

Nonpoint Source Management Program 2017 Annual Report

May 2018

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Sebago Lake, Standish Photo credit: John Hufstader
Courtesy of Portland Water District



MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Executive Summary

This report summarizes activities and accomplishments of the Maine's Nonpoint Source Management Program (NPS Program) in 2017. Maine Department of Environmental Protection (DEP) prepared this report to inform the public and the U.S. Environmental Protection Agency (EPA) about Maine's progress controlling nonpoint source (NPS) water pollution. NPS pollution is a major source of water quality impact to Maine's lakes, streams, and coastal waters. DEP coordinates Maine's NPS Management Program and works with other State agencies to achieve widespread use of state-agency best management practice (BMP) guidelines to prevent NPS pollution. The NPS Program uses a combination of statewide programs and targeted watershed projects to make progress restoring and protecting water quality. The NPS Program is funded in part, by the U.S. EPA under Sections 319(h) and 604(b) of the Clean Water Act (CWA).

Maine DEP uses a watershed-based approach as the coordinating framework to organize public and private sector efforts to protect and restore waters. DEP administers a pass-through grant program that awards and monitors grants of federal CWA Section 319 and 604(b) funds for watershed projects to help restore or protect lakes, streams, and coastal waters from NPS pollution. These grants help communities identify nonpoint sources, prepare watershed-based management plans, and act to reduce or prevent NPS pollution.

In 2017, ten NPS watershed projects funded through the NPS grants program in previous years were successfully completed. These projects reduced pollutant loads to waters by 153 tons of sediment, 268 pounds of phosphorus and 168 pounds of nitrogen per year. DEP provided technical assistance and granted \$712,208 of CWA funds provided by EPA for these projects. Grantees, partners, and landowners contributed matching funds or services valued at \$854,709. This report provides two-page summaries for each project.

DEP issued 13 new grants (\$945,564) in 2017 using CWA Section 319 funds to help communities implement actions called for in their watershed management plans to restore impaired waters or protect waters threatened by NPS pollution. DEP also issued three grants using CWA Section 604(b) funds to develop watershed-based plans for Annabessacook Lake in Winthrop (\$13,075), Lower Pemaquid River in Bristol (\$6,525) and Medomak River in Waldoboro (\$22,000).



Sebago Lake, Raymond Photo credit: Neil Hiltunen
Courtesy of Portland Water District

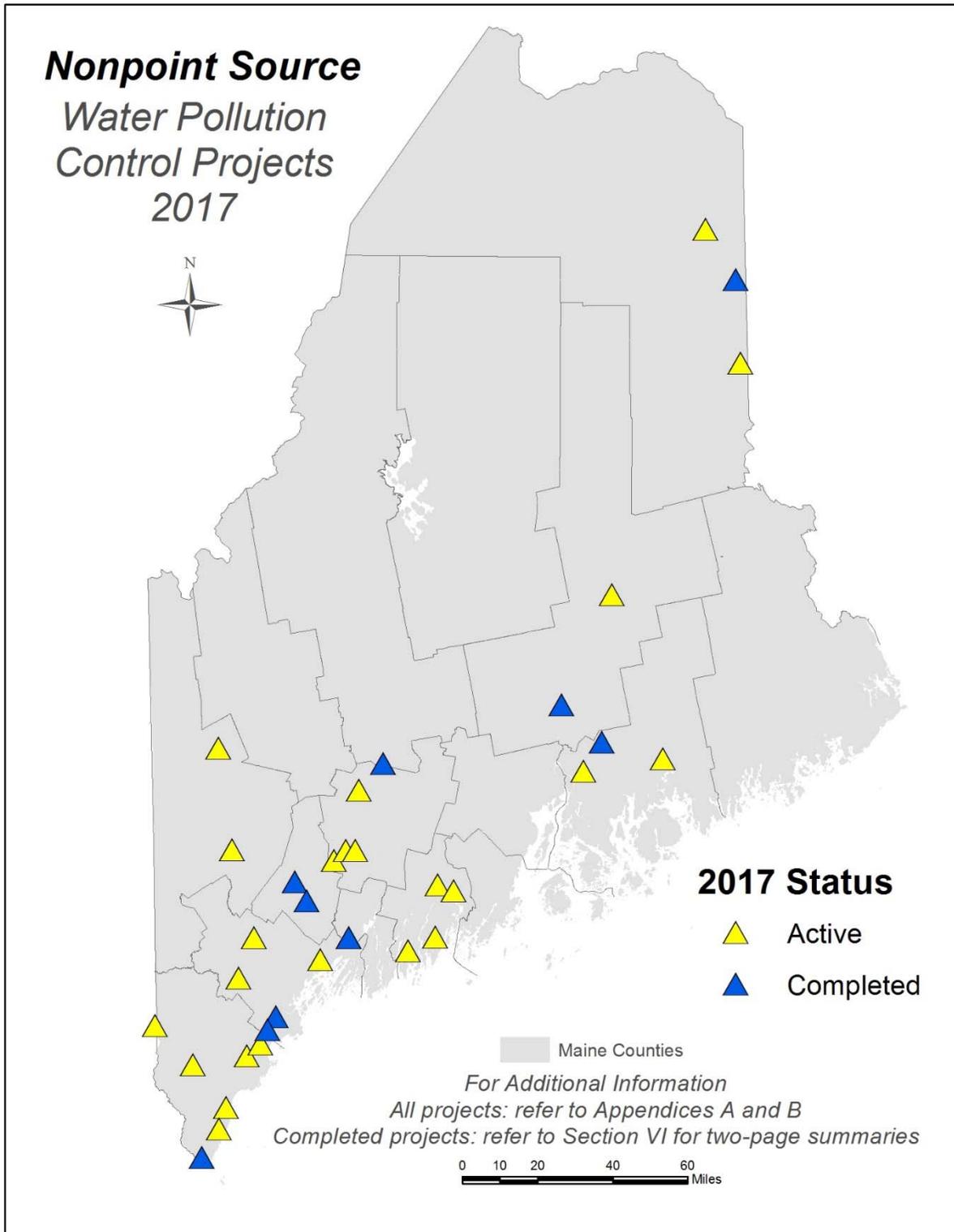
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Document available for download at: <http://www.maine.gov/dep/water/grants/319-documents/reports/>

NPS Water Pollution Control Projects Active in 2017



I. Introduction

Nonpoint source pollution impacts many of Maine's lakes, rivers, streams, and coastal waters. When it rains or the snow melts, water running off our driveways, parking lots, yards, farm fields, forestry operations, and industrial sites picks up and carries hitchhiking pollutants into our waters. Pollutants include sediment from erosion; nutrients from fertilizers or animal waste; bacteria from animal waste and failing septic systems; and toxics such as road salt or spilled petroleum products.

The Maine Department of Environmental Protection (DEP) coordinates the State of Maine Nonpoint Source Pollution Program (38 MSRA 410) to achieve widespread use of state-agency "best management practice guidelines" (BMPs) to prevent NPS pollution. Since 1990, EPA has awarded funds under CWA Section 319(h) to help states and tribes address their most pressing NPS pollution problems. Section 319 monies that are provided by EPA to the State help fund a significant portion of Maine's NPS Program. NPS Program services are guided by the *Maine Nonpoint Source Management Program Plan 2015-2019*.



Pervious pavers in Portland help infiltrate stormwater. The project is funded, in part, with Clean Water State Revolving Funds.

DEP helps communities and watershed groups assess water quality problems and take action to reduce or stop NPS pollution. CWA Sections 604(b) and 319 funds are used to provide grants for watershed projects to help local communities identify water pollution sources in watersheds and take action to restore or protect lakes, streams, or coastal waters.

This report summarizes the Nonpoint Source (NPS) Program activity and accomplishments in 2017 and fulfills annual reporting requirements of Section 319(h) of the Federal CWA. Each year, DEP prepares this report to inform the public and the EPA about Maine's progress controlling NPS water pollution.

II. 2017 Highlights - NPS Management Program

A. Projects Closed Out - Ten NPS watershed projects funded through the NPS grants program in previous years were successfully completed. DEP provided technical assistance and granted \$712,208 of Federal CWA Section 319 and 604(b) funds for these projects. Grantees, partners, and landowners contributed matching funds or services valued at \$854,709.

- BMPs were installed to reduce polluted runoff in the following eight watersheds, thereby reducing pollutant loading to these waters by an estimated 268 pounds of phosphorus, 168 pounds of nitrogen and 153 tons of sediment per year - equivalent to about 14 dump truck loads:

Capehart Brook (Bangor)
Hart Brook (Lewiston)
Lake Auburn (Auburn)
Phillips Lake (Dedham)

Red Brook (Scarborough)
Spruce Creek (Kittery)
Topsham Fair Mall Stream (Topsham)
Upper Prestile Stream (Easton)

- Watershed-based plans were completed for East Pond (Smithfield) and Phillips Brook (Scarborough). A plan provides assessment and management information and describes actions needed to restore NPS-impaired water bodies, or to protect water bodies threatened by NPS pollution.

- B. New Grant Awards** - EPA awarded \$1,897,215 FFY 2017 Section 319 Clean Water Act funds to the DEP. Funds were used to fund programs designed to evaluate, prevent, or reduce NPS pollution problems. Thirteen new NPS grants totaling \$945,564 were issued to municipalities, soil and water conservation districts, and watershed groups for watershed implementation projects.
- C. Maine DEP's Clean Water State Revolving Fund (CWSRF)** – The CWSRF program helped fund \$4.1 million in NPS projects in 2017. The CWSRF and the Finance Authority of Maine (FAME) also established a pass-through loan program for the removal and/or replacement of commercial above-ground and underground oil storage facilities or tanks. FAME finalized rule making and program documents at the end of 2017. DEP worked with EPA to amend Maine's NPS Management Program Plan (2015-2019) to identify above and underground storage tanks and brownfields as emerging NPS issues in Maine.
- D. Lake Sediment Chemistry Research and Maine NPS Priority Watersheds** - For several years, University of Maine, DEP's Lakes Unit and other partners have been conducting research to better understand why some lakes have phosphorus recycling problems and recurring algal blooms, while other seemingly similar lakes do not. Lake sediment chemistry is now understood to be a key determinant in lake vulnerability. Lakes that meet or are close to sediment chemistry vulnerability thresholds (aluminum to iron ratios less than 3:1 and aluminum to phosphorus ratios less than 25:1) will now be added to the DEP's NPS Priority Watersheds List. Ten such lakes were added to the list in 2017.



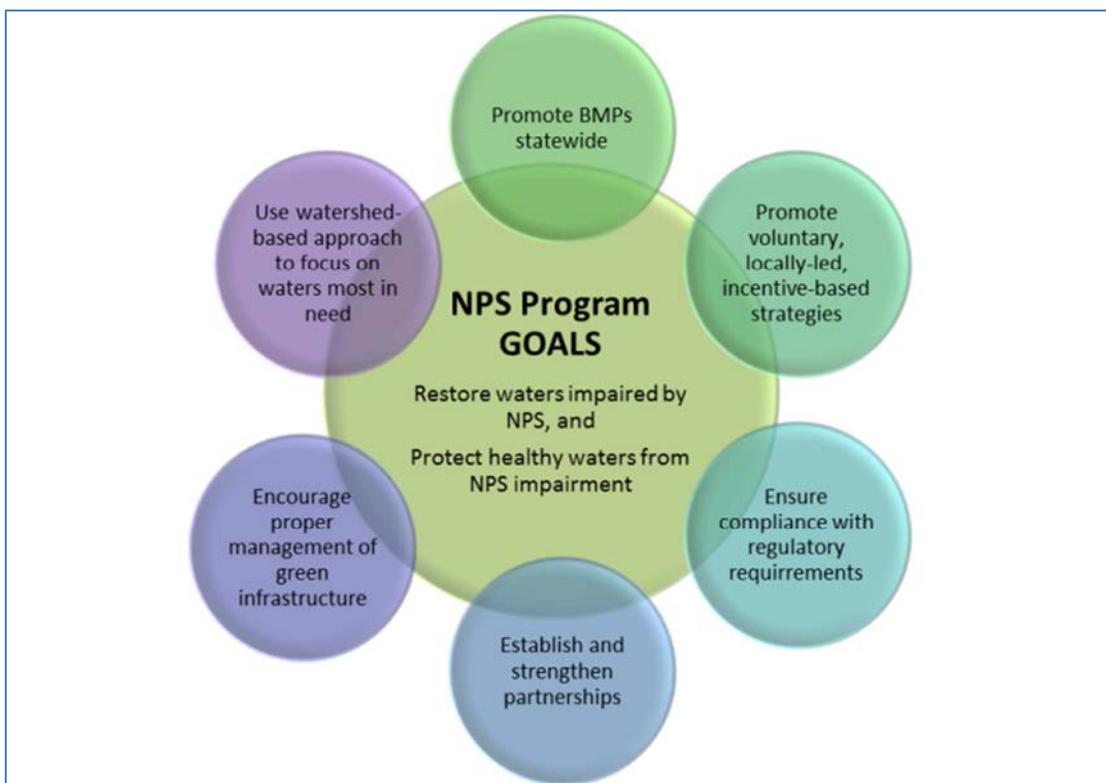
Branch Lake, Ellsworth. Credit: Megan Facciolo, HCSWCD

III. Maine NPS Management Program

A. Overview

The *Maine Nonpoint Source Management Program Plan 2015-2019* establishes program goals and strategies that Maine uses to make progress controlling NPS pollution. The NPS program uses both statewide programs and targeted watershed-based approaches to promote the use of state-agency defined "best management practice guidelines" (BMPs) to prevent water pollution.

DEP administers the NPS Program in coordination with EPA and other federal, state, and local governmental agencies, and non-governmental organizations. Five Maine agencies share responsibility for implementing NPS programs: Departments of Environmental Protection; Agriculture, Conservation, and Forestry; Transportation; Health and Human Services, Division of Environmental Health; and Marine Resources. State agencies conduct programs that promote voluntary use of BMPs and implement State laws or rules which require meeting performance standards to protect water quality.



The NPS plan describes actions State Agencies will take over five years to make progress controlling NPS pollution, including 37 five-year objectives with actions and milestones. Outputs or accomplishments in 2017 are summarized Appendix C.

The NPS plan is available at: <http://www.maine.gov/dep/land/watershed/nps-program-plan.html>.

B. Protecting Clean Waters

Maine has significant water quality protection and restoration challenges and limited resources for NPS programs. DEP prioritizes and balances the use of available NPS funds to make progress both protecting and restoring lakes, streams, and coastal waters. Preventing pollution of Maine's abundant clean waters is important. While working to restore impaired waters, DEP also invests considerable NPS control efforts to protect clean waters that are considered threatened by NPS pollution. Preventing NPS water pollution of waters is far more cost effective than restoring a polluted waterbody.

Protecting Maine's clean waters can be accomplished by local communities with technical and financial assistance from DEP and other partners. Local stewardship is needed for any project, plan, or outreach effort to effectively take hold because residents can increase local involvement in watershed management activities. Fortunately, Maine has many capable and determined watershed stewardship groups and Soil and Water Conservation Districts working to protect watersheds and clean waters.

Developing Plans to Protect Lakes

In 2017, four new lake protection plans (indicated with an * below) were developed by local entities following guidance developed by DEP and EPA. With the addition of these four plans, there are now 21 active lake watershed-based protection plans that have been accepted by DEP and EPA.

Lake Watershed-based Protection Plans Accepted by DEP

Abrams Pond* (Eastbrook)	North Pond (Buckfield)
Adams & Knickerbocker Lake (Boothbay)	North Pond* (Norway)
Alamoosook Lake (Orland)	North Pond* (Smithfield)
Cobbossee Lake (Manchester)	Panther Pond (Raymond)
Cold Stream Pond (Enfield)	Phillips Lake (Dedham)
Crescent Lake (Raymond)	Sebago Lake & Crooked River (Naples)
Damariscotta Lake (Jefferson)	Thompson Lake (Oxford)
Ellis Pond (Roxbury)	Toddy Pond (Orland)
Great Pond (Franklin)	Wilson Lake* (Wilton)
Lake Auburn (Auburn)	Woods Pond (Bridgton)
Little Sebago Lake (Windham)	

Implementation Projects to Protect Lakes

DEP invests Section 319 funds provided by EPA for NPS watershed projects to implement BMPs that reduce polluted runoff. These projects help protect clean waters that are threatened by NPS pollution. In 2017, Section 319 funds helped sustain or start NPS watershed implementation projects in the following 12 lake watersheds:

Adams & Knickerbocker (Boothbay)	Ellis Pond (Roxbury)	North Pond (Norway)
Cobbossee Lake (Winthrop)	Great East Lake (Acton)	Panther Pond (Raymond)
Coldstream Pond (Enfield)	Great Pond (Franklin)	Phillips Lake (Dedham)
Damariscotta Lake (Jefferson)	Lake Auburn (Auburn)	Sebago Lake (Standish)

C. Restoring Impaired Waters

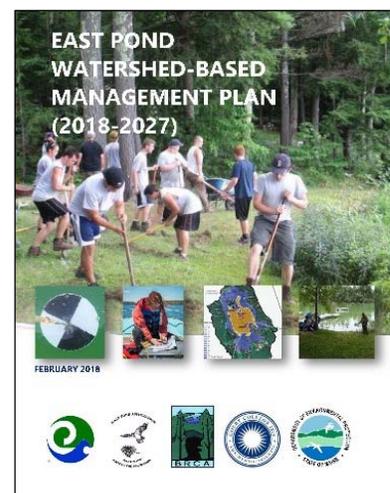
State and federal water quality laws require that waters attain their assigned water quality classification. DEP monitors water quality conditions of Maine's rivers, lakes, and coastal waters to determine if the public can use the waters for designated uses such as recreation, swimming, fishing, shellfish harvesting, and drinking water supply, and if the waters support healthy habitats for fish and wildlife. DEP places waters found to be degraded (i.e., not attaining water quality standards needed to support designated uses) on the impaired waters list in the *Integrated Water Quality Monitoring and Assessment Report* or "Integrated Report" (IR) reported to EPA. Restoring impaired waters involves three steps:

- **Water Quality Assessment, including TMDLs & Alternative Approaches.** In addition to DEP's water quality monitoring and assessment programs, DEP establishes a pollution allocation, also called a total maximum daily load (TMDL), for impaired waterbodies to comply with Section 303(d) of the Clean Water Act. A TMDL assessment estimates the necessary reduction in pollution from point and nonpoint sources for the waterbody to meet the state water quality classification.
- **Watershed-based Planning.** A watershed-based plan describes overall actions needed in a watershed to help restore water quality. EPA requires a watershed-based plan addressing nine minimum elements prior to use of 319 funds to help restore an impaired waterbody. For EPA guidance on watershed planning, refer to https://www.epa.gov/sites/production/files/2015-12/documents/watershed_mgmt_quick_guide.pdf.
- **Implementing Pollution Reduction Measures.** Communities, agencies and individuals install conservation practices or BMPs to eliminate or control sources of NPS pollution. Typically work needs to be focused within a watershed for 10 years or more to restore an impaired waterbody. DEP provides technical and financial assistance to help communities improve watersheds and restore waters.

Developing Plans to Restore NPS Impaired Waters

DEP provided services and Section 604(b) grant funds to help communities develop watershed-based plans (WBPs), which will then be used to guide restoration of NPS impaired waters.

- In 2017, DEP accepted nine-element WBPs for two impaired waters: East Pond (Smithfield) and Phillips Brook (Scarborough).
- Work began to develop nine-element WBPs for Annabessacook Lake (Winthrop), Medomak River (Waldoboro) and Lower Pemaquid River (Bristol), and continued for Kennedy Brook (Presque Isle).
- DEP also provided staff services to support locally-funded efforts to help update WBPs for Birch Stream (Bangor), Hart Brook (Lewiston), and Penjajawoc Stream (Bangor).
- Through 2017, there were 34 active nine-element WBPs for NPS impaired waters.



Watersheds with Nine-Element Watershed Plans Accepted by Maine DEP

Arctic Brook (Bangor)	Meduxnekeag River (Houlton)
Birch Stream (Bangor)	Ogunquit River (Ogunquit)
Bond Brook (Augusta)	Pearce Brook (Houlton)
Cape Neddick River (York)	Penjajawoc Stream (Bangor)
Capehart Brook (Bangor)	Phillips Brook (Scarborough)
Capisic Brook (Portland)	Pleasant Pond (Gardiner)
China Lake (China)	Pleasant River (Windham)
Cochnewagon Lake (Monmouth)	Red Brook (Scarborough)
Concord Gully Brook (Freeport)	Spruce Creek (Kittery)
Dudley Brook (Castle Hill)	Thatcher Brook (Biddeford)
East Pond (Smithfield)	Togus Pond (Augusta)
Goodall Brook (Sanford)	Topsham Fair Mall Brook (Topsham)
Goosefare Brook (Saco)	Trout Brook (Cape Elizabeth)
Hart Brook (Lewiston)	Upper Prestile Stream (Fort Fairfield)
Long Creek (South Portland)	Whitten Brook (Skowhegan)
Long Pond & Great Pond (Belgrade)	Wilson Pond (Monmouth)

NPS Watershed Implementation Projects

DEP allocates Section 319 funds to help communities implement their watershed-based plans to restore NPS-impaired waters. In 2017, Section 319 funds helped continue or start projects in the following 15 NPS-impaired watersheds:

Capehart Brook (Bangor)	Goosefare Brook (Saco)	Red Brook (Scarborough)
Cape Neddick River (York)	Hart Brook (Lewiston)	Spruce Creek (Kittery)
Cochnewagon Lake (Monmouth)	Long Pond (Belgrade)	Thatcher Brook (Biddeford)
Concord Gully Brook (Freeport)	Meduxnekeag River (Houlton)	Topsham Fair Mall Stream (Topsham)
Goodall Brook (Sanford)	Ogunquit River (Ogunquit)	Upper Prestile Stream (Easton)

D. NPS Pollutant Load Reductions

EPA Section 319 program guidelines require load reduction estimates for projects that will result in load reductions of sediment or nutrients (nitrogen and phosphorous). EPA recognizes that due to runoff variability, load reductions associated with BMP projects cannot be directly measured. Load reduction estimates for Maine Section 319 projects are developed using simple models. DEP and grantees use methods described in the EPA Region 5 Model and/or the USDA Forest Service Water Erosion Prediction Project - Road computer model to estimate NPS load reductions. These models are described at: <http://it.tetrattech-ffx.com/steplweb/> and <http://forest.moscowfsl.wsu.edu/fswepp/>.

NPS load reductions for Section 319-funded implementation projects are reported in the EPA Grants Reporting and Tracking System (GRTS) database. The following table shows load reductions reported for 21 active implementation projects in 2017.

2017 NPS Pollutant Load Reductions		
Sediment 196.1 tons/year	Phosphorus 192.6 pounds/year	Nitrogen 282.9 pounds/year

E. Section 319 Grant Administration

EPA awarded \$1,897,215 of FFY 2017 Section 319 funds to DEP. Of FFY 2017 Section 319 funds, 48% (\$902,829) were allocated for NPS grants to municipalities, soil and water conservation districts, and watershed groups for watershed implementation projects. Section 319 funds also supported eight DEP NPS program staff positions. DEP administered the Section 319 grant awarded to DEP under federal fiscal years 2013 - 2017, including monitoring sub-recipient performance on 30 grants for NPS watershed projects and providing other DEP NPS program services. In June 2017, DEP issued the *NPS Management Program 2016 Annual Report*.

Summary of FFY17 319 Grant and Match

Activity	Program Funds Subtotal	Project Funds Subtotal	Section 319 Total	Nonfederal Match
NPS Grants for Watershed Projects	0	\$902,829	\$902,829	\$725,798
Small Community Grants Program	0	0	0	\$23,413
DEP Staff (8 FTE), Other & Indirect	\$944,386	\$50,000	\$994,386	\$718,283
Totals	\$944,386	\$952,829	\$1,897,215	\$1,467,494

Of FFY 2017 Section 319 funds, 50% (\$952,829) were allocated for implementation of nine-element WBPs for restoration projects or alternative plans for protection projects. This includes funds (\$50,000) for DEP staff services to help implement WBPs and grant funds (\$902,829) for 12 projects to implement WBPs. Six of the funded projects (\$511,987) will implement nine-element plans for impaired waters, and six projects (\$390,842) will implement alternative WBPs to protect NPS priority watersheds threatened by NPS pollution.



Photo credit: Katie Kelley
Courtesy of Portland Water District

IV. NPS Program Services

A. DEP Services for Watershed Groups and Municipalities

DEP provides considerable technical assistance to help watershed groups and towns reduce NPS water pollution. Some of the activities and projects that DEP supported in 2017 include:

- **Municipal Comprehensive Plan Reviews** - DEP staff provide maps and data to municipalities starting the comprehensive planning process. After plans are submitted to the state, DEP staff review the water resources sections of municipal comprehensive plans for consistency with agency goals, programs, and policies. In 2017, assistance was provided to the following ten towns:
 - Camden
 - Hartland
 - Kittery
 - Morrell
 - New Portland
 - Portland
 - Plymouth
 - Union
 - Wells
 - Windham
- **Lake Watershed Surveys** - Volunteer watershed surveys find, describe, and prioritize NPS pollution sources and recommend BMPs needed at specific NPS sites to reduce polluted runoff to lakes. DEP grant funds are typically not available to help support watershed surveys. However, DEP provides technical assistance and project oversight to local groups that conduct locally-funded volunteer watershed surveys. After completing surveys, many of these groups use survey findings to develop lake watershed-based protection plans that will guide local stewardship efforts and open the door to possible 319 grant funding.

In 2017, DEP assisted with the following five watershed surveys:

- Forest Lake (Cumberland)
- Mousam Lake (Acton)
- Salmon Lake and McGrath Pond (Oakland)
- Whetstone Pond (Blanchard)
- Whitney and Hogan Ponds (Oxford)

Staff also provided assistance to lake associations to help plan 2018 surveys for Bauneg Beg Lake (Sanford) and Highland Lake (Windham). DEP partnered with the Volunteer Lake Monitoring Program (VLMP) to conduct a watershed survey workshop, which was attended by 19 volunteers representing nine lakes. DEP also helped VLMP review applications to their small grants program, which provides small grants to help fund watershed surveys.



Volunteers for the 2017 Whitney and Hogan Ponds Watershed survey

- **Stream Water Quality Monitoring** – DEP staff conducted preliminary water quality assessments on the following streams to help with current or anticipated planning efforts or help assess progress with restoration goals:

Amsden Brook (Ft. Fairfield)
Aroostook River (Ft. Fairfield)
Birch Stream (Bangor)
Goosefare Brook (Saco)
Hart Brook (Lewiston)
Kennedy Brook (Presque Isle)
Mill Brook (Scarborough)
Moose Brook (Auburn)
Norton Brook (Falmouth)

Penjajawoc Stream (Bangor)
Prestile Stream (Easton and Westfield)
Phillips Brook (Scarborough)
Pleasant River (Windham)
Pottle Brook (Perry)
Stone Brook (Augusta)
Tappan Brook (Saco)
Willowdale Brook (Scarborough)

- **Youth Conservation Corps (YCC)** - The DEP provides technical assistance and training to Maine's eight YCC programs. These YCC programs hire high school students to install buffers, erosion control measures, and other conservation practices in lake and river watersheds. Most of these programs originally started as part of 319 grant projects and continued with local funding support. DEP staff hosted a YCC Roundtable in March 2017 to promote information sharing and collaboration between the YCCs.

In 2015, the Maine Legislature enacted Public Law 365, which provided two years of funding at \$20,000 per year to support YCCs doing work in lake watersheds. DEP issued a RFP and selected Lakes Environmental Association to pass through the state funds in 2016 and 2017. All eight youth conservation corps received funds in 2017. The 2017 YCC Program Summary reported that the eight YCCs hired 57 young adults to install 350 conservation practices at 151 project sites in 31 lake watersheds. Local match for the YCC programs amounted to over \$194,000, which far exceeded the required two-for-one match.



Acton Wakefield Watershed Alliance
Youth Conservation Corps

- **Watershed Group Support** - DEP supports the work of watershed associations and communities through presentations at annual association meetings and technical assistance outside of 319 grant-funded projects. In 2017, DEP provided watershed maps upon request and assistance to many organizations and groups focused on the following watersheds:

Belgrade Lakes	Long Creek (South Portland)
Collins Pond (Windham)	Meduxnekeag River with Houlton Band of Maliseet Indians
Highland Lake (Windham)	Watchic Lake (Standish)
- **Watershed Roundtable** - Over 70 watershed managers from state agencies, municipalities, watershed organizations and SWCDs attended the DEP's 15th annual Watershed Managers Roundtable held at the Viles Arboretum in Augusta in November. This informal day-long event provides an opportunity for networking, sharing lessons learned, and discussing common problems in both rural and urban watersheds across the state.
- **Stormwater Compensation Fee Projects** - Under the Maine Stormwater Law, developers in certain lake watersheds have the option to pay a compensation fee in lieu of constructing additional BMPs to comply with a portion of a parcel's phosphorus budget. DEP staff works annually with seven partner organizations to identify and implement phosphorus mitigation projects in these watersheds. In 2017, three projects were completed by Lakes Environmental Association. Two projects were completed on private roads in the Long Lake watershed and one project was completed in the Moose Pond watershed in partnership with Shawnee Peak.



Alamoosook Lake Buffer Planting Volunteers

B. Maine Nonpoint Source Training and Resource Center

The Maine Nonpoint Source Training and Resource Center's primary focus is to provide training to various groups throughout the state to help them prevent nonpoint source pollution. In addition, the Center maintains an inventory of NPS publications and acts as a clearinghouse for information on nonpoint source pollution and best management practices.

Accomplishments in 2017:

- Provided training to 557 participants in Basic and Advanced Erosion and Sediment Control practices, and certified 148 additional individuals in the Voluntary Contractor Certification program.
- Established a new six-month grace period to obtain continuing education credit for individuals certified in erosion and sediment control practices. This new requirement is consistent with other state licensing and certification programs.
- Provided two training programs in the Maintenance and Repair of Gravel Roads with 32 participants attending.
- Provided four field-based continuing education workshops on Wetland Identification and Protection with a total of 86 attendees.
- Provided continuing education training on Good Housekeeping on Construction Sites / Dealing with Contaminated Soil /Spill Prevention and Cleanup, to 101 individuals previously certified in erosion and sediment control practices.
- Provided on-line continuing education training to 228 previously certified individuals and distributed 32 courses on CD-ROM.

For More Information:

Bill Laflamme, DEP, (207) 215-9237, william.n.laflamme@maine.gov

NPS Training Center Website, <http://www.maine.gov/dep/land/training/index.html>



C. Maine Volunteer River Monitoring Program

The purpose of the Volunteer River Monitoring Program (VRMP) is to provide a standardized approach to river and stream monitoring. Volunteer groups participating in the Program collect data under the VRMP Quality Assurance Program Plan and (QAPP) develop Sampling and Analysis Plans (SAPs) specific to their needs. The volunteer organizations are also responsible for recruiting and organizing the volunteers, attending an annual training/certification, and entering the data electronically.

The VRMP provides technical support and resources to the volunteer groups. This support includes assistance with SAP development/updates, annual training, and equipment maintenance and loan. VRMP staff review the data entered by the volunteer groups, upload acceptable data to DEP's database, and produce an annual report.

Accomplishments in 2017:

- Completed the *Volunteer River Monitoring Report – 2016 Data Report* (April 2017).
- VRMP staff trained and certified/re-certified volunteers from seven volunteer organizations to monitor 10 rivers, 22 streams and one harbor statewide.
- Water quality data was collected by 61 volunteers at 86 sites during 633 sampling events.
- Data collected included temperature, dissolved oxygen, conductivity, bacteria, chlorophyll, and nutrients.
- A total of 17 new sampling sites were added in 2017. Sites were added to investigate bacteria issues and expand the geographic range of sites. In one watershed, the merger of two organizations expanded the number of newly recruited volunteers allowing previously established sites or new sites to be sampled.

For More Information:

Mary Ellen Dennis, VRMP Coordinator – (207) 215-7946, mary-ellen.c.dennis@maine.gov
VRMP Website – http://www.maine.gov/dep/water/monitoring/rivers_and_streams/vrmp/index.htm



Presumpscot River Land Trust
volunteer training, 2017

D. Clean Water State Revolving Fund

Clean Water State Revolving Fund Projects

In Maine, the Clean Water State Revolving Fund (CWSRF) funds NPS projects through several different direct loans, pass-through loans, and linked-deposit loans. These DEP programs helped fund \$4.1 million in the following types of NPS projects in 2017.

- The CWSRF linked-deposit Forestry program makes low interest-rate financing available for Forestry BMPs and the purchase of environmentally friendly logging equipment. Loan recipients must comply with forest industry harvesting standards and environmental inspections. In 2017, 11 loans were made under this program totaling \$2.8 million.
- As part of a larger combined sewer overflow abatement project, the City of Portland expended \$103,400 in CWSRF funds to install seven under-drained soil filters to capture and treat stormwater runoff.
- The City of Portland expended \$102,160 in CWSRF funds to install pervious pavers and underdrain system.
- In 2017 the CWSRF financed \$1.1 million for the design and construction of five sand/salt storage facilities to abate runoff and protect ground and surface waters.
- The CWSRF and the Finance Authority of Maine established a pass-through loan program for the removal and/or replacement of commercial above-ground and underground oil storage facilities or tanks. FAME finalized rule making and program documents at the very end of 2017. No projects were completed or loans made in 2017.
- DEP worked with EPA to amend Maine's NPS Management Program Plan (2015-2019) to identify above and underground storage tanks and brownfields as emerging NPS issues in Maine.



One of seven soil filters installed in Portland using CWSRF financing.



Town of Livermore Sand/Salt storage facility funded by the CWSRF.

For More Information:

John True, CWSRF Program Manager – (207) 287-7808, john.n.true@maine.gov
Clean Water SRF Webpage - <http://www.maine.gov/dep/water/grants/srfparag.html>

E. Stream Culvert Projects – Maine Water Bond

In 2014, Maine voters approved a referendum for a “Clean Water for Maine” bond. Since then, DEP has developed a grant program to disseminate \$5 million for stream crossing or culvert upgrades and \$400,000 for the restoration of wetlands. Program funds are intended to improve public safety by reducing the risk of culvert failures; include provisions for climate change, flood protection, and resiliency; improve fish habitat by removing barriers to fish passage; and restore wetlands that improve wildlife habitat. In addition to the program goals listed above, projects also provide NPS and stream habitat benefits.

- In 2017, DEP released the program’s third and final Request for Proposals (RFP) and received 53 applications totaling 4.1 million dollars.
- In August, DEP announced that 28 projects were awarded funding totaling over \$2.2 million. Projects will benefit the following NPS Priority Watersheds: China Lake, Cobbossee Lake, Lake Annabessacook, Moulton Brook, and Taylor Pond.
- In November, voters approved another \$5 million in bond funding for upgrading culverts at stream crossings in order to improve fish and wildlife habitats and increase safety. The first RFP under this new funding is expected to be released in June 2018.

For More Information:

Bill Laflamme, DEP, (207) 215-9237, william.n.laflamme@maine.gov
Culvert Bond Website – http://www.maine.gov/dep/land/water_bond_rfp.html.



In Lincolnville, a severely deteriorated and undersized culvert was replaced with an open-bottom pipe arch. The project removed a fish barrier and opened over three miles of stream habitat to fish passage. Technical support was provided by the US Fish and Wildlife Service, and funding was provided through the DEP water bond, The Nature Conservancy, Trout Unlimited, and the Town of Lincolnville.

F. Other Program News

- Highland Lake Water Quality** - In 1990, Highland Lake in Windham and Falmouth was listed as impaired due to declining water clarity. From 1997-2009, partners including the Towns, Highland Lake Association, Cumberland County SWCD, and Maine DEP worked to reduce sources of phosphorus loading to the lake. By 2010, Highland Lake's water clarity showed a stable trend, and it was removed from the DEP's impaired list. Highland Lake was highlighted as a NPS Success Story by EPA.

Lake volunteer monitors started to notice new water quality issues in the past few years. Since 2013, the lake has experienced a three to four week algae bloom that reduces clarity from five meters to less than two meters. It appears to be a picocyanobacteria (very small, mostly single-cell blue green "algae") bloom. Although picocyanobacteria are common in Maine lakes, this is the first documentation of this type of bloom in a Maine lake and its cause is unclear.

In December, DEP and the Highland Lake Association convened the Highland Lake Science Roundtable. Nearly 20 scientists from varied disciplines attended the day-long event, where they reviewed available data and developed hypotheses about the possible causes of the lake's picoplankton bloom. Representatives from the Town of Falmouth, Town of Windham, and Highland Lake Association have also formed the Highland Lake Leadership Team and subcommittees charged with developing local ordinances, identifying and mitigating NPS sources to the lake, and raising citizen awareness. DEP is serving as a technical advisor to the group and supporting the community's renewed efforts to tackle the lake's water quality problems.

- Lake Sediment Chemistry and NPS Priority Watersheds** - DEP maintains a NPS priority watersheds list that is based on a set of selection criteria. In 2017, a new listing criteria (*Sensitive – Sediment Chemistry*) was added to the NPS Priority Watersheds listing process to incorporate ongoing research by University of Maine, Maine DEP, and other partners. Studies have shown that lake sediment with ratios of aluminum to iron less than three to one ($Al:Fe < 3:1$) and aluminum to phosphorus less than 25 to one ($Al:P < 25:1$) are more vulnerable to the release of sediment-bound phosphorus, which can lead to internal phosphorus loading.¹

On preliminary review of recent sediment chemistry analysis results for 170 Maine lakes, 43 lakes were identified as meeting or being close to these chemistry vulnerability thresholds. Ten of the lakes were not previously considered sensitive to additional phosphorus inputs through the DEP's vulnerability prediction model and therefore were added to the Threatened Lakes NPS Priority Watersheds List in 2017. It is anticipated that the list will be further refined following further review of the sediment chemistry model results.



Jeff Dennis of DEP, reviews Highland Lake's water quality data with participants at the Highland Lake Science Roundtable.

¹ Kopáček, J., Borovec, J., Hejzlar, J., Ulrich, K., Norton, S.A., Amirbahman, A. (2005). Aluminum control of phosphorus sorption by lake sediments. *Environmental Science & Technology*, 39(22), 8784-8789.

- **Maine's LakeSmart Program** - Maine's LakeSmart program was highlighted in the North American Lake Management Society's Journal, *Lakelines*, in its Winter 2017 edition. LakeSmart is an education and reward program that helps lakefront homeowners adopt practices that protect water quality. Trained volunteers perform property assessments for participating homeowners and provide suggestions for keeping pollutants out of the lake. Sites that score well earn the coveted LakeSmart Award. LakeSmart signs, which can be placed at the lake edge and driveway, help raise awareness with neighbors.

Maine DEP developed the LakeSmart program in 2001 and carried out the program for several years in collaboration with Maine Congress of Lake Associations (now Maine Lakes Society) and local lake associations. In 2011, Maine Lakes Society (MLS) assumed full management of the program and spearheaded efforts to expand the program. By 2017, LakeSmart was active on 53 lakes with 226 LakeSmart awards. Under MLS, the program has also partnered with Maine Audubon to provide a Loon Smart merit badge to homeowners that make efforts to provide nesting habitat for loons and other waterfowl. By 2020, MLS aims to have a LakeSmart presence on all 172 lakes on DEP's NPS Priority Watersheds list.



Article available at <http://mainelakesociety.org/wp-content/uploads/2018/02/Lake-Smart-article-in-LakeLine.pdf>. For more information, go to <http://mainelakesociety.org/lakesmart-2/>.

V. NPS Grants Program

A. Overview

DEP uses a watershed-based approach as the coordinating framework to organize public and private sector efforts to identify, prioritize, and then implement activities to restore or protect waters. A pass-through grants program is administered that awards and monitors sub-grants of federal CWA Section 319 and 604(b) funds for watershed projects to help restore or protect lakes, streams, rivers or coastal waters affected by NPS pollution. DEP issues grants to local project sponsors to help fund two types of watershed-based projects:

- **Watershed-based Plan Development.** DEP offers grants to help communities develop watershed-based management plans. A plan provides assessment and management information and describes actions needed over a 10-year period to restore NPS-impaired water or to protect unimpaired waters considered threatened by NPS pollution. A thorough assessment of NPS problems (e.g., watershed survey) is needed to prepare an informed watershed plan.
- **Watershed-based Plan Implementation.** DEP offers grants to help communities implement their watershed-based plans and carry out actions called for in the plan to make progress restoring or protecting a waterbody.

B. Grant Awards Issued in 2017

DEP issued 13 Section 319 grants (\$945,564) to help communities implement actions called for in their watershed management plans to restore impaired waters or protect waters threatened by NPS pollution. DEP also issued three Section 604(b) grants to develop watershed-based plans for Annabessacook Lake in Winthrop (\$13,075), Lower Pemaquid River in Bristol (\$6,525) and Medomak River in Waldoboro (\$22,000). CWA Section 319 and 604(b) funding for these grants was provided to DEP by EPA.

NPS Grants Issued in 2017

Project Title	Grantee	Project #	Grant	Match
Adams Pond, Knickerbocker Lake Watershed Protection Project	Boothbay Water District	2017RR01	43,300	37,447
Updating the Watershed Based Plan for Annabessacook Lake	Cobbossee Watershed District	2017PT14	13,075	11,779
Cape Neddick River Watershed Restoration Project, Phase I	Town of York	2017RT02	30,676	24,446
Cochnewagon Lake NPS Watershed Restoration - Phase II	Cobbossee Watershed District	2017RT03	95,117	77,823
Cold Stream Pond Watershed Protection Project, Phase I	Penobscot County SWCD	2017RR04	47,345	47,950
Damariscotta Lake Watershed Protection Project, Phase I	Midcoast Conservancy	2017RR05	127,478	101,250
Goosefare Brook Restoration Project, Phase 1	City of Saco	2017RT06	124,594	90,090
Great East Lake Watershed Protection, Phase 3: Maine	Acton Wakefield Watersheds Alliance	2017RR07	42,387	28,276
Great Pond Watershed Protection Project	Hancock County SWCD	2017RR08	65,505	46,150
Lower Pemaquid River Watershed Assessment Project	Town of Bristol	2017PT15	6,525	9,810
Medomak River Watershed-based Plan Development	Town of Waldoboro	2017PT13	22,000	15,080
Meduxnekeag Watershed Implementation Conservation	Southern Aroostook SWCD	2017RT09	19,810	31,276
North Pond Watershed Protection Project	Oxford County SWCD	2016RR13	42,735	29,800
Panther Pond Watershed Protection Project, Phase III	Town of Raymond	2017RR10	64,827	54,156
Thatcher Brook Watershed Restoration Project, Phase I	City of Biddeford	2017RT11	139,790	99,521
Topsham Fair Mall Stream Restoration Project, Phase II	Town of Topsham	2017RT12	102,000	87,413
Totals			987,164	792,267

C. Conditional Grant Awards for 2018 Projects

In May 2017, DEP issued an RFP for projects to help communities implement their watershed-based plans and make progress restoring or protecting a waterbody. Nine proposals were received requesting \$834,987. DEP issued conditional grant awards for seven projects with a combined grant amount of \$728,712.

Conditional Grant Awards under 2017 Section 319 RFP (FFY 2018 Funds)

Project Title	Grantee	Project #	Grant	Match
Cochnewagon Lake Restoration Project, Phase III: In-Lake Alum Treatment	Cobbossee Watershed District	20180001	175,000	187,400
Concord Gully Watershed Restoration Project, Phase II	Freeport, Town of	20180004	90,675	90,675
East Pond Watershed Restoration Project, Phase IV: In-Lake Alum Treatment	Belgrade Region Conservation Alliance	20180002	232,000	751,000
North Pond NPS Watershed Protection Project, Phase I	Belgrade Region Conservation Alliance	20180003	80,406	87,270
North Pond Watershed Protection Project ²	Oxford County SWCD	2016RR13	42,735	29,800
Spruce Creek Restoration Project, Phase V	Kittery, Town of	20180005	38,200	27,846
Wilson Lake Watershed Protection Project, Phase I	Wilton, Town of	2016RR11	69,696	147,337
			\$728,712	\$1,321,328



Sebago Lake, Naples Photo credit: Rich Antinorelli. Courtesy of Portland Water District

² Contract was executed in October 2017 so it is included in both Sections B. and C.

VI. Summaries of NPS Projects Completed in 2017

Ten NPS watershed projects funded through the NPS grants program in previous years were successfully completed. DEP provided technical assistance and granted \$618,208 of Federal Clean Water Act funds for these projects. Grantees, partners, and landowners contributed matching funds or services valued at \$725,739.

- BMPs were installed to reduce polluted runoff in eight watersheds, including two lake and six river or stream watersheds. Over the course of these projects, NPS work reduced pollutant loading to these waters by 264 pounds of phosphorus, 168 pounds of nitrogen, and 152 tons of sediment per year - equivalent to about 14 dump truck loads.
- Watershed-based plans were completed for East Pond (Smithfield) and Phillips Brook (Scarborough). A plan provides assessment and management information and describes actions needed to restore NPS-impaired water bodies or to protect water bodies threatened by NPS pollution.

Two-page summaries of each project are included in the following pages. These summaries will be uploaded to the Gulf of Maine's Knowledgebase database located at:

<http://www.gulfofmaine.org/kb/2.0/search.html>.

Project Title	Page Number
Capehart Brook Restoration, Phase II	21
East Pond Watershed-Based Plan Update	23
Hart Brook Water Quality Restoration - 2016	25
Lake Auburn Watershed Protection Project, Phase I	27
Phillips Brook Watershed Plan Development	29
Phillips Lake Watershed Protection – Phase II	31
Red Brook Watershed Restoration Project, Phase I	33
Spruce Creek Watershed Restoration Project, Phase IV	35
Topsham Fair Mall Stream Restoration Project, Phase I	37
Upper Prestile Stream Main Stem 1 Subwatershed Restoration Project Phase I	39

Capehart Brook Restoration Phase II

#2015RT01

Waterbody Name:	Capehart Brook
Location:	City of Bangor - Penobscot County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	City of Bangor
Project Duration:	May 2015 – December 2017
319 Grant Amount:	\$150,000
Local Match:	\$257,418

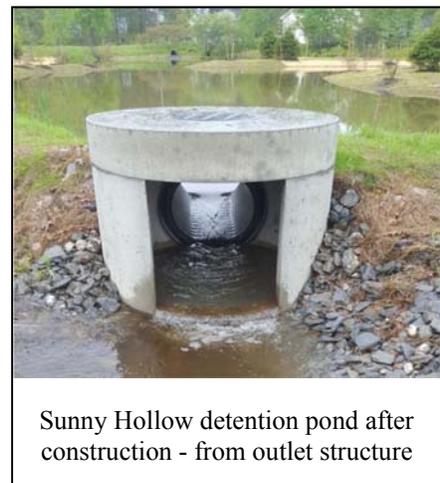


PROBLEM:

Capehart Brook is a small stream (0.46 miles) in the City of Bangor that drains to Kenduskeag Stream and then the Penobscot River. Water quality analyses of Capehart Brook indicate low dissolved oxygen (DO) concentrations and large diurnal DO swings suggestive of nutrient enrichment. Capehart Brook's 685-acre watershed contains 15% impervious cover and runoff from roads, roofs, and parking lots carry soil, oil, metals, and other pollutants into the brook. Impervious cover also results in abnormally high volumes of flow during storm events due to the loss of infiltration normally associated with undisturbed watersheds. According to DEP's *Maine Impervious Cover TMDL* (2012), to support Class B aquatic life uses the Capehart Brook watershed should have the characteristics of a watershed with 8% impervious cover. Both the TMDL and a previously conducted Stream Corridor Survey recommend effectively disconnecting impervious cover to reduce contaminants and volume. The *Capehart Brook Watershed Management Plan* (2011) was developed to guide stream restoration. From 2011 – 2013, the City of Bangor's Phase I 319 project (#2011RT16) installed two subsurface bio-retention cells, 21 rain barrels and three rain gardens in the watershed. However, it was recognized that additional stormwater BMPs were needed.

PROJECT DESCRIPTION:

The Phase II project was managed by the City of Bangor's Engineering Department. The project consisted of repairing a non-functioning detention pond (Sunny Hollow) to improve the amount of dissolved oxygen in the water coming out of the pond and installing 19 bio-retention cells and one level spreader treatment cell in order to provide pollutant removal and attenuation. The Sunny Hollow detention pond was retrofitted by clearing existing vegetation and dredging to remove accumulated sediment and creating vegetated peninsulas to provide shading. An outlet structure was installed to aerate the water leaving the pond by incorporating a drop which allows mixing. The pond design and outlet structure are intended to introduce cooler, more oxygenated water into Capehart Brook.



Sunny Hollow detention pond after construction - from outlet structure

PROJECT OUTCOMES:

- Redesigned the Sunny Hollow Detention Pond to increase dissolved oxygen being delivered to the brook.
- Installed 19 bio-retention cells and one level spreader cell, which are estimated to reduce 5.8 tons of sediment, 134.5 pounds of nitrogen and 31.97 pounds of phosphorus from entering the brook annually (Region 5 Method).
- The City of Bangor contributed \$132,000 over the agreement match requirement to make this project happen.
- Created an Inspection and Maintenance Plan to ensure proper performance of BMPs into the future.



Bio-retention cell during construction



Finished bio-retention cell with sidewalk cut to allow storm water to drain into cell from road.

PROJECT PARTNERS:

Bangor Housing Authority

CONTACT INFORMATION:

Rich May, City of Bangor - (207) 949-3819, richard.may@bangormaine.gov, www.bangormaine.gov

Greg Beane, Maine DEP - (207) 299-4703, greg.e.beane@maine.gov

East Pond Watershed-Based Plan Update #2015PT10

Waterbody Name: East Pond

Location: Smithfield, Belgrade and Oakland-
Kennebec County

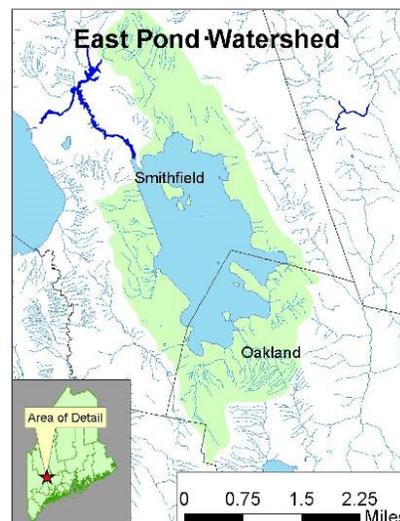
Waterbody Status: NPS Priority Watershed, Impaired

Project Grantee: Kennebec County SWCD

Project Duration: November 2015 – December 2017

319 Grant Amount: \$20,556

Local Match: \$40,202



PROBLEM:

East Pond is the headwater lake in the seven-lake chain known as the Belgrade Lakes. East Pond has a surface area of 1,720 acres, is spring fed with no major inlets and has a slow flushing rate of 0.37 flushes/year. The watershed has a relatively small direct drainage of 2,832 acres and land cover is 79% forested, 15% developed land, 6% wetlands, and <1% agriculture. The shoreline contains numerous residential homes and camps, three summer youth camps, two commercial camps and one public boat launch. Water quality data has been collected in East Pond since 1975. East Pond has experienced persistent algal blooms since 1993, predictably occurring each year between July and September. To gain a better understanding of sediment/nutrient dynamics and internal loading, Colby College conducted intensive weekly sampling over the past three years (2105-2017).

The first NPS watershed survey was conducted by the Belgrade Regional Conservation Alliance (BRCA) in 1999, followed by three 319 implementation projects between 1999 and 2012 that addressed 64 NPS sites. A TMDL (2001) report estimated that both internal loading and watershed loading were significant contributors to the poor water quality. In 2007, Kennebec County SWCD in cooperation with BRCA, DEP and the East Pond Association developed a watershed-based plan (WBP). Since 2010, the East Pond Association has participated in Maine Lakes Society's LakeSmart Program with 32 shorefront properties currently recognized as LakeSmart properties. In 2014, another watershed survey completed by the East Pond Association and other partners identified 124 NPS sites with 60% rated as low impact.

PROJECT DESCRIPTION:

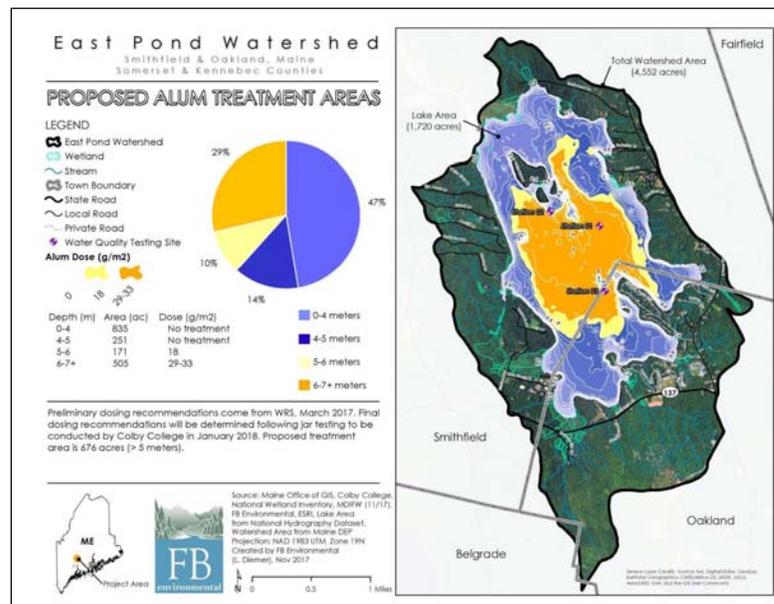
The purpose of the project was to update the WBP and describe actions needed to restore East Pond's water quality and eliminate annual algal blooms. The updated plan proposed scientifically-sound implementation strategies to effectively restore the water quality of East Pond over the next 10 years (2018-2027). It outlines strategies to address the internal phosphorus load, mitigate nonpoint source pollution in the watershed, and monitor improvements in water quality.



East Pond Project Steering Committee

PROJECT OUTCOMES:

- Completed the *East Pond Watershed-Based Management Plan*, which establishes water quality goals, objectives and actions needed to restore the pond's water quality.
- The updated plan was developed with participation from a diverse group of stakeholders including the East Pond Association, BRCA, Colby College, the towns of Smithfield and Oakland, commercial camp owners, community members, and the DEP. Two well-attended technical review committee meetings, three steering committee meetings, and one public presentation were held.
- Technical documents were completed to support the plan including a water quality analysis; a study to examine the potential of back-flushing from the outlet stream; an internal loading analysis; sediment analysis; watershed modeling; and an alum treatment and diagnostic feasibility study.
- Water quality goals were established that include reducing phosphorus loading through both watershed management and phosphorus inactivation in the pond. In-lake phosphorus reduction will be accomplished with a single treatment of alum to inactivate surficial sediment phosphorus, resulting in the elimination of algal blooms for the next 10-20 years.



PROJECT PARTNERS:

Belgrade Regional Conservation Alliance
Colby College
East Pond Association

Ecological Instincts
Town of Oakland
Town of Smithfield

CONTACT INFORMATION:

Dale Finseth, Kennebec County SWCD - (207) 622-7847, dfinseth@kcsxcd.org
Charlie Baeder, BRCA - (207) 495-6039, brcacb@belgradelakes.org
Mary Ellen Dennis, Maine DEP - (207) 215-7946, mary-ellen.c.dennis@maine.gov

Hart Brook Water Quality Restoration - 2016

#2016RT04

Waterbody Name: Hart Brook

Location: Lewiston - Androscoggin County

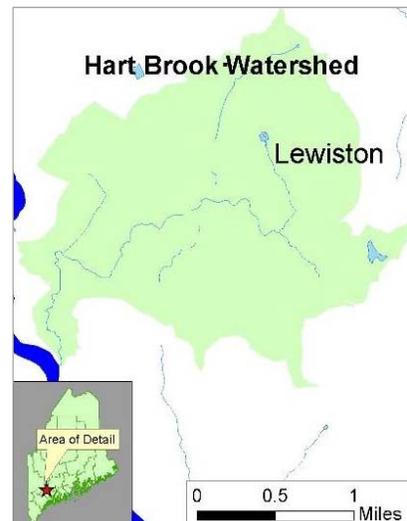
Waterbody Status: Urban Impaired Stream

Project Grantee: City of Lewiston

Project Duration: April 2016 – January 2018

319 Grant Amount: \$94,000

Local Match: \$128,970



PROBLEM:

Hart Brook (also known as Dill Brook) is a small Class B stream located in Lewiston. The brook is 3.7 miles long with a watershed of 2200 acres and flows into the Androscoggin River. The watershed is comprised of residential, commercial, industrial, and undeveloped land and is approximately 22% impervious. The watershed also includes the area around the Maine Turnpike Exit 80 and commercial development.

Hart Brook was first evaluated by Maine DEP in 1998, at which time modeling showed that the stream would not meet its water quality classification for aquatic life. The Maine Integrated Report has listed Hart Brook as non-attaining due to benthic macroinvertebrate bioassessments, habitat assessment, dissolved oxygen, and periphyton indicator bioassessments. Hart Brook impairments have been included in the Statewide Bacteria TMDL (2009) and Impervious Cover TMDL (2012), and in Volunteer River Monitoring Program Reports (2011-2014). The *Hart Brook Watershed Management Plan* (2008) identifies non-structural BMPs and approximately 600 specific structural BMPs (65 top priority).

PROJECT DESCRIPTION:

The goal of this project was to install a subsurface stormwater treatment system filter basin downstream of a residential neighborhood. Lewiston's Engineering Department staff provided design and project oversight services, and a contractor completed the construction. The system provides treatment for a 1-year storm event coming from 52 acre drainage area including 12 acres of impervious area and significant areas of fertilized lawns. The manufactured treatment device provides physical (sedimentation, filtration) and chemical treatment and consists of a series of treatment chambers completely encased in geotextile filter fabric. As an organic filter cake develops over the fabric, phosphorus and other nutrients will be removed by chemical sorption. Additional storage chambers were installed to provide channel protection downstream via stormwater detention. This will provide protection for potential future conversion of the downstream concrete-lined channel to a natural stream.



PROJECT OUTCOMES:

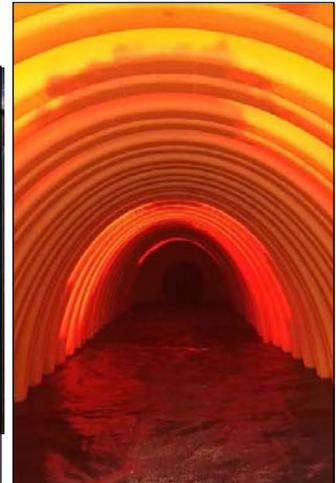
- Installation of an under-drained subsurface filter basin, providing water quality treatment for one-year storm events for stormwater from 52 acres of residential development.
- The system is designed to provide treat 80% of total suspended solids, 49% of phosphorus, 90% of total petroleum hydrocarbons, and 53% of zinc.
- Estimated pollutant removal for the project was 0.74 tons per year of sediment and 3.92 pounds per year of phosphorus (estimated using hydroCAD & BMP removal rates).
- Project match from the City of Lewiston totaled \$128,970, almost double the planned match amount of \$66,650.



Connecting access manhole installation



Installation of Storm Tech MC-3500 Chambers



View inside the installed chambers

PROJECT PARTNERS:

L.P. Poirier and Son, Inc.

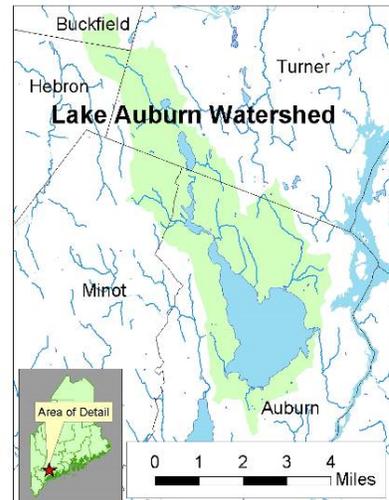
CONTACT INFORMATION:

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Kristin Feindel, DEP – (207) 215-3461, kristin.b.feindel@maine.gov

Lake Auburn Watershed Protection Project - Phase I

#2015RR03

Waterbody Name:	Lake Auburn
Location:	Auburn, Buckfield, Hebron, Minot and Turner - Androscoggin County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Lake Auburn Watershed Protection Commission
Project Duration:	May 2015 – December 2017
319 Grant Amount:	\$117,739
Local Match:	\$91,852



PROBLEM:

Lake Auburn is a 2,290-acre lake located in the City of Auburn. Its 9,800 acre watershed also lies in the towns of Buckfield, Hebron, Minot, and Turner. Little Wilson Pond as well as several tributaries drain to the lake. The watershed is largely forested, with urban land use and development concentrated along Route 4 and the southern part of the watershed. The Lake Auburn Watershed Protection Commission (LAWPC) owns about 81% of the shoreline and about 1320 acres (14%) of the watershed. Lake Auburn is the sole source of public water supply for Auburn and Lewiston, cities with populations of approximately 22,972 and 36,460, respectively. No bodily contact is allowed in the lake, but fishing and boating is allowed and access is available at the LAWPC-owned launch.

Lake Auburn has historically had above-average water quality. However, the lake had an algae bloom in the fall of 2012, and low dissolved oxygen levels resulted in a fish kill of approximately 200 lake trout. Subsequent studies identified the cause of the algal bloom as excess phosphorus - initially from the watershed and now from internal cycling in the lake. LAWPC has completed numerous other studies and projects with the DEP, Maine Department of Transportation, Maine Drinking Water Program, and the City of Auburn. In 2003, the Maine Public Drinking Water Source Assessment Program completed a report that identified 86 NPS erosion sites with 47 identified as priority sites. In 2005, the 319-grant funded Lake Auburn NPS Improvement Project (#2005R16) installed BMPs at six problem sites in the watershed. The *Lake Auburn Watershed Management Plan* was developed in 2010 and updated in 2013 to meet DEP and EPA requirements for a Lake Watershed-Based Protection Plan (LAWMP).

PROJECT DESCRIPTION:

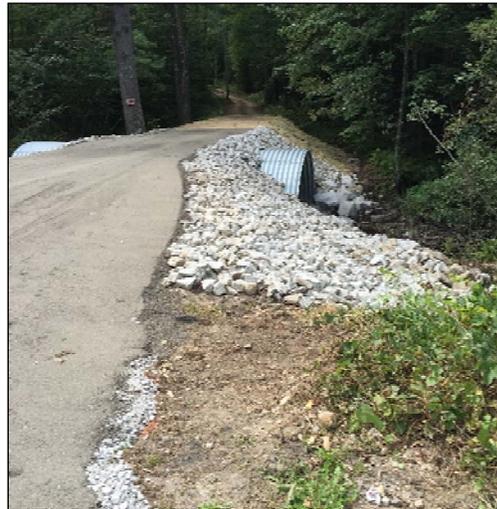
The goal of the project was to implement actions in the LAWMP to reduce export of sediment and associated pollutants from the watershed. This was accomplished through the installation of BMPs at 12 commercial, residential, road, and LAWPC sites. Technical assistance was provided to 19 landowners, which was seven more landowners than proposed. Extensive outreach and education included Project WET training for teachers, presentations at Little Wilson Pond's annual meetings, and coverage of the grant through newsletters, press releases, and website posts.

PROJECT OUTCOMES:

- Two large culverts were installed to improve stream flow and reduce sedimentation to Little Wilson Pond, which is the major tributary to Lake Auburn.
- Every property owner along Lake Auburn and Little Wilson Pond received information about the grant and methods to address runoff and erosion issues.
- Maine Department of Transportation addressed one of the largest proposed projects at their expense, thereby reducing the need to use funds from this grant.
- Edward Little High School students installed 85 feet of buffer at the Lewiston Auburn UV Treatment Facility. In total, 115 feet of buffers were installed along Lake Auburn and Little Wilson Pond.
- Annual pollutant loading to Lake Auburn was reduced by an estimated 78.4 tons of sediment and 66.6 pounds of phosphorus per year, which was almost twice as much as projected in the grant proposal (Region 5 Method).



Gurschick Road - Pre-Construction



Gurschick Road - Post Construction

PROJECT PARTNERS:

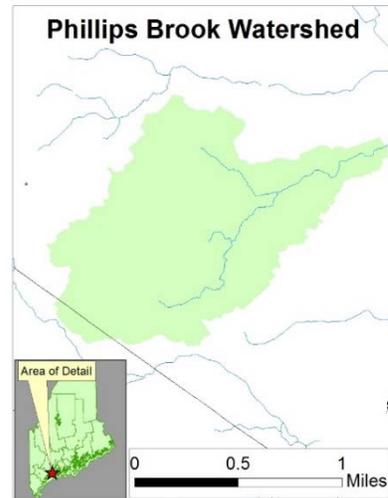
Androscoggin County Soil and Water Conservation District
Auburn Water District
Edward Little High School
Lewiston Water Division
Little Wilson Pond Improvement Association

CONTACT INFORMATION:

Lynne Richard, LAWPC - (207) 333-6665, lrichard@awsd.org
Mary Ellen Dennis, Maine DEP - (207) 215-7946, mary-ellen.c.dennis@maine.gov

Phillips Brook Watershed Plan Development #2015PP09

Waterbody Name:	Phillips Brook
Location:	Scarborough - Cumberland County
Waterbody Status:	Impaired, Urban Impaired Stream
Project Grantee:	Town of Scarborough
Project Duration:	January 2016 – December 2017
319 Grant Amount:	\$23,044
Local Match:	\$51,760



PROBLEM:

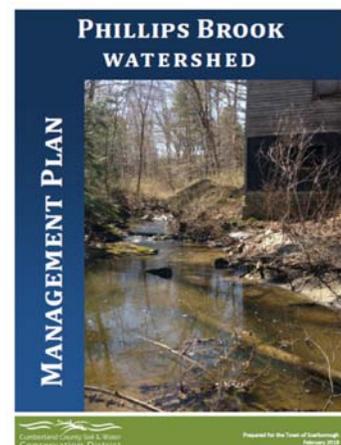
The Phillips Brook watershed covers 838 acres in the Dunstan Corner area of Scarborough. The brook runs 2.77 miles from primarily forested land, through a residential area, across Broadturn Road and Payne Road, and then behind commercial development along US Route 1 before entering Scarborough Marsh. The watershed is in a designated growth area, with the build-out analysis estimating up to 400 new households and 150,000 square feet of additional commercial development.

Phillips Brook does not currently meet its designated Class C water quality standards for aquatic habitat use and dissolved oxygen, and it has been listed on the 303(d) list of impaired waters. The Phillips Brook watershed is 9% impervious cover and was included in the *Impervious Cover TMDL* (2005). A principal issue affecting watershed health is altered hydrology resulting in severe bank erosion and excessive sedimentation within the stream channel, creating unsuitable habitat and depleting dissolved oxygen.

PROJECT DESCRIPTION:

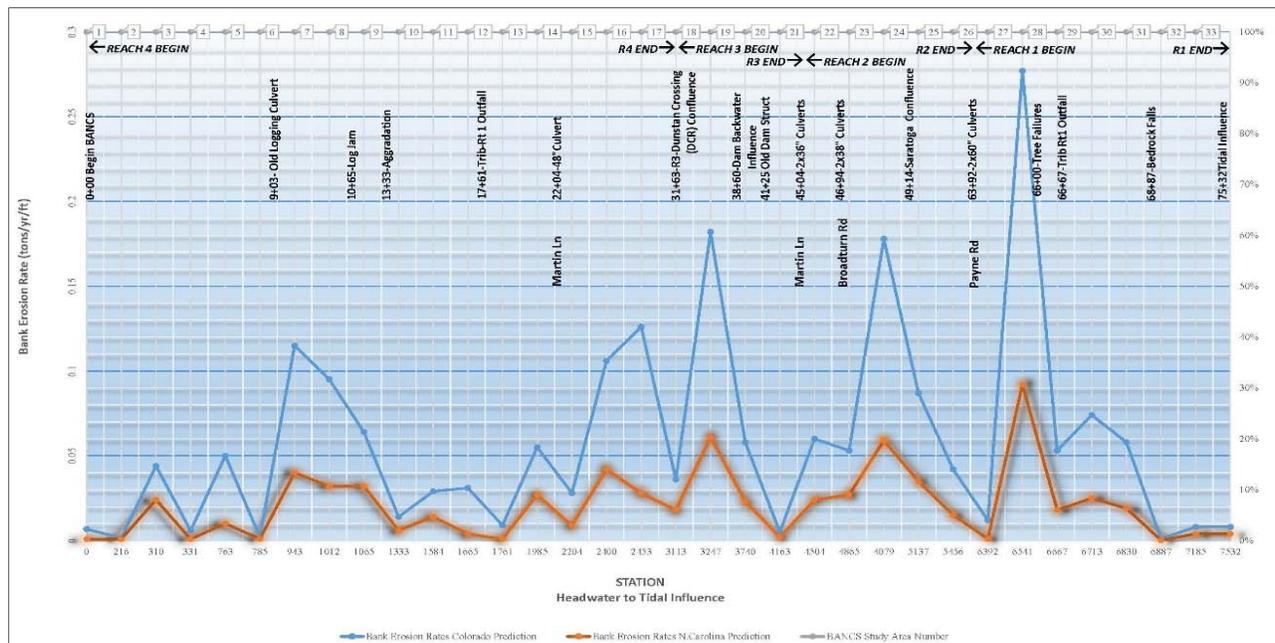
The Town of Scarborough and Cumberland County SWCD worked with stakeholders to develop a watershed-based management plan that addresses EPA's required elements for watershed-based plans. The plan's goals are to (1) restore water quality and stream habitat to help ensure Phillips Brook meets its Class C state water quality standards; (2) protect water quality and stream habitat from potential degradation associated with future land use in the watershed; and (3) build and sustain community support for the protection and restoration.

The ten-year plan (2019-2029) consists of five phases and includes plans for 17 structural solutions and six non-structural solutions. The structural solutions consist of stream crossings, in-stream restoration, and structural retrofit sites and are estimated to cost a total of \$1.7 million. The non-structural solutions consist of education and outreach programs and policy, ordinance, and development standard reviews.



PROJECT OUTCOMES:

- Creation of the *Phillips Brook Watershed Management Plan* (2018).
- Detailed instream assessment of the geomorphology of 7,500 feet of the brook, summarized in “A Study of Bank Erosion Rates: Headwater to Tidal Reaches of Phillips Brook” (2017).
- Engagement with community stakeholders through mailings, an interactive public meeting, and Town committee meetings.
- Providing match of \$51,800, over double the grant funds and exceeding the planned match by \$8,500.



Phillips Brook bank erosion rate prediction from headwaters to the tidally influenced area. The highest rates were just downstream of culvert crossings and downstream of the Dunstan tributary confluence.

PROJECT PARTNERS:

Cumberland County SWCD
 Friends of Scarborough Marsh
 Local developers
 Local residents
 Maine Audubon

Maine Department of Transportation
 Maine Turnpike Authority
 Scarborough Conservation Commission
 Scarborough Economic Development Corporation
 Scarborough Sanitary District

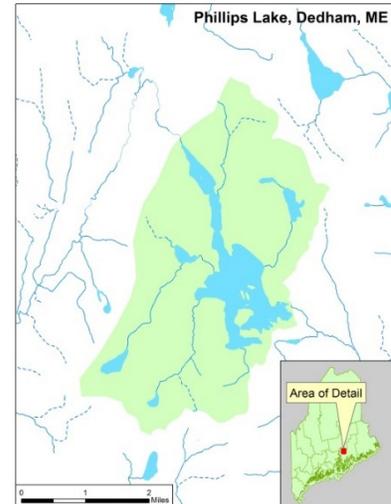
CONTACT INFORMATION:

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 Jodie Keene, Cumberland County SWCD - (207) 892-4700, jkeene@cumberlandswcd.org
 Kristin Feindel, Maine DEP - (207) 215-3461, kristin.b.feindel@maine.gov

Phillips Lake Watershed Protection – Phase II

#2015RR04

Waterbody Name:	Phillips Lake
Location:	Dedham, Village of Lucerne - Hancock County
Waterbody Status:	NPS Priority Watershed
Project Grantee:	Hancock County SWCD
Project Duration:	May 2015 – December 2017
319 Grant Amount:	\$98,447
Local Match:	\$128,555



PROBLEM:

Water quality data has been collected by DEP and the Maine Volunteer Lake Monitoring Program since 1974. The lake's water quality is considered above average; however, secchi disk readings from the last decade reveal a two-meter decline in water clarity. Phillips Lake also has a low flushing rate (0.52 times/year), which makes it sensitive to increases in nutrient loading.

In 2009, a watershed survey was completed which identified 60 NPS sites. In 2012, HCSWCD re-surveyed all road sites in the Phillips Lake watershed and found 44 NPS sites, seven of which were on private roads and 37 on town roads. Most of the sites that were identified in the 2009 survey were still present, but some had been fixed and additional issues were discovered. From 2013-2014, Hancock County SWCD successfully carried out a Phase I 319 grant project (#2013RR02), which implemented BMPs at more than 40 NPS sites and stabilized over 75 feet of shoreline. The project reduced pollutant loading to Phillips Lake by an estimated 138 tons of sediment and 116 pounds of phosphorus per year. However, it was determined that a second phase was needed to address the remaining NPS sites in the watershed.

PROJECT DESCRIPTION:

The Phillips Lake Watershed Protection Project – Phase II was managed by Hancock County SWCD and guided by a Steering Committee that included representatives from the Phillips Lake Association, DEP, the Town of Dedham, the Lucerne-in-Maine Village Corporation, and watershed residents.

The project focused on reducing NPS pollution by fixing high- and medium-priority road sites identified during the 2012 watershed survey. HCSWCD addressed the remaining low priority sites through technical assistance to landowners in the watershed and utilizing in-kind match. Public outreach and education was an essential component of this project and the Education and Outreach Plan developed during Phase I guided all education activities.



PROJECT OUTCOMES:

- The project installed BMPs at 33 road sites in total, including 28 town road sites and five private road projects. BMPs included new culverts, ditches and turnouts.
- Vegetative buffers, shoreline stabilization and other BMPs were installed to reduce erosion and help protect water quality at 12 residential sites.
- The total non-federal match for this project was \$128,555, which exceeded the match requirement by \$62,890.
- 27 watershed property owners received technical assistance but did not elect to utilize the cost-share portion opportunity.
- The project resulted in an estimated 59.4 tons of sediment, 50.3 pounds of phosphorus, and 101.5 pounds of nitrogen from going into Phillips Lake each year (Region 5 Method).



Fitts Mountain Road culvert replacement



Drip-line infiltration trench installation

PROJECT PARTNERS:

Lucerne in Maine Village Corporation
Phillips Lake Association
Town of Dedham

CONTACT INFORMATION:

Greg Beane, DEP - (207) 299-4703, greg.e.beane@maine.gov
Zack Steele, Hancock County SWCD - (207) 667-8663, zsteele@hancockcountyswcd.org

Red Brook Watershed Restoration Project, Phase I

#2015RT05

Waterbody Name:	Red Brook
Location:	Scarborough, South Portland - Cumberland County
Waterbody Status:	Urban Impaired Stream
Project Grantee:	Town of Scarborough
Project Duration:	May 2015 – December 2017
319 Grant:	\$87,983
Local Match:	\$91,744



PROBLEM:

Red Brook is a 7.2 mile-long stream that flows into Clark's Pond and the Fore River. The 3.2 square mile watershed includes a relatively undeveloped upper watershed, sections of the Maine Turnpike and I-295, a regional waste incinerator, and a high-density commercial area at the base of the watershed. Red Brook is listed as an Urban Impaired Stream in Maine DEP's Chapter 502, which means that it does not meet state and federal water quality classifications due to polluted runoff from impervious cover (IC). In 2012, the Maine DEP completed an IC Total Maximum Daily Load (TMDL) for Red Brook.

Water quality in the upper portion of the stream is considered to be relatively stable, and the stream supports a brook trout population. However, the stream does not meet Class C standards and is impaired due to habitat degradation and PCB contamination. A PCB-contaminated site in the upper watershed was sealed in 2009, and levels in fish tissue are expected to decrease over time. Habitat degradation is found primarily in the lower sections of the stream due to past channel alterations and near-stream development.

PROJECT DESCRIPTION:

Phase I started the process of restoring Red Brook's aquatic habitat so it could attain Class C water quality standards. In the rural upper watershed, two high-priority culvert sites were addressed. In the more urban lower watershed, a stormwater pond and outfall were rebuilt to provide advanced water quality treatment benefits. Although an adjacent instream project was not completed during the grant period, the completed designs will be used to reconnect the stream to its floodplain and stabilize stream banks. Permitting is in process, and the Town will be implementing this project on their own in 2018. Two commercial properties participated in BMP workshops and developed updated Operations & Maintenance Plans for their properties.



Kala Lane - The Town replaced two undersized culverts with a concrete box culvert with natural bottom.

PROJECT OUTCOMES:

- Two culverts that were identified as creating stream habitat problems were removed or modified to allow for unrestricted fish passage and address associated bank erosion. Culvert C9 on New Road was removed and returned to natural flow. Culvert C10 on Kala Lane was replaced with a natural bottom concrete box culvert spanning 1.2 times the bankfull width of the stream.
- The La-Z-Boy stormwater pond directly adjacent to Red Brook was redesigned and reconstructed to provide multiple stream benefits. The Town constructed a gravel trench to reduce water temperature and provide additional water quality treatment. The pond was also enlarged to increase stormwater capacity, and step pools were installed at the pond outfall/discharge point to reduce flow velocity and prevent further erosion into the stream.
- CCSWCD and Town staff reached out to commercial property owners with the purpose of educating the landowners on stormwater infrastructure operations and maintenance (O&M). CCSWCD and the landowners reviewed O&M Plans for two properties that were drafted as part of the project and conducted site inspections in December 2017.
- Phase I work exceeded project match targets by \$8,534, showing the Town's willingness to invest in and continue this critical work. That figure does not account for the additional cost the Town will incur constructing the in-stream improvements in Spring 2018.



The La-Z-Boy stormwater pond next to Red Brook was rebuilt with a gravel bench and outlet step pools (right) to reduce stormwater and downstream habitat impacts.

PROJECT PARTNERS

Amec Foster Wheeler
 City of South Portland
 Cumberland County SWCD
 La-Z-Boy

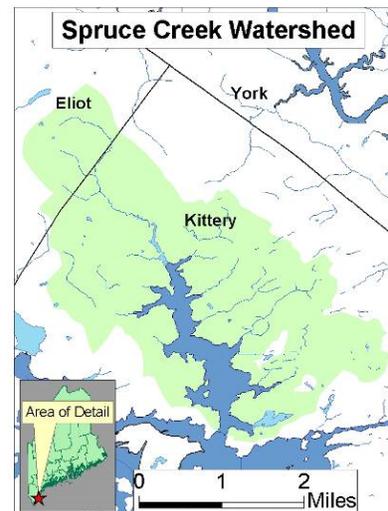
Maine Department of Transportation
 Maine Turnpike Authority
 Scarborough Economic Development Corporation

CONTACT INFORMATION:

John Maclaine, Maine DEP - (207) 615-3279, john.maclaine@maine.gov
 Angela Blanchette, Town of Scarborough - (207) 730-4043, ablanchette@scarboroughmaine.org
 Jodie Keene, CCSWCD - (207) 892-4700, jkeene@cumberlandswcd.org

Spruce Creek Watershed Improvement Project - Phase IV #2015RT06

Waterbody Name:	Spruce Creek
Location:	Kittery and Eliot - York County
Waterbody Status:	NPS Priority Watershed, Impaired
Project Grantee:	Town of Kittery
Project Duration:	May 2015 – October 2017
319 Grant Amount:	\$59,050
Local Match:	\$85,080



PROBLEM:

The Spruce Creek watershed covers 9.6 square miles in Kittery and Eliot. The creek flows into the Piscataqua River 1.5 miles from where the river meets the Gulf of Maine. The creek is primarily fed by six freshwater streams and includes approximately three square miles of tidal area. Watershed land use includes sparse residential development and some active farmland and woodlots in the upper reaches in Eliot. The Route 1 and Route 95 corridors contain extensive impervious areas in commercial strip malls, roads, and interchanges. The tidal portion is residential with larger homes along the immediate shoreline.

Spruce Creek is impaired due to bacterial contamination, low dissolved oxygen, toxic contamination, and a compromised ability to support aquatic life. Shellfish harvesting areas have been closed since 2005 due to poor water quality and high fecal coliform concentrations. A survey completed in 2007 (#2005R-01) identified 197 NPS sites. Three phases of projects (#2008RR01, #2010RT07, and #2013RT06) installed BMPs at 20 sites, hosted 11 septic and residential socials, resulted in over 80 residential pledges to install watershed-friendly practices, developed a septic system ordinance and database, and removed an overboard discharge and a stormdrain system bacteria source.

PROJECT DESCRIPTION:

The purpose of this project was to reduce bacteria levels and improve water quality in Spruce Creek by installing BMPs and raising community awareness and engagement in solutions. BMPs were installed at commercial, town, and residential properties. Bacteria filter inserts were installed at catch basins at the Kittery Department of Public Works lot and on a road in a high dog-use residential area. ‘Keep it Clean, Drains to Spruce Creek’ was stenciled at these catch basin insert locations, as well next to the site of the biofiltration BMP at the entrance to Kittery Trading Post. Attendees of the end-of-project “Green Streets Tour” showed great interest in each of the BMPs, including the attractive residential rain garden.



This rain garden infiltrates and filters roof runoff, and has allowed an adjacent eroding area to stabilize.

PROJECT OUTCOMES:

- Installation of five stormwater BMPs at a total of four NPS pollution sites. BMPs included a biofiltration modular system at a highly-visible commercial site, three bacteria filter catch basin inserts, and a residential rain garden.
- Expansion of a septic and sewer database to allow the Town to focus on areas with septic systems at high risk based on environmental and infrastructural factors.
- Outreach to the community via technical assistance to six residences, a Green Streets Tour, a mailing to targeted areas identified from the septic database, and follow-up with residents who took the Watershed Pledge in past project phases.
- Two years of water quality monitoring and reporting.
- Annual pollutant loading to Spruce Creek was reduced by an estimated 17.7 pounds of nitrogen, 4.3 pounds of phosphorus and 0.81 tons of sediment per year (STEPL Method).



Biofiltration system at entrance to Kittery Trading Post.
System catches and treats parking lot runoff.



Catch basin with bacteria filter cartridge
and educational stenciling.

PROJECT PARTNERS:

Spruce Creek Association
Kittery Trading Post

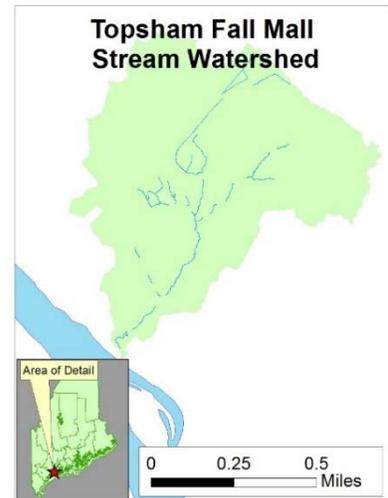
CONTACT INFORMATION:

Jessa Kellogg, Town of Kittery - (207) 475-1321, jkellogg@kitteryme.org
 Laura Diemer, FB Environmental - (207) 221-6699, laurad@fbenvironmental.com
 Kristin Feindel, Maine DEP - (207) 215-3461, kristin.b.feindel@maine.gov

Topsham Fair Mall Stream Restoration Project – Phase I

#2015RT07

Waterbody Name:	Topsham Fair Mall Stream
Location:	Topsham - Sagadahoc County
Waterbody Status:	Urban Impaired Stream
Project Grantee:	Town of Topsham
Project Duration:	August 2015 – December 2017
319 Grant Amount:	\$95,997
Local Match:	\$65,413



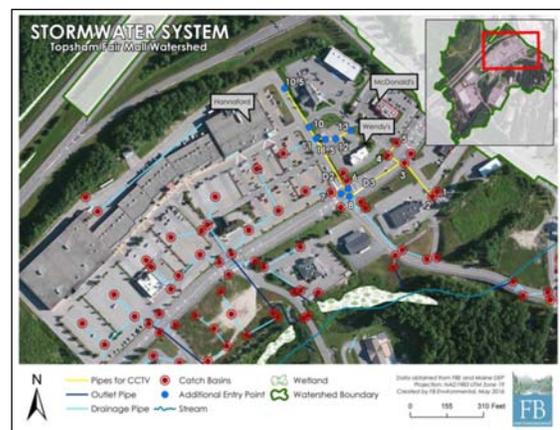
PROBLEM:

Topsham Fair Mall Stream is an impaired stream in Topsham. Several large road crossings of the stream block the floodplain and significantly alter the flow and ecology of the stream. The 320 acre watershed has 79% of the land area developed, including 30% impervious surfaces. Undeveloped portions of the watershed are slated for growth in Topsham's Comprehensive Plan. This Class B stream was listed as impaired in 2008 due to habitat assessment and is included in the 2011 Maine Impervious Cover TMDL.

Salt application in the winter enters the stream directly and via groundwater, causing elevated chloride levels in both winter and summer. Despite impairments, the stream is well oxygenated and groundwater recharge keeps temperatures low enough to make it a potentially valuable refuge for coldwater fish from the Androscoggin River. *The Topsham Fair Mall Stream Watershed Based Plan (2014)* identified the need for reduction of salt entering the groundwater, modification of several stream crossings and installation of stormwater retrofits at 29 high, moderate-high, and moderate priority sites.

PROJECT DESCRIPTION:

The purpose of this project was to begin restoring the Topsham Fair Mall Stream. The Town worked with project consultants to provide technical assistance and implement non-structural and structural BMPs. The project was guided by the technical advisory committee, which included the Town, landowners, consultants, facility managers, and state partners. Salt management outreach was conducted through one-on-one contact and project factsheets. Municipal ordinances were revised to include chloride management considerations and provide an opportunity to be minimalist with parking lot size. Stormwater pipes suspected of being leaky were investigated with the hopes of pinpointing areas that could be tightened to prevent groundwater infiltration. Non-salt stormwater pollutants were also addressed with the installation of catch-basin filters in several hotspot locations.



PROJECT OUTCOMES:

- Revised Topsham’s stormwater ordinance revisions to include a Chloride Management Plan for new and redevelopment in the urban impaired watershed and a reduction of minimum parking standards with alternative parking plan options available.
- Installed catch-basin filter inserts to treat stormwater entering eight catch basins at busy intersections on the Topsham Fair Mall Road.
- Conducted salt management outreach via one-on-one outreach, factsheets, updated website, and stakeholder meetings.
- Investigated the condition of 975 feet of stormwater pipe via closed circuit television.
- Conducted two years of stream monitoring.
- Reduced annual pollutant loading to the stream by an estimated 0.5 tons sediment, 2.7 lbs phosphorus, and 10.9 lbs nitrogen (STEPL method), as well as hydrocarbons and other pollutants commonly associated with urban stormwater.

SNOW SMART SALT PRACTICES
Deicing Safely in Topsham, Maine

STREAM HEALTH DECLINING!
ROAD SALT or sodium chloride, is the common snow and ice melting agent used to keep roads, parking lots, and other access ways clear. Stormwater runoff from commercial businesses in Topsham is polluting the groundwater and stream.

STREAM STATUS
EXCESS CHLORIDE is toxic to aquatic life in the stream. Topsham Fair Mall Stream has been listed as IMPAIRED by the Maine Department of Environmental Protection.

MAKING PROGRESS
Maine spent approximately \$98 million dollars on winter road maintenance in 2008-2009. Salt is harmful to the stream AND expensive! The Town of Topsham and contractors are working hard to EFFICIENTLY use salt, setting a 50% REDUCTION GOAL.

WHAT CAN YOU DO?

- 1 **RAISE** awareness about the stream and reduce your own salt use.
Learn more at: [www.topshammaine.com/Departments > Planning & Development > Projects > Topsham Fair Mall Watershed > Salt Management](http://www.topshammaine.com/Departments%20Planning%20&%20Development%20Projects%20Topsham%20Fair%20Mall%20Watershed%20Salt%20Management)
- 2 **SUPPORT** the 50% salt reduction.
- 3 **ATTEND** future stream and salt reduction events, and spread the word!

Contact FB Environmental: (207) 221-6699

*Rubin, J., P.F. Gardner, C.F. Morris, K.L. Nicholls, J.M. Piskochuk, E. McKee, A. Slatin, T.O. Johnson (2010) Maine Winter Roads Salt Study. Environmental and Cost Report for the Marginal Clusco Study Policy Cluster. The University of Maine.

Funding for this project, in part, was provided by the U.S. Environmental Protection Agency under Section 319 of the Clean Water Act. This funding is administered by the Maine Department of Environmental Protection in partnership with EPA.



PROJECT PARTNERS:

FB Environmental Associates
Belanger Engineers
Local landowners
Maine Dept. of Transportation

Planning Decisions
Rbouvier Consulting
Site Design Associates
Sitelines

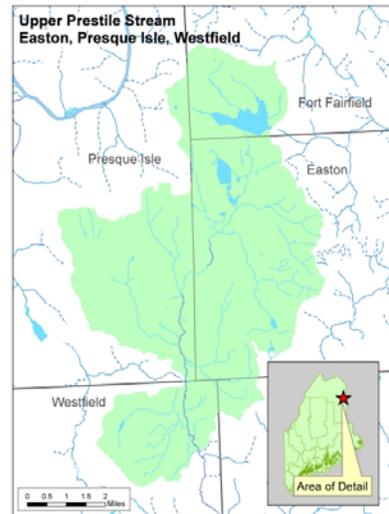
Stantec
Wright-Pierce

CONTACT INFORMATION:

Rod Melanson, Town of Topsham, 207-725-1724, rmelanson@topshammaine.com
Kristin Feindel, Maine DEP, 207-215-3461, kristin.b.feindel@maine.gov

Upper Prestile Stream Main Stem 1 Subwatershed Restoration Project Phase I #2015RT08

Waterbody Name:	Prestile Stream
Location:	Easton, Presque Isle, and Westfield - Aroostook County
Waterbody Status:	Impaired and NPS Priority Watershed
Project Grantee:	Central Aroostook SWCD
Project Duration:	May 2015 – July 2017
319 Grant Amount:	\$8,992
Local Match:	\$5,677



PROBLEM:

The Upper Prestile Stream Main Stem 1 Subwatershed is a 5,494 acre (8.6 m²) watershed of the Prestile Stream located within the municipalities of Presque Isle, Easton, and Westfield. The watershed feeds a 6.1-mile segment of Prestile Stream starting just below the Christina Reservoir in Easton and ending just above the main bridge crossing in Westfield.

The Prestile Stream is historically known for its world-renowned wild brook trout fishing and more recently for its high value inland waterfowl habitat. There are also two State species of concern, the wood turtle and the pygmy snaketail. Based on the Prestile Stream TMDL, the Upper Prestile Main Stem 1 subwatershed is one of the greatest NPS pollution sources to Prestile Stream due to agriculture with 48% in cropland. The soils are considered highly erodible with some agricultural fields on slopes up to 15%. The TMDL estimates that 97% sediment and 68% of the phosphorus loading in the subwatershed is from cropland. In addition, there are a number of gravel roads in close proximity to the stream with serious erosion issues.

PROJECT DESCRIPTION:

The original workplan called for CASWCD to work with two major agricultural landowners and two municipalities to implement BMPs on eight medium or high priority NPS sites. The sites were chosen based on their proximity to the stream or conveyance system and the magnitude of erosion. Unfortunately, CASWCD was unable to complete the project as proposed. The District did, however, tap into technical assistance from a Maine DEP engineer and work with one municipality to install BMPs that addressed a serious erosion issues from a municipal public works access road on a very steep slope. CASWCD also successfully worked with the town and ATV club to address erosion from an ATV crossing adjacent to the public works access road.



Access road to public works (upper right) and ATV trail to stream crossing (lower left).

PROJECT OUTCOMES:

- Addressed two NPS erosion sites immediately adjacent to Prestile Stream.
- The project reduced pollutant loading to Prestile Stream by an estimated 0.17 lbs phosphorus, 0.34 lbs/yr nitrogen and 0.17 tons of sediment per year (Region 5 Method).



Public works access road after removing berms and adding geotextile and gravel to super-elevate the road. Reshaped ATV trail and used large rocks to restrict ATV access.

PROJECT PARTNERS:

Town of Easton
Central Aroostook SWCD

CONTACT INFORMATION:

Kathy Hoppe, Maine DEP – (207) 540-3134, kathy.m.hoppe@maine.gov
Hollie Umphrey, Central Aroostook SWCD - (207) 760-4604, centralaroostookswcd@gmail.com

Appendix A. NPS Watershed Projects Closed in 2017

Project Title	Project ID#	Grantee	Grant Amount	Non-Federal Match	Completion Date
Capehart Brook Restoration, Phase II	2015RT01	Bangor, City of	150,000	257,418	Dec. 2017
East Pond Watershed-Based Plan Update	2015PT10	Belgrade Region Conservation Alliance	20,556	40,202	Dec. 2017
Hart Brook Watershed Restoration – 2016	2016RT04	City of Lewiston	94,000	128,970	Jan. 2018
Lake Auburn Watershed Protection Project, Phase I	2015RT03	Lake Auburn Watershed Protection Commission	117,739	91,852	Dec. 2017
Phillips Brook Watershed Plan Development	2015PP09	Scarborough, Town of	23,044	51,759	Dec. 2017
Phillips Lake Watershed Protection – Phase II	2015RR04	Hancock County SWCD	98,447	128,555	Dec. 2017
Red Brook Watershed Restoration Project, Phase I	2015RT05	Scarborough, Town of	87,983	91,744	Dec. 2017
Spruce Creek Watershed Restoration Project, Phase IV	2015RT06	Kittery, Town of	59,050	85,080	Oct. 2017
Topsham Fair Mall Stream Restoration Project, Phase I	2015RT07	Topsham, Town of	95,997	65,413	Dec. 2017
Upper Prestile Stream Main Stem 1 Subwatershed Restoration Project Phase I	2015RT08	Central Aroostook SWCD	8,992	5,677	July 2017

Appendix B. NPS Watershed Projects Active in 2017

Project Title	Project ID#	Grantee	Grant Amount	Non-Federal Match	Planned Completion Date
Adams Pond, Knickerbocker Lake Watershed Protection Project, Phase I	2017RR01	Boothbay Region Water District	43,300	37,447	Dec. 2018
Alamoosook Lake Watershed Protection Project	2016RR01	Hancock County SWCD	\$132,217	88,145	Dec. 2018
Updating the Annabessacook Lake Watershed Based Plan	2017PT14	Cobboossee Watershed District	13,075	11,779	Sept. 2019
Cape Neddick River Watershed Restoration Project, Phase I	2017RT02	Town of York	30,676	24,446	Dec. 2018
Cobboossee Lake Watershed Protection Project	2016RR02	Cobboossee Watershed District	93,430	68,096	Dec. 2018
Cochnewagon Lake NPS Watershed Restoration - Phase II	2017RT03	Cobboossee Watershed District	95,117	77,823	Dec. 2018
Cold Stream Pond Watershed Protection Project, Phase I	2017RR04	Penobscot County SWCD	47,345	47,950	Dec. 2018
Concord Gully Brook Watershed Restoration Project, Phase I	2016RT09	Cumberland County SWCD	44,300	33,429	Dec. 2018
Damariscotta Lake Watershed Protection Project, Phase I	2017RR05	Midcoast Conservancy	127,478	101,250	Dec. 2018
Ellis Pond Watershed Protection Project, Phase I	2016RR03	Oxford County SWCD	96,826	67,345	Dec. 2018
Goodall Brook Watershed Restoration Project, Phase I	2016RT08	City of Sanford	84,526	63,675	Oct. 2018
Goosefare Brook Restoration Project, Phase 1	2017RT06	City of Saco	124,594	90,090	Dec. 2018
Great East Lake Watershed Protection, Phase 3: Maine	2017RR08	Acton Wakefield Watersheds Alliance	42,387	28,276	Dec. 2018
Great Pond Watershed Protection Project	2017RR08	Hancock County SWCD	65,505	46,150	Dec. 2018
Kennedy Brook / Mantle Lake Watershed Plan Development	2016PT10	City of Presque Isle	41,600	23,000	Aug. 2018

Project Title	Project ID#	Grantee	Grant Amount	Non-Federal Match	Planned Completion Date
Long Pond Watershed Restoration Project, Phase IV	2016RT05	Belgrade Region Conservation Alliance	76,120	81,660	Feb. 2018
Lower Pemaquid River Watershed Assessment	2017PT15	Town of Bristol	6,525	9,810	March 2019
Medomak River Watershed-based Plan Development	2017PT13	Town of Waldoboro	22,000	15,080	April 2019
Meduxnekeag River Watershed Restoration, Phase I	2017RT09	Southern Aroostook SWCD	19,810	31,276	Dec. 2018
North Pond Watershed Protection Project	2016RR13	Oxford County SWCD	42,735	29,800	Nov. 2019
Ogunquit River Watershed Restoration Project, Phase II	2016RT06	Town of Ogunquit	69,340	46,658	March 2018
Panther Pond Watershed Protection Project, Phase III	2017RR10	Town of Raymond	64,827	54,156	Dec. 2018
Sebago Lake Watershed Protection Project, Phase III	2016RR07	Portland Water District	59,327	48,884	Dec. 2018
Thatcher Brook Watershed Restoration Project, Phase I	2017RT11	City of Biddeford	139,790	99,521	Dec. 2018
Topsham Fair Mall Stream Restoration Project, Phase II	2017RT12	Town of Topsham	102,000	87,413	Dec. 2018

Appendix C. Maine NPS Program Five-year Objectives, Actions, Annual Milestones and 2017 Accomplishments or Outputs (from *Maine NPS Management Program Plan 2015-2019*)

This section provides the five-year objectives, actions, milestones, schedule and annual outputs to date for Maine's NPS program. Table 9 focuses on DEP's watershed approach to improve and protect water quality. Tables 10 to 15 list objectives for Maine's statewide approach to address six major NPS pollution categories: developed areas, agriculture, transportation, forestry, subsurface wastewater disposal, and hydrologic modification. Table 16 lists objectives for partnerships, funding, and NPS program administration.

Table 9. Watershed Approach Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
<p>1. Prioritization: Complete revisions to the evaluation criteria and the methodology used for prioritizing lakes, streams and marine waters (NPS Priority Watersheds list)</p> <p>Partners: DACF, DMR</p>	<ul style="list-style-type: none"> For lakes, evaluate use of aluminum sediment core data in the lake vulnerability index when data is available. Update priority watersheds list incorporating results, if appropriate. For streams, evaluate use of Recovery Potential Screening tool (EPA) to assist with prioritization of impaired and threatened streams. Update priority watersheds list incorporating model results, if appropriate. For marine waters, work with DMR, Healthy Beaches Program and other partners to investigate ways to improve the prioritization as new data or methods becomes available. Improve methodology to assign priority among NPS priority watersheds to progressively address protecting or restoring NPS priority watersheds. 	1. Revised NPS priority watersheds list evaluation criteria and methodology			X	X		Jeff Dennis	For streams, conducted monitoring and review of threatened list, which resulted in 7 removals and 3 additions. For lakes, added new criteria subcategory 'Sensitive - Sediment Chemistry', which resulted in 10 lake additions. For marine, worked closely with DMR to review data and rationale for 8 waters considered for addition to priority list.
<p>2. Prioritization: Evaluate NPS priority lists annually as new information becomes available.</p>	<ul style="list-style-type: none"> Annually evaluate NPS priority watersheds lists. Announce public opportunity to submit requests and support for waterbodies to be added to the priority lists. 	2. Updated NPS priority watershed list	X ✓	X ✓	X ✓	X	X	Kristin Feindel	Provided opportunity to request waters be evaluated for inclusion on priority lists. Updated list finalized and posted in

Table 9. Watershed Approach Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
	<ul style="list-style-type: none"> Update priority lists as needed; add or remove individual waterbodies as new information becomes available. 								Feb. 2018. Noteworthy changes described above.
3. <u>Planning</u> : Approve 5 nine-element watershed based plans (WBP) for restoration of impaired waters.	<ul style="list-style-type: none"> Provide to decision makers the information needed to develop sound WBPs including data necessary to determine the dominant stressors contributing to the impairment and sufficient watershed and stream corridor information to identify and prioritize specific implementation activities needed to restore the waterbody. Provide technical support, guidance and when available funding for development of effective WBPs. 	3. Nine element WBPs	2 ✓ 3	1 ✓ 2	1 ✓ 2		1	Wendy Garland	DEP approved 2 plans, East Pond (Smithfield) and Phillips Brook (Scarborough) in December 2017.
4. <u>Planning</u> : Approve 10 alternative WBPs for protection of unimpaired waters.	Working with partners, provide technical assistance and funding for watershed surveys to support the development of lake watershed-based protection plans. Coordinate to secure EPA approval of alternative WBPs.	4. Alternative WBPs	2 ✓ 7	2 ✓ 3	2 ✓ 4	2	2	Wendy Garland	DEP & EPA approved WBPs for 4 lakes: Abrams Pond (Eastbrook), North Pond (Norway), North Pond (Smithfield) and Wilson Lake (Wilton).
5. <u>Planning</u> : Approve updates of 3 existing nine-element WBPs.	Working with partners, provide technical assistance to support updates of nine-element WBPs.	5. Updated nine-element WBPs			1 1	1	1	Wendy Garland	On track. 4 plans (Birch, Penjajawoc and Hart Brook and Annabessacook Lake) in process of being updated with DEP support.
6. <u>Planning</u> : Develop guidance document to identify stream stressors.	Develop a guidance document to help partners identify stream stressors and develop WBPs for urban impaired streams.	6. Stream stressors guidance document		X				Mary Ellen Dennis	Document completed and edited internally in 2017. To be distributed in 2018.

Table 9. Watershed Approach Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
7. <u>Planning</u> : Develop guidance document to update WBPs.	Develop guidance for updating WBPs that will be more than ten years old between 2015 and 2019 and share with groups associated with these plans.	7. Guidance document for updating WBPs		X ✓				Wendy Garland	Completed. Shared with partners in January 2017.
8. <u>Restoration</u> : Fully or partially restore 2 NPS impaired waterbodies; Prepare NPS Success Stories that document the restorations.	<ul style="list-style-type: none"> • Provide technical support and funding through NPS Section 319 grant program to support implementation of WBPs for waters with high potential to be restored. • Work with local municipalities and interest groups to resolve pathogen contamination problems on bacteria-impaired waterbodies (includes marine and freshwaters). • Collect targeted water quality and biological health information to determine the effectiveness of implementation efforts and guide modifications to the WBP. • Evaluate available data to determine if water classification standards have been met or if there has been substantial incremental improvement in water quality and/or ecological condition. 	8. NPS success stories about partially or fully restored waterbodies (WQ-10)					2 Wendy Garland	Ongoing, due in 2019. Identified two NPS Success Stories to be developed in 2018.	
9. <u>Restoration</u> : Collaborate with EPA and NRCS in the NWQI program to make progress restoring impaired waters.	<ul style="list-style-type: none"> • Coordinate with EPA and NRCS to select watersheds for the National Water Quality Initiative program (NWQI). • Conduct ambient water quality monitoring of Oliver Brook, within the Nickerson Lake - Meduxnekeag River subwatershed selected under the NRCS NWQI 	9. Water quality monitoring results for Oliver Brook.		X	X	X	X	Kathy Hoppe	No monitoring conducted in 2017 because not enough BMP installation to date for water quality response. Meetings held with DEP and NRCS at Belfast and Houlton Field Offices in Nov. 2017. Reviewed projects and planned for monitoring.

Table 9. Watershed Approach Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
10. Target efforts to maintain open shellfish harvesting areas or restore closed shellfish harvesting areas.	<ul style="list-style-type: none"> MCP, DMR and DEP will identify priority target watersheds. MCP, DMR and DEP will help municipal and watershed groups adopt regulatory or non-regulatory measures, complete targeted projects, or implement recognized BMPs to reduce impacts to coastal water quality in target watersheds of priority shellfish growing areas. This work will be conducted to make progress opening closed shellfish growing areas. 	10. Number of municipalities that adopt: new plans and policies; regulatory or non-regulatory measures; complete targeted projects; or implement BMPs	X 1	X 2	X 3	X	X	Wendy Garland	Ongoing focused work in Medomak River (Waldoboro), Lower Pemaquid River (Bristol) and Spruce Creek (Kittery). Added 5 new marine waters to NPS Priority list following DMR nominations.
11. <u>Substantial Improvement</u> : Demonstrate substantial Improvement in water quality and/or ecological condition in 3 NPS-impaired waterbodies.	<ul style="list-style-type: none"> Provide technical support and funding through NPS Section 319 grant program to support implementation of WBPs for waters with high potential to be restored. Work with local municipalities and interest groups to resolve pathogen contamination problems on bacteria-impaired waterbodies (includes marine and freshwaters). Collect targeted water quality and biological health information to determine the effectiveness of implementation efforts & guide modifications to the WBP. Evaluate data to determine if water classification standards have been met or if there has been substantial incremental improvement in water quality and/or ecological condition. 	11. NPS success stories that show progress toward achieving water quality goals or about ecological restoration		1 ✓		1	1	Wendy Garland	Ongoing. No partial success stories submitted in 2017.
12. <u>Protection</u> : Develop 2 guidance documents to estimate effectiveness of watershed protection efforts.	Develop metrics and methods to evaluate effectiveness of efforts to protect unimpaired threatened waters. <ul style="list-style-type: none"> 2015 For lake watersheds 2016 for stream and marine watersheds 	12. Demonstrating protection guidance documents	X	X				Jeff Dennis	Discussion with EPA about draft lakes document in March 2017. DEP continues to enlist partners to pursue stream protection plans.

Table 9. Watershed Approach Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
13. <u>Protection</u> : Demonstrate effective protection of 8 unimpaired threatened waters.	<ul style="list-style-type: none"> • Provide technical support and funding through NPS Section 319 grant program to support implementation of WBPs. • Evaluate the effectiveness of the protection projects. 	13. Watershed protection success stories		2	2	2	2	Jeff Dennis	Discussed with EPA in March 2017 as part of Lake Protection metrics document.
14. Provide technical support to help watershed groups conduct NPS watershed surveys.	Provide training and technical assistance for NPS watershed surveys to help protect or restore NPS priority watersheds.	14. Completed NPS watershed surveys	3 ✓ 3	3 ✓ 5	3 ✓ 5	3	3	John Maclaine	Watershed surveys completed for 5 lakes: Forest Lake (Windham), Mousam Lake (Acton), Salmon Lake/McGrath Pond (Oakland), Whetstone Pond (Blanchard) and Whitney/Hogan Ponds (Oxford).

Table 10. Statewide Approach - Developed Areas Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
1. Incorporate additional low impact development (LID) design practices into Maine’s stormwater statutes and rules.	<ul style="list-style-type: none"> Review Chapter 500 Stormwater Management Rules and proposed changes to Chapter 500 for opportunities to encourage or incentivize use of LID strategies and design practices. 	1. By 2015, issue proposed revised Chapter 500 rules	X ✓					Mark Bergeron	
2. Regularly update the Maine Stormwater Best Management Practices (BMP) manual to reflect the current best management practices.	<ul style="list-style-type: none"> Solicit input annually from consulting community and other interested parties. Evaluate proposals for new or modified BMPs (including proprietary systems) for approval for use under Chapter 500 Stormwater Rules. When reviewing the effectiveness of current BMP practice standards and specifications, consider the impacts of more frequent extreme wet-weather events. Propose updates to manual as warranted, solicit input through public comment. 	2. Update manual as new or modified BMPs are approved	X ✓	X ✓	X ✓	X	X	Jeff Dennis	Reviewed & approved 3 proprietary BMPs: StormTreat Linear, Focal Point, and StormTank, as Chapter 500 General Standard alternatives. Updated manual accordingly. Also staff were heavily involved in the review of 3 other proprietary BMPs: ACF R-Tank, Oldcastle Kri-star Perk Filter, and Lane Stormkeeper (not approved at this time).
3. Maintain the number of Contractors Certified In Erosion & Sediment Control BMPs.	DEP NPS Training and Resource Center will continue to administer the Erosion and Sediment Control Contractor Certification Program and track the number of certified contractors (increased from 1,630 in 2012 to 2,700 in 2014).	3. Number of Contractors Certified In Erosion & Sediment Control BMPs	X ✓ 2,862	X ✓ 2,917	X ✓ 2,419	X	X	Bill Laflamme	Number of certified Individuals totaled 2,419.

Table 10. Statewide Approach - Developed Areas Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
4. Provide municipalities with NPS training and resources to prompt and improve local water resource protection.	DEP NPS Training and Resource Center will use Adobe Connect to produce 20-minute educational programs and on-line resources for NPS training for municipal officials on topics such as NPS pollution prevention and low-impact development.	4. Adobe Connect educational programs completed	1	2 1	1	2		Bill Laflamme	An on-line continuing education program was produced on NPS for Municipal Officials.
5. Document chloride salt impacts on streams.	Prepare a report summarizing DEP findings about how excessive chloride salt use in developed areas has adversely impacted aquatic life of some streams in Maine. Chloride salts degrade water quality, soil quality, and ecosystems. Specific effects vary by location.	5. Chloride salt impact on streams (document)			X			Kristin Feindel	Developed document outline and assignments. On track to be completed in 2018.
6. Provide municipalities with technical assistance on protection and restoration of local waterbodies.	Provide information to municipalities working on Comprehensive Plans and review plans for consistency and completeness.	6. Comprehensive Plan reviews completed	4 6	4 4	4 10	4	4	Jeff Dennis	Completed reviews of 10 plans: Camden, Hartland, Kittery, Morrell, New Portland, Portland, Plymouth, Union, Wells and Windham.
7. Prevent and mitigate NPS impacts from unpaved camp roads.	The NPSTRC will provide training workshops and/or online resources.	7. Number of participants receiving training	X 13	X 7	X 32	X	X	Bill Laflamme	Two workshops on maintenance and repair of unpaved camp roads: August 4 in Boothbay (16 participants) and August 23 in East Madison (16 participants).

Table 11. Statewide Approach – Agriculture Lead Agency: Maine DAC			Schedule					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
1. Monitor agricultural operations to ensure compliance with the requirement to implement approved nutrient management plans (NMP).	<ul style="list-style-type: none"> Evaluate agricultural operations (AOs) to determine if they need to develop and implement an approved NMP. Track existing AOs with an approved NMP to ensure that their NMP is up-to-date. Provide guidance for initial development of a NMP or for facilitating updates as needed. Continue to identify AOs that need an NMP and help AOs comply with the obligation to operate according to a NMP. 	1. Each year report: a. The number of AOs that maintain and implement an approved NMP; b. An estimate of the number of AOs that need a NMP.	X	X	X	X	X	Mark Hedrich	a. 293 NMPs. b. Estimate 20 NMPs to be updated. 56 letters sent for NMP renewals. 12 letters sent to holders of expired NMPs. Approximately 25 site visits conducted related to NMP initiation or renewal.
2. Monitor agricultural operations to ensure compliance with requirement to operate according to a Livestock Operations Permit (LOP).	<ul style="list-style-type: none"> Evaluate new or expanded agricultural operations (AOs) to determine their requirement for obtaining a LOP. Continue to identify AOs that need a LOP and help AOs comply with the obligation to operate according to a LOP. Evaluate farms to determine if they are considered a CAFO as defined by state or federal regulations. Initiate steps for appropriate permitting of these entities as needed. Conduct annual inspections of CAFOs to determine compliance with terms of the LOP. 	2. Each year report: a. The number of AOs that operate according to a LOP; and b. An estimate of the number of AOs that need an LOP.	X	X	X	X	X	Mark Hedrich	a. 16 active LOPs. b. Estimate 7 LOPs required to be developed. 6 LOP initiation/renewal letters sent out. 5 related site visits conducted. 2 new LOPs issued. 3 of these LOPs almost completed; 1 additional LOP application in office for review.
3. Update the Nutrient Management Program Rules	<ul style="list-style-type: none"> Evaluate soil test timeframe validity, evaluate NMP variance operational timeline; Incorporate Maine Phosphorous Index criteria if feasible; Address carcass disposal issues; Incorporate Compost Management Plan criteria; Update certification requirements for planners; 	3. By 2015, complete draft of rules; by 2016 hold public hearing; and by 2017 adopt the revised rules.	X	X	X			Mark Hedrich	Draft rule essentially completed. Update should be formally adopted in 2018.

Table 11. Statewide Approach – Agriculture Lead Agency: Maine DAC			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
	<ul style="list-style-type: none"> Address livestock access to waterbodies 								
4. Continue to implement the Agricultural Compliance Program to resolve water-quality related complaints.	<ul style="list-style-type: none"> Investigate complaints concerning farm operations that involve threats to human or animal health and safety, and to the environment. Prescribe new or modified site-specific best management practices where needed to resolve the issue, particularly water-quality-related matters. Develop and maintain a database or spreadsheet to track and categorize agriculture complaints received and resolutions Prepare a concise annual summary of water-quality related complaints received, investigated, and resolved. 	4. Annual summary of water quality related complaints received, investigated, and resolved	X	X	X	X	X	Matt Randall	26 various water quality complaints were investigated and resolved. Complaint reports provided to DEP from 2015 – 2017. Summary report template created by DEP with input from DACF and Nutrient Management Board and 2017 report created using the template.
5. Develop a brochure for farmers outlining NPS pollution BMPs for farming operations.	<ul style="list-style-type: none"> Consider Maine agricultural BMP guidelines, select ten or more of the most significant BMPs and develop an informative quick-read brochure for farmers. Promote adoption of the BMPs by distributing the brochure at trade shows, meetings, educational events, and direct contact with farmers. 	6. NPS BMPs brochure for farmers			X			Mark Hedrich	BMP brochure draft completed. Interested individuals will provide input in winter 2018.

Table 12. Statewide Approach - Transportation Lead Agency: MaineDOT			Schedule					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
1. Continue using Erosion and Sedimentation Control BMPs on applicable MaineDOT projects.	<ul style="list-style-type: none"> Continue to implement and enforce MaineDOT Standard Specification 656. Continue ongoing ESC training for MaineDOT staff and contractors. Report on summary of MaineDOT activities as required by the Stormwater MOA between DEP and MaineDOT 	1. Annual Stormwater MOA report to MDEP	X	X	X	X	X	Peter Newkirk	All transportation-related projects contracted out by MaineDOT must comply with MaineDOT’s Standard Specification 656: Erosion and Sedimentation Control. ESC training for MaineDOT employees and consultants was held in March and June 2017; ESC training for contractors was held at 15 workshops across the State between January and April of 2017. MaineDOT submitted the annual stormwater MOA report to Maine DEP on January 20, 2017.
2. Regularly update the MaineDOT Erosion and Sedimentation Control BMPs manual to reflect the current BMPs.	<ul style="list-style-type: none"> Receive input annually from vendors, contractors, and professionals as appropriate. Evaluate proposals for new or modified BMPs (including proprietary systems) for approval for use. When reviewing the effectiveness of current BMP practice standards and specifications, consider the impacts of more frequent extreme wet weather events. Propose updates to manual as warranted. 	2. Update BMPs manual as new or modified BMPs are approved by MaineDOT	X	X	X	X	X	Peter Newkirk	There are no new ESC BMPs, or other reasons, to update the MaineDOT Best Management Practices for Erosion and Sedimentation Control manual.

Table 12. Statewide Approach - Transportation Lead Agency: MaineDOT			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
3. Promote chloride salt reduction BMPs to protect water quality while maintaining safe roads for travelling public.	<ul style="list-style-type: none"> Continue Maine Local Roads Center (MLRC) training and BMP Task Force to promote snow and ice control BMPs to municipal PWs. MaineDOT will continue to investigate new products, technologies, or efficiencies to reduce the use of chlorides. 	3. MLRC will track number of towns that received training. MaineDOT will document its research or use of new products or technologies for winter maintenance on its Winter Maintenance Research Reports webpage.	X ✓ 105	X ✓ 79	X ✓ 9	X	X	Peter Newkirk	In 2017, Maine Local Roads Center staff presented 2 snow and ice control and other winter road maintenance training to 39 individuals from 9 municipalities, and visited 2 individual town garages for equipment calibrating and training. MaineDOT continues to investigate new products and technologies to reduce the use of chlorides; no new products or technologies were adopted in 2017.
4. Promote reduction in the number of outdoor sand/salt piles.	<ul style="list-style-type: none"> MaineDOT will reduce the number of outdoor sand/salt piles. MLRC will continue technical assistance to towns regarding town salt storage facilities, and will continue its funding for improvement of salt storage facilities until 2016. 	4. MaineDOT will reduce the number of outdoor sand/salt piles from 30 to 22 (25%).	✓ 8		✓ 2		X	Peter Newkirk	MaineDOT has exceeded the goal of reducing the number of outdoor sand/salt piles by 25%: 8 of the remaining 30 outdoor sand/salt piles were eliminated in 2015 and two additional outdoor sand/salt piles were eliminated in 2017. Maine Local Roads Center provides ongoing technical assistance to towns on salt storage options.

Table 13. Statewide Approach - Forestry			Lead Agency: Maine Forest Service					Schedule		Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)								
			2015	2016	2017	2018	2019				
1. Increase overall effective BMP application on harvests from 83% to 90% or greater. Effective BMPs include all appropriately applied BMP practices, effective planning, and avoiding waterbody crossings.	<ul style="list-style-type: none"> Offer BMP training programs, with partners including the Maine Sustainable Forestry Initiative, Certified Logging Professional, Qualified Logging professional program and Northeast Master logger. Deliver existing or develop new and topic specific trainings as needed to address problem areas when identified by monitoring, compliance inspections and industry consultation. Work with DEP and Maine Municipal Bond Bank and EPA to maintain CWSRF funding and promote the Maine Forestry Direct Link Loan Program financing to reduce NPS risk at timber harvest sites. Apply northeast regional forestry BMP monitoring protocol on a biennial basis to assess use & effectiveness of forestry BMPs. 	1. Maine Forestry BMPs Use and Effectiveness report that documents the achievement of the objective by 2018 (and interim progress by 2016)		X	✓ 85%		X		Tom Gilbert	MFS continues to monitor timber harvests statewide for BMP use and effectiveness. Data from the 2016-17 monitoring seasons will be summarized in the biannual Maine Forestry BMP Use and Effectiveness report to be released in the winter of 2018.	
2. Maintain the Forest Ranger-approved water quality inspections of timber harvest sites at over 90%.	<ul style="list-style-type: none"> Forest rangers will continue routine inspections of timber harvests for environmental compliance. MFS field foresters will continue to provide technical assistance to prevent problems from occurring and quickly fix problems encountered during inspections. 	2. Percentage of approved water quality inspections & number of inspections referred for enforcement action	X	X	X	X	X	Tom Gilbert	Rangers inspected 1688 instances of water quality-related matters. Of these, 117 (7%) were referred for enforcement action.		
3. By 2018, improve consistency for the regulated community by increasing the number of critical mass municipalities	<ul style="list-style-type: none"> Work with DEP to make significant progress toward adoption of statewide standards for timber harvesting in shoreland areas. Focus on the list of municipalities with the highest average timber harvest acreage. When critical mass is met, 	3. By January 2016, 35 new municipalities adopt statewide timber harvesting standards, or DEP		X	7	7		Tom Gilbert	From January through December of 2017, 7 new critical mass towns adopted SWS, bringing the total number of critical mass towns to 215.		

Table 13. Statewide Approach - Forestry			Lead Agency: Maine Forest Service					Schedule			
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2017		
			2015	2016	2017	2018	2019				
that have adopted statewide standards for timber harvesting in shoreland areas from 182 to 252.	statewide standards will take effect in the unorganized areas. <ul style="list-style-type: none"> • Provide outreach to municipalities that have not yet adopted statewide standards for timber harvesting in shoreland areas. • Encourage DEP to adopt ordinances for towns that do not act by 2017. 	adopts ordinances for them. By January 2017, an additional 35 new municipalities adopt statewide timber harvesting standards or DEP adopts ordinances for them.			X				Despite multiple workshops and other outreach efforts, adoption rate has significantly declined compared to that during the onset of SWS in 2015.		

Table 14. Statewide Approach - Subsurface Wastewater Disposal Lead Agency: Maine DHHS, Environmental Health			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
1. Ensure municipalities properly implement Subsurface Wastewater Disposal (SSWD) rules.	<ul style="list-style-type: none"> Conduct at least one municipal review of subsurface wastewater disposal activities for each municipality over the 5-year period ending 2019. There are 490 municipalities in Maine. About 100 reviews per year will be completed. Respond to requests for assistance from municipalities. Assist in the training and licensing of Local Plumbing Inspectors. 	1. Number of municipal reviews completed in the year and number of municipal reviews found satisfactory	X	X	X	X	X	Glen Angell	Conducted 64 municipal reviews. Six had minor issues but none failed. Conducted 8 training sessions for LPIs, site evaluators and contractors. Conducted training for Maine Rural Water and DMR shoreline sanitary survey staff and went on actual inspections. Delivered presentation to Maine Building Officials Inspectors Association (60 people).
2. Improve the State's Voluntary Onsite Sewage Disposal System (OSDS) Inspection Program.	<ul style="list-style-type: none"> Evaluate the current voluntary OSDS inspection program and certification process. Propose ways to strengthen the voluntary OSDS inspection program. These could take the form of statutory changes to make certification mandatory or through rule changes to clarify what must be included as part of an inspection. Update Inspection Form to reflect changes implemented. Modify training program to incorporate results of review and changes 	2a. Feasibility report completed by 12/31/2016 2b. Proposed Statutory/Regulatory changes by 12/31/2017 2c. Revise Inspection Criteria by 6/30/2019		X		X		Glen Angell	Department received permission to develop Rules for septic system inspections and started drafting to strengthen the qualifications of inspectors and the inspection process. Legislation proposed to require licensing of inspectors. Passed by the Maine Legislature but vetoed by the Governor.

Table 15. Statewide Approach - Hydrologic Modification Lead Agency: Maine DEP			Schedule Planned (X #) Actual (✓ #)					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	2015	2016	2017	2018	2019		
1. Adopt new standards for stream crossings (new, repair, replacement) designed to improve fish passage, hydraulic capacity, and resiliency to larger storm events.	<ul style="list-style-type: none"> DEP will continue to participate, along with DOT, other state natural resource agencies, and private sector groups, in the development of an Aquatic Resource Management Strategy (ARMS) to reestablish the connectivity of stream systems. DEP will propose new standards for stream crossings under the Natural Resources Protection Act. Identify funding mechanisms, develop training programs and to assess/prioritize watersheds where removing passage impediments will result in the greatest connectivity of fisheries habitats. 	<p>1a. By 2016, draft standards for public comment.</p> <p>1b. By 2017, complete aquatic resource management strategy.</p> <p>1c. By 2017, adopt new standards for stream crossings.</p>		X				Mark Stebbins	Draft rules completed in 2017. Rules will be reviewed by AG in spring 2018. If major substantive rules, they will go to the Legislature in January 2019.

Table 16. DEP Programs, Partnerships and Funding Lead Agency: Maine DEP			Schedule					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)						
			2015	2016	2017	2018	2019		
1. <u>Partnerships</u> : Build and strengthen partnerships of the lead state agencies to coordinate efforts and effectively implement the Maine NPS Management Plan implementation.	Establish a NPS Lead Agency workgroup that will meet twice a year to report on progress with implementation of the Maine NPS Management Plan and seize opportunities for further collaboration.	1. NPS lead agency workgroup established	X					Wendy Garland	Not convened. Concluded more efficient to maintain regular contact and meet with each NPS Lead Agency as needed.
2. <u>Partnerships</u> : Build and strengthen partnerships at the program and project level to maximize effectiveness and efficiency of NPS mitigation efforts.	<ul style="list-style-type: none"> Conduct the annual Watershed Roundtable to bring together watershed professionals to share information, network and collaboration. Coordinate and improve the watershed managers' listserve to efficiently distribute and promote sharing of information and resources between partners. 	2. Annual NPS Watershed Roundtable	X ✓	X ✓	X ✓	X	X	Marianne Senechal	70 watershed managers from municipalities, NGOs, and SWCDs attended DEP's 15th annual roundtable on 11/14/17. 189 people are subscribed to watershed listserve.
3. <u>Funding</u> : Facilitate CWSRF funding for NPS projects by exploring new funding avenues and publicizing funding opportunities.	<ul style="list-style-type: none"> Look for opportunities to expand the eligibility of NPS controls that can be funded through the Clean Water State Revolving Fund (CWSRF) and mechanisms that can deliver that funding. Determine if there are barriers to prioritization of NPS projects, and if so, develop recommendations and coordinate with the CWSRF program to encourage approval of NPS projects. Track CWSRF projects and funding awarded to NPS projects and produce an annual summary report. Publicize funding opportunities on the watershed managers' listserve. 	3. Provide a summary of CWSRF funding on NPS projects in the annual NPS Program Report.	X	X ✓	X ✓	X	X	Wendy Garland	CWSRF projects and funding for NPS projects in 2017 totaled \$4.1 million. Projects described in Section II. D. of Annual Report.

Table 16. DEP Programs, Partnerships and Funding Lead Agency: Maine DEP					Schedule					Lead Contact	Accomplishments or Outputs in Year 2017
Five-Year Objectives	Actions	Milestones	Planned (X #) Actual (✓ #)								
			2015	2016	2017	2018	2019				
<p>4. <u>NPS Management Program Administration:</u> Continue to manage and implement the NPS program to meet program goals and work towards addressing the state’s water quality problems as effectively and expeditiously as possible.</p>	<ul style="list-style-type: none"> DEP employs appropriate programmatic and financial systems that ensure section 319 dollars are used efficiently and consistent with fiscal and legal obligations (Section 319 grant program guidelines, EPA-DEP Performance Partnership Agreement). In keeping with Clean Water Act Section 319 (h)(8) and (11), provide EPA with sufficient information, reports and data about Maine’s 319 program to determine whether the state’s progress for the previous fiscal year was satisfactory. 	<p>4. Maine’s NPS Program continues to achieve satisfactory progress</p>	X	X	X	X	X	Wendy Garland	<p>Ongoing – TBD.</p> <p>Completed satisfactory progress interview / review w/EPA for FY 2016</p> <p>EPA issued a favorable determination July 14, 2017. The determination for FFY17 reporting period to be issued by summer 2018.</p>		
<p>5. <u>NPS Program Administration:</u> Update the Maine NPS management program plan by 2019.</p>	<p>Consult lead agencies and gather public input to update the Maine NPS management program for the next cycle (including milestones for 2020-2024).</p>	<p>5. EPA approved Maine NPS Management Program Plan by 10/1/19.</p>					X	Wendy Garland	<p>Not started yet, due 2019</p>		



Salmon Lake and McGrath Pond Watershed Survey
Photo credit: Jen Jespersen



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Document available for download at:
<http://www.maine.gov/dep/water/grants/319-documents/reports/>

