

## **Massachusetts Bays Program**

Proposed Workplan  
July 1, 2013 to June 30, 2014

*[Approved by EPA September 30, 2013]*

June 28, 2014

The Massachusetts Bays Program (MBP) is pleased to submit this application for funding to implement our 2013 – 2014 Workplan. In spite of the departure of the Program's Executive Director in June 2012, MBP had a successful and productive year under the leadership of Acting Director Lisa Berry Engler. For example, MBP:

- Awarded six Research and Planning Grants around the region.
- Initiated work to update the MBP Comprehensive Conservation and Management Plan, beginning with an estuary assessment and delineation to define our region's physical boundaries and health indicators.
- Welcomed a new Executive Director in January 2013.
- Selected four Regional Service Providers to carry out work in the Program's sub-regions.

We thank you for your continued commitment to our work in the Massachusetts and Cape Cod Bays. Funding and technical support provided by EPA has been invaluable to our work, and indeed is the only way we have been able to make such progress. Even as we develop a fiscal plan for future sustainability, we will continue to rely on EPA funding, thus a pressing concern is the potential of continued cuts in base allocations to the National Estuary Program. The proposed workplan is only possible through application of carry-over funds from the current fiscal year, which will be expended to maintain restoration and protection activities in our large region – including 50 communities, 800 miles of coastline, and 47 embayments – in the face of the 15% cut sustained this year.

Please do not hesitate to contact us if you have any comments, suggestions, or concerns regarding the workplan.

Sincerely,

Pam DiBona  
Executive Director  
Massachusetts Bays Program  
[pamela.dibona@state.ma.us](mailto:pamela.dibona@state.ma.us)  
617-626-1204

Wendy Leo  
Management Committee Chair  
Massachusetts Water Resources Authority  
[wendy.leo@mwra.state.ma.us](mailto:wendy.leo@mwra.state.ma.us)  
617-242-6000

cc: Bruce Carlisle, EEA/CZM  
Regina Lyons, EPA/Region 1

## **Commonly Used Acronyms**

APCC	Association to Preserve Cape Cod
CCMP	Comprehensive Conservation and Management Plan
CRC	Coastal Resources Committee (Barnstable County)
CSCR	Cohasset Center for Student Coastal Research
CZM	Office of Coastal Zone Management
DCR	Department of Conservation and Recreation
DEP	Department of Environmental Protection
DER	Division of Ecological Restoration
DFG	Department of Fish and Game
DMF	Division of Marine Fisheries
DOT	Department of Transportation
EEA	Executive Office of Energy & Environmental Affairs
EPA	Environmental Protection Agency
GMRTF	Great Marsh Revitalization Task Force
GOMRI	Gulf of Maine Research Institute
JRWA	Jones River Watershed Association
LID	Low Impact Development
MAPC	Metropolitan Area Planning Commission
MBP	Massachusetts Bays Program
MET	Massachusetts Environmental Trust
MIT	Massachusetts Institute of Technology
MORIS	Massachusetts Ocean Resources Information System
MVPC	Merrimack Valley Planning Commission
MWRA	Massachusetts Water Resources Authority
NDA	No Discharge Area
NEP	National Estuary Program
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NPS	Non-point source pollution
NSRWA	North and South Rivers Watershed Association
RC	Regional Coordinator
RSP	Regional Service Provider
RIFL	River Instream Flow Stewards
SSCW	Salem Sound Coastwatch
TNC	The Nature Conservancy
UHI	Urban Harbors Institute
UNH	University of New Hampshire
USFWS	United States Fish & Wildlife Service
USGS	US Geological Survey

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## A. Summary

### ***FY 2012 Progress***

Over the past year, the Massachusetts Bays Program (MBP) met its ambitious targets for habitat restoration with more than 600 acres restored, distributed more than \$80,000 in grant funding to local research and planning efforts, and leveraged more than 50% of EPA's investment in the program. All this in spite of the departure of MBP's Executive Director, and an eight-month gap in fulltime leadership. The progress made over the past year is due in large part to the skills of the regional and Boston-based staff and the commitment of MBP's Management Committee members.

### ***FY 2013 Goals***

Work in our five regions will continue along the same high degree of effort to advance goals of the current Comprehensive Conservation and Management Plan (CCMP). That document, however, was last revised in 2003, and our 2012 Program Evaluation noted the need for an update. With the funds available (see Section D [page 36], Budget and Narrative), both Boston- and region-based staff will begin an estimated 3-year process to update our CCMP. We have identified the following Program-wide goals and corresponding outcomes for this fiscal year:

- |  |  |
|--|--|
| Advance Estuarine Restoration and Protection                 | <ul style="list-style-type: none"><li>• Provide ongoing support to Regional Coordinators (RCs), both technical and through connections to state agency decision makers.</li><li>• Work with sister agency staff to advance policies that facilitate restoration and protection.</li></ul>  |
| Complete Phase One CCMP Update                               | <ul style="list-style-type: none"><li>• Establish new and reinforce regional connections and partnerships to facilitate community-based action.</li><li>• Generate up-to-date understanding of the Bays, the Program, and complementary programs.</li><li>• Identify specific sub-regional and region-wide priorities.</li></ul> |
| Develop an MBP Monitoring Framework                          | <ul style="list-style-type: none"><li>• Connect and contribute to existing Northeastern U.S./Gulf of Maine monitoring schema.</li></ul>  |
| Develop an Outreach Plan                                     | <ul style="list-style-type: none"><li>• Identify specific audiences, messengers, and media for targeted messages.</li></ul>  |
| Administer 4 <sup>th</sup> Research & Planning Grant Program | <ul style="list-style-type: none"><li>• Leverage funds to identify and describe transferable best practices.</li></ul>   |
| Complete a fiscal plan                                       | <ul style="list-style-type: none"><li>• Capitalize on common goals and interests among state agencies, universities, nonprofits, and other potential project partners.</li><li>• Diversify MBP funding beyond EPA grant monies.</li></ul>  |

A detailed logic model for this work is included as Attachment 1.

Meanwhile, region-specific goals include:

#### **South Shore (9 communities, 10 embayments):**

- Manage stormwater and expand temporal and spatial extent of open shellfish beds
- Improve habitat quality in freshwater and estuarine wetland systems
- Restore connectivity and protect diadromous fish habitat to help rebuild threatened fish populations
- Improve local understanding and acceptance of the potential impacts of climate change and sea level rise on ecosystems

Upper North Shore Region (9 communities, 9 embayments):

- Protect and restore native vegetation in the Great Marsh
- Increase local understanding and acceptance of the impacts of Climate Change and Sea Level Rise
- Restore degraded salt marsh and protect salt marsh habitat
- Mitigate negative impacts to water quality and water quantity affecting the habitats of the Great Marsh
- Identify and preserve the “traditional, sustainable uses” of the Great Marsh region

Salem Sound (6 communities, 6 embayments):

- Reduce bacterial contamination in Salem Sound
- Protect and restore eelgrass habitat
- Enhance understanding of the transport, population dynamics and impacts of invasive species and provide early detection of newly arriving invasive species
- Prepare for and understand the potential impacts of climate change and sea level rise and increased storm events on coastal ecosystems and communities, and enhance education and adaptation efforts
- Protect and restore emergent wetland habitats

Cape Cod (11 communities, 14 embayments):

- Expand temporal and spatial extent of open shellfish beds and enhance protection and restoration efforts.
- Restore and protect tidally-restricted salt marshes and diadromous fish habitat to help rebuild coastal ecosystems and threatened populations.
- Improve water quality in order to protect and restore habitat of important coastal species.
- Prepare for and understand the potential impacts of climate change and sea level rise on coastal ecosystems and communities and enhance education and adaptation efforts.
- Support Mass Bays Program planning, CCMP update, outreach, grant programs and administration.

Metropolitan Boston (15 communities, 8 embayments):

- Understand the estuarine habitat restoration needs for the region and develop habitat specific restoration targets for Boston Harbor.
- Protect and restore eelgrass habitat.
- Restore degraded salt marsh and protect salt marsh habitat.
- Protect and restore diadromous fish habitat.
- Prepare for and understand the potential impacts to estuarine habitats associated with climate change.

***Staffing***

Executive Director Pam DiBona is responsible for the overall management of the program, including administration of grants and contracts, including reports to EPA and other funders; staff supervision, including oversight of Regional Service Providers in line with contracts; and organizational development, including strategic planning through the CCMP update, work with the Management Committee to set priorities for the program, and developing partnerships that result in diversified funding for the program.

Staff Scientist Prassede Vella works half time with MBP and half time with our host agency, CZM, as an Ocean Management Specialist. Ms. Vella is responsible for coordination of the Research and Planning Grant Program, and serves as technical expert for MBP planning and reporting efforts.

Special Projects Coordinator Lisa Engler has primary responsibility for MBP communications and outreach efforts, including weekly reports, newsletters and social media, website management, and education efforts associated with the CCMP update. Ms. Engler also serves as Regional Coordinator (RC) for the Metro Boston Region, engaging a coalition of stakeholders around this complex sub-region.

Four Regional Service Providers connect MBP with our region’s communities. Under grants from MBP

(awarded through a competitive bidding process), each RSP designates a Regional Coordinator, in turn responsible for identifying regional priorities consistent with the CCMP and the Strategic Plan, and developing strategies for implementing the annual Workplan at the local level. RSPs are hosted by regional planning agencies or nonprofit organizations. For FY2014, grants are being awarded to the following regional host organizations to provide the service of an RSP:

- The Merrimack Valley Planning Commission: Upper North Shore Region
- Salem Sound Coastwatch: Salem Sound Region
- The North and South Rivers Watershed Association: South Shore Region
- The Association to Preserve Cape Cod: Cape Cod Region.

**Budget Overview**

A detailed FY2013 budget request and narrative are included in Section D; a summary is included here.

Proposed Expenditures (FY13 Grant)		
Personnel	Requested	Match
Salaries	\$ 179,549	
Fringe @ 27.6% (salaries)	\$ 49,556	
<b>subtotal, salaries &amp; fringe</b>	<b>\$ 229,105</b>	
<b>Contractual - Sub-grants</b>		
2014 Regional Service Providers (4 @ \$61,000)	\$ 244,000	\$ 357,148
2014 Research and Planning Grants	\$ 14,588	\$ 3,647
<b>subtotal, subgrants</b>	<b>\$ 258,588</b>	<b>\$ 360,795</b>
<b>Other Expenses</b>		
shared agency expenses	\$ 4,000	
<b>subtotal, other expenses</b>	<b>\$ 4,000</b>	
<b>Indirect</b>		
Indirect Charges @ 11.31% (salaries and subcontracts)	\$ 20,307	
<b>Total Request, FY13</b>	<b>\$ 512,000</b>	

Carryover expenditures (unspent from FY12)		
<b>Travel</b>	\$ 7,553	
<b>subtotal, travel</b>	<b>\$ 7,553</b>	
<b>Contractual - Subcontracts</b>		
CCMP Update - literature review & gap analysis	\$ 10,000	
<b>subtotal, subcontracts</b>	<b>\$ 10,000</b>	
<b>Contractual - Sub-grants</b>		
2014 Research and Planning Grants	\$ 85,412	\$ 21,353
<b>subtotal, subgrants</b>	<b>\$ 85,412</b>	<b>\$ 21,353</b>
<b>Other Expenses</b>		
Printing, computer services	\$ 975	
<b>subtotal, other expenses</b>	<b>\$ 975</b>	
<b>Indirect</b>		
Indirect Charges @ 11.31% (salaries and subcontracts)	\$ 1,131	
<b>Total Carryover to FY13</b>	<b>\$ 105,071</b>	
<b>Total Anticipated Expenditures &amp; Match, FY13</b>	<b>\$ 617,071</b>	<b>\$ 382,148</b>

## **B. Completed Major Projects/Activities**

MBP has many successes to report from the past year of grant funding. Major projects are summarized here.

### ***Region-wide/Central Office Accomplishments***

#### Program Evaluation

MBP hosted an EPA Program Evaluation Team, including site visits in three out of five sub-regions, meetings with Management Committee members and MBP staff, and review of extensive documentation of program accomplishments. The specific and constructive feedback resulting from the evaluation has subsequently informed development of MBP's anticipated goals and outcomes for the next four years.

#### Delineation and Assessment Report

Under contract to MBP and guidance from the MBP staff scientist, Geosyntec Consultants in October 2012 completed an Estuary Assessment and Delineation, compiling data for seven resource and fifteen stressor indicators. Environmental stressors include factors that cause or indicate impairment of the watershed, such as high intensity land use, population density, and impervious surface. Resource metrics indicate the presence of important ecological resources such as eelgrass, shellfish beds, anadromous fish, and salt marsh. The indicators were selected based on data quality and reliability, availability of data for the entire MBP region, availability of data in the future, and cost effectiveness. The results will allow MBP to assess the current condition of each estuary as well as evaluate progress toward three programmatic management goals: 1. Reduce bacterial contamination and minimize the risk of eutrophication; 2. Protect and restore estuarine habitat; and 3. Improve the continuity of estuarine habitat.

#### Research and Planning Grant: 2012 Results and 2013 Awards

By December 31, 2013, eight grantees under MBP's Research and Planning Grants program had completed their projects. The results include:

- *Town of Danvers* -- \$20,000 to conduct a feasibility study to identify a sustainable funding mechanism for stormwater management. The first step engaged stakeholders to discuss how anticipated future needs for both regulatory compliance and drainage system operation and maintenance which is expected to roughly double stormwater expenditures in the next five to ten years, should be addressed. Stakeholder feedback indicates that there is a compelling need to improve the Town's stormwater management program, citing the regulatory compliance mandate as the most compelling reason to improve stormwater services, followed closely by water quality improvements, flood prevention, and aging infrastructure improvements. Additional reasons included equitable distribution of costs, sewer rate reduction, pollution control, beach closure prevention, and potential credits for improvements. A stormwater user fee could generate sufficient revenue to support an enhanced program. To continue moving forward with the formal evaluation of a stormwater utility, the Town needs a broader "stakeholder" group comprised of members of the Danvers Stormwater Committee, residents, businesses and environmental groups to work with and inform the Danvers Board of Selectmen of their findings and request support in moving forward with the creation of a Stormwater Management Business Plan.
- *The Cape Cod Commercial Hook Fishermen Association* -- \$7,441 to enhance and expand the River Herring Warden Network. The River Herring Network steering committee worked on refining the BMP Plan. Using Wellfleet as an example, the BMP will serve as a guide for wardens as they develop a formal plan for the particular waterway. The Network steering committee reached out to several north shore towns to assess the feasibility to expand the Network. Essex and Ipswich expressed interest in utilizing the resources and the possibility of attending south shore meetings or starting their own meetings on the north shore.
- *The Saugus River Watershed Council* -- \$10,000 to conduct a smelt spawning habitat assessment in the Saugus River. Based on the promising findings of smelt eggs in the Saugus River and surprisingly also in Shute Brook, several opportunities for improvement, expansion, and enhancement of smelt spawning habitat were identified including: Improve and enhance riffle

habitat by conducting strategic grooming of the river substrate in the Saugus River and Shute Brook, protect vegetated buffer in Saugus River and Shute Brook, improve plants on berm at Saugus Iron Works, and conduct monitoring.

- *The University of New Hampshire* -- \$25,000 to develop an eelgrass habitat suitability model in Plum Island Sound to identify potential restoration sites. A number of sites with good eelgrass habitat suitability were identified as having a very good potential for eelgrass restoration. This produce is a valuable tool for guiding future eelgrass transplanting efforts in the Sound. In fact, six of those locations are currently being tested for viability with funds from the FY13 Mass Bays Program Research and Planning grant.
- *The Wildlands Trust* -- \$6,749 to develop a plan for the South River Greenway and establish a walking trail to restore access along the South River, enhance public access to this resource, and raise awareness about riparian habitats and estuarine resources. As part of this plan, strategies to implement the Greenway were identified. Wildlands Trust also provided support to the Town of Marshfield for the acquisition for conservation of the 36-acre Pratt parcel, which abuts the South River and anchors the Greenway to the North and East. A number of recommendations to implement this plan by engaging communities, especially in Marshfield were developed.
- *The Provincetown Center for Coastal Studies* -- \$22,119 to study the levels and sources of contaminants such as pharmaceuticals, personal care products and detergents in Cape Cod Bay. Four of the five PhACs monitored were present in the samples and 53% of the samples tested were contaminated with at least one. Because humans are the only source of these types of contaminants, these data confirmed contamination by wastewater, contaminated groundwater, and other anthropogenic sources. Therefore addressing wastewater runoff should decrease potential impacts of PhACs. This study also suggests that areas within 100 m of the creek have the most influence on the level of contamination, and therefore, should be the most closely managed. A next step identified is for the need for additional monitoring to evaluate potential sources or transport pathways.
- *Salem State University* -- \$22,992 to explore the nature and causes of reduced water clarity in Salem Harbor and its potential impact on eelgrass habitat. Water column monitoring indicated that a variety of factors including seasonal phytoplankton, wind events, runoff, and other processes such as shallow water wave resuspension may be causes of turbidity increase. On the other hand no apparent connection was observed between tidal currents and turbidity. Further monitoring, geochemical characterization of the particulate matter, and a better understanding of the mechanisms of water column stratification in Salem Harbor is recommended in order to further refine the conclusions obtained from this study.
- *The Massachusetts Division of Marine Fisheries* -- \$20,000 to identify and prioritize restoration opportunities for coastal aquatic habitats in the Massachusetts Bays Program planning area. Through various stakeholder meetings and discussions, a ranking tool and guidance document was developed. The tool has been tested on a case study to identify potential projects under the ILF program. Recommendations for next steps to enhance the use and applicability of this tool have been prepared and further discussion on implementation will take place.

MBP distributed \$84, 543 to fund six new projects through the program in February 2013. Each grantee committed at least 25% cash or in-kind match. The grant recipients and their projects are:

- Friends of Herring River, Wellfleet/Truro - \$20,000 to evaluate the effectiveness of proposed tidal control structures designed to restore salt marsh conditions to the Herring River floodplain in Wellfleet
- Neponset River Watershed Association - \$7,500 to address water quality concerns in the Neponset River Area of Critical Environmental Concern
- Cohasset Center for Student Central Research - \$10,600 to conduct a survey of river herring populations and perform water quality monitoring in the Gulf River estuary

- Massachusetts Division of Marine Fisheries - \$8,120 to study the impacts of small docks and piers on salt marsh vegetation in Massachusetts estuaries
- University of New Hampshire - \$20,000 to test the viability of transplanting eelgrass into Plum Island Sound where it was once abundant
- Provincetown Center for Coastal Studies - \$18,323 to conduct an assessment of shoreline change along the coast from Beach Point in Truro to Jeremy Point in Wellfleet

#### New Executive Director

In January 2013, MBP's new executive director, Pam DiBona, joined the Boston staff. Over the course of her first few months in the post, she met with all RSPs, EPA Region 1 staff, several Management Committee members, and the Directors of the Great Bay and Casco Bay NEPs. She facilitated a Regional Coordinators' retreat in February, attended the NEP national meeting in DC later that month, and hosted a Management Committee meeting in April. By the end of July 2013, she will have facilitated network meetings in each region, part of a phased plan to update the CCMP detailed under New Projects, below.

#### CCMP Revision Launch

In April work began on the development of a new CCMP. After presenting a process overview to the Management Committee and distributing a survey to Committee members to gather feedback on priority topics to be discussed, . MBP staff used the survey results to guide discussions at a series of regional network meetings. Over the course of Spring and Summer 2013, existing partners and supporters of MBP in the regions will be called upon to identify their own priorities, share their own projects in line with those priorities, and suggest issues that could benefit from MBP support. The template invitation and agenda for the regional meetings are included in Attachment 2.

#### Education and Outreach Products

MBP re-launched its electronic newsletter with a web-based platform, hosted free of charge. The most recent issue of the newsletter is included as Attachment 3.

#### New Program Website

In late August, MBP launched its new website ([www.massbays.org](http://www.massbays.org)) in the state portal format [Mass.Gov](http://Mass.Gov). In addition to a dramatically different look, the new site features improved navigation/organization and stronger links to our regional partners and other state agencies and departments. The new website serves as a strong foundation to our many current and proposed outreach efforts.

### ***Regional Accomplishments***

The major completed projects described below are transferable, model efforts from across the Mass Bays region. Additional completed projects are listed by region below these highlighted success stories.

#### Invasive species monitoring on Cape Cod and reporting to the Massachusetts Environmental Trust

The Cape Cod regional coordinator and APCC monitored marine invasive species in FY12 in Cape Cod Bay (and Buzzards Bay) to serve as an early warning system of new invasive species and to inform researchers working on possible linkages between invasive species on coastal structure and proximal eelgrass beds. The results were compiled into an interim report to the MET which provided funding for this effort. Results indicate that floats, docks, submerged ropes, and gear appear to provide the most suitable habitat for colonization by invasive tunicates, in contrast to coastal structures such as riprap, pilings, cobble beaches, etc.

- Lead: Cape Cod RSP
- 320 Budget: \$0 MBP cash
- Project deliverable(s): Report to MET
- Environmental results: Invasive tunicates seem to favor certain structures/surfaces preferably submerged. These results will help researchers identify appropriate methods for management and control.
- Role: Primary

#### Redesign of the Tack Factory Dam on Third Herring Brook on the South Shore

NSRWA and the South Shore regional coordinator conducted work to improve habitat, water quality, and quantity in the Third Herring Brook by pursuing stream restoration and dam removal opportunities. The Tack Factory Dam, the first dam from the ocean to Third Herring Brook, is in a state of disrepair. A feasibility study for dam removal and reconnecting the Third Herring Brook to the North River concluded that the dam is in poor/failing condition. The study concluded that the costs of removal are far less than the costs of repair and there are no technical impediments that would prohibit removal. As part of the outreach process, a public meeting was held in March. The project is in design and permitting. On a related note, the Mill Pond dam which is part of the same system is scheduled for removal this fall and pre- and post-vegetation monitoring is being conducted.

- Lead: South Shore RSP and regional host organization (NSRWA)
- 320 Budget: \$0 MBP cash
- Project deliverable(s): Removal of dam.
- Environmental results: Improved habitat quality of Third Herring Brook; improved spawning success of anadromous fish.
- Role: Primary
- Timeline: Ongoing through FY14

#### Survey of Shellfish Habitat on the South Shore

NSRWA and the South Shore regional coordinator partnered with TNC to monitor and investigate the potential for restoring shellfish habitat in the North and South Rivers and in Plymouth. Based on this FY12 pilot effort, surveys that will include water quality monitoring, settlement plate experiments, and mapping of existing mussel beds will be conducted. The surveys will help establish the range and extent of mussel spat and adults in the rivers and provide data to inform a possible volunteer "mussel adoption" effort to benefit water quality.

- Lead: South Shore RSP and regional host organization (NSRWA)
- 320 Budget: : \$0 MBP cash
- Project deliverable(s): Seeding of shellfish beds.
- Environmental results: Improved water quality.
- Role: Primary
- Timeline: Ongoing through FY14

#### Upper Great Marsh *Phragmites* control

The Upper North Shore regional coordinator continued to coordinate the effort to control and eradicate stands of the common reed (*Phragmites australis*) in the Newbury and Newburyport sections of the Great Marsh using physical burning and chemical treatment. The success of this effort will now serve to implement these strategies in other areas of the Great Marsh.

- Lead: Upper North Shore RSP
- 320 Budget: \$0 MBP cash
- Project deliverable(s): 60 acres of *Phragmites* stands treated
- Environmental results: Reduction in growth, proliferation and spread of *Phragmites*.
- Role: Primary
- Timeline: Ongoing through FY14

#### Sustainable Funding for Stormwater Management in Danvers (Salem Sound)

The Salem Sound regional coordinator provided support to the town of Danvers to conduct a feasibility study to identify a sustainable funding mechanism for stormwater management. An intensive stakeholder engagement process revealed the need to improve the town's existing stormwater management program and incorporate a user fee which could generate sufficient revenue to support the program. The town will move forward with the process to develop a Stormwater Management Business Plan.

- Lead: Salem Sound RSP
- 320 Budget: \$20,000 MBP cash (FY12 MBP Research and Planning Grant Program)
- Project deliverable(s): Feasibility study for sustainable funding for stormwater management
- Environmental results: Enhanced stormwater management system will result in improved water quality and healthier ecosystem.
- Role: Primary
- Timeline: Completed

### Outreach to support Phase II Stormwater Permit Compliance in Salem Sound

The Salem Sound regional coordinator continues working along with the Upper North Shore and South Shore regional coordinators to encourage participation in the Greenscapes Program (greenscapes.org) by providing outreach materials, information, and training on the impacts of stormwater from residential properties on the marine environment and on mitigation options such as infiltration and environmentally-friendly landscaping. In FY12, a Notice of Intent (NOI) tailored to the educational requirements of the NPDES Phase II permit was drafted for participating communities. The Greenscapes Coalition proceeded with evaluation of the new draft EPA Phase II Stormwater Permit to determine the best outreach messages for member communities.

- Lead: Salem Sound RSP
- 320 Budget: \$0 MBP Cash; \$20,000 cash and in-kind contribution of Greenscapes communities
- Project deliverable(s): Greenscapes flyers; NPDES Education and Outreach NOI for participating communities
- Environmental results: Improved water quality in Salem Sound
- Role: Primary
- Timeline: Ongoing

### Publication and Dissemination of the First Boston Harbor Habitat Atlas

In 2010, MBP and UHI at UMass Boston received funding from the MET to develop a digital atlas of priority habitats and protection and restoration opportunities for the Metro Boston region. The project, which was completed at the end of calendar year 2011, developed the online mapping tool and website which identifies and describes priority habitats in the region. The project also established a coalition of 40 organizations working on estuarine issues in the Boston Harbor region. The Boston Harbor Habitat Coalition is tasked with raising awareness for the Boston Harbor habitat resources and supporting restoration/protection of the resources. The Coalition will also serve as the Local Governance Committee for the Mass Bays Metro Boston region which has been absent for 6 years. During this past fiscal year, the Coalition met to form three subcommittees moving forward the agenda of the group and continued to utilize the Boston Harbor Habitat Atlas as a tool to raise awareness of estuarine habitats in Boston Harbor.

- Lead: Metro Boston RC
- 320 Budget: \$0 MBP cash
- Project deliverable(s): Coalition of 40 organizations; three subcommittees working on specific Coalition objectives
- Environmental results: Shared understanding of habitat importance and protection and restoration opportunities; increased habitat protections partnerships in the region
- Role: Primary
- Timeline: Ongoing

### ***Other Completed Projects/Activities***

#### Cape Cod region

- Anadromous fish run monitoring & data management

#### South Shore region

- Iron Mine Brook culvert removal
- Invasive species monitoring, Pepperweed survey, South River Park Knotweed management
- Anadromous fish run monitoring – including ladder preparation and management, volunteer recruitment and training, counting, and data analysis
- First Herring Brook water use data analysis
- Third Herring Brook flow monitoring, outreach re: Tack Factory Pond dam redesign, Mill Pond Dam vegetation survey, loosestrife survey
- Wetland monitoring training at Cohasset Center for Student Coastal Research
- Benthic invertebrate survey
- Green Harbor *Phragmites* survey

- Duxbury Bay invasive spp data and horseshoe crab spawning surveys

#### Upper North Shore region

- Mapped *Phragmites* in northern Salisbury marshes
- Pepperweed mapping and monitoring in Great Marsh

#### Salem Sound

- All monitoring tasks were completed as anticipated
- Conducted three Adopt-a-Beach “Beach 101” trainings
- Low-impact development outreach & education materials

#### Metro Boston

- Boston Harbor Habitat Coalition meetings held
- Outreach, Policy, and Technical advisory committees to the Boston Harbor Habitat Coalition formed to advise and guide protection/restoration objectives of the group
- Planning and feasibility study for a salt marsh restoration in Revere
- Smelt spawning habitat study for Saugus River and tributary

### ***Publications and Presentations***

MBP’s Regional Coordinators conduct and track habitat protection and restoration projects and programs, and also disseminate information about progress and outcomes to stakeholders.

#### Region-wide/State/National dissemination

Mass Bays Newsletter. June 2012, April 2013.

MBP newsletter featuring articles, upcoming events, and publications from the five Mass Bays regions.  
Principal Author: Lisa Berry Engler, Outreach Coordinator for the Massachusetts Bays Program

New England Estuarine Research Society Summer Newsletter, September 2012.

Author and Editor: Dr.

Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

<http://neers.org/documents/newsletters/news2012summ.pdf>

“The Boston Harbor Habitat Atlas – An Interactive Habitat Protection and Restoration Planning Tool,” October 22, 2012.

Restore America’s Estuaries National Conference, Tampa, FL.

Presenter: Lisa Berry Engler, Metro Boston Regional Coordinator for the Massachusetts Bays Program

“Conservation Mooring Study,” January 2013.

Principal Author: Urban Harbors Institute, University of Massachusetts, Boston

[mass.gov/eea/docs/mbp/publications/conservation-mooring-report-uhi-dec2013.pdf](http://mass.gov/eea/docs/mbp/publications/conservation-mooring-report-uhi-dec2013.pdf)

“Massachusetts Bays Program Estuarine Delineation and Assessment,” March 2013

Ecosystem Indicators Partnership Journal

Principal Author: Geosyntec Consultants

[gulfofmaine.org/2/committees-and-programs/ecosystem-indicator-partnership/esip-journal-entry-march-2013/](http://gulfofmaine.org/2/committees-and-programs/ecosystem-indicator-partnership/esip-journal-entry-march-2013/)

National Estuary Program Webcast Series, May 2013: Reducing Stormwater Runoff and Opening Shellfish Beds in the Massachusetts Bays.

Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program

“Salem Sound Marine Water Monitoring and The Politics of Resource Protection,” June 11, 2013

Talk at the Gulf of Maine Council meeting, held in Salem MA

Presenter: Barbara Warren, Salem Sound Regional Coordinator for the Massachusetts Bays Program

New England Estuarine Research Society Winter Newsletter, February 2013.  
Author and Editor: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program. <http://neers.org/documents/newsletters/news2013wint.pdf>

#### Cape Cod Region

“Cape Cod’s Volunteer Herring Count Programs: Summary from 2007-2012”, presentation at APCC Volunteer Appreciation Workshop, Cape Cod Museum of Natural History, April 24, 2013.

“Results of APCC Survey of Municipal Stormwater Management”, presentation to Barnstable County Coastal Resources Committee meeting, 2/13/13.

“Fish Run Restoration: What Herring Counts Tell Us”, presentation to Barnstable County Coastal Resources Committee meeting, May 23, 2013.

“The State of Cape Cod’s Herring Runs”, presentation at APCC Science Breakfast, Harwich, MA, April 12, 2012.

“Restoration of the Upper Shawme Pond Herring Run: A Success Story”, Brown Bag Lunch for Herring Monitors, September 13, 2012.

Coastal America Partnership Award Ceremony for Stony Brook Salt Marsh and Fish Passage Restoration Project, Brewster, MA. Award ceremony held in Brewster, September 21, 2013.

#### South Shore Region

“Restoring What Matters: Prioritizing the Restoration of River Habitat in Our Watershed,” July 2012.  
Norwell Conservation Commission Meeting  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

Horseshoe Crab Walk, MassAudubon Duxbury Beach Summer Series, July 2012.  
Leader: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Balancing ecological and municipal water demand in a southeastern Massachusetts coastal stream,” July 2012.

Talk at the Plymouth County Water Works Association Annual Trade Show and Training  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Introduction to the Massachusetts Bays Program,” September 2012.  
South Shore Conservation Network Meeting  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Shellfish Assessment in the North and South Rivers,” October 2012.  
North and South Rivers Watershed Association Board Meeting  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Delineating and Assessing Coastal Watersheds,” October 2012.  
South Shore Conservation Network Meeting.  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Watersheds and Water Quality,” October 2012.  
Notre Dame Academy Environmental Science Classes.  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Restoring Herring to First Herring Brook,” November 2012.  
North and South Rivers Watershed Association Annual Meeting.  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Restoring Third Herring Brook” (Outreach Poster), December 2012.  
Author: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

North and South Rivers Watershed Association Herring Training, February-April 2013.  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Restoring Herring and Natural Flows to the First Herring Brook” (Outreach Poster), April 2013.  
Author: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program.

“Raingardens: A beautiful way to control stormwater and improve water quality,” May 2013.  
South Shore Natural Science Center Spring Stirrings Lecture Series.  
Presenter: Dr. Sara Grady, South Shore Regional Coordinator for the Massachusetts Bays Program

#### Metro Boston Region

Boston Harbor Habitat Atlas - Introduction and Overview, February 2013.  
Presentation to Metropolitan Area Planning Council staff.  
Presenter: Lisa Berry Engler, Metro Boston Regional Coordinator for the Massachusetts Bays Program

#### Salem Sound Region

A Comparative Study of Three Phragmites Control Measures, 2012. Principal Author: Dr. Alan M. Young, Salem State University. <http://www.salemsound.org/PDF/AYoungPPP PowerPoint.ppt.pdf>

Service learning presentation to 20 freshman in a Salem High School summer remediation program – Salem Sound, marine biology and service learning  
Presenter: Barbara Warren, Salem Sound Regional Coordinator for the Massachusetts Bays Program

“A Coast for Every Classroom” (one-day training for 23 teachers in marsh vegetation and salinity, seining, and water testing), National Park Service, Salem MA  
Presenter: Barbara Warren, Salem Sound Regional Coordinator for the Massachusetts Bays Program

“Good Harbor Gateway and Conservancy Project: Marsh Assessment” presented to Friends of Good Harbor report to elected officials and resource managers for Friends of Good Harbor, December 27  
Presenter: Barbara Warren, Salem Sound Regional Coordinator for the Massachusetts Bays Program

“The Great Good Harbor Marsh: Past, Present and Future, Protecting Our Coastal Waters” June 13  
Keynote speech for Friends of Good Harbor annual meeting  
Presenter: Barbara Warren, Salem Sound Regional Coordinator for the Massachusetts Bays Program

“Lawns & Gardens to Wetlands: Protecting Coastal Waters,” November 1, 2012  
Speech for the North Shore Garden Club Annual Meeting  
Presenter: Barbara Warren, Salem Sound Regional Coordinator for the Massachusetts Bays Program

“Flooding in Peabody’s and Salem’s North River Watershed,” five times over the grant period  
Informational talk to Peabody officials, Salem Mayors, Senator Lovely, Representative Keenan and 29 elected officials, including city councilors (topics: flooding, climate changes, LID)  
Presenter: Barbara Warren, Salem Sound Regional Coordinator for the Massachusetts Bays Program

“The Art of Observation,” March 20, 2013  
Keynote speech at the North Shore High School Marine Science Symposium, Endicott College  
Presenter: Barbara Warren, Salem Sound Regional Coordinator for the Massachusetts Bays Program

### Upper North Shore Region

Castle Neck Creek Restoration Project, January, 2013. Slideshow Presented by Division of Ecological Restoration, MA Fish and Game

Traditional Uses of the Great Marsh, A review of lesser-known resources in the Massachusetts Bay Great Salt Marsh, April 2013.

Principal Author: Department of Urban and Environmental Planning, Tufts University

Great Marsh Revitalization Task Force Actions 2012, presentation December, 2012.

Presenter: Peter Phippen/Geoffrey Walker, Eight Towns and the Great Marsh Committee

Infrastructure Impacts to Great Marsh Communities, Potential Impacts of Sea Level Rise on the Great Marsh Workshop, November 2012.

Presenter: Peter Phippen, Upper North Shore Regional Coordinator for the Massachusetts Bays Program

### **C. New and Ongoing Projects**

New and ongoing projects that are taking place in each of the five Mass Bays regions are described below. The projects are categorized according to priorities identified in the Strategic Plan:

- i. Expand temporal and spatial extend of open shellfish beds
- ii. Improve estuarine water quality
- iii. Protect and restore estuarine habitat
- iv. Manage marine invasive species
- v. Adapt for projected impacts of climate change

#### ***i. Expand temporal and spatial extent of open shellfish beds (SF)***

##### Task SF1: Support shellfish restoration and protection efforts on Cape Cod.

APCC will continue to work with local and regional partners to identify opportunities for shellfish restoration and protection. The Cape Cod Regional Coordinator will work to support regional efforts to improve water quality to open or improve the status of shellfish beds by providing grant-writing assistance, outreach or other technical assistance. APCC will continue to support County efforts to ensure long-term operation of a regional shellfish seed production facility that is critically important to ensuring the Cape's future shellfish aquaculture and seeding programs.

- Responsible Parties: Cape Cod RSP
- Partners: Barnstable County CRC, local shellfish constables, NRCS, Cape Cod Cooperative Extension and DMF
- Budget: \$0 MBP cash; \$10,000 APCC
- Output/ deliverables: Grant-writing assistance, outreach products, or other technical assistance as opportunities arise or as requested by partners.
- Short-term outcome: Grant applications submitted, opportunities identified, outreach provided
- Intermediate outcome: Obtain grants for restoration; help County protect aquaculture, other services
- Long-term outcome: Increased acreage of harvestable shellfish beds
- Region: Cape Cod
- CCMP Action Item: Action Plan #2-Protecting and Enhancing Shellfish Resources
- CWA Core Program Area: 4-6

### Task SF2: Restoration and Maintenance of Shellfish Bed Habitat on the South Shore.

The South Shore regional coordinator and the host organization, NSRWA together with TNC will investigate the potential for restoring mussel habitat in the North and South Rivers, and the potential for riverfront dock owners to “adopt” bags of mussels. The RSP will also assist DMF and the towns of Scituate and Marshfield with seeding the shellfish beds of the North and South Rivers.

- Responsible Parties: South Shore RSP and regional host organization (NSRWA)
- Partners: TNC, Towns of Scituate and Marshfield, MA; DMF
- Budget: \$ 0 MBP cash; \$2,725 in kind services by NSRWA, towns of Scituate and Marshfield harbormasters, and non-profit partners.
- Outcomes/deliverables: Mussel spat survey results; evaluation of mussel bag “adoption” program feasibility; seeding of North and South Rivers shellfish beds.
- Short-term outcome: Improved understanding of mussels in the North and South Rivers
- Intermediate Outcome(s): Increased public engagement in shellfish and water quality issues
- Long-term Outcome(s): Improved water quality in the North and South Rivers
- Region: South Shore
- CCMP Action Item: Action Plan #2-Protecting and Enhancing Shellfish Resources
- CWA Core Program Area: 4-6

### Task SF3: Protect and Enhance Shellfish Resources in Salem Sound

The Salem Sound regional coordinator will continue to examine contamination issues that have resulted in closure of all shellfish beds in Salem Sound to harvesting.

- Responsible Parties: Salem Sound RSP
- Partners: communities, DMF
- Budget: \$0 MBP cash; \$2,000 in-kind contribution SSCW
- Outcomes/deliverables: Collaboration with DMF to explore strategy to open at least one shellfish bed in Salem Sound and to determine focused actions; one lecture in the Underwater in Salem Sound lecture series.
- Short-term Outcome(s): Increased public awareness of shellfish closures and shellfish bed rehabilitation priorities
- Intermediate Outcome(s): Actions taken to improve targeted shellfish area
- Long-term Outcome(s): At least one shellfish bed opens in Salem Sound region.
- Region: Salem Sound
- CCMP Action Items: Action Plan #2-Protecting and Enhancing Shellfish Resources; Action Plan # 4 Reducing and Preventing Stormwater Pollution
- CWA Core Program Area: 4-6

## ***ii. Improve estuarine water quality (WQ)***

### Task WQ1: Promote stormwater management in Cape Cod Bay communities.

The Cape Cod Regional Coordinator will provide support and promote stormwater management to improve water quality for shellfish and coastal ecosystems. Proposed subtasks include using the results of the 2012 municipal stormwater survey to promote stormwater management to provide outreach to managers and the public and technical assistance to municipalities to obtain funding for stormwater remediation projects.

- Responsible parties: Cape Cod RSP
- Anticipated partners: Barnstable County CRC, NRCS, and Cape Cod communities
- Budget: \$0 MBP cash; non-federal match: \$11,000 (APCC)
- Outputs/Deliverables: Stormwater outreach program for the public and for stormwater managers; grant-writing assistance, or other technical or outreach assistance or support.
- Short-term outcome: Improved understanding of Cape Cod stormwater management needs
- Intermediate outcome: Promote awareness of need for stormwater management; obtain funds for remediation of stormwater discharges
- Long-term outcome: Improved water quality for shellfish beds
- Region: Cape Cod

- CCMP Action Item: Action Plan #4-Reducing Stormwater Pollution
- CWA Core Program Area: 4-6

Task WQ2: Support regional wastewater management initiatives on Cape Cod.

In 2012, the Cape Cod host organization, APCC and several partners convened the Environmental Summit on Wastewater consisting of 35 non-profit organizations to build consensus on the need for wastewater management. The first workshop was held in late 2012, and a consensus statement was developed. The RSP will assist the APCC Executive Director with coordination and outreach work.

- Responsible Parties: Cape Cod RSP and regional host organization (APCC)
- Partners: APCC Environmental Summit partners
- Budget: \$0 MPB cash; \$15,000 from private foundation grant; \$20,000 (APCC).
- Outcomes/deliverables: Ratified consensus statement, will likely also include assistance with coordination and development of outreach materials.
- Short-term outcomes: Articulate/publish a statement of principles to define the problem, assess urgency and move forward. Assist with regional consensus-building through coordination and outreach
- Intermediate outcomes: NGOs individually discuss statement of principles and ratify with commitment of support by each individual organization. Identify next steps and areas to broaden coalition, e.g. business community.
- Long-term outcomes: Develop and carry out public education program including social media campaign consistent with statement of principles. Improved water quality.
- Region: Cape Cod
- CCMP Action Item: Action Plan #7 Managing municipal stormwater
- CWA Core Program Area: 4-6

Task WQ3: Promote science-based evaluation of nitrogen-uptake capabilities of natural or restored coastal ecosystems on Cape Cod.

Many communities on Cape Cod are interested in exploring the possibility of using coastal ecosystems (e.g., shellfish beds, salt marshes, wetlands, seaweed) to attenuate nitrogen loading from septic systems and improve coastal water quality. Public policies and actions should be based on sound science, and the scientific validity of using such alternatives needs to be evaluated. Proposed subtasks include working with partners including scientists and managers to evaluate alternative methods of nitrogen attenuation. The Cape Cod Regional Coordinator will work with the CRC to synthesize such efforts and subsequently provide outreach on the results, possibly through a workshop sponsored by the CRC.

- Responsible Parties: Cape Cod RSP and regional host organization (APCC)
- Partners: CRC
- Budget: \$0 MBP cash; \$10,000 (APCC)
- Outcomes/ deliverables: Outreach materials and workshop or other venue for disseminating science-based information on nitrogen attenuation.
- Short-term outcomes: Organize workshop and promote creation of clearinghouse for information; build public understanding of pros and cons of alternatives based on science.
- Intermediate outcomes: Action taken to implement management options
- Long-term outcomes: Reduced nutrient loading to Cape Cod embayments
- Region: Cape Cod
- CCMP Action Item: Action Plan #11-Protecting Nitrogen Sensitive Embayments
- CWA Core Program Area: 4-6

Task WQ4: Bacterial Source Tracking and Remediation on the South Shore.

The South Shore RSP will assist stakeholders with testing for and identifying sources of bacterial pollution, and support local efforts to reduce bacterial pollution through stormwater management. In particular, the RSP will assist the towns of Kingston and Duxbury in continued implementation of BMPs, and assist the town of Plymouth with an assessment of the Great Herring Pond watershed. In addition the RSP will continue their annual Riverwatch water quality monitoring program.

- Responsible Parties: South Shore RSP
- Partners: NSRWA, Towns of Kingston, Duxbury, and Plymouth, MA; DEP, Herring Ponds Watershed Association

- Budget: \$0 MBP cash; \$105,550 cash and in-kind contribution from NSRWA, state agencies and volunteers.
- Outcomes/deliverables: Assistance with CPR and 604b grant proposals for stormwater remediation; Great Herring Pond stormwater assessment project; Riverwatch data.
- Short-term Outcome: improved understanding of sources of contaminated runoff
- Intermediate Outcome(s): Action taken to reduce stormwater contamination
- Long-term Outcome(s): Improved water quality in receiving water bodies
- Region: South Shore
- CCMP Action Item: Action Plan #4-Reducing Stormwater Pollution
- CWA Core Program Area: 4-6

#### Task WQ5: South Shore Stormwater Outreach and Education.

The South Shore RSP and host organization, NSRWA will continue to support the Greenscapes program and associated 5th Grade “Water All Around You” program as a way to provide outreach to South Shore communities on water conservation, stormwater management and ecologically friendly landscaping. In addition the South Shore regional coordinator will support local efforts to implement stormwater bylaws and utilities, and act as a liaison for general stormwater outreach in the region.

- Responsible Parties: South Shore RSP and regional host organization (NSRWA)
- Partners: Greenscapes Coalition, volunteer educators, town officials; DEP Circuit Rider Program
- Budget: \$0 MBP case; \$27,855 in-kind services by NSRWA, Greenscapes Coalition, and volunteers.
- Outcomes/ deliverables: Participation in “Water All Around You” program, support outreach to communities regarding Greenscapes and stormwater management.
- Short-term Outcome(s): Improved understanding of stormwater and water use impacts
- Intermediate Outcome(s): Changed behavior with regard to stormwater and water use
- Long-term Outcome(s): Improved water quality and quantity
- Region: South Shore
- CCMP Action Item: Action Plan #4-Reducing Stormwater Pollution
- CWA Core Program Area: 4-6

#### Task WQ6: Salem Sound Clean Beaches & Streams Program

The Salem Sound regional coordinator will identify bacterial non-point pollution sources throughout Salem Sound through its volunteer-based water quality monitoring program.

- Responsible Parties: Salem Sound RSP
- Partners: Clean Beaches & Streams Network, volunteers, Salem Sound communities
- Budget: \$0 MBP cash; \$228,000 from SSCW, state foundation funds, and City of Salem (includes MET grant as part of the Rockmore Settlement (\$75,000 expected in Fall 2013)).
- Outputs/Deliverables: Bacterial analysis for 14 to 22 outfalls to Salem Sound, and results on SSCW website and list of bacterial hot spots in Salem Sound and remediation efforts
- Short-term Outcome: Identification of bacterial contamination at outfalls/streams
- Intermediate Outcomes: Action taken to remediate discharge and remove Salem Sound from the MA 303(d) list for pathogens.
- Long-Term Outcome: Open shellfish beds in Salem Sound
- CCMP Action Item: Action Plan #4-Reducing and preventing stormwater pollution
- CWA Core Program Area: 4-6

#### Task WQ7: Sewer Connection Title V in Salem Sound

The Salem Sound regional coordinator will promote the development of a new regulation that would require home sewer line inspections at time of house transfer such as Title 5 of the state environmental code and Illicit Discharge Detection and Elimination Requirements of the NPDES MS4 Program.

- Responsible Parties: Salem sound RSP
- Partners: MA Association of Realtors, stormwater engineers, State legislators
- Budget: \$0 MBP cash; \$75,000 special grant funding from MET as part of the Rockmore Settlement expected in Fall 2013); \$2,000 in-kind from realtors and realty lawyers
- Outcomes/deliverables: Action plan; report summarizing discussions with partners; draft

- legislation
- Short-term Outcome(s): Plan of action that leads to draft legislation
- Intermediate Outcome(s): Development of state-wide stakeholders to support legislation
- Long-term Outcome(s): Legislation passed; increased inspections of sewer line connections in Salem Sound; Salem Sound's removal from MA 303(d) list for pathogens
- Region: Salem Sound
- CCMP Action Item: Action Plan #7-Managing Municipal Wastewater
- CWA Core Program Area: 4-6

#### Task WQ8: Low Impact Development in Salem Sound

The Salem Sound regional coordinator will identify opportunities, effective communication methods and ways to promote and implement Low Impact Development in the communities of Peabody, Salem and Beverly.

- Responsible Parties: Salem Sound RSP
- Partners: Cities of Salem and Peabody; Beverly Stormwater Committee
- Budget: \$0 MBP cash; non-federal match: \$4000 in-kind contribution of SSCW
- Outcomes/deliverables: LID outreach and education materials; implementation of a minimum of two LID demonstration projects in the watershed
- Short-term Outcome(s): Increased awareness and understanding of LID
- Intermediate Outcome(s): LID demonstration sites showing local water improvements
- Long-term Outcome(s): Removal of local water bodies from MA 303(d) list for pathogens
- Region: Salem Sound
- CCMP Action Plan #4- Reducing and Preventing Stormwater pollution
- CWA Core Program Area: 4-6

#### Task WQ9: Salem Sound Water Quality Assessment (Turbidity Study)

In collaboration with Salem State University, the Salem Sound regional coordinator will monitor water temperature and water level in Salem Harbor and in the Forest and South Rivers, and precipitation events as part of Salem Sound Water Quality Assessment. Results will be communicated to the public through a lecture series.

- Responsible Parties: Salem Sound RSP
- Partners: Salem State University, Marblehead Abbot Library,
- Budget: \$0 MBP cash; non-federal match: \$1,500 in-kind services by SSCW; \$1,500 cash from the Marblehead Abbott Library
- Outcomes/deliverables: Hydrological data to help inform the causes of turbidity in Salem Harbor; educational initiatives to raise awareness of issues among communities
- Short-term Outcome(s): Increased understanding of turbidity causes in Salem Harbor and increased public awareness
- Intermediate Outcome(s): Resource management recommendations and appropriate actions taken (if possible) to minimize sources of turbidity in freshwater input.
- Long-term Outcome(s): Improved water quality conditions in Salem Sound
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 4-6

#### Task WQ10: Stormwater Outreach and Assistance to Communities on the Upper North Shore

The Upper North Shore regional coordinator will work with local communities and community stormwater committees to increase awareness and understanding of the forthcoming NPDES Phase II Stormwater permit, LID, and stormwater management through workshops, presentations, or personal discussions.

- Responsible Parties: Upper North Shore RSP
- Partners: Upper North Shore communities; Eight Towns and the Great Marsh Committee
- Budget: \$0 MBP cash; \$51,000 cash and in-kind contribution from MVPC, Upper North Shore communities, and Great Marsh Committee.

- Outputs/Deliverables: Stormwater funding workshop, presentations on NPSES Phase II requirements and up-to-date community stormwater plans. Model Phase II MS4 permits outreach and education.
- Short-Term Outcome: Increased local understanding of regulatory requirements and best management proactive related to stormwater
- Intermediate Outcomes Full compliance with Phase II requirement on the Upper North Shore; Increased local acceptance of principals of low impact development
- Long-Term Outcome: Improved water quality in the Great Marsh and Upper North Shore contributing surface waters and shellfish beds
- CCMP Action item: Action Plan #4-Reducing and preventing stormwater pollution
- CWA Core Program Area: 4-6

### ***iii. Protect and Restore Estuarine Habitats (EH)***

#### **Task EH1: Support salt marsh restoration and protection efforts by providing technical assistance and outreach on Cape Cod.**

The Cape Cod Regional Coordinator will provide technical support and outreach for salt marsh restoration and protection efforts. Specific subtasks include: 1) providing support through outreach, monitoring, and participation in the project selection process for the ongoing the Cape Cod Water Resources Restoration Project; 2) providing project management and monitoring support for the Stony Brook Salt Marsh and Fish Passage Restoration Project in Brewster; and 3) providing coordination and outreach support as needed for the Herring River Restoration Project in Wellfleet.

- Responsible Parties: Cape Cod RSP
- Partners: CRC, NRCS, DER, Towns of Brewster and Wellfleet, Friends of Herring River.
- Budget: \$0 MBP cash; \$29,000 cash from SEP; \$2,500 from DER contract with APCC; (additional funds – see EH2 and CC1).
- Outcomes/Deliverables: These are project-dependent and include assistance with project management support (grant reporting, budget tracking); monitoring reports; grant applications; outreach materials; or other materials requested by partners provided they are feasible.
- Short-term outcomes: Improved understanding of salt marsh restoration opportunities on Cape Cod; provide monitoring data, project management, outreach support
- Intermediate outcomes: Action taken to restore salt marsh habitat
- Long-term outcomes: Increased acreage of restored salt marsh habitat.
- Region: Cape Cod
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

#### **Task EH2: Support local and regional efforts for diadromous fish restoration and protection projects on Cape Cod**

The Cape Cod Regional Coordinator will continue to support restoration and protection of diadromous fish runs by assisting partners with restoration, coordination, and providing monitoring and other technical support. Subtasks include providing technical and outreach support and advice on project selection for the Cape Cod Water Resources Restoration Project; and providing project management and monitoring support for the Lower Mill Pond Dam Reconstruction and Fish Passage Project in Brewster and to Upper Shawme Pond in Sandwich. In addition the Regional Coordinator will continue the ongoing program that supports volunteer herring counts in streams where restoration work is needed, ongoing, or completed. Environmental monitoring of a select number of fish runs will also be continued to gather data as part of restoration efforts.

- Responsible Parties: Cape Cod RSP
- Partners: NRCS, River Herring Warden Network; Friends of Herring River in Wellfleet.
- Budget: \$ 0 MBP cash; \$ 25,000 cash for monitoring (Town of Brewster contract for EH1 and EH2); \$20,000 APCC 2012 Whitlock & Geist internship (Private foundation grant for Cape Cod Critical Habitats Atlas Update - EH1 and EH2)

- Outcomes/Deliverables: grant proposal(s), coordination, outreach, volunteer training sessions for fish counts and use of fish run software, workshop or other presentation, fish count data management, data summaries, or other services as needed to further restoration.
- Short-term outcomes: Improved data collection efforts to enhance the understanding of condition/status of diadromous fish runs
- Intermediate outcomes: Improved management of herring runs
- Long-Term Outcomes: Increased herring populations
- Region: Cape Cod
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

**Task EH3: Marine Benthic Invertebrate Monitoring on the South Shore.**

The South Shore regional coordinator will monitor marine benthic invertebrates at salt marsh restoration sites for the DER wetlands restoration program, and will continue to provide species identification training for students at CSCR. The NSRWA will also partner with the Salem Sound regional coordinator and with the Encyclopedia of Life to create a digital field guide to common benthic invertebrates.

- Responsible Parties: South Shore RSP and host organization
- Partners: DER, CSCR, Salem Sound Coastwatch, Encyclopedia of Life, CZM, Suffolk University, private programming assistance
- Budget: \$0 MBP cash; \$ 1,800 in-kind services from state agencies and non-profit partners.
- Outcomes/deliverables: Benthic monitoring data; digital benthic invertebrate field guide
- Short-term Outcome(s): Improved understanding of wetland conditions
- Intermediate Outcome(s): Demonstrable improvements in identification skills, demonstration of wetland condition improvement
- Long-term Outcome(s): Facility with benthic invertebrate taxonomy, benthic invertebrate communities indistinguishable from reference conditions
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

**Task EH4: Tidmarsh Farms Restoration (South Shore).**

The South Shore regional coordinator and host organization NSRWA will participate in monitoring, research planning, education, and outreach for the Tidmarsh Farms Restoration Project, a large scale headwaters to ocean restoration that includes stream restoration in former cranberry bogs, removal of barriers to fish migration, as well as development of a unique “Living Observatory” outreach platform through the MIT Media Lab.

- Responsible Parties: South Shore RSP and regional host organization (NSRWA)
- Partners: DER, American Rivers, UMass Amherst, Town of Plymouth, US FWS, DFG, NOAA Restoration Center, NRSC, Mass Audubon, MIT Media Lab
- Budget: \$0 MBP cash; \$10,900 in-kind support from UMass Amherst and town officials; \$9,445 from A.D. Makepeace grant.
- Outcomes/deliverables: Monitoring plan for Tidmarsh Farms; permitting for stream restoration efforts; public outreach via Living Observatory platform
- Short-term Outcome(s): Consistent data collection at the restoration site, public engagement in the restoration process
- Intermediate Outcome(s): A complete headwaters to sea restoration
- Long-term Outcome(s): A fully connected and functional coastal wetland system, ongoing public engagement at site and via Living Laboratory
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

#### Task EH5: Wetland Invasive Vegetation Management on the South Shore (pending funding from US Fish and Wildlife)

The South Shore regional coordinator will participate in community-based mapping and control efforts along the geographic extent of perennial pepperweed on the East Coast for 3 years (ME, NH, MA, RI, CT and Long Island), and assist with removal of Japanese knotweed in the South River Park. An annual survey of *Phragmites* population reduction in the Green Harbor River will also be conducted.

- Responsible parties: South Shore RSP and host organization
- Partners: US Fish and Wildlife Service, Mass Audubon, Neponset River Watershed Association, Town of Marshfield
- Budget: \$0 MBP cash; \$950 in-kind services from NSRWA.
- Outcomes/deliverables: Baseline mapping of pepperweed in the towns of Cohasset, Scituate, and Marshfield; 2013 Green Harbor *Phragmites* survey data and report; Japanese knotweed maintenance removal event
- Short-term Outcome(s): Mapping of pepperweed; increased understanding of Green Harbor River *Phragmites* trends and in the management of Japanese knotweed
- Intermediate Outcome(s): Control the spread of pepperweed; control the spread of *Phragmites* in Green Harbor River
- Long-term Outcome(s): Absence or marked reduction in presence of invasive species
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

#### Task EH6: Salt Marsh Shading Impacts.

The South Shore RSP will assist DMF with research to investigate the impacts of shading by docks and piers on salt marsh vegetation, using the marsh adjacent to Trout's Island in Marshfield as a research site.

- Responsible Parties: South Shore RSP
- Partners: *Marine Fisheries*, Town of Marshfield
- Budget: \$7,500 Mass Bays Program Research and Planning Grant
- Outcomes/deliverables: Report on salt marsh shading impacts and recommended height for docks and piers constructed in salt marshes
- Short-term Outcome(s): Improved understanding of shading impacts to salt marsh
- Intermediate Outcome(s): Changes in permitting requirements to reduce shading impacts
- Long-term Outcome(s): Reduced impacts to salt marsh vegetation from the construction of docks and piers in these wetlands
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

#### Task EH7: Horseshoe Crab Spawning Surveys on the South Shore.

The South Shore RSP will continue with the horseshoe crab spawning surveys as part of the Duxbury Bay Management Plan. Surveys to study trends in horseshoe crab populations are conducted in Duxbury Bay in May and June and data will be made available to DMF and the Atlantic States Marine Fisheries Commission for stock assessments.

- Responsible Parties: South Shore RSP
- Partners: DMF, Town of Duxbury, Duxbury Bay Management Committee
- Budget: \$0 MBP cash; \$3,250 in-kind services by NSRWA and volunteers.
- Outcomes/deliverables: Horseshoe crab spawning survey data; report on trends in horseshoe crab populations in Duxbury Bay to the Duxbury Bay Management Committee
- Short-term Outcome(s): Improved understanding of horseshoe crab population trends in Duxbury Bay
- Intermediate Outcome(s): Refinement of fisheries regulations that account for shifts in population and timing of spawning
- Long-term Outcome(s): Stable or increasing horseshoe crab populations on the East Coast
- Region: South Shore

- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

Task EH8: Tussock Brook and Stony Brook Restoration on the South Shore.

The South Shore regional coordinator will coordinate with JRWA to expand on the results of their investigation into the feasibility of removing the Tussock Brook tide gate and improving flushing to Tussock Brook and Stony Brook, tributaries of the Jones River. The feasibility study was conducted in 2011 with funds from the MBP Research and Planning Grant.

- Responsible Parties: South Shore RSP and regional host organization (NSRWA)
- Partners: JRWA, towns, CZM, DER, DOT.
- Budget: \$0 MBP cash; \$1,725 in-kind services from municipalities and JRWA.
- Outcomes/deliverables: Plan for removal of Tussock Brook tide gate
- Short-term Outcome(s): Plan for removing tide gate and improving flushing
- Intermediate Outcome(s): Removal of tide gate resulting in improved flushing
- Long-term Outcome(s): Decrease in background bacteria levels in Stony and Tussock Brooks, and initiation of habitat recovery
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

Task EH9: First Herring River Brook Restoration in Scituate (South Shore)

The South Shore RSP will assist the Town of Scituate with efforts to restore the First Herring Brook, including in-stream and impoundment habitat supportive of diadromous fish and other resident organisms. The RSP and NSRWA will work with DER and the Town to evaluate and if possible, implement potential steps towards restoration such as modification of fish ladders and installation of weirs. The RSP will also assist with implementation and evaluation of results of watering restrictions and minimum stream flow release efforts.

- Responsible Parties: South Shore RSP and regional host organization (NSRWA)
- Partners: Town of Scituate, DER, DMF, DEP
- Division of Marine Fisheries, Mass. Department of Environmental Protection
- Budget: \$0 MBP cash; \$6,250 in-kind services from town of Scituate and state agencies; \$55,380 from SWMI grant.
- Outcomes/ deliverables: Evaluation of watering restriction; stream flow data in context of water system operations plan; educational/Interpretive signage on First Herring Brook highlighting the project; installation of weirs at Old Oaken Bucket Pond; feasibility Study of Reservoir Level Modification .
- Short-term Outcome(s): Improved understanding of the First Herring Brook system and its hydrological systems
- Intermediate Outcome(s): Improved fish passage and second nature provision of flows
- Long-term Outcome(s): Increased diadromous fish populations in First Herring Brook
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

Task EH10: Third Herring Brook Restoration on the South Shore.

The South Shore RSP will work to improve habitat conditions and water quality and quantity in the Third Herring Brook by pursuing stream restoration and dam removal where possible, including removal of the Mill Pond Dam and final design and permitting of the Tack Factory Pond Dam. The RSP and NSRWA will continue to work with dam owners to seek funding and provide community education and outreach on this project. The RSP will monitor vegetation, including purple loosestrife, at the former Mill Pond impoundment site and provide release and monitoring of *Galerucella* loosestrife beetles. Monitoring of in-stream flow through the RIFLS program will also be continued so as to evaluate any impacts from water withdrawals.

- Responsible Parties: South Shore RSP
- Partners: Towns of Hanover and Norwell, NSRWA, DER, South Shore YMCA, Cardinal Cushing Centers; volunteers

- Budget: \$0 MBP cash; \$50,000 MET grant (Mill Pond); \$30,000 TU/NOAA and \$10,000 from the Sheehan Family Foundation (Tack Factory); \$2,225 in-kind services from NSRWA, towns, YMCA, volunteers.
- Outcomes/deliverables: Removal of Mill Pond Dam; completion of design and engineering work at Tack Factory Pond (pending funding); dam removal initiated; in-stream flow data; Mill Pond vegetation and beetle data (pending local and state permit approvals of the project)
- Short-term Outcome(s): Removal of an impediment to passage and steps towards removal of another dam
- Intermediate Outcome(s): Removal of impediments at Petersons Pond and Jacobs Pond; purple loosestrife reduced to stable and manageable quantities
- Long-term Outcome(s): Full restoration of the Third Herring Brook system
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

#### Task EH11: Anadromous Fish Run Monitoring on the South Shore

The South Shore RSP will provide support to recruit, train and coordinate volunteers to count anadromous fish in streams within the South Shore region. Data will be analyzed using the DMF database when appropriate. The RSP will maintain and collect water level and temperature data from data loggers installed in anadromous fish streams in the South Shore. The RSP will also participate in the efforts of the Herring Warden Network established in 2011 through the MBP Research and Planning Grant to improve and implement best management practices to conduct herring counts and manage fish ladders in the South Shore.

- Responsible Parties: South Shore RSP
- Partners: NSRWA, South Shore Communities, River Herring Network, DMF, NOAA
- Budget: \$0 MBP cash; \$7,300 in-kind services by NSRWA, towns staff, volunteers.
- Outcomes/deliverables: Volunteer fish count data (and population analysis where appropriate); temperature and water level data; Herring warden network expansion and support
- Short-term Outcome(s): Improved understanding of local diadromous fish populations
- Intermediate Outcome(s): Actions taken to restore populations in South Shore runs
- Long-term Outcome(s): Increased diadromous fish populations
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

#### Task EH12: Culvert Assessment and Restoration on the South Shore.

The South Shore RSP will work with stakeholders to initiate and plan local in-stream restoration projects building on the success of stream restoration in the North and South Rivers Watershed planning effort in 2010-2011 as a guide, at locations like Iron Mine Brook in Hanover and Pudding Brook in Pembroke. The South Shore RSP and host organization, NSRWA, will expand the data collected for the North and South Rivers watershed as well as the UMass Stream Crossings database.

- Responsible Parties: South Shore RSP
- Partners: South Shore communities, NSRWA, DER, UMass Amherst
- Budget: \$0 MBP cash; \$1,800 in-kind services by NSRWA, town staff, volunteers.
- Outcomes/ deliverables: Plan for replacement of Iron Mine Brook culvert; removal of flashboards at Pudding Brook/Rt. 53 culvert (pending town buy-in); plan for potential upstream restoration at Pudding Brook
- Short-term Outcome(s): Actions taken to remove or replace problematic culverts
- Intermediate Outcome(s): Increased connectivity in a few locations, greater municipal awareness of impacts of restrictive culverts
- Long-term Outcome(s): Improved stream habitat quality/continuity on the South Shore
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

Task EH13: South River Restoration on the South Shore (pending NOAA/FFO grant).

The South Shore RSP will work with the Towns of Marshfield and Duxbury and the owner of Chandler Pond Dam to initiate efforts towards a holistic restoration of the South River, including improved management of the Veterans Memorial Park fish ladder and feasibility analysis of removing the Chandler Pond Dam.

- Responsible Parties: South Shore RSP
- Partners: towns, NSRWA, DMF, DFG, DER, Chandler Pond Dam owner
- Budget: \$0 MBP cash; \$2,050 in-kind services from NSRWA.
- Outcomes/deliverables: Feasibility study for Chandler Pond Dam (pending funding); Management Plan for Veterans Memorial Park fish ladder
- Short-term Outcome(s): Proper management of Veterans Memorial Park Fish Ladder; improved understanding of Chandler Pond Dam
- Intermediate Outcome(s): Removal of impediments in South River
- Long-term Outcome(s): Increased diadromous fish populations in the South River
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

Task EH14: Bound Brook Restoration on the South Shore.

The South Shore RSP will provide support and technical guidance to the CSCR to monitor fish and water quality in Bound Brook and the Gulf River, a project funded by the Mass Bays Program Research and Planning Grant FY13. The RSP will also act as a technical advisor for the effort to remove Hunter's Pond Dam based on the results of the survey.

- Responsible Parties: South Shore RSP
- Partners: Towns of Scituate and Cohasset, MA CZM, DER, DMF, NOAA, CSCR.
- Budget: \$0 MBP funds; \$900 in-kind services by NSRWA, CSCR and volunteers.
- Outcomes/deliverables: Fish population and water quality data from Gulf River and Bound Brook; feasibility study for Hunters Pond Dam removal
- Short-term Outcome(s): Improved understanding of the ecology of Bound Brook
- Intermediate Outcome(s): Removal of Hunters Pond Dam and other impediments to fish passage
- Long-term Outcome(s): Increased herring population in Bound Brook
- Region: South Shore
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

Task EH16: Conservation Moorings to Restore Eelgrass in Salem Sound

The Salem Sound regional coordinator will support ongoing interagency efforts to protect eelgrass beds through the promotion of use of conservation moorings and coastal stewardship. With \$30,000 from the ANEP program to implement eelgrass restoration in Massachusetts, conservation moorings were placed in Manchester-by-the-Sea in 2011. Opportunities and feasibility of placing conservation moorings in Beverly and Salem (potentially 20 moorings off Misery Island) are currently being explored.

- Responsible Parties: Salem Sound RSP
- Partners: Communities and harbormasters, DMF
- Budget: \$0 MBP cash; non-federal match: \$2000 in-kind contribution by SSCW.
- Outcomes/deliverables: Replacement of traditional moorings with conservation moorings installed.
- Short-term Outcome(s): Increased awareness and understanding of conservation moorings value in eelgrass restoration and the value and function of the eelgrass ecosystem.
- and eelgrass value and functions
- Intermediate Outcome(s): Increased number of conservation moorings in Salem Sound
- Long-term Outcome(s): Improvement of eelgrass habitat in Salem Sound
- Region: Salem Sound
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5,6

#### Task EH17: Salem Harbor Turbidity Study

The Salem Sound regional coordinator will continue working on Salem Sound Water Quality Assessment through a study in collaboration with Salem State University of the possible characteristics and causes of reduced water clarity in Salem Harbor and its potential impact on eelgrass habitat.

- Responsible Parties: Salem Sound RSP
- Partners: Salem State University, DMF
- Budget: \$0 MBP cash; \$25,000 in-kind contribution from SSCW; \$25,000 FY14 MET grant
- Outcomes/deliverables: Water quality and sediment analysis to quantify turbidity and determine the factors responsible for initiating turbidity events in Salem Harbor
- Short-term Outcome(s): Increased understanding of the water clarity condition and possible sources in Salem Harbor
- Intermediate Outcome(s): 3-year study resource management recommendations to improve estuarine habitat, particularly eelgrass beds
- Long-term Outcome(s): Improvement of eelgrass habitat in Salem Harbor
- Region: Salem Sound
- CCMP Action item: Action Plan #4-Reducing and Preventing Stormwater Pollution
- CWA Core Program Area: 4-6

#### Task EH18: Greenscapes (Salem Sound and Upper North Shore)

As part of this ongoing program, the Salem Sound regional coordinator, in coordination with the Upper North Shore regional coordinator, will continue to provide educate opportunities to increase awareness of the importance of reducing stormwater through infiltration, and the implementation of LID and environmentally friendly landscaping. The Greenscapes Coalition will continue the evaluation of the new draft EPA Phase II Stormwater Permit to determine the best outreach messages for member communities.

- Responsible Parties: Salem Sound RSP and Upper North Shore RSP
- Partners: Greenscapes North Shore Coalition (communities in Salem Sound and Upper North Shore, Ipswich River Watershed Association, Eight Towns and the Great Marsh Committee), Massachusetts Greenscapes Coalition.
- Budget: \$0 MBP cash; \$49,600 cash and in-kind contribution from MVPC, SSCW and Greenscapes Coalition.
- Outcomes/deliverables: Outreach efforts (e.g. workshops) and education materials for communities; MS4 NOI section on outreach and education.
- Short-term Outcome(s): Increased public awareness and knowledge of the Greenscapes program and the importance of reducing stormwater pollution
- Intermediate Outcome(s): Changes in personal landscaping behaviors and increase in the implementation of water infiltration practices
- Long-term Outcome(s): Reduction in contaminants and improvement of habitat in Salem Sound.
- Region: Salem Sound and Upper North Shore
- CCMP Action item: Action Plan #4-Reducing and Preventing Stormwater Pollution
- CWA Core Program Area: 4-6

#### Task EH19: Salt Marsh Monitoring in Salem Sound

The Salem Sound regional coordinator will monitor emergent wetland at Good Harbor Marsh (Gloucester), and at other salt marshes to be determined in coordination with DER through a Master Service Agreement.

- Responsible Parties: Salem Sound RSP
- Partners: DER, Friends of Good Harbor, Maritime Gloucester
- Budget: \$0 MBP cash; \$18,089 cash and in-kind contribution from SSCW and Friends of Good Harbor.
- Outcomes/deliverables: Post-restoration monitoring data and reports to DER; trained local stewards at Good Harbor and report for Friends of Good Harbor; recommendations on culvert restriction
- Short-term Outcome(s): Improved understanding of salt marsh conditions, restoration opportunities and results; recommendations for restoration actions; increased stewardship

- Intermediate Outcome(s): Action taken to implement restoration activities
- Long-term Outcome(s): Improved salt marsh habitat quality in Salem Sound marshes
- Region: Salem Sound
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 4-6

Task EH20: Upper Great Marsh *Phragmites* Control on the Upper North Shore.

To control emergent and existing *Phragmites* stands in the Newbury/Newburyport section of the Great Marsh, the Upper North Shore regional coordinator will continue the monitoring and mapping efforts to assess the current expanse and distribution of *Phragmites* following previous control efforts. In addition the regional coordinator will continue working on control and monitoring of 30 acres of *Phragmites*.

- Responsible Parties: Upper North Shore RSP
- Partners: Communities, U.S. Army Corps of Engineers, DMF, Northeast Mosquito Control, Parker River National Wildlife Refuge, Essex County Greenbelt Association, and the GMRTF
- Budget: \$0 MBP cash; \$47,900 cash and in-kind contribution from MVPC, state agencies, non-profit partners and volunteers.
- Outcomes/deliverables: 30 acres of treated *Phragmites* stands; Map of locations where control efforts are made.
- Short-term Outcome: Unified approach to controlling *Phragmites* in the Great Marsh
- Intermediate Outcome: Decreased acreage of *Phragmites*
- Long-Term Outcome: *Phragmites* has less ecological impact on the Great Marsh System
- Region: Upper North Shore
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

Task EH21: Management of *Phragmites* in Salisbury Salt Marshes on the Upper North Shore

The Upper North Shore regional coordinator will identify and seek treatment permissions from owners of property previously identified and mapped *Phragmites* stands in the highly infested salt marsh immediately north of the Merrimack River to develop a plan for future *Phragmites* control.

- Responsible Parties: Upper North Shore RSP
- Partners: Property owners in Salisbury, Mass Audubon, Parker River National Wildlife Refuge, Essex Agricultural and Technical School, and the Great Marsh Revitalization Task Force
- Budget: \$0 MBP cash; \$2,100 in-kind services from MVPC.
- Outcomes/ deliverables: List of property owners, contact information, and permission status for future *Phragmites* treatment in the Salisbury marsh.
- Short-term Outcome: Action plan to continue the eradication efforts of *Phragmites*
- Intermediate Outcome: Decreased acreage of *Phragmites*
- Long-Term Outcome: *Phragmites* has little ecological impact on the Great Marsh System
- Region: Upper North Shore
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

Task EH22: Great Marsh Pepperweed Monitoring and Control on the Upper North Shore.

The Upper North Shore regional coordinator will continue in-the-field monitoring and control of pepperweed in those estuarine areas that have not yet been evaluated, and complete finer mapping of non-accessed, known sites. Areas in the Newbury marsh and the Labor In Vain Creek area of Ipswich will be remapped and will include boat surveys, foot surveys, geo-locating stands, and prioritizing control techniques. Activities will include pepperweed pulling (Essex and other areas) and providing assistance for the treatment and control of this invasive species.

- Responsible Parties: Upper North Shore RSP
- Partners: Mass Audubon, Parker River National Wildlife Refuge, US FWS, Northeast Massachusetts Mosquito Control, and local communities and property owners.
- Budget: \$0 MBP cash; \$10,000 from MassAudubon; \$24,900 cash and in-kind from MVPC and other partners.
- Outcomes/deliverables: Maps of new pepperweed locations, report on control effects and treated

pepperweed sites in the Great Marsh.

- Short-term Outcome(s): Locations of new pepperweed identified
- Intermediate Outcome(s): Action taken to continue control and eradication of pepperweed.
- Long-term Outcome(s): Decreased acreage of pepperweed and reduction in ecological impact on the Great Marsh.
- Region: Upper North Shore
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

#### Task EH23: Coordination of the Efforts of the Great Marsh Revitalization Task Force (GMRTF)

The Upper North Shore regional coordinator will organize, coordinate, and develop projects for the GMRTF and the five committees to ensure Great Marsh stakeholders are engaged in ongoing short-term and long-term *Phragmites* management and treatment efforts. Project coordination efforts resulted in hydrodynamic modeling of the Merrimack River and Plum Island Sound, Smart Spray Technology for short-term control, marsh/upland boundary *Phragmites* management, streamline permitting for invasive species control, development of a five-year *Phragmites* treatment management plan, development of a funding plan, and other project initiatives as they develop.

- Responsible Parties: Upper North Shore RSP
- Partners: GMRTF
- Budget: \$0 MBP cash; \$94,500 cash and in-kind contribution from MVPC, partners, and volunteers;
- Outcomes/deliverables: GMRTF meetings with defined scopes for the management and control of *Phragmites* in the Great Marsh.
- Short-term Outcome: Improved understanding of *Phragmites* spread and distribution rates
- Intermediate Outcome: Action taken to control the spread of *Phragmites*
- Long-Term Outcome: Decreased acreage of *Phragmites*
- Region: Upper North Shore
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

#### Task EH24: Oversight and Assistance in the Transplanting of Eelgrass Donor Plots in Plum Island Sound (Upper North Shore)

The Upper North Shore regional coordinator will provide support and assistance to UNH's project funded by the FY13 MBP Research and Planning Grant to conduct test-transplanting of eelgrass in Plum Island Sound as part of eelgrass restoration efforts in Massachusetts.

- Responsible Parties: Upper North Shore RSP
- Partners: UNH, Mass Audubon, Eight Towns and the Great Marsh Committee
- Budget: \$0 MBP cash; non-federal match: \$3,100 in-kind services from MVPC, partners, and volunteers.
- Outcomes/deliverables: Data and report for eelgrass restoration and recommendations for other restoration efforts.
- Short-term Outcome(s): Determination of the viability of eelgrass in Plum Island Sound, the most resilient genetic strains for Plum Island Sound.
- Intermediate Outcome(s): Growth of eelgrass beds in Plum Island Sound.
- Long-term Outcome(s): Long-term widespread program established; increased acreage of eelgrass.
- Region: Upper North Shore
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

#### Task EH25: Great Marsh Restoration Projects on the Upper North Shore

The Upper North Shore regional coordinator will coordinate with partner organizations and communities to advance coastal restoration projects in the Great Marsh (e.g. Town Creek, Larkin Mill Dam, Castle Neck Creek, Ipswich River).

- Responsible Parties: Upper North Shore RSP
- Partners: DER, NOAA Restoration Center, and local stakeholders.
- Budget: \$0 MBP cash; \$4,200 in-kind from non-federal partners.
- Outcomes/deliverables: Project milestones for each phase of the individual projects. For example: Castle Neck Creek marsh hydrology assessment; Town Creek: flood control structure installation, feasibility study assistance for Willowdale and Ipswich Mill dam removal.
- Short-term Outcome: Strategies for advancing ongoing restoration initiatives
- Intermediate Outcome: Action taken on restoration initiatives
- Long-Term Outcomes: Improved salt marsh habitat quality of the Great Marsh
- Region: Upper North Shore
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

#### Task EH26: Great Marsh Promotion and Outreach Efforts on the Upper North Shore

The Upper North Shore regional coordinator will lead and/or work with regional coalitions and committees to promote smart growth development, environmental protection, watershed protection, and outreach for the Great Marsh ecosystem.

- Responsible Parties: Upper North Shore RSP
- Partners: North Shore Task Force, the Great Marsh Coalition and Coastal Restoration subcommittee, North Shore Community Development Corporation, Essex National Heritage Commission, Plum Island-Long Term Ecological Research Group, Parker, Ipswich, Essex River Restoration Partnership, North Shore Conservation Commission Network, Great Marsh Assembly, MA/NH Merrimack Valley Conservation Workgroup, and other formal and ad hoc regional committees.
- Budget: \$0 MBP cash; non-federal match: \$10,500 in-kind from MVPC.
- Outcomes/deliverables: Great Marsh Symposium; coordination and outreach for regional planning initiatives including stormwater mitigation and smart growth initiatives.
- Short-term Outcome(s): Stakeholder networking and outreach to promote MBP
- Intermediate Outcome(s): Improved awareness and support from the communities.
- Long-term outcome(s): Improved salt marsh habitat quality in the Great Marsh
- Region: Upper North Shore
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

#### Task EH27: Inventory Significant Traditional, Sustainable uses of the Great Marsh:Phase 2

In the second stage of this task, the Upper North Shore regional coordinator will research, identify, and map traditional uses (fishing, fowling, and hunting, fruit and vegetable harvesting, mussel harvesting, etc.) to be included in the Traditional Uses website. Administration of management activities for the first seven traditional marsh uses researched in Phase 1 (FY13) will be conducted based on the recommendations of the contractor engaged to collect and analyze the data.

- Responsible Parties: Upper North Shore RSP
- Partners: Eight Towns and the Great Marsh Committee, Historic New England, Parker River National Wildlife Refuge, Great Marsh communities, and individuals with relevant historical/cultural Great Marsh information.
- Budget: \$0 MBP cash; \$10,500 in-kind services from Eight Towns and the Great Marsh Committee and MVPC.
- Outputs/Deliverables: Listing and maps of identified traditional marsh uses and management strategies.
- Short-term Outcome: Identification of sustainable and historical uses of the Great Marsh
- Intermediate Outcome: Plan for preserving traditional uses is developed
- Long-Term Outcomes: Traditional uses are preserved in perpetuity

- Region: Upper North Shore
- Time Line: Ongoing through FY2013
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

**Task EH28: Anadromous Fish Monitoring on the Upper North Shore**

The Upper North Shore regional coordinator will continue to assemble and train volunteers for to monitor river herring passage in the Essex River.

- Responsible Parties: Upper North Shore RSP
- Partners: Eight Towns and the Great Marsh Committee, DMF, and local volunteers (Chebacco Lake Association, City of Gloucester, Essex Elementary School)
- Budget: \$0 MBP cash; \$4,600 cash and in-kind services from MVPC and volunteers.
- Outcomes/deliverables: Data report on fish run observations
- Short-term Outcome: Improved understanding/tracking of the fish run in the Essex River
- Intermediate Outcome: Action taken to improve Upper North Shore Fish runs
- Long-Term Outcomes: Increased herring population
- Region: Upper North Shore
- Time Line: Spring, 2014
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

**Task EH29: Belle Isle Salt Marsh Restoration (Metro Boston)**

The Metro Boston regional coordinator will coordinate with project partners to restore salt marsh in urban Revere.

- Responsible Parties: Metro Boston Regional Coordinator
- Partners: Division of Ecological Restoration, Friends of Belle Isle Marsh, Mystic River Watershed Association, Massachusetts Mosquito Control Board, DCR
- Budget: \$0 MBP cash; in-kind services from VHB
- Outcomes/deliverables: 7 acre salt marsh restored
- Short-term Outcome: Improved understanding/tracking of the fish run in the Essex River
- Intermediate Outcome: Action taken to improve Upper North Shore Fish runs
- Long-Term Outcomes: Increased herring population
- Region: Metro Boston
- Time Line: Winter, 2013/2014
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

**Task EH30: Boston Harbor Promotion and Outreach Effort**

In continuation of the Boston Harbor Habitat Atlas project, the Metro Boston regional coordinator will lead the Boston Harbor Habitat Coalition (comprised of representatives from 30 partners invested in the ecological health of the region) in raising awareness for the wealth of natural resources within Boston Harbor and what the public can do to restore and protect them. Outreach products will include a consistent Boston Harbor Habitat message to be used by Coalition members, current website, listserv, social media, presentations to municipalities, and various printed materials.

- Responsible Parties: Metro Boston Regional Coordinator
- Partners: Boston Harbor Habitat Coalition, CZM, UMass Urban Harbors Institute, Neponset River Watershed Association.
- Budget: \$0 MBP cash
- Outcomes/deliverables: Boston Harbor Coalition and subcommittee meetings; consistent Boston Harbor Habitat message; presentations to local municipalities and at regional conferences; coordination and support for restoration initiatives; current Atlas/Coalition website; listserv; social media; and various printed materials
- Short-term Outcome(s): Stakeholder networking and outreach to promote Boston Harbor
- Intermediate Outcome(s): Improved awareness of Boston Harbor natural resources
- Long-term outcome(s): Improved salt marsh, eelgrass, shellfish habitat quality in Boston Harbor

- Region: Metro Boston
- CCMP Action Item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: 5, 6

**Task EH31: Neponset River Area of Critical Environmental Concern Water Quality Study (Metro Boston).**

The Metro Boston Regional Coordinator will assist the Neponset River Watershed Association with research to understand the current status of water quality in the Neponset River estuary as well as the monitoring efforts (past and current) in the estuary. This effort will lead to the development of a plan for improving the health of the estuary.

- Responsible Parties: Metro Boston Regional Coordinator
- Partners: Neponset River Watershed Association
- Budget: \$7,500 Mass Bays Program Research and Planning Grant
- Outcomes/deliverables: Report on water quality monitoring efforts in the estuary
- Short-term Outcome(s): Improved understanding of current water quality, monitoring efforts, and potential partners in improving water quality in the future
- Intermediate Outcome(s): Plan to improve water quality in the region; partners identified to support effort
- Long-term Outcome(s): Improved water quality in Neponset Estuary
- Region: Metro Boston
- CCMP Action item: Action Plan #3-Protecting and Enhancing Coastal Habitat
- CWA Core Program Area: Area 5, 6

***iv. Manage Marine Invasive Species (MIS)***

**Task MIS1: Control and Eradication of Pepperweed in Salem Sound.**

The Salem Sound regional coordinator will conduct perennial pepperweed removal efforts within the Salem Sound Watershed to control the spread of this invasive species as part of a New England-wide community-based mapping and control effort.

- Responsible Parties: Salem Sound RSP
- Partners: Mass Audubon, Parker National Wildlife Refuge
- Budget: \$0 MBP cash; non-federal match: \$2,000 in-kind contribution of volunteers; and private foundations (Trustees of Goldthwaite Marsh, The Trustees of Reservations)
- Outcomes/deliverables: Removal of pepperweed from shoreline habitat in Salem Sound; map of results.
- Short-term Outcome(s): 90% of Salem Sound shoreline mapped; removal of pepperweed by trained volunteers
- Intermediate Outcome(s): Formally trained group of volunteers to participate in the pepperweed monitoring and removal program
- Long-term Outcome(s): 95% eradication of pepperweed from Salem Sound
- Region: Salem Sound
- CCMP Action Item: Action Plan #16-Preventing Marine Invasive Species
- CWA Core Program Area: 5, 6

**Task MIS2: Coastal Habitat Invasive Species Monitoring in Salem Sound**

The Salem Sound regional coordinator will continue to monitor marine native and invasive species in Salem Sound and provide support the CZM Marine Invader Monitoring and Information Collaborative (MIMIC) program and SETL program.

- Responsible Parties: Salem Sound RSP
- Partners: CZM, MIT Sea Grant
- Budget: \$0 MBP cash; \$2,000 in-kind services of volunteers
- Outcomes/deliverables: Data reports for five locations and uploaded to MIMIC website and database, as well as MORIS data provided to CZM.
- Short-term Outcome(s): Improved public education to provide early detection warning

- Intermediate Outcome(s): Better understanding of impacts on local ecology and the distribution mechanisms in Salem Sound and Mass Bays
- Long-Term Outcome: Reduced or stabilized impact of invasive species on Massachusetts and Cape Cod Bay habitats
- Region: Salem Sound
- CCMP Action Plan #16-Preventing Marine Invasive Species
- CWA Core Program Area: 5, 6

#### Task MIS3: Monitor Marine Invasives in the Upper North Shore

The Upper North Shore regional coordinator will organize and train volunteers in the identification of marine invasive species. A minimum of seven monitoring sites will be monitored monthly, with the possibility of expanding the number of locations in FY14. Data are submitted to CZM to be included in the MIMIC database.

- Responsible Parties: Upper North Shore RSP
- Partners: GOMRI, Mass Audubon, SSCW, CZM, Eight Towns and the Great Marsh Committee, and other volunteers.
- Budget: \$0 MBP cash; \$5,100 in-kind contribution from GMRI, Eight Towns and the Great Marsh Committee, MVPC, and volunteers.
- Outcomes/deliverables: Data reports for sampling locations and uploaded to MIMIC website and database, as well as MORIS data provided to CZM.
- Short-term Outcome(s): Improved public education to provide early detection warning to track existing and new marine invasive species
- Intermediate Outcome(s): Better understanding of impacts on local ecology and the distribution mechanisms in the Upper North Shore
- Long-Term Outcome: Reduced or stabilized impact of invasive species on Mass Bays habitats
- Region: Upper North Shore
- CCMP Action Plan #16-Preventing Marine Invasive Species
- CWA Core Program Area: 5, 6

#### ***v. Adapt for projected impacts of climate change (CC)***

##### Task CC1: Evaluate impacts of sea level rise on water resources and develop adaptations on Cape Cod.

The Cape Cod RSP is working to obtain funding for the USGS Water Science Center to conduct a modeling study to evaluate the potential effects of sea level rise on the mid-Cape's groundwater system. Potential effects include changes in stream baseflow, depth to groundwater, and changes in the subsurface saltwater-freshwater interface. Such changes could have significant implications for the Cape's water quality, coastal and freshwater ecosystems, water supply, restoration planning, and land use. The Cape Cod Regional Coordinator and host organization (APCC) will work with partners to evaluate the results of the modeling study and develop appropriate public outreach and public policy measures to help communities adapt to the effects of sea level rise on the Cape's hydrology. The Cape Cod Regional Coordinator will develop outreach and policy products and assist with project management.

- Responsible Parties: Cape Cod RSP
- Partners: Cape Cod Commission, USGS Water Science Center, CRC, TNC
- Budget: \$0 MBP cash; \$80,000 grant from MET (state funds); \$10,000 grant from The Nature Conservancy; \$2500 financial institution donation
- Outcomes/Deliverables: proposed scope of work for 3-year program, literature review of outreach and policy implications, proposals, outline of preliminary outreach products; literature survey of risks and potential adaptation measures.
- Short-term outcomes: Prepare preliminary outreach materials
- Intermediate outcomes: Incorporate findings and tools into 208 plan. Provide public outreach on existing knowledge, while study is being done.
- Long-term outcomes: Build public awareness of the issue to be ready for the results of the study when it's completed in 3 years. . Identify/map potential areas of concern, e.g. on-site septic system failure from groundwater infiltration, public infrastructure placed at risk from modeled changes in groundwater elevations and flow.

- Region: Cape Cod
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

Task CC2: Scituate/Marshfield/Duxbury Sea Level Rise Vulnerability (South Shore).

The South Shore RSP will serve on a technical committee tasked with interpreting sea level rise vulnerability assessments for the towns of Scituate, Marshfield, and Duxbury, and translating the results into actionable goals for these communities. The RSP will also assist with community outreach related to the project results.

- Responsible Parties: South Shore RSP
- Partners: towns, CZM, MAPC
- Budget: \$0 MBP cash; in-kind services by towns; \$1,425 in-kind contribution from NSRWA
- Outcomes/deliverables: Community outreach on vulnerability assessment; information sheet on potential adaptation measures
- Short-term Outcome(s): Increased understanding of areas of greatest vulnerability within these communities
- Intermediate Outcome(s): A plan for reducing impact from sea level rise and related outreach
- Long-term Outcome(s): Adaptation to sea level rise in the most vulnerable areas of the three towns
- Region: South Shore
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

Task CC3: Regional Sea Level Rise Workshop on the South Shore.

The South Shore RSP and the JRWA will partner to conduct a regional sea level rise workshop to discuss the impacts of sea level rise on the South Shore and initiate a discussion of community impacts and current and future adaptation efforts.

- Responsible Parties: South Shore RSP and regional host organization (NSRWA)
- Partners: JRWA, CZM
- Budget: \$0 MBP cash; \$1,350 in-kind services by NSRWA
- Outcomes/deliverables: Regional sea level rise workshop
- Short-term Outcome(s): Improved understanding on sea level rise impacts
- Intermediate Outcome(s): Development of a regional approach to sea level rise adaptation
- Long-term Outcome(s): Adaptation to sea level rise to the greatest extent possible
- Region: South Shore
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

Task CC4: Salem Sound - Adopt a Beach Program

Through the popular and ongoing Adopt a Beach Program, the Salem Sound regional coordinator and host organization provide training to volunteers to collect long-term beach profile data that will be used to document impacts of sea-level rise and storms at Salem Sound beaches and coastal infrastructures.

- Responsible Parties: Salem Sound RSP and regional host organization (SSCW)
- Partners: CZM
- Budget: \$0 MBP cash; \$2,000 in-kind services of volunteers
- Outcomes/deliverables: Graphs of beach profiles at 4 beaches to establish trend analysis and reporting to CZM's Coastal Storm Damage Reporting Program
- Short-term Outcome(s): Improved understanding of climate change impacts on Salem Sound beaches; local stewards engaged and trained in monitoring
- Intermediate Outcome(s): Documentation of coastal changes to natural resources and infrastructure
- Long-term Outcome(s): Actions taken based on documented changes and reporting
- Region: Salem Sound
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

#### Task CC5: City of Salem Climate Vulnerability and Adaptation Planning

The Salem Sound regional coordinator will develop a scope of work for the a climate change vulnerability and adaptation planning study for the city of Salem in coordination with the Salem Planning Department and other stakeholders. The Salem Sound regional coordinator will also serve on the taskforce as the project develops in FY14.

- Responsible Parties: Salem Sound RSP
- Partners: City of Salem; CZM
- Budget: \$0 MBP cash, \$45,000 contribution by CDM Smith, \$15,000 contribution of the City of Salem; \$2,000 in-kind contribution from SSCW
- Outcomes/deliverables: Vulnerability assessment and priorities for adaptation planning
- Short-term Outcome(s): Stakeholders working together to address climate change impacts
- Intermediate Outcome(s): Increased understanding of Salem's vulnerability to climate change impacts; action taken to establish/implement adaptive priorities
- Long-term Outcome(s): Reduced vulnerability of communities in Salem Sound
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

#### Task CC6: North River Flooding in Salem Sound

The Salem Sound regional coordinator will encourage the Cities of Salem and Peabody to continue discussions to reassess plans to address the problem of flooding from the North River. Current plans need to include risk-based planning and watershed-wide stormwater management using climate change scenarios to determine effective flood mitigation strategies.

- Responsible Parties: Salem Sound RSP
- Partners: communities, State Legislators, concerned public; Salem State
- Budget: \$0 MBP cash; \$3,000 cash and in-kind contribution from SSCW and concerned citizen.
- Outcomes/deliverables: Meetings to educate the public and raise awareness; stormwater management BMPs for increased storm events
- Short-term Outcome(s): Discussion and planning moved beyond the "big pipe" strategy.
- Intermediate Outcome(s): Risk-based planning and watershed-wide stormwater management using climate change scenarios to determine flood mitigation actions
- Long-term Outcome(s): Reduced flooding of the North River in Peabody Square and Salem's Commercial and Bridge Streets
- Region: Salem Sound
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

#### Task CC7: Climate Change Lecture Series (Salem Sound)

Salem Maritime National Historic Site and SSCW will co-sponsor a new lecture series on climate change to be held at the National Park Headquarters in Salem.

- Responsible Parties: Salem Sound RSP and regional host organization (SSCW)
- Partners: Salem Maritime National Historic Site
- Budget: \$0 MBP cash; \$1,500 in-kind services (NPS and others)
- Outcomes/deliverables: Lecture series implemented in Fall 2013
- Short-term Outcome(s): Increased public understanding of potential climate change impacts and implications.
- Intermediate Outcome(s): Public support for mitigation and adaptation actions
- Long-term Outcome(s): Mitigation and adaptation actions implemented in Salem Sound
- Region: Salem Sound
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

#### Task CC8: Merrimack River Estuary Hydrodynamic Modeling Proposal

The Upper North Shore regional coordinator will work with stakeholders to initiate a modeling effort to determine riverine and tidal circulation patterns in the Merrimack River Estuary/Plum Island Sound for improved management of anthropogenic response to climate change events. The model will also be used to assist in GMRTF activities to identify circulation patterns affecting tidal flushing in the marsh and sediment transport in the estuary.

- Responsible Parties: Upper North Shore RSP
- Partners: GMRT Hydrodynamic Modeling Subcommittee
- Budget: \$0 MBP cash; \$200,000 from Army Corps of Engineers (anticipated); \$2,100 in-kind contribution of MVPC.
- Outcomes/deliverables: Scope of services and early tasks completed for the development of a hydrodynamic model.
- Short-Term Outcome: Improved understanding of Merrimack River Estuary circulation patterns and implications for its response to climate stressors
- Intermediate Outcome: Selection of modeling protocols and development of scenarios for different stressors
- Long-Term Outcome: Decrease of *Phragmites* in the marsh.
- Region: Upper North Shore
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

#### Task CC9: Great Marsh Sea Level Rise Adaptation Workshop on the Upper North Shore

The Upper North Shore regional coordinator will develop and host the second symposium to inform stakeholders and Great Marsh community officials and volunteer board members on the local threat from sea level rise and potential mitigation measures. This workshop will focus on local threat from sea level rise to natural systems.

- Responsible Parties: Upper North Shore RSP
- Partners: Great Marsh Coalition; Eight Towns and the Great Marsh Committee; Great Marsh communities; The Trustees of Reservations, Essex Country Greenbelt Association, Mass Audubon, DER, MAPC, CZM.
- Budget: \$0 MBP cash; \$12,500 cash and in-kind contribution from non-federal partners and MVPC
- Outcomes/deliverables: A one day outreach workshop displaying community level sea level rise impacts and a one day follow up panel discussion.
- Short-Term Outcome: Great marsh community leaders informed on potential climate impacts on ecosystems
- Intermediate Outcome: Action taken to address potential impacts/vulnerabilities
- Long-Term Outcome: Climate change ready communities
- Region: Upper North Shore
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

#### Task CC10: Climate Change Impacts to Regional Transportation Networks

- Identify and document how projected climate change impacts could affect Merrimack Valley region's transportation services, as a means for calling decision makers' attention to climate change and sea level rise. Starting with the reality that the region's transportation network is extremely vulnerable to flooding, municipal officials will learn about other detrimental environmental impacts from CC that they do not realize, ie; marsh and barrier beach flood buffering, culvert enlargement, dam removal, future coastal land acquisition, shellfish bed losses and contamination, etc. This effort is the first step at engaging them in the CC discussion which at the community and policy level has been extremely difficult thus far. Responsible Parties: Upper North Shore RSP
- Partners: Metropolitan Planning Organization (MPO); DOT and local communities
- Budget: \$0 MBP cash; \$26,440 cash and in-kind contribution from MPO and MVPC
- Outcomes/deliverables: climate change impact areas mapped on region-wide transportation infrastructure; a public workshop to discuss inventory and mapping results.

- Short-term Outcome(s): Impacted areas mapped on region-wide transportation infrastructure
- Intermediate Outcome(s): Development of a public workshop to discuss inventory and mapping results and possible solutions
- Long-term Outcome(s): municipal infrastructure changes implemented
- vi. Outcomes include education of transportation decision makers on potential problem areas, interest in ecological solutions, and long-term redesign for existing problem areas and area avoidance for future designs.
- Region: Upper North Shore
- CCMP Action item: Objective A8 of the 2009-2014 Strategic Plan
- CWA Core Program Area: 4-6

## **D. Budget and Narrative**

### ***Budget Narrative***

#### Assumptions

FY13 funding allocations to MBP is \$512,000.

In addition to the anticipated grant of funds from EPA for FY13, MBP has a surplus of funds from 2012 allocations of approximately \$105,000 (exact amount pending final invoices). The primary source of savings from the FY12 budget is the long absence of a full-time Executive Director. In addition, \$10,000 allocated to the CCMP update were not spent, and the 2013 Research and Planning Grants Program was under-spent by approximately \$15,000.

These funds taken together will allow MBP to increase staff time by 0.2FTE for the Outreach Coordinator, fully fund the Regional Service Providers, begin work to update the CCMP, and continue the Research and Planning Grant Program. Impacts of the nearly 15% reductions in base funding include:

- Extended timeline for the CCMP update, from 1 year to a phased approach over approximately 3 years.
- Deletion of the proposed increase in Research and Planning Grant and Pilot Demonstration Grant funds for local projects, a reduction in planned spending by approximately \$53,000, and a loss of leveraged match on that funding.
- Deletion of planned supplemental funding to the Regional Service Providers to offset the costs of hosting two regional meetings. The meetings have been reduced in size and duration to avoid over-burdening partner organizations.

#### Proposed Combined (base allocation plus carryover) Spending

##### *Salaries and Fringe*

Salaries are for three staff: Executive Director (1.0FTE), Staff Scientist (0.5FTE), and Outreach/Boston Harbor Coordinator (0.8FTE). Increasing the Outreach Coordinator/Metro Boston Regional Coordinator time by one day per week will enable us to respond to recommendation in our 2012 Program Evaluation to develop an outreach plan. These include annual STEP (union-negotiated) increases for MA FY2014. Fringe rate is 27.6% of salaries.

##### *Contractual - sub-grants*

- Regional Service Providers. Similar to past years, \$61,000 is allocated to each of the four RSPs, to come from the FY13 base grant monies. MBP has worked closely with its regional partners to identify sources of match for the program. These funding sources are linked directly to the implementation of the CCMP as well as the 2009-2014 Strategic Plan. Each of our RSPs has identified a substantial cash and in-kind match as detailed above. Funding sources from the RSPs include revenue from membership, state and local grants, local donors, etc., as well as the work of

staff within these organizations on projects specifically related to our estuarine restoration and conservation efforts.

- Research & Planning Grants. The proposed budget funds a fourth year of Research and Planning (R&P) Grants. Total 2014 R&P grant funding is \$100,000, maintaining past years' allocation; \$14,588 will come from the FY13 base allocation and \$85,412 from FY12 carryover. The Research and Planning Grant Program requires a minimum 25% match of the total project cost (or 33.3% of the MBP contribution)

#### *Contractual – subcontracts*

- CCMP update. MBP is committed to moving forward to update our CCMP, as recommended in our 2012 Program Evaluation. \$10,000 is budgeted from carryover funds for the Urban Harbors Institute, through an Interagency Service Agreement with UMass Boston, to conduct a literature review and gap analysis of studies, plans, and reports for any of the 47 embayments encompassed by Mass Bays (as identified in the 2012 Delineation and Assessment Report). This work, along with regional meetings (estimated 35 people for larger meetings of “friends of MBP/RSP” and 15 people at each focus group meeting of those who either should be more engaged in MBP efforts or can provide a unique perspective during the update effort) and the 2012 Delineation and Assessment Study, make up Phase 1 of the CCMP update. The FY2013 Proposed Workplan describes the CCMP update in more detail.

#### *Travel*

- Director travel: Annual National Estuary Program (NEP) Spring meeting in DC (required by EPA) one public meeting in each MBP region regarding the CCMP, two meetings at each RSP for CCMP and workplan development, and three Region 1 NEP meetings (in Portsmouth, Narragansett, and Durham).
- Outreach/Boston Harbor Coordinator travel: Three Region 1 NEP meetings, and multiple trips within the region.
- Staff Scientist travel: One public meeting in each MBP region regarding the CCMP, and three Region 1 NEP meetings.
- Program travel and Professional Development: The National Estuary Program each year hosts a 4-day Fall Technical Training workshop, to be held this year in Mobile AL. Depending on the agenda, the Executive Director and/or Outreach Coordinator will attend this meeting. Alternatively, the ED, Outreach Coordinator, and Staff Scientist will take advantage of other recurring professional development opportunities offered by EPA, NOAA (especially through the National Estuarine Research Reserves), and the Commonwealth.
- CCMP update meeting refreshments: The budget includes a modest allocation of \$3.50pp for regional, public meetings to be held in the course of the CCMP scoping process, a total of \$875.

#### *Other Expenses*

- Shared Agency Expenses. MBP has traditionally provided \$5000 to \$7000 to our host agency, MACZM, to offset costs of services including program-level fiscal management, computers and phones, day-to-day printing capacity, and internet access. The current budget provides \$4000 to MACZM for these shared expenses from the FY13 grant. Note the difference between this and Indirect Charges, below.
- Printing, Computer Services. Printing expenses (\$575) are anticipated to implement the communications and outreach plan, under which we anticipate publishing materials for distribution to target audiences. Monies for Computer Services (\$400) will be spent to support an online, electronic newsletter service contract, a subscription for online survey tools, and internet-based meeting platform subscription. These funds are from the FY12 carryover.

#### *Indirect Charges*

Indirect charges (11.31 percent on salaries and subcontracts) allocate monies directly to the Commonwealth, to support state-level administrative and overhead costs.

### Overall Program Budget

<b>Proposed Expenditures (FFY13 Grant)</b>	
<b>Personnel (incl. Massachusetts STEP increase)</b>	
Executive Director, 1.0FTE	\$ 83,279
Outreach/Boston Harbor Regional Coordinator, 0.8FTE	\$ 61,930
Staff Scientist, 0.5FTE	\$ 34,340
<b>subtotal, salaries</b>	<b>\$ 179,549</b>
<b>Fringe</b>	
Fringe @ 27.6% (salaries)	\$ 49,556
<b>subtotal, salaries &amp; fringe</b>	<b>\$ 229,105</b>
<b>Contractual - Sub-grants</b>	
2014 Regional Service Providers (4 @ \$61,000; see detail budgets below)	\$ 244,000
2014 Research and Planning Grants	\$ 14,588
<b>subtotal, subgrants</b>	<b>\$ 258,588</b>
<b>Other Expenses</b>	
shared agency expenses	\$ 4,000
<b>subtotal, other expenses</b>	<b>\$ 4,000</b>
<b>Indirect</b>	
Indirect Charges @ 11.31% (salaries and subcontracts)	\$ 20,307
<b>Total Request, FY13</b>	<b>\$ 512,000</b>
<b>Matching Cash &amp; In-kind</b>	
Direct Match from RSPs (see budgets below)	\$ 357,148
Direct Match from R&P Grant recipients (25% required)	\$ 25,000
Direct Project Match (Tasks CCI, EH18)	\$ 142,100
<b>Total Match, FY 13</b>	<b>\$524,248</b>
<b>Carryover expenditures (unspent from FFY12)</b>	
<b>Travel (see detail, budget page 2)</b>	\$ 7,553
<b>subtotal, travel</b>	<b>\$ 7,553</b>
<b>Contractual – Subcontracts</b>	
CCMP Update - literature review & gap analysis	\$ 10,000
<b>subtotal, subcontracts</b>	<b>\$ 10,000</b>
<b>Contractual - Sub-grants</b>	
2014 Research and Planning Grants	\$ 85,412
<b>subtotal, subgrants</b>	<b>\$ 85,412</b>
<b>Other Expenses</b>	
printing (100pp @ \$0.05/p x 115 copies)	\$ 575
computer services	\$ 400
<b>subtotal, other expenses</b>	<b>\$ 975</b>
<b>Indirect</b>	
Indirect Charges @ 11.31% (salaries and subcontracts)	\$1,131
<b>Total Carryover to FY13</b>	<b>\$ 105,071</b>
<b>Total Anticipated Expenditures</b>	<b>\$617,071</b>

<b>Travel Detail</b>					
<b>destination (# travelers)</b>	<b>airfare</b>	<b>meals</b>	<b>ground transportation</b>	<b>lodging</b>	<b>other</b> (CCMP mtg refreshments; national mtg fees)
NEP national meetings:					
Spring (Washington DC), 4d (1)	250	70	100	800	600
NEP/NERR/other Professional Development	1000	140	200	1000	1200
regional public meetings for CCMP (2)			1 car @ \$.45/mi		
Haverhill, 1d	0	20	36		123
Salem, 1d	0	20	18		123
Boston, 1d	0	20	0		123
Norwell, 1d	0	20	22.5		123
Barnstable, 1d	0	20	72		123
Regional meetings for CCMP and workplan development (1)			1 car @ \$.45/mi		
Haverhill x2	0	20	72		52.5
Salem x2	0	20	36		52.5
Boston x2	0	20	0		52.5
Norwell x2	0	20	45		52.5
Barnstable x2	0	20	144		52.5
Regional NEP meetings (3)			1 car @ \$.45/mi		
Portland ME	0	30	99	351	
Narragansett RI	0	30	72	0	
Durham NH	0	30	60	0	
<b>subtotals</b>	<b>\$ 1,250</b>	<b>\$ 500</b>	<b>\$ 977</b>	<b>\$ 2,151</b>	<b>\$ 2,675</b>
<b>Total Travel</b>	<b>\$ 7,553</b>				

**Regional Service Provider Budgets**

Cape Cod Region: Association for the Preservation of Cape Cod

<b>Cost Category</b>		<b>Request</b>	<b>Match</b>	<b>Total Cost</b>
<b>Salaries</b>	<b>Hours</b>			
Primary Regional Coordinator	1560	\$61,000	\$12,393	\$73,393
<b>Other Direct Costs</b>		\$0	\$2,500	\$2,500
<b>Indirect charges 22% (salaries)</b>		\$0	\$16,146	\$16,146
<b>Totals</b>		<b>\$61,000</b>	<b>\$31,039</b>	<b>\$92,039</b>

South Shore Region: North and South River Watershed Association

<b>Cost Category</b>		<b>Request</b>	<b>Match</b>	<b>Total Cost</b>
<b>Salaries</b>	<b>Hours</b>			
Primary Regional Coordinator (NSRWA Scientist)	2080	\$ 41,484	\$ 16,132	\$ 57,616
Secondary Regional Coordinator (NSRWA ED)	200	\$ 5,494	\$ 2,136	\$ 7,630
<b>Other Direct Costs</b>		\$ 1,804	\$ 700	\$ 2,500
<b>Indirect charges 25% (salaries)</b>		\$ 11,744	\$ 4,567	\$ 16,312
<b>Totals</b>		<b>\$ 60,526</b>	<b>\$ 23,535</b>	<b>\$ 84,058</b>

Salem Sound Region: Salem Sound Coastwatch

<b>Cost Category</b>		<b>Request</b>	<b>Match</b>	<b>Total Cost</b>
<b>Salaries</b>	<b>Hours</b>			
Primary Regional Coordinator	1642	\$ 61,000	\$ 7,903	\$ 68,903
<b>Other Direct Costs</b>		\$ -	\$ 550	\$ 550
<b>Indirect charges 18.5% (salaries)</b>		\$ -	\$ 12,747	\$ 12,747
<b>Totals</b>		<b>\$ 61,000</b>	<b>\$ 21,200</b>	<b>\$ 82,200</b>

Upper North Shore Region: Merrimack Valley Regional Planning Commission

<b>Cost Category</b>		<b>Request</b>	<b>Match</b>	<b>Total Cost</b>
<b>Salaries</b>	<b>Hours</b>			
Primary Regional Coordinator (MVPC Scientist)	1460	\$ 54,020	\$ 98,432	\$ 152,452
Secondary Regional Coordinator (MVPC Environmental Programs Director)	40	\$ 1,840	\$ 1,968	\$ 3,808
<b>Other Direct Costs</b>		\$ 2,740		\$ 2,740
<b>Indirect charges 120% (salaries)</b>		\$ -	\$ 182,942	\$ 182,942
<b>Totals</b>		<b>60,750</b>	<b>\$ 281,374</b>	<b>\$ 337,194</b>

## Travel expenditures, FY2012

Date(s) of Travel	Person Traveling	Location	Purpose of Travel	Amount
8/9/12, 9/24/2012	Acting Director	Revere MA	restoration site visit	\$13.30
8/28/2012 8/29/2012 9/5/2012	Staff Scientist	Barnstable MA Norwell MA Danvers MA	Research and Planning Grant Info Session	\$130.05
9/27/2012	Acting Director	Newburyport MA	climate change adaptation workshop, Parker River NWR	\$34.00
10/2/2012	Acting Director	Gloucester MA	meeting with Dept of Marine Fisheries staff	\$17.80
10/18/2012	Staff Scientist	Plymouth MA	meeting with Dept of Marine Fisheries staff	\$40.05
10/20 to 10/24/12	Acting Director	Tampa FL	Restore America's Estuaries, ANEP annual meetings	\$1,326.24
11/7/2012	Acting Director	Revere MA	field work	\$10.40
11/8/2012	Acting Director	Ipswich MA	sea level rise symposium	\$32.65
11/16/2012	Acting Director	Bourne MA	Cape Cod Harbormasters' Association meeting	\$52.47
11/20/2012	Acting Director	Saugus MA	field visit	\$12.22
12/18/2012	Acting Director	Barnstable MA	site visit	\$63.00
1/22/2013	Executive Director	Norwell & Wareham MA	South Shore region, Buzzards Bay NEP site visits	\$54.00
1/24/2013	Executive Director	Salem & Haverhill MA	Salem Sound and Upper North Shore region site visits	\$39.60
1/25/2013	Executive Director	Barnstable MA	Cape Cod region site visit	\$62.55
2/14/2013	Executive Director, Staff Scientist, and Outreach/Boston Harbor RC	Milton MA	Regional Coordinator meeting	\$98.60
2/25 to 2/28/13	Executive Director	Washington DC	NEP annual meeting	\$1,334.82
3/11/2013	Outreach/Boston Harbor Regional Coordinator	Roxbury MA	professional development workshop	\$84.50
3/27/2013	Outreach/Boston Harbor RC	Newbury MA	Plum Island public meeting	\$35.80
3/28/2013	Outreach/Boston Harbor RC	Hingham MA	shellfish seminar	\$20.15
4/12/2013	Executive Director	Boston MA	professional development workshop	\$100.00
4/22 to 4/25/13	Staff Scientist	Falmouth MA	NERRS SET training	\$191.70
5/17/2013	Executive Director & Outreach/Boston Harbor RC	Wells ME	professional development workshop	\$79.65
6/4/2013	Executive Director and Staff Scientist	Newburyport MA	Upper North Shore region CCMP meeting	\$59.85
6/7/2013	Executive Director and Staff Scientist	Salem MA	Salem Sound region CCMP meeting	\$21.15
6/13 to 6/14/13	Executive Director	Hyannis MA	Cape Cod Coastal Conference	\$99.15
			<b>Total</b>	<b>\$3,657.05</b>