invest in Rhode Island's ports and maritime industries, including dredging and dredged materials management.

- Protect Rhode Island's freshwater resources, surface and groundwater to maintain the well-being of freshwater ecosystems and ensure high quality drinking water supplies.

- Implement watershed-based systems approaches to managing and controlling pollution, and sustaining living resources and habitats.

- Develop our ocean renewable energy resources in a manner that accommodates and promotes existing uses of Rhode Island's marine waters and submerged lands.

- Sustain the economic viability and ecological well-being of commercial and recreational marine and freshwater fisheries.

- Encourage aquaculture in Rhode Island waters, balancing its development with other uses.

- Protect and restore freshwater, estuarine, and marine habitats, boosting their biodiversity and resilience.

- Prevent or mitigate aquatic invasive species and their impacts upon habitat quality, native species, and biodiversity.

Insufficient or poorly executed actions toward these imperatives will pose substantial risks to the future well-being of Rhode Island. Socio-economic impacts will intensify without significant public and private investments, as well as difficult, possibly substantial, adjustments to social and individual behaviors and lifestyles. But, these imperatives also pose opportunities for Rhode Island. For example, while much of the U.S. faces growing freshwater resource scarcity, Rhode Island’s freshwaters are abundant and high quality, and will continue to be so if we invest adequately in their conservation, demand management, and infrastructure. Rhode Island’s unique blend of high quality aquatic environments and resources, diverse outdoor recreational offerings, and historic, culturally dynamic cities positions the state well to compete within the 21st century American economy.

If we don’t invest in their protection, restoration, and sustainable utilization, Rhode Island’s aquatic environments will decline, resource allocation and access disputes will intensify, and the capacity of socioeconomic and environmental systems to adapt to future change will deteriorate. Environmental management and sustainable economic development strategies must expand their influence and effectiveness just to maintain existing levels of aquatic environmental quality and resource abundance in the context of unprecedented regional and global change.

The Rhode Island Bays, Rivers, and Watersheds Coordination Team

In 2004, the General Assembly concluded that:

“The formation of an [state executive] interagency group for the coordination of the functions, programs, and regulations that affect the bays, rivers, and watersheds is 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.”

This is the mission of the Rhode Island Bays, Rivers, and Watersheds Coordination Team (BRWCT), a state interagency commission consisting of the following agencies:

- ◆ Coastal Resources Management Council
- ◆ Department of Environmental Management
- ◆ Department of Administration’s Division of Planning
- ◆ Economic Development Corporation
- ◆ Narragansett Bay Commission
- ◆ Rivers Council
- ◆ Water Resources Board

The work of the BRWCT is facilitated by a BRWCT Chair appointed by the Governor and

confirmed by the Rhode Island Senate. The BRWCT has established economic and environmental monitoring collaboratives and public and scientific advisory committees to provide guidance and support. The BRWCT has initiated a strategic planning cycle known as The Rhode Island Bays, Rivers, and Watersheds Systems Level Plan (BRW SLP). The first version of the BRW SLP covering the period of 2009-2013 was issued in July 2008.

The Rhode Island Bays, Rivers, and Watersheds Systems Level Plan: 2009-2013

Via development and implementation of the BRW SLP, the BRWCT promotes interagency coordination and collaborative learning, advances ecosystem-based management of estuarine and fresh water resources, and fosters development of Rhode Island's water-reliant economy. The BRW SLP is organized into eight major sections.

- ◆ Waterfront and Coastal Development
- ◆ Watersheds
- ◆ Water-Reliant Economy
- ◆ Natural Hazards
- ◆ Freshwater Supply
- ◆ Water Quality
- ◆ Fisheries and Aquaculture
- ◆ Aquatic Habitats and Invasive Species

Each section summarizes key concerns and uncertainties, includes a Strategy Table summarizing objectives, strategies, and actions to be pursued in the next four years. Agency leads for each action are identified, along with key stakeholders. Additional commitments to implementation will be made in BRWCT Annual Work Plans.

The key recommendations of the BRW SLP: 2009-2013 are as follows:

◆ Waterfront and Coastal Development

To ensure that our waterfront industrial lands foster marine and waterfront economic development:

- Expand municipal government utilization of zoning tools such as performance standards to encourage appropriate development of industrial waterfront sites.
- Develop clear policy statements regarding the state's interests and goals for marine transportation and the maintenance and development of key port facilities.
- Adapt current and design future waterfront infrastructure to accommodate sea-level rise.

To ensure that waterfront, riverine, and coastal development and restoration upholds key environmental and cultural values:

- Advance Special Area Management Planning (SAMP) for critical coastal regions.
- Ensure that coastal SAM Plans and DEM's water quality restoration plans are adequately reflected in state and local planning, zoning and related by-laws.
- Promote revision of community development standards to ensure application of Low Impact Development (LID) standards and techniques in re-development and development along freshwater and estuarine waterfronts.

◆ Watersheds

To fully attain water quality standards for our rivers, streams, and ponds:

- Work with local governments to establish their most important priorities for protecting natural resources with strategies such as regional green space protection.
- Establish and promulgate green development standards and land use techniques.
- Expand local and statewide protection of riparian buffers, freshwater wetlands, brackish wetlands, and salt marshes.
- Increase the capacity and emphasis of land acquisition programs to protect critical headwaters.
- Minimize impervious cover to reduce storm-water runoff that impairs water quality and habitat.

To bring about future land-uses which protect and restore watersheds:

- Develop incentives and requirements for local government permit reviews and land-use decisions to address cumulative impacts to water quality.
- Provide incentives for local governments to adopt compact growth techniques such as village centers and conservation development.
- Maximize utilization of existing infrastructure and developed sites to reduce development pressure on green fields and critical watershed areas.

- Ensure that future development occurs only where there is adequate freshwater supply.

◆ The Water-Reliant Economy

To ensure a bright future for Rhode Island's industries in marine trades, marine tourism and recreation, fisheries and aquaculture:

- Implement the National Geographic Geotourism Charter Principles for Sustainable Tourism.
- Cultivate Rhode Island's natural attributes and maritime history to attract national and international marine-related events and activities.
- Develop alternative transportation schemes for moving people between coastal and watershed destinations.
- Maintain and expand public infrastructure for marine and freshwater recreational opportunities.
- Compete nationally and internationally for large marine boating events. Promote such events as part of RI's Geotourism strategy.
- Dredge areas key to shipbuilding and other marine interests in a timely and cost-effective manner.
- Support the development of marine industry sites on surplus Navy land on the west side of Aquidneck Island.
- Support expansion of boat storage and marina capacity.

- Undertake comprehensive, state-wide planning for marine transportation.

◆ Natural Hazards

To significantly reduce natural hazard risks to coastal and riverfront residents, infrastructure, and development:

- Incorporate advancements in coastal hazards science into State and local policies.
- Enhance the resilience of existing structures in flood zones.
- Develop local natural hazard mitigation plans (floods and coastal storms), increase the capacities required to implement them, and improve local responses to coastal and inland flooding events.
- Control and guide reconstruction after severe storm events to direct future development away from high hazard areas, and/or ensure that redevelopment minimizes future hazards.
- Reduce dam hazards through increased inspection, enforcement, and the rebuilding of high hazard structures.
- Reduce impervious cover and restore wetland and riparian buffers to decrease flooding along rivers.

◆ Freshwater Supply

To ensure sustainable use and protection of the state's freshwater resources:

- Improve water data management.

- Promote and practice integrated (regional, state and local) water management.

- Upgrade the state and community information bases and technology systems to integrate land and water use data.

- Implement strategic water supply plan to ensure reliability of supply.

- Integrate management of land use and water use.

- Promote water use efficiency and conservation.

◆ Water Quality

To attain all water quality standards for Rhode Island waters, including fishable, swimmable water quality in upper Narragansett Bay and the Blackstone River by 2015:

- Fulfill the 2004 mandate for 50% reduction in total nitrogen discharges from WWTF's discharging into Narragansett Bay.

- Implement NBC's CSO Abatement Project and monitor resulting reductions in pathogen concentrations.

- Develop funding sources to meet the state's estimated \$1.36 billion worth of wastewater infrastructure needs.

- Significantly reduce sewer system overflows.

- Implement pollution abatement actions necessary to restore water quality in impaired waters.

- Enhance management of onsite wastewater systems in coastal and freshwater watersheds that lack public sewers.
- Significantly enhance stormwater control and management.
- Promote and enforce no-discharge zone provisions in all Rhode Island marine waters.
- Reduce pathogen loadings from sources other than CSOs.
- Where warranted, extend or establish public sewer service to mitigate pollution problems resulting from continued reliance on septic systems in densely developed coastal areas.

◆ Fisheries and Aquaculture

To achieve sustainable and profitable commercial fish harvests, rebuild fishery stocks and advance cooperative management regimes:

- Work to achieve fishing mortality rates and stock abundances that minimize the risk of stock depletions and recruitment failures.
- Promote statewide and regional mechanisms for cooperative management with industry that emphasize efficient fishery operations, consistent with biological objectives.
- Incorporate adaptive management principles into fisheries regulations to improve management of unanticipated short-term events or circumstances.
- Develop stakeholder process (fisheries roundtable) to explore and balance the interests

of Rhode Island recreational and commercial fisheries in relation to shared fisheries such as menhaden.

To achieve a flourishing aquaculture industry that respects traditional commercial fisheries and cultures, Rhode Island should:

- Consider offshore aquaculture opportunities in conjunction with future wind farm operations.
- Expand shallow water shellfish aquaculture in relation to CRMC/MFC endorsed strategic planning.

◆ Aquatic Habitats and Invasive Species

To control and prevent the onset of marine and freshwater aquatic invasive species:

- Increase the capacity of Rhode Island, in partnership with NGOs and private interests, to implement the Rhode Island Aquatic Invasive Species Plan.
- Establish a lake management program within DEM.
- Expand the partnership between the Northeast Aquatic Nuisance Species Panel and the Northeast Regional Ocean Council (NROC) to pursue shared goals relating to AIS and ocean ecosystem health.

To successfully restore a diverse array of fresh and marine aquatic habitats:

- Establish a statewide habitat restoration coordinator.
- Implement the 2002 strategic plan for restoration of anadromous fisheries.

- Renew state funding to ensure matching funds are available for priority habitat restoration projects.

- Establish a comprehensive set of status and trends indicators for coastal habitats to assess habitat changes, impacts, and conservation and restoration progress.

- Maintain and expand state-wide mapping for brackish and freshwater wetlands, salt marshes and seagrass beds.

- Use mapping to support wetlands and eel-grass restoration and conservation planning, and enhanced enforcement wetlands protection law.

- Improve protection regulations for riverine buffers.

- Identify, assess, and maintain up-to-date databases on future coastal and riparian buffer restoration sites and projects.

- Develop incentives for private property owners to participate in habitat restoration projects.

Conclusion

Since 2004, thanks to the patient, determined efforts of many dedicated individuals, the first iteration of BRW SLP has been issued, a BRWCT Chair, and four standing committees are in place and have been working for several years, dedicated funding for BRWCT-endorsed activities has been established, and support is growing for ecosystem-based management via collaborative government networks. Building upon these initial successes, the BRWCT must address a number of important questions regarding implementation of the BRW SLP:

- What new policy, management, and regulatory tactics will be necessary to address the environmental and economic development challenges identified in the BRW SLP?

- How should BRW SLP implementation proceed in light of the budgetary and personnel pitfalls facing the state agencies in FY 2009, and likely in subsequent budget years?

- How should implementation of the BRW SLP guide allocations of static or dwindling agency capacities?

- What incentives or mandates for BRW SLP implementation should the General Assembly and the Governor consider to ensure that state agencies move expeditiously into ecosystem-based management for its aquatic environments and resources?

- How will we successfully direct urgently needed investment toward projects and infrastructure whose environmental and economic development benefits will manifest only in the future, particularly given continuing cost increases in education and health care, social programs whose funding dwarfs all other government programs?

- How could we more flexibly and strategically pursue environmental and economic policies and management goals while still upholding basic legal mandates for management and regulatory uniformity, fairness, and consistency?

BRW SLP implementation should also induce consideration of more fundamental policy questions. Notwithstanding the fact that state decision-makers must devote significant time and resources to addressing short-term urgencies (as exemplified by the state's current fiscal crisis),

they must also continually address how the consequences of their decisions today will play out socially, economically, and environmentally over five, ten, and twenty years. Handling immediate imperatives in a manner that contributes sufficiently to the pursuit of long-term goals is one of the most important and difficult prerequisites for successful executive and legislative leadership. The BRW SLP strategic planning cycle must be conducted so that we better characterize and account for the short-term and long-term consequences of policy and management decisions.

Through a networked approach to EBM the BRWCT helps Rhode Island’s public and private sector leaders to explore and experiment with the governance reforms that will successfully address these important questions.

Finally, as the BRWCT assessed Rhode Island’s current governmental structure and

environmental and economic challenges in developing the BRW SLP, what emerged forcefully across many issues is the need for stronger links between state and local government decisions and actions. Therefore, the BRWCT will bolster training and technical assistance for local governments and work to develop better linkages between state and local decision-making; but expanded financial support and regulatory mandates will also be essential.

Successful execution of the BRW SLP will require a collective willingness on the part of Rhode Island’s executive agencies to work together, break down program “silos,” and move beyond jurisdictional and budgetary “turf battles.” Their progress toward these coordination ideals will require the attentive support and commitment of all Rhode Islanders who truly care about the well-being and sustainable future of Rhode Island’s waters and watersheds. ♦



All images portray Rhode Island bays, rivers and watersheds
and were photographed by Thomas Epstein

