

Municipality/Organization: City of Portsmouth

EPA NPDES Permit Number: NHR041027

Annual Report Number  
& Reporting Period: May 2004 – April 2005

## NPDES PII Small MS4 General Permit Annual Report

### Part I. General Information

Contact Person: Silke Psula

Title: Solid Waste Coordinator

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### Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:



Printed Name: David Allen, P.E.

Title: Public Works Deputy Director

Date:

4/30/05

## **Part II. Self-Assessment**

On July 28, 2003, the City of Portsmouth, New Hampshire, submitted a Notice of Intent (NOI) to EPA as required by the NPDES Storm water General Permit issued for small MS4 municipalities by EPA Region. Portsmouth's NOI summarized the steps Portsmouth would take to meet the requirements of the general permit, including compliance with water quality standards. In 2004, the Conservation Law Foundation (CLF) commented on Portsmouth's NOI, identifying several areas in which it felt that requirements of the Clean Water Act were not met.

The City of Portsmouth took into account the issues raised by CLF as part of the required self-assessment, which it has completed. The City has determined that the municipality is in compliance with all permit conditions, with the possible exception of the following provisions:

- Part I. C.
1. The permittee must determine whether storm water discharges from any part of the MS4 contribute, either directly or indirectly, to a 303(d) listed water body.
  2. The storm water management program must include a section describing how the program will control the discharge of the pollutants of concern and ensure that the discharges will not cause an instream exceedance of the water quality standards. This discussion must specifically identify control measures and BMPs that will collectively control the discharge of the pollutant(s) of concern. Pollutant(s) of concern refer to the pollutant identified as causing the impairment.
- Part I. D.
1. Determine whether the approved TMDL is for a pollutant likely to be found in storm water discharges from the MS4.
  2. Determine whether the TMDL includes a pollutant waste load allocation (WLA), BMP recommendations or other performance requirements for storm water discharges. This storm water WLA may be expressed in the TMDL as a gross allotment for the impaired water body.

The City remains committed to resolving whether these conditions have been met and believes that critical data is needed which would, among other things, help establish whether certain water bodies are in fact impaired and if so for which pollutants. To that end, Portsmouth, the New Hampshire Department of Environmental Services (DES), and CLF, propose to conduct a demonstration project that would provide critical data relative to the above exceptions.

Enclosed is a copy of the grant request detailing the project tasks and deliverables.

**Part III. Summary of Minimum Control Measures**  
(See attached Annual Storm Water Report/Spreadsheet)

**Part IV. Summary of Information Collected and Analyzed**  
(Refer to Part II, above and BMP 3. B. (ii))

**Part V. Program Outputs & Accomplishments (OPTIONAL)**

**Programmatic**

Storm water management position created/staffed	(Y/N)*
Annual program budget/expenditures	Rough estimate \$520,440 **

\* While a specific position was not created, the Solid Waste Coordinator was designated as the primary point of contact, facilitating the implementation of programs/BMPs with designated staff as part of a City wide implementation of storm water phase II compliance.

\*\* Estimate includes Vac truck #65; approximately 4,573 personnel hours; installation and operation of 4 Vortecnic; 5,562 hours of Street Sweeping; Hodgson Brook.

**Education, Involvement, and Training**

Estimated number of residents reached by education program(s)	Undetermined at this time	See BMP 1. A.(iv)
Stormwater management committee established	Y (N)	See BMP 2.A.(i) and (ii)
Stream teams established or supported	(# of Y (N))	
Shoreline clean-up participation or quantity of shoreline miles cleaned	(Y) N	See BMP 6.B.(vii)
Household Hazardous Waste Collection Days		
<ul style="list-style-type: none"> <li>▪ days sponsored</li> </ul>	2	5/22/04 & 10/16/04
<ul style="list-style-type: none"> <li>▪ community participation</li> </ul>	2%	

▪ material collected	1,114,971 gals
School curricula implemented	¥ (N)

**Legal/Regulatory**

	In Place Prior to Phase II	Under Review	Drafted	Adopted
<b>Regulatory Mechanism Status (indicate with "X")</b>				
▪ Illicit Discharge Detection & Elimination		X		
▪ Erosion & Sediment Control		X		
▪ Post-Development Stormwater Management		X		

**Mapping and Illicit Discharges**

Outfall mapping complete	80%*
Estimated or actual number of outfalls	+/- 213**
System-Wide mapping complete	99%
<b>Mapping method(s)</b>	
▪ Paper/Mylar	0 %
▪ CADD	0 %
▪ GIS	100 %
Outfalls inspected/screened	35
Illicit discharges identified	1 See BMP 3. B (i)
Illicit connections removed	1 (est. 250 gpd)
% of population on sewer	95%
% of population on septic systems	5%

\* Locations are known; ongoing program of surveying invert elevations and determining pipe type and diameter.

\*\* Directly discharging to waterbodies listed by DES as impaired waterbodies 303(d).

**Construction**

*Have not yet begun to track this information.*

Number of construction starts (>1-acre)	(#)
Estimated percentage of construction starts adequately regulated for erosion and sediment control	(%)
Site inspections completed	(# or %)
Tickets/Stop work orders issued	(# or %)
Fines collected	(# and \$)
Complaints/concerns received from public	(#)

**Post-Development Storm Water Management**

*Have not yet begun to track this information.*

Estimated percentage of development/redevelopment projects adequately regulated for post-construction storm water control	(%)
Site inspections completed	(# or %)
Estimated volume of storm water recharged	(gpy)

**Operations and Maintenance**

*Currently the City has a program in place to clean and maintain catch basins. However at this time we have not yet begun to track all of this information.*

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	Urban annually and residential & commercial area as needed	See BMP 6.B (iii)
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	(#)	
Total number of structures cleaned	(LF or mi.)	
Storm drain cleaned	(lbs. Or tons)	
Qty. of screenings/debris removed from storm sewer infrastructure		
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)		
Cost of screenings disposal	(\$)	

Average frequency of street sweeping (non-commercial/non-arterial streets)	1 time/yr	See BMP 6.
Average frequency of street sweeping (commercial/arterial or other critical streets)	6 days/week Spring through Fall	B(iv) Total of 5,562 hours.
Qty. of sand/debris collected by sweeping	(lbs. or tons)	
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	(location)	
Cost of sweepings disposal	(\$)	
Vacuum street sweepers (purchased/leased)	1	
Vacuum street sweepers specified in contracts	(y/n)	

Reduction in application on public land of: ("N/A" = never used; "100%" = elimination)	
▪ Fertilizers	(lbs. or %)
▪ Herbicides	(lbs. or %)
▪ Pesticides	(lbs. or %)

Anti-/De-Icing products and ratios	% NaCl % CaCl <sub>2</sub> % MgCl <sub>2</sub> % CMA % Kac % KCl % Sand	
Pre-wetting techniques utilized	(y/n)	
Manual control spreaders used	(y/n)	
Automatic or Zero-velocity spreaders used	(y/n)	
Estimated net reduction in typical year salt application	(lbs. or %)	
Salt pile(s) covered in storage shed(s)	Y/N	
Storage shed(s) in design or under construction	Y/N	Constructed 2001

**Name of Project:** A Demonstration of Integrated Implementation and Monitoring of Municipal NPDES Stormwater Phase II Measurable Goals

**Point of Contact:** Paul Currier, New Hampshire Department of Environmental Services, 29 Hazen Drive, Concord, NH 03301, (P) 603-271-2963, (F) 603-271-7894, [pcurrier@des.state.nh.us](mailto:pcurrier@des.state.nh.us)

**Is this a Continuation of a Previously Funded Project:** No

**Proposed Award Amount:** \$500,000

**Proposed Awardee Cost Share:** \$100,000

**Description of General Budget Proposed to Support Project:** This project is a partnership between the NH Department of Environmental Services (DES), the City of Portsmouth, and the Conservation Law Foundation (CLF). DES costs include \$280,000: two years' funding for 1.5 FTEs, and monitoring sample analysis costs. Portsmouth costs include \$180,000: two year's funding for .8 FTE; construction of at least one BMP; and outreach materials. CLF costs include two years' funding for .2 FTEs. Cost share of \$100,000 is from the City of Portsmouth and CLF: in-kind services for engineering, outreach assistance, technical assistance, ordinance review, legal research, and management.

**Project Topic Area:** #5. Storm Water Programs "Develop information and tools accessible and useable by State and local authorities that increase efficiencies for managing NPDES storm water programs."

**Project Description:** DES in partnership with the City of Portsmouth, and CLF, will conduct a demonstration project to improve the effectiveness of implementing NPDES Stormwater Phase II measurable goals for Small MS4 regulated communities. The project will also demonstrate tools for modeling, monitoring and outreach, quantitative measurements of program effectiveness and resulting water quality improvements relative to state water quality standards. The project partners will share the products, processes and lessons with other Phase II communities in NH and with other states. This project involves a unique partnership among a municipality (Portsmouth), a state regulatory agency (DES) and a nonprofit environmental advocacy group (CLF). The impetus for this project was twofold, CLF's comments on Phase II NOIs in the state and the desire of the partners to build capacity for municipal stormwater management.

The project takes a multi-stakeholder approach to directly connect the impacts of stormwater on receiving waters back to the precise human uses that generate that stormwater runoff. The project tasks, described in detail below, will be used to make this connection:

Portsmouth is well suited to a stormwater demonstration project for several reasons. First, the City is committed to improving storm water quality. Second, it is an old city with aging infrastructure and numerous water quality problems in both fresh water and estuarine receiving waters. Third, the City has the planning, public works, and legislative capacity for the project, including highly qualified and sophisticated staff attuned to the engineering, planning and human elements of storm water management. Finally, the City has a variety of drainage area types ranging from highly developed urban to medium density residential, so the results will be useful to a broad range of communities. One important aspect to note is the spatial resolution of the project. Each of the selected drainage areas will be only a small number of city blocks or dozens of acres. We believe that successful storm water management will only occur at this "human scale." Also the project approach includes outreach, education and public involvement as tools for storm water management that are integral parts of each step in the project, and not ends in themselves.

## PROJECT TASKS

### 1. Prioritize drainage areas based on the quality of their receiving waters.

Revise and refine surface water assessment units (AUs) affected by Portsmouth stormwater discharges. Determine the impairment status of each AU for aquatic life and recreation uses and identify the receiving waters most likely impacted by stormwater. Delineate stormwater drainage areas and refine land use/cover data and identify potential stormwater retrofit sites. Prioritize and select six to ten drainage areas for the project based on assessment status of receiving waters, degree of stormwater impacts to

receiving waters, land use and intensity of development, and opportunities within the drainage area to improve stormwater quality.

**Deliverables:** A revised assessment unit (AU) catalog and assessments for aquatic life and recreation of all AUs that are potentially affected by Portsmouth stormwater discharges; an updated Portsmouth stormwater collection system map showing the location of structures, direction of flow, pipe size and condition, and drainage area for each outfall; a prioritized list of six to ten drainage areas that will serve as the focal areas for the remainder of the project, prioritized by estimated.

## **2. Design and implement a monitoring plan**

Develop a monitoring and assessment strategy for Portsmouth to systematically assess receiving waters and their stormwater impacts, enabling long term documentation of water quality trends and improvements due to phase II implementation. Develop monitoring and assessment protocols to be used by municipalities to identify stormwater impacts. Design a monitoring plan that tracks water quality trends in AUs influenced by stormwater from priority drainage areas as well as the other Portsmouth drainage areas, relative to water quality standards. Include in the plan monitoring to evaluate actual reduction in pollutant loads from implementation of specific Best Management Practices (BMPs) in selected subdrainages of priority drainage areas, relative to reductions predicted in the model results of task 3.

**Deliverables:** Assessment for aquatic life and recreation for all AUs affected by Portsmouth stormwater discharges; A water quality trend report for AUs affected by priority drainage areas; A BMP effectiveness report for specific BMPs. A water quality assessment report for all affected AUs for aquatic life and recreation, relative to NH water quality standards.

## **3. Model the stormwater flows and loads in the priority drainage areas.**

Review available stormwater loading models and select an efficient water quality loading model. Perform targeted sampling to calibrate the model. Run the model to estimate existing and future loads in the selected drainage areas. Prepare a report summarizing modeling results for existing conditions and predictive model runs to guide implementation of non-structural and structural BMPs in the priority drainage areas.

**Deliverables:** A report describing the estimated existing stormwater loads for receiving waters in priority drainage areas and the expected pollutant load reductions from recommended BMPs and the effect on receiving water quality.

## **4. Create drainage area stormwater management plans.**

Identify and select BMPs for application to Portsmouth stormwater discharges in priority drainage areas, based on the specific land uses and stormwater characteristics of the drainage area. Identify effective cold climate BMPs for stormwater pollutants, including structural and nonstructural (e.g., ordinances, pollution prevention) techniques. Select the BMPs that are most likely to reduce or eliminate the pollutants as identified in Tasks 1 and 2. Estimate expected water quality benefits for selected BMPs for particular applications, including options such as retrofits (including one for immediate installation) and as requirements for future development or redevelopment in Portsmouth.

**Deliverables:** a general city-wide management plan and several drainage area-specific management plans for BMP implementation; integration of stormwater management plan results into the City's long term capital improvement plan for stormwater infrastructure.

## **5. Implement key aspects of the stormwater management plans.**

Conduct a local public outreach campaign to distribute stormwater management and control information and education materials to local citizens, city personnel and city decision makers. Implement recommended BMPs from Step 3, including nonstructural BMPs and construction of at least one stormwater retrofit in a priority drainage area. The Portsmouth Department of Public Works will develop and test a communications plan that links the local boards and municipal staff with the existing regional stormwater workgroup, the Seacoast Stormwater Coalition, as a means of identifying and addressing information exchange needs for Small MS4 communities. Portsmouth will create a survey to measure

public perception of stormwater issues prior to the outreach campaign, and a post-survey to measure public outreach success.

**Deliverables:** Installation of stormwater retrofit in priority subwatershed; implementation of non-structural BMPs and administrative mechanisms for continued implementation tracking; implementation of communications plan; and report on results of outreach success estimated through public surveys.

#### **5. Assess and disseminate the results of the project.**

The underlying project purpose is to develop effective tools to improve municipal stormwater management and resulting ambient water quality in New Hampshire's urban areas. A number of different assessments will be made of this project to quantify its validity as an approach that other communities might follow.

#### **Deliverables:**

- **Economic assessment.** Document the costs of monitoring, planning and implementation for the different types of BMPs and outreach in the project. Determine staffing levels and costs in addition to costs for the routine maintenance and long-term management of stormwater control and treatment. Inventory sources of funding available for different stormwater management tools.
- **Long-term water quality trend analysis.** Create a long-term monitoring plan for AUs affected by Portsmouth's stormwater with a statistical power analysis to understand the interaction between the number of samples, years of analysis and statistical certainty of trends. The estimated costs of this monitoring will also be reported.
- **BMP Monitoring report.** A report of targeted monitoring of selected subdrainage areas to which specific BMPs have been applied, assessing BMP effectiveness.
- **Communications plan.** A plan for communicating demonstration results to the Seacoast Stormwater Coalition. This regional group meets at least quarterly and the meetings are designed to provide a coordinated networking and training opportunity for coastal NH stormwater coordinators to assist with implementing the Phase II Minimum Control Measures. Identify and implement training, outreach materials and information that are useful to other NH Phase II communities. Outreach campaign steps include analyzing and understanding each segment of the target audience, creating messages by simplifying complex issues when possible, and distributing the message by carefully linking to the needs of the audience.
- **Guidance Documents.** Create guidance documents that show other communities how to conduct stormwater modeling, create small drainage area storm water management plans, integrate those plans into monitoring, implement tools for storm water management, and identify funding sources for storm water management.

*Describe How the Project Meets the Evaluation Criteria Specified Below: (in Section V.A.)*

**1. *The extent to which the proposed project effectively leads to the protection of water quality as identified by the priorities in this notice (25 points)*** This project will lead directly to improved stormwater management, reduced pollutant loads and improved water quality in AUs affected by City of Portsmouth stormwater discharges. The project will be implemented by a unique partnership that includes staff from a city, a regulatory agency and a national environmental organization. Improvements will ultimately occur on a priority basis for stormwater-impaired waters by the installation and use of both structural and non-structural BMPs for control and treatment.

**2. *The extent to which the results of the proposed project, or tools developed, can be transferred to others and the quality of the communication strategy to actually achieve the transfer (25 points)***. In this project, Portsmouth will serve as a testing ground for development of systematic Phase II assessment, implementation and monitoring methods and tools. The Project Team will develop transferable tools for municipal stormwater management in NH communities as well as in other states, using the technical approach taken in this project. Outreach by the Project Team will start with the existing Seacoast Coalition Storm Water Group. Statewide, results will be presented to other regional stormwater groups, already in existence, and similar to the Seacoast Coalition. The NH Department of Transportation is a major partner with DES in facilitating these groups. Project results are applicable to stormwater management at all scales and not just in phase II areas. Other stakeholders such as developers, contractors, engineers and municipal boards will also be targeted for specific outreach efforts by DES to communicate project results and recommendations.

**3. *Meaningful environmental benefit will result from the proposed work, and the quality of the evaluation component to assess or measure the environmental outcome(s).*** Improvements in stormwater management will result in reduced stormwater pollutant loads to assessment units affected by Portsmouth. Water quality in these AUs is expected to improve as a result. The water quality monitoring program created by the project will produce data to evaluate water quality improvements using statistically valid trend evaluation methods. The monitoring program will also assess the effectiveness of particular BMPs in pollutant load reduction. The success of the outreach campaign will be evaluated using surveys including both process and impact indicators.

**4. *The capability of the applicant to effectively perform and complete the tasks and deliver the products of the project or activity.*** (15 points) DES will be the lead agency and memoranda of agreements will be developed with CLF and Portsmouth. DES routinely administers and implements projects funded by EPA grants, typically involving multiple stakeholder groups in the process. DES staff have extensive experience with indicator development, watershed management, monitoring and modeling, and a reputation for delivering high quality work products. Natalie Landry, who has extensive experience in coastal water quality projects, will be assigned as the project manager and other staff will support the manager in various capacities including data management, analysis and interpretation, indicator development, outreach planning and implementation, and technical assistance to project partners.

The City of Portsmouth has a well-staffed and capable public works department, including a staff person for planning stormwater phase II implementation. The City has a legal staff and a well-structured communication process between city departments, elected officials and appointed municipal boards and committees.

Conservation Law Foundation is a mature environmental advocacy organization with a NH office staffed by lawyers that are familiar with and have commented to EPA on implementation of the stormwater phase II general permit in New England. Their review of project tasks and elements in light of Clean Water Act expectations and requirements will be a robust, valuable part of the project, as well as their assistance with developing concise, effective outreach materials and events.

**5. *Cost effectiveness and reasonableness of the proposal.*** (15)

The Project Team has developed reasonable estimates of the cost to successfully complete this project. The project can be successfully completed for the proposed budget. And, the systematic approach that will result is likely to be highly transferable to MS4 communities across the country, thus adding significant value to the national efforts to better manage stormwater.

**6. *Cost share or leverage other resources. Eligible and non-eligible costs.*** (5)

Portsmouth will contribute \$80,000 of in-kind work and materials, including city public works engineering and planning staff time, time of municipal boards and committees spent reviewing authorizing project implementation, and crew and equipment time implementing recommended BMPs

CLF will contribute \$20,000 of in-kind legal and technical staff time in review and recommendation of project tasks and elements, and assistance with outreach materials.

Sources of match are considered eligible and make up 16% of total project costs.