

**Clean Water Act Section 604(b)
Water Quality Management Planning Program
Project Summaries: Federal Fiscal Years 1991-2021**



Commonwealth of Massachusetts
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August 2023



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**Watershed Planning Program
Division of Watershed Management, Bureau of Water Resources
Massachusetts Department of Environmental Protection**

August 2023



Suggested Citation

MassDEP. 2023. Clean Water Act Section 604(b) Water Quality Management Planning Program Project Summaries: Federal Fiscal Years 1991-2021. CN 586.0, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program. Worcester, MA.

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Massachusetts Department of Environmental Protection

MassDEP's mission is to protect and enhance the Commonwealth's natural resources – air, water, and land – to provide for the health, safety, and welfare of all people, and to ensure a clean and safe environment for future generations. In carrying out this mission MassDEP commits to address and advance environmental justice and equity for all people of the Commonwealth; provide meaningful, inclusive opportunities for people to participate in agency decisions that affect their lives; and ensure a diverse workforce that reflects the communities we serve.

Watershed Planning Program

The Watershed Planning Program is a statewide program in the Division of Watershed Management, Bureau of Water Resources, at MassDEP. We are stewards of the water resources of Massachusetts. Together with other state environmental agencies, we share in the duty and responsibility to protect, enhance, and restore the quality and value of the waters of the Commonwealth. We are guided by the federal Clean Water Act and work to secure the environmental, recreational, and public health benefits of clean water for the residents of Massachusetts. The Watershed Planning Program is organized into five Sections that each have a different technical focus under the Clean Water Act: (1) Surface Water Quality Standards; (2) Surface Water Quality Monitoring; (3) Data Management and Water Quality Assessment; (4) Total Maximum Daily Load; and (5) Nonpoint Source Pollution.

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References to trade names, commercial products, manufacturers, or distributors in this report constituted neither endorsement nor recommendation by MassDEP.

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Introduction

This report presents brief summaries of the *one hundred and sixty-six (166)* projects funded under section (§) 604(b) of the Clean Water Act in Federal Fiscal Years 1991 to 2021, including 13 projects funded under the 2009 American Recovery & Reinvestment Act. The focus of these projects is watershed or sub-watershed based nonpoint source (NPS) assessment activities that support work planned by the Massachusetts Department of Environmental Protection (MassDEP or Department) in priority basins, the Department's Total Maximum Daily Load (TMDL) development efforts, the Department's Massachusetts Estuaries Program, water supply source protection planning projects, activities identified in EEA's watershed action plans, or other suitable water quality assessment/planning projects identified by regional planning agencies or local communities. Projects that support MassDEP's assessment and planning priorities are selected for funding each year. Annual funding for these §604(b) projects is derived from a percentage of the State's Clean Water Act State Revolving Fund award from EPA. Approximately \$218,000 were available for projects in 2021.

NPS pollution is caused by diffuse sources that are not regulated and are normally associated with precipitation and stormwater runoff from the land or infiltration into the soil. Common types of NPS pollution include phosphorus and nitrogen from lawn and garden fertilizers, bacteria from pet waste and waterfowl, oil and grease from parking lots and roadways, and sediment from construction activities and soil erosion.

Since 1991, the Department has funded *one hundred and sixty-six (166) projects totaling \$6,979,524 of federal funding in twenty-six (26) of the Commonwealth's major basins (see Table 1 below)*. Activities performed include: assessment of NPS pollution in urban and rural watersheds, collection of water quality data from Massachusetts estuaries and coastal ponds, nutrient loading to coastal ponds, estuarine and freshwater shoreline surveys, assessments of stormwater management systems, assessments of unpaved rural roads, priority land acquisition identification and planning, development of watershed-based plans (WBPs) and healthy WBPs to improve waterbody health, and development of green infrastructure and low impact development.

In 2009, as part of the federal American Recovery and Reinvestment Act (ARRA) of 2009 and §604(b) of the U.S. Clean Water Act, Massachusetts awarded \$750,266 in grants to 11 projects to help conduct watershed NPS pollution assessment and planning work to address water quality impairments. Two additional projects totaling \$140,000 were also developed with University of Massachusetts (UMASS) Amherst through the ARRA funding to improve the Commonwealth's wetland and water quality monitoring programs.

Qualified proposals are selected on a competitive basis and grant recipients include municipalities and regional planning commissions. These projects are key to the Department's overall water resource protection efforts in threatened water bodies across the Commonwealth. The infusion of federal stimulus funding into this program in 2009 allowed the Department to greatly expand the development of plans to help remediate water quality concerns in more watersheds.

Copies of the final reports for selected projects are available upon request.

Table 1: Number of 604(b) Projects and Allocation of Grant Funds by Watershed (1991-2021)

Basin	Number of Projects	Federal Dollars Allocated
Blackstone	1	49,789
Boston Harbor (proper)	0	-
Buzzards Bay	6	269,914
Cape Cod	25	1,097,842
Charles	12	439,990
Chicopee	13	541,011
Concord (SuAsCo)	2	92,500
Connecticut	21	950,004
Deerfield	12	546,161
Farmington	4	131,569
French	0	-
Housatonic	12	415,451
Hudson (Hoosic, Kinderhook, BashBish)	7	304,533
Ipswich	3	211,000
Islands	11	297,277
Merrimack	8	312,735
Millers	8	293,703
Mount Hope Bay	4	249,400
Mystic	5	222,233
Narragansett Bay	4	133,654
Nashua	5	222,233
Neponset	7	235,858
North Coastal	7	210,341
Parker	3	108,175
Quinebaug	2	53,050
Shawsheen	0	-
South Coastal	6	303,103
Statewide	4	188,792
Taunton	7	268,094
Ten Mile	1	36,025
Westfield	8	266,904
Weymouth & Weir	1	37,000
Total	166	6,979,524

Note: Dollar amounts shown are federal grant funds and do not include non-federal matching funds. Funding awarded to projects across multiple basins is represented in each basin and total federal dollars allocated are counted multiple times. However, the total number of projects and total funding amounts count each project only once.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-01

Control of Hazardous Material Users to Protect Groundwater Quality on Cape Cod

Grantee: Barnstable County Health and Environmental Department

Watershed: Cape Cod

Description: This project will provide technical assistance to the communities of Chatham, Eastham, and Orleans for implementation of a local initiative to regulate hazardous material users (HMU's) to prevent groundwater deterioration. Tasks include:

- 1) preparation of draft model regulation to control toxic and hazardous materials;
- 2) conduct inventory, registration, and assessment of HMU's;
- 3) train local officials in site inspections of HMU's;
- 4) determine locations of all residential and commercial underground storage tanks located in the study area; and
- 5) reassess potential contamination sources to determine if more comprehensive regulations are necessary

Cost: \$20,531

Funding: \$20,531 – U.S. Environmental Protection Agency

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-02

Monomoy Lens Regional Water Protection Project

Grantee: Cape Cod Commission

Watershed: Cape Cod

Description: This project will provide technical assistance to the Monomoy Lens Communities of Dennis, Harwich, Brewster, Orleans, Chatham and Yarmouth for the development of a comprehensive regional groundwater protection plan. Tasks include:

- 1) develop Monomoy Lens Geographic Information System (GIS);
- 2) prepare Monomoy Lens Groundwater Protection Plan; and
- 3) establish a Monomoy Lens Groundwater Protection Committee.

Cost: \$50,825

Funding: \$15,000 – U.S. Environmental Protection Agency
\$35,825 – Cape Cod Commission

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-03

Quaboag River Water Supply Protection Project

Grantee: Central Massachusetts Regional Planning Commission

Watershed: Chicopee

Description: The purpose of this project is to provide technical assistance to the communities of East Brookfield, Brookfield, West Brookfield, and Warren for development of regional water supply protection measures to safeguard their public supplies. Tasks include:

- 1) establishment of regional task force to oversee the planning process;
- 2) identification of major potential sources of contamination to the public water supplies;
- 3) an evaluation and identification of development controls; and
- 4) development of recommendations for proposed new land use regulations in each community.

Cost: \$25,000

Funding: \$25,000 – U.S. Environmental Protection Agency

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-04

Franklin County Water Resources Protection Planning Project

Associated Projects: 92-03

Grantee: Franklin County Commission

Watershed: Deerfield, Millers, Connecticut, and Chicopee

Description: This project will provide technical assistance and support to selected communities in Franklin County for comprehensive water resource protection planning, to develop contingency plans for public groundwater supplies, develop regional water supply protection measures, and develop and implement an education program for the banking and real estate community. Tasks include:

- 1) establish water resource protection committees;
- 2) prepare parcel-level risk assessment mapping for public water supplies in Greenfield, Colrain, Bernardston and Orange, and for private water supplies in Leyden and Colrain;
- 3) develop and implement regulations and bylaws to protect water supplies in the communities of Greenfield, Colrain, Bernardston, Orange, and Leyden;
- 4) provide staffing to the Western Valley Water Supply Committee;
- 5) develop contingency plans for the public water supplies in the communities of Sunderland, South Deerfield, Old Deerfield, Whately, Orange, and Buckland/Shelburne; and
- 6) develop and conduct workshops for banks, realtors, and appraisers.

Cost: \$39,000

Funding: \$39,000 – U.S. Environmental Protection Agency

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-05

Merrimack River Water Resources Protection Project

Investigator: Merrimack Valley Planning Commission

Watershed: Merrimack

Description: The purpose of this project is to provide technical assistance to the communities of Merrimack, Newburyport, and West Newbury to enhance local water supply protection and management and provide more effective water supply protection at the local and regional levels. Tasks include:

- 1) formation of a permanent water resource protection committee;
- 2) inventory and mapping of water supply resources and potential sources of contamination;
- 3) assessment of contamination risks;
- 4) development and implementation of local water supply protection strategies; and
- 5) organization of a public education meeting.

Cost: \$24,500

Funding: \$19,500 – U.S. Environmental Protection Agency
\$5,000 – Merrimack Valley Planning Commission

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-06

Charles River Southwest Regional Water Supply Protection Planning Project

Grantee: Metropolitan Area Planning Council

Watershed: Charles

Description: This project will provide technical assistance to the communities of Bellingham, Dover, Franklin, Holliston, Medway, Milford, Millis, Sherborn, and Wrentham in the Charles River Basin to develop and implement local and regional water supply protection measures. Tasks include:

- 1) establish a Southwest Advisory Water Supply Protection Committee;
- 2) inventory and map available hydrogeologic data for delineation of aquifer boundaries and/or zones of contribution to public supply wells and watersheds of municipal reservoirs;
- 3) inventory and map contamination sources and land use;
- 4) evaluate existing groundwater protection measures;
- 5) recommend groundwater protection measures for local implementation; and
- 6) implement an outreach program.

Cost: \$39,000

Funding: \$39,000 – U.S. Environmental Protection Agency

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-07

Upper Naukeag Lake Watershed Protection Study

Grantee: Montachusett Regional Planning Commission

Watershed: Millers

Description: The purpose of this project is to provide technical assistance to the communities of Ashburnham and Winchendon in the Upper Naukeag Lake watershed to improve the level of protection for the area through the use of conservation restrictions, easements, land acquisition and zoning changes and to develop best watershed management practices for implementation. Tasks include:

- 1) formation of a task force;
- 2) identification of major potential groundwater, and surface water contamination sources in the watershed; and
- 3) evaluation of the adequacy of local water resource protection regulations and bylaws.

Cost: \$12,000

Funding: \$10,000 – U.S. Environmental Protection Agency
\$2,000 – Montachusett Regional Planning Commission

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-08

Northern Middlesex County Water Resources Protection Project

Grantee: Northern Middlesex Council of Governments

Watershed: Merrimack

Description: The purpose of the project is to provide technical assistance to the communities of Chelmsford, Dracut, Tyngsborough, and Westford to establish permanent water resource protection committees and to pilot and support on-going community-based water resource education, planning, protection, and management. Tasks include:

- 1) facilitate the establishment of permanent water resource protection committees;
- 2) inventory and map water supply resources and potential sources of contamination;
- 3) assess contamination risks;
- 4) develop and implement local water supply protection strategies; and
- 5) organize and present a public education meeting.

Cost: \$24,500

Funding: \$19,500 – U.S. Environmental Protection Agency
\$5,000 – Northern Middlesex Council of Governments

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-09

Upper Taunton River Basin Water Supply Protection and Development

Grantee: Old Colony Planning Council

Watershed: Taunton

Description: This project will provide assistance to communities within the Silver Lake watershed and other areas to conduct contingency planning and resolution of short-term to mid-term problems for the Brockton/Whitman Water Supply. Tasks include:

- 1) provide technical assistance to planning boards and other regulatory bodies in Halifax, Plympton, Kingston, and Pembroke on adoption of new or strengthened water supply protection regulations;
- 2) prepare informational materials on underground storage tanks;
- 3) assist the town of Avon to strengthen existing regulations to meet the requirements for new groundwater sources for regulation of handlers of hazardous materials;
- 4) assist towns of Hanson, East Bridgewater, and Halifax in establishing a Drinking Water Protection District;
- 5) conduct contingency planning and resolution of water supply concerns in the Brockton/Whitman Water Supply; and
- 6) conduct public information and awareness activities.

Cost: \$20,000

Funding: \$20,000 – U.S. Environmental Protection Agency

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-10

Pioneer Valley Water Resources Protection Project

Grantee: Pioneer Valley Planning Commission

Watershed: Westfield

Description: The purpose of this project is to provide technical assistance to Holyoke and Southamptton for the development of a coordinated approach to inventory and regulate underground storage tanks (USTs) to enhance the Barnes Aquifer protection efforts. The project will also provide technical assistance to the communities of Blandford, Granville, and Russell for development of regional watershed protection mechanisms. Tasks include:

- 1) provide technical assistance to the Barnes Aquifer Protection Advisory Committee (BAPAC) by developing and implementing UST bylaws, and developing a UST inventory and database for Geographic Information System;
- 2) provide technical assistance to Blandford, Granville, and Russel in developing and designing a regional water supply protection strategy, and developing public education material;
- 3) provide technical assistance to the Western Valley Water Protection Committee; and
- 4) provide technical assistance to the Eastern Valley Water Protection Committee.

Cost: \$39,000

Funding: \$39,000 – U.S. Environmental Protection Agency

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1991
SECTION 604(b) PROJECT 91-11

Mattapoissett River Water Supply Protection Project

Grantee: Southeastern Regional Planning and Economic Development District

Watershed: Taunton

Description: The objective of this project is to provide technical assistance to the communities of the Mattapoissett River Water Supply Protection Advisory Committee of Fairhaven, Marion, Mattapoissett, Rochester, and Acushnet and to the Lakeville Ponds Protection Committee communities of Taunton, New Bedford, Raynham, Dighton, Berkley, Acushnet, Dartmouth, Fairhaven, Freetown, Lakeville, Middleborough, and Bridgewater for water supply protection. Tasks include:

- 1) organize a subcommittee of the Mattapoissett River Water Supply Protection Advisory Committee, develop materials for formation of water supply protection district and conduct presentations at public meetings; and
- 2) provide technical assistance and develop bylaws for the Lakeville Ponds Protection Committee.

Cost: \$35,000

Funding: \$35,000 – U.S. Environmental Protection Agency

Duration: 1992-1993

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-01

Cape Cod Small Volume Well Prioritization Project

Grantee: Cape Cod Commission

Watershed: Cape Cod

Description: This project will develop a watershed protection plan for targeted water supply districts and develop an enforcement program for local officials for water resource protection planning. Tasks include:

- 1) conduct a comprehensive survey locating non-community and non-transient/non-community water supplies;
- 2) evaluate and compare a variety of approaches for delineating the wellhead protection zones of small volume wells;
- 3) assess land use around each well to determine existing vulnerability; and
- 4) develop an education and training program.

Cost: \$19,804

Funding: \$19,804 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-02

Fitchburg Watershed Planning Project

Grantee: City of Fitchburg

Watershed: Nashua

Description: This project will provide technical support to local officials in the communities of Fitchburg, Ashby, Hubbardston, Princeton, and Westminster to facilitate and streamline enforcement of water supply protection provisions. Tasks include:

- 1) the establishment of a Water Resource Committee(s) to provide direction and address water protection issues;
- 2) development of intermunicipal agreements regarding notification of sale of watershed land and transfer of purchase rights;
- 3) delineation of watershed boundary information;
- 4) identification of land ownership and parcel boundaries in the watershed;
- 5) identification of potential hazards to water quality; and
- 6) the development of a critical area acquisition list.

Cost: \$20,000

Funding: \$20,000 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-03

Franklin County Water Resources Protection Planning Project

Associated Projects: 91-04

Grantee: Franklin County Commission

Watershed: Deerfield, Millers, Connecticut, and Chicopee

Description: The purpose of this project is to provide technical assistance and education to communities and small water suppliers in Franklin County. Tasks include:

- 1) the establishment of water resource protection committees with representatives from town boards, water districts, and interested citizens in the towns of Ashfield and Shelburne;
- 2) a comprehensive education and support program to small water suppliers for compliance with the Safe Drinking Water Act;
- 3) development of a Watershed Resource Protection Plan for the South Deerfield Water Supply District;
- 4) development of strategies for enforcing state and local laws relating to water resource protection; and
- 5) assistance to communities pursuing water resource protection strategies not participating in this project.

Cost: \$45,000

Funding: \$39,000 – U.S. Environmental Protection Agency
\$5,000 – Franklin County Commission
\$1,000 – South Deerfield Water Supply District

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-04

Martha's Vineyard Water Resources Protection Planning Project

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will provide technical assistance and education to the communities and small water suppliers of Vineyard Haven, Edgartown, West Tisbury, Tisbury, and Oak Bluffs and develop resource protection and land use evaluation plans for regional public water supply resources. Tasks include:

- 1) establish a permanent Water Resource Protection Committee with appointed representation from boards of health, water commission, Martha's Vineyard Water Supply Protection District, Water Superintendents, non-community small water suppliers, and the Martha's Vineyard Commission;
- 2) assist Martha's Vineyard communities in coordinating their efforts to protect drinking water sources through land use evaluation by mapping major potential groundwater contamination sources in Wellhead Protection Areas;
- 3) develop a contingency plan for the provision of alternative drinking water supplies for each public water system in the event of contamination or other emergency; and
- 4) coordinate public education efforts by conducting workshops.

Cost: \$25,000

Funding: \$25,000 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-05

Merrimack Valley Regional Water Supply Protection Project

Grantee: Merrimack Valley Planning Commission

Watershed: Merrimack, Parker, and North Coastal

Description: The objective of this project is to provide technical assistance and support to the communities of Newbury, Rowley, and Salisbury and to develop an enforcement program for local officials for comprehensive water resource protection planning. Tasks include:

- 1) establish a permanent water resource protection committee consisting of appointed representation from key local boards and interested citizens from participating communities to promote responsible water resource education, planning, and protection at the local level;
- 2) identify and map key water supply resources and potential sources of contamination;
- 3) assess pollution threats to each water supply;
- 4) develop and implement local water supply protection measures; and
- 5) conduct workshops on water supply protection issues.

Cost: \$24,645

Funding: \$19,645 – U.S. Environmental Protection Agency
\$5,000 – Merrimack Valley Planning Commission

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-06

Ipswich and North Coastal River Basins Water Resources Protection Planning Project

Grantee: Metropolitan Area Planning Council

Watershed: Ipswich and North Coastal

Description: This project will provide technical assistance and support to the communities of Danvers, Gloucester, Middleton, Peabody, Rockport, and Topsfield to develop a regional water supply protection plan for groundwater and surface water sources. Tasks include:

- 1) establishment of permanent Water Resources Protection Committees with appointed representation from town boards, water districts, conservation commissions, and interested citizens from participating communities;
- 2) compilation of all available hydrogeologic data useful for delineation of aquifer boundaries and/or zones of contribution to public supply wells and watersheds of municipal reservoirs;
- 3) an inventory of contamination sources and land use;
- 4) an evaluation of existing local water supply protection measures; and
- 5) recommendations for new or amended water supply protection measures.

Cost: \$35,000

Funding: \$35,000 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-07

Montachusett Water Resources Protection Planning Project

Grantee: Montachusett Regional Planning Commission

Watershed: Millers

Description: The purpose of this project is to provide technical assistance and education to selected communities and water supplies to facilitate and streamline enforcement of water supply protection provisions and develop recommendations for new regulations as necessary and develop a Watershed Resource Protection Plan for Ashburnham and Winchendon. Tasks include:

- 1) develop a Watershed Resource Protection Plan for the Ashburnham and Winchendon Joint Water Authority;
- 2) assess risks and develop best management plans;
- 3) inventory and map all open space under public control and direct efforts to obtain all agreements with land owners; and
- 4) conduct education and support program for small water suppliers for compliance with the Safe Drinking Water Act.

Cost: \$18,203

Funding: \$18,203 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-08

Pioneer Valley Water Resources Protection Planning Project

Grantee: Pioneer Valley Planning Commission

Watershed: Westfield, Connecticut, and Chicopee

Description: This project will provide technical assistance and education to communities and small water suppliers in the Pioneer Valley of Massachusetts, develop a Watershed Protection Plan for targeted Water Supply Districts, and develop an enforcement program for local officials for comprehensive water resource protection planning. Tasks include:

- 1) establishment of an Intermunicipal Watershed Protection Advisory Committee;
- 2) Geographic Information System (GIS) mapping of land use, underground storage tanks, and other potential contamination sources in selected communities;
- 3) development of public education materials, such as fact sheets and maps;
- 4) technical support to the Barnes Aquifer Protection Advisory Committee and the Eastern Valley Water Protection Committee;
- 5) development of an education and support program for small water suppliers for compliance with the Safe Drinking Water Act; and
- 6) GIS mapping of small public water supply systems.

Cost: \$39,000

Funding: \$39,000 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-09

Small Public Water Supplies Planning and Protection Project

Grantee: Rural Housing Improvements Rural Community Assistance Program

Watershed: Hoosic, Housatonic, Deerfield, Westfield, Farmington, and Connecticut

Description: This project will provide technical assistance, training, and support to communities in Central and Western Massachusetts, develop a watershed protection plan for targeted Water Supply Districts, and assist local officials in comprehensive water resource protection planning. Tasks include:

- 1) deliver a comprehensive education and support program to small water supply systems;
- 2) coordinate and conduct a workshop for small water suppliers to facilitate compliance with the Safe Drinking Water Act; and
- 3) organize "teams" and use team approach to deal with water supply problems.

Cost: \$13,888

Funding: \$13,888 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1992
SECTION 604(b) PROJECT 92-10

Taunton River Basin Water Resources Protection Planning Project

Grantee: Southeastern Regional Planning and Economic Development District

Watershed: Taunton

Description: The objective of this project is to provide technical assistance and education to communities and water suppliers in the targeted Water Supply Districts and develop an enforcement program for local officials for comprehensive Water Resource Protection Planning. Tasks include:

- 1) establishment of a permanent Water Resource Committee to address water resources protection issues in the Palmer River watershed, Warren Upper Reservoir, and Lower Warren Reservoir areas (in Rehoboth and Swansea, respectively);
- 2) in conjunction with the Assawompset Ponds Protection Committee revise existing water resources protection bylaws; and
- 3) provide administrative support and technical assistance to the Mattapoisett River Valley Water Supply Protection Advisory Committee and propose a model sanitary code.

Cost: \$37,000

Funding: \$37,000 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1993
SECTION 604(b) PROJECT 93-01

*Technical Assistance to Community and Non-Transient Non-Community (NTNC) Water
Suppliers in Preparing Source Protection Plans*

Grantee: Berkshire County Regional Planning Commission

Watershed: Hoosic, Housatonic, Deerfield, Westfield, and Farmington

Description: This project will assist NTNC Public Water Suppliers in Berkshire County in the preparation of Source Protection Plans relative to the synthetic organic chemical (SOC) and inorganic chemical (IOC) waiver application. Tasks include:

- 1) compiling a list of all communities and NTNC Community Public Water Suppliers in Berkshire County including relevant information on each supplier;
- 2) provide direct technical assistance on the Source Protection Component of the SOC/IOC Waiver applications by conducting workshops, identifying monitoring responsibilities, completing the Wellhead Protection Plan Form, calculating Zone I and IWPA protection areas, aiding in addressing source vulnerability, and offering best management practices as appropriate;
- 3) conduct an evaluation of the SOC/IOC Waiver application and produce a supplementary plan to address SOC/IOC issues and make recommendations; and
- 4) develop recommendations to targeted communities on the adoption of Hazardous Materials bylaws.

Cost: \$24,473

Funding: \$24,473 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1993
SECTION 604(b) PROJECT 93-02

Franklin County Water Quality Improvement Program

Grantee: Franklin County Commission

Watershed: Deerfield, Millers, Connecticut, and Chicopee

Description: The objective of this project is to provide technical assistance and education outreach to communities in Franklin County to improve public and private water systems and overall groundwater quality. Tasks include:

- 1) work with a Water Resource Committee in the Town of Northfield to review current protection measures and identify weaknesses and areas of vulnerability and make recommendations for improved resource protection;
- 2) provide direct technical assistance on the Source Protection Component of synthetic organic chemical (SOC) and inorganic chemical (IOC) waiver applications for all community and non-transient non-community Public Water Suppliers;
- 3) conduct a comprehensive water protection workshop;
- 4) develop contingency plans for Erving and Greenfield, which would provide for management of their water supplies during droughts and emergencies; and
- 5) provide technical assistance to the Western Valley Water Protection Committee.

Cost: \$44,000

Funding: \$44,000 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

**FEDERAL FISCAL YEAR 1993
SECTION 604(b) PROJECT 93-03**

Development and Implementation of Local Floor Drain Regulations in the Merrimack and Parker River Basins

Grantee: Merrimack Valley Planning Commission

Watershed: Merrimack and Parker

Description: The purpose of this project is to enhance the capability of local governments to prevent or minimize groundwater contamination from commercial and industrial floor drains. Tasks include:

- 1) organize and conduct introductory informational meetings in the communities of Georgetown, Groveland, Merrimac, Newbury, Rowley, Salisbury, and West Newbury to solicit local input on the project;
- 2) inventory all commercial and industrial facilities which have the potential to house unauthorized floor drains discharging to the ground, a leaching structure, or a septic system;
- 3) map the locations of all known and potential facility floor drains;
- 4) present findings and introduce the Department of Environmental Protection's Model Floor Drain Regulation to local officials; and
- 5) design and conduct a regional training seminar on commercial and industrial floor drains.

Cost: \$33,600

Funding: \$33,600 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1993
SECTION 604(b) PROJECT 93-04

Sudbury-Assabet-Concord (SuAsCo) River Basin Water Supply Protection Project

Grantee: Metropolitan Area Planning Council

Watershed: Concord (SuAsCo)

Description: The purpose of this project is to develop a regional water supply protection plan for the communities of Acton, Boxborough, Carlisle, Concord, Hudson, Littleton, Maynard, and Stow. Tasks include:

- 1) establish a SuAsCo Basin Water Supply Protection Committee in the eight study towns to assist in locating relevant data, reviewing draft maps and reports, and take a leading role in implementing the plan's actions;
- 2) inventory and map aquifer boundaries and/or zones of contribution to public supply wells and watersheds of municipal reservoirs;
- 3) inventory and map contamination sources (such as underground storage tanks) and land use;
- 4) evaluate existing water supply protection measures including zoning bylaws, general bylaws, and board of health regulations;
- 5) develop draft recommendations for new or amended water supply protection measures for each community; and
- 6) provide assistance to communities for the implementation and enforcement of the recommended protection measures.

Cost: \$43,500

Funding: \$43,500 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1993
SECTION 604(b) PROJECT 93-05

Upper Taunton River Basin Water Supply Protection/Contingency Planning Program

Grantee: Old Colony Planning Council

Watershed: Taunton

Description: This project will strengthen zoning and non-zoning water supply protection measures, improve contingency supply planning efforts and present a regional forum on supply protection progress and needs in the communities of Avon, Brockton, East Bridgewater, Easton, Halifax, Hanson, Kingston, and West Bridgewater. Tasks include:

- 1) establish a Water Supply Protection Advisory Committee to encourage cooperative water supply protection in areas with shared resources or with potential impacts on each others resources;
- 2) expand protection of local and regional ground and surface water supplies in target areas;
- 3) prepare a comprehensive water supply protection plan for the town of Halifax;
- 4) review and synthesize water supply issues, assumptions and recommendations from past efforts performed in the Taunton River Basin;
- 5) conduct contingency planning for Brockton's short to mid-term water supply needs; and
- 6) coordinate and conduct a public forum on water supply issues in the Taunton River Basin.

Cost: \$35,000

Funding: \$35,000 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1993
SECTION 604(b) PROJECT 93-06

Pioneer Valley Regional Water Supply Protection Project

Grantee: Pioneer Valley Planning Commission

Watershed: Westfield, Connecticut, and Chicopee

Description: The objective of this project is to provide technical assistance to communities in the Pioneer Valley on water supply protection. Tasks include:

- 1) provide technical assistance to the Barnes Aquifer Protection Advisory Committee (BAPAC) by coordinating meetings, developing a proposal for a permanent BAPAC funding mechanism, and revising zoning bylaws for expanded protection areas;
- 2) provide technical assistance to the Eastern Valley Water Protection Committee (EVWPC) by coordinating meetings and developing and implementing applicable components of the EVWPC's comprehensive water protection strategy;
- 3) provide technical assistance to the Western Valley Water Protection Committee (WVWPC) by coordinating meetings, developing and implementing applicable components of WVWPC's Comprehensive Water Protection Strategy, preparing a strategy to protect the confining clay layer over the Mill River Aquifer, and inventorying property owners of all agricultural parcels in Zone II's of wells located in the WVWPC;
- 4) conduct regional watershed management; and
- 5) develop a comprehensive water supply strategy for the Town of Granby.

Cost: \$44,000

Funding: \$44,000 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1993
SECTION 604(b) PROJECT 93-07

Technical Assistance to the Palmer River Watershed, Mattapoisett River Valley Water Supply Protection Advisory Committee, and the Taunton River Basin Needs Study

Grantee: Southeastern Regional Planning and Economic Development District

Watershed: Taunton, Buzzards Bay, and Narragansett Bay

Description: This project will protect the water resources in the communities of Rehoboth, Swansea, Marion, Mattapoisett, Rochester, Fairhaven, Acushnet, and those within the Taunton River Basin through improved regional watershed management planning and regionally consistent regulations. Tasks include:

- 1) address water resource protection and watershed management planning issues in the Palmer River watershed, Upper Warren Reservoir, and Lower Warren Reservoir by amending existing or establishing new regulations relative to floor drain and septage tracking and management, and organizing and conducting regional health, planning, and technology-based workshops;
- 2) provide technical assistance to the Mattapoisett River Valley Water Supply Protection Advisory Committee to establish uniform health regulations to help alleviate potential drinking water contamination; and
- 3) perform a multi-community water supply needs survey in the Taunton River Basin.

Cost: \$39,094

Funding: \$39,094 – U.S. Environmental Protection Agency

Duration: 1993-1994

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1994
SECTION 604(b) PROJECT 94-01

Sagamore Lens Groundwater Protection Project

Grantee: Barnstable County and Cape Cod Commission

Watershed: Cape Cod

Description: The purpose of this project is to develop consistent water resource planning strategies for the six-town area that make up the Sagamore Lens including the towns of Bourne, Falmouth, Mashpee, Sandwich, Barnstable, and Yarmouth. Technical assistance will be provided through the development of a groundwater protection matrix and land use analysis within water resource recharge areas. Tasks include:

- 1) evaluate the existing groundwater protection regulations in the six towns that comprise the Sagamore Lens as well as the Massachusetts Military Reservation, which overlays the crown of the lens and present this information to the local planning committees for implementation;
- 2) prepare and present the Sagamore Lens findings and develop an educational poster for distribution to schools, towns, and public interest groups; and
- 3) select a limited number of zones of contribution crossing town boundaries for land use assessments

Cost: \$30,000

Funding: \$18,000 – U.S. Environmental Protection Agency
\$12,000 – Barnstable County and Cape Cod Commission

Duration: 1994-1995

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1994
SECTION 604(b) PROJECT 94-02

Small Public Water System Collaborative Project

Grantee: Franklin County Commission

Watershed: Deerfield, Millers, Connecticut, and Chicopee

Description: The objective of this project is to safeguard the public health by maintaining and promoting the viability of small public water suppliers in Franklin County through the formation and support of a permanent, mutually-supportive collaborative of small public water suppliers who will act cooperatively to reduce costs and improve efficiency. Tasks include:

- 1) form a Steering Committee to set priorities and objectives, establish guidelines, and provide overall guidance and supervision of the project;
- 2) conduct a comprehensive evaluation of system participant needs;
- 3) form and operate a purchasing and testing collaborative for laboratory testing services and bulk purchase of supplies;
- 4) develop a model purchasing and testing collaborative; and
- 5) provide technical assistance to meet requirements of the Lead and Copper Rule.

Cost: \$39,000

Funding: \$39,000 – U.S. Environmental Protection Agency

Duration: 1994-1995

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1994
SECTION 604(b) PROJECT 94-03

Cape Ann Emergency Water Supply Plan

Grantee: Metropolitan Area Planning Council

Watershed: North Coastal

Description: The intent of this project is to develop an emergency water supply plan for the City of Gloucester and the Town of Rockport to ensure reliable public water supply service during an emergency due to loss of supplies or water distribution facilities. Tasks include:

- 1) the establishment of a Cape Ann Water Supply Coordinating Committee;
- 2) an inventory and mapping of the components of the Water Supply Systems of Gloucester and Rockport relevant to establishing the capacity for emergency transfers of water between the communities;
- 3) a review and evaluation of past planning or engineering studies relevant to system interconnections or emergency water supply provisions;
- 4) a review and evaluation of issues relating to the cost of providing emergency water supplies between the two communities and alternative methods of allocating costs and providing financial compensation to the donor community in the event of an emergency transfer of water; and
- 5) a presentation of recommendations for providing emergency supply capabilities for Gloucester and Rockport, including recommendations for further technical or engineering studies, operation policies and appropriate regulatory measures.

Cost: \$20,000

Funding: \$20,000 – U.S. Environmental Protection Agency

Duration: 1994-1995

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1994
SECTION 604(b) PROJECT 94-04

Public Water Supply Technical Assistance/Watershed Inspection Implementation and ISTE A Planning Project

Grantee: Pioneer Valley Planning Commission

Watershed: Westfield, Connecticut, and Chicopee

Description: The objective of this project is to provide technical assistance to Pioneer Valley communities on water supply protection. This includes protection of regional aquifer recharge areas through development of a "Green Business" Program to implement best management practices (BMPs), protection of surface water supplies by control of highway runoff and protection of small water supplies through comprehensive municipal strategies to protect small public water systems. Tasks include:

- 1) provide technical assistance to landowners and municipal officials in the communities of Westfield and Easthampton to implement BMPs for existing land uses to mitigate potential threats to water supplies from those uses;
- 2) assess and evaluate potential contamination threats from existing land uses in the area of the Barnes Aquifer and work with cooperative landowners and businesses to identify and implement BMPs;
- 3) develop and publicize a program to recognize cooperative businesses through a "Green Business" award program;
- 4) develop and conduct a pilot-planning project to secure Intermodal Surface Transportation Efficiency Act (ISTEA) enhancement funded projects for mitigation of highway runoff which threatens public drinking water supplies;
- 5) improve watershed inspection programs by assessing existing watershed inspection programs and developing and evaluating a proposed "model" inspection program; and
- 6) develop a comprehensive water supply protection program for Brimfield and Goshen, two communities with a large number of small water supplies.

Cost: \$34,112

Funding: \$32,612 – U.S. Environmental Protection Agency
\$1,500 – Pioneer Valley Planning Commission

Duration: 1994-1995

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1994
SECTION 604(b) PROJECT 94-05

A Regional Approach to Water Resources Protection and Protecting a Future Potential Water Supply

Grantee: Southeastern Regional Planning and Economic Development District

Watershed: Narragansett Bay and Taunton

Description: The objective of this project is to protect the water resources in the communities of Somerset, Dighton, and Rehoboth, through improved local and regional wellhead and watershed management planning and regionally consistent regulations. Tasks include:

- 1) develop and implement a regional water resource protection initiative to serve the water supply protection needs of the Dighton and Somerset wellfields, help to protect a shared regional resource, and upgrade local water resource protection related regulations in both communities; and
- 2) develop and implement water resource protection bylaw provisions focusing on the protection of areas of future potential water supply in the town of Rehoboth.

Cost: \$25,000

Funding: \$20,000 – U.S. Environmental Protection Agency
\$5,000 – Southeastern Regional Planning and Economic Development District

Duration: 1994-1995

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1994
SECTION 604(b) PROJECT 94-06

Tri-Town Watershed Protection Implementation Project

Grantee: Tri-Town Board of Water Commissioners

Watershed: Weymouth and Weir

Description: The purpose of this project is to implement key elements of the Tri-Town Board of Water Commissioners' "Watershed Protection Program" in order to protect existing and potential sources of water supplies. Tasks include:

- 1) establish a regional watershed protection committee and conduct meetings to inform neighboring communities about the critical need for watershed protection;
- 2) develop an emergency response plan to provide effective regionally coordinated response capabilities to ensure water supply and public safety are protected from accidents;
- 3) develop a recommended standard policy for road salt storage and use;
- 4) review existing zoning protection and develop recommendations for a unified Tri-Town Watershed Protection Bylaw;
- 5) develop a recommended Model Hazardous Materials Bylaw; and
- 6) implement a Public Information Program

Cost: \$37,000

Funding: \$37,000 – U.S. Environmental Protection Agency

Duration: 1994-1995

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1995
SECTION 604(b) PROJECT 95-01

Nonpoint Source Assessment in the Westfield River Watershed

Grantee: Pioneer Valley Planning Commission

Watershed: Westfield

Description: This project will assess nonpoint sources of pollution in the Westfield River watershed and assess local water resource protection control measures. Tasks include:

- 1) assess and map current land use activities within the Westfield River watershed;
- 2) assess the level of existing local water resource protection control in communities in the Westfield River watershed;
- 3) estimate nonpoint source pollutant loadings; and
- 4) conduct water quality sampling in four targeted sub-basins of the Westfield River.

Cost: \$56,927

Funding: \$44,927 – U.S. Environmental Protection Agency
\$12,000 – Pioneer Valley Planning Commission

Duration: 1995-1996

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1995
SECTION 604(b) PROJECT 95-02

Farmington River Watershed Nonpoint Source Assessment Project

Grantee: Berkshire Regional Planning Commission

Watershed: Farmington

Description: The purpose of this project is to assess the existing and potential water quality problems within the Farmington River Basin to establish an information base that can serve federal, state, regional, and local officials. Tasks include:

- 1) develop a Geographic Information System (GIS) Database for the Farmington River watershed;
- 2) conduct a comprehensive assessment of land use and land use activities, including an identification of potential pollution sources and an evaluation of pollutant loadings;
- 3) assess local water quality protection measures;
- 4) assess local and regional needs for public awareness, environmental education, technical assistance, and interagency/community coordination; and
- 5) develop a watershed Action Plan presenting a management strategy plan to address remediation of existing nonpoint source pollution (NPS) and prevention of potential future NPS pollution.

Cost: \$51,508

Funding: \$44,008 – U.S. Environmental Protection Agency
\$7,500 – Berkshire Regional Planning Commission

Duration: 1995-1996

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1995
SECTION 604(b) PROJECT 95-03

South Shore Nonpoint Source Management Plan

Grantee: Metropolitan Area Planning Council

Watershed: South Coastal

Description: This project will provide the Department and local officials data to characterize the problems of nonpoint source pollution in the South Coastal Drainage Area and provide management tools that can be implemented by communities under their home rule authority. Tasks include:

- 1) the establishment of a South Shore Water Quality Task Force to assist in locating relevant local data, review draft maps and reports, and take a leading role in implementing the South Shore Nonpoint Source (NPS) Management Plan's recommendations;
- 2) an inventory and mapping of land use and potential NPS pollution throughout the targeted nine-town study area;
- 3) a more detailed assessment and modeling of NPS pollution in three sub-basins; and
- 4) an assessment of local water quality protection measures.

Cost: \$43,553

Funding: \$43,553 – U.S. Environmental Protection Agency

Duration: 1995-1996

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1995
SECTION 604(b) PROJECT 95-04

Nonpoint Source Assessment in the Ipswich River Watershed

Grantee: Merrimack Valley Planning Commission

Watershed: Ipswich and North Coastal

Description: The purpose of this project is to assess the nonpoint pollution sources in the nonsewered areas of the Ipswich River watershed from the confluence of the Miles River to the coast. Tasks include:

- 1) inventory town records and maps and build computer databases of all storm drains and subsurface sewage disposal systems in the study area;
- 2) conduct a field survey of subsurface sewage disposal systems;
- 3) collect and analyze water samples from storm drains to identify areas of failing subsurface sewage disposal systems and polluted storm water sources;
- 4) conduct a dye testing program of selected homes and businesses to confirm or reject suspected pollution sources; and
- 5) begin the development of an on-site sewage disposal system management plan for the study area.

Cost: \$40,226

Funding: \$36,476 – U.S. Environmental Protection Agency
\$3,750 – Merrimack Valley Planning Commission and Others

Duration: 1995-1996

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1996
SECTION 604(b) PROJECT 96-01

Urban Watershed Management in the Mystic River Basin

Associated Projects: 98-01

Grantee: Berkshire Conservation District

Watershed: Hoosic

Description: This project will provide a comprehensive environmental/land use assessment of the entire Hoosic River watershed. Based on the assessment information, recommendations will be developed to address existing nonpoint source problems and to prevent future nonpoint source pollution in the watershed. The primary goal of the project is to establish a solid information base to guide future governmental and private property actions to minimize nonpoint source pollution and ensure a high level of water quality in the Hoosic River watershed. Tasks include:

- 1) acquire and update existing GIS data, and develop new GIS data layers relevant to the various physical, institutional, and natural features of the watershed;
- 2) develop a land suitability map that will illustrate general environmental constraints to development in the watershed;
- 3) determine the type, intensity and distribution of existing land uses within the watershed;
- 4) assess and identify potential and existing sources of pollution;
- 5) organize and conduct a "Stream Team" survey on the North Branch;
- 6) evaluate and model selected pollutant loadings in the watershed;
- 7) assess local water quality protection measures, regional and local environmental awareness, and needs for public education and technical assistance; and
- 8) develop a watershed action plan.

Cost: \$66,730

Funding: \$59,830 – U.S. Environmental Protection Agency
\$6,900 – Berkshire Conservation District
Berkshire County Regional Planning Commission
Natural Resource Conservation Service
University of Massachusetts

Duration: 1996-1998

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1996
SECTION 604(b) PROJECT 96-02

Assessment of On-Site Sewage Disposal Related Pollution in Gloucester Waters

Grantee: Gloucester Board of Health

Watershed: North Coastal

Description: This project will assess existing and new data relative to fecal coliform pollution from failing septic systems in the City of Gloucester's water resources, particularly those impacting shellfish beds. The project will provide a rapid assessment of the extent and location of septic system pollution problems to efficiently focus cleanup efforts and provide a baseline for comparison to post-cleanup water quality. Tasks include:

- 1) analyze historic water quality data to determine which shellfish beds have been commonly impacted by fecal coliform pollution;
- 2) assess the degree to which historic fecal coliform pollution is attributable to inadequately treated septic system effluent;
- 3) collect and analyze water quality samples not historically monitored for septic system pollution;
- 4) identify upland areas likely to have significant septic system problems using GIS; and
- 5) involve resident and shellfish stakeholders in project's conclusions by way of presentations and neighborhood meetings.

Cost: \$49,536

Funding: \$41,396 – U.S. Environmental Protection Agency
\$8,140 – City of Gloucester and the Massachusetts Division of Marine Fisheries

Duration: 1996-1998

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1996
SECTION 604(b) PROJECT 96-03

An Assessment of Urban Stream Restoration: Tannery and Poor Brooks

Grantee: Pioneer Valley Planning Commission

Watershed: Connecticut and Chicopee

Description: The project objective is to identify potential watershed management practices that will restore water quality in Tannery and Poor Brooks, two degraded urban streams, to a more natural condition. The project will utilize a comprehensive watershed management approach to assess measures that address stormwater runoff, erosion and sedimentation, wetland degradation, and flooding by using restoration and stormwater control measures. Tasks include:

- 1) establish watershed committees for each brook;
- 2) conduct a sampling program to identify existing watershed conditions within each watershed;
- 3) develop GIS maps of the watersheds;
- 4) perform an analysis of the watersheds based on sampling and mapping task results and develop a matrix of watershed management practices for restoration;
- 5) conduct public outreach to promote awareness of the project including a public forum on recommended restoration actions; and
- 6) develop an implementation plan for restoration of the watersheds with recommended actions and guidance for future outreach activities.

Cost: \$83,380

Funding: \$45,880 – U.S. Environmental Protection Agency
\$37,500 – Natural Resource Conservation Service
City of Holyoke
City of Springfield
Local volunteers

Duration: 1996-1998

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1996
SECTION 604(b) PROJECT 96-04

Edgartown Great Pond: Existing and Projected Nitrogen Loading

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will provide delineation of critical areas of the ground watershed of Edgartown Great Pond on Martha's Vineyard. Land-use analysis and nitrogen loading modeling will be performed to examine build-out scenarios and the resultant potential impacts to the pond. Public outreach will be ongoing throughout the project to inform and involve watershed stakeholders and residents in the development of long- and short-term pond watershed management strategies. Tasks include:

- 1) delineate the groundwater watershed of the pond and perform an assessment of pond recharge rates and groundwater flows;
- 2) map existing and projected land use of the groundwater recharge area and model nitrogen loading for three growth scenarios;
- 3) determine a nitrogen loading limit for the pond;
- 4) provide a matrix of watershed management strategies for the pond and present two comprehensive management scenarios for water quality improvement and preservation for public consideration; and
- 5) provide public education via the press and public meetings to promote awareness of the project.

Cost: \$44,954

Funding: \$33,454 – U.S. Environmental Protection Agency
\$11,500 – Martha's Vineyard Commission

Duration: 1996-1998

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1996
SECTION 604(b) PROJECT 96-05

Housatonic River Watershed Nonpoint Source Pollution Assessment Project

Grantee: Berkshire Regional Planning Commission

Watershed: Housatonic

Description: The Housatonic River watershed nonpoint source pollution assessment project will comprehensively assess both existing and potential water quality problems within the watershed. The primary goal of this project is to establish a solid information base to guide future governmental and private property actions to minimize nonpoint source pollution and ensure a high level of water quality in the Housatonic River watershed. Tasks include:

- 1) conduct a comprehensive environmental/land use assessment of the basin that will inventory its various physical and institutional characteristics and natural features;
- 2) identify existing and potential nonpoint source pollution problems;
- 3) update existing GIS data relevant to the watershed and develop new GIS data layers based on the information collected under tasks 1 and 2;
- 4) assess the local capacity to address nonpoint source pollution impacts by analyzing existing municipal bylaws and other source controls; recommendations on how to more comprehensively address nonpoint source pollution will be developed based on this assessment; and
- 5) develop a Watershed Action Plan which presents a comprehensive management strategy to address the remediation of existing nonpoint source pollution problems and prevention of future nonpoint source pollution.

Cost: \$60,000

Funding: \$60,000 – U.S. Environmental Protection Agency

Duration: 1997-1998

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1996
SECTION 604(b) PROJECT 96-06

Assessment and Evaluation of Stormwater Source Reduction Practices on Combined Sewer Overflows

Grantee: Pioneer Valley Planning Commission

Watershed: Connecticut

Description: The project will assess the potential impacts of stormwater source reduction projects on a specified combined sewer overflow (CSO) outfall point. Focusing on a single sewershed or sub-sewershed, it will use a hydraulic model to predict the likelihood of CSO events under different stormwater reduction scenarios. The modeling results will then be analyzed to determine the extent to which stormwater best management practices (BMP's) can achieve significant reductions in CSO volume and frequency, and to develop a recommended stormwater management plan for the study area. Comparative cost estimates will be used to evaluate the relative advantages and disadvantages of a source reduction approach to CSO abatement, and to develop the recommended stormwater management plan. Tasks include:

- 1) establish a project Steering Committee;
- 2) collect data to identify and characterize existing conditions in the study area
- 3) develop Geographic Information Systems (GIS) maps of the conditions identified in Task 2;
- 4) develop a baseline model of CSO frequency and flow for 10-12 classifications of storm event;
- 5) develop a set of stormwater reduction scenarios for the study area;
- 6) predict the impacts on CSO frequency and flow using the SWMM hydraulic model for each of the stormwater BMP's identified in Task 5; and
- 7) identify the most promising stormwater reduction scenarios identified by the modeling in Task 6 and prepare a comparative cost analysis of them.

Cost: \$34,700

Funding: \$34,700 – U.S. Environmental Protection Agency

Duration: 1997-1998

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1997
SECTION 604(b) PROJECT 97-01

Stream Classification and Assessment Project

Grantee: Franklin County Council of Governments

Watershed: Connecticut and Deerfield Watersheds

Description: This project proposes to use the Rosgen Stream Classification and Assessment Methodology to generally classify and assess stream types in the Deerfield and Connecticut River Basins, to collect data at selected sites on different stream types, and to establish an inventory of different stream types for reference and educational purposes. The resulting information will be used to make predictions about stream behavior, anticipate problems in the watershed as a result of certain land uses, identify areas in need of restoration, distinguish between natural stream migration and evidence of stream instability, and improve overall ability to make good watershed planning decisions based on the stability and types of streams in the watershed. The primary purpose of the work is to develop and disseminate a reference base of information that can be used to educate local boards and others about the different characteristics of stream types and the usefulness of the stream classification system, provide actual local reference sites for hands-on training, and develop tools for local planning and development decision-making. Tasks include:

- 1) Perform a general survey of stream types and select reference reaches;
- 2) Select and describe areas within the watershed that are experiencing bank erosion, bedload aggradation/degradation, channel avulsion, or other indications of instability;
- 3) Further evaluate one site from Task 2 in accordance with the Rosgen Stream Classification and Assessment System;
- 4) Develop a Reference Manual containing data and guidance for using the system; and
- 5) Submit quarterly reports summarizing all work completed in reporting period

Cost: \$52,500

Funding: \$52,500 – U.S. Environmental Protection Agency

Duration: 1997-1999

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1997
SECTION 604(b) PROJECT 97-02

Priority Land Acquisition Assessment for Cape Cod: Protecting Suitable Land for Future Water Supply Needs

Associated

Projects: 99-01

Grantee: Cape Cod Commission

Watershed: Cape Cod

Description: This project proposes to conduct a regional assessment of suitable parcels for potential water supply sites and water supply source protection in the Cape Cod watershed. The method proposed will serve as a rational, cost effective planning tool for identifying potential future well sites and guidance for parcel acquisition. The project will consist of the development and application of an innovative parcel-based GIS methodology to refine efforts to identify priority water supply related land parcels for immediate protection and eventual acquisition. Prioritization of parcels will be conducted cooperatively with water supply purveyors and town planners. Tasks include:

- 1) Identify GIS information available for map refinement;
- 2) Prepare draft maps and databases from a combination of map information;
- 3) Develop a rating scheme approach to subjunctively evaluate areas for their supply development potential;
- 4) Gather input from local officials; and
- 5) Final preparation of local and regional maps and a list of land tracts prioritized as to their potential suitability for future water supply development

Cost: \$36,300

Funding: \$36,300 – U.S. Environmental Protection Agency

Duration: 1997-1999

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1998
SECTION 604(b) PROJECT 98-01

Urban Watershed Management in the Mystic River Basin

Associated Projects: 96-01

Grantee: Metropolitan Area Planning Council

Watershed: Mystic

Description: The project will provide recommendations for reducing pollutant runoff into Spy Pond based on a detailed analysis of land cover in watershed. Baseline water quality information, data gaps, and nonpoint source pollution issues will be identified in the Horn Pond watershed. Dry and wet weather water quality sampling will be conducted in Horn Pond watershed. A detailed assessment of the drainage area that contributes runoff for the one large stormwater outfall in Horn Pond will be conducted. Recommendations will be provided to improve stormwater management in the Horn Pond watershed including opportunities for stormwater remediation and future grant funding.

Cost: \$49,820

Funding: \$42,343 – U.S. Environmental Protection Agency
\$7,477 – Metropolitan Area Planning Council

Duration: 1998 – 2002

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1998
SECTION 604(b) PROJECT 98-02

Parker River Basin: Assessment and Management of Nonpoint Source Pollution in the Little River Subwatershed

Grantee: Merrimack Valley Planning Commission

Watershed: Parker

Description: This project will comprehensively inventory, map, and assess nonpoint sources of pollution in the Little River subwatershed of the Parker River Basin. Tasks include:

- 1) production of parcel-based GIS maps and databases of land use and nonpoint pollution sources through research of local and state records, and intensive field surveys;
- 2) water quality sampling to identify fecal coliform bacteria sources and loadings in the Little River main stem and tributaries;
- 3) review and evaluation of local nonpoint source control measures; and
- 4) development of management recommendations for enhancing Little River water quality.

Cost: \$62,420

Funding: \$54,930 – U.S. Environmental Protection Agency
\$7,500 – Merrimack Valley Planning Commission

Duration: 1998 – 2001

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1998
SECTION 604(b) PROJECT 98-03

Upper Blackstone River Watershed Wetlands Restoration Plan

Grantee: Worcester County Conservation District

Watershed: Blackstone

Description: The project involves preparation of an upper Blackstone River Watershed Wetlands Restoration Plan that complies with the technical and planning criteria of the Massachusetts Wetlands Restoration & Banking Program. This includes: updating wetlands map data; identifying, characterizing and mapping potential wetlands restoration sites; establishing a digital wetlands database; and evaluating how wetlands restoration can help improve the watershed in terms of water quality, flood storage, fish habitat, and wildlife habitat. The project will be carried out by the Worcester County Conservation District in cooperation with the Wetland Restoration and Banking Program.

Cost: \$69,489

Funding: \$49,789 – U.S. Environmental Protection Agency
\$19,700 – Wetland Restoration and Banking Program

Duration: 1998 – 2003

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1998
SECTION 604(b) PROJECT 98-04

Assessment of Current Quality and Projected Nutrient Loading: Menemsha Pond and Chilmark Great Pond.

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will assess the water quality and determine the nutrient loading limits for Menemsha Pond and Chilmark Great Pond. Tasks include:

- 1) determine sources of bacterial contamination and assess nutrient status in Chilmark Great Pond using both existing and new water quality data;
- 2) determine nitrogen loading to Chilmark Great Pond and Menemsha Pond;
- 3) determine flushing time and estimate a nitrogen loading limit for Chilmark Great Pond and Menemsha Pond;
- 4) project buildout loading and assess impact on Ponds; and
- 5) recommend options to reduce nitrogen loads (as needed) by bylaw revisions, easement acquisitions, and pond opening cycles.

Cost: \$45,415

Funding: \$37,670 – U.S. Environmental Protection Agency
\$7,745 – Martha's Vineyard Commission

Duration: 1998 – 2001

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1999
SECTION 604(b) PROJECT 99-01

Priority Land Acquisition Assessment for Cape Cod: Phase 2

Associated Projects: 97-02

Grantee: Cape Cod Commission

Watershed: Cape Cod

Description: This project is the second phase of a priority land-rating project initiated under a previous 604(b) grant. This phase of the project will provide guidance to eleven Cape Cod towns towards securing new land for water supply. Project tasks will include providing detailed GIS maps of the most suitable parcels for potential acquisition. These GIS maps will provide surficial topography and depth to water table information. A detailed analysis of relevant water development factors including funding options, groundwater protection measures, withdrawal permitting issues, and identification of local concerns affecting site selection will be prepared for each recommended site. A series of public meetings will be conducted to distribute project information.

Cost: \$49,900

Funding: \$49,900 – U.S. Environmental Protection Agency

Duration: 1999 – 2001

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1999
SECTION 604(b) PROJECT 99-02

Nutrient Loading to Two Great Ponds: Tisbury Great Pond and Lagoon Pond

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: Martha's Vineyard Commission will assess water quality in both Tisbury Great Pond and Lagoon Pond using existing water quality data and by acquiring new data. Groundwater watershed contribution boundaries, flushing times, existing and potential land uses, buildout nutrient loads, and acceptable load limits will be determined for each pond. Options to meet loading limits including land purchase, easements, zoning changes, performance standards, and sewage treatment options will be prepared for both ponds.

Cost: \$52,000

Funding: \$50,000 – U.S. Environmental Protection Agency
\$2,000 – Martha's Vineyard Commission

Duration: 1999 – 2001

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1999
SECTION 604(b) PROJECT 99-03

Cape Cod Coastal Nitrogen Loading Studies

Grantee: Cape Cod Commission

Watershed: Cape Cod

Description: The Cape Cod Commission will complete the nitrogen loading assessments for three embayments (Centerville River, Nauset Marsh and Town Cove) and the Herring River systems initiated under previous grants. Development of nitrogen limits/TMDLs, determination of nitrogen loads, and recommendations for potential pollution controls will be prepared. In addition, recent water quality and revised tidal flushing in the Popponesset Bay system, including the Mashpee River, will be used to produce nitrogen management options for this system.

Cost: \$45,000

Funding: \$45,000 – U.S. Environmental Protection Agency

Duration: 1999 – 2002

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 1999
SECTION 604(b) PROJECT 99-04

Chicopee River Watershed Basin Assessment

Grantee: Pioneer Valley Planning Commission

Watershed: Chicopee

Description: This project will address watershed assessment needs in the communities of Chicopee, Ludlow, Springfield, and Wilbraham that fall within the Chicopee River Basin. Tasks include:

- 1) stormwater infrastructure components will be identified, compiled into a database, and mapped;
- 2) existing BMPs will be mapped and recommendations for future BMP implementation will be generated;
- 3) existing water quality data will be compiled into a comprehensive database and analyzed to determine data gaps and to recommend future sampling efforts; and
- 4) local water quality protection ordinances and bylaws will be reviewed and draft water protection bylaws prepared for communities within the study area.

Cost: \$45,400

Funding: \$45,400 – U.S. Environmental Protection Agency

Duration: 2000 – 2002

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2000
SECTION 604(b) PROJECT 00-01

Surface Water Nutrient Management (Long Pond, Barnstable, and Red Brook Harbor)

Grantee: Cape Cod Commission

Watershed: Cape Cod

Description: This project will address two Massachusetts Watershed Initiative Priority Projects: 1) Long Pond; and 2) Barnstable and Red Brook Harbor. Nitrogen loading and management options will be prepared for the Barnstable Harbor and Red Brook Harbor Coastal embayment systems. This includes watershed delineations, critical nitrogen loads, existing and buildout nitrogen loads, comparison of nitrogen loads to nitrogen limits, and developing management options. For Long Pond, data needs will be identified and if necessary additional data collected (a Quality Assurance Project Plan (QAPP) will be prepared if necessary), an Advisory Committee will be established, nutrient management options will be prepared, and a preferred set of options recommended.

Cost: \$46,400

Funding: \$46,400 – U.S. Environmental Protection Agency

Duration: 2000 – 2002

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2000
SECTION 604(b) PROJECT 00-02

Runnins River Watershed Bacterial and Nutrient Source Assessment and Water Quality Management Project

Grantee: Town of Seekonk

Watershed: Narragansett

Description: This project will focus on the assessment of water quality along the Runnins River and will identify significant sources of bacterial pollution to sections of the Runnins River and two tributaries with known water quality problems. Recommended management actions and conceptual designs for remedial measures will be provided. Tasks include:

- 1) Existing data compilation and subwatershed reconnaissance. Property ownership, zoning, site plans for large impervious areas, septic system location, existing planning/management reports (e.g., catch basin cleaning and street sweeping frequency), and water quality data reports/information will be compiled and summarized;
- 2) Develop an EPA/DEP approved Quality Assurance Project Plan (QAPP);
- 3) Conduct field sampling and analysis. Sampling will include wet and dry weather work plus groundwater sampling for fecal coliform and nutrients;
- 4) Prepare conceptual designs for remedial measures; and
- 5) Prepare draft and final reports and conduct public presentation of final results.

Cost: \$44,900

Funding: \$40,500 – U.S. Environmental Protection Agency
\$4,400 – Town of Seekonk

Duration: 2001 – 2004

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2000
SECTION 604(b) PROJECT 00-03

Millers River Watershed Nonpoint Source Pollution Assessment

Grantee: Montachusett Regional Planning Commission

Watershed: Millers

Description: Montachusett Regional Planning Commission and Franklin Regional Council of Governments will team up to create a solid information base to guide future governmental and private actions in reducing nonpoint source pollution and improve the water quality in the Millers River. MassGIS data layers, state reports, community input, and fieldwork will be employed to identify potential nonpoint source pollution. An action plan incorporating Watershed Basin Team and Watershed Council goals will be created.

Cost: \$57,500

Funding: \$57,500 – U.S. Environmental Protection Agency

Duration: 2000 – 2002

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2000
SECTION 604(b) PROJECT 00-04

Lake Cochituate Nonpoint Source Management Plan

Grantee: Metropolitan Area Planning Council

Watershed: Concord (SuAsCo)

Description: This project will characterize and prioritize nonpoint source pollution problems in the Lake Cochituate watershed. Tasks include:

- 1) conduct a watershed wide inventory, mapping, and assessment of land use activities and nonpoint sources;
- 2) conduct a detailed nonpoint source assessment and stormwater mapping in selected sub-basins;
- 3) assess local water quality protection measures;
- 4) provide recommendations to communities for improved management of nonpoint source pollution within the watershed;
- 5) conduct a workshop to provide outreach and technical assistance; and
- 6) develop and distribute a public information brochure on preventing nonpoint source pollution in the watershed.

Cost: \$53,900

Funding: \$49,000 – U.S. Environmental Protection Agency
\$4,900 – Metropolitan Area Planning Council

Duration: 2001 – 2003

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2001
SECTION 604(b) PROJECT 01-01

Assessment of Unpaved Roadways in the Farmington River Watershed

Grantee: Berkshire Regional Planning Commission & Pioneer Valley Planning Commission

Watershed: Farmington

Description: This project will assess unpaved roads in the Massachusetts portion of the Farmington River watershed. Assessment and planning activities, using the Roadway Surface Management System (RSMS) will identify potential environmentally degrading unpaved roadway maintenance and management practices that contribute to nonpoint source pollution. The project will address remediation of existing roadway problems, set goals for prevention of potential NPS problems, and develop proactive strategies for management and maintenance of unpaved roads. Tasks include:

- 1) unpaved road assessment training. Representatives from BRPC, PVPC, and from each participating town's DPW will receive RSMS training;
- 2) inventory and map unpaved roads;
- 3) map priority resource areas;
- 4) conduct unpaved roads condition assessment;
- 5) develop a customized RSMS database for each Town;
- 6) develop an unpaved roads assessment report for each Town; and
- 7) conduct planning sessions with local municipal officials.

Cost: \$54,200

Funding: \$49,200 – U.S. Environmental Protection Agency
\$5,000 – Berkshire Regional Planning Commission

Duration: 2001 – 2003

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2001
SECTION 604(b) PROJECT 01-02

Assessment of Stormwater Management System

Grantee: City of Easthampton

Watershed: Connecticut

Description: The City of Easthampton will conduct an assessment of its stormwater management system and procedures as part of the City's efforts to meet the Phase II Stormwater Management requirements. Tasks include:

- 1) create an information database and GIS maps depicting locations of stormwater management infrastructure;
- 2) identify and describe specific stormwater management shortcomings and provide specific BMP recommendations to address the identified problems; and
- 3) prepare a framework for the City's Phase II stormwater application including developing recommendations for meeting the six minimum Phase II Stormwater control measures that are required by the U.S. EPA.

Cost: \$48,200

Funding: \$48,200 – U.S. Environmental Protection Agency

Duration: 2001 – 2003

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2001
SECTION 604(b) PROJECT 01-03

*Assessment of Land Use Activities, Nonpoint Source Pollution, and Water
Quality in the Taunton River Watershed*

Grantee: Southeastern Regional Planning and Economic Development District

Watershed: Taunton

Description: This project will assess land use activities and identify nonpoint source (NPS) pollution areas for a minimum of six subwatersheds in the Taunton River basin. Local water quality protection measures will be assessed and subwatershed action plans developed to address identified nonpoint source pollution problems. Tasks include:

- 1) acquire, update, and develop GIS data for various physical, institutional, and natural features of the watershed;
- 2) create a land suitability map to illustrate general environmental constraints to development in the watershed;
- 3) update existing MassGIS information on the type, intensity, and distribution of existing land uses in six subwatersheds;
- 4) identify and assess potential and existing sources of pollution through extensive field verification and model estimates of nutrient base loading;
- 5) assess local water quality protection measures; and
- 6) provide recommendations to address existing and potential NPS pollution problems in the watershed.

Cost: \$82,000

Funding: \$82,000 – U.S. Environmental Protection Agency

Duration: 2001 – 2003

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2002
SECTION 604(b) PROJECT 02-01

Shoreline Survey of Salem Sound

Grantee: City of Beverly, Board of Health

Watershed: North Coastal

Description: The Shoreline Survey of Salem Sound project will provide updated information on chronic bacteria pollution sources to coastal bathing beaches and shellfish beds. The survey will provide information to support remediation of 303(d) listed waters, Phase II stormwater management, and new swimming-beach water quality regulations. The Shoreline Survey project will update a 1993 shoreline survey to reflect numerous remedial actions, flood control projects, and sewer line repairs made in the last nine years and to identify remaining and new sources for remediation; provide supporting data to Division of Marine Fisheries to conduct a complete sanitary survey with the goal of opening shellfish beds; and assist local municipalities with both the Federal Beaches Act and Phase II stormwater permitting. Tasks include:

- 1) review 1993 shoreline survey and compile information from DPWs and South Salem Sewage District to determine locations of active pipes and changes or improvements made over the last ten years;
- 2) develop a Quality Assurance Project Plan (QAPP) for standard survey and water quality data collection;
- 3) conduct shoreline survey of Salem Sound coastline to identify, at a minimum, all outfalls 12" diameter and larger, within ¼ mile of swimming beaches or shellfish resource area;
- 4) collect water quality samples from dry weather flows at prioritized locations and analyze samples for bacteria;
- 5) produce GIS maps of all active outfalls, sources, swimming beaches, and shellfish resource areas; and
- 6) distribute survey results to municipalities at meetings and in a final report.

Cost: \$49,600

Funding: \$33,700 – U.S. Environmental Protection Agency
\$15,900 – City of Beverly

Duration: 2002 – 2004

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2002
SECTION 604(b) PROJECT 02-02

Stormwater Management Assessment Project

Grantee: Town of Adams

Watershed: Hudson

Description: The Town of Adams will conduct a comprehensive assessment of the stormwater management system, stormwater management practices, and development of review and management measures. This assessment will identify specific locations or discharges contributing to stormwater problems, identify needed improvements to the Town's stormwater management practices, and identify improvements to the Town's development control measures. A comprehensive stormwater management plan will be prepared by the Town with the goal of improving water quality in the Hoosic River and removal of specific segments of the Hoosic River from the 303(d) list of impaired waters. Tasks include:

- 1) prepare a Quality Assurance Project Plan (QAPP) and conduct a water quality monitoring program to identify "hot" spots;
- 2) prepare conceptual remediation designs and strategies for stormwater problem areas;
- 3) assess and evaluate existing stormwater management practices;
- 4) assess and evaluate development control measures including bylaws, regulations, and administrative procedures;
- 5) evaluate the capacity of local board members and personnel to implement stormwater management program; and
- 6) prepare a stormwater management plan and framework that addresses improvements and enhancements to the Town's stormwater management practices and infrastructure.

Cost: \$76,355

Funding: \$64,017 – U.S. Environmental Protection Agency
\$12,338 – Town of Adams

Duration: 2002 – 2004

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2002
SECTION 604(b) PROJECT 02-03

Assessment of Stormwater Management Systems and Nonpoint Source Pollution

Grantee: Town of Swansea

Watershed: Narragansett and Mt. Hope Bay

Description: This project will assess the stormwater management system for the Town of Swansea and create a Stormwater Management Plan in accordance with the EPA NPDES Phase II Stormwater program, including identification and mapping of stormwater infrastructure. Nonpoint source pollution at Compton's Corners estuary will be investigated including water quality testing at identified drainage structure locations. The Stormwater Management Plan will include: locations and current status of stormwater management infrastructure, methodology for detecting illicit discharges, location and general descriptions of illegal and illicit discharges, location and general descriptions of nonpoint source and point sources of pollution, bacteria test data from water quality samples, review existing bylaws and ordinances, and draft recommendations and an action plan to address Phase II minimum requirements. Tasks include:

- 1) identification, mapping, and field inspections of the stormwater infrastructure including the creation of a GIS stormwater infrastructure database;
- 2) prepare a Quality Assurance Project Plan (QAPP) for water quality and dye testing in the Compton's Corners area;
- 3) map potential nonpoint source pollution sites including large impervious areas, industrial areas, areas prone to flooding, and new or redevelopment construction sites;
- 4) conduct a water quality and dye-testing program to identify sources of contamination and nonpoint source pollution; and
- 5) develop a Stormwater Management Plan that will address the six required Phase II stormwater elements and recommended remediation actions for identified nonpoint source pollution sources.

Cost: \$84,060

Funding: \$34,060 – U.S. Environmental Protection Agency
\$50,000 – Town of Swansea

Duration: 2002 – 2004

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2002
SECTION 604(b) PROJECT 02-04

Stormwater Education Assessment and Planning

Grantee: Town of Plainville

Watershed: Ten Mile

Description: This project will support nonpoint source pollution prevention activities in the watershed through an education program that will: create a watershed stormwater education committee; assess existing local educational resources and identify future educational needs regarding stormwater pollution and management; develop a five-year stormwater education and outreach plan for all watershed municipalities; and develop educational materials and resources to support implementation of the plan. Tasks include:

- 1) assessment of stormwater education resources and needs including the formation of a stormwater education committee;
- 2) develop and implement a five-year stormwater education and outreach plan including a summary of current stormwater education resources, an outline of specific education needs, and recommendations to meet those needs;
- 3) develop stormwater education resources and materials including materials for public distribution and display, including pamphlets and brochures, and hands-on materials appropriate for local schools; and
- 4) develop and maintain a website for obtaining stormwater management information to be shared by local municipalities.

Cost: \$43,025

Funding: \$36,025 – U.S. Environmental Protection Agency
\$7,000 – Town of Plainville

Duration: 2002 – 2004

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2002
SECTION 604(b) PROJECT 02-05

East Branch Housatonic Watershed Assessment

Grantee: Berkshire Regional Planning Commission

Watershed: Housatonic

Description: This project will assess the extent of known and suspected nonpoint source pollution problems in the East Branch subwatershed of the Housatonic River. Berkshire Regional Planning Commission and Housatonic Valley Association will conduct targeted water quality sampling of suspected problem areas and will pilot an effort to include volunteer water quality monitoring into a municipal stormwater management plan. Additional efforts, if needed, will be directed towards waters on the 303(d) impaired list. Berkshire Regional Planning Commission will assist the two communities in the subwatershed in meeting their stormwater management goals and will recommend remediation of identified erosion and sedimentation problems in two surface water supply watersheds. Tasks include:

- 1) develop a Quality Assurance Project Plan (QAPP) and conduct a water quality sampling program;
- 2) conduct a pilot sampling program to detect illicit discharges;
- 3) conduct an unpaved road runoff and erosion assessment in two surface water supply subwatersheds;
- 4) compile existing and collect new data to remove selected waters from the 303(d) list of impaired waters;
- 5) conduct an assessment of outreach, regulatory, and policy needs for NPDES Phase II communities and prepare a draft Stormwater Management Program for these towns.

Cost: \$44,955

Funding: \$44,955 – U.S. Environmental Protection Agency

Duration: 2002 – 2004

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2003
SECTION 604(b) PROJECT 03-01

Martha's Vineyard: Water Quality Assessment of Nine Coastal Ponds

Associated Projects: 04-01, 05-02, 06-02, 07-01, 08-03

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will obtain additional water quality data from nine coastal salt ponds in support of the Massachusetts Estuaries Project. The nine coastal ponds on Martha's Vineyard that will be sampled are: Sengekontacket, Cape Pogue, Pocha, Tashmoo, Oak Bluffs Harbor, Farm, Menemsha, Chilmark, and Squibnocket. Water quality samples will be collected from forty-six stations during four sampling rounds from late July through mid-September. Data will be incorporated into a final report and published on a web site. Tasks include:

- 1) update existing Quality Assurance Project Plan (QAPP) to reflect changes in the sampling locations, stations, sample collection and processing methodology, and equipment and handling;
- 2) identify and conduct field reconnaissance of up to forty-six sample station locations to collect GPS data and subsequently prepare a GIS map of the sample collection sites;
- 3) conduct four sample collection rounds at forty-six stations and analyze the water quality samples in accordance with the updated QAPP. Water quality data will be summarized by pond and sampling round and provided in spreadsheet format;
- 4) prepare GIS based data maps showing station locations, pond system physical location, and other water quality data collected. The resource information for each pond surveyed will be presented in a "clickable" format on web-ready maps and posted on the MVC's website; and
- 5) prepare complete water quality assessment report.

Cost: \$45,424

Funding: \$35,124 – U.S. Environmental Protection Agency
\$10,300 – Martha's Vineyard Commission

Duration: 2003 – 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2003
SECTION 604(b) PROJECT 03-02

An Ecosystem Approach to the Sawmill River Watershed Restoration

Grantee: Franklin Conservation District

Watershed: Connecticut

Description: This project will provide a three-phase geomorphic approach for the lower portion of the Sawmill River watershed. The assessments will use a state-of-the-art model to inventory and analyze river ecosystem health indicators. The project will use natural stream channel principles based on the river's ecosystem to design conceptual solutions for flooding, sedimentation, and erosion problems. The project will also offer a methodology for replication in other Massachusetts watersheds. Tasks include:

- 1) review existing data prepared for the project including NRCS Phase I and Phase II assessments and existing engineering data;
- 2) perform a Stream Geomorphic Assessment of the river to identify areas of concern including determination of bank full features, width of flood prone area, cross sections for stream typing, pebble counts, and determining planform geometry;
- 3) perform cross section surveys and longitudinal profiles of selected reaches and incorporate additional stream cross section data into hydrology study;
- 4) perform hydrology study using NRCS and Army Corps of Engineers computer models (TR 20 and HEC-RAS, respectively); and
- 5) prepare conceptual restoration design alternatives using project data and natural channel design principles.

Cost: \$100,820

Funding: \$54,500 – U.S. Environmental Protection Agency
\$46,320 – Franklin Conservation District

Duration: 2003 – 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2003
SECTION 604(b) PROJECT 03-03

Water Quality Monitoring: Parker's River, Lewis Bay, and Bass River

Grantee: Town of Yarmouth

Watershed: Cape Cod

Description: The Town of Yarmouth will conduct water quality sampling in the Parker's River, Lewis Bay, and Bass River subwatersheds in support of the Massachusetts Estuaries Project. The sampling will produce data essential to the subsequent assessments of each ecosystem including the development of TMDLs and local watershed management plans. Data collected will be consistent with Massachusetts Estuaries Project criteria and consistent with Cape Cod Watershed Team Action Plan, the Cape Cod Commission's Regional Policy Plan, and the Town's Local Comprehensive Plan. Sampling efforts will directly involve local citizens from Yarmouth, Dennis, and Barnstable. Tasks include:

- 1) prepare a Sampling and Analysis Plan (SAP) for monitoring and assessment work;
- 2) recruit and train volunteer sampling teams;
- 3) collect and analyze water quality samples from subwatershed sampling stations in accordance with approved SAP. Additional observations and measurements of macroalgae biomass and distribution, eelgrass biomass and distribution, sediment type, wind speed and direction, and air temperature will be collected from selected sampling stations in accordance with the approved SAP; and
- 4) prepare final project report including a summary and analysis of all data collected by subwatershed and sampling round.

Cost: \$62,963

Funding: \$44,975 – U.S. Environmental Protection Agency
\$17,988 – Town of Yarmouth

Duration: 2003 – 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2003
SECTION 604(b) PROJECT 03-04

Estuaries Monitoring Program: Duxbury, Kingston, and Plymouth Coastal Waters

Grantee: Town of Kingston

Watershed: South Coastal

Description: This project will provide water quality and flow data to support the Massachusetts Estuaries Program assessment of Duxbury, Kingston, and Plymouth coastal waters including: Duxbury Harbor, Jones River, Kingston Bay, Plymouth Harbor, Ellisville Harbor, Eel River, and Town Brook. The project will establish a water quality database for the Town's coastal waters that will be used for the future development of TMDLs and nutrient management. Tasks include:

- 1) completion of a Sampling and Analysis Plan (SAP) for the collection and analysis of water quality and flow data in the project area;
- 2) establish fresh and saltwater monitoring locations for water quality and flow measurements. Descriptions and GPS data will be provided for each sampling site;
- 3) recruit and train volunteer sampling teams for each subwatershed;
- 4) collect and analyze water quality and flow data from subwatershed sampling sites in accordance with DEP approved SAP; and
- 5) prepare final project report including a summary and analysis of all data collected by subwatershed and sampling round.

Cost: \$85,240

Funding: \$76,410 – U.S. Environmental Protection Agency
\$8,830 – Town of Kingston

Duration: 2003 – 2005

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2004
SECTION 604(b) PROJECT 04-01

Martha's Vineyard: Water Quality Assessment of Four Coastal Ponds

Associated Projects: 03-01, 05-02, 06-02, 07-01, 08-03

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will obtain water quality data to prepare four coastal salt ponds (Farm Pond, Tashmoo Pond, Sengekontacket Pond, and Chilmark Pond) for entry into the Massachusetts Estuaries Project (MEP), enhance the dataset for two other salt ponds (Cape Pogue and Poucha Pond), and collect additional water quality data for Lagoon Pond which has already entered MEP. Water quality samples will be collected from thirty-one stations during four sampling rounds from late July through mid-September. Data will be incorporated into a final report and added to the MVC's web site. Tasks include:

- 1) conduct four sample collection rounds at thirty-one stations and analyze the water quality samples in accordance with the updated Sampling and Analysis Plan. Water quality data will be summarized by pond and sampling round, and provided in spreadsheet format; and
- 2) prepare GIS based data maps showing station locations, pond system physical location, and other water quality data collected. The resource information for each pond surveyed will be presented on maps and posted on MVC's web site.

Cost: \$18,012

Funding: \$11,412 – U.S. Environmental Protection Agency
\$6,600 – Martha's Vineyard Commission

Duration: 2004 – 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2004
SECTION 604(b) PROJECT 04-02

A Subwatershed Approach to Nonpoint Source Pollution Assessment in the Deerfield River Watershed

Grantee: Franklin Regional Council of Governments

Watershed: Deerfield River

Description: This project will assess land use activities, identify and field-verify potential nonpoint sources of pollution for six subwatersheds (South, North, Green, Chickley, and River corridor segments 1 and 2) with impaired river segments within the Deerfield River watershed, and create Watershed-Based Plans following EPA guidance to reduce nonpoint source pollution for these subwatersheds. The Franklin Regional Council of Governments will partner with the Deerfield River watershed Association, the Berkshire Regional Planning Commission, and the MA Department of Fish and Game's Riverways/Adopt-A-Stream program to conduct the Deerfield River watershed assessment project. Tasks include:

- 1) organize Stream Teams and conduct Shoreline Surveys in the Chickley River, South River, and North River subwatersheds;
- 2) convene Advisory Committees for four targeted subwatersheds and conduct an outreach program;
- 3) using MassGIS data layers and recent GIS mapping previously developed by the Contractor, prepare GIS theme maps of various physical, institutional, and natural features of the watershed including new development areas;
- 4) inventory existing and potential sources of nonpoint pollution in six subwatersheds;
- 5) conduct a Rural Road Assessment for the Chickley River subwatershed;
- 6) prepare a Quality Assurance Project Plan and conduct water quality sampling for *E. coli* in three subwatersheds;
- 7) incorporate assembled data into a Watershed-Based Plan following EPA guidance; and
- 8) provide site-specific nonpoint source management recommendations on a sub-watershed basis.

Cost: \$114,455

Funding: \$87,700 – U.S. Environmental Protection Agency
\$26,755 – Franklin Regional Council of Governments

Duration: 2004 – 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2004
SECTION 604(b) PROJECT 04-03

Simulation of Soluble Waste Transport: Estuarine Reach of the Merrimack

Grantee: Merrimack Valley Planning Commission

Watershed: Merrimack

Description: The project will conduct a dye tracer study to track the movement and dispersion of a solute in the Newburyport tidal basin of the lower Merrimack River. The tracer test will measure speed, dispersion, and resident time of a tagged water parcel as it passes through the estuarine network. This sampling will be tied to an existing tracer study to be conducted from Lawrence to the Route 1 Bridge in Newburyport by the United States Geological Survey (USGS). Tasks include:

- 1) coordinate project activities with USGS and other state and local agencies participating in the study. This will include planning for crews and equipment needed to collect the data according to USGS sampling protocols. The USGS sampling protocols shall establish specific sampling locations, times, and procedures;
- 2) collect water quality samples at pre-determined times and locations to document the passage of a dye tracer tagged parcel of water. All samples will be analyzed for final dye concentrations;
- 3) analyze dye tracer concentrations to simulate build up concentrations at each sampling location and to determine flushing (residence) time for the tidal basin; and
- 4) prepare quarterly reports and a final investigative report to document study findings.

Cost: \$56,350

Funding: \$46,350 – U.S. Environmental Protection Agency
\$10,000 – U.S Geological Survey

Duration: 2004 – 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2004
SECTION 604(b) PROJECT 04-04

Mount Hope Bay: Estuaries Water Quality Monitoring

Associated Projects: 05-04, 06-04

Grantee: Southeastern Regional Planning and Economic Development District

Watershed: Mt Hope Bay

Description: This project will initiate water quality sampling in Mount Hope Bay including fresh, estuarine, and marine waters. This project will provide water quality and flow data to support the Massachusetts Estuaries Program assessment of coastal waters including: Mt. Hope Bay, Taunton River, Three Mile River, Segreganset River, Assonet River, and Quequechan River. Principle objectives will be to collect baseline data at established points, promote community involvement and awareness of water quality issues within the estuary. Tasks include:

- 1) completion of a Sampling and Analysis Plan (SAP) for the collection and analysis of water quality and flow data in the project area;
- 2) establish fresh and saltwater monitoring locations for water quality and flow measurements. Descriptions and GPS data will be provided for each sampling site;
- 3) recruit and train volunteer sampling teams for in-bay and freshwater sampling locations;
- 4) collect and analyze water quality and flow data from in-bay and freshwater sampling sites in accordance with approved SAP;
- 5) conduct a Workshop to increase community awareness of water quality issues; and
- 6) prepare final project report including a summary and analysis of all data collected by subwatershed and sampling round.

Cost: \$81,000

Funding: \$81,000 – U.S. Environmental Protection Agency

Duration: 2004 – 2006

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2005
SECTION 604(b) PROJECT 05-01

Continuation of Water Quality Monitoring – Parker’s River, Bass River, and Lewis Bay

Grantee: Town of Yarmouth

Watershed: Cape Cod

Description: The Town of Yarmouth will continue to conduct water quality sampling in the Parker’s River, Lewis Bay, and Bass River subwatersheds in support of the Massachusetts Estuaries Project. The sampling will produce data essential to the subsequent assessments of each ecosystem including the development of Total Maximum Daily Loads and local watershed management plans. Data collected will be consistent with Massachusetts Estuaries Project criteria and consistent with Cape Cod Watershed Team Action Plan, the Cape Cod Commission’s Regional Policy Plan, and the Town’s Local Comprehensive Plan. Sampling efforts will directly involve local citizens from Yarmouth, Dennis, and Barnstable. Tasks include:

- 1) revise a Sampling and Analysis Plan (SAP) as needed for monitoring and assessment work including collection and analysis of total suspended solids (TSS) samples from open-water sites;
- 2) continue to recruit, train, and support volunteer sampling teams;
- 3) collect and analyze water quality samples from subwatershed sampling stations in accordance with approved and/or revised SAP. Additional observations and measurements of TSS, macroalgae biomass and distribution, eelgrass biomass and distribution, sediment type, wind speed and direction, and air temperature will be collected from selected sampling stations in accordance with the approved Quality Assurance Project Plan; and
- 4) prepare final project report including a summary and analysis of all data collected by subwatershed and sampling round.

Cost: \$28,670

Funding: \$20,140 – U.S. Environmental Protection Agency
\$8,530 – Town of Yarmouth

Duration: 2005 – 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2005
SECTION 604(b) PROJECT 05-02

Martha's Vineyard Coastal Pond Water Quality Assessment – Phase III

Associated Projects: 03-01, 04-01, 06-02, 07-01, 08-03

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will obtain water quality data to prepare six coastal salt ponds for entry into the Massachusetts Estuaries Project (MEP). First year data will be collected for Katama Bay Pond and James Pond; second year data for Oyster Pond; and complete the dataset for Cape Pogue, Poucha Pond, and Farm Pond. The Grantee will collect additional water quality data for Tashmoo Pond and Sengekontacket Pond that have already entered MEP. Water quality samples will be collected from forty-two stations during four sampling rounds from late July through mid-September. Data will be incorporated into a final report and added to the Grantee's web site. Tasks include:

- 1) update existing Sampling and Analysis Plan (SAP) to reflect any changes in the sampling locations, stations, sample collection and processing methodology, and equipment and handling including the collection of TSS at select stations;
- 2) conduct four sample collection rounds at forty-two stations and analyze the water quality samples in accordance with the updated SAP. Water quality data will be summarized by pond and sampling round and provided in spreadsheet format;
- 3) prepare GIS based data maps showing station locations, pond system physical location, and other water quality data collected. The resource information for each pond surveyed will be presented on maps and posted on a web site; and
- 4) prepare quarterly progress reports and a final water quality assessment report.

Cost: \$34,513

Funding: \$28,013– U.S. Environmental Protection Agency
\$6,500 – Martha's Vineyard Commission

Duration: 2005 – 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2005
SECTION 604(b) PROJECT 05-03

Four Mile River Watershed Assessment

Grantee: Franklin Regional Council of Governments

Watershed: Connecticut

Description: The goal of this project is to develop solutions to the erosion and sedimentation problems and to investigate new approaches to reducing nonpoint source pollution in the watershed. Franklin Regional Council of Governments will conduct a comprehensive assessment of the Four Mile Brook watershed including: a macroinvertebrate sampling program, a public education and outreach effort, and a watershed management plan which will prioritize watershed problems and provide recommendations for mitigation or restoration projects. Tasks include:

- 1) inventory potential sources of nonpoint source pollution in the Four Mile River watershed. This inventory will include a pilot program to test new EPA methodologies for watershed assessment – The Unified Stream Assessment and the Unified Subwatershed and Site Reconnaissance method;
- 2) prepare a Quality Assurance Project Plan for a macroinvertebrate sampling program for EPA and MassDEP approval;
- 3) analyze water quality data collected, and inventory and prioritize sites for restoration and mitigation projects;
- 4) develop a Watershed Management and Restoration Plan with specific recommendations for restoration and mitigation projects;
- 5) prepare draft conceptual engineering designs for a priority project;
- 6) convene an Advisory Committee with watershed stakeholders;
- 7) implement a Public Participation and Outreach Program; and
- 8) prepare quarterly and final project reports.

Cost: \$76,290

Funding: \$61,700 – U.S. Environmental Protection Agency
\$14,590 – Franklin Regional Council of Governments

Duration: 2005 – 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2005
SECTION 604(b) PROJECT 05-04

Mount Hope Bay: Estuaries Water Quality Monitoring – Phase II

Associated Projects: 04-04, 06-04

Grantee: Southeastern Regional Planning and Economic Development District

Watershed: Mount Hope Bay

Description: This project will continue the second of three years of water quality sampling planned for Mount Hope Bay including fresh, estuarine, and marine waters. This project will provide water quality and flow data to support the Massachusetts Estuaries Program assessment of coastal waters including: Mount Hope Bay, Taunton River, Three mile River, Segreganset River, Assonet River, and Quequechan River. Principle objectives will be to collect baseline data at established points, promote community involvement and awareness of water quality issues within the estuary. Tasks include:

- 1) revise the Quality Assurance Project Plan (QAPP) for the collection and analysis of water quality and flow data in the project area as needed;
- 2) continue recruitment, training and support of volunteer sampling teams for in-bay and fresh water sampling locations;
- 3) collect and analyze water quality and flow data from in-bay and freshwater sampling sites in accordance with approved QAPP including total suspended solids data from open-water stations; and
- 4) prepare final project report including a summary and analysis of all data collected by subwatershed and sampling round.

Cost: \$74,420

Funding: \$74,420 – U.S. Environmental Protection Agency

Duration: 2005 – 2007

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2006
SECTION 604(b) PROJECT 06-01

Hamilton Reservoir Watershed Management

Grantee: Pioneer Valley Planning Commission

Watershed: Quinebaug

Description: The project will focus on assessment, management, and Best Management Practices (BMP) design solutions for road surfaces and stormwater runoff in the Hamilton Reservoir watershed to reduce sediment and nutrient loading to Hamilton Reservoir. The project will conduct a comprehensive assessment of unpaved road surfaces in the Hamilton Reservoir watershed. Tasks include:

- 1) prepare a GIS map and database of watershed roads including ownership status, Federal functional road classification, road surface type, land use and hydrology;
- 2) conduct road surface assessments using the Road Manager 2000 program to identify sources of sediment loading and develop unpaved road surface management recommendations including budget projections;
- 3) conduct a Shoreline survey of the Massachusetts portion of the Hamilton Reservoir watershed and three tributaries: Leadmine, Steven's, and Brown's Brooks. Shoreline surveys will also be conducted on the Connecticut portion of the watershed by volunteers from Connecticut;
- 4) complete BMP design schematics at three to four high priority locations and obtain written permission from landowners to proceed with BMP installation;
- 5) review local bylaws and recommend local regulatory tools for watershed protection; and,
- 6) conduct a public outreach program and prepare final report.

Cost: \$32,110

Funding: \$29,810 – U.S. Environmental Protection Agency
\$2,300 – Pioneer Valley Planning Commission

Duration: 2006 – 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2006
SECTION 604(b) PROJECT 06-02

Martha's Vineyard Coastal Pond Water Quality Assessment – Phase IV

Associated Projects: 03-01, 04-01, 05-02, 07-01, 08-03

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will continue the collection of water quality data to prepare six coastal salt ponds for entry into the Massachusetts Estuaries Project (MEP). Second year data will be collected for Katama Bay Pond and James Pond; and third year data for Oyster Pond. Water quality samples will be collected from seventeen stations during four sampling rounds from late July through mid-September. Data will be incorporated into a final report and added to the Martha's Vineyard Commission (MVC) web site. Tasks include:

- 1) update existing Sampling and Analysis Plan (SAP) to reflect any changes in the sampling locations, stations, sample collection and processing methodology, and equipment and handling including the collection of TSS at select stations;
- 2) conduct four sample collection rounds at seventeen stations and analyze the water quality samples in accordance with the updated SAP. Water quality data will be summarized by pond and sampling round and provided in spreadsheet format;
- 3) prepare GIS based data maps showing station locations, pond system physical location, and other water quality data collected. The resource information for each pond surveyed will be presented on maps and posted on a web site; and
- 4) prepare quarterly progress reports and a final water quality assessment report.

Cost: \$20,361

Funding: \$13,498 – U.S. Environmental Protection Agency
\$6,863 – Martha's Vineyard Commission

Duration: 2006 – 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2006
SECTION 604(b) PROJECT 06-03

Old Harbor and Scorton Creek Water Quality Sampling

Grantee: Town of Sandwich

Watershed: Cape Cod

Description: This project will continue with the collection of baseline water quality data required for entry into Massachusetts Estuary Program initiated by the Town of Sandwich in 2005. Water quality data will be collected during the summer months at 15 stations in Sandwich Harbor and 14 stations in Scorton Creek. Tasks include:

- 1) update existing Sampling and Analysis Plan (SAP) to reflect any changes in the sampling locations, stations, sample collection and processing methodology, and equipment and handling from the 2005 sampling effort including the collection of TSS at select stations;
- 2) conduct up to two training sessions for sampling volunteers;
- 3) assemble sampling kits as specified in the SAP for each Sampling team;
- 4) conduct six sample collection rounds at twenty-nine stations and analyze the water quality samples in accordance with the updated SAP. Water quality data will be summarized by Harbor and sampling round and provided in spreadsheet format;
- 5) prepare GIS based data maps showing station locations, Harbor system physical location, and water quality data collected; and
- 6) prepare quarterly progress reports and a final water quality assessment report.

Cost: \$21,400

Funding: \$21,400 – U.S. Environmental Protection Agency

Duration: 2006 – 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2006
SECTION 604(b) PROJECT 06-04

Mount Hope Bay: Estuaries Water Quality Monitoring – Phase III

Associated Projects: 04-04, 05-04

Grantee: Southeastern Regional Planning and Economic Development District

Watershed: Mt Hope Bay

Description: This project will complete three years of water quality sampling for Mt. Hope Bay including fresh, estuarine, and marine waters. The project will provide water quality and flow data to support the Massachusetts Estuaries Program assessment of coastal waters including: Mt. Hope Bay, Taunton River, Three Mile River, Segreganset River, Assonet River, and Quequechan River. Three new freshwater stream gauging and water quality monitoring stations will be established on Lewins Brook and Heath Brook/Kickamuit River. Principle objectives are to collect baseline data at established points and to promote community involvement and awareness of water quality issues within the estuary. Tasks include:

- 1) revise the Quality Assurance Project Plan (QAPP) for the collection and analysis of water quality and flow data in the project area as needed;
- 2) continue recruitment, training and support of volunteer sampling teams for in-bay and fresh water sampling locations;
- 3) collect and analyze water quality and flow data from in-bay and freshwater sampling sites in accordance with approved QAPP including total suspended solids (TSS) data from open-water stations; and
- 4) prepare final project report for the three-year Water Quality Sampling Program including a summary and analysis of all data collected by subwatershed and sampling round.

Cost: \$59,920

Funding: \$59,920 – U.S. Environmental Protection Agency

Duration: 2006 – 2008

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2007
SECTION 604(b) PROJECT 07-01

Martha's Vineyard Coastal Pond Water Quality Assessment – Phase V

Associated Projects: 03-01, 04-01, 05-02, 06-02, 08-03

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will continue the collection of water quality data to prepare six coastal salt ponds for entry into the Massachusetts Estuaries Project (MEP). Third year data will be collected for Katama Bay Pond and James Pond. Additional data will be collected from both Oyster Pond and Tisbury Great Pond due to the discontinuous tidal nature of these systems. Water quality samples will be collected from twenty-five stations during four sampling rounds from late July through mid-September. Data will be incorporated into a final report and added to the MVC's web site. Tasks include:

- 1) update existing Sampling and Analysis Plan (SAP) to reflect any changes in the sampling locations, stations, sample collection and processing methodology, and equipment and handling including the collection of TSS at select stations;
- 2) conduct four sample collection rounds at twenty-five stations and analyze the water quality samples in accordance with the updated SAP. Water quality data will be summarized by pond and sampling round and provided in spreadsheet format;
- 3) prepare GIS based data maps showing station locations, pond system physical location, and other water quality data collected. The resource information for each pond surveyed will be presented on maps and posted on a web site; and
- 4) prepare quarterly progress reports and a final water quality assessment report.

Cost: \$24,744

Funding: \$20,119 – U.S. Environmental Protection Agency
\$4,625 – Martha's Vineyard Commission

Duration: 2007 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2007
SECTION 604(b) PROJECT 07-02

Old Harbor and Scorton Creek Water Quality Sampling

Associated Projects: 06-03

Grantee: Town of Sandwich

Watershed: Cape Cod

Description: This project will complete the third year of baseline water quality data collection required for entry into Massachusetts Estuary Program. Water quality data will be collected during the summer months at 15 stations in Sandwich Harbor and 14 stations in Scorton Creek. Tasks include:

- 1) update existing Sampling and Analysis Plan (SAP) to reflect any changes in the sampling locations, stations, sample collection and processing methodology, and equipment and handling from previous sampling efforts including the collection of TSS at select stations;
- 2) conduct up to two training sessions for sampling volunteers;
- 3) assemble sampling kits as specified in the SAP for each Sampling team;
- 4) conduct six sample collection rounds at twenty-nine stations and analyze the water quality samples in accordance with the updated SAP. Water quality data will be summarized by Harbor and sampling round and provided in spreadsheet format;
- 5) prepare GIS based data maps showing station locations, Harbor system physical location, and water quality data collected; and
- 6) prepare quarterly progress reports and a final water quality assessment report that summarizes the three years of data collection.

Cost: \$21,100

Funding: \$21,100 – U.S. Environmental Protection Agency

Duration: 2007 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2007
SECTION 604(b) PROJECT 07-03

Provincetown Harbor & Pamet Harbor Water Quality Assessment

Associated Projects: 08-01, 09-02

Grantee: Town of Provincetown

Watershed: Cape Cod

Description: This project will collect the baseline water quality data necessary to prepare coastal water bodies in Provincetown and Truro for entry into the Massachusetts Estuaries Project (MEP). The Towns of Provincetown and Truro, in concert with UMASS School of Marine Science and Technology (SMASST), will prepare a Sampling and Analysis Plan and collect Year one data for Hatches Harbor, Provincetown Harbor, East Harbor Lagoon, and Pamet Harbor. Water quality samples will be collected from a minimum of thirty-nine stations during six sampling rounds from June through September. Tasks include:

- 1) prepare a Sampling and Analysis Plan (SAP) including field survey station locations, GPS coordinates, and GIS maps of sample locations following existing Massachusetts Estuaries Program (MEP) Quality Assurance Project Plan (QAPP) to insure standard survey and water quality data collection methods;
- 2) collect water quality samples from thirty-nine stations during six sampling rounds; and
- 3) prepare final data summary.

Cost: \$52,730

Funding: \$47,730 – U.S. Environmental Protection Agency
\$5,000 – Town of Provincetown

Duration: 2007 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2007
SECTION 604(b) PROJECT 07-04

Barrett Pond Watershed Assessment

Grantee: City of Leominster

Watershed: Nashua

Description: This project will conduct an assessment of nonpoint pollution sources and develop solutions to improve water quality and restore recreational uses of Barrett Pond. Tasks include:

- 1) assess land uses in the watershed to identify nonpoint pollution sources;
- 2) conduct water quality and biological assessments to identify pond management techniques that will reduce turbidity and algal blooms;
- 3) develop preliminary designs, estimated costs, and identify locations to install Best Management Practices;
- 4) prepare specific recommendations for stormwater controls and pond management measures;
- 5) conduct a community outreach and education program; and
- 6) prepare a final project report.

Cost: \$45,300

Funding: \$33,300 – U.S. Environmental Protection Agency
\$12,000 – City of Leominster

Duration: 2007 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2007
SECTION 604(b) PROJECT 07-05

Green Street Demonstration Project

Grantee: City of Boston

Location: Neponset

Description: This project will assess the potential stormwater management and recharge benefits of Green Streets by implementing a pilot Green Street project in the City of Boston. The results will help the City of Boston, as well as the EOEEA and the Department of Environmental Protection (DEP), understand more fully the role that Green Streets could play in stormwater management and watershed protection in this region. The Contractor will work in partnership with the Charles River Watershed Association to complete the project. This project will provide an opportunity to integrate planning, design, development and education about ultra-urban Low Impact Development designs and innovative stormwater retrofits across agencies. Tasks include:

- 1) assess existing conditions at an urban location;
- 2) develop Source Loading and Management Model estimates of surface water runoff and nutrient loading for the selected site;
- 3) evaluate Low Impact Development (LID) Best Management Practices (BMP) Opportunities;
- 4) conduct scenario modeling for various BMP's;
- 5) select BMP options Streetscape Concept;
- 6) conduct a Public Outreach program; and
- 7) prepare a final project report.

Cost: \$44,986

Funding: \$25,406 – U.S. Environmental Protection Agency
\$19,580 – City of Boston

Duration: 2007 – 2009

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2008
SECTION 604(b) PROJECT 08-01

Provincetown Harbor & Pamet Harbor Water Quality Assessment

Associated Projects: 07-03, 09-02

Grantee: Town of Provincetown

Watershed: Cape Cod

Description: This project will continue the collection of baseline water quality data necessary to prepare coastal water bodies in Provincetown and Truro for entry into the Massachusetts Estuaries Project (MEP). The Towns of Provincetown and Truro and the National Park Service, in concert with UMASS School of Marine Science and Technology (SMAST), will revise the existing Sampling and Analysis Plan and collect Year two data for Hatches Harbor, Provincetown Harbor, East Harbor Lagoon, and Pamet Harbor. Water quality samples will be collected during six sampling rounds from June through September. Tasks include:

- 1) revise existing Sampling and Analysis Plan (SAP) including field survey station locations, GPS coordinates, and GIS maps of sample locations following existing Massachusetts Estuaries Program (MEP) Quality Assurance Project Plan (QAPP) to insure standard survey and water quality data collection methods;
- 2) collect water quality samples during six sampling rounds; and
- 3) prepare final data summary.

Cost: \$46,400

Funding: \$46,400 – U.S. Environmental Protection Agency

Duration: 2008 -2010

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2008
SECTION 604(b) PROJECT 08-02

Cranberry Bog Management in the Weweantic Watershed

Grantee: Town of Carver

Watershed: Buzzards Bay

Description: This project seeks to reduce nutrient loading associated with cranberry production in the Weweantic watershed by updating the cranberry industry's Best Management Practices guide. The Grantee will produce an updated technical document to inform growers as to innovative methods of cranberry production that reduce environmental impacts. Project partners include the Cape Cod Cranberry Growers Assoc., UMASS Cranberry Station, and Coalition for Buzzards Bay. Tasks include:

- 1) collect, compile and assess current research on reducing nutrient inputs;
- 2) publish and distribute a Fact sheet to cranberry growers on environmental issues in the Weweantic;
- 3) synthesize research into a BMP manual and distribute BMP manual to growers; and
- 4) conduct a workshop with cranberry growers and present the updated technical BMP document at an annual cranberry grower's conference.

Cost: \$17,040

Funding: \$16,500 – U.S. Environmental Protection Agency
\$540 – Town of Carver

Duration: 2008 – 2010

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2008
SECTION 604(b) PROJECT 08-03

Martha's Vineyard Coastal Pond Water Quality Assessment – Phase VI

Associated Projects: 03-01, 04-01, 05-02, 06-02, 07-01

Grantee: Martha's Vineyard Commission

Watershed: Islands

Description: This project will continue the collection of water quality and land use data to prepare coastal salt ponds on Martha's Vineyard for entry into the Massachusetts Estuaries Project (MEP). Additional data will be collected from both Oyster Pond and Tisbury Great Pond at regular intervals before, during, and after openings to the ocean are cut through the barrier beaches. Water quality samples and pond surface elevation data will be collected from 12 stations during six sampling rounds. Data will be incorporated into a final report and added to the Martha's Vineyard Commission (MVC) web site.

The Grantee will also complete a land use analysis for Farm Pond watershed using the methodology developed by the Cape Cod Commission for nitrogen loading models. Parcel-level uses and their development potential will be identified and residential wastewater production estimated. Lawn size and fertilizer treatment level, commercial wastewater loads, and golf course turf acreage will be measured to estimate landscape nitrogen loading. All parcel-level data will be entered into spreadsheets for use in the MEP analysis. Tasks include:

- 1) update existing Sampling and Analysis Plan (SAP) to reflect any changes in the sampling locations, stations, sample collection and processing methodology, and equipment and handling including the collection of total suspended solids at select stations;
- 2) install water pressure transducers to record pond level elevations before, during and after these systems are open to the ocean;
- 3) conduct six sample collection rounds at twelve stations and analyze the water quality samples in accordance with the updated SAP. Water quality data will be summarized by pond and sampling round and provided in spreadsheet format;
- 4) prepare GIS based data maps showing station locations, pond system physical location, and other water quality data collected. The resource information for each pond surveyed will be presented on maps and posted on a web site;
- 5) prepare parcel-level land use analysis to estimate nitrogen loading from residential, recreational, and commercial land uses; and
- 6) prepare quarterly progress reports and a final water quality assessment report.

Cost: \$22,366

Funding: \$16,137 – U.S. Environmental Protection Agency
\$6,229 – Martha's Vineyard Commission

Duration: 2008 – 2010

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2008
SECTION 604(b) PROJECT 08-04

Westfield River Basin Water Quality Monitoring Program

Grantee: Pioneer Valley Planning Commission

Watershed: Westfield

Description: The Grantee, in collaboration with Westfield State College's Westfield River Environmental Center will implement a water quality monitoring program in the Westfield River watershed to identify sources of impairments. A Quality Assurance Project Plan (QAPP) that describes sampling locations and sampling and analysis methodologies will be submitted to DEP/EPA for review. This project will conduct 18 months of baseline chemical and bacterial sampling. Tasks include:

- 1) review and edit QAPP based on DEP/EPA comments and finalize QAPP;
- 2) organize volunteer stream teams and train volunteers;
- 3) conduct monitoring program;
- 4) analyze samples; and
- 5) conduct outreach and publish water quality data on Westfield State College's web site.

Cost: \$37,379

Funding: \$29,004 – U.S. Environmental Protection Agency
\$8,375 – Pioneer Valley Planning Commission & Westfield State College

Duration: 2008 – 2010

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-01
American Recovery & Reinvestment Act

Developing Tools for More Effective Assessment of Wetlands and Aquatic Ecosystems

Grantee: UMass – Amherst

Watershed: Statewide

Description: This project will continue efforts by UMass and MassDEP to develop a landscape level assessment method that will inform MassDEP's wetland and water quality sampling programs. The method under development is the Conservation Assessment and Prioritization System (i.e. CAPS) developed by the University of Massachusetts at Amherst. Tasks include:

- 1) development of reference condition (or disturbance gradient) for the assessment of wetland and water quality condition and aid in the incorporation of wetland issues into broader watershed planning and watershed management goals;
- 2) development of Tidal Restriction and Ditching salt marsh metrics for the CAPS landscape level model to aid in wetland monitoring and assessment of wetland condition;
- 3) identification of algae and/or invertebrates and other data collected to aid in calibration of the CAPS model; and
- 4) preparation of final report detailing work completed in the above tasks.

Cost: \$100,000

Funding: \$100,000 – U.S. Environmental Protection Agency

Duration: 2009 – 2010

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-02
American Recovery & Reinvestment Act

*Technical Support for the Development of a Probabilistic Water Quality
Monitoring Program for Massachusetts*

Grantee: UMass – Amherst

Watershed: Statewide

Description: This project will provide technical support for the design of a probabilistic water quality monitoring program for the Commonwealth of Massachusetts which would provide sufficient data to report on the overall quality of freshwaters in Massachusetts every two years and at the same time provide MassDEP with additional information to assess the condition of water quality in specific lakes and rivers to meet the Commonwealth's obligations under Section 303(d) of the federal Clean Water Act.

The Massachusetts Water Resources Research Center of UMass will work with MassDEP to support the development of a probabilistic monitoring program for wadable rivers, lakes, and estuaries in the Commonwealth. Tasks include:

- 1) preparation of an overview of relevant literature, including an evaluation of other state programs to determine if and how they have integrated probabilistic monitoring designs into their water assessment and management programs and, if so, the approximate number of FTEs allotted to those efforts; and
- 2) modifications to the high resolution (1:24,000) National Hydrography Dataset (NHD) within Massachusetts to allow for its use as the sample frame for river and lake probabilistic surveys.

Cost: \$40,000

Funding: \$40,000 – U.S. Environmental Protection Agency

Duration: 2009 – 2010

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-03
American Recovery & Reinvestment Act

Paines Creek and Stony Brook Watershed Stormwater Mitigation Project

Grantee: Town of Brewster

Watershed: Cape Cod

Description: The goal of this project is to continue improvements to untreated stormwater discharges for the Paines Creek and Stony Brook watershed in Brewster. A stormwater mitigation assessment project for this area was completed in 2007 under a Massachusetts Coastal Zone Management Nonpoint Source grant and identified four priority sites. One of the four sites, Stony Brook Mill, received a CZM Coastal Pollution Remediation grant for final design and a Section 319 Nonpoint Source grant for implementation.

This project will include a site survey and preliminary design of stormwater improvements for two additional priority sites: the Route 6A Triangle and Paines Creek Road North of the Route 6A intersection. The primary pollutants of concern are suspended solids, sediments, pathogens/bacteria, and nutrients. Preliminary design plans up to the 50% review stage will be prepared for both sites in a format suitable to submit as a proposal for Federal Fiscal Year 2011 319 funding. Tasks include:

- 1) site survey and data collection; and
- 2) prepare preliminary design plans for 50% review.

Cost: \$58,000

Funding: \$58,000 – U.S. Environmental Protection Agency

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-04
American Recovery & Reinvestment Act

Provincetown Harbor Stormwater Mitigation Project

Grantee: Town of Provincetown

Watershed: Cape Cod

Description: This project will continue improvements to the West End outfalls to correct ongoing bacteria pollution and improve the overall water quality of Provincetown Harbor. A stormwater mitigation assessment project funded by a Coastal Zone Management CPR grant identified 25 stormwater discharge points to Provincetown Harbor. Stormwater mitigation measures have already been designed, implemented, and planned at many of these outfalls. This project will provide preliminary design for stormwater collection improvements, infiltration facilities, and installation of porous pavement as a combined solution. The Contractor will conduct a site survey, subsurface investigations, and preliminary design of Commercial Street redevelopment between the West End lot and Atlantic Avenue. Tasks include:

- 1) site survey and data collection;
- 2) conduct subsurface investigations, and
- 3) prepare preliminary design plans for 50% review.

Cost: \$90,240

Funding: \$90,240 – U.S. Environmental Protection Agency

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-05
American Recovery & Reinvestment Act

South River Bacterial Source Assessment Project

Grantee: Town of Marshfield

Watershed: South Coastal

Description: This project will assess potential sources of bacteria in the South River watershed through iterative source tracking sampling; prioritize potential solutions and problem areas according to feasibility and expected improvement; and provide designs for Best Management Practices (BMPs) to improve the top three priority areas. The project goal is to reach water quality goals supportive of opening South River shellfish beds and allowing safe recreation. Tasks include:

- 1) update existing North and South River Watershed Association Quality Assurance Project Plan;
- 2) conduct water quality sampling to identify bacterial sources;
- 3) compile watershed information including identification and feasibility analysis of BMP retrofit sites; and
- 4) prioritize BMP sites and develop preliminary designs.

Cost: \$60,835

Funding: \$49,430 – U.S. Environmental Protection Agency
\$11,405 – Town of Marshfield

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-06
American Recovery & Reinvestment Act

Kingston Bay Stormwater Mitigation Project

Grantee: Town of Duxbury

Watershed: South Coastal

Description: This project will advance the work already underway in Kingston Bay to mitigate the worst stormwater outfalls. The project will complement a recent Federal Fiscal Year 2009 Coastal Pollution Remediation (Coastal Zone Management) award for the second worst outfall (#44) by preparing designs for three additional Best Management Practices (BMPs) for this outfall. Additionally, four other outfalls will be selected after water quality sampling and analysis. BMP designs will be prepared for these sites. The project goal is to bring technical documents for these seven BMPS to a level of engineering and design where they can become the substance of an application for construction funds under the Section 319 Grant or other programs. Tasks include:

- 1) prepare a Quality Assurance Project Plan including soil boring and water quality sampling;
- 2) conduct water quality sampling;
- 3) prioritize sites, conduct site investigations, and develop final BMP designs.

Cost: \$58,180

Funding: \$53,600 – U.S. Environmental Protection Agency
\$4,580 – Town of Duxbury

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-07
American Recovery & Reinvestment Act

Furnace & Oldham Pond Watershed Restoration Project

Grantee: Town of Pembroke

Watershed: Cape Cod

Description: This project will develop a long-term watershed restoration plan for both Oldham and Furnace Ponds. Both Ponds are located in Pembroke within the North River watershed and are on the 303(d) List of Impaired Waters for noxious aquatic weeds (Oldham), low dissolved oxygen (Furnace), and organic enrichment (Furnace). A number of watershed improvements have been implemented over the past 10 years. Additionally, a local volunteer effort to collect water quality data was implemented in 2008. This restoration plan will prioritize future watershed protection activities to obtain the most cost-effective pollutant removal, while estimating the anticipated improvements. The project will focus on pollutant sources, in this case phosphorus, and will determine how much phosphorus needs to be removed under existing and buildout conditions to reduce in-lake phosphorus levels to meet recreational goals. The plan will be used by the Town to implement the most cost-effective Best Management Practices (BMPs) to meet water quality goals and to obtain future funds for implementation. Tasks include:

- 1) amend an existing Quality Assurance Project Plan to include water quality modeling and any proposed changes;
- 2) conduct water quality sampling; and
- 3) prioritize sites, conduct site investigations, and develop final BMP designs.

Cost: \$54,335

Funding: \$47,150 – U.S. Environmental Protection Agency
\$7,185 – Town of Pembroke

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-08
American Recovery & Reinvestment Act

Improving Water Quality in Urban Watersheds Project

Grantee: City of Cambridge

Watershed: Boston Harbor and Charles

Description: This project will determine street-dirt accumulation rates, wash-off of street-dirt due to precipitation, trace element concentrations in street-dirt, and develop a productivity function for a high-efficiency (H-E) street cleaner in areas representing two well defined land-use categories (multifamily residential and commercial/industrial) in the City of Cambridge, over a 9-month (April to December) street-cleaning season. These data and data from other sources, where available, will be used to develop, calibrate, and verify a Source Loading and Management Model (SLAMM) to simulate the effectiveness of a H-E street cleaning program at reducing phosphorus loading to the Lower Charles River.

The data acquired by this effort will be used to refine existing stormwater runoff models, estimate urban nonpoint source reductions of total phosphorus relative to the lower Charles River total phosphorus Total Maximum Daily Load (TMDL), and develop appropriate load-reduction credits to facilitate additional high-efficiency vacuum sweeping in the Lower Charles River Basin and other areas statewide. Information derived from this study will enhance the knowledge base about effective Best Management Practices (BMPs) and will help prioritize municipal good housekeeping decisions for TMDL implementation and the National Pollutant Discharge Elimination System Phase II compliance. Tasks include:

- 1) prepare a Quality Assurance Project Plan;
- 2) determine street-dirt accumulation rates, wash-off of street-dirt due to precipitation, and trace element concentrations in street-dirt;
- 3) develop a productivity function for a H-E street cleaner in areas representing two well defined land-use categories (multifamily residential and commercial/industrial) in the City of Cambridge;
- 4) develop, calibrate, and verify a SLAMM to simulate the effectiveness of a H-E street cleaning program at reducing phosphorus loading to the Lower Charles River; and
- 5) provide final report including physical and chemical results for each analytical constituent and a discussion of the SLAMM model and simulations of phosphorus load reductions due to a street cleaning program.

Cost: \$345,000

Funding: \$150,000 – U.S. Environmental Protection Agency
\$195,000 – MassDEP, USGS, City of Cambridge

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-09
American Recovery & Reinvestment Act

Lake Gardner Bacteriological Study

Grantee: City of Amesbury

Watershed: Merrimack

Description: This project will collect water quality data and conduct assessment activities for the upstream Powwow River segment (Tuxbury Lake to Lake Gardner segment of the Powwow River) and in Lake Gardner. Lake Gardner is an 80-acre lake that lies between several reaches of the Powwow River in the Merrimack River watershed. The Powwow River is a Class A waterbody and is listed as a Category 5 impaired waterbody on the 2006 303(d) list of impaired waters for pathogens, suspended solids, noxious aquatic weeds, and turbidity. Periodic beach closures occur due to elevated bacteria levels; other water quality problems for Lake Gardner include algal blooms, sedimentation, and nuisance aquatic weeds.

In addition to collecting water quality data, the Town will develop a long-term remediation plan focusing on pathogens for the Powwow River (Tuxbury Lake outlet to Lake Gardner) including Lake Gardner to prioritize and plan for future water quality improvements, particularly relating to bacteria and nutrients, for these waterbodies. Tasks include:

- 1) prepare an EPA and MassDEP approved Quality Assurance Project Plan;
- 2) collect watershed data to identify potential bacteria sources;
- 3) collect and analyze water quality data;
- 4) prepare long-term remediation plan; and
- 5) provide progress and final reports.

Cost: \$49,950

Funding: \$46,550 – U.S. Environmental Protection Agency
\$3,400 – City of Amesbury

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-10
American Recovery & Reinvestment Act

Water Quality Assessment of Windsor & Cady Brooks

Grantee: City of Pittsfield

Watershed: Housatonic

Description: This project is part of a comprehensive management approach to protect the City of Pittsfield's water supply. The City will assess sources of sediment to Windsor and Cady Brooks and identify best management practices to prevent sediment from entering Cleveland Reservoir. Sediment deposits in these waterbodies and the re-suspension of these materials during storm events and high-water flows are contributing to the increased turbidity impacting Cleveland Reservoir. An analysis of the watershed, stream system, sediment characteristics, and potential management alternatives will be conducted. The baseline information collected, and conceptual alternatives developed will form the framework for implementation of Best Management Practices (BMPs) that will protect the water quality of the streams and the water supply reservoirs. Tasks include:

- 1) prepare an EPA and MassDEP approved Quality Assurance Project Plan;
- 2) characterize the turbidity in Windsor and Cady Brook impoundments;
- 3) prepare bathymetric profiles and calculate sediment volumes in these impoundments;
- 4) evaluate potential sediment sources;
- 5) estimate watershed sediment volumes;
- 6) evaluate BMPs for managing sediment and turbidity;
- 7) evaluate effectiveness of management practices in reducing sediment load; and
- 8) provide final project report.

Cost: \$107,200

Funding: \$69,300 – U.S. Environmental Protection Agency
\$37,900 – City of Pittsfield

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-11
American Recovery & Reinvestment Act

Stormwater Remediation in the Upper Ipswich Watershed

Grantee: Town of North Reading

Watershed: Ipswich

Description: The goal of this project is to conduct assessments of stormwater conveyances, streambank erosion, sediment plumes at outfalls, and water quality in small-scale catchments in the upper Ipswich watershed area. This assessment information will be used to design low impact Best Management Practices (BMPs) that will mitigate nonpoint source pollution caused primarily by stormwater runoff and develop implementation plans for these BMPs. Tasks include:

- 1) prepare a Quality Assurance Project Plan;
- 2) assess streambank erosion and sediment plumes;
- 3) sample catchment water quality during storm events;
- 4) prepare conceptual plans and cost estimates; and
- 5) provide a final report on project activities and recommendations.

Cost: \$36,000

Funding: \$26,000 – U.S. Environmental Protection Agency
\$10,000 – Town of North Reading

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-12
American Recovery & Reinvestment Act

Three Town BMP Development Project

Grantee: Town of Sharon

Watershed: Neponset

Description: The goal of this project is to identify sites in the Towns of Sharon, Stoughton, and Walpole that are suitable for retrofitting with structural stormwater Best Management Practices (BMPs) and to develop conceptual designs for BMPs at those sites. The Contractor will identify, prioritize, and design BMP retrofits in each of the three towns. The Contractor will use a new approach that will emphasize a visual survey of BMP retrofit potential that will be applied to: prioritize retrofit opportunities, determine ease of implementation, provide qualitative estimates of pollutant loading, determine engineering feasibility, estimate potential for pollutant load reduction, and determine the likelihood for acceptance by abutters. Upon completion of this assessment, and the vetting of potential sites with key community stakeholders, the Contractor will prepare final conceptual designs and determine pollutant loading from the sites selected in each of the three towns. Tasks include:

- 1) demonstrate a methodology which can be used to efficiently identify and prioritize stormwater BMP retrofit opportunities in other towns and other watersheds;
- 2) identify at least three sites (neighborhoods or discrete collection areas) that are amenable to the implementation of structural BMP retrofits in each town; and
- 3) prepare conceptual designs and cost estimates for three sites in each town to support future applications for implementation funding.

Cost: \$91,374

Funding: \$82,790 – U.S. Environmental Protection Agency
\$8,584 – Town of Sharon

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09A-13
American Recovery & Reinvestment Act

Connecticut River Water Quality Monitoring Project

Grantee: Pioneer Valley Planning Council

Watershed: Connecticut

Description: This project will continue an on-going volunteer-based bacteria monitoring program in the Connecticut River watershed in Franklin, Hampshire, and Hampden Counties. The Contractor will oversee the collection of bacteria samples along the main stem of the River, collection of new baseline data on tributaries suspected to be sources of bacteria, and new monitoring and field reconnaissance at specific locations for bacteria source tracking. Data collected will be shared with the public, MassDEP, municipal officials, and other stakeholders through posting the data to a web site targeting recreational river users as well as outreach through local media and forum outlets. Tasks include:

- 1) update existing Quality Assurance Project Plan for the Tri-State Connecticut River Volunteer Monitoring Program;
- 2) coordinate recruitment and training of volunteer samplers;
- 3) select sampling sites on the main stem, suspect tributaries, and specific source tracking sites;
- 4) collect water quality samples and conduct bacteria analysis to identify bacterial sources;
- 5) conduct public outreach to disseminate water quality results; and
- 6) provide a final report on project activities.

Cost: \$104,788

Funding: \$77,206 – U.S. Environmental Protection Agency
\$27,582 – PVPC

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09-01

Stormwater Best Management Practices Retrofit Development

Grantee: Town of Canton

Watershed: Neponset

Description: The goal of this project is to identify sites in the Town of Canton that are suitable for retrofitting with structural stormwater Best Management Practices (BMPs) and to develop conceptual designs for BMPs at those sites. The Contractor will employ a new method for identifying, prioritizing, and designing BMP retrofits. This approach will emphasize a visual survey of BMP retrofit potential that can be rapidly applied to a large area to: prioritize retrofit opportunities, determine ease of implementation, provide qualitative estimates of pollutant loading, determine engineering feasibility, estimate potential for pollutant load reduction, and determine the likelihood for acceptance by abutters. Upon completion of this assessment, and the vetting of potential sites with key community stakeholders, the Contractor will prepare final conceptual designs and determine pollutant loading from the selected sites. Tasks include:

- 1) demonstrate a methodology which can be used to efficiently identify and prioritize stormwater BMP retrofit opportunities in other towns and other watersheds;
- 2) identify at least three sites (neighborhoods or discrete collection areas) that are amenable to the implementation of structural BMP retrofits;
- 3) prepare conceptual designs and cost estimates to support future applications for implementation funding; and
- 4) conduct an outreach program through the distribution of a press release and newsletter article announcing the commencement of the project and the project's findings.

Cost: \$26,904

Funding: \$23,830 – U.S. Environmental Protection Agency
\$3,074 – Town of Canton

Duration: 2009 – 2012

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09-02

Provincetown Harbor & Pamet Harbor Water Quality Assessment

Associated Projects: 07-03, 08-01

Grantee: Town of Provincetown

Watershed: Cape Cod

Description: This project will continue the collection of baseline water quality data necessary to prepare coastal water bodies in Provincetown and Truro for entry into the Massachusetts Estuaries Project (MEP). The Towns of Provincetown and Truro and the National Park Service, in concert with the UMass School of Marine Science and Technology (SMAST), will revise the existing Sampling and Analysis Plan (SAP) and collect year three data for Hatches Harbor, Provincetown Harbor, East Harbor Lagoon, and Pamet Harbor. Water quality samples will be collected during six sampling rounds from June through September. A final report that summarizes all three years of sampling will also be prepared. Tasks include:

- 1) revise existing SAP including field survey station locations, GPS coordinates, and GIS maps of sample locations following existing MEP Quality Assurance Project Plan to insure standard survey and water quality data collection methods;
- 2) collect water quality samples during six sampling rounds; and
- 3) submit a final data summary and analysis report covering all three years of sampling to MassDEP.

Cost: \$35,670

Funding: \$35,670 – U.S. Environmental Protection Agency

Duration: 2009 – 2011

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2009
SECTION 604(b) PROJECT 09-03

Bernardston Wellhead Protection Planning

Grantee: Franklin Regional Council of Governments

Watershed: Connecticut & Deerfield

Description: The objective of this project is to implement two of the priority actions listed in the *5-Year Watershed Action Plan for the Connecticut River* and the protection planning recommendations in the MassDEP Source Water Assessment and Protection report. These actions will help protect the drinking water quality of public water supplies, private wells, and aquifers in the Town of Bernardston. Tasks include:

- 1) develop a Wellhead Protection Plan to protect public water supplies, private drinking water wells, and high yield aquifers in Bernardston;
- 2) evaluate options for gaining ownership or control of the entire Zone I areas for the two wells;
- 3) conduct a detailed, parcel-level field inventory of the current land uses in the Zone I and Zone II areas and prepare GIS maps;
- 4) develop specific regulatory and non-regulatory controls to address the potential sources of contamination identified; and
- 5) prepare updates to the town's zoning bylaws to meet 310 CMR 22.21(2) and include the Zone II delineations for adoption by Town Meeting.

Cost: \$30,401

Funding: \$24,000 – U.S. Environmental Protection Agency
\$6,401 – Town of Bernardston

Duration: 2009 – 2012

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2010
SECTION 604(b) PROJECT 10-01

Fluvial Geomorphic and Habitat Assessment of the South River Watershed

Grantee: Franklin Regional Council of Governments

Watershed: Deerfield

Description: The Franklin Regional Council of Governments will conduct a geomorphic assessment of the South River to provide information on the causes of erosion, channel instability, and habitat degradation. Fish community and physical habitat surveys will be performed in the South River and its tributaries to characterize the current habitat conditions and provide data to the fluvial geomorphic study. Tasks include:

- 1) help fill significant water quality data gaps for the South River watershed;
- 2) provide conceptual restoration designs for 4 reaches, and
- 3) provide a final engineering design for the highest priority restoration site.

Cost: \$82,885

Funding: \$74,900 – U.S. Environmental Protection Agency
\$7,985 – Deerfield River Watershed Association

Duration: 2010 – 2012

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2010
SECTION 604(b) PROJECT 10-02

Stormwater Best Management Practices Retrofit Development

Grantee: Town of Dedham

Watershed: Neponset

Description: The goal of this project is to identify sites in the Town of Dedham that are suitable for retrofitting with structural and nonstructural stormwater Best Management Practices (BMPs) using a Low Impact Design approach and to develop conceptual designs for BMPs at those sites. The project will utilize a methodology for identifying and prioritizing BMP retrofit opportunities that is currently employed on two existing 604(b) projects in Sharon and Canton respectively. This approach will emphasize a visual survey of BMP retrofit potential that can be rapidly applied to a large area to: prioritize retrofit opportunities, determine ease of implementation, provide qualitative estimates of pollutant loading, determine engineering feasibility, estimate potential for pollutant load reduction, and determine the likelihood for acceptance by abutters. Upon completion of this assessment, and the vetting of potential sites with key community stakeholders, the Contractor will prepare final conceptual designs and determine pollutant loading from the selected sites. Tasks include:

- 1) demonstrate a methodology which can be used to efficiently identify and prioritize stormwater BMP retrofit opportunities in other towns and other watersheds;
- 2) identify at least three sites (neighborhoods or discrete collection areas) that are amenable to the implementation of structural BMP retrofits. Less detailed cost estimates will be provided for an additional seven sites;
- 3) prepare conceptual designs and cost estimates to support future applications for implementation funding; and
- 4) conduct an outreach program through the distribution of a press release and newsletter article announcing the commencement of the project and the project's findings.

Cost: \$40,258

Funding: \$37,010 – U.S. Environmental Protection Agency
\$3,248 – Town of Dedham

Duration: 2010 – 2012

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2010
SECTION 604(b) PROJECT 10-03

Knob Hill Stormwater Planning

Grantee: Great Barrington

Watershed: Housatonic

Description: The Town of Great Barrington will develop implementation plans (i.e. preliminary designs and cost estimates for Best Management Practices (BMPs)) for managing the nonpoint source pollution into Lake Mansfield that originates from Knob Hill. This area is one of several major sources of runoff that contribute to the water quality impairment of the Lake. The plans and estimates developed will provide the basis for the implementation and ongoing management of these BMPs. Tasks include:

- 1) Assess pollution originating from Knob Hill by determining the right-of-way ROW and property ownership, topography, BMP type and location, required permits, and cost estimates;
- 2) Work cooperatively with the State's Office of Fishing and Boating Access OFBA; and
- 3) Conduct outreach to those in the project area to inform them of the work, why it was being conducted, what the project goals are, and when contractors would be in the field performing work.

Cost: \$13,200

Funding: \$10,700 – U.S. Environmental Protection Agency
\$2,500 – Town of Great Barrington

Duration: 2010 – 2012

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2010
SECTION 604(b) PROJECT 10-04

Bellingham Subwatershed Stormwater Restoration Planning

Grantee: Bellingham

Watershed: Charles

Description: The Town of Bellingham in collaboration with the Charles River Watershed Association (CRWA) will create a subwatershed restoration plan to address nonpoint source pollution problems and restore water function in a portion of Bellingham that lies within the Charles River watershed. The project will identify opportunities for both on-site and regional stormwater management approaches, especially techniques that use green infrastructure and Low Impact Development (LID) techniques, as it works to address stormwater problems and water body impairments. The Town will identify a priority subwatershed, evaluate various restoration design options, estimate costs and pollution reduction potential, and select a preferred subwatershed restoration plan that will enable Bellingham to significantly improve stormwater management. The plan will include a priority list of projects which would bring the most benefit at the least cost, and which appear to have the fewest site constraints. Tasks include:

- 1) delineate drainage areas and conduct site visits to each of the 29 drainage areas within the Bellingham subwatershed in collaboration with CRWA;
- 2) compile data on each drainage area and select 6 priority sites;
- 3) produce an existing site conditions analysis and preliminary design plans at each of the priority sites; and
- 4) identify stormwater management opportunities for the remaining sites.

Cost: \$45,090

Funding: \$45,090 – U.S. Environmental Protection Agency

Duration: 2010 – 2012

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2010
SECTION 604(b) PROJECT 10-05

Stormwater Assessment & Stormwater Retrofit Plan

Grantee: City of Peabody

Watershed: North Coastal

Description: This project will perform a stormwater retrofit assessment and develop conceptual design plans that the City could implement to improve altered hydrology in the City. This project will identify, evaluate, and prioritize structural and non-structural Best Management Practices (BMPs) to control nonpoint source pollution problems and ultimately improve water quality and attenuate stormwater runoff conditions in the North River watershed. A comprehensive stormwater retrofit assessment will be conducted of the City's stormwater management systems on publicly owned parcels in the North River watershed. Tasks include:

- 1) identify subwatershed stormwater retrofit potential and feasibility;
- 2) identify the most effective sites and most appropriate BMPs to improve stormwater runoff water quality as well as reduce water quantity and peak flow rates discharging into the watershed; and
- 3) prepare conceptual design plans, sizing calculations, and cost estimates for potential BMP retrofit opportunities.

Cost: \$38,440

Funding: \$35,240 – U.S. Environmental Protection Agency
\$3,200 – City of Peabody

Duration: 2010 – 2012

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2010
SECTION 604(b) PROJECT 10-06

Strategic Fish Tissue Monitoring Survey to Assess Mercury Impairments

Grantee: New England Interstate Water Pollution Control Commission

Watershed: Statewide

Description: The objective of this project is to complete a comprehensive regional fish tissue monitoring survey to assess the status of mercury impairments in the region and the impacts of mercury reduction activities. The results will support the re-evaluation of the Northeast Regional Mercury Total Maximum Daily Load. New England Interstate Water Pollution Control Commission will coordinate the design and development of a regional approach to fish tissue monitoring with other New England states and coordinate this effort with the on-going Massachusetts monitoring plan and existing database. Tasks include:

- 1) revise existing Massachusetts approved Quality Assurance Project Plan to meet EPA requirements;
- 2) collect fish tissue samples from both Smallmouth Bass (SMB) and Largemouth Bass (LMB) and from specific Massachusetts lakes recommended by the Department to augment Massachusetts data;
- 3) assist MassDEP Wall Experiment Station staff with sample processing;
- 4) perform SMB/LMB fish tissue mercury comparisons; and
- 5) provide quarterly and final project reports.

Cost: \$75,783

Funding: \$75,783 – U.S. Environmental Protection Agency

Duration: 2010 – 2012

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2011
SECTION 604(b) PROJECT 11-01

Aberjona River Watershed BMP Development Project

Grantee: City of Woburn

Watershed: Mystic

Description: This project will evaluate subwatersheds in Woburn, Burlington, Reading, and Winchester to identify suitable sites for retrofitting with structural stormwater Best Management Practices (BMPs) that will address pollutants of concern as recommended in the EEA Mystic River Watershed Action Plan. Potential retrofit sites will be prioritized based on water quality assessment, GIS analysis, site surveys, and a collaborative decision-making process. Conceptual designs and cost estimates will be prepared for one site in each of the four participating municipalities. This project will provide each of the four participating municipalities with a list of BMP projects they can implement to remediate water quality impairments in the Aberjona River watershed. Tasks include:

- 1) prepare list of Town preferred BMPs;
- 2) revise existing Quality Assurance Project Plan for wet weather monitoring;
- 3) conduct analysis of nonpoint source loading;
- 4) conduct analysis of priority drainage basins to screen potential BMP sites;
- 5) prioritize sites for BMP implementation;
- 6) conduct wet weather monitoring at priority sites;
- 7) survey sites and collect design data;
- 8) prepare conceptual designs and cost estimates; and
- 9) prepare quarterly and final reports.

Cost: \$67,500

Funding: \$49,860 – U.S. Environmental Protection Agency
\$17,640 – Woburn, Burlington, Reading, & Winchester

Duration: 2011 – 2013

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2011
SECTION 604(b) PROJECT 11-02

Stormwater Best Management Practices Retrofit Development

Grantee: Town of Milton

Watershed: Neponset

Description: This project will replicate stormwater Best Management Practice (BMP) development efforts ongoing in other Boston Harbor watershed towns. A mobile GIS based strategy will be used to survey subwatersheds in the Town of Milton to identify suitable sites for retrofitting with structural stormwater BMPs that address pathogens and other pollutants of concern as recommended in applicable Total Maximum Daily Loads and EEA Watershed Action Plan. Conceptual designs for BMPs will be developed at three or more sites and less detailed cost estimates at an additional seven sites. The Milton Department of Public Works will partner with the Neponset Watershed Association to identify sites suitable for retrofitting with structural stormwater BMPs and to develop conceptual designs for BMPs at those sites. Tasks include:

- 1) identify at least three sites (neighborhoods or discrete collection areas) that are amenable to the implementation of structural BMP retrofits in the near term;
- 2) prepare conceptual designs and cost estimates to support future applications for implementation funding at those sites;
- 3) assemble planning level data on as many other retrofit opportunities as possible, to guide longer term efforts and infrastructure planning; and
- 4) apply and refine a methodology which is being used successfully in other Neponset communities to efficiently identify and prioritize stormwater BMP retrofit opportunities.

Cost: \$40,258

Funding: \$37,010 – U.S. Environmental Protection Agency
\$3,248 – Town of Milton

Duration: 2011-2013

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2011
SECTION 604(b) PROJECT 11-03

Cranberry Bog Nutrient Loss Study

Grantee: Town of Carver

Watershed: Buzzards Bay

Description: This project will collect data to better understand actual nutrient losses from various types and configurations of cranberry bogs. This project will collect information to estimate the potential for nitrogen to discharge from cranberry bogs of various configurations. This information can be used to more accurately model the potential contribution that cranberry bogs may be making to the eutrophication of Buzzards Bay estuaries. Tasks include:

- 1) identification of six bogs from two different bog types – three pass-through bog systems and three closed-loop systems;
- 2) develop Quality Assurance Project Plan and a sampling plan;
- 3) install groundwater monitoring wells and water level loggers;
- 4) data collection and analysis over 24 months; and
- 5) prepare quarterly & final reports.

Cost: \$68,642

Funding: \$58,642 – U.S. Environmental Protection Agency
\$10,000 – Cape Cod Cranberry Growers Assoc. & Coalition for Buzzards Bay

Duration: 2011-2014

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2011
SECTION 604(b) PROJECT 11-04

Bacteria Source Tracking & Mitigation in the Hoosic River Watershed

Grantee: Berkshire Regional Planning Commission

Watershed: Hudson

Description: The project will identify nonpoint sources of bacterial contamination in the Hoosic River watershed and develop strategies to mitigate the sources found. This work will continue work initiated by the MassDEP's Division of Watershed Management, Pilot Bacteria Source Tracking Program, to address the primary cause of impairment in the watershed. Tasks include:

- 1) develop a Quality Assurance Project Plan that builds on MassDEP's Bacteria Source Tracking Program;
- 2) assemble existing data into a geo-referenced database;
- 3) collect, analyze, and document water quality samples;
- 4) maintain communication of project efforts and results with municipalities and MassDEP WERO;
- 5) identify and prioritize a minimum of three sites for mitigation; and
- 6) prepare quarterly & final project reports.

Cost: \$63,100

Funding: \$56,300 – U.S. Environmental Protection Agency
\$6,800 – Massachusetts College of Liberal Arts

Duration: 2011 -2014

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2012
SECTION 604(b) PROJECT 12-01

Kingston Town Center Stormwater Assessment Project

Grantee: Town of Kingston

Watershed: South Coastal

Description: This project will continue local efforts to assess and remediate bacterial water quality impairments of the lower Jones River and Duxbury Bay where Total Maximum Daily Loads are required due to pathogenic contamination (Category 5 listing for pathogens). This phase will focus on a subwatershed of the Jones River in and around Kingston town center where “first flush” stormwater sampling will occur during two storm events at four MassDOT outfalls and six town-owned outfalls that discharge to the Jones River. Analysis of water quality data and “first flush” volumes will direct prioritization of new remediation design plans while an on-going Massachusetts Bays Research & Planning project will advance development of final, implementation ready design plans. Stormwater remediation plans generated through the 604(b) project will include low impact development Best Management Practices (BMPs) that provide the highest bacterial removal efficiencies in accordance with Massachusetts Stormwater regulations. Through these stormwater assessment and planning activities this project will promote restoration of beneficial uses in impaired waters and will address regional public health, environmental, economic, and recreational, as well as aesthetic concerns. Tasks include:

- 1) prepare Quality Assurance Project Plan for wet-weather monitoring;
- 2) collect “first flush” water quality samples for two storm events;
- 3) conduct analysis of water quality samples;
- 4) conduct analysis of priority sites to screen potential BMP designs;
- 5) prioritize sites for BMP implementation;
- 6) survey sites, collect design data and create conceptual designs for these sites;
- 7) prepare preliminary design plans and cost estimates for three sites; and
- 8) prepare quarterly and final reports.

Cost: \$54,480

Funding: \$48,620 – U.S. Environmental Protection Agency
\$5,860 – Town of Kingston

Duration: 2012 -2014

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2012
SECTION 604(b) PROJECT 12-02

Fluvial Geomorphic & Habitat Assessment of the North River

Grantee: Franklin Regional Council of Governments

Watershed: Deerfield

Description: This project will complete a geomorphic assessment and a fish community and physical habitat survey of the North River. Stream bank erosion was previously identified as a significant source of nonpoint source pollution in this watershed. The geomorphic assessment will provide information on the causes of erosion, channel instability and habitat and water quality degradation. Causes for channel instabilities will be determined and solutions identified to improve aquatic habitat and water quality. The current fish community and habitat conditions will be characterized and provide data that will inform the work of the fluvial geomorphologist. This project will: characterize fish community and habitat conditions; provide water quality data for the North River watershed; provide conceptual restoration designs for 4 reaches in sufficient detail for a Section 319 proposal; and provide final (30%) engineering design and cost estimates for the highest priority restoration site. Tasks include:

- 1) prepare Quality Assurance Project Plan for the physical habitat and fish survey tasks;
- 2) conduct reconnaissance surveys of the project watershed and select five reaches to represent the range of conditions along the East Branch of the North River;
- 3) physical habitat, fish communities, and water chemistry sampling from the five survey reaches;
- 4) perform fluvial geomorphic assessment of the East Branch North River; and
- 5) public outreach through flyers, press releases, website posts, and public meetings.

Cost: \$65,707

Funding: \$61,200 – U.S. Environmental Protection Agency
\$4,507 – Franklin Regional Council of Governments

Duration: 2012 – 2015

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2012
SECTION 604(b) PROJECT 12-03

Arcadia Lake & Metacomet Lake Watershed Assessment

Grantee: Pioneer Valley Planning Commission

Watershed: Connecticut

Description: This project will identify and assess nonpoint pollution sources to Arcadia and Metacomet Lakes and will assist watershed residents and Belchertown Town officials in the development and implementation of a stormwater management project. Tasks include:

- 1) conduct shoreline surveys of each of the two lakes to identify and map potential sources of pollution;
- 2) identify water quality monitoring locations;
- 3) conduct water quality sampling to determine which subwatersheds deliver the greatest pollutant loads to the lakes;
- 4) survey high priority subwatershed areas identified through water quality monitoring to track sources of pollution;
- 5) develop preliminary Green Infrastructure/Low Impact Development Best Management Practice design and cost estimates for nonpoint source control at 3 to 4 high priority locations;
- 6) work with residents and town officials to share results and promote better stormwater management practices; and
- 7) prepare quarterly & final reports.

Cost: \$55,092

Funding: \$50,000 – U.S. Environmental Protection Agency
\$5,092 – Pioneer Valley Planning Commission

Duration: 2012 – 2015

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2012
SECTION 604(b) PROJECT 12-04

Sassaquin Pond Stormwater Restoration Project

Grantee: City of New Bedford

Watershed: Buzzards Bay

Description: The project will conduct an analysis of the nonpoint source pollution in the Sassaquin Pond watershed and develop a plan for improving the waters of Sassaquin Pond. Low Impact Development (LID) strategies, due to their ability to mimic natural conditions and the lower cost of implementation, will be investigated to determine their feasibility. Structural Best Management Practices (BMPs) will also be investigated if LID BMPs are not feasible. Tasks include:

- 1) review existing plans, reports, soils information, and parcel data as it relates to the stormwater drainage system;
- 2) evaluate the watershed for specific LID BMPs;
- 3) examine specific parcels where LID BMPs may be appropriate;
- 4) identify up to ten possible locations for LID BMPs;
- 5) perform hydrologic modeling of the watershed to determine flows and preliminary sizing of the selected BMP locations;
- 6) perform calculations and analysis for structural BMPs, if appropriate;
- 7) prepare conceptual designs and sketches, including landscaping architecture, for the ten selected BMP locations;
- 8) develop preliminary cost estimates for the BMPs based on the conceptual sketches;
- 9) prepare a brochure and PowerPoint presentation describing nonpoint source pollution issues and the impacts that nonpoint source pollution has on Sassaquin Pond; and
- 10) present the PowerPoint presentation at up to three information sessions.

Cost: \$59,132

Funding: \$50,552 – U.S. Environmental Protection Agency
\$8,580 – City of New Bedford

Duration: 2012 – 2014

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2013
SECTION 604(b) PROJECT 13-01

Mystic River Headwaters: Alewife & Mill Brook Subwatersheds

Grantee: Town of Arlington

Watershed: Mystic

Description: The Town of Arlington will partner with the Town of Belmont to collectively address the problem of nonpoint source pollution in the Alewife and Mill Brook subwatersheds. The two municipalities will identify pollution sources and reduce pollutant loading through an examination of solutions with a focus on “green” structural Best Management Practices (BMPs). This collaborative approach will allow the Towns to share key expertise at a reduced cost, foster communication on the shared resources (Alewife Brook and Mystic River) and provide greater opportunity to learn from the projects completed in each other’s communities. The project will focus on “green” structural BMPs – based on Low Impact Design principles – because of their demonstrated performance, cost effectiveness, and the broad community benefits that they impart. Specific BMPs that may be considered during the project include vegetated swales, bioretention structures, permeable pavement, street trees, and rainwater harvesting.

The project goals include developing conceptual designs for five BMPs – three within Arlington and two in Belmont – that will reduce pollutant loading from respective sites to water bodies in the Alewife and Mill Brook subwatersheds. This project will provide the towns with the information, experience, and tools necessary to move forward with more widespread BMP implementation in the future. Tasks include:

- 1) kickoff and preparation of preferred BMP list;
- 2) review continuous monitoring sampling plan and Quality Assurance Project Plan (QAPP) with MassDEP and amend plan and QAPP accordingly;
- 3) conduct GIS analysis of nonpoint source loading;
- 4) conduct GIS analysis of priority drainage basins to screen potential BMP sites;
- 5) prioritize sites for BMP implementation;
- 6) conduct continuous sampling at final sites and in-stream load analysis;
- 7) survey sites to verify feasibility of preferred BMPs and to collect design data;
- 8) prepare conceptual designs and cost estimates; and
- 9) reporting and project management.

Cost: \$48,380

Funding: \$39,580 – U.S. Environmental Protection Agency
\$8,800 – Town of Arlington

Duration: 2013 – 2015

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2013
SECTION 604(b) PROJECT 13-02

Provincetown Harbor – Commercial Street Reconstruction – Phase 3

Associated Projects: 17-02, 09A-04

Grantee: Town of Provincetown

Watershed: Cape Cod

Description: The Town of Provincetown will continue with the Phase 3 Preliminary Design of Commercial Street as part of the Provincetown Harbor Stormwater Mitigation Project. This design would address the storm water impacts of a portion of Commercial Street beginning at the intersection of Johnson Street and heading east approximately 2,300 feet to Howland Street with the installation of porous pavement and other drainage improvements. This project will improve the water quality of the six ocean outfalls that currently discharge from this area into Provincetown Harbor.

Prior work in this area includes the construction of Phase 1 with funding assistance from the MassWorks Infrastructure Program (funded under a Public Works Economic Development (PWED) grant). Preliminary design of the Phase 2 area was developed with funding assistance from an American Recovery and Reinvestment Act (ARRA) 2009 604(b) Water Quality Management Planning Grant. The Section 319 Nonpoint Source Pollution Competitive Grant Program provided funding assistance for Phase 2 which will begin final design this spring/summer with construction to follow during the fall of 2013 and spring of 2014. Tasks include:

- 1) site survey and data collection;
- 2) prepare preliminary design plans – 50% Review; and
- 3) project reporting.

Cost: \$74,346

Funding: \$73,946 – U.S. Environmental Protection Agency
\$400 – Town of Provincetown

Duration: 2013 – 2015

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2013
SECTION 604(b) PROJECT 13-03

West Falmouth Harbor Wetland Restoration Feasibility Assessments

Grantee: Cape Cod Conservation District

Watershed: Cape Cod

Description: This project will determine the feasibility of restoring three previously identified tidally restricted wetland systems within this impaired water body in order to improve water quality and restore salt marsh and benthic habitats. The restoration of natural tidal flow to a coastal ecosystem improves their ecosystem services and values, including improved water quality and improved habitat. These feasibility assessments for tidal restoration will directly advance the water quality management priorities of the Town of Falmouth and MassDEP, as these assessments are the first steps which will lead to implementation (e.g. installation of new larger culverts to restore tidal flow). Restoration of tidal flow at the tidally restricted sites within West Falmouth Harbor will improve water quality by decreasing nitrogen concentrations and increasing dissolved oxygen. Salt marsh health and functioning and benthic habitats will also improve as a result.

Seven separate tidal restrictions were previously identified within the West Falmouth watershed (Atlas for Tidally Restricted Salt Marshes in the Buzzards Bay watershed, published in 2004 by the Buzzards Bay National Estuary Program). These sites include the bridge at Mashapaquit Creek, the bridge on Chapaquoit Road, the culvert into Oyster Pond, the culvert west of the Chapaquoit Road bridge, the culvert south of FA19, and two culverts on the west side of Falmouth Harbor on Chappaquoit Island. Three of these sites will be selected in consultation with MassDEP and the Town of Falmouth for this project. Tasks include:

- 1) prepare Quality Assurance Project Plan for site assessment and modeling tasks;
- 2) conduct site inspection and GIS mapping;
- 3) conduct tidal survey and assessment;
- 4) supplemental ground survey and low-lying property assessment;
- 5) analytical hydraulic/hydrologic modeling;
- 6) landowner coordination and outreach;
- 7) prepare a digital inventory of project data; and
- 8) prepare quarterly & final reports.

Cost: \$48,934

Funding: \$47,934 – U.S. Environmental Protection Agency
\$1,000 – Cape Cod Conservation District

Duration: 2013 – 2015

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2013
SECTION 604(b) PROJECT 13-04

Westwood – Green Infrastructure Planning

Grantee: Town of Westwood

Watershed: Neponset

Description: This project will identify voluntary retrofitting opportunities on private property that is not the subject of active redevelopment, as a strategy for reducing water quality, hydrologic, and habitat impacts. The goal of the project is to retrofit existing impervious surfaces on private property, using green infrastructure techniques. Once potential sites are identified and landowner interest established, the Town will work with private landowners to encourage them to implement recommended measures, through a program of general education, technical assistance workshops, and other incentives. A variety of mechanisms such as water banks, tradable mitigation credits or storm water utilities may be considered to support and incentivize retrofits in areas where they would otherwise be unlikely to occur. Tasks include:

- 1) identify and prioritize private properties where simple, low-cost, green infrastructure techniques, such as downspout disconnection, rain gardens, rain barrels, and dry wells are feasible retrofit options;
- 2) identify private property owners willing to consider implementation of such practices on their land;
- 3) develop and test a methodology that can be utilized as a model in other communities facing similar challenges; and
- 4) prepare quarterly and final project reports.

Cost: \$25,974

Funding: \$23,974 – U.S. Environmental Protection Agency
\$2,000 – Town of Westwood

Duration: 2013 – 2015

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2013
SECTION 604(b) PROJECT 13-05

Ipswich River Watershed Resource Assessment & Protection Plan

Grantee: Metropolitan Area Planning Council

Watershed: North Coastal

Description: The project will address water quality and quantity issues that persist within the Ipswich River watershed, with a focus on the town of Ipswich. The objectives include: to assess subwatersheds of the Ipswich River and its tributaries to identify and prioritize potential sites for the implementation of storm water Best Management Practices (BMPs) using a green infrastructure approach; and to prepare preliminary engineering designs for the highest priority sites that the town can move to implementation following this project. The project will provide targeted technical assistance for both structural and non-structural management of storm water with the goal of promoting sustainable green infrastructure approaches to the water quality challenges of the Ipswich River. Tasks include:

- 1) convene local task force;
- 2) prepare GIS maps of the watershed;
- 3) compile and summarize existing data;
- 4) conduct initial screening for green infrastructure/BMP implementation sites;
- 5) develop BMP alternatives matrix and select preferred options;
- 6) conduct field reconnaissance/final screening of potential green infrastructure/BMP sites;
- 7) prepare preliminary green infrastructure BMP designs; and
- 8) project management and reporting

Cost: \$44,236

Funding: \$23,736 – U.S. Environmental Protection Agency
\$20,500 – Metropolitan Area Planning Council

Duration: 2013 – 2015

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2014
SECTION 604(b) PROJECT 14-01

North Allston Subwatershed Restoration Plan

Grantee: City of Boston – Boston Redevelopment Authority

Watershed: Charles

Description: The Boston Redevelopment Authority in partnership with the Charles River watershed Association will develop a Restoration Plan for a subwatershed in the North Allston neighborhood and integrate this plan with ongoing public realm improvement efforts and development projects in the area.

The project team will identify a priority subwatershed in North Allston, evaluate various Green Infrastructure (GI) design options in terms of feasibility and benefits, and develop a subwatershed scale restoration plan that will enable the City to meet regulatory requirements at the least cost and with maximum environmental benefit. Tasks include:

- 1) develop a GI Plan that uses Low Impact Development techniques, decentralized storm water management and increased vegetation to improve storm water management and restore a more natural hydrologic regime in this dense urban neighborhood;
- 2) identify priority retrofit projects and demonstrate the multiple benefits of GI;
- 3) ensure that this Plan is integrated with the City’s ongoing public realm improvement efforts; and
- 4) conduct public outreach and education about GI and its application in an ultra-urban environment like North Allston.

Cost: \$64,546

Funding: \$48,546 – U.S. Environmental Protection Agency
\$16,000 – City of Boston/BRA

Duration: 2014 – 2017

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2014
SECTION 604(b) PROJECT 14-02

Chicopee River Bacteria Source Tracking

Grantee:	Pioneer Valley Planning Commission
Watershed:	Chicopee
Description:	<p>This project will identify the degree to which illicit connections and urban stormwater are contributing to bacteria impairments on the Chicopee River and associated tributaries. The Grantee will work with watershed residents and municipal officials in Chicopee, Ludlow, and Springfield toward development and implementation of a project to restore water quality. The proposed project will complement the ongoing work to eliminate combined sewer overflows and improve flow from hydropower operations. As the project proposes to organize and train a watershed team, this work will also help build capacity towards a revived watershed group for the Chicopee River. Tasks include:</p> <ol style="list-style-type: none">1) contribute to ongoing and future assessments of whether bacterial contamination impairs the river's ability to support primary (and in some cases secondary) contact recreation;2) engage watershed residents, municipal officials, and other interested stakeholders in advancing improved water quality in the Chicopee River, Poor Brook, and Fuller Brook;3) locate sources of bacterial contamination within targeted subwatersheds; and4) recommend appropriate action to initiate remediation (including preliminary structural BMP design where appropriate).
Cost:	\$56,800
Funding:	\$50,000 – U.S. Environmental Protection Agency \$6,800 – Pioneer Valley Planning Commission
Duration:	2014 – 2017

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2014
SECTION 604(b) PROJECT 14-03

Stormwater mitigation: Ell Pond

Grantee: City of Melrose

Watershed: Mystic

Description: This project seeks to build upon the decades of work undertaken by the City to improve water quality and hydraulic capacity of Ell Pond. Earlier work has eliminated cross connections and mitigated flooding by increasing outlet capacity. The City will now address the storm water system discharging into Ell Pond by identifying points in the system where Best Management Practice units could be installed. The 1,100-acre Ell Pond watershed lies primarily in Melrose and includes some 85,000 linear feet of streets in five subwatersheds. Given the size and complexity of the Melrose storm drain system flowing into Ell Pond, the work to identify sites and develop preliminary designs will be conducted in two phases, separated by a 2-3-year period of construction implementation. Tasks include:

- 1) conduct project mapping and delineation of all subdrainage areas;
- 2) calculate the “first flush” volumes for all subdrainage areas;
- 3) prepare an EPA and MassDEP approved Quality Assurance Project Plan and Standard Operating Procedure for subsurface investigations;
- 4) conduct water quality sampling and analysis at up to 15 locations in the select subdrainage areas during the “first flush” of two rain events;
- 5) calculate mass balance values for each location;
- 6) prioritize areas warranting treatment;
- 7) develop conceptual design drawings for all areas deemed to warrant treatment;
- 8) develop estimates of construction cost;
- 9) conduct subsurface soils investigations for up to ten locations;
- 10) prepare preliminary design drawings for up to ten locations; and
- 11) prepare draft final and final reports that include all mapping, drawings, tables, and descriptions of the work completed with conclusions and recommendations.

Cost: \$56,130

Funding: \$50,000 – U.S. Environmental Protection Agency
\$6,130 – City of Melrose

Duration: 2014 – 2016

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2014
SECTION 604(b) PROJECT 14-04

Stockbridge Bowl Watershed Assessment

Grantee: Town of Stockbridge

Watershed: Housatonic

Description: The Stockbridge Bowl Watershed Assessment Project will identify the major contributing sources of sediment and organic material to Stockbridge Bowl from the subwatersheds of the lower, southern portion of the lake and the Lily Brook watershed, and develop strategies to address these sources. The project will accomplish this by running sediment yield modeling, conducting detailed field reconnaissance, and developing conceptual Best Management Practice (BMP) designs for two or three high priority sites. Controlling sediment inputs to these will aid in the overall goal of reducing the prolific growth of exotic aquatic macrophytes, particularly *Myriophyllum spicatum*. Tasks include:

- 1) delineate subwatersheds in the project areas and create GIS-based analyses to estimate which sites are most likely to contribute significant sediment loading to the lower lake; conduct field work to verify delineations and identify probable sources of sediment;
- 2) conduct a Sediment Yield Analysis to estimate the sediment loads from land uses, streambank erosions, and other probable contributors;
- 3) prepare conceptual level BMPs and cost estimates for up to three of the most significant contributors; and
- 4) conduct a public education effort to engage residents within the targeted subwatersheds to aid in the identification and mitigation of sediment inputs and increase their awareness of nonpoint source pollution.

Cost: \$57,500

Funding: \$50,000 – U.S. Environmental Protection Agency
\$7,500 – Town of Stockbridge

Duration: 2014 – 2017

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2015
SECTION 604(b) PROJECT 15-01

Berkshire Regional Phase II NPDES

Grantee: Berkshire Regional Planning Commission

Watershed: Hudson & Housatonic

Description: The Berkshire Regional Planning Commission (BRPC) will work with the Towns of Adams, Cheshire, Dalton, and Lanesborough and the City of Pittsfield to form a NPDES Regional Working Group to develop a plan to address the cost of stormwater management and Municipal Separate Storm Sewer System (MS4) compliance. BRPC will conduct research to determine if a stormwater utility is appropriate for the City and Towns. BRPC will quantify the current and future cost of stormwater management programs, estimate the costs to comply with MS4 requirements, and develop regional agreements and funding structures to address the cost of stormwater management and MS4 compliance. Tasks include:

- 1) assist the NPDES Phase II regulated communities of Adams, Cheshire, Dalton, Lanesborough, and Pittsfield in developing an effective and efficient strategy to fund compliance with the Massachusetts Small MS4 General Permit; and
- 2) provide outside expertise to each community, both individually and collectively, to evaluate current practices and develop a recommended approach.

Cost: \$50,000

Funding: \$50,000 – U.S Environmental Protection Agency

Duration: 2015 – 2017

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2015
SECTION 604(b) PROJECT 15-02

Green Infrastructure Strategy

Grantee: Town of Watertown

Watershed: Charles

Description: The Town of Watertown will build on previous green infrastructure (GI) planning efforts, including Massachusetts projects funded by the Section 604(b) program and projects elsewhere in the region, to identify GI priorities for Watertown. A number of these GI projects have developed and tested GIS methodologies to assess sources of pollutant loadings and to identify promising areas for GI projects. In addition, there has been substantial research on the performance and cost-effectiveness of various GI designs in different circumstances from the Charles River Watershed Association's Blue Cities Program, the University of New Hampshire Stormwater Center, and elsewhere. Watertown will draw on the results of these projects, both to inform stakeholders about effective green infrastructure approaches and to recommend green infrastructure priorities for Watertown. Tasks include:

- 1) apply proven analytic and planning methods to identify opportunities and constraints for green infrastructure projects in Watertown;
- 2) educate key decision makers about the benefits and practicalities of green infrastructure projects;
- 3) develop a list of priority sites and projects for town road, parks and other public property improvements;
- 4) engage a broad stakeholder effort to select and develop preliminary designs and implementation plans for two pilot projects for initial implementation; and
- 5) develop a reporting process to track GI components of future developments and redevelopments on both public and private property by either the property owner or the town.

Cost: \$54,370

Funding: \$41,110 – U.S. Environmental Protection Agency
\$13,260 – Town of Watertown

Duration: 2015 – 2018

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2015
SECTION 604(b) PROJECT 15-03

Manhan River Water Quality Monitoring & Source Tracking

Grantee: Pioneer Valley Planning Commission

Watershed: Connecticut

Description: The Pioneer Valley Planning Commission will work to identify the major sources of *E. coli* impairment in the Manhan River, including nonpoint sources and potential illicit connections through water quality monitoring and bacterial source tracking. The *Connecticut River 2003 Watershed Water Quality Assessment Report* recommends bacteria monitoring “to assess the Primary and Secondary Contact Recreation uses in the upper and lower sections of this segment.” Tasks include:

- 1) identify sources of bacterial contamination through targeted sampling based on land uses and features, and past stormwater outfall mapping;
- 2) enhance data associated with an understanding of the river’s ability to support primary recreational uses;
- 3) engage municipal officials in Southampton and Easthampton, residents, and other stakeholders in understanding and improving water quality of the Manhan River, with the potential to form a watershed organization; and
- 4) provide recommendations for remediation, including preliminary design of Best Management Practices, and other follow-up work.

Cost: \$55,700

Funding: \$50,000 – U.S. Environmental Protection Agency
\$5,700 – Pioneer Valley Planning Commission

Duration: 2015 – 2018

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2015
SECTION 604(b) PROJECT 15-04

Phosphorus Sources for Hummock & Miacomet Ponds

Grantee: Town of Nantucket

Watershed: Islands

Description: Both Hummock and Miacomet Ponds are major public recreational resources on Nantucket, but both experience algae blooms in summer, including cyanobacteria at potentially hazardous levels. Extensive work has evaluated nitrogen loading in conjunction with the Massachusetts Estuaries Program, and in-lake phosphorus levels are known to be elevated, but there has been no focused assessment of the sources of phosphorus supporting algae blooms. With low atmospheric inputs and minimal overland runoff or stream flow, the likely sources are groundwater and internal release from sediment. Groundwater will be influenced by both wastewater disposal and stormwater infiltration. This project seeks to sample groundwater entering the lake and test surficial sediments to determine the potential for those sources to supply enough phosphorus to support observed blooms. The Town of Nantucket will conduct additional work to assess blooms and oxygen status critical to release of phosphorus from sediments. This project will allow planning for nutrient reductions to improve the conditions of these ponds, and complements the work done to date by the Town, UMass School for Marine Science and Technology, and independent researchers. This project will also provide data to MassDEP for potential development of a Total Maximum Daily Load for phosphorus for each lake. Tasks include:

- 1) prepare a Quality Assurance Project Plan;
- 2) conduct groundwater sampling;
- 3) conduct surficial sediment sampling;
- 4) conduct a dissolved oxygen assessment of the ponds;
- 5) characterize the algae communities; and
- 6) prepare a final project report.

Cost: \$31,850

Funding: \$26,850 – U.S. Environmental Protection Agency
\$5,000 – Town of Nantucket

Duration: 2015 – 2017

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2015
SECTION 604(b) PROJECT 15-05

Sturbridge Stormwater Pollution Reduction

Grantee: Central Massachusetts Regional Planning Commission

Watershed: Quinebaug

Description: Green Infrastructure and Low Impact Development (LID) techniques reduce stormwater runoff from residential and commercial development and mimic natural site hydrology by storing, infiltrating, and recharging stormwater on site. Currently the Town of Sturbridge does not have an LID Bylaw, which is identified as a need in the Town's Master Plan. With this project, the Central Massachusetts Regional Planning Commission (CMRPC) will assist the Town in the development of an LID Bylaw for passage at the Sturbridge Town Meeting. The second task to be completed by CMRPC is the development of an LID-based education component that will be implemented at Old Sturbridge Village (OSV), the largest outdoor museum in New England with 260,000 annual visitors. Thirdly, CMRPC will work with OSV on a conceptual drawing/feasibility study for the OSV main visitor parking lot. This parking lot has been identified with having existing stormwater runoff issues. If implemented, these activities will help to lead to better water quality throughout the Town, which drains into the Quinebaug River watershed. Tasks include:

- 1) develop an LID Bylaw for implementation by the Town of Sturbridge;
- 2) conduct an LID based education program; and
- 3) prepare LID conceptual designs for OSV parking area.

Cost: \$25,740

Funding: \$23,240 – U.S. Environmental Protection Agency
\$2,500 – Central Massachusetts Regional Planning Commission

Duration: 2015 – 2017

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2016
SECTION 604(b) PROJECT 16-01

Nutrient Loading for Lake Garfield, Monterey

Grantee: Town of Monterey

Watershed: Housatonic

Description: The Grantee will conduct an in-lake and watershed assessment of phosphorus inputs to Lake Garfield and evaluate management options. Observed water quality issues have resulted in this waterbody being placed on the integrated list of impaired waters for elevated phosphorus, low oxygen, and aquatic invasive species (Eurasian water milfoil). This project seeks to augment existing data to support development of a Total Maximum Daily Load for phosphorus which very likely also relates to the depression of oxygen. The primary data needs are quantification of storm water phosphorus inputs from diffuse sources around the lake, updated in-lake phosphorus and oxygen profiles that include the deepest water, and assessment of internal phosphorus loading from sediment under anoxic water. Newly generated data will be used to characterize phosphorus loading to Lake Garfield. The model will be applied to determine the level of reduction necessary to reach a loading level appropriate to the designated uses of this lake, and to evaluate specific management actions for their ability to achieve the necessary load reduction. Tasks include:

- 1) prepare a Quality Assurance Project Plan to cover all activities under this project;
- 2) obtain in-lake oxygen profiles in the deepest part of the lake from spring through summer;
- 3) measure in-lake phosphorus concentrations in the epilimnion and hypolimnion during stratification;
- 4) pre-storm, first flush and post-storm water sampling for 3 storms;
- 5) assessment of available phosphorus in surficial sediment in areas subject to anoxia;
- 6) calibration of a lake and watershed model;
- 7) determination of target phosphorus loading to meet water quality objectives;
- 8) testing of watershed and in-lake management scenarios to determine how target loading can be met; and
- 9) prepare a comprehensive report of the results and management implications of the above tasks.

Cost: \$51,045

Funding: \$44,320 – U.S. Environmental Protection Agency
\$6,725 – Town of Monterey

Duration: 2016 – 2018

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2016
SECTION 604(b) PROJECT 16-02

Documenting Bacterial Contamination Improvements

Grantee: Berkshire Regional Planning Commission

Watershed: Housatonic & Hudson

Description: The Berkshire Regional Planning Commission (BRPC) will document current bacterial levels in select river segments of the Hoosic and Housatonic River watersheds to determine if bacteria levels have decreased in those river segments due to known land use changes and/or infrastructure improvements conducted by municipal public works departments. BRPC will document whether these select river segments meet MassDEP's criteria for Primary Contact Recreation and if they can become candidates for delisting from the 303(d) list for fecal coliform. Tasks include:

- 1) update existing Quality Assurance Project Plan;
- 2) compile existing *E. Coli* data into master database compatible with MassDEP Watershed Planning Program systems;
- 3) listing of known land use changes and infrastructure improvements;
- 4) collect new water quality samples;
- 5) analyze and summarize water quality data and provide recommendations to address suspected bacterial sources; and
- 6) project management and reporting.

Cost: \$36,025

Funding: \$36,025 – U.S. Environmental Protection Agency

Duration: 2016 – 2018

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2016
SECTION 604(b) PROJECT 16-03

Statewide Stormwater Collaborative

Grantee: Central Massachusetts Regional Planning Commission

Watershed: Statewide

Description: The Central Massachusetts Regional Planning Commission will partner with the existing Massachusetts regional stormwater groups, as well as a technical consultant, to assist in the creation of a Massachusetts Statewide Stormwater Coalition. Key among coalition activities will be to support and enhance the permit implementation for years one to year three of the Massachusetts Separate Storm Sewer System (MS4) permit. The statewide group will promote resource and tool development and sharing across regions, helping regulated municipalities meet terms of the MS4 permit at the least cost possible. Over the past three years, the regional stormwater groups across Massachusetts have formed a strong partnership with MassDEP, EPA, Mass Municipal Association (MMA), and others. Tasks include:

- 1) create a framework to form the Massachusetts Statewide Stormwater Collaborative;
- 2) define needs within the new permit, inventory existing materials, develop collaborative strategies to update these materials, and create a venue for highlighting high quality materials. A compilation of high-quality materials, will be made available for all regional coalitions and municipalities across Massachusetts;
- 3) conduct an inventory and a gaps analysis, then determine which materials and/or tools are most needed by regulated municipalities.
- 4) update MS4 cost estimation spreadsheets to help municipalities achieve stable funding for stormwater work, including consideration of stormwater utilities;
- 5) update municipal code review checklists with new model regulation recommendations based on the new permit requirements;
- 6) conduct an education and outreach campaign that draws from the tenets of community based social marketing and that can therefore provide the metrics required for measuring success for education and outreach under the permit;
- 7) conduct education and outreach that draws on EPA's Soak up the Rain materials to help promote understanding related to permit requirements on retaining the first inch of rainfall in new development or redevelopment projects;
- 8) coordinate program of best practices trainings for municipal officials, possibly with the help of MassDOT's Bay State Roads program;
- 9) coordinate program of trainings for municipal officials on Illicit Discharge and Detection Elimination requirements and source tracking strategies, possibly in collaboration with MassDEP and EPA; and
- 10) conduct presentations at the MMA conferences to educate municipal leaders statewide.

Cost: \$64,300

Funding: \$53,500 – U.S. Environmental Protection Agency
\$10,800 – Central Mass Regional Planning Commission

Duration: 2016 – 2018

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2016
SECTION 604(b) PROJECT 16-04

Green Street Guidance

Grantee: City of Cambridge

Watershed: Charles

Description: The City of Cambridge in partnership with the Charles River Watershed Association will develop conceptual green street design plans for three public rights of way and integrate these plans with the City's five-year roadway improvement plan. The Grantee will also develop a general green street guidance document for use by the Department of Public Works, other City agencies, and private developers. The document will provide guidance on green street implementation in space constrained urban settings with a focus on typical residential street layouts in the City of Cambridge.

The Grantee has identified three public roadways scheduled for capital improvements in the coming four years. Conceptual green street designs will be produced for each of the three streets including an evaluation of each design for water quality and quantity impacts and benefits to the Charles River. These plans will enable the City to incorporate green infrastructure installations into some of their smaller scale capital improvement projects which often have very limited design budgets. Systematically integrating green infrastructure into roadway projects will maximum environmental benefit while reducing costs for the City. Tasks include:

- 1) develop three conceptual green street plans that use low impact development techniques, decentralized stormwater management, and increased vegetation to improve stormwater management and restore a more natural hydrologic regime in this dense urban community;
- 2) develop general green street guidance document for dense residential urban streets, a common typology in the City, that can be adapted to future capital improvement projects;
- 3) provide specific input on green street planning for the City-wide master plan; and
- 4) engage various City departments and key stakeholders in discussions about green infrastructure and its application in urban settings.

Cost: \$65,000

Funding: \$45,000 – U.S. Environmental Protection Agency
\$20,000 – City of Cambridge

Duration: 2016 – 2018

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2017
SECTION 604(b) PROJECT 17-01

Jones River Water Quality Assessment & Stormwater BMP Designs

Grantee: Town of Kingston

Watershed: South Coastal

Description: The Jones River Water Quality Assessment and Best Management Practices (BMP) project will continue a multi-phase project to assess and address bacterial water quality impairments to the degraded waters of the lower Jones River and Duxbury Bay. The water quality sampling and engineering design work funded under both the 2011 Mass Bays Grant and the 2012 604(b) Grant led to the implementation of a series of stormwater remediation projects under the Massachusetts Office of Coastal Zone Management (CZM) Coastal Pollutant Remediation (CPR) Grant program in 2013, 2014, 2015, & 2016. This project will use recent survey work from Brook and Elm Streets to develop conceptual and preliminary design plans for the Elm Street outfalls to be included in a State Fiscal Year 2019 CPR grant application in order for BMP implementation to coincide with the head-of-tide dam removal project. Tasks include:

- 1) prepare a Quality Assurance Project Plan for sampling and analysis protocols;
- 2) conduct the water quality survey to include bacteria (fecal coliform, enterococci), and total suspended solids.
- 3) identify sampled locations with the greatest adverse water quality impact;
- 4) create conceptual BMP designs for the outfalls sampled;
- 5) perform subsurface investigations at three locations in a manner satisfactory to meet Stormwater Regulations;
- 6) prepare draft preliminary design plans for BMPs;
- 7) refine preliminary design plans (50% complete, not to include details or technical specifications);
- 8) prepare a construction cost estimate; and
- 9) prepare quarterly reports, draft final, and final reports.

Cost: \$41,020

Funding: \$36,520 – U.S. Environmental Protection Agency
\$4,500 – Town of Kingston

Duration: 2017 – 2019

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2017
SECTION 604(b) PROJECT 17-02

Provincetown Harbor Stormwater Mitigation – Phase 4

Associated Projects: 13-02

Grantee: Town of Provincetown

Watershed: Cape Cod

Description: Through a multi-year effort on Commercial Street, the Town has successfully completed improvement projects with porous pavement in the Phase 1 and 2 areas of Commercial Street. Benefits have been observed with significant improvement in water quality measured by a reduction in beach closures within the limits of the porous pavement. Phase 3 is currently in construction with final completion expected by June 1, 2017. This will expand the improvement corridor for water quality in Provincetown Harbor. With this project the Town of Provincetown will continue with Phase 4 Site Survey and Conceptual Design of Commercial Street as part of the Provincetown Harbor Stormwater Mitigation Project. The design goal is to address the stormwater impacts to a portion of Commercial Street beginning at the intersection of Howland Street and heading east approximately 2,300 feet to Allerton Street with the installation of porous pavement and other drainage improvements. This project will improve the water quality that currently discharges from this area by six ocean outfalls into Provincetown Harbor. Tasks include:

- 1) site survey and data collection;
- 2) preliminary design plans (50% review); and
- 3) project reporting.

Cost: \$40,500

Funding: \$40,000 – U.S. Environmental Protection Agency
\$500 – Town of Provincetown

Duration: 2017 – 2019

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2017
SECTION 604(b) PROJECT 17-03

Feasibility Study for a Stormwater Utility

Grantee: Town of Belchertown

Watershed: Chicopee & Connecticut

Description: This project will help to define a program of sustainable stormwater funding for Belchertown, from obtaining needed information about possible fee models and methodologies that make sense for the Town, to engaging property owners on the need for sustainable stormwater funding and their concerns, to devising a workable strategy to moving forward in funding the stormwater program. Tasks include:

- 1) prepare Request for Responses and select qualified consulting services;
- 2) conduct parcel analysis and calculate equivalent residential unit (ERU);
- 3) define and evaluate the financial elements of the stormwater utility;
- 4) engage the Town's Stormwater Committee so that members learn in-depth about the needs and costs for Belchertown's stormwater program, consider the options in establishing a sustainable funding source for the program, and make recommendations;
- 5) conduct two public roundtable events for property owners to help frame issue of stormwater funding and hear directly about concerns; and
- 6) project reporting.

Cost: \$60,750

Funding \$50,000 – U.S. Environmental Protection Agency
\$10,750 – Town of Belchertown

Duration: 2017 – 2019

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2017
SECTION 604(b) PROJECT 17-04

Cape Cod Stormwater Coalition: Regional Framework for Stormwater

Grantee: Cape Cod Commission

Watershed: Cape Cod

Description: The Cape Cod Commission will develop a regional stormwater management entity, a “Cape Cod Stormwater Coalition” (CCSWC), to assist Cape Cod municipalities in meeting stormwater management requirements under the 2016 Small Municipal Separate Storm Sewer General Permit (MS4 permit) and the Cape Cod 208 Area Wide Water Quality Management Plan (208 Plan). Working with members of the CCSWC and coordinating this effort with the Statewide Coalition project, deliverables will include: inventory of existing resources; needs analysis; gap analysis; cost estimates for each town to meet MS4 requirements; recommendations for financing options, municipal and regional coordination, policies, best management practices (BMPs) and performance measures, Model Public Education and Outreach Plan, recommendations for building a municipal CCSWC to coordinate stormwater management, and public outreach to build public support for improving water quality through stormwater management. Tasks include:

- 1) inventory of existing resources;
- 2) conduct a needs assessment;
- 3) conduct a gap analysis;
- 4) develop collaborative stormwater strategies for efficient and cost-effective stormwater management;
- 5) prepare MS4 cost estimates for each town;
- 6) identify possible financing approaches to help all Cape Cod municipalities achieve stable funding for stormwater management;
- 7) develop recommendations for municipalities for “Incorporating Good Housekeeping and Pollution Prevention for Permittee Owned Operations”;
- 8) identify policies and SOPs for cost-effective stormwater management best-suited to Cape Cod conditions, governance, and needs;
- 9) identify suitable MS4 performance measures and measurable goals from the EPA menu or other sources that would benefit Cape Cod towns;
- 10) prepare a “Model Public Education and Outreach Plan;” and
- 11) provide recommendations for a Regional Stormwater Framework and CCSWC.

Cost: \$103,972

Funding: \$50,000 – U.S. Environmental Protection Agency
\$53,972 – Cape Cod Commission and other project partners

Duration: 2017 – 2019

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2017
SECTION 604(b) PROJECT 17-05

Municipal Facilities Green Infrastructure Retrofit Design

Grantee: City of Waltham

Watershed: Charles

Description: The City of Waltham in partnership with the Charles River Watershed Association will develop conceptual green infrastructure (GI) retrofit design plans for one municipal facility located in the downtown area immediately abutting the Charles River. The project will include analysis, planning, development of a conceptual stormwater treatment design, and stakeholder engagement. The City will produce a conceptual GI retrofit design for the Embassy Parking Lot including an evaluation of each design for water quality and quantity impacts and potential benefits to the Charles River. This plan will enable the City to incorporate GI installations into some of their other capital improvement projects. Tasks include:

- 1) develop one conceptual GI retrofit plan that uses low impact development techniques, decentralized stormwater management, and increased vegetation to improve stormwater management and restore a more natural hydrologic regime in this dense urban community; and
- 2) engage with various City departments and key stakeholders about GI and its application in urban settings.

Cost: \$29,092

Funding: \$17,092 – U.S. Environmental Protection Agency
\$12,000 – City of Waltham

Duration: 2017 – 2019

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2018
SECTION 604(b) PROJECT 18-01

Subwatershed Restoration Planning

Grantee: Town of Milford

Watershed: Charles

Description: The Town of Milford and Charles River Watershed Association will develop a restoration plan for an impacted subwatershed within the Town of Milford that discharges to the Charles River. The project will include analysis, planning, conceptual stormwater treatment design for multiple sites and preliminary engineering design for a priority site, soil assessments, water quality and quantity modeling, and stakeholder engagement. The Town will prioritize the restoration opportunities identified for Town owned or managed parcels and conduct soil assessments at priority sites. The Town will select one priority site for preliminary engineering design. Stakeholders within the community including Town board volunteers and the Milford Water Company will be engaged during the design and prioritization processes. Tasks include:

- 1) conduct an existing condition assessment;
- 2) develop site specific restoration goals;
- 3) produce a comprehensive subwatershed restoration plan;
- 4) identify and prioritize sites;
- 5) prepare preliminary designs for selected sites; and
- 6) prepare quarterly progress and final reports.

Cost: \$59,300

Funding: \$25,000 – U.S. Environmental Protection Agency
\$34,300 – Town of Milford

Duration: 2018 – 2020

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2018
SECTION 604(b) PROJECT 18-02

Green Streets Approach to Improve Water Quality

Grantee: Franklin Regional Council of Governments (FRCOG)

Watershed: Deerfield

Description: The goal of this project is to develop a cost-effective and replicable assessment protocol that calculates stormwater pollutant loads and evaluates site suitability for including Green Infrastructure stormwater Best Management Practices (BMPs) in transportation and downtown revitalization projects. This project will also provide Green Infrastructure (GI) stormwater management BMPs for up to three sites that meet MassDOT's 25% design submission guidelines so the Town of Buckland can incorporate the BMPs into their planned transportation and downtown revitalization projects. Once built, these "Green Streets" can help improve water quality in the Deerfield River. The assessment methods developed for Buckland will be disseminated by FRCOG to other small, rural towns to help them incorporate GI stormwater management techniques into municipal transportation and redevelopment projects in their towns. Tasks include:

- 1) conduct stormwater drainage and pollutant loading analysis;
- 2) conduct a GI feasibility analysis;
- 3) prepare preliminary designs (25%) for two identified sites;
- 4) prepare green streets guidance document for distribution to other towns;
- 5) conduct public outreach to provide project updates; and
- 6) prepare quarterly progress and final reports.

Cost: \$33,800

Funding: \$32,000 – U.S. Environmental Protection Agency
\$1,800 – Franklin Regional Council of Governments

Duration: 2018 – 2020

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2018
SECTION 604(b) PROJECT 18-03

Nutrient Sampling in the Connecticut River Watershed

Grantee: Pioneer Valley Planning Commission

Watershed: Connecticut

Description: Pioneer Valley Planning Commission (PVPC), with project partners United States Geological Survey (USGS), and the Connecticut River Conservancy, will conduct a nonpoint source nutrient sampling program on the Connecticut River in Massachusetts. The project will attempt to characterize nonpoint source loading for up to three land uses in tributaries with the highest nonpoint source nutrient loading to the Connecticut River. Water quality sampling for this study will entail collecting a minimum of 18 cross-sectional composited samples over one year's time to capture the variability of nutrient inputs through the seasons and will be timed to capture high and low flow events. Project results will help determine what land uses are generating the highest nonpoint source net nutrient loads to the Connecticut River within Massachusetts. Further, this project will help to guide nutrient management strategies and future nonpoint sampling efforts. Tasks include:

- 1) select water quality monitoring locations;
- 2) develop Quality Assurance Project Plan for EPA and MassDEP review and approval;
- 3) collect and analyze water quality samples;
- 4) prepare summary report and provide water quality data in MassDEP approved format;
- 5) prepare quarterly progress and final reports; and
- 6) conduct stakeholder meetings.

Cost: \$71,618

Funding: \$66,618 – U.S. Environmental Protection Agency
\$5,000 – Pioneer Valley Planning Commission

Duration: 2018 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2018
SECTION 604(b) PROJECT 18-04

Assessing Nutrient Reduction Scenarios in the Wareham River Watershed

Grantee:	Southeastern Regional Planning and Economic Development District
Watershed:	Buzzards Bay
Description:	<p>The Massachusetts Estuaries Project determined that close to 40% of the total nitrogen load to the Wareham River needs to be removed for water quality to be restored to target levels. Wastewater and cranberry agriculture are the two largest managed sources of nitrogen to the River. The Town of Wareham is actively working on ways to expand sewerage to reduce the nitrogen from septic wastewater. Cranberry agriculture represents about one-third of the area of the Wareham River watershed and is estimated to contribute approximately 20% of the non-atmospheric nitrogen load to the Wareham River. As the cranberry industry is evolving towards higher-yielding varieties, there has been increasing interest in restoring cranberry bogs to natural wetlands. Natural wetlands may serve as nutrient sinks that have the potential to reduce the nitrogen load in the Wareham River. Currently, very limited data exist on how cranberry restoration contributes to nitrogen reductions in the watershed. It is also unknown to what extent cranberry bog restoration can help to meet the pollutant load reductions necessary to meet water quality standards. This project will use an existing nutrient loading model and recent research on the restoration of cranberry bogs to examine how different potential scenarios of cranberry bog restoration could contribute to the target of reducing nitrogen loads by up to 40% in the Wareham River watershed. Tasks include:</p> <ol style="list-style-type: none">1) develop Quality Assurance Project Plan for EPA and MassDEP review and approval;2) calibrate NLOAD model;3) collect and analyze nitrogen concentrations in wet and dry atmospheric deposition samples;4) develop potential nitrogen reduction scenarios;5) conduct public outreach on project results; and6) prepare quarterly progress and final reports.
Cost:	\$48,896
Funding:	\$46,882 – U.S. Environmental Protection Agency \$2,014 – Southeastern Regional Planning and Economic Development District
Duration:	2018 – <i>In progress</i>

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2018
SECTION 604(b) PROJECT 18-05

Red Brook Harbor Monitoring to support TMDL Development

Associated

Projects: 20-02

Grantee: Town of Bourne

Watershed: Cape Cod

Description: This project will assess the benthic habitat and water quality in the Red Brook Harbor system. The project will support management planning by providing a piece of the site-specific scientific foundation required for Total Daily Maximum Load (TMDL) development. Benthic habitat assessment will be performed using existing protocols previously applied in this area for developing the science for a TMDL. A project specific Quality Assurance Project Plan (QAPP) will be developed that will outline detailed specifications for this assessment.

At least six sites will be selected for benthic habitat sampling and will be distributed around the Red Brook Harbor system. Sediment samples for benthic infauna, sediment grain size, and total organic content will be collected in triplicate using Van Veen grabs

Water samples for nutrient analysis will be collected from at least six stations on at least three dates in summer 2019 and summer 2020. More in-depth sampling will occur for at least four stations where 20 measurements of summertime dissolved oxygen will be performed each summer. Samples will be analyzed for the full suite of nitrogen parameters (ammonium, nitrate + nitrite, total dissolved nitrogen, and particulate organic nitrogen), as well as particulate organic carbon, phosphate, the main algal pigments (chlorophyll and phaeophytin), and salinity. Analysis of dissolved oxygen, temperature, and salinity will be performed in the field. Dissolved oxygen samples will be analyzed using modified Winkler titrations and automated probes (e.g., YSI ProDSS). All water quality sampling and analysis will follow the procedures and protocols outlined in the water quality monitoring QAPP.

- 1) develop a QAPP for EPA and MassDEP review and approval;
- 2) collect and analyze benthic infauna and water quality samples;
- 3) prepare an assessment of the relative health of Red Brook Harbor;
- 4) conduct public outreach on project results; and
- 5) prepare quarterly progress and final reports.

Cost: \$56,892

Funding: \$49,500 – U.S. Environmental Protection Agency
\$7,392 – Town of Bourne

Duration: 2018 – 2021

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2019
SECTION 604(b) PROJECT 19-01

Beach Parking Area Stormwater Planning

Grantee: Town of Great Barrington

Watershed: Housatonic

Description: The Town of Great Barrington will develop preliminary designs and cost estimates for the installation of Best Management Practices (BMPs) to reduce nonpoint source runoff from the beach area parking lot into Lake Mansfield. Recent planning efforts including the Watershed-Based Plan for Lake Mansfield have identified this area as one of the last remaining major nonpoint source pollution areas contributing to the water quality impairment. Tasks include:

- 1) engage subcontractor;
- 2) expand existing conditions plans;
- 3) preliminary plans and cost estimates;
- 4) outreach and education; and
- 5) reporting and project oversight.

Cost: \$30,000

Funding: \$25,400 – U.S. Environmental Protection Agency
\$4,600 – Town of Great Barrington

Duration: 2019 – 2022

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2019
SECTION 604(b) PROJECT 19-02

Stormwater Retrofit Evaluation Project

Grantee: City of Quincy

Watershed: Neponset

Description: The City of Quincy, in partnership with the Neponset River Watershed Association, will identify, prioritize, and inspect town-owned properties to determine suitability for the installation of structural stormwater Best Management Practices (BMPs). Conceptual designs for potential future implementation projects will be produced for the top three priority sites. Tasks include:

- 1) start up meeting;
- 2) desktop analysis;
- 3) field survey;
- 4) post-survey meeting and factsheets;
- 5) conceptual BMP designs; and
- 6) reporting and project oversight.

Cost: \$34,333

Funding: \$29,878 – U.S. Environmental Protection Agency
\$4,455 – City of Quincy

Duration: 2019 – 2022

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2019
SECTION 604(b) PROJECT 19-03

Greening Natick Streets

Grantee: Town of Natick

Watershed: Charles & Concord (SuAsCo)

Description: The Town of Natick, in partnership with the Charles River Watershed Association, will develop a conceptual green street design for Pond Street, a green stormwater infrastructure guide that will provide a common language for effective communication amongst various departments within the town, and will conduct a green stormwater infrastructure outreach campaign. The conceptual green street design will focus on reducing phosphorus contributions from the heavily traveled Pond Street, while improving the pedestrian experience along the corridor. Additionally, an outreach campaign will be conducted to raise awareness of the Town's green stormwater efforts. Tasks include:

- 1) existing conditions assessment;
- 2) Pond Street design;
- 3) green stormwater infrastructure guide;
- 4) Natick green streets outreach campaign; and
- 5) reporting and project oversight.

Cost: \$37,820

Funding: \$27,300 – U.S. Environmental Protection Agency
\$10,520 – Town of Natick

Duration: 2019 – 2022

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2019
SECTION 604(b) PROJECT 19-04

Forest Lake Watershed Association

Grantee: Town of Palmer

Watershed: Chicopee

Description: The Town of Palmer will identify and assess nonpoint pollution sources to Forest Lake. The assessment will include surface water quality analysis, watershed surveys with a focus on shoreline and septic system inputs, a bathymetric study, aquatic macrophyte survey with mapping, and a wildlife habitat analysis. This assessment will be used to create a Watershed-Based Plan (WBP) for long-term water quality management within the Forest Lake watershed. The WBP will summarize the nature and sources of pollution to the lake, provide recommendations for lake management measures and stormwater Best Management Practices (BMPs), and identify future grant opportunities. Based on the WBP, conceptual stormwater BMP designs and cost estimates will be developed. A community outreach and education program will also be conducted to enhance public understanding of the lake, watershed management, and potential implementation measures. Tasks include:

- 1) develop an EPA and MassDEP approved Quality Assurance Project Plan;
- 2) surface water assessment: wet and dry weather sampling;
- 3) shoreline and watershed surveys for pollutant inputs;
- 4) biological and physical assessments of the lake;
- 5) septic systems mapping and Title 5 compliance;
- 6) stormwater controls and preliminary BMP design;
- 7) community outreach and education program;
- 8) share project results and develop WBP; and
- 9) reporting and project oversight.

Cost: \$55,619

Funding: \$48,119 – U.S. Environmental Protection Agency
\$7,500 – Town of Palmer

Duration: 2019 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2019
SECTION 604(b) PROJECT 19-05

Braintree Subwatershed Assessment & Stormwater Retrofit

Grantee: Town of Braintree

Watershed: Weir

Description: The Town of Braintree will identify, prioritize, and inspect town-owned properties within the Weymouth-Weir watershed to determine suitability for the installation of structural stormwater Best Management Practices. Conceptual design plans for potential future implementation projects will be produced for up to five of the top prioritized sites. Additionally, a stormwater infrastructure outreach campaign will be conducted to raise awareness of the project. Tasks include:

- 1) identify & prioritize sites;
- 2) identify Town-owned sites;
- 3) conceptual designs;
- 4) public engagement program; and
- 5) reporting and project oversight.

Cost: \$39,881

Funding: \$30,623 – U.S. Environmental Protection Agency
\$9,258 – Town of Braintree

Duration: 2019 – 2021

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2019
SECTION 604(b) PROJECT 19-06

Lake Ellis Watershed Survey

Grantee: Town of Athol

Watershed: Millers

Description: The Town of Athol will conduct a baseline study of Lake Ellis, which will include the review of existing water quality data, collection and analysis of new water quality data, the characterization of watershed land uses, and the assessment of drainage patterns within the lake's watershed. The resulting baseline study will be used as the base to create a Watershed-Based Plan (WBP) for long-term water quality improvement. Lake Ellis is currently listed as impaired for nuisance aquatic vegetation, which prevents the attainment of recreational and aquatic habitat uses. Long-term water quality management and nuisance aquatic vegetation reduction are the goals of this project. Additionally, a water quality outreach campaign will be conducted to raise awareness of the project. Tasks include:

- 1) characterize the Lake Ellis watershed;
- 2) develop a sampling plan and Quality Assurance Project Plan;
- 3) water quality sampling and analysis;
- 4) develop WBP;
- 5) conduct education activities; and
- 6) reporting and project oversight.

Cost: \$47,000

Funding: \$47,000 – U.S. Environmental Protection Agency

Duration: 2019 – 2022

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2020
SECTION 604(b) PROJECT 20-01

Development of Preliminary Designs and Implementation Plans That Will Reduce Phosphorus Loading in Lake Garfield

Grantee: Town of Monterey

Watershed: Housatonic

Description: The Town of Monterey will evaluate structural and non-structural stormwater Best Management Practices (BMPs) and develop a conceptual engineering design for drainage improvements along a section of Hupi Road to reduce nonpoint source-based phosphorus contributions to Lake Garfield (MA21040). Lake Garfield suffers from water quality degradation and is listed as impaired for total phosphorus, dissolved oxygen, non-native aquatic plants, and mercury in fish tissue in the *Massachusetts Year 2016 Integrated List of Waters*. A 604(b) funded watershed-based investigation, which sought to identify phosphorus sources to the lake, *Phosphorus Loading Assessment for Lake Garfield, Massachusetts, Final Report 2018*, identified the project site as a major nonpoint source with the potential to reduce 8-10 percent of phosphorus loading into Lake Garfield. The project team will begin by reviewing existing data and conducting field reconnaissance to evaluate existing conditions at the project site. Field reconnaissance will produce preliminary sketches and measurement details of the current drainage system, which will be captured in a drainage system database. Potential stormwater BMPs will be evaluated and prioritized based on drainage calculations, topography, soil data, assessors mapping, floodplain, and other environmental constraints. Conceptual designs will be prepared for structural and/or nonstructural stormwater BMPs based on the prioritized list. Tasks include:

- 1) review stormwater drainage system information;
- 2) field reconnaissance at the Hupi Road project site;
- 3) conceptual designs for structural and non-structural BMPs;
- 4) outreach program in collaboration with *Friends of Lake Garfield and the Lake Garfield Working Group*;
- 5) circulate outreach/education newsletter; and
- 6) quarterly reports, a draft final report, and the final project report.

Cost: \$9,500

Funding: \$8,500 – U.S. Environmental Protection Agency
\$500 – Friends of Lake Garfield
\$500 – Town of Monterey

Duration: 2020 – 2022

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2020
SECTION 604(b) PROJECT 20-02

Modeling in Red Brook Harbor to Support TMDL Development

Associated Projects:	18-05
Grantee:	Town of Bourne
Watershed:	Cape Cod
Description:	<p>The Town of Bourne, along with project partners including scientists from the Buzzards Bay National Estuary Program, Woods Hole Oceanographic Institution, and Buzzards Bay Coalition (Coalition), will investigate subwatershed nitrogen loads and develop a hydrodynamic and water quality model for the Red Brook Harbor system. Red Brook Harbor including Hen Cove (MA95-18) and Pocasset Harbor (MA95-17) are listed in the <i>Massachusetts 2016 Integrated List of Waters</i> as Category 5 Waters for nitrogen-related impairments including estuarine bioassessments and Nutrient/Eutrophication Biological Indicators. Additionally, both waterbodies are listed for fecal coliform. This current project seeks to provide information to develop Total Maximum Daily Load (TMDL) guidelines by building on earlier benthic habitat and water quality assessment work in Red Brook Harbor. Under this current 604(b) project, the Grantee will develop tools and information needed to develop a site-specific nitrogen TMDL for Red Brook Harbor. This project will quantify existing and future watershed sources of nitrogen, calibrate a hydrodynamic and water quality model for current and build-out conditions and conduct outreach to engage key constituencies. Tasks include:</p> <ol style="list-style-type: none">1) prepare an EPA and MassDEP approved Quality Assurance Project Plan;2) quantify existing watershed nitrogen sources;3) quantify future watershed nitrogen sources;4) hydrodynamic/water quality model development, calibration, and execution;5) hydrodynamic/water quality model run with build-out nitrogen loading; and6) project outreach.
Cost:	\$53,344
Funding:	\$48,344 – U.S. Environmental Protection Agency \$5,000 – Town of Bourne
Duration:	2020 – <i>In progress</i>

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2020
SECTION 604(b) PROJECT 20-03

Town of Medfield Stormwater Retrofit Evaluation Project

Grantee:	Town of Medfield
Watershed:	Charles & Neponset
Description:	<p>The Town of Medfield, in collaboration with the Neponset River Watershed Association (NepRWA) and Charles River Watershed Association (CRWA), will assess Town-owned properties for potential installation of a structural stormwater Best Management Practice (BMP) to address nonpoint source pollution in the Charles and Neponset River watersheds. The primary water quality concerns in both watersheds are nutrient related. Site assessment will include use of the stormwater retrofit suitability screening tool developed by NepRWA and Metropolitan Area Planning Council to identify sites with the highest priority for BMP installation based on estimated pollutant input, impervious area, soil types, and ownership. In-person visits to 40 sites identified using this tool will provide on-the-ground verification to inform a final list of the top 10-12 sites, 3 of which will be selected by the Town staff. Conceptual drawings will be prepared for the top 3 sites identified for structural stormwater BMP installation. NepRWA and CRWA will prepare Watershed-Based Plans for the drainage areas of the 3 sites proposed for retrofits using the MassDEP Watershed-Based Plan Tool. Tasks include:</p> <ol style="list-style-type: none">1) desktop analysis using GIS;2) field survey at a minimum of 40 sites;3) post-survey meeting and factsheets;4) conceptual BMP designs and watershed-based plan development; and5) reporting
Cost:	\$37,630
Funding:	\$36,030 – U.S. Environmental Protection Agency \$1,600 – Town of Medfield Department of Public Works
Duration:	2020 – <i>In progress</i>

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2020
SECTION 604(b) PROJECT 20-04

Mystic Infiltration Trench Siting and Design Project

Grantee: City of Everett

Watershed: Mystic

Description: The City of Everett will work with the Mystic River Watershed Association (MyRWA) to identify appropriate sites for future installation of high efficiency, low-cost infiltration trenches in at least 8 municipalities (Everett, Cambridge, Medford, Melrose, Woburn, Arlington, Lexington, and Reading) within the Mystic River watershed. Previous water quality assessment reports have indicated that the main causes of impairment in the Mystic River watershed are nutrients and pathogens.

The project team will review the town of Arlington's Pilot Project for the design and installation of high efficiency, low-cost infiltration trenches throughout Arlington for use as a template to reduce phosphorus. The project team will conduct a desktop assessment to determine areas of focus that are compatible with infiltration based on soil types, depth to groundwater, and other environmental factors.

Based on the results from the desktop analysis, 250 sites will be inspected for possible infiltration trench installation. Municipalities will provide feedback on the selected sites and a finalized list of candidate sites will be produced. The final sites list will be used to develop individual design packages for each municipality that will include site specific details on sizing, design, estimated construction costs, and estimated phosphorus removal. The project team will also develop a stormwater outreach and education campaign that will include a press release describing the project and stormwater educational materials. Tasks include:

- 1) kickoff meeting;
- 2) desktop investigation, field work, and site list;
- 3) customized design packages for each participating municipality;
- 4) outreach and education about green infrastructure in the watershed; and
- 5) management of the consultant and coordinating with participating municipalities.

Cost: \$48,802

Funding: \$40,450 – U.S. Environmental Protection Agency
\$8,352 – City of Everett

Duration: 2020 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2020
SECTION 604(b) PROJECT 20-05

Improving Water Quality Through Green Infrastructure Capacity Building

Grantee: Pioneer Valley Planning Commission

Watershed: Connecticut River

Description: The Pioneer Valley Planning Commission (PVPC), with its partner communities on the Connecticut River Stormwater Committee, seeks to advance stormwater treatment utilizing green infrastructure as it applies to the region's specific water quality needs. In the Pioneer Valley region, twelve waterbodies are listed in the *Massachusetts 2016 Integrated List of Waters* as Category 5 Waters for nutrients or total phosphorus. This current project addresses the needs in Agawam, Belchertown, Chicopee, East Longmeadow, Easthampton, Granby, Hadley, Holyoke, Longmeadow, Ludlow, Northampton, Palmer, South Hadley, Southampton, Southwick, Springfield, West Springfield, Westfield, and Wilbraham, and the University of Massachusetts in Amherst for better green infrastructure design guidance and a greater understanding through training on how to ensure good design, construction, and operation of facilities over the long term. The project will engage stakeholders in a project advisory committee, produce 5 to 7 implementable stormwater Best Management Practice (BMP) designs with estimated costs for the Connecticut River region and will provide a green infrastructure certification training program. Tasks include:

- 1) meet with project engineer to guide BMP selection;
- 2) develop designs for 5-7 BMPs optimized for nutrient removal, size, and ease of maintenance;
- 3) identify soil specifications that best serve nutrient removal objectives;
- 4) model operation and maintenance plan with information for each BMP; and
- 5) green infrastructure training and certification exam.

Cost: \$45,545

Funding: \$41,400 – U.S. Environmental Protection Agency
\$1,950 – City of Easthampton
\$870 – City of Northampton
\$1,325 – Town of Southwick

Duration: 2020 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2020
SECTION 604(b) PROJECT 20-06

Dennis Impaired Waters BMP Assessment Project

Grantee: Town of Dennis

Watershed: Cape Cod

Description: The Town of Dennis will evaluate and prioritize stormwater outfall catchment areas based on pollutant load contributions to impaired waterbodies and their tributaries. The Bass River, Swan Pond River, and other waterbodies in the town currently have EPA-approved Total Maximum Daily Loads (TMDLs) for total nitrogen and pathogens. The Town is interested in better understanding where to best allocate resources towards designing and constructing stormwater Best Management Practices (BMPs) to improve water quality within receiving waterbodies. This project will allow for prioritization of future stormwater BMPs to reduce nitrogen and bacteria loads to coastal waterbodies. The Town will develop three conceptual-level design plans that can remove nitrogen and pathogens from stormwater runoff and will advance one of the designs to final design status for permitting and construction under a future grant. Tasks include:

- 1) GIS-based site assessment of Bass River and Swan Pond watersheds;
- 2) conceptual designs for 3 different types of stormwater BMPs;
- 3) site survey of relevant features necessary to complete final design;
- 4) project design including plans and details for eventual construction by a licensed contractor; and
- 5) operation and maintenance plan detailing long-term inspection and maintenance requirements of the BMP.

Cost: \$60,600

Funding: \$45,276 – U.S. Environmental Protection Agency
\$15,324 – Town of Dennis

Duration: 2020 – 2022

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2021
SECTION 604(b) PROJECT 21-01

Spicket River Nutrient & Pathogen Reduction

Grantee: City of Methuen

Watershed: Merrimack

Description: The City of Methuen, in coordination with the City of Lawrence, the Merrimack Valley Planning Commission (MVPC), the Merrimack River Watershed Council (MRWC), and Groundwork Lawrence (GWL) will investigate and develop solutions for pathogen and nutrient impairments in the Spicket River. Previous water quality assessment reports have indicated that the main cause of impairment in the Spicket River are due to nutrients and pathogens. The Massachusetts Year 2016 Integrated List of Waters categorizes Spicket River (MA84A-10) as an impaired category 5 water (waters requiring a Total Daily Maximum Load (TMDL)) and in addition to nutrients and pathogens is listed as impaired for debris, physical substrate habitat alterations, trash, benthic macroinvertebrates, and copper as impairments.

The project team will conduct a land use assessment and collect water quality data to support the development of a comprehensive Watershed-Based Plan (WBP), which will identify an initial list of Best Management Practices (BMPs) throughout the watershed. The initial list of BMPs will be prioritized and narrowed down to 5-8 BMPs that will be selected for advancement to conceptual level designs. The project team will implement a multi-lingual water quality outreach campaign that will include recruiting and training residents as water quality sampling volunteers and hosting a public river event to publicize the project. Tasks include:

- 1) forming an advisory committee including representatives from a minimum of five community groups;
- 2) engaging and educating the public about the Spicket River and the project using online, in-person, and local television outlets;
- 3) developing a Sampling and Analysis Plan (SAP) to conduct water quality monitoring and training volunteers for implementation; and
- 4) GIS-based land use assessment to aid in developing a WBP and conceptualizing designs for 5-8 BMPs;

Cost: \$96,000

Funding: \$50,000 – U.S. Environmental Protection Agency
\$46,000 – Cities of Methuen and Lawrence

Duration: 2021 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2021
SECTION 604(b) PROJECT 21-02

A Healthy Watershed-Based Plan for Clesson Brook Watershed

Grantee: Franklin Regional Council of Governments

Watershed: Deerfield

Description: The Clesson Brook watershed is within the Deerfield River Basin and was identified under a previous Section 319 grant (15-04/319) to be currently within the top third of the healthiest watersheds within the Deerfield River Basin. However, the continued health of the Clesson Brook watershed is threatened by a lack of protected land in upland tributary areas, the high amount of agricultural use along the stream corridor, stormwater runoff from Route 112 and other roads directly adjacent to waterbodies in the watershed, and moderate to high erosion and sediment loading. The Franklin Region Council of Governments will implement a community outreach campaign and develop a Healthy Waterbody Watershed-Based Plan (WBP) to identify projects to protect the watershed and address the current nonpoint source threats.

This project will identify management strategies and best practices to protect the health of Clesson Brook and address its sediment loading issue. FRCOG will build partnerships with the municipalities and residents of Buckland, Ashfield, and Hawley, determine necessary interventions, and design an implementation program. Tasks include:

- 1) identifying and building partnerships between stakeholders in the towns of Buckland, Ashfield, and Hawley;
- 2) public outreach on the project, including two public meetings and one project presentation;
- 3) GIS-based assessment of Clesson Brook watershed;
- 4) setting specific watershed goals and identifying potential solutions; and
- 5) developing a WBP and implementation program for the Clesson Brook watershed.

Cost: \$40,300

Funding: \$38,500 – U.S. Environmental Protection Agency
\$1,800 – Franklin Regional Council of Governments

Duration: 2021 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2021
SECTION 604(b) PROJECT 21-03

Green Stormwater Infrastructure at Medway Middle School and High School

Grantee: Town of Medway

Watershed: Charles

Description: The Town of Medway, in coordination with the Charles River Watershed Association (CRWA) will advance work completed under a prior Watershed Management Act (WMA) Grant (BWR 2020-01-WMA) that resulted in the identification of 97 potential locations for Best Management Practice (BMP) installations throughout the Town. This project will address water quality impairments in Chicken Brook and the Charles River by designing green stormwater infrastructure (GSI) plans at the Middle and High Schools, prioritizing the 97 sites previously identified, developing conceptual plans for ten high priority sites, and will implement a public engagement and education campaign.

The Massachusetts Year 2016 Integrated List of Waters categorizes the portion of the Charles River that borders Medway, also known as the Upper Charles, and Chicken Brook as impaired category 5 waters (waters requiring a Total Daily Maximum Load (TMDL)). The Upper Charles River (segments MA72-04 and MA72-05) is impaired for algae, benthic macroinvertebrates, chloride in fish tissue, DDT in fish tissue, dissolved oxygen, *Escherichia coli* (*E. coli*), fish bioassessments, mercury in fish tissue, nutrient/eutrophication biological indicators, total phosphorus, and turbidity and Chicken Brook (MA72 34) is impaired for *E. coli*. The Upper Charles River is subject to two TMDLs, one for pathogens (CN 0156.0) and one for nutrient impairments (CN 272.0). To reduce pathogens and nutrient inputs to Chicken Brook and the Upper Charles River, this project will develop seven conceptual design plans at the middle and high schools, which were two of the top five sites identified under the previous WMA project. Tasks include:

- 1) educating and engaging Middle and High school students and their families about GSI;
- 2) soil assessments for each GSI location at the schools;
- 3) developing concept plans for seven (7) total GSI BMPs; and
- 4) prioritizing the remaining 92 potential BMP sites identified under previous grant work and developing concept plans for 10 high priority GSI locations.

Cost: \$45,232

Funding: \$35,769 – U.S. Environmental Protection Agency
\$9,463 – Town of Medway

Duration: 2021 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2021
SECTION 604(b) PROJECT 21-04

Comprehensive Watershed Based Planning for a Sustainable Future

Grantee: City of Amesbury

Watershed: Merrimack

Description: The City of Amesbury will develop a City-wide plan of prioritized water quality restoration recommendations that can be used as a road map over the next 10 years. This plan will entail reviewing existing data and the success of prior implementation projects to assess, prioritize and develop structural and non-structural conceptual plans for future implementation with a focus on climate change impacts, sustainability and long-term resiliency, and agricultural/backyard farming pollution abatement. Watershed-Based Plans (WBP) will be developed or updated for the Powwow River (MA84A-08, MA84A-25, and MA84A-28) and Lake Gardner, Back River (MA84A-16), and Lake Attitash (MA84002) watersheds. As part of the proposed WBP work, a Quality Assurance Project Plan will be created, data will be compiled and reviewed, and a watershed field survey will be conducted. BMP conceptual designs will be developed for the top five sites prioritized across all the project watersheds. Additionally, a preliminary Green Streets survey will be completed for downtown Amesbury, which will focus on improving water quality, reducing stormwater flows, and controlling stormwater volume. Tasks include:

- 1) developing a Quality Assurance Project Plan (QAPP) to ensure accuracy of existing water quality data;
- 2) field surveys of the three watersheds (Powwow River/Lake Gardner, Back River, and Lake Attitash) to identify problem areas and potential locations for structural BMP improvements;
- 3) Green Streets Survey of Downtown Amesbury to identify opportunities for BMPs to improve water quality, reduce stormwater flows, and control stormwater volume;
- 4) update the WBP for Lake Attitash, and draft WBPs for Powwow River/Lake Gardner and Back River; and
- 5) develop five (5) conceptual BMP designs for prioritized locations.

Cost: \$75,820

Funding: \$70,540 – U.S. Environmental Protection Agency
\$5,280 – City of Amesbury

Duration: 2021 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

FEDERAL FISCAL YEAR 2021
SECTION 604(b) PROJECT 21-05

North River Headwaters Bacterial Source Tracking

Grantee: Town of Hanover

Watershed: North Coastal

Description: The waters of the North River estuary are used for swimming, boating, and shellfishing, but are impaired for bacteria. The North and South Rivers Watershed Association (NSRWA) sampled five headwater tributary sites in 2019: Longwater Brook, Cushing Brook, French Stream, Drinkwater River, and Indian Head River. The Town of Hanover will partner with the NSRWA and the Massachusetts Bays National Estuary Partnership (MassBays) to conduct iterative sampling of the five tributaries (the 2022 bacteria source tracking program). This sampling will identify sources of pollution that prevent these waters from meeting bacterial standards. By addressing these sources, downstream and adjacent towns that share these waters (Rockland, Pembroke, Norwell, Marshfield, and Scituate) will benefit. The collection of these data will also help provide reliable bacteria data for MassDEP's assessments for recreational activities in these waters.

The project team will provide outreach to the community about water quality impairments and their causes and identify three candidate areas for potential action. Tasks include:

- 1) developing a Sampling and Analysis Plan (SAP) for the 2022 bacteria source tracking program;
- 2) implementing a monitoring program with 18 iterative sampling rounds (9 wet, 9 dry) in April-September 2023 for *Escherichia coli* (*E. coli*), temperature, specific conductivity, and dissolved oxygen;
- 3) educating the community about water quality impairments and their causes;
- 4) recruiting monitoring volunteers; and
- 5) submitting collected water quality data to MassDEP's External Data Submittal web page by December 31, 2023.

Cost: \$37,768

Funding: \$21,269 – U.S. Environmental Protection Agency
\$16,499 – Town of Hanover

Duration: 2021 – *In progress*

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

Appendix Table A

604(b) Projects by Watershed (Federal Fiscal Years 1991-2021)

Project Number	Title
Blackstone	
98-03	Upper Blackstone River Watershed Wetlands Restoration Plan
Buzzard's Bay	
08-02	Cranberry Bog Management in the Wewantic Watershed
11-03	Cranberry Bog Nutrient Loss Study
12-04	Sassaquin Pond Stormwater Restoration Project
18-04	Assessing Nutrient Reduction Scenarios in the Wareham River Watershed
20-02	Modeling in Red Brook Harbor to Support TMDL Development
Cape Cod	
91-01	Control of Hazardous Material Users to Protect Groundwater Quality on Cape Cod
91-02	Monomoy Lens Regional Water Protection Project
92-01	Cape Cod Small Volume Well Prioritization Project
94-01	Sagamore Lens Groundwater Protection Project
95-04	Nonpoint Source Assessment in the Ipswich River Watershed
97-02	Priority Land Acquisition Assessment for Cape Cod: Protecting Suitable Land for Future Water Supply Needs
99-01	Priority Land Acquisition Assessment for Cape Cod: Phase 2
99-03	Cape Cod Coastal Nitrogen Loading Studies
00-01	Surface Water Nutrient Management (Long Pond, Barnstable, and Red Brook Harbor)
03-03	Water Quality Monitoring: Parker's River, Lewis Bay, and Bass River
05-01	Continuation of Water Quality Monitoring - Parker's & Bass River, Lewis Bay
06-03	Old Harbor and Scorton Creek Water Quality Sampling
07-02	Old Harbor and Scorton Creek Water Quality Sampling
07-03	Provincetown Harbor & Pamet Harbor Water Quality Assessment
08-01	Provincetown Harbor & Pamet Harbor Water Quality Assessment
09-03	Bernardston Wellhead Protection Planning
09A-01	Developing Tools for More Effective Assessment of Wetlands and Aquatic Ecosystems
09A-04	Provincetown Harbor Stormwater Mitigation Project
09A-12	Three Town BMP Development Project
13-02	Provincetown Harbor - Commercial Street Reconstruction - Phase 3
13-03	West Falmouth Harbor Wetland Restoration Feasibility Assessments
17-02	Provincetown Harbor Stormwater Mitigation - Phase 4
17-04	Cape Cod Stormwater Coalition: Regional Framework for Stormwater
18-05	Red Brook Harbor Monitoring to Support TMDL Development
20-06	Dennis Impaired Waters BMP Assessment Project
Charles	
91-06	Charles River Southwest Regional Water Supply Protection Planning Project

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

09A-05	South River Bacterial Source Assessment Project
10-04	Bellingham Subwatershed Stormwater Restoration Planning
14-01	North Allston Subwatershed Restoration Plan
15-02	Green Infrastructure Strategy
16-04	Green Street Guidance
17-05	Municipal Facilities Green Infrastructure Retrofit Design
18-01	Subwatershed Restoration Planning
19-03	Greening Natick Streets
19-05	Braintree Subwatershed Assessment & Stormwater Retrofit
20-03	Town of Medfield Stormwater Retrofit Evaluation Project
21-03	Green Stormwater Infrastructure at Medway Middle School and High School

Chicopee

91-03	Quaboag River Water Supply Protection Project
99-04	Chicopee River Watershed Basin Assessment
19-04	Forest Lake Watershed Association
14-02	Chicopee River Bacteria Source Tracking
17-03	Feasibility Study for a Stormwater Utility

Concord (SuAsCo)

93-04	Sudbury-Assabet-Concord (SuAsCo) River Basin Water Supply Protection Project
00-04	Lake Cochituate Nonpoint Source Management Plan

Connecticut

96-06	Assessment and Evaluation of Stormwater Source Reduction Practices on Combined Sewer Overflows
03-02	An Ecosystem Approach to the Sawmill River Watershed Restoration
05-03	Four Mile River Watershed Assessment
09A-10	Water Quality Assessment of Windsor & Cady Brooks
09A-13	Connecticut River Water Quality Monitoring Program
12-03	Arcadia Lake & Metacomet Lake Watershed Assessment
15-03	Manhan River Water Quality Monitoring & Source Tracking
18-03	Nutrient Sampling in the Connecticut River Watershed
20-05	Improving Water Quality Through Green Infrastructure Capacity Building
96-03	An Assessment of Urban Stream Restoration: Tannery and Poor Brooks
01-02	Assessment of Stormwater Management System

Deerfield

97-01	Stream Classification and Assessment Project
04-02	A Subwatershed Approach to Nonpoint Source Pollution Assessment in the Deerfield River Watershed
10-01	Fluvial Geomorphic and Habitat Assessment of the South River Watershed
12-02	Fluvial Geomorphic & Habitat Assessment of North River
18-02	Green Streets Approach to Improve Water Quality
91-04	Franklin County Water Resources Protection Planning Project
92-03	Franklin County Water Resources Protection Planning Project
93-02	Franklin County Water Quality Improvement Program

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

94-02	Small Public Water System Collaborative Project
21-02	A Healthy Watershed-Based Plan for Clesson Brook Watershed
Farmington	
95-02	Farmington River Watershed Nonpoint Source Assessment Project
01-01	Assessment of Unpaved Roadways in the Farmington River Watershed
Housatonic	
96-05	Housatonic River Watershed Nonpoint Source Pollution Assessment Project
02-05	East Branch Housatonic Watershed Assessment
09A-07	Furnace & Oldham Pond Watershed Restoration Project
10-03	Knob Hill Stormwater Planning
14-04	Stockbridge Bowl Watershed Assessment
16-01	Nutrient Loading for Lake Garfield, Monterey
19-01	Beach Parking Area Stormwater Planning
20-01	Development of Preliminary Designs and Implementation Plans That Will Reduce Phosphorus Loading in Lake Garfield
Hudson	
02-02	Stormwater Management Assessment Project
15-01	Berkshire Regional Phase II NPDES
96-01	Urban Watershed Management in the Mystic River Basin
11-04	Bacteria Source Tracking & Mitigation in the Hoosic River Watershed
16-02	Documenting Bacterial Contamination Improvements
93-01	Technical Assistance to Community and Non-Transient Non-Community (NTNC) Water Suppliers in Preparing Source Protection Plans
92-09	Small Public Water Supplies Planning and Protection Project
Ipswich	
09A-08	Improving Water Quality in Urban Watersheds Project
09A-11	Stormwater Remediation in the Upper Ipswich Watershed
92-06	Ipswich and North Coastal River Basins Water Resources Protection Planning Project
Islands	
92-04	Martha's Vineyard Water Resources Protection Planning Project
96-04	Edgartown Great Pond: Existing and Projected Nitrogen Loading
98-04	Assessment of Current Quality and Projected Nutrient Loading: Menemsha Pond and Chilmark Great Pond
99-02	Nutrient Loading to Two Great Ponds: Tisbury Great Pond and Lagoon Pond
03-01	Martha's Vineyard: Water Quality Assessment of Nine Coastal Ponds
04-01	Martha's Vineyard: Water Quality Assessment of Four Coastal Ponds
05-02	Martha's Vineyard Coastal Pond Water Quality Assessment - Phase III
06-02	Martha's Vineyard Coastal Pond Water Quality Assessment - Phase IV
07-01	Martha's Vineyard Coastal Pond Water Quality Assessment - Phase V
08-03	Martha's Vineyard Coastal Pond Water Quality Assessment - Phase VI
15-04	Phosphorus Sources for Hummock & Miacomet Ponds

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

Merrimack	
91-05	Merrimack River Water Resources Protection Project
91-08	Northern Middlesex County Water Resources Protection Project
04-03	Simulation of Soluble Waste Transport: Estuarine Reach of the Merrimack
09A-06	Kingston Bay Stormwater Mitigation Project
92-05	Merrimack Valley Regional Water Supply Protection Project
93-03	Development and Implementation of Local Floor Drain Regulations in the Merrimack and Parker River Basins
21-01	Spicket River Nutrient & Pathogen Reduction
21-04	Comprehensive Watershed Based Planning for a Sustainable Future
Millers	
91-07	Upper Naukeag Lake Watershed Protection Study
92-07	Montachusett Water Resources Protection Planning Project
00-03	Millers River Watershed Nonpoint Source Pollution Assessment
19-06	Lake Ellis Watershed Survey
Mount Hope Bay	
04-04	Mount Hope Bay: Estuaries Water Quality Monitoring
05-04	Mount Hope Bay: Estuaries Water Quality Monitoring - Phase II
06-04	Mount Hope Bay: Estuaries Water Quality Monitoring - Phase III
Mystic	
98-01	Urban Watershed Management in the Mystic River Basin
11-01	Aberjona River Watershed BMP Development Project
13-01	Mystic River Headwaters: Alewife & Mill Brook Subwatersheds
14-03	Stormwater mitigation: Ell Pond
20-04	Mystic Infiltration Trench Siting and Design Project
Narragansett	
00-02	Runnins River Watershed Bacterial and Nutrient Source Assessment and Water Quality Management Project
02-03	Assessment of Stormwater Management Systems and Nonpoint Source Pollution
94-05	A Regional Approach to Water Resources Protection and Protecting a Future Potential Water Supply
Nashua	
92-02	Fitchburg Watershed Planning Project
07-04	Barret Pond Watershed Assessment
Neponset	
07-05	Green Street Demonstration Project
09A-09	Lake Gardner Bacteriological Study
10-02	Stormwater Best Management Practices Retrofit Development
11-02	Stormwater Best Management Practices Retrofit Development
13-04	Westwood – Green Infrastructure Planning
19-02	Stormwater Retrofit Evaluation Project
North Coastal	
94-03	Cape Ann Emergency Water Supply Plan

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

96-02	Assessment of On-Site Sewage Disposal Related Pollution in Gloucester Waters
02-01	Shoreline Survey of Salem Sound
10-05	Stormwater Assessment & Stormwater Retrofit Plan
13-05	Ipswich River Watershed Resource Assessment & Protection Plan
21-05	North River Headwaters Bacterial Source Tracking
Parker	
98-02	Parker River Basin: Assessment and Management of Nonpoint Source Pollution in the Little River Subwatershed
Quinebaug	
06-01	Hamilton Reservoir Watershed Management
15-05	Sturbridge Stormwater Pollution Reduction
South Coastal	
95-03	South Shore Nonpoint Source Management Plan
03-04	Estuaries Monitoring Program: Duxbury, Kingston, and Plymouth Coastal Waters
09A-02	Technical Support for the Development of Probabilistic Water Quality Monitoring Program for Massachusetts
09A-03	Paines Creek and Stony Brook Watershed Stormwater Mitigation Project
12-01	Kingston Town Center Stormwater Assessment Project
17-01	Jones River Water Quality Assessment & Stormwater BMP Designs
Statewide	
09-01	Stormwater Best Management Practices Retrofit Development
09-02	Provincetown Harbor & Pamet Harbor Water Quality Assessment
10-06	Strategic Fish Tissue Monitoring Survey to Assess Mercury Impairments
16-03	Statewide Stormwater Collaborative
Taunton	
91-09	Upper Taunton River Basin Water Supply Protection and Development
91-11	Mattapoisett River Water Supply Protection Project
92-10	Taunton River Basin Water Resources Protection Planning Project
93-05	Upper Taunton River Basin Water Supply Protection/Contingency Planning Program
01-03	Assessment of Land Use Activities, Nonpoint Source Pollution, and Water Quality in the Taunton River Watershed
93-07	Technical Assistance to the Palmer River Watershed, Mattapoisett River Valley Water Supply Protection Advisory Committee and the Taunton River Basin Needs Study
Ten Mile	
02-04	Stormwater Education Assessment and Planning
Westfield	
91-10	Pioneer Valley Water Resources Protection Project
95-01	Nonpoint Source Assessment in the Westfield River Watershed
08-04	Westfield River Basin Water Quality Monitoring Program
93-06	Pioneer Valley Regional Water Supply Protection Project
94-04	Public Water Supply Technical Assistance/Watershed Inspection Implementation and ISTEPA Planning Project

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

92-08 Pioneer Valley Water Resources Protection Planning Project

Weymouth and Weir

94-06 Tri-Town Watershed Protection Implementation Project

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

Appendix Table B

604(b) Projects by Federal Fiscal Year (1991-2021)

Project #	Project Name
1991	
91-01	Control of Hazardous Material Users to Protect Groundwater Quality on Cape Cod
91-02	Monomoy Lens Regional Water Protection Project
91-03	Quaboag River Water Supply Protection Project
91-04	Franklin County Water Resources Protection Planning Project
91-05	Merrimack River Water Resources Protection Project
91-06	Charles River Southwest Regional Water Supply Protection Planning Project
91-07	Upper Naukeag Lake Watershed Protection Study
91-08	Northern Middlesex County Water Resources Protection Project
91-09	Upper Taunton River Basin Water Supply Protection and Development
91-10	Pioneer Valley Water Resources Protection Project
91-11	Mattapoisett River Water Supply Protection Project
1992	
92-01	Cape Cod Small Volume Well Prioritization Project
92-02	Fitchburg Watershed Planning Project
92-03	Franklin County Water Resources Protection Planning Project
92-04	Martha's Vineyard Water Resources Protection Planning Project
92-05	Merrimack Valley Regional Water Supply Protection Project
92-06	Ipswich and North Coastal River Basins Water Resources Protection Planning Project
92-07	Montachusett Water Resources Protection Planning Project
92-08	Pioneer Valley Water Resources Protection Planning Project
92-09	Small Public Water Supplies Planning and Protection Project
92-10	Taunton River Basin Water Resources Protection Planning Project
1993	
93-01	Technical Assistance to Community and Non-Transient Non-Community (NTNC) Water Suppliers in Preparing Source Protection Plans
93-02	Franklin County Water Quality Improvement Program
93-03	Development and Implementation of Local Floor Drain Regulations in the Merrimack and Parker River Basins
93-04	Sudbury-Assabet-Concord (SuAsCo) River Basin Water Supply Protection Project
93-05	Upper Taunton River Basin Water Supply Protection/Contingency Planning Program
93-06	Pioneer Valley Regional Water Supply Protection Project
93-07	Technical Assistance to the Palmer River Watershed, Mattapoisett River Valley Water Supply Protection Advisory Committee and the Taunton River Basin Needs Study
1994	
94-01	Sagamore Lens Groundwater Protection Project
94-02	Small Public Water System Collaborative Project
94-03	Cape Ann Emergency Water Supply Plan
94-04	Public Water Supply Technical Assistance/Watershed Inspection Implementation and ISTEPA Planning Project

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

94-05	A Regional Approach to Water Resources Protection and Protecting a Future Potential Water Supply
94-06	Tri-Town Watershed Protection Implementation Project
1995	
95-01	Nonpoint Source Assessment in the Westfield River Watershed
95-02	Farmington River Watershed Nonpoint Source Assessment Project
95-03	South Shore Nonpoint Source Management Plan
95-04	Nonpoint Source Assessment in the Ipswich River Watershed
1996	
96-01	Urban Watershed Management in the Mystic River Basin
96-02	Assessment of On-Site Sewage Disposal Related Pollution in Gloucester Waters
96-03	An Assessment of Urban Stream Restoration: Tannery and Poor Brooks
96-04	Edgartown Great Pond: Existing and Projected Nitrogen Loading
96-05	Housatonic River Watershed Nonpoint Source Pollution Assessment Project
96-06	Assessment and Evaluation of Stormwater Source Reduction Practices on Combined Sewer Overflows
1997	
97-01	Stream Classification and Assessment Project
97-02	Priority Land Acquisition Assessment for Cape Cod: Protecting Suitable Land for Future Water Supply Needs
1998	
98-01	Urban Watershed Management in the Mystic River Basin
98-02	Parker River Basin: Assessment and Management of Nonpoint Source Pollution in the Little River Subwatershed
98-03	Upper Blackstone River Watershed Wetlands Restoration Plan
98-04	Assessment of Current Quality and Projected Nutrient Loading: Menemsha Pond and Chilmark Great Pond
1999	
99-01	Priority Land Acquisition Assessment for Cape Cod: Phase 2
99-02	Nutrient Loading to Two Great Ponds: Tisbury Great Pond and Lagoon Pond
99-03	Cape Cod Coastal Nitrogen Loading Studies
99-04	Chicopee River Watershed Basin Assessment
2000	
00-01	Surface Water Nutrient Management (Long Pond, Barnstable, and Red Brook Harbor)
00-02	Runnins River Watershed Bacterial and Nutrient Source Assessment and Water Quality Management Project
00-03	Millers River Watershed Nonpoint Source Pollution Assessment
00-04	Lake Cochituate Nonpoint Source Management Plan
2001	
01-01	Assessment of Unpaved Roadways in the Farmington River Watershed
01-02	Assessment of Stormwater Management System
01-03	Assessment of Land Use Activities, Nonpoint Source Pollution, and Water Quality in the Taunton River Watershed

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

2002	
02-01	Shoreline Survey of Salem Sound
02-02	Stormwater Management Assessment Project
02-03	Assessment of Stormwater Management Systems and Nonpoint Source Pollution
02-04	Stormwater Education Assessment and Planning
02-05	East Branch Housatonic Watershed Assessment
2003	
03-01	Martha's Vineyard: Water Quality Assessment of Nine Coastal Ponds
03-02	An Ecosystem Approach to the Sawmill River Watershed Restoration
03-03	Water Quality Monitoring: Parker's River, Lewis Bay, and Bass River
03-04	Estuaries Monitoring Program: Duxbury, Kingston, and Plymouth Coastal Waters
2004	
04-01	Martha's Vineyard: Water Quality Assessment of Four Coastal Ponds
04-02	A Subwatershed Approach to Nonpoint Source Pollution Assessment in the Deerfield River Watershed
04-03	Simulation of Soluble Waste Transport: Estuarine Reach of the Merrimack
04-04	Mount Hope Bay: Estuaries Water Quality Monitoring
2005	
05-01	Continuation of Water Quality Monitoring - Parker's & Bass River, Lewis Bay
05-02	Martha's Vineyard Coastal Pond Water Quality Assessment - Phase III
05-03	Four Mile River Watershed Assessment
05-04	Mount Hope Bay: Estuaries Water Quality Monitoring - Phase II
2006	
06-01	Hamilton Reservoir Watershed Management
06-02	Martha's Vineyard Coastal Pond Water Quality Assessment - Phase IV
06-03	Old Harbor and Scorton Creek Water Quality Sampling
06-04	Mount Hope Bay: Estuaries Water Quality Monitoring - Phase III
2007	
07-01	Martha's Vineyard Coastal Pond Water Quality Assessment - Phase V
07-02	Old Harbor and Scorton Creek Water Quality Sampling
07-03	Provincetown Harbor & Pamet Harbor Water Quality Assessment
07-04	Barret Pond Watershed Assessment
07-05	Green Street Demonstration Project
2008	
08-01	Provincetown Harbor & Pamet Harbor Water Quality Assessment
08-02	Cranberry Bog Management in the Wewantic Watershed
08-03	Martha's Vineyard Coastal Pond Water Quality Assessment - Phase VI
08-04	Westfield River Basin Water Quality Monitoring Program
2009	
09-01	Stormwater Best Management Practices Retrofit Development
09-02	Provincetown Harbor & Pamet Harbor Water Quality Assessment
09-03	Bernardston Wellhead Protection Planning

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

09A-01	Developing Tools for More Effective Assessment of Wetlands and Aquatic Ecosystems
09A-02	Technical Support for the Development of Probabilistic Water Quality Monitoring Program for Massachusetts
09A-03	Paines Creek and Stony Brook Watershed Stormwater Mitigation Project
09A-04	Provincetown Harbor Stormwater Mitigation Project
09A-05	South River Bacterial Source Assessment Project
09A-06	Kingston Bay Stormwater Mitigation Project
09A-07	Furnace & Oldham Pond Watershed Restoration Project
09A-08	Improving Water Quality in Urban Watersheds Project
09A-09	Lake Gardner Bacteriological Study
09A-10	Water Quality Assessment of Windsor & Cady Brooks
09A-11	Stormwater Remediation in the Upper Ipswich Watershed
09A-12	Three Town BMP Development Project
09A-13	Connecticut River Water Quality Monitoring Program
2010	
10-01	Fluvial Geomorphic and Habitat Assessment of the South River Watershed
10-02	Stormwater Best Management Practices Retrofit Development
10-03	Knob Hill Stormwater Planning
10-04	Bellingham Subwatershed Stormwater Restoration Planning
10-05	Stormwater Assessment & Stormwater Retrofit Plan
10-06	Strategic Fish Tissue Monitoring Survey to Assess Mercury Impairments
2011	
11-01	Aberiona River Watershed BMP Development Project
11-02	Stormwater Best Management Practices Retrofit Development
11-03	Cranberry Bog Nutrient Loss Study
11-04	Bacteria Source Tracking & Mitigation in the Hoosic River Watershed
2012	
12-01	Kingston Town Center Stormwater Assessment Project
12-02	Fluvial Geomorphic & Habitat Assessment of North River
12-03	Arcadia Lake & Metacomet Lake Watershed Assessment
12-04	Sassaquin Pond Stormwater Restoration Project
2013	
13-01	Mystic River Headwaters: Alewife & Mill Brook Subwatersheds
13-02	Provincetown Harbor - Commercial Street Reconstruction - Phase 3
13-03	West Falmouth Harbor Wetland Restoration Feasibility Assessments
13-04	Westwood - Green Infrastructure Planning
13-05	Ipswich River Watershed Resource Assessment & Protection Plan
2014	
14-01	North Allston Subwatershed Restoration Plan
14-02	Chicopee River Bacteria Source Tracking
14-03	Stormwater mitigation: Ell Pond
14-04	Stockbridge Bowl Watershed Assessment

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

2015	
15-01	Berkshire Regional Phase II NPDES
15-02	Green Infrastructure Strategy
15-03	Manhan River Water Quality Monitoring & Source Tracking
15-04	Phosphorus Sources for Hummock & Miacomet Ponds
15-05	Sturbridge Stormwater Pollution Reduction
2016	
16-01	Nutrient Loading for Lake Garfield, Monterey
16-02	Documenting Bacterial Contamination Improvements
16-03	Statewide Stormwater Collaborative
16-04	Green Street Guidance
2017	
17-01	Jones River Water Quality Assessment & Stormwater BMP Designs
17-02	Provincetown Harbor Stormwater Mitigation - Phase 4
17-03	Feasibility Study for a Stormwater Utility
17-04	Cape Cod Stormwater Coalition: Regional Framework for Stormwater
17-05	Municipal Facilities Green Infrastructure Retrofit Design
2018	
18-01	Subwatershed Restoration Planning
18-02	Green Streets Approach to Improve Water Quality
18-03	Nutrient Sampling in the Connecticut River Watershed
18-04	Assessing Nutrient Reduction Scenarios in the Wareham River Watershed
18-05	Red Brook Harbor Monitoring to Support TMDL Development
2019	
19-01	Beach Parking Area Stormwater Planning
19-02	Stormwater Retrofit Evaluation Project
19-03	Greening Natick Streets
19-04	Forest Lake Watershed Association
19-05	Braintree Subwatershed Assessment & Stormwater Retrofit
19-06	Lake Ellis Watershed Survey
2020	
20-01	Development of Preliminary Designs and Implementation Plans That Will Reduce Phosphorus Loading in Lake Garfield
20-02	Modeling in Red Brook Harbor to Support TMDL Development
20-03	Town of Medfield Stormwater Retrofit Evaluation Project
20-04	Mystic Infiltration Trench Siting and Design Project
20-05	Improving Water Quality Through Green Infrastructure Capacity Building
20-06	Dennis Impaired Waters BMP Assessment Project
2021	
21-01	Spicket River Nutrient & Pathogen Reduction
21-02	A Healthy Watershed-based Plan for Clesson Brook Watershed
21-03	Green Stormwater Infrastructure at Medway Middle School and High School
21-04	Comprehensive Watershed Based Planning for a Sustainable Future

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SECTION 604(b)
PROJECT SUMMARIES

21-05	North River Headwaters Bacterial Source Tracking
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