



# NonPoint Source Times

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## New Stream Survey Manual (Volume 1)

Maine DEP is proud to announce: "Stream Survey Manual (Volume 1): A Citizen's Guide to Basic Watershed, Habitat, and Geomorphology Surveys in Stream & River Watersheds" available at [http://www.maine.gov/dep/blwq/docstream/team/stream\\_survey\\_manual/vol\\_1/index.htm](http://www.maine.gov/dep/blwq/docstream/team/stream_survey_manual/vol_1/index.htm).

*(Note: Stream Survey Manual (Volume 2): A Citizen's Primer on Stream Ecology, Water Quality, Hydrology, and Fluvial Geomorphology". Produced by the Maine Stream Team Program / Maine Department of Environmental Protection is expected by August 2008).*

There are roughly 45,000 miles of streams and rivers in Maine. These streams and rivers serve as habitats and sources of food for many different types of organisms during part or all of their lives.

Maine is home to the last, remaining populations of wild Atlantic salmon in the U.S., and those populations remain at critically low numbers. Maine is also home to most of the remaining, intact brook trout populations in the U.S. It is also home to a unique blend of certain aquatic insect, crustacean, mollusk, and plant species; as well as home to many exciting and charismatic reptiles, amphibians, birds, and mammals which rely on streams for sources of water and food.

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These stream and river ecosystems also provide much aesthetic beauty; they carry water, nutrients, and food resources to downstream waterbodies such as lakes and the ocean; and they provide important economic benefits (e.g., tourism, fishing, recreation, hydropower, industrial process water, etc.) to Maine and its citizens.

The health of streams, rivers, and the organisms that live in them, depend on good water quality and aquatic habitat conditions. Humans, however, can disturb and degrade these conditions through land-use and water-use activities that are not done properly or carefully. Maine is no exception. While it has many beautiful miles of pristine or near-pristine waterways, a significant amount of its stream and river miles have been damaged and impacted.

In order to maintain or improve water quality and habitat conditions, these resources need to be assessed, managed, and protected. Nearby human activities must be done with care and according to the latest standards (sometimes referred to as “best management practices (BMPs).”

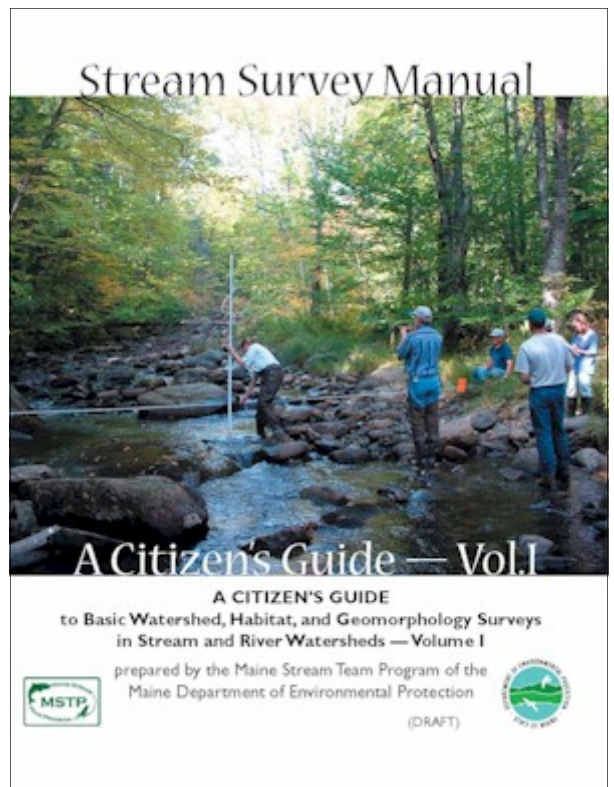
Volunteers play an important role in assessment and protection activities since the budgets and staffs of state, federal, academic, private, and nonprofit agencies and organizations can only go so far.

Some examples of these activities include:

- forming and operating watershed groups, stream teams, and land trusts;
- doing streamside tree buffer plantings, trash clean-ups, and stormdrain stenciling projects; and educating the public about ways to reduce its contribution of pollution to Maine’s waterways.

Surveys are another great activity in which volunteers can participate.

- In general, a survey is an activity which gathers information about a particular topic or place. (For the purposes of this manual, the term “survey” refers to people [volunteers, watershed managers, scientists, etc.] going out and collecting information about a stream [or river], the land around that waterbody, or both.)
- Surveys are an excellent way for volunteers to help gather important information about streams and rivers, their shoreland areas, and the land surrounding them.
- The survey results can be used to educate the participants, their neighbors, and municipal/state officials about the stream and any potential high-value habitats it may have; and/or potential problems that may threaten or exist in their stream watershed.
- Surveys information can then be analyzed and used to make better informed management and conservation decisions related to natural resources.



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This guide is designed to help volunteer group leaders and, to some extent, the volunteers themselves learn:

- some basic watershed concepts,
- learn how to organize and carry out basic stream watershed surveys and stream corridor surveys, learn how to use standardized methods so that the information collected in various watersheds and streams around the state can be readily compared. (Details about these activities are contained other units later in this guide.)

For more information contact Jeff Varricchione Maine Department of Environmental Protection (207) 822-6317 or Jeffery.T.Varricchoine@Maine.gov

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## Penobscot River Synthesis

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The Penobscot River Synthesis began in 2005 as a literature review and data inventory of past and current research in the Penobscot River and its watershed. Anticipating increased interest in the river as the [Penobscot River Restoration Project](#) moves forward, the project aims to provide scientists, educators, and communities with needed information on Penobscot River ecology and environmental history. Initially funded by the U.S. Geological Survey Water Resources Research Institutes program and the Atlantic Salmon Federation, the synthesis project is continuing to compile and disseminate Penobscot River information.

[The Senator George J. Mitchell Center for Environmental and Watershed Research](#) has partnered with the Penobscot River Restoration Trust and the Maine Department of Environmental Protection to coordinate the [Penobscot River Science Steering Committee](#). The committee is responsible for overseeing scientific research and monitoring related to the restoration project.

For more information <http://pearl.maine.edu/windows/penobscot/>

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## Biological Monitoring Data Now Available on Line

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DEP's Biological Monitoring Unit is very pleased to announce that their sampling data is now available through the DEP webpage using Google Earth.

The Bio-who? Not sure who the Biological Monitoring Unit is? Wondering what they do and why they do it? Visit their recently updated webpage to learn the answers to all these questions and more: <http://www.maine.gov/dep/blwq/docmonitoring/biomonitoring/index.htm>.

While you're there, check out the new data delivery program (see the Data and Maps page). Using Google Earth, you will see all of the sampling locations across the state, as well as be able to view and download the raw physical, chemical and biological data collected at each site. A limited number of sites currently have pretty pictures and fancy reports, and eventually all sites will have these as well.

For more information contact Beth Connors at 822-6399 or Beth.Connors@Maine.gov

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## Home Depot Canada Phases Out Pesticides

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*(Editors Note: We are not promoting Home Depot but do feel their recent actions deserve mention.)*

Home Depot Canada Voluntarily Phases Out Pesticides Across Canada and Provides Consumers Over 50 Options in Natural Lawn Care

TORONTO, April 22 /CNW/ - The Home Depot(R) today announced that it will voluntarily stop selling traditional pesticides and herbicides in its stores across Canada by the end of 2008 and will increase its selection of environmentally friendly alternatives.

The Home Depot is the first home improvement retailer to stop selling pesticides voluntarily across Canada and will phase out the products long before legislated deadlines. The Home Depot stores in Quebec do not sell pesticides. In addition, there are currently over 55 municipalities in Canada where the residential use, but not sale, of pesticides is banned. As the leader in the Canadian home improvement industry, The Home Depot will not sell any traditional pesticides and currently offers over 50 natural alternatives for its customers.

"Like our customers, we, at The Home Depot, are concerned about the environment," said Annette Verschuren, president of The Home Depot Canada and Asia. "We are going above and beyond government regulations by working with our suppliers to develop pesticide alternatives that are environmentally friendly and produce excellent results on lawns and gardens."

Pesticides will be phased out of The Home Depot stores across Canada starting today. By June 2008, The Home Depot anticipates that 62 of its stores nationwide will no longer sell pesticides, with all 166 stores offering additional environmentally preferred replacement products by the end of 2008.

"Our stores will prominently feature green pesticide alternatives, in addition to our current Eco Options products, and our trained associates will continue to provide customers with product information and tips, as well as on-line support," added Verschuren.

Product categories currently affected by The Home Depot's voluntary phase-out include herbicides, insecticides, fungicides, slug baits, moss control products and lawn fertilizers with weed control. A total of 60 products will be affected.

As the environmental leader in the home improvement retail sector, The Home Depot Canada has developed a number of environmental initiatives to date. For the past eight years, the company has held its Mow Down Pollution lawnmower trade-in event to help consumers reduce smog emissions when trimming their lawns. The Home Depot Canada also offers more than 1,500 Eco Options products, including all-natural insect repellents, organic plant food and vegetables in biodegradable pots. The wide array of Eco Options also includes compact fluorescent light (CFL) bulbs, programmable thermostats, cellulose insulation, front-load washing machines, and certified wood. The company also offers the only national recycling program for CFL bulbs.

From <http://www.newswire.ca/en/releases/archive/April2008/22/c8079.html>

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## Lake Protection Law Passed

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LD 2249, An Act to Protect Lake Water Quality, was signed by the Governor on April 10<sup>th</sup> and is now Public Law Chapter 593. While the law is due to take effect on July 18<sup>th</sup> (90 days after the Legislature adjourned), the only change that actually takes effect at that time is a change in the stormwater compensation fee language (Section 1), which increases the fee rate based on the amount of phosphorus removal required, from \$10,000 per pound of phosphorus to \$25,000 per pound of phosphorus. In addition, the law requires that contractors involved in earth-moving activity be certified on use of erosion control measures (Section 2); that section takes effect January 1, 2013. The long lead time was proposed to ensure that contractors have adequate time to take the required training and to become certified.



The most controversial part of the DEP's proposed legislation was concerned with the water quality impact of private roads. At the legislature's public hearing on the bill, there was general agreement among those who testified that camp roads are a significant problem. How to fix and maintain the roads continues to be a tough nut to crack.

The Department had proposed that municipalities be authorized to assess a private road impact fee to those who live on a road that is not meeting certain minimum standards. Several people testified in opposition to that proposal, citing the high taxes that lakeshore owners already pay for very limited services, and the concern that fees paid would not be put toward road improvements. This section of the bill was changed to a report (Section 3), which is due back to the Legislature by January 15, 2009. It requires the Department of Environmental Protection to evaluate "strategies to diminish the impact of private roads, driveways and boat ramps on lake water quality. The report must include guidance to municipalities on appropriate road standards for the protection of lake water quality, a sample model ordinance and, in consultation with the Office of the Attorney General, an analysis of the constitutional issues regarding the public purpose doctrine raised by permitting a municipality to adopt an ordinance that includes an assessment of an annual fee on property owners for construction or maintenance of a private road to prevent degradation of water quality."

DEP will again be convening a stakeholder group to provide input on this next report. A first meeting of the group has been scheduled for June 18<sup>th</sup> in Augusta. In the meantime, work has begun on developing road standards and a request has been made to the Office of Attorney General concerning the constitutionality of allowing municipalities to assess road impact fees.

Water quality problems associated with improperly built and maintained camp roads have been a source of frustration and debate for many years. There's no guarantee that this latest round of discussions will lead to a break-through, but given the high level of interest expressed by those who have asked to participate, there's reason for optimism that real progress can be made. Stay tuned for future updates.

Contact: Don Witherill: tel.: 207-287-7725; e-mail: [donald.t.witherill@maine.gov](mailto:donald.t.witherill@maine.gov).

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## 2007 Maine Lakes Report Available

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The 2007 Maine Lakes Report is now available in PDF format on the VLMP website: [www.MaineVolunteerLakeMonitors.org/VLMP2007MaineLakesReport.pdf](http://www.MaineVolunteerLakeMonitors.org/VLMP2007MaineLakesReport.pdf) (7.05meg).

The report summarizes 2007 Maine lake data with an overview of lake water quality and invasive aquatic plants and VLMP program updates. The report also includes an updated list of lakes with certified volunteer monitors.

Hard copies of the report will be mailed to all certified Water Quality Monitors by the end of April in their spring mailing packets. Others can request a copy by contacting the VLMP at [vlmp@mainevlmp.org](mailto:vlmp@mainevlmp.org) with your mailing address (please allow 3 weeks to receive your copy as they just went to the printers).



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## NPS Annual Report Available

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We are pleased to announce the release of Maine DEP's **Nonpoint Source Management Program - 2007 Annual Report**.

The Report (68p) & Executive Summary (8p) are posted at DEP's NPS webpage at: [http://www.maine.gov/dep/blwq/docgrant/319\\_files/reports/index.htm](http://www.maine.gov/dep/blwq/docgrant/319_files/reports/index.htm)

The report summarizes accomplishments of Maine DEP NPS Program activities funded, in part, under Section 319 of the Federal Clean Water Act in partnership with EPA. DEP provides technical and financial help to watershed groups that assess water quality problems and take action to reduce nonpoint source pollution, in order to help protect or improve Maine's clean water.

Highlights include:

- Brief (2 page) outcome summary of each of the 24 NPS Projects completed in 2007.
- NPS Watershed Projects completed in 2007 reported estimated reductions of about 310 pounds of phosphorus and 583 tons of sediment per year, equivalent to 50 - 8 yard dump truck loads.
- Restoration of Mousam Lake, a three-mile-long lake in York County, was highlighted on the EPA's "Nonpoint Source Program Success Stories" website.

DEP thanks our many valued partners described in this report for their support, cooperation and leadership.

Together we are proudly serving to protect Maine's clean waters for future generations.

We welcome your comments. Contact me (Norm Marcotte) to request a copy of the report [norm.g.marcotte@maine.gov](mailto:norm.g.marcotte@maine.gov) (207) 287-7727.

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## Bioremediation Study

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Bioremediation Study of a Shallow Lake in South-Central Maine: *Combining top-down and bottom-up approaches to improve water quality*

**Introduction:** Lake management agencies have traditionally focused efforts on controlling external sources of nutrients to lakes to remediate water quality issues. Despite these efforts, improvement of water quality can be slow, particularly in shallow lakes that exhibit resistance to returning to a clear-water stable state. Studies in Europe and North America suggest that manipulating food web structure to favor fish populations with lower planktivory can lead to responses that cascade down through lake food webs – improving water clarity by releasing herbivorous zooplankton from predation.



Figure 1. Nuisance blue-green algal bloom on East Pond (Alden Camps) during late summer 2006 (photo credit: Dave Halliwell, Maine DEP).

The Maine Department of Environmental Protection (Maine DEP) included 34 lakes on the 2006 list of state impaired waters – requiring a Total Maximum Daily Load (TMDL) under Section 303(d) of the Clean Water Act (CWA). Aside minimal Secchi disk transparencies (less than 2.0 meters water clarity) due to the prevalence of nuisance summer blue-green algal blooms (Figure 1), a common biological feature in many of the Maine TMDL lakes is the dominance of introduced populations of landlocked white perch (Figure 2). Relationships between altered fish assemblages and water quality have been studied extensively in Europe (Germany, Denmark, and the Netherlands) during the past several decades (summary papers by Mehner et al. 2004; Sondergaard et al. 2007)

East Pond, one of these 303(d) listed lakes, had a TMDL report prepared by Maine DEP and the Maine Association of Conservation Districts (MACD) approved in 2001 by the United States Environmental Protection Agency (USEPA) – New England Region I. Based on the results of this TMDL, best watershed management practices to control/reduce non-point sources of phosphorus were implemented through USEPA Section 319 (CWA) funding in recent years (1999-2007 – \$195,365). A recently completed *Watershed Based Management Plan* (Kennebec County Soil & Water Conservation District – April 2007) further detailed a strategic plan of recommended actions to ensure that East Pond will attain acceptable Maine DEP Class GPA water quality standards over the next ten years.

East Pond is located directly upstream of North Pond, a lake that has much less severe algal blooms despite having similar shallow morphometry and mesotrophic nutrient status. The lakes differ in their fish assemblages, with East Pond having a higher density of planktivorous-sized white perch, while North Pond has an illegally introduced top predator – northern pike – not found in East Pond. These differences led us to hypothesize that food web structure may be responsible, at least in part, for the higher frequency of summertime nuisance algal blooms in East Pond (Figure 3).

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Based on the results from studies in Europe, as well as preliminary source controls within the East Pond watershed coincident with an in-lake biomanipulation (food web alteration). Following two years of (Phase I) baseline evaluation, including estimates of fish populations and other limnological studies in 2004-06 (University of Maine and Colby College), target fish species removal and disposal commenced in East Pond during the spring of 2007 and will continue in 2008. A minimal 50-percent and up to 75-percent removal of fish biomass over a two-year period was found to be effective for water quality improvement in past European biomanipulation studies (Mehner et al. 2004).

Our primary objectives here are to: (1) provide background on the water quality and fish assemblages in the two study lakes; (2) discuss first-year fish removal and assessment methods; and (3) to acknowledge the cooperative partnerships among funding agencies, lake scientists, fish managers, aquatic biologists, and citizens to effectively implement a different approach to fisheries management and water quality



Figure 2. Boatload of adult white perch captured by trap-netting and removed from East Pond during the early spring of 2007 (photo credit: Ryan Burton, Maine DEP).

To learn more about this project or to review the rest of this article contact David Halliwell at [david.halliwell@maine.dep.gov](mailto:david.halliwell@maine.dep.gov) or 207-287-7649 or Melissa Evers at [Melissa.evers@maine.gov](mailto:Melissa.evers@maine.gov) or 207-287-2838.

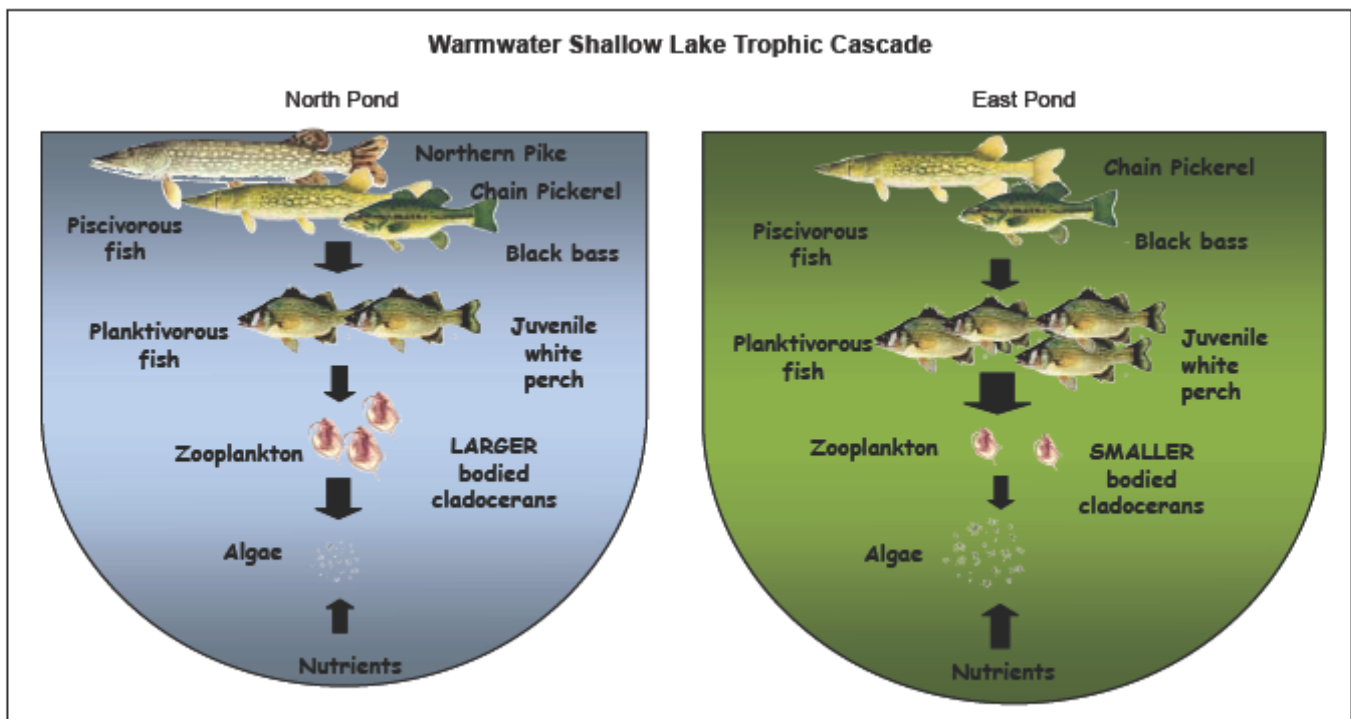


Figure 3. East and North pond trophic cascade (graphic design by Tara Trinko, University of Maine, Orono).

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## Upcoming Events

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June 12 & 13, 2008. Stormwater Financing Workshops. Portland and Bangor. FMI contact David Ladd at 287-5404.

June 21, 2008. Annual COLA Conference. Colby College.

July 19, 2008. Presumpscot River Festival. Riverbank Park, Westbrook.

May 18-20, 2009, NPS Conference will be held at the Eastland Park Hotel in Portland, Maine.

**Reminder** that the following Conservation Practices for Homeowners Series is available on line <http://www.maine.gov/dep/blwq/docwatershed/materials.htm> . The Series of 20 fact sheets from DEP and the Portland Water District profiling common conservation practices that homeowners can use to protect water quality. The fact sheets include detailed instructions, diagrams and color photos about installation and maintenance.

<ul style="list-style-type: none"> <li>• <a href="#">Construction BMPs</a></li> <li>• <a href="#">Dripline Trench</a></li> <li>• <a href="#">Dry Wells</a></li> <li>• <a href="#">Erosion Control Mix</a></li> <li>• <a href="#">Infiltration Steps - New</a></li> <li>• <a href="#">Infiltration Trench</a></li> <li>• <a href="#">Infiltration Steps - Retrofit</a></li> <li>• <a href="#">Live staking</a></li> <li>• <a href="#">Open-Top Culverts</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Paths and Walkways</a></li> <li>• <a href="#">Permitting</a></li> <li>• <a href="#">Planting Vegetation</a></li> <li>• <a href="#">Plants - full sun &amp; dry</a></li> <li>• <a href="#">Plants - full sun &amp; moist to wet</a></li> <li>• <a href="#">Plants - shade &amp; dry</a></li> <li>• <a href="#">Plants - shade &amp; moist to wet</a></li> <li>• <a href="#">Plants - part sun &amp; dry</a></li> <li>• <a href="#">Plants - part sun &amp; moist to wet</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Rain Barrels</a></li> <li>• <a href="#">Rain Gardens</a></li> <li>• <a href="#">Rubber Razors</a></li> <li>• <a href="#">Turnouts</a></li> <li>• <a href="#">Waterbars</a></li> </ul>
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**Clean water starts with you!**



MDEP  
1235 Central Drive  
Presque Isle, Maine 04769