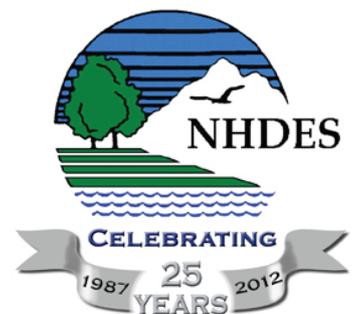


# Nonpoint Source Management 2011 Annual Report



New Hampshire  
Department of Environmental Services  
April 2012



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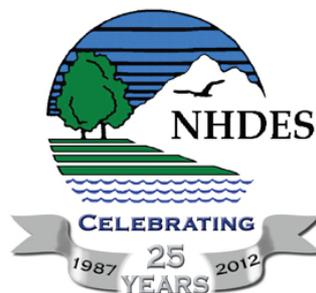
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April 2012



**Front Cover:** *Students from School Street School in Rochester pose in front of an excavator as part of a water quality awareness day to learn more about how stormwater improvements at their school will help to restore Willow Brook. Photo by Lorie Chase, Cocheco River Watershed Coalition.*

## Dedication

In memory of our friend and colleague Jody Connor, Director, Limnology Center at the New Hampshire Department of Environmental Services.

Jody was well known and highly respected as a limnologist, educator, watershed manager, innovator and motivator. His work and contributions are far reaching, and extend from the surface waters of New Hampshire, throughout North America and across the globe. Jody's work with lakes and watersheds along with his commitment to their

protection and restoration made him one of the most respected limnologists in the field by his peers and the thousands of people he encountered, even though the man himself was humble.

Jody dedicated his life and his career to protect and restore the beautiful natural resources that New Hampshire is so fortunate to have. He will long be remembered by many as a true mentor and friend. Countless careers were launched and thousands of volunteers were mobilized to protect natural resources thanks to the vision, guidance, mentoring, and unselfish dissemination of knowledge and experience that Jody embodied. It is with our heartfelt thanks, admiration and infinite respect, that we dedicate the 2011 NPS Annual Report to the memory of Jody Connor.



*Jody's Dock on Lake Winnisquam. Photo by Jen Drociak, DES.*

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# Introduction

It would be fair to characterize 2011 as the first year of the decline of the federal 319 program. While Congress appropriated level funding, EPA took the initiative to reduce the 319 program budget by 12 percent by re-allocating the funding to other programs through a maneuver called a “spending plan.” In a typical year, spending plans must be approved by Congress, but in 2011 Congress delegated the authority to EPA, who, without explanation, made the cut.

For FY 2012, the 319 budget was cut an additional 6 percent.

The federal Office of Management and Budget, which advises the Executive Branch on budget matters, had the 319 program in its crosshairs, recommending a 50 percent cut for 2011. EPA argued against such a large cut, recommending that they study the effectiveness of the program and propose programmatic changes, including an incentives-based, or competitive, system for making appropriations to states.

EPA released its study of the 319 program in October 2011. It is an interesting read with examples of best programmatic practices from many states. While the study contains 162 pages, the recommendations about the future of the program are included in a four-page Appendix. The six recommendations of the study are:

1. Use the satisfactory progress provision to strengthen and update state NPS management programs and improve accountability.
2. Implement regional competition/reallocation of funds that have not been expended by the end of the grant period, and a portion of new fiscal year funds.
3. Accelerate achievement of environmental results and improving program management.
4. Increase use and leveraging of Clean Water State Revolving Funds and/or other sources of state funding.
5. Improve measuring success and program accountability.
6. Improve partnership and collaboration with federal agencies such as U.S. Department of Agriculture, Department of Interior, and others to more effectively tackle NPS pollution.

The 2011 annual report includes several examples of completed projects that implement watershed-based plans, clearly illustrating how the New Hampshire Department of Environmental Services has used the 319 program to achieve environmental results and measure success (recommendations #3 and #5 in the list above).

- One project highlight is Cains Pond in Seabrook, which was impaired for recreational use due to sedimentation and now meets water quality standards as a result of a 319 restoration project. This project is included in EPA’s 319 success stories web site at <http://water.epa.gov/polwaste/nps/success319/>.
- Several projects completed in 2011 addressed stormwater retrofits in urban settings, including Hodgson Brook in Portsmouth, where neighborhood-scale BMPs such as tree-box filters were demonstrated, and Cobbett’s Pond in Windham, where highway runoff was infiltrated in a tight setting.
- Physical and biological restoration projects were completed at Warren Brook in Alstead and Lake Horace Marsh in Weare.
- The first web-based watershed plan was completed for three bays of Lake Winnepesaukee, the state’s largest lake.

- The report also describes efforts to explore the feasibility of stormwater utilities in Dover and a new tool to quantify and address pollutant loading from residential sites.

In addition to the above, we now have more than 30 completed watershed-based plans posted on the DES web site. These plans represent thousands of hours of work by organizations, volunteers, and consultants toward measurably improved water quality and will serve as the building blocks for on the ground implementation projects.

## Stormwater Initiatives

### New Do-It-Yourself Tools to Manage Stormwater

Managing stormwater can be complicated. Often, engineers and other professionals are called upon to design and install stormwater treatment practices, as well as calculate their pollutant removal benefit. While professional stormwater management services may be only a small part of the budget for large commercial or multi-unit residential developments, such services are simply not affordable for the majority of small-scale property owners.

Still, many people want to lessen the impact of stormwater runoff from their property. Whether they want to protect water quality or prevent their driveway from washing out, people are looking for ways to manage stormwater with simple materials and easy to follow instructions. Recognizing this need, DES has developed the following new tools.

NEW HAMPSHIRE HOMEOWNER'S GUIDE TO STORMWATER MANAGEMENT DO-IT-YOURSELF STORMWATER SOLUTIONS

### VEGETATED SWALE

A vegetated swale is a shallow channel that slows stormwater runoff and directs it to an area where it can infiltrate. Swales receive drainage from roads, sidewalks, and driveways. They use plants to help trap sediment, remove pollutants from stormwater, and prevent erosion.



#### SIZING AND DESIGN

**STEP 1:** Determine the best location, shape, and size for your swale. Swales are often located close to roads or driveways. The swale should be located in a place where it will receive runoff at one end and have enough slope to it that the runoff will naturally flow through the swale to the other end to outlet. A slope of 1" for every foot in length is enough to move the runoff.

**STEP 2:** Select plants for the swale using the Native Plant List in Appendix A of this guide. Hardy ground covers and grasses that produce uniform, dense cover, and can withstand flood and drought conditions are best. If the swale is to be located close to a road or in an area where you will store snow, choose salt-tolerant plants.

#### EQUIPMENT & MATERIALS

- Measuring tape
- Shovel
- Grass sod or other vegetation - native grasses, sedges, and seedlings. Drought & flood tolerant plants are best suited.
- Soil mix (depending on existing soil type)

#### OPTIONAL

- Downspout extension
- Splash guard
- Crushed stone (for check dams)

<http://des.nh.gov/organization/divisions/water/stormwater> 49

*The New Hampshire Homeowner's Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home* provides fact sheets for a variety of stormwater treatment practices, such as dry wells and rain gardens that can be easily installed on private property. Each fact sheet includes a material list, illustrations and step-by-step instructions. Constructing these practices can help reduce flooding and erosion, and subsequently protect nearby streams and ponds from stormwater pollution.

*The New Hampshire Residential Loading Model* is a spreadsheet tool to help estimate the amount of stormwater pollutants, specifically sediment, phosphorus, and nitrogen, that come from a given property. This tool can model various property scenarios including the water quality impact of building a new garage, for example, or the water quality benefit of constructing a stormwater treatment practice from the homeowner's guide. The tool can also be used to determine if a property meets local water quality goals, if they have been defined for a particular water body.

Example fact sheet from the *New Hampshire Homeowner's Guide to Stormwater Management*.

Both tools are available at <http://des.nh.gov/organization/divisions/water/stormwater/stormwater-mgmt-homeowners.htm>

## Update on Stormwater Utility Feasibility Studies

The city of Dover completed its stormwater utility feasibility study with funding from a 2009 Section 319 Grant. The funding enabled Dover to hire consultants to identify stormwater program needs and costs, evaluate the possibility of establishing a municipal stormwater utility, and identify a preferred approach to funding the city's stormwater program. Dover spearheaded an effort to garner public support by appointing an ad-hoc stormwater study committee of stakeholders. This citizen committee representing various groups that would be affected by the outcome of the committee's recommendation was able to work cooperatively and, despite initial concerns and misgivings, unanimously voted to support the formation of a stormwater utility.

Unfortunately, following presentations to the city council and the public, a well-organized opposition spoke at a public hearing. Concerns centered around not wanting to be the first stormwater utility in New Hampshire, delay in issuing the new MS4 permit that many of the stormwater program costs were based on, and a lack of trust in government in general. Following the negative responses, the city council felt that much was learned by the feasibility process but that establishing a utility at this time in Dover was premature.

DES then met with Dover and other stormwater utility feasibility study grantees to identify lessons learned that could be incorporated into the ongoing efforts. It was recommended, if possible, to wait for the new MS4 permit to be issued before bringing utility proposals to city councils for a vote. DES has since incorporated additional recommendations for stormwater utility feasibility studies in New Hampshire, which can be found at <http://des.nh.gov/organization/divisions/water/stormwater/utilities.htm#feasibility>, and will add new information as other grant projects are completed.

## Education and Outreach

### Second Annual 319 Grantees' Roundtable Combines Project Site Tours

The Watershed Assistance Section hosted the 2010 Watershed Managers Roundtable (2nd Edition) and Project Site Tours in October at the DES Coastal Office in Portsmouth.

This event combined the 319 Grantees' Roundtable with project site tours, conventionally held for EPA staff, so that 319 project managers could also observe past and ongoing 319 project successes. Attendees at the combined event, included approximately 50 past, current, and potential future 319 Watershed Assistance and Restoration grantees, private consultants, and representatives from several EPA Programs and the DES Watershed Management Bureau.

During the roundtable, grantees brainstormed on ways to build capacity and implement tools for watershed projects and identified four key areas of interest.



*Lori Chase, Project Coordinator, Cocheco River Watershed Coalition describing BMPs for School Street School, Rochester.*

1. Enable best management practice implementation at the local level.
2. Establish partnerships with NH Department of Transportation and local departments of public works.
3. Streamline the local and state regulatory processes to facilitate restoration and BMP implementation.
4. Reduce water quality impacts from winter road maintenance practices.

For each key area of interest, participants discussed barriers, benefits, and recommendations for follow-up action. Some of the suggested actions included: demonstrate to DPWs how implementing low impact development (LID) can save their town money; streamline the permitting process for smaller projects that improve water quality; and, create and promote fact sheets for winter maintenance practices to reduce salt use.

Attendees were then escorted on a bus tour to visit three 319 project sites in the Coastal watershed. The Hodgson Brook Restoration Project in Portsmouth provided an example of LID best management practices retrofitted into existing developed areas in a highly urbanized area. The stop at Cain's Pond in Seabrook demonstrated how the pond was restored for recreational uses through dredging and installation of a sediment trap chamber BMP. Finally, a visit to the Cocheco River project at School Street School in Rochester highlighted stormwater BMPs that were retrofitted into existing development including a pervious asphalt basketball court, pervious concrete sidewalk, three rain gardens, and an infiltration dry well and trench.

Evaluations and responses indicated the event was a huge success and a third edition of the roundtable will occur in FY 2012.

## **Dipping into Social Networking with the New Hampshire Watershed Protection and Restoration Forum Blog**

To meet 319 grantees requests for additional opportunities to network with fellow grantees and partners, DES created the *New Hampshire Watershed Protection and Restoration Forum blog* at [http://xml2.des.state.nh.us/blogs/watershed/?page\\_id=176](http://xml2.des.state.nh.us/blogs/watershed/?page_id=176). This blog provides additional resources and opportunities to network for those involved with Watershed Assistance and Restoration Grants.

Over 175 grant project managers and interested parties are updated on new posts on a regular basis and are provided the opportunity to post and share their own resources and comments.

The blog pages are loaded with useful resources including links to web sites of past and current grant recipients. Since going live, over 50 posts have included notification about workshops, conferences, webinars and other 319 program related information.



*Tara Schroeder, Green Mountain Conservation Group sharing tips with the representatives from Lake Wentworth Association.*

## Watershed Grant Procedures Meeting

In January 2011, DES held the first Watershed Grant Procedures Meeting for Section 319 Grant recipients. The purpose of this meeting was to provide training regarding the paperwork and procedures required for 319 grant administration. Historically, this information was provided to the grantees during a scoping meeting to discuss the particulars of their project. It was determined that this approach provided too much information at once, and that it would be best to separate discussion of the scope of work from training on grant procedures. The procedures meeting included: general grant information; execution of the paperwork needed for grant agreement approval; procedures during the project period such as procurements, payment requests, interim reports and quality assurance; and guidance for closing out the project, such as final report requirements. At least one representative from each grantee organization attended the meeting. In addition to receiving guidance attendees learned from each other as they shared tips that have been beneficial to them. The majority of grantees also took advantage of an opportunity to meet one on one with a DES grant manager following the meeting. The meeting was well received and DES plans to continue offering this training to future grant recipients.



*Green SnowPro logo.*

## Green SnowPro Certification and Reducing Road Salt

Continuing with efforts to implement measures to meet the chloride Total Maximum Daily Loads (TMDL) in the I-93 expansion watersheds, DES partnered with UNH Technology Transfer (T2) Center to design and kick-off the "Green SnowPro" Certification program. This voluntary program improves communications and increases training opportunities with one of the larger chloride contributors in the TMDL watersheds, private applicators. Participants in the program are afforded the opportunity to become a New Hampshire "Green SnowPro" certified winter maintenance professional by participating in a

half day course followed by an exam. The training includes: how salt works, anti-icing with liquids, pre-wetting, spreader calibration, material storage and housekeeping, and salt accounting. The first two training sessions in 2011, hosted by the town of Derry, were at maximum capacity and resulted in over 100 applicators earning "Green SnowPro" certification. In addition to the water quality benefits, "Green SnowPro" certified applicators learned techniques to continue to maintain a level of service while using less salt, which in turn saves time and money, increases professionalism, and reduces risk exposure. Salt Reduction Compliance for Operators training was also provided for the municipal winter maintenance staff and incorporated into the "Green SnowPro" program. Once certified, businesses can market their certification with truck decals and via the web site at <http://t2.unh.edu/green-snowpro-certification>.



*Salt applicators go through a calibration exercise.*

## Pet Waste Gets Some Air Time

The pet waste program, "Scoop the Poop," received local and international fame through a video/public service announcement (PSA) "Beach Karma" and a documentary "Dog Poo – the Truth at Last."

In February a "Scoop Social" was held to kick-off the first pet waste PSA hosted on the DES web site at [http://des.nh.gov/organization/divisions/water/wmb/coastal/scoop\\_the\\_poop.htm](http://des.nh.gov/organization/divisions/water/wmb/coastal/scoop_the_poop.htm). This innovative video was created by Blue Ocean Society as match for a Section 319 Watershed Assistance grant. The video creatively combines a little Alfred Hitchcock with Charlie Chaplin to encourage people to pick up their pet waste by highlighting that pet waste left on our beaches can cause impacts to water quality and may even close beaches.

In September, the Australian filmmaker James Boldiston's documentary film "Dog Poo – the Truth at Last" held its American debut at the New Hampshire Film Festival in Portsmouth. Shot in eight

countries, the secret life of dog feces is brought out in "glorious" detail. New Hampshire's own "Scoop the Poop" pet waste education program created and implemented by DES is featured alongside Harvey Milk's pooper scooping laws in San Francisco and poo detection in the outback of Australia. After researching and producing this funny and informative film for over a year, Boldiston declared New Hampshire's program as "one of the best pet waste outreach programs in the world." The movie trailer can be seen at: <http://www.dogpootruth.com/>.



*Australian Filmmaker, James Boldiston, filming New Hampshire segments for a pet waste documentary at Rye Beach.*

## 2011 New Hampshire Envirothon addresses Nitrogen Pollution in the Great Bay Estuary

Annually high school students across New Hampshire participate in the "Envirothon," a national high school environmental science competition that encourages an understanding of the principles and practices of natural resource management and ecology. The theme for 2011 was "Salt Water Estuaries" and DES assisted with creating the research and oral presentation topic on nitrogen loading to the Great Bay Estuary. Participating teams were tasked with developing a balanced strategy to reduce nitrogen levels in the Great Bay Estuary by limiting nitrogen discharge from wastewater treatment facilities and other point sources, as well as addressing non-point sources of nitrogen pollution. About 160 students representing 12 high schools from 41 communities participated in the competition.

## Watershed Gaming

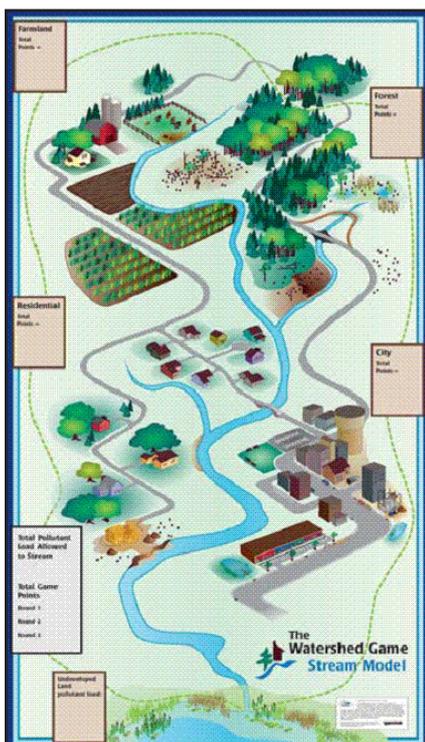
DES outreach staff was trained by Northland Nonpoint Education for Municipal Officials (NEMO) representatives from Minnesota to facilitate a watershed interactive activity, *The Watershed Game*. This competitive activity uses a board game to increase participants' knowledge of what a watershed is, how various land uses impact water quality, what different best management practices will help obtain a water quality goal by reducing certain pollutants, and the need for collaboration among land use stewards to reach a water quality goal.

The game was then purchased and piloted before DES staff to identify appropriate audiences and to solicit feedback on the game process. DES staff also facilitated the game for lake association members at the Action Wakefield Watershed Alliances Healthy Lakes kick-off meeting and for DPW staff at the Seacoast Stormwater Coalition meeting. Both groups were positive about the increase in awareness about water quality goals, low impact development BMPs and the different stakeholders involved in protecting or restoring a water body.

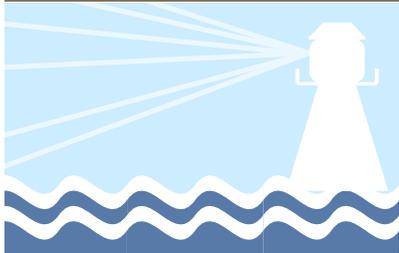
The New Hampshire Natural Resource Outreach Coalition will assist DES in publicizing and loaning the game to New Hampshire stakeholders, such as watershed organizations, state and local decision makers, and educational institutions. DES will also respond to requests for training and/or facilitation assistance.



*Municipal officials are assisted by Northland NEMO Representatives in the Watershed Game exercise.  
Photo by J. Bilotta, NEMO.*



*The Watershed Game has options for both lake and river watersheds.*



# Highlights and Overview of Completed Projects

## Watershed-Based Plan for High Quality Waters in the Acton Wakefield Watershed Region - Salmon Falls Headwaters Lakes

Coastal Watershed

Watershed-Based Plan for High Quality Waters in the Acton Wakefield Watershed Region - Salmon Falls Headwaters Lakes

Acton Wakefield Watershed Alliance (AWWA)

2005/2007/2008 Restoration

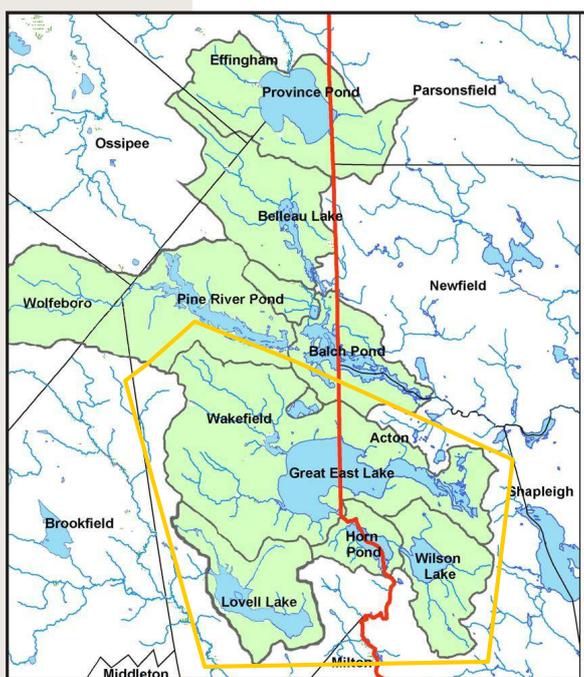
Grant Amount: \$108,266

Local Match: \$210,097

The Salmon Falls River Headwaters Lakes Watershed Management Plan includes the five watersheds of Great East Lake, Horn Pond, Lake Ivanhoe, Lovell Lake and Wilson Lake. This area comprises approximately 26 square miles within Acton, Maine and Wakefield, New Hampshire. Development in the Acton-Wakefield region is considered rural with nearly 89 percent of land area undeveloped. The remaining developed land is largely residential, primarily occurring along major roadways and lake shores. The lakes and associated wetlands are home to a diverse ecological community that depends on clean water.

This grant was awarded to the Acton Wakefield Watersheds Alliance (AWWA) to develop a watershed-based plan for the Salmon Falls Headwater Lakes. These pristine waterbodies are of significant value to the communities of Acton and Wakefield and action is needed to maintain their good condition.

To promote community engagement in the planning process, AWWA convened a watershed steering committee of stakeholders that included town officials, planning board members, representatives of lake associations and local land trusts as well as interested community members.



Acton Wakefield Watershed Region

### The Problem and the Threat: Phosphorus

Small increases in phosphorus can adversely affect lake water quality leading to decreased clarity, possible algal blooms and accelerated eutrophication. This in turn can adversely impact fish populations and public uses such as swimming and boating. Phosphorus has therefore been identified as the pollutant of concern for lake management in the plan. Water quality data analyses, lake loading models, and land use models were used to define current in-lake phosphorus levels for all five lakes. These analyses indicate that all five lakes need phosphorus control

measures to maintain or achieve high quality water status based upon water quality standards set by DES in 2010. This is especially true in light of a build-out analysis projecting that the region may gain over 4,200 buildings and 9,000 people within the next 44 years. If not controlled, this increase in growth could result in several hundred more pounds of phosphorus entering the lakes each year.

### Development of the Plan

Over the two year project period several models were utilized to characterize current water quality conditions and to identify opportunities to improve and protect the lakes. The project team worked together with Maine and New Hampshire environmental agencies to organize, summarize, and analyze water quality data gathered by volunteers and professionals over more than three decades. The project team also analyzed current land use and phosphorus inputs to the watershed. Additionally, AWWA conducted watershed surveys on each lake with the help of over 100 local volunteers to identify erosion sites contributing excess phosphorus to the project lakes and tributaries. These data enabled the project scientists to determine the current in-lake status and set phosphorus goals for each lake. (Table 1)

Table 1. In-lake Phosphorus Goals: Maintain or Improve Lake Water Quality	
<b>Maintain water quality at current in-lake phosphorus level:</b> <ul style="list-style-type: none"> <li>Great East Lake - 6.4ppb</li> <li>Wilson Lake - 6.5ppb</li> <li>Horn Pond - 8.0ppb*</li> </ul> *Further analysis will be conducted to confirm the goal at Horn Pond	<b>Improve water quality and reduce in-lake phosphorus to 7.2 ppb:</b> <ul style="list-style-type: none"> <li>Lake Ivanhoe: reduce by 0.8 ppb</li> <li>Lovell Lake: reduce by 0.3 ppb</li> </ul>

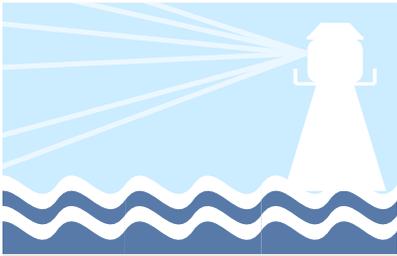
In January 2009, stakeholders gathered to discuss preliminary results from analyses and to brainstorm water quality improvement and protection action items. The steering committee then used these ideas to develop an action plan with five key action areas. (Table 2) Specific tasks were developed for each key action area that identified responsible parties, potential funding sources, approximate costs, and an implementation schedule

Table 2. Five Key Action Areas to Maintain or Improve Lake Water Quality
<b>Private and Public Roadway BMPs:</b> Reduce sediment loads through the stabilization and reinforcement of road crossings and roadsides.
<b>Residential BMPs, Riparian Buffers, Low Impact Development and Septic Systems:</b> Encourage vegetated buffers and low impact development techniques. Implement a septic system inspection and pumping program.
<b>Community Planning:</b> Strengthen and enforce regulations to protect water quality.
<b>Land Conservation:</b> Coordinate with municipalities, land trusts, regional planning commissions, and lake associations to ensure that some land remains in an undisturbed state which will help reduce total phosphorus runoff.
<b>Education and Outreach:</b> Work with seasonal and full-time residents to enhance the understanding of land use/water quality connections.

### Next Steps

The success of this watershed management plan is dependent heavily on the cooperation of the local municipalities and key stakeholders. AWWA's goal is to use the plan to engage all community members in the protection of the region's most valuable asset – its lakes.

AWWA will convene the watershed steering committee at least annually to provide periodic updates to the plan, track and record progress, and ensure that the plan remains current and relevant by adding new tasks as needed. All achievements, such as press coverage, pollutant load reductions, outreach activities, number of sites repaired, number of volunteers, funding received, and number of sites documented, will be tracked. In addition, established measures will be used to determine the effectiveness of the plan on reaching the water quality goals.



## Willand Pond Drainage Establishment and Public Outreach

Coastal Watershed

Willand Pond  
Drainage  
Establishment and  
Public Outreach

City of Dover

2004-2007  
Restoration

Grant Amount:  
\$68,064

Local Match:  
\$58,517

Willand Pond is a natural, spring-fed kettle pond located in both Somersworth and Dover. The pond has a drainage area of approximately 330 acres, and a surface area of approximately 80 acres. The watershed was used as a public drinking water source by the city of Dover from 1876 until 1966. The pond has also served as a public recreational area since the 1890s when it was the site of a Victorian-style park. Its historical use as a water supply and recreational destination protected it from significant commercial development pressure until the 1960s when aggressive development and land use conversion occurred in the area surrounding the pond. The cumulative effect of many years of development, compounded with cessation of water withdrawals and three consecutive years of record-breaking precipitation in 2006-2008 contributed to sustained elevated surface water levels, flooding, property damage, and water quality degradation.

In 2006 Willand Pond was listed as impaired for Aquatic Life and Primary Contact Recreation on the DES 305(b)/303(d) Surface Water Quality Assessment. Water quality degradation of the pond culminated with a large cyanobacteria bloom in the summer of 2007. The pond was posted and closed for recreational purposes from mid-July until the fall of 2007. Historically, the adjacent

wetland area had been a crucial factor in the pond's ability to balance its water budget (through flood flow alteration and storage). However, man-made alterations to the discharge coupled with increased inputs from precipitation and stormwater have overwhelmed the system's ability to equilibrate itself. To improve water quality, immediate actions would be necessary to reduce both nutrient sources and surface water elevation.

The goals of this project were to review and assess the natural and anthropogenic factors causing flooding and water quality issues at Willand Pond, and to develop public outreach focused on promoting pond stewardship. DES worked with the cities of Dover and Somersworth and



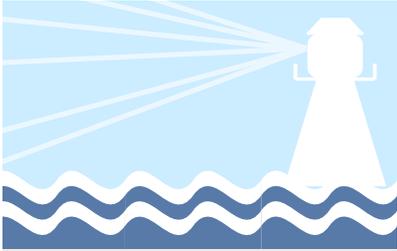
*Willand Pond and identified retrofit areas.*

two private consultants, S. W. Cole Engineering Inc. and Horsley Witten Group Inc. to assess historical and current hydrologic and land use conditions. The project team worked closely with neighborhood residents and businesses to develop and sustain the “Friends of Willand Pond,” a local ad hoc group dedicated to restoring and protecting the pond. The Friends created educational materials and conducted workshops and activities to promote pond restoration including water quality monitoring events, pond clean ups, trail planning sessions, safety planning meetings, landowner workshops, and more. The assessment of historical and current conditions served as the basis for the development of a watershed management plan, which provides both structural and non-structural restoration practices for addressing water quality and quantity issues of the pond.

The plan’s recommendations include stormwater retrofits to reduce phosphorus loading to the pond; conceptual designs for restoring hydrologic connectivity in the pond’s outlet area to alleviate water level issues related to encroachment from development, adoption of local water quality provisions, and sustained public education and outreach efforts supported by both cities and the Friends of Willand Pond.



*Willand Pond. Photo by Norma Willard, Friends of Willand Pond.*



Coastal Watershed

Hodgson Brook  
Restoration  
Years 3 & 4

Blue Ocean  
Society for Marine  
Conservation

2006 Restoration

Grant Amount:  
\$85,020

Local Match:  
\$58,277

## Hodgson Brook Restoration Years 3 & 4

Hodgson Brook is an urban stream that is impacted by high stormwater flows that are contaminated from parking lots and roads. In addition, over the years it has been straightened, channelized, and piped underground. This project implements year 3 and 4 of the Watershed Restoration Plan for Hodgson Brook. The project goals included raising the public's awareness of the brook's condition by connecting watershed residents and businesses to the brook, and by highlighting solutions each could take to improve its condition.

The support of watershed residents and businesses and ultimately their actions are critical to achieving the goal of cleaning up the brook. The activities conducted through this project initiated the process of engaging local residents and business and schools in the restoration effort. Capacity building activities included:

- Participation in the water quality sampling, monitoring stream flow, trash surveys and cleanups, storm drain stenciling, and helping with invasive plant surveys.
- New Franklin School students and teachers created and recorded public service radio announcements encouraging the public to help "Save the Brook!" These were introduced by the students on the Environmental Show and aired on Portsmouth Community Radio 106.1.



*Volunteers plant a buffer along Hodgson Brook.*

- Storm drain stenciling and distribution of informational flyers.
- UNH students conducted stormwater retrofit surveys to identify locations for future LID installations.
- The Hodgson Brook Advisory Board members helped both the City of Portsmouth and Pease Development Authority (PDA) evaluate and

strengthen their regulations to better protect the brook and other water resources. Board members also advised on a major redevelopment project along the brook which resulted in additional installations of LID technologies to reduce the impact of stormwater runoff from the site.

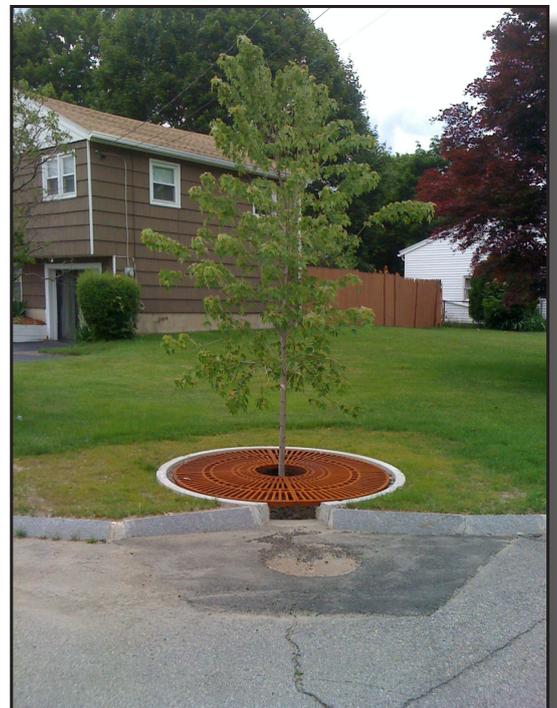
- Great Bay Community College provided office space for project work and embraced the challenge of retrofitting its campus grounds for water quality including using pervious pavement in a recent parking lot expansion and daylighting a section of drainage.

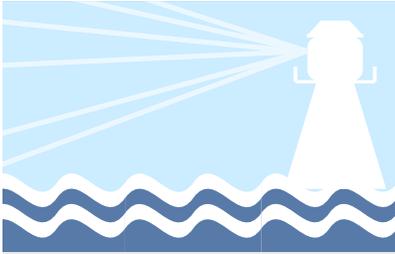
A major success of the project was the restoration of approximately 150 feet of stream buffer located at the Port Inn. The stream bank was eroding and unstable. Vegetation at the site consisted mainly of invasive species. UNH Cooperative Extension staff designed an attractive native planting plan for the buffer. Invasive species were removed from the site and volunteers from the United Way helped plant the new buffer. The project was featured on New Hampshire Public Television in a series of interviews and site visits. The bank is now stabilized and native vegetation is in place to filter pollutants and help keep the bank intact. The Port Inn provided generous donations of cash, staff assistance, and services to support the project. Owners of the Port Inn maintain the buffer and are proud of its natural beauty and water quality benefits.

The local capacity built during this grant will enable the next phase of the Hodgson Brook Restoration Project to move forward with strong local partnerships and demonstrated success!



*Catch basin retrofit in Portsmouth before (above) and after (right).*





Coastal Watershed

Cains Brook and Mill  
Creek Restoration

Town of Seabrook

2006 Restoration

Grant Amount:  
\$68,240

Local Match:  
\$57,758

Sediment Load  
Reduction:  
1.9 tons/year

## Cains Brook and Mill Creek Restoration

The Cains Brook and Mill Creek Watershed Management Plan was developed by the Seabrook Conservation Commission in 2006, and revised in 2009, to guide local restoration efforts to restore aquatic, riverine and recreational uses to the watershed. This project implemented three action items from the plan including installing a structural BMP, an oil/trash/grit separator chamber device, to reduce sediment and pollutant loading from the adjacent US Route 1 roadway. The installation of this BMP will remove an estimated 1.9 tons of sediment annually.

To address the large volume of trash deposited in the watershed, outreach to the community was conducted and a Cains Pond clean-up day was held where participants removed over one ton of trash from the riparian area.

A team of volunteer monitors was recruited and trained by the DES Volunteer River Assessment Program staff. Eight sites were sampled for various parameters during the project period. Final reports were produced and sampling results will be used to guide future restoration efforts. Assessment work conducted during the project also resulted in documentation of an additional impairment for navigation to Cains Pond (see Cains Pond Restoration on page 15).

The project raised local awareness of the brook and ponds in the watershed as recreational resources worth protecting. It also helped build momentum for future work and implemented key sediment load reduction measures.



*Cains Brook clean-up day.*

## Cains Pond Restoration

For many years, Seabrook residents enjoyed skating, fishing, small boating, and other recreational activities on Cains Pond. However, increased development surrounding the pond and the breach of the Cains Dam during the Mothers Day storm of 2006 resulted in more rapid than normal infiltration of sediment and shallower pond depths. As the pond's depth became shallower, conditions became more conducive to invasive plants which infested the margins and surface of the pond. This severely limited recreational activities due to sediment deposits and dense plant growth.

Cains Pond was listed on the 2010 303 (d) list for a secondary contact recreation impairment. The goals of this project were to restore navigation, improve habitat, and create better public access to the pond. In accordance with the Cains Brook and Mill Creek Watershed Management Plan, low impact dredging was determined to be a way to remove recently accumulated materials including sediment and decayed plant material and restore the pond to historical depths that were present when recreation was possible. Additional recommendations in the plan to improve public access, construction of a fishing platform, and aquatic organism passage were also implemented during this project.

To address the navigation impairment over 7,500 cubic yards of material was removed from the pond and 25,000 square feet of invasive plants. In addition, "deep holes" of up to seven feet were dug to provide habitat for fish and other aquatic life. The "inlet-to-outlet" dredge pattern makes the entire length of the pond navigable.

Two "Cains Brook – Keep it Clean" signs were placed along Route 1 near the restoration site to remind visitors, residents and motorists to keep trash and other debris out of the pond and brook. This is a continuation of previous outreach efforts to reduce trash input to the brook.

A bathymetric survey was conducted to show post dredge pond depths and provides a comparison to pre-dredge depths. Pre- and post photo documentation of the site was conducted to record changes in conditions and recreational activity.

This project also addressed related action items in the watershed plan for improving pond habitat and public access:



Coastal Watershed

Cains Pond  
Restoration

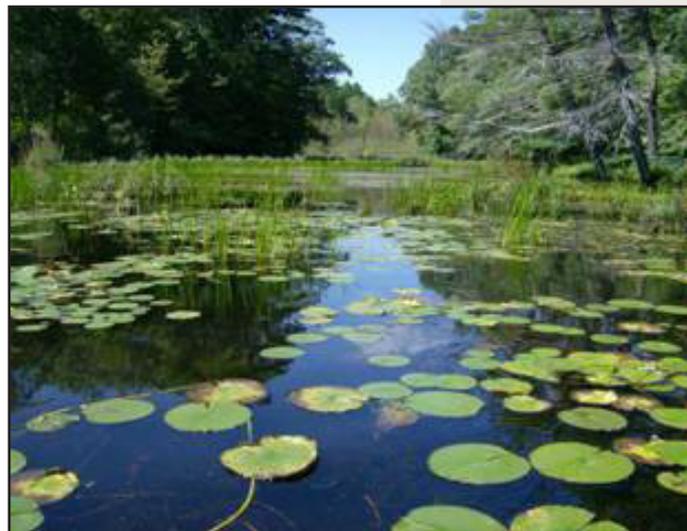
Town of Seabrook

2006 Restoration

Grant Amount:  
\$91,800

Local Match:  
\$196,300

Sediment Load  
Reduction:  
750 tons/year



*Cains Pond shallow depth before dredging.  
Photo: Duncan Mellor, Waterfront Engineers*

- Aquatic and Wildlife Passage Improvements

Nature-like stone rock/riffles were constructed to replace a vertical concrete weir structure at the Route 1 crossing/outlet of Cains Pond and at adjacent Mary's Pond at Lakeshore Drive. The nature-like rock riffles allow for greatly improved aquatic organism stream passage and will also prevent culvert entrance scour and will maintain the pond's water levels to preserve aquatic habitat, recreational uses, and scenic views. After construction, wildlife were observed using the new rock riffle to travel upstream from the lower reaches of the watershed into Cains Pond. Prior to construction of the berm, wildlife had to cross Route 1 in order to enter or leave Cains Pond.

- Public Access Improvements

Public access improvements included construction of a handicapped accessible overlook/fishing platform adjacent to the pond and installation of a car top boat launch. An easement with the neighboring property owner was granted for the creation of a public ADA parking area adjacent to the public access improvements.



As a result of these improvements, small boats are now able to navigate the pond once again. A success story detailing the restoration work was posted to the EPA "Success Story" web site in the fall of 2011 [http://water.epa.gov/polwaste/nps/success319/nh\\_cain.cfm](http://water.epa.gov/polwaste/nps/success319/nh_cain.cfm). Accordingly, the secondary contact recreation use impairment for Cains Pond will be removed from the state's CWA section 303(d) list in 2012.

*Kayaking returns to Cains Pond.*

*Photo: Sue Foote, Seabrook Conservation Commission*

## Hancock Village Stormwater Management and Water Quality Improvement

Through this project, the town of Hancock took a proactive approach to protecting local resources. Though water quality in the adjacent Norway Pond and Davis Brook were quite good, stormwater runoff was contributing pollutants and threatening these valuable resources. The Hancock Main Street roadway improvement project represented a timely opportunity to incorporate practices that would improve road drainage and other traditional goals for stormwater conveyance – but would also provide protection for Norway Pond and Davis Brook.

The village area's upgraded stormwater management system now includes several treatment devices to protect water quality including seventeen deep sump catch basins, thirteen leaching catch basins, and two infiltration chambers. The catch basins are designed to remove sediment such as road sand from the stormwater by allowing it to settle in the basin while the water flows through. The basins can then be cleaned out and the sand discarded or reused. The infiltration chambers allow the soil to act as a natural filter treating stormwater pollutants such as bacteria and phosphorus. It is estimated that these treatment devices will result in annual pollutant load reductions of over 8.8 tons of sediment, 25.9 pounds of phosphorus and 265.3 pounds of nitrogen that would otherwise have been delivered directly to Norway Pond and Davis Brook.

The project also improved the boat ramp and beach area by re-grading the parking and boat ramp so that stormwater is now redirected, reducing beach erosion and stormwater runoff to the pond. An additional benefit of this work is the improved parking area and access paths for beach users. A kiosk was installed that provides educational information to residents and visitors on stormwater, the BMPs that were installed and ways that individuals can take responsibility to protect water quality.



*The town of Hancock's road agent, Kurtis Grasset, leads DES and EPA staff on a tour of the town's stormwater improvements.*



Merrimack River Watershed

Hancock Village Stormwater Management and Water Quality Improvement

Town of Hancock

2005/2007 Base

Grant Amount:  
\$94,800

Local Match:  
\$125,879

TSS Reduction:  
8.8 tons/year

Phosphorus  
Reduction: 25.9 lbs/yr

Nitrogen Reduction:  
265.3 lbs/yr



## Lake Winnepesaukee Watershed Management Plan: Meredith, Paugus, and Saunders Bays

Lake Winnepesaukee, the largest freshwater body in New Hampshire, is the principal economic and environmental feature in the New Hampshire Lakes Region. With a size of 44,587 acres the total watershed area encompasses 369 square miles. In light of its significance, it is surprising to note that there does not exist a comprehensive watershed management plan for the greater Winnepesaukee watershed area. This project is part of a long-term strategy to create a public, comprehensive web-based watershed management plan for Lake Winnepesaukee. Due to the size of the watershed and the number of communities involved, the plan will be completed in segments, using a sub-watershed approach. This project focused on the sub-watersheds of Meredith Bay, Paugus Bay and Saunders Bay. Potential threats to water quality include nonpoint source discharges as a result of failing septic systems, recreational impacts and development pressures. The project included an evaluation of the causes and potential threats to water quality, land use mapping, establishing in-lake phosphorus levels and a water quality goal, development of a web site, outreach and on-going monitoring.

In 2005 the communities of Meredith, Laconia and Gilford formed an advisory committee to focus on water quality protection of Meredith Bay, Paugus Bay and Saunders Bay. Partnering with the Lake Winnepesaukee Watershed Association, Lakes Region Planning Commission, North Country Resource Conservation and Development Area Council, UNH, Plymouth State and DES the success of this project was realized.

Merrimack River Watershed

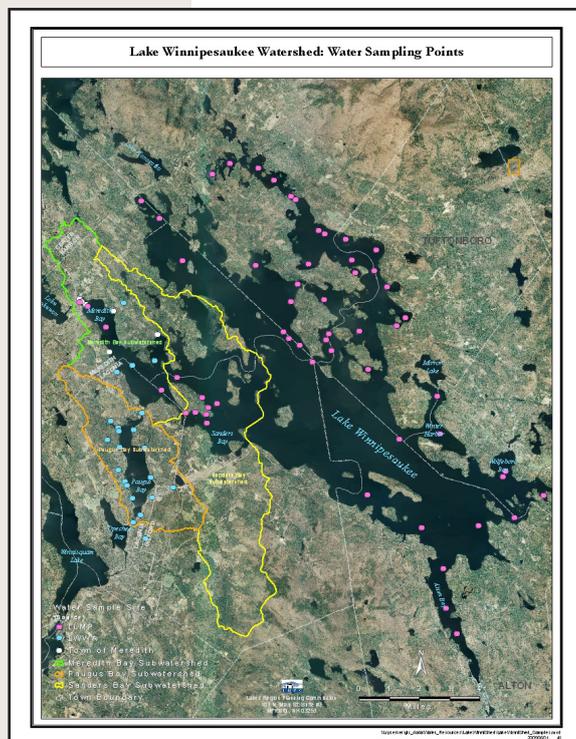
Lake Winnepesaukee Watershed Management Plan: Meredith, Paugus and Saunders Bays

Lakes Region Planning Commission

2008 Base

Grant Amount: \$76,640

Local Match: \$73,519



*Lake Winnepesaukee Water Sampling Points.*

One of the major outcomes of the project was a consensus-based water quality goal and mission statement for the three bays studied under this phase of the plan. An excerpt taken from the management plan for the subwatershed including Meredith, Paugus, and Saunders Bays includes the following shared mission statement: "The fundamental goal of this watershed management plan is to halt or minimize further water quality degradation attributable to nutrient inputs, primarily phosphorus in order to maintain our high quality water. Current total phosphorus levels in Meredith, Paugus, and Saunders Bays are below the state standard of 8.0 ug/L established for high quality water. We will work toward maintaining

or improving current total phosphorus levels by stabilizing nutrient inputs through the reduction of nutrient sources. We will manage landscape change to limit nutrient loads through stormwater management, adoption of low impact development techniques, innovative land use planning, and installation of best management practices. Our locally derived strategies are purposeful, considerate and comprehensive. Our approach embodies flexibility allowing us to achieve our stated goal while meeting the diverse needs and capacities of all watershed stakeholders.”

The web based plan known as “Winnepesaukee Gateway” is located at [www.winnepesaukeegateway.org](http://www.winnepesaukeegateway.org). It is the first of its kind in the state in that rather than a static document, the web-based plan will ensure that the plan is readily accessible to all stakeholders and the general public with the most current information so that progress can be tracked. It also lays the foundation for future sub-watershed plan development that will eventually result in a comprehensive watershed management plan for the entire Winnepesaukee watershed. In recognition of creating the first web-based watershed management plan to be approved by DES, the Winnepesaukee Gateway was selected by the New Hampshire Planners Association as Project of the Year in 2011. Building from the successful development of the Winnepesaukee Gateway, the Lakes Region Planning Commission has already initiated the next phase of watershed management planning for Center Harbor and has plans to pursue additional funding in the coming years to develop a plan for Moultonborough Inlet as well.



*Lake Winnepesaukee. Photo by Gary Tompkins.*



Merrimack River  
Watershed

Cobbett's Pond  
Watershed  
Restoration Plan

Cobbett's Pond  
Improvement  
Association

2004/2005/2008  
Restoration

Grant Amount:  
\$83,591

Local Match:  
\$61,826

## Cobbett's Pond Watershed Restoration Plan

Cobbett's Pond in Windham is located in a heavily developed watershed in southeastern New Hampshire. VLAP monitoring has shown that over the past 19 years the pond has shifted from oligotrophic to eutrophic status. Diminished dissolved oxygen levels and increased levels of chlorophyll-a have resulted in Cobbett's Pond no longer supporting the designated use for aquatic life. When the project started, Cobbett's Pond was on the 305(b)/303(d) list of impaired waters for a dissolved oxygen saturation impairment. After the grant award, additional impairments for chlorophyll-a, non-native aquatic plants, and total phosphorus have been added.

In 2008, the Cobbett's Pond Improvement Association was awarded Section 319 grant funds to create a watershed restoration plan. The goals for the association were to identify pollutant sources causing the dissolved oxygen impairment, generate a watershed restoration plan to address these sources, and implement recommended actions within the watershed to help restore the pond to fully supporting status. After the development of the restoration plan, the association created a team of residents to review and prioritize sites in the watershed that should move forward with the implementation of BMPs.

In August of 2009, the CPIA wrote a Watershed Protection Ordinance for Cobbett's Pond. In December, the Windham Planning Board unanimously supported the petition for town meeting, and in March of 2010, town residents adopted the ordinance. The adoption of these additional protections for Cobbett's Pond will facilitate water quality improvement practices in the watershed.



*A stormwater generated sediment plume discharging to Cobbett's Pond from the Fossa Road area - one of the priority sites identified for the construction of BMPs in the Cobbett's Pond watershed restoration plan.*

Although the ultimate goal of restoring Cobbett's Pond to fully supporting designated uses may not be realized immediately, the recommended strategies in the plan as well as the implementation of priority NPS control measures will act as the catalyst for changes to be made at both the municipal and individual landowner scales through regulatory and volunteer initiatives.

## Lake Horace Marsh Restoration

Lake Horace Marsh is a designated “prime wetland” in Weare along the North Branch of the Piscataquog River. Its ecological functions were severely compromised by downstream dam operations. Raising the levels of Lake Horace in the spring and lowering them in the fall to accommodate waterfront dock protection on Horace Lake had dire effects for most aquatic flora and fauna. Wildlife surveys throughout the marsh reflected drastic reductions from numbers one would expect of waterfowl, amphibians, mammals, aquatic reptiles and insects.

This project involved the construction of a run-of-river ecological water control structure, designed by engineers from the DES Dam Bureau, downstream of the marsh at the confluence of Horace Lake. Consisting of crushed stone, covered by a geomembrane fabric with larger diameter stone on top, the installed control structure extends across the river in a downstream-facing arc. When the lake is drained in the fall, water levels do not fall below the top of the structure, thus eliminating the dramatic spring and fall fluctuations that characterized the marsh system before installation. At full pond elevation in the summer months, the ecological water control structure is submerged by at least two feet of water allowing passage for canoes, kayaks and small boats. Post monitoring to date has shown that marsh vegetation has responded positively to the stabilized water levels with damages to nesting areas of many mammals being eliminated as well.

Additional monitoring is planned for five years post construction to further evaluate how the plant and fish populations are responding.



Merrimack River  
Watershed

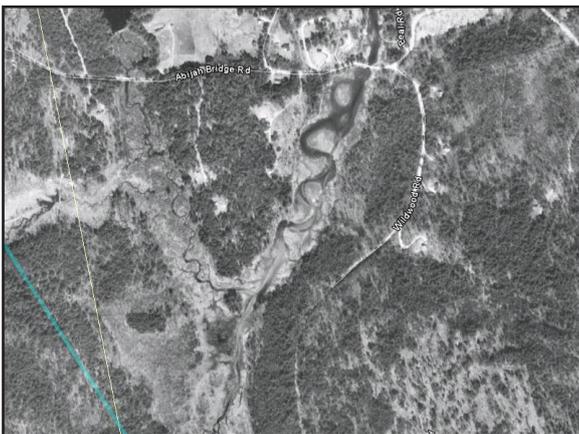
Lake Horace Marsh  
Restoration

Piscataquog Land  
Conservancy

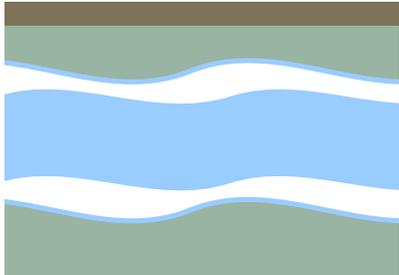
2003/2004  
Restoration

Grant Amount:  
\$64,359

Local Match:  
\$42,843



*Lake Horace Marsh before construction of water control structure in 1998 and after construction in 2011.*



Connecticut River  
Watershed

Warren Brook  
Restoration Planning

Town of Alstead

2007 Restoration

Grant Amount:  
\$12,600

Local Match:  
\$8,600

## Warren Brook Restoration Planning

As a result of the October 2005 flood disaster in Alstead, Warren Brook was listed as impaired for aquatic life use support based on bioassessment data. Initial disaster response funding from the Natural Resources Conservation Service led to stabilization of Warren Brook, mostly with stone banking, in 2006 and 2007. DES provided funding to the town of Alstead in 2008 to develop a restoration plan, prioritize restoration sites, and develop and permit a final design for one site

The project partners, including the New Hampshire Fish & Game Department and the town of Alstead, identified the reach of Warren Brook between state Route 123 and Griffin Hill Road as the top priority site for restoration due to its geomorphic instability and the limited number of landowners that would be affected by construction.

Project design and permitting were completed with 319 funds which, in turn, helped Alstead secure \$240,000 in federal stimulus money from the U.S. Fish and Wildlife Service for construction, which was completed in 2011.



*Section of Warren Brook prior to restoration.*



*Restored channel of Warren Brook looking upstream.*

## Looking Ahead

In 2012, states will be working with EPA to redesign the federal 319 program to address concerns described in EPA's report to the Office of Management and Budget. It is likely that New Hampshire, like many states, will be required to update the state Nonpoint Source Management Plan by the end of 2013. This work will begin in 2012 and is likely to include a priority system for working in watersheds, as well as recommended changes to statewide approaches to nonpoint source management.

We anticipate increased federal scrutiny relative to the use of 319 funds, for which DES is well-prepared. We are careful to ensure that grantees follow federal funding guidelines and that each project has quantifiable goals and systems to measure progress toward those goals. It is our recent experience that such an approach improves the likelihood of success for local watershed practitioners because watershed stakeholders better understand why specific measures are being proposed and implemented.

Nitrogen from permitted wastewater discharges in the Great Bay watershed has received quite a bit of attention in the news media during the past year. Meanwhile, DES has been busy working to quantify the nonpoint sources of nitrogen in the watershed. By September 2012, DES expects to have the breakdown of NPS nitrogen from lawn fertilizer, septic systems, and stormwater runoff, which will guide efforts by many stakeholders working to restore Great Bay.

Along these lines, DES will be participating in an effort led by the New England governors to develop voluntary lawn fertilizer guidelines. With heavy stakeholder participation and coordinated by the New England Interstate Water Pollution Control Commission, the goal of this effort is to create guidelines for the manufacture, sale and application of lawn fertilizers.

In 2012 we also hope to gain some clarity on how stormwater is addressed with respect to the 319 program. Since stormwater is regulated as a point source under the federal MS4 program, and 319 funds cannot be used to implement projects required by a point source permit, the distinction of what is required by the permit is an important one. A draft permit released in 2009 by EPA includes provisions requiring municipal retrofits in areas draining to impaired waters. Several watershed-based plans developed by our partners in MS4 areas recommend this very activity. If the draft permit language remains unchanged, this will curtail our ability to assist local groups who continue to implement these plans. Building the capacity to develop and implement watershed-based plans requires significant investments of time and money, and it is our hope that this work can continue, regardless of how it is funded or permitted.

## Appendix A

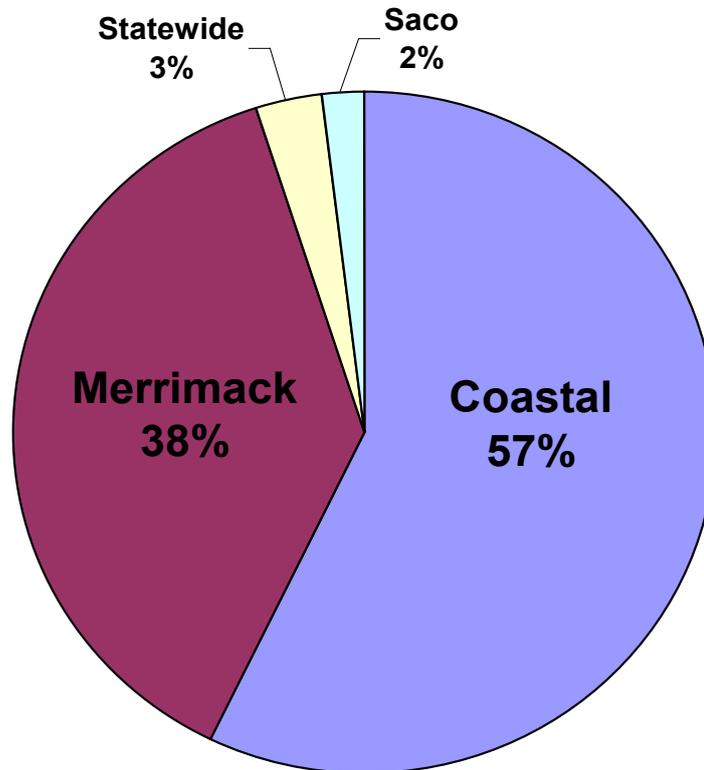
DES Section 319 Watershed Assistance Grants for High Quality Waters Awarded in FFY 2011						
Grantee	Project Name	Project No.	NPS Pollutant Category	Watershed	Source of Funds (FFY)	Grant Award
Lakes Region Planning Commission	Lake Winnepesaukee Watershed Mgt. Plan - Center Harbor	B-11-M-02	All Sources	Merrimack	2011 Base and 2010/2011 Incremental	\$55,000
Green Mountain Conservation Group	Ossipee Watershed Plan - Phase 1 Alternatives Analysis	B-11-S-01	All Sources	Saco	2011 Base	\$15,000
Town of Wolfeboro	Lake Wentworth and Crescent Lake Watershed Mgt. Plan	B-11-M-03	All Sources	Merrimack	2011 Base	\$67,800
Town of Brentwood	Middle Exeter River Watershed Mgt. Plan Implementation Phase 1, Rowell Road West	B-11-C-04	Urban Runoff/Stormwater	Coastal	2010 Incremental	\$49,152
UNH Stormwater Center	UNH Stormwater Center On Call Engineers for Small Scale BMP Implementation	B-11-C-01	Urban Runoff/Stormwater	Statewide	2010 Incremental	\$25,000
			Total Award:			\$211,952

## Appendix B

DES Section 319 Watershed Restoration Grants for Impaired Waters Awarded in FFY 2011						
Grantee	Project Name	Project No.	NPS Pollutant Category	Watershed	Source of Funds (FFY)	Grant Award
Blue Ocean Society for Marine Conservation	Hodgson Brook Watershed Restoration Plan Phase 2 BMPs and Chloride TMDL development	R-11-C-05	Urban Runoff/Stormwater	Coastal	2009/2010 Incremental	\$104,574
City of Franklin	Webster Lake - Lake Shore Drive Community Septic System Design and Design/implementation of BMPs	R-09-M-03	Stormwater/Other	Merrimack	2009 Incremental	\$70,000
City of Dover	Berry Brook Watershed Restoration Plan Phase 1 Implementation	R-06-C-10	Urban Runoff/Stormwater	Coastal	2006 Incremental	\$55,000
City of Dover	Berry Brook Watershed Restoration Plan Implementation Phase 2, LID Retrofits	R-11-C-02	Urban Runoff/Stormwater	Coastal	2008/2011 Incremental	\$147,200
Cobbetts Pond Improvement Association	Cobbetts Pond Watershed Restoration Plan Implementation Phase 2, Fossa Road BMPs	R-10-M-05	Urban Runoff/Stormwater	Merrimack	2006/2010 Incremental	\$100,000
Cocheco River Watershed Coalition	Cocheco River Watershed Restoration Plan Implementation Phase 2, Rochester LID	R-11-C-04	Urban Runoff/Stormwater	Coastal	2011 Incremental	\$109,500
NH Rivers Council	McQuesten Brook Watershed Restoration Plan Phase 1	R-11-M-01	Urban Runoff/Stormwater	Merrimack	2011 Incremental	\$17,000
			Total Awarded:			\$603,274

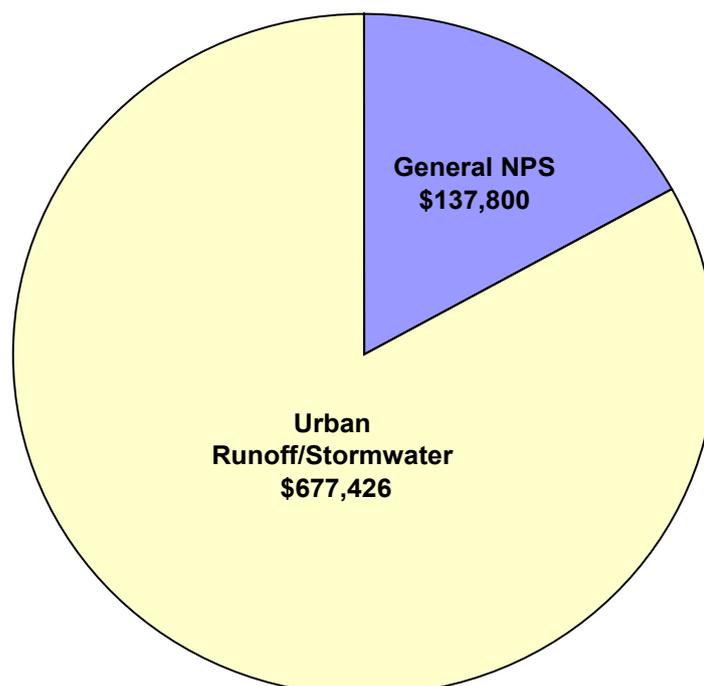
## Appendix C

### Distribution of Section 319 Grant Dollars Awarded in FFY 2011 by Watershed



## Appendix D

### Distribution of Section 319 Grant Dollars Awarded in FFY 2011 by NPS Category



## Appendix E

DES Section 319 Base Projects Completed in FFY 2011							
Grantee	Project Name	FFY Source of Funds	Grant #	Date Completed	Watershed	319 Funds	Total Cost
Acton Wakefield Watershed Alliance	Watershed-Based Plan for High Quality Waters in the AWWA Region	2005/2007/2008	B-08-C-02	10/14/2010	Coastal	\$108,266	\$318,363
Town of Hancock	Hancock Village Stormwater Mgt. and Water Quality Improvement	2005/2007	B-07-M-04	1/18/2011	Merrimack	\$94,800	\$220,679
Lakes Region Planning Commission	Lake Winnepesaukee Watershed Mgt. Plan: Meredith, Paugus and Saunders Bays	2008	B-08-M-04	3/31/2011	Merrimack	\$76,640	\$150,159
					Total	\$279,706	\$689,201

## Appendix F

DES Section 319 Restoration Projects Completed in FFY 2011							
Grantee	Project Name	FFY Source of Funds	Grant #	Date Completed	Watershed	319 Funds	Total Cost
Cobbetts Pond Improvement Association	Cobbetts Pond Watershed Restoration Plan	2004/2005/2008	R-08-M-01	1/3/2011	Merrimack	\$83,591	\$145,417
Town of Alstead	Warren Brook Restoration Planning	2007	R-07-CT-05	1/5/2011	Connecticut	\$12,600	\$21,200
City of Dover	Willand Pond Drainage	2004/2007	R-07-C-02	1/31/2011	Coastal	\$68,064	\$126,581
Piscataquog Land Conservancy	Lake Horace Marsh Restoration	2003/2004	R-04-M-01	2/7/2011	Merrimack	\$64,359	\$107,201
Blue Ocean Society for Marine Conservation	Hodgson Brook Watershed Restoration Plan Implementation Years 3 & 4	2006	R-05-C-13	3/10/2011	Coastal	\$85,020	\$143,297
Town of Seabrook	Cains Brook and Mill Creek Restoration	2006	R-06-C-06	4/15/2011	Coastal	\$68,240	\$125,998
Town of Seabrook	Cains Pond Restoration - Dredging to Remove Navigation Impairment	2006	R-08-C-03	3/28/2011	Coastal	\$91,800	\$288,100
					Total	\$473,674	\$957,794

## Appendix G

2011 Estimated Pollutant Load Reductions Achieved										
Grantee	Project Name	FFY Source of Funds	319 Funds	Total Cost	P (lbs/yr)	N (lbs/yr)	Sediment (tons/yr)	Other	Model/Method	Notes
Cocheco River Watershed Coalition	Introducing LID in the Willow Brook Watershed	2005 and 2009 - Restoration	\$84,912	\$141,548	n/a	n/a	n/a	34 lbs/yr TSS	Region 5 Model	project still in progress
Blue Ocean Society for Marine Conservation	Reducing Effective Impervious Surface in the Lower Hodgson Brook Watershed Through LID	2007 and 2009 - Restoration	\$120,416	\$210,398	3	18	1.3	n/a	Region 5 Model	project still in progress
Cobbetts Pond Improvement Association	Cobbetts Pnd - Watershed Restoration Plan Implementation Phase 2: Fossa Road BMPs	2006 and 2010 - Restoration	\$100,000	\$173,000	12.1	n/a	4.7	n/a	Physical measure	
Newfound Lake Region Association	Newfound Lake Watershed Master Plan Implementation: Phase 1	2008 and 2010 - Base	\$127,960	\$238,600	2.7	9.9	0.5	n/a	Region 5 Model	Also 43.9 lbs/yr BOD, 0.26 lbs/yr lead, and 0.54 lbs/yr zinc
City of Dover	Berry Brook Watershed Management Plan - Implementation Projects Phase 1	2006 - Restoration	\$55,000	\$96,790	1	0.01	n/a	147.8 lbs/yr TSS	Region 5 Model	
Granite Lake Association	Granite Lake Watershed Management Plan	2008 - Base	\$50,000	\$83,354	0.25	n/a	n/a	n/a	Region 5 Model	
Acton Wakefield Watersheds Alliance	Salmon Falls Headwater Lakes Watershed Management Plan	2010 - Base	\$107,952	\$214,189	18.7	n/a	21.7	n/a	Region 5 Model	project still in progress