Municipality/Organization:	Town of Exeter, NH
EPA NPDES Permit Number:	**NHR041007**
Annual Report Number & Reporting Period:	**Year 13** **April 1, 2015 – March 31, 2016**

NPDES PII Small MS4 General Permit
Annual Report
(Due: May 1, 2016)

Part I. General Information

Contact Person: Jennifer Mates, P.E. Title: Assistant Town Engineer

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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: Russell Dean

Title: Town Manager

Date: 4/28/16

Part II. Self-Assessment

The Town of Exeter has completed the required self-assessment and has determined that our municipality is in compliance with all permit conditions, with the possible exception of the following provisions:

Part 1 C. Discharges to Water Quality Impaired Waters

1. The permittee must determine whether stormwater 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.

The Town of Exeter has been studying the Squamscott and Exeter Rivers because of a condition set in a new wastewater treatment facility (WWTF) permit. The permit has imposed stringent discharge limits on nitrogen. The permit requires: development of total nitrogen non-point source (NPS) and point source accounting system; a nitrogen control plan be developed by 2018; a description and accounting of the activities by the town as part of its nitrogen control plan; and description of activities conducted which affect nitrogen in these rivers.

The town has participated in a Water Integration for the Squamscott and Exeter Rivers (WISE) study over the past several years, which addresses some of the issues required by the WWTF permit. Officials from the Towns of Exeter, Stratham and Newfields worked with a team from Geosyntec Consultants, the University of New Hampshire (UNH), Rockingham Planning Commission, Consensus Building Institute and the Great Bay National Estuarine Research Reserve to develop the study. The final report was made available in December 2015. The WISE group studied integrated planning opportunities with neighboring communities to meet regulatory requirements for treating and discharging stormwater and wastewater and to find effective and affordable means to meet water quality goals.

The WISE project:

Estimated baseline stormwater nitrogen loads for the town
Determined the most cost-effective BMP's for load reductions
Established continuing water quality monitoring plans for the river
Analyzed and mapped septic systems within 200 meters of major streams
Estimated substantial budget increases to the town for implementation
Obtained tentative approval for fulfilling the required 2018 Nitrogen Control Plan

The town is also participating in the Great Bay Pollution Tracking and Accounting Pilot Program (PTAPP) coordinated by NHDES. The purpose of PTAPP is to enable coordination on nitrogen tracking and accounting for the Great Bay region. The Town developed a draft accounting worksheet for possible future use for land developers.

The Town retained Tighe & Bond, in July 2015, to perform an Evaluation of Exeter's Stormwater Management Program and provide an Action Plan for Stormwater Program Improvements. The technical memorandum identified recommended actions for short- and long-term stormwater program improvements, as well as an evaluation of Exeter's compliance with the current Small MS4 Permit. The Town has determined that the municipality is in compliance with the current permit conditions and has taken steps to improve the Stormwater Management Program based on anticipated future Small MS4 Permit requirements.

An on-going project that will affect the water quality of the Exeter River is the removal of the Great Dam. The town approved $1.79 million in funds for this removal project in March 2014 after extensive analysis and debate. The final design was finished and all permits were obtained in March 2016. A contractor selection process to remove the dam was started in February 2016. Several contractors were pre-qualified and bids were scheduled to open in April 2016.The Exeter River has an impounded reach within the town that is listed on the 2012 303(d) list of impaired waters. With the removal of the dam, the river will be restored to fully support designated uses of Aquatic Life Use support and Primary Contact Recreation. Additionally, without the impoundment, the river will be free of water quality impediments to fish migration, and will be allowed to return to a state of geomorphic equilibrium. Ultimately, the river within Exeter will have dissolved oxygen concentrations sufficient for maintaining aquatic life and chlorophyll a, and bacteria concentrations that do not pose a risk for primary contact recreation.

The Town retained Horsely Witten Group to evaluate possible adjustments to buffer width regulations in the Epping Road Tax Increment Finance District.

A project that will improve the water quality of the Squamscott River is the Squamscott River Outfall Restoration Project, which began in October of 2015. Unitil, in conjunction with the Town of Exeter and the NHDES, conducted an environmental restoration project in the Squamscott River adjacent to Swasey Parkway. The project removed sediment near a stormwater outfall that had been impacted by the operation of a Manufactured Gas Plant at the corner of Green and Water Streets during the period of 1864 to 1955.

An NHDES 319 Nonpoint Source Grant for Water Integration for the Squamscott – Exeter (WISE) Integrated Plan Ph 1 – Lincoln Street Subwatershed Nutrient Control was approved by the Town for $75,000. A contract with Waterstone Engineering in the same amount was approved to perform the work in the grant. The Town is awaiting final approval by the State.

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PUBLIC EDUCATION & OUTREACH

BMP #1 DISPLAY AT ALEWIFE FESTIVAL

The festival no longer takes place.

ADDITIONS

2015 Spring clean up of Swasey Parkway Norris Brook Buffer. The Exeter Conservation Commission (ECC) in partnership with the Trustees of Swasey Parkway led volunteers in a clean up of the buffer including removal of invasive plants. The following two events were held:

- April 11, 2015, volunteers from Exeter Congregational Church participated. All participants were given an overview of the function of a healthy stream buffer, invasive plants.
- April 18, 2015, Cub Scout Pack 177 members and parents joined ECC and Trustees for Swasey Parkway to conduct a clean up of the Parkway. All participants were given a presentation about stormdrains, how they differ from sanitary sewers, how they collect dirt, leaves, and why they should be cleaned. They also learned about where the water goes and how they outfall at rivers or wetlands.

BMP #2 STENCIL STORM DRAINS

All catch basins in town were stenciled or touched up with the message “Attention – Drains to Local Waterway” as needed.

BMP #3 STORMWATER VIDEO ON LOCAL PUBLIC STATION

No videos were played on the local public station; however, the Town has the following educational videos on the town website: “Stormwater Rubber Duck” PSA; “Devil Duck Lawn Care” PSA; “Rain Storm” Radio Ad; and, “Car Wash” Radio Ad.

The Conservation Commission and River Study Committee meetings provide information regarding the local stormwater program and are televised. The stormwater education program “Think Blue Exeter” is a subcommittee of the River Study Committee, so their activities are presented during these televised meetings. Also, the Board of Selectman’s televised meetings included presentations about the progress and results of the WISE project.

BMP #4 DISPLAY AT TOWN BUILDING

Permanent educational signs: Stream buffer at a popular local park. This display is located adjacent to the Squamscott/Exeter Rivers and highlights how rain garden and stream buffers functions can improve water quality.

During the month of September, a “Smart Septic” display was located at the town office, along with handouts. The display addressed proper septic system construction and maintenance

ADDITIONS-

Town Website and Facebook pages –

- "Think Blue Exeter" – general stormwater education, water quality in Exeter's streams & rivers, simple changes to reduce stormwater pollution.
- "Drug Take Back Day" – Exeter Police Department participates in National Drug Take Back Day, which allows residents to drop off household and prescription drugs at the police department to prevent improper disposal.
- "Drug Drop-Off Box" – Exeter Police Department – The Exeter Police Department has taken a step further to help protect our waterways by providing a safe, sustainable and secure method to dispose of unwanted and/or expired household and prescription medications by installing a secure container in the lobby of the Police Department.
- "Household Hazardous Waste Collection Day" – Exeter continues to host the once per year collection of household hazardous waste. The collection is coordinated by the Rockingham Planning Commission and includes Exeter and four other communities.
- Announcements for Spring 2015 and Fall 2015 leaf collection, and January 2016 Christmas tree pickup. Each Town resident was permitted to have ten bags of leaves picked up for free in the spring and fall 2014. The leaves were distributed to a compost pile and residents are allowed to use the compost.

Educational Speakers, Tours, and Information -

- Exeter Conservation Commission's Guest Speaker Night – May 2015. Great Bay - Piscataqua Waterkeeper discussed the challenges facing the Great Bay including the water quality of the estuary and Exeter's connection to the Bay via the Exeter/Squamscott River.
- Exeter DPW Sump Pump Removal program – The Town distributed information regarding the Sump pump Removal Program, including a response questionnaire and educational materials, to residents in May 2015.

Newspaper Articles –

- An article informing the public that river restoration work, including dredging of contaminated sediments to improve the functionality of a stormwater outfall, was being conducted in the Squamscott River.
- Announcements for Spring 2015 and Fall 2015 leaf collection and January 2016 Christmas tree pickup.
- Announcements for Household Hazardous Waste Collection Day and Drug Take-Back Day

PUBLIC PARTICIPATION

BMP #5 PUBLIC NOTICE

Completed 1st year

BMP #6 REVIEW NEED FOR STORMWATER COMMITTEE

No additional review for a stormwater committee; however, the education program "Think Blue Exeter" is a subcommittee of the Exeter River Study Committee. Information on activities of the subcommittee is presented at various meetings, which are televised and open to the public. The majority of committee members are local residents.

The Exeter River Study Committee conducted many outreach presentations dealing with the removal of the Great Dam which would return the lower Exeter River to its natural state improving water quality and native fish populations.

BMP #7 STENCIL STORM DRAINS

All catch basins in town were stenciled with the message "Attention – Drains to Local Waterway" by town employees and the stencils are repainted as needed.

ADDITIONS-

- The CAPE (Climate Adaptation Plan for Exeter) study included a large community involvement component. The study estimated the effects of climate change within the Town. The study included: large public meetings, neighborhood and stakeholder focus groups, meetings with town staff and volunteer boards. This CAPE study was completed in the winter of 2015.
- "Exeter Rain Barrel Program" – Exeter Conservation Commission offered reduced rates on rain barrels during the month of May 2015 (13 sold in 2015)
- Volunteer River Assessment Program , which monitors 10 sites on the Exeter River and Little River, between April and August (3 to 4 times each). The Exeter Conservation Commission and Town staff conduct the annual sampling for dissolved oxygen, conductance, pH, turbidity, and temperature.
- This is a part of the NHDES state-wide river monitoring program.
- Exeter-Squamscott River Local Advisory Committee (ESRLAC) – volunteers representing the twelve communities in the Exeter-Squamscott River watershed celebrated its 19th year of stewardship of the river and its watershed in 2015. Work by ESRLAC included discussions with municipalities and state and federal agencies about water quality in the river and its impact on water quality in Great Bay, the review of development proposals along the river corridor, and assisting with stormwater management projects. Several ESRLAC members participated in Project WISE.
- Annual Fish Ladder Tour – May 2015. Presented by NH Fish and Game Department, targeted at the importance of fish ladders. The annual tour of the fish ladder located next to the Great Dam in downtown Exeter. As always, this event attracted a large crowd interested in learning about the annual fish migration from the salt water of the Squamscott River to the fresh water of the Exeter River.

ILLICIT DISCHARGE DETECTION AND ELIMINATION

BMP #8 SURVEY OUTFALLS

The Town retained Wright-Pierce, in December 2015, to perform dry-weather outfall inspections and water quality screenings at a selected group of MS4 outfalls. As part of this effort, eleven (11) outfall locations were

visited, inspected, and photographed. The inspection forms and photos for each of these outfalls are on record with the Town in paper and electronic formats.

BMP #9 MAP/UPDATE OUTFALLS

The Town retained Wright-Pierce, in December 2015, to perform dry-weather outfall inspections and water quality screenings at a selected group of MS4 outfalls. As part of this effort, eleven (11) outfall locations were verified in the field and revisions were made to the Town's GIS mapping system as necessary.

BMP #10 ORDINANCE TO PROHIBIT NON-STORMWATER DISCHARGES

Existing Storm Drainage Ordinance prevents illegal discharges to the drainage system, with fines. The ordinance will be reviewed and updated as needed after the new Small MS4 Permit for New Hampshire is issued final.

BMP #11 CREATE EDUCATION FOR BUSINESSES

"Think Blue Exeter" – General Stormwater Education - No specific education for businesses this year.

BMP #12 HOTLINE

Police Dispatch and Exeter Department of Public Works

BMP #13 SAMPLE SUSPECT OUTFALLS

The Town retained Wright-Pierce, in December 2015, to perform dry-weather outfall inspections and water quality screenings at a selected group of MS4 outfalls. Eleven (11) outfalls, a tributary to the Little River, Exeter River, Squamscott River and Norris Brook were inspected and sampled in December 2015. The inspection consisted of verification of the outfall location, completion of dry weather screening, water quality field testing (when flow was present), reconnaissance of potential nearby pollution sources and a photograph log.

Flow was present during these dry-weather inspections at five (5) of the 11 outfalls. Water quality screening was conducted at those 5 outfalls. Six (6) of the 11 outfalls were flagged for follow-up water quality sampling based on either physical condition, water quality observation and field test results, inability to field locate or further questions regarding outfall identification. Follow-up work has not yet been performed for these systems.

BMP #14 TEST SUSPECT CONNECTIONS

Infiltration/inflow investigations were performed in several locations throughout town, including manhole inspections, dye testing, smoke testing, building inspections and flow evaluations.

Approximately 3800 feet of stormwater lines were cleaned and inspected via CCTV camera on Water Street , Lincoln Street , Center Street and 300 feet of Front St.

BMP #15 CORRECT ILLICIT CONNECTIONS

No corrective actions were taken to remove illicit connections to the stormwater collection pipelines.

ADDITIONS –

- The Town maintains 18 "pet waste station" (bags and disposal container) located around Town. A full list of the locations is provided on the Town's website.
- The CAPE (Climate Adaptation Plan for Exeter) study included a stormwater collection system mapping component. The study estimated the effects of climate change within the Town. The study included: modeling/technical team focused on creating three models for Exeter's river and stormwater systems; evaluating water quality, flooding, and stormwater aspects of watershed systems; delineating stormwater catchments in the central urbanized areas of Town. This CAPE study was completed in the winter of 2015.

CONSTRUCTION SITE RUNOFF CONTROL

BMP #16 UPDATE SITE REGULATION

Completed – The Town will review and update the stormwater regulations as needed after the new Small MS4 Permit for New Hampshire is issued final.

BMP #17 SITE PLAN REVIEW FOR ALL CONSTRUCTION PROJECTS GREATER THAN 1 ACRE

The Technical Review Committee (TRC) reviews all development greater than 1 acre, with a focus on construction and post-construction erosion controls and stormwater Best Management Practices (BMPs).

BMP #18 SITE INSPECTIONS

Projects are inspected throughout construction for all development greater than one acre to monitor stormwater management and erosion controls.

BMP #19 DEVELOP AND IMPLEMENT CONSTRUCTION SITE INFORMATION AND REPORTING PROGRAM

Town construction projects are posted on the town website and social media sites with contact information.

An emergency contact list for all privately owned construction projects is updated regularly and distributed to emergency response personnel.

POST CONSTRUCTION RUNOFF CONTROL

BMP #20 IMPLEMENT SITE APPROPRIATE NON-STRUCTURAL, STRUCTURAL, INFILTRATION, AND VEGETATIVE PRACTICES

BMPs are in place as per Planning Board approved plans. Seven (7) of the development/redevelopment projects, reviewed by the Planning Board in 2015, included at least one Best Management Practice (BMP) such as a rain garden or tree box filter.

Addition - Stormwater BMP's are being incorporated into town projects. Two water quality tree filters are being installed in an upcoming sidewalk project in the downtown area.

BMP #21 DEVELOP AND IMPLEMENT LONG TERM OPERATION AND MAINTENANCE PROGRAM FOR BMPs

Maintenance Agreements and Maintenance Plans are implemented during planning and construction process

ADDITIONS –

- Stormwater inspections were performed at several private developments with deficiencies identified.
- A downtown sidewalk replacement project on Water Street is in the planning and preliminary design phase, targeting construction in 2016. The downtown area has a high percentage of impervious area. This project will incorporate several retrofitted sidewalk tree box filters.

POLLUTION PREVENTION AND MUNICIPAL GOOD HOUSEKEEPING

BMP #22 CREATE POLLUTION PREVENTION & GOOD HOUSEKEEPING PROGRAM FOR MUNICIPAL EMPLOYEES

The following training was completed within the last year:

- Several of the highway department employees hold NH-DES solid waste certification and train annually for best management practices to operate the transfer station.
- All town Highway Department employees involved in snow plowing were trained on equipment calibration, attended UNH T2 Green SnowPro training course, and received NHDES Salt Applicator Certification;
- The Town's Natural Resource Planner is working with the "Soak Up the Rain NH" group to identify an area in Exeter for a project. Representatives from SoakNH, NHDES, and ECC walked the neighborhood of Westside Drive and Marshall Farms talking with residents. Initial planning for implementing a rain garden project in the Westside Drive neighborhood began and is anticipated for construction in 2016.

The Exeter DPW Director is a member of the WISE program and the Exeter Town Planner is a member of the CAPE program.

The Town attends regular meetings of the Seacoast Stormwater Coalition. The town engineer presented findings of last year's BMP review to the group.

BMP #23 SWEEP STREETS

All Town streets were swept twice (once in spring and once in fall). The streets located within the downtown area were swept bi-weekly during the warm months of the year. In 2015, new street sweeping equipment was purchased by the Town for improved sweeping capabilities.

BMP #24 INSPECT CATCH BASINS

A total of 565 catch basins were documented with individual inspection forms to be entered into the Town's GIS database.

BMP #25 CLEAN CATCH BASINS

A total of 565 catch basins were cleaned in this year.

LIST OF ATTACHMENTS

1. WISE Final report, December 2015
2. PTAPP 2- year Implementation Framework
3. Nitrogen Accounting Worksheet
4. Squamscott River Outfall Remediation Project summary
5. Swasey Park – Norris Brook Spring Cleanup
6. Think Blue Exeter website
7. Septic Week announcement
8. Household Hazardous Waste Day announcement
9. Spring and Fall leaf pickup announcement
10. Great Bay Waterkeeper public presentation announcement
11. Sump Pump Removal Program flyer
12. Squamscott River Outfall Remediation newspaper article
13. Rain barrel sale announcement
14. VRAP data summary
15. ESRLAC annual report
16. Fish Ladder Tour announcement

WATER INTEGRATION FOR SQUAMSCOTT EXETER (WISE)

Preliminary Integrated Plan

Final Technical Report

December 2015

Prepared By:

Geosyn
consu

National Estuarine Research Reserve System

University of New Hampshire

cbi Consensus Building Institute

Rockingham Planning Commission

Prepared For:

Towns of Exeter, Stratham, and Newfields, New Hampshire

Great Bay Pollution Tracking and Accounting Pilot Project

Two Year Implementation Framework:
Sustaining Progress toward Regional Pollution Tracking and Accounting

PURPOSE

This document provides a road map and describes next steps for sustaining progress for the next phase of the Great Bay Pollution Tracking and Accounting Pilot Project (PTAPP). Phase of PTAPP resulted in significant progress toward developing a framework to implement regional coordination; however, participants agree future phases and additional work are needed to achieve regional coordination.

Introduction and Description

Coastal watershed communities face regulatory measures to improve water quality in New Hampshire's Great Bay and its tributaries. The requirements include tracking of pollution control activities including point and non-point sources. Implementing tracking and accounting measures that effectively and accurately quantify water quality improvements is a technically challenging and potentially costly endeavor. Communities in the region agree that on-going, collaborative coordination by permitted and non-permitted entities and state and federal regulators is needed to leverage scarce financial resources and develop an effective and affordable system.

Phase One of PTAPP was initiated in 2015 to bring communities together to develop a regionally coordinated approach that leverages existing resources and develop regional goals for the long term implementation of a coordinated pollutant tracking and accounting system.

Phase One of PTAPP consisted of a series of six meetings designed to provide a forum and a process to identify key components, needs and next steps for implementation of a regional approach. Phase 1 goals include progress toward development of 1) uniform tools to track pollution control activities, and 2) regionalized accounting methods to credit pollutant load reduction resulting from the implementation of control activities. A summary of progress to-date and anticipated next steps follows.

Phase 1 Outcomes

The PTAPP participants succeeded in meeting the two Phase 1 goals by active participation in six facilitated workshops. Eight municipalities participated in the project, including four consulting firms that have worked with the participating communities. Other participants included: state and federal agencies, regional planning commissions, the Piscataqua Region Estuaries Partnership, University of New Hampshire, Southeast Watershed Alliance, and others (Table 1.). Participants recognized and agreed that a regional approach is the most cost effective and efficient way to meet tracking requirements.

Collectively, PTAPP participants developed a group decision-making process, identified key tracking items and needs, and made progress toward determining necessary accounting methods. Phase 1

resulted in a Two-Year Implementation Framework that identifies next steps and outcomes for subsequent phases.

Phase 1 Outcomes: PTAPP Foundational Elements

- Project teams developed and defined roles and responsibilities and a group decision-making process was established
- Consensus definitions of "tracking" and "accounting" created (See Glossary of Common Terms: PTAPP Glossary)
- Tracking Matrix developed to describe activities municipalities will track and defined at the category and subcategory level; based on regulatory requirements and other local needs (Final Tracking Matrix)
- Rationale, benefits, interest and commitment to regional approach confirmed
- Discussion of next steps for developing accounting methods
- Two Year Implementation Framework developed to guide next steps.

Phase 1 meeting notes and other resources can be found on the PTAPP website:
http://www.unh.edu/unhsc/ptapp

Phase 1 Outcomes: Project Teams - Sustaining the Process

An important outcome of Phase 1 included the establishment of two key process teams: a **Regional Stakeholder Team** and a **Project Management Team**. As the Phase One process evolved, all participants recognized there is a clear need for continued participation from both teams in future phases of the effort (Table 1.).

- **Regional Stakeholder Team (RST)**: Includes an interdisciplinary group of regional participants who represent a range of interests. The participants include municipalities, state and federal agencies, regional planning commissions, and other key stakeholders.

  RST Role: The RST participated in PTAPP meetings and provided input during the process to develop key outcomes and products.

- **Project Management Team (PMT)**: Oversees programmatic implementation for the process. This team includes representatives from funding agencies and facilitators including NHDES (Coastal Program and Watershed Assistance Section), Rockingham Planning Commission, Strafford Regional Planning Commission, and the UNH Stormwater Center.

  PMT Role: The PMT developed meeting agendas, refined process outcomes, and provided grant/project management.

During Phase 1, the RST continuously reviewed, discussed, and established roles for current and future phases of the project. Additionally, RST meeting participants identified resource needs to enable participation in future phases. The PMT met frequently during Phase One and continued to refine general and specific project roles for both teams.

Table 1. PTAPP Process Participants and Roles

Project Team	Participant Description	Process Role		Resource Needs for Continued Participation
		Phase 1	Future Phases	
RST	**Phase 1 Municipalities:** Dover, Durham, Exeter, Lee, Newmarket, Portsmouth, Rochester, Stratham	Participation – provide local input and reality checks	Continued participation; including additional communities as identified	Funding may be needed to enable continued participation of municipal consultants
PMT & RST	UNH Stormwater Center	Project management & technical facilitation	Participation could increase to provide additional technical assistance	Funding would be needed to support staff participation
PMT & RST	NH Department of Environmental Services	Project management, facilitation, funding	Continued participation	Evaluate role and staffing requirements for future phases
RST & PMT	Regional Planning Commissions	Participation – serve as regional planning resource & project management	Continued participation	Funding will needed to support RPC staff participation
RST	US EPA	Participation and technical assistance	Continued participation	Evaluate and define
RST	Piscataqua Region Estuaries Partnership	Participation and resource leveraging	Continued participation	Evaluate interest and define roles
RST	Southeast Watershed Alliance	Participation	Potential for increased participation depending on needs	Evaluate capacity and define roles
TBD	The Nature Conservancy	None	TNC has active oyster restoration program in Great Bay and has conducted extensive research on benefits of implementation –	Evaluate interest and define role

			Technical Panel contributor	
TBD	US Department of Agriculture	None	Assistance on technical panel for determination of agricultural BMPs and load reduction potential	Evaluate interest and define role
	University of New Hampshire Cooperative Extension	None	Assistance on technical panel for determination of fertilizer BMPs and load reduction potential	Evaluate interest and define roles

Phase 1 Outcomes: Benefits and Rationale for Moving Forward

During the six Phase One meetings, participants identified three key benefits to justify moving forward to further develop and implement a regional approach for pollution tracking and accounting.

Benefits

- **Cost Savings**: A regional approach will generate and leverage shared financial and technical resources thereby reducing the burden of cost and effort for municipalities

  Regulatory Compliance: Tracking items at the category and sub-category level were developed and reviewed during Phase One (Final Tracking Matrix). The Tracking Matrix includes activities that will fulfill regulatory requirements. . It also includes activities that non-regulated and MS4-waiver communities should consider to avoid future waiver revocation or invocation of residual regulation authority by EPA.

- **Coordination with other Regional Efforts**: The Great Bay region has a number of related efforts underway. The PTAPP products and process should be used to enhance and leverage projects with related goals

Next Steps: Where do we go from here and how do we get there?

The Phase 1 process resulted in a foundation for further development of a regional tracking and accounting approach; however, additional phases of PTAPP are needed to make continued progress toward developing and sustaining a regional system. Future phases will require additional financial, technical, and collaborative resources.

The **Two-Year Implementation Framework** will guide the PTAPP process through the next steps toward implementing a regional pollution tracking and accounting program. The framework recognizes that over the next two years, interim pilot phases may be needed to build a strong foundation for widespread implementation of regional pollution tracking and accounting (Figure 1.). A description of the two year framework, anticipated phases and key tasks follows.

It is anticipated that the Regional Stakeholder and Project Management Teams will continue to participate in the next phases of the project as needed and described.

Phase 2: Pilot Tracking Program and Conceptual Planning for Accounting Methods

The next phase of PTAPP will include implementation of a pilot tracking program for several communities in the region. This will involve direct technical assistance to help communities implement tracking for items described in the Tracking Matrix and will make progress toward identifying items and methods best suited for tracking at the regional level.

Concurrently during this phase, progress will be made toward developing accounting methods for tracked items.

Implement Pilot Tracking Program

Tracking efforts will be piloted both locally within select communities and regionally. The Tracking Matrix will serve as the foundation for the pilot program. Two tracks are anticipated:

1.) **Local Tracking Efforts**: Phase Two will provide direct technical assistance to help pilot communities to evaluate accuracy, efficacy and additional needs for implementing tracking at the local level for activities described in the Tracking Matrix. PTAPP will offer technical assistance to further define and identify tracking elements and assist with translation to functional units of measure such that long term trends in land use and NPS management can be further understood.

Several communities have made progress toward developing local tracking approaches through updated NPDES permit requirements. PTAPP will leverage resources from these efforts to develop a common tracking sheet to be used by participating communities.

2.) **Regional Tracking Efforts**: A subcommittee will be established to work with RPCs and DES to consolidate major tracking items that can be developed regionally (GIS and OneStop) into a single database or report. This effort would likely have a five year reporting timeframe and would overlap or parallel some of the local tracking elements that would be reporting similar information on an annual timeframe. Deliverables would be a single report for all participating communities on long term changes with respect to land use change and septic developments. A key component of the regional effort would be ensuring that aerial photography is

flown/created and that funding is secured to work with DES and RPC and UNH GRANIT partners to complete the analysis and comparative reporting on the first five year report period between 2010-2015.

Milestone: The Tracking Matrix is piloted in select communities to determine feasibility, economics and efficacy of selected metrics. Attention will be paid to long term practicability of selected metrics as well as effective time scales and cooperative reporting methods so as to reduce overall economic burdens and maximize regional efficiencies.

Accounting Methods: Develop Conceptual Process

The development of regional accounting methods to quantify load reductions achieved through implementation of tracked NPS management activities will likely be a complex process as it is of primary concern for both regulatory interests (EPA) and community representatives. For some tracking items in the Tracking Matrix, such as impervious cover increases and stormwater best management practice (BMP) implementation, there are advanced regional methods that either have been or are nearing development. These methods have largely been pioneered by EPA Region 1 and are part of a tracking tool developed to assist local communities implementing tracking and accounting efforts associated with impaired waters like the Charles River and Lake Champlain watershed areas. However, for other tracking elements, such as fertilizer reduction programs and other outreach efforts, load reduction estimates are unknown and will need to be researched and developed.

During Phase 2, a conceptual process will be developed to enable development of regional accounting methods for tracked activities. Key process tasks, participants, roles, and costs will be identified and shared with regional partners for input.

Milestone: A conceptual process is defined, described, and shared with regional stakeholders for input.

Phase 2 Timeframe: Fall 2015 – Winter 2017

Phase 3: Evaluate Pilot Tracking Program and Formalize Accounting Process

This phase of the project will focus on evaluation of the pilot tracking program and will solidify the approach for developing regional accounting methods.

Tracking Program Evaluation

Local and regional pilot efforts will be evaluated to identify critical modifications and resources required to scale up to include additional communities. The evaluation will focus on a review of the utility and level of effort required for each tracked item, identification of additional technical and financial resources, and a review and refinement of stakeholder roles.

It is anticipated that some tracking efforts may be more manageable and have higher accuracy at a regional scale. The opposite could be true for other efforts. This comparison should provide

information to guide future direction and tool development and will be an important part of identifying the appropriate scope and scale of all tracking efforts that emerged from PTAPP Phase One efforts.

Milestones:

- Refined matrix of practical regional tracking items with appropriate time scales, methods, and roles
- Description of technical and financial resources needed to implement regional tracking for additional communities
- Sustainable business model identifying local and regional ownership roles and opportunities
- Funding secured to implement the regional tracking program in additional communities
- Identification of process and methods to include non-regulated communities
- Evaluation of database options for tracking tool

Formalize Process for Development of Regional Accounting Methods

Based on feedback from stakeholders' review of the conceptual framework, a formal process for developing accounting methods will be established. Key process tasks, costs, participants, and roles will be described.

Milestone: Process is described and funding is secured to implement.

Phase 3 Timeframe: Fall 2016 – Fall 2017 (Note: Overlap with Phase Two is anticipated)

Phase 4 and Beyond: Implementation of Regional Tracking Program and Process for Completing and Implementing Accounting System

Regional Tracking Program

Once Phases 2and 3 are completed, it is anticipated that technical and financial resources will be in place to implement regional tracking with additional communities. Additionally, local and regional roles and responsibilities will be defined and participants will have a clear sense of benefits for participation.

Accounting Method Development

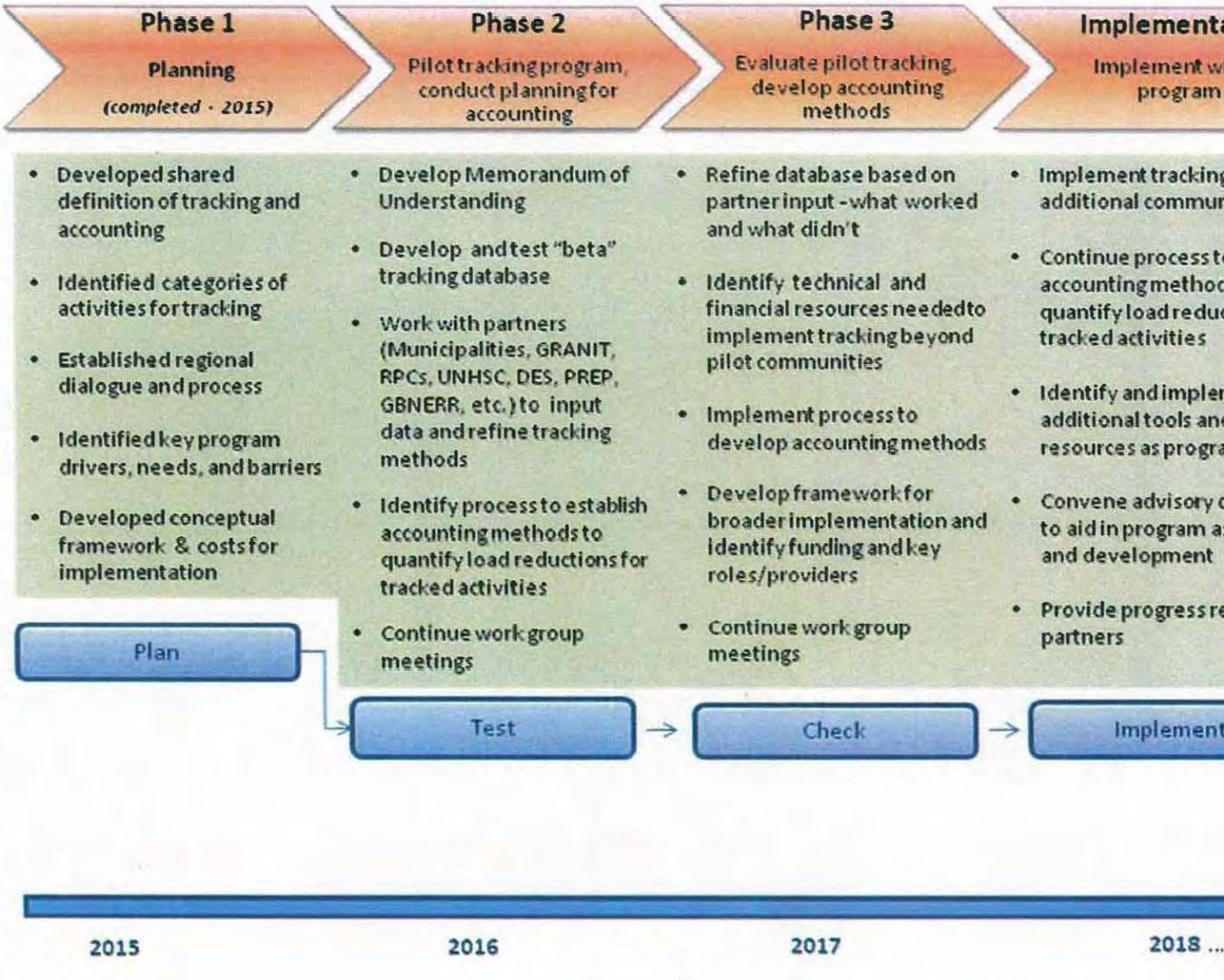
The process for developing accounting methods will be implemented. This is likely to include a series of expert panels, stakeholder meetings, comprehensive literature reviews and other steps that will be needed in what is likely to be a highly iterative, long term process.

Phase 4 Timeframe: Fall 2017 and beyond (Note: Accounting implementation could happen sooner if opportunities and resource to fast-track the effort arise)

It should be noted that as the program moves forward into Phase Four and beyond, continual evaluation and adaptive management of tracking and accounting methods will be needed to ensure economic and programmatic practicality. Additionally, on-going regional stakeholder participation will be critical through all phases of the project to ensure program success.

PTAPP: Implementation Framework

Regional Pollution Tracking and Accounting



Conceptual Budget and Tasks for Phases 2 and 3

Phase 2: Pilot local tracking efforts and explore regional scale tracking efforts

Pilot local tracking efforts in two communities, explore regional scale tracking efforts, and establish process for how to develop accounting methods.

This task will involve input and direct technical assistance from the Project Management Team which includes the NHDES, NHCP, the UNHSC and the RPCs (Strafford and Rockingham). In addition it would likely require the assistance of a computer programmer or database developer. Estimates for costs are provided below and include GIS work, meetings between representatives of the Project Management Team and each of the pilot communities, and technical assistance with Tracking Matrix implementation. For simplicity, two pilot communities (one in Rockingham County and one in Strafford County) have been used for this estimate. Additional pilot communities could be added if interest and funding is identified.

Budget Item	Estimated Budget	Notes
Technical assistance for pilot committee 1	$10,000	Tentatively planned for Newmarket
Technical assistance for pilot committee 1	$10,000	Tentatively planned for Exeter

Task Total for 2 Pilot Communities: $20,000
Additional communities: $10,000 per community.

Specific tasks to include:

- Develop a common tracking form to be used by participating communities.
- Explore possibilities and opportunities of regionalizing reporting
- Develop an annual report template for use by towns to satisfy EPA permit requirements
- Work with RPCs and NHDES to develop regional tracking resources (GIS and OneStop) into a single database or product that can be shared with the larger PTAPP advisory board
- Coordinate meetings with pilot communities, the Regional Stakeholder Team, and Project Management Team

Phase 3: Establish Process for development of regional accounting methods, evaluate tracking process, review databases

Personnel: This task will involve the input and assistance from the Project Management Team which includes the NHDES, NHCP, the UNHSC and the RPCs (Strafford and Rockingham). In addition it would likely require the assistance of an expert panel to spearhead the development and defense of

accounting metrics. At minimum there should be 4 subcommittees to start with that parallel the subcommittees that were formed to work on the tracking matrix: Septic, Land Use Changes, Best Management Practices, and Fertilizer Controls. Subcommittees should work with EPA Region I to establish current accounting metrics that have been developed through regional efforts (i.e. BMP DSS

Budget Item	Estimated Budget	Notes
Technical Assistance to develop regional tracking initiatives	$40,000	Work with RPC, SRPC, NHDES and others to develop regional tracking tools.

Total Cost: $40,000

Specific tasks to include:

- Create conceptual and final process for developing methods
- Work with technical expert panels to develop a common accounting metrics for use by participating communities to quantify load reduction estimates for pollutant control activities
- Develop an annual report template that could be submitted to EPA to satisfy permit requirements
- Coordinate meetings with pilot communities, the Regional Stakeholder Team, and Project Management Team

Final Budget Note: The conceptual budgets presented here depict a **bare minimum** expense. With more resources this project could potentially develop processes, tracking tools and templates that are more immediately useful and defensible. It is assumed that additional expenditures for communication personnel, database developers and collaboration facilitators could not only extend the applicability of the results to more communities but could also build trust and commitment amongst project participants which will lead to a greater probability of practicable and sustainable success.

Next Steps

The Project Management Team will work with municipal partners and the RPCs to more fully develop the budgets and tasks for each phase. Funding will be identified to support the next phases. The PTAPP dance will continue.

Town of Exeter, NH

Land Use Development Tracking Worksheet

Map / Lot No.	Zoning District	Project Name	Exeter File No.
1	2	3	4

Planning Board No.	Approval Date	Occupancy Date	Source Reference Material
5	6	7	8

Within Shoreland Protection	Name of Water Body	Distance from Water (Ft)	Buffer Size (SF)
9	10	11	12

Land To	Turf / Grass	New Impervious	Imp. Removed	Disconnected Imp.	Agr. / Pasture
(SF)	13	16	19	23	27
Previous	14	17		24	28
Soil Type(s)	15		20	25	
Percent Disconnected		18			29
Infiltration Rate			21		
Description of soil / landscape restoration			22		
Estimated annual runoff				26	

Type of Agricultural / Pasture use	30

Wetland areas filled (SF)	31	Wetland areas restored (SF)	32

Sewer Connection	Septic System Type	Design Flow (Gal)	Maintenance Required and Frequency
33	34	35	36

New / Rebuilt	Name of closest Water Body to Septic System	Distance to closest Water Body (Ft or Mi)
37	38	39

BMP No.	BMP Type	BMP Description	GPS Coordinates		Drainage Area (SF)	Design Storm (in)
			Latitude	Longitude		
40	41	42	43	44	45	46

BMP No.	Water Quality Volume (CF)	Percent Runoff Volume Reduction	Disconnection Multiplier	Effective Impervious (SF)	Underdrained
47	48	49	50	51	52

BMP No.	Description of required maintenance and scheduled frequency
53	54

BMP No.	Annual N Load to BMP (lbs N/Yr)	N Removal Efficiency (%)	N Load Reduction (lbs N/Yr)	Cumulative N Load Reduction (lbs N/Yr)
55	56	57	58	59

Parcel Existing Annual N Load (lbs N/Yr)	Cumulative N Load Reduction (lbs N/Yr)	Parcel Proposed Annual N Load (lbs N/Yr)
60	61	62

Town of Exeter, NH
Land Use Development Tracking Worksheet
Direction Sheet

Listed below is the information that need to be input for each numbered block.

1. Map and Lot number for the subject parcel.
2. Zoning District for the subject parcel.
3. Project Name.
4. Exeter File Number.
5. Planning Board Number.
6. Planning Board Approval Date.
7. Date the Certificate of Occupancy was issued.
8. Source of the reference material used to obtain the information of fill out the Land Use Development Tracking Worksheet.
9. If the subject parcel is within the Shoreland Protection Zone input Yes, if not then input No.
10. If Box 9 is Yes, input the name of the Shoreland Protection Zone water body that the subject parcel is within.
11. If Box 9 is Yes, input the distance from the subject parcel to the water body.
12. If Box 9 is Yes, input the Buffer Size in square feet.
13. Area (square feet) of land that was converted to turf / grass.
14. Previous cover type of land area that was converted to turf / grass.
15. Soil Type(s) of land converted to turf / grass.
16. Area (square feet) of land that was converted to new impervious.
17. Previous cover type of land that was converted to new impervious.
18. Percent of new impervious area that is disconnected (See Definition A).
19. Area (square feet) of Impervious area that was removed.
20. Soil Type(s) of land where impervious was removed.
21. Soil Infiltration Rate of land where impervious was removed.
22. Description of how the soil or landscape restoration.
23. Area (square feet) of land that was converted to disconnected impervious (See Definition A).
24. Previous cover type of land that was converted to disconnected impervious.
25. Soil Type(s) of land that was converted to disconnected impervious.
26. Estimated runoff volume (acre-feet) from the land that was converted to disconnected impervious.
27. Area (square feet) of land that was converted to agricultural / pasture.
28. Previous cover type of land that was converted to agricultural / pasture.
29. Percent of new agricultural / pasture area that is disconnected (See Definition B).
30. If Box 27 has an area (square feet), description of the type of agricultural / pasture used.
31. Area (square feet) of wetlands that were filled.
32. Area (square feet) of wetlands that were restored.
33. If the subject parcel is connected to the Exeter sewer system input Yes, if not input No.
34. If Box 33 is No, type of septic system (conventional single family home, conventional shared, nitrogen removing, etc.) that the subject parcel is served by.
35. If Box 33 is No, design flow (gallons) of the septic system.
36. If Box 33 is No, septic system maintenance required and the frequency (monthly, quarterly, yearly, etc.)
37. If Box 33 is No, if the septic system was newly installed input New, if the septic system was rebuilt input Rebuilt.
38. If Box 33 is No, name of the closest water body to the septic system.
39. If Box 33 is No, distance (feet or mile) from septic system to the closest water body.
40. Number of the BMP (Best Management Practice, See Definition C) as designated on the Grading Plan.
41. Type of BMP, Structural BMP (See Definition D) or Non-Structural BMP (See Definition E).

Town of Exeter, NH
Land Use Development Tracking Worksheet
Direction Sheet

42. Description of BMP such as, structural: wet or dry ponds, wetland system, infiltration system, Bioretention areas or non-structural: vegetative buffers, forested buffers or filter strips.
43. Latitude of BMP.
44. Longitude of BMP.
45. Drainage area (square feet)(see Definition F) directed to the BMP.
46. Design Storm (inches) the BMP is designed to service.
47. Number of the BMP as designated on the Grading Plan.
48. Water Quality Volume (cubic feet) (see Definition G).
49. Percent runoff volume reduction (see Definition H) being directed to the BMP.
50. Disconnection Multiplier (see Definition I) for the BMP.
51. Effective Impervious (square feet) (see Definition J) directed to the BMP.
52. If the BMP is underdrained enter Yes, if not enter No.
53. Number of the BMP as designated on the Grading Plan.
54. Description of the BMP required maintenance and scheduled frequency.
55. Number of the BMP as designated on the Grading Plan.
56. Annual Nitrogen load (lbs Nitrogen per year) being delivered to the BMP.
57. Nitrogen Removal Efficiency (%) of the BMP.
58. Nitrogen load reduction (lbs Nitrogen per year) of the BMP.
59. Cumulative Nitrogen load reduction (lbs Nitrogen per year) for all BMPs (If there is a BMP listed above, add the Nitrogen load reduction (lbs Nitrogen per year) to the current BMP).
60. Parcel existing annual Nitrogen load (lbs Nitrogen per year)(Determined by the existing cover type areas of the subject parcel multiplied by the Nitrogen allocation rate (TBD)).
61. Cumulative Nitrogen load reduction (lbs Nitrogen per year)(Determined by adding the Nitrogen load reduction (lbs Nitrogen per year) for all BMPs listed).
62. Parcel proposed annual Nitrogen load (lbs Nitrogen per year)(Calculated by subtracting the Cumulative Nitrogen load reduction (Box 61) from the Parcel existing annual Nitrogen load (Box 60)).

Estimating Change in Impervious Area (IA) and Directly Connected Impervious Areas (DCIA) for New Hampshire Small MS4 Permit

Small MS4 Permit Technical Support Document, Revised April 2014 (Original Document, April 2011)

Draft NPDES Permit Focuses on DCIA

The 2010 NPDES Small MS4 permits for New Hampshire require regulated communities to estimate the number of acres of **impervious area (IA)** and **directly connected impervious area (DCIA)** that have been added or removed each year due to development, redevelopment, and or retrofitting activities (Draft Permit Section 2.3.6.8 (c)). Beginning with the second year annual report, IA and DCIA estimates must be provided for each subbasin within your regulated MS4 area. This technical support tool outlines accepted methods for estimating and reporting IA and DCIA in three steps:

What does DCIA really mean?

Impervious surfaces such as roadways, parking lots, rooftops, sidewalks, driveways, and other pavements impede stormwater infiltration and generate surface runoff. Research has shown that total watershed IA is correlated with a number of negative impacts on our water resources such as increased flood peaks and frequency, increased sediment, nutrient, and other pollutant levels, channel erosion, impairments to aquatic biota, and reduced recharge to groundwater (Center for Watershed Protection, 2003). Typically watersheds with 4-6% IA start to show these impacts, though recent work has found lower % IA threshold values for sensitive species (Wenger *et* al., 2008). Watersheds exceeding 12% IA often fail to meet aquatic life criteria and narrative standards (Stanfield and Kilgore, 2006).

For the purposes of the MS4 permit, DCIA is considered the portion of IA with a direct hydraulic connection to the permittee's MS4 or a waterbody via continuous paved surfaces, gutters, drain pipes, or other conventional conveyance and detention structures that do not reduce runoff volume. DCIA does not include:

- IA draining to stormwater practices designed to meet recharge and other volume reduction criteria.
- Isolated IA with an indirect hydraulic connection to the MS4, or that otherwise drain to a pervious area.
- Swimming pools or man-made impoundments, unless drained to an MS4.
- The surface area of natural waterbodies (e.g., wetlands, ponds, lakes, streams, rivers).

Accepted Methods for Estimating IA & DCIA

Step 1. Establish Baseline IA/DCIA

Use the estimates of existing IA and DCIA provided by EPA to establish the baseline acreage from which future additions or reductions of impervious cover can be tracked and measured.

For each regulated municipality in New Hampshire, EPA will provide graphical and tabular estimates of IA/DCIA ordered by land use type and subbasin. **Permittees may simply use these baseline estimates as is, or develop more accurate estimates when justified.** This may include using local data to refine EPA's estimates or the direct measure of IA (**Figure 1**). If the EPA estimates are not used for the baseline, permittees must provide in the annual report a description of the alternative methodology used.

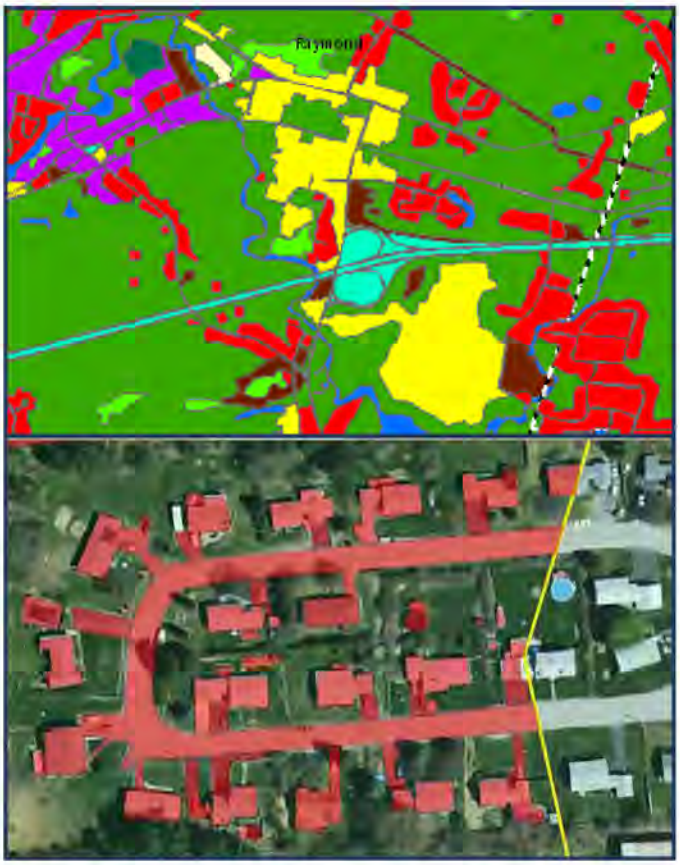


Figure 1. EPA will use statewide land use data (GRANIT), subbasin boundaries, and land use impervious coefficients to estimate baseline IA for each MS4 jurisdiction (upper). Communities may choose to refine these estimates with direct measure of IA where local GIS capacity is available, as shown here from Somersworth, NH (lower).

Why Quantify Your IA & DCIA?

New construction, redevelopment, and restoration activities can change existing IA and DCIA – potentially exacerbating or reducing existing watershed impairments. Understanding watershed imperviousness is important for communities because it:

- Informs management of impaired waterbodies and prioritization of watershed restoration efforts;
- Facilitates investigation of existing chronic flooding and stormwater drainage problems, and avoidance of new problems;
- Indicates potential threats to drinking water reservoirs/aquifers; commercial fisheries, and recreational waters;
- Demonstrates progress toward achieving future **Total Maximum Daily Load (TMDL)** allocations based on impervious cover thresholds;
- Serves as an educational tool for encouraging environmentally sensitive land use planning and **Low Impact Development (LID);**
- Facilitates equitable derivation of possible stormwater utility fees based on parcel-specific impervious cover; and
- Provides guidance for stormwater retrofit efforts.

Based on the established IA, DCIA can be estimated using empirical formulas developed by Sutherland as a function of watershed type (CWP, 2000). **Table 1** provides approved IA coefficients to be used for this approach. These coefficients were derived from previous studies and used by EPA to establish baseline conditions for regulated New Hampshire communities using **Equations 1** and **2**.

Eq. 1 $IA_{Lui} = \text{Total acres}_{Lui} * \%IA$

Eq. 2 $\text{Total Subbasin IA} = \sum_{i=1}^{n} IA_{Lui}$

Table 1. Estimating DCIA as a function of Land Use[1]

Land Use	% IA
Commercial	76
Industrial	56
High density residential	51
Med. density residential	38
Low density residential	19
Institutional	34[2]
Agricultural	2
Forest	1.9
Open Urban Land	11

[1] IA coefficients taken from Rouge River Study/EPA
[2] Institutional land use coefficient from Cappiella and Brown, 2001

Table 2 summarizes the appropriate Sutherland equations to apply for estimating DCIA from IA for *average*, *highly connected*, *totally connected*, *somewhat connected*, and *mostly disconnected* watersheds. **Permittees may opt to refine DCIA estimates to better reflect actual basin conditions where justified.**

Table 2. Sutherland Equations to Determine DCIA (%)

Watershed Selection Criteria	Assumed Land Use	Equation *(where IA(%) ≥1)*
Average: Mostly storm sewered with curb & gutter, no dry wells or infiltration, residential rooftops not directly connected	Commercial, Industrial, Institutional/ Urban public, Open land, and Med. density residential	$DCIA=0.1(IA)^{1.5}$
Highly connected: Same as above, but residential rooftops are connected	High density residential	$DCIA=0.4(IA)^{1.2}$
Totally connected: 100% storm sewered with all IA connected	--	DCIA=IA
Somewhat connected: 50% not storm sewered, but open section roads, grassy swales, residential rooftops not connected, some infiltration	Low density residential	$DCIA=0.04(IA)^{1.7}$
Mostly disconnected: Small percentage of urban area is storm sewered, or 70% or more infiltrate/disconnected	Agricultural; Forested	$DCIA=0.01(IA)^{2}$

Step 2. Calculate Annual Change

Once baseline IA/DCIA is established for each subbasin, permittees must annually track the change in IA and DCIA acreage from development, redevelopment, and retrofit projects completed that year.

To account for the estimated annual change in DCIA, permittees will need to determine how much IA and DCIA have been added or removed as a result of individual development, redevelopment, or retrofit projects completed during the reporting period.

The acres of DCIA for each project will be based on two factors: **(1) the amount of site IA, and (2) the effectiveness of stormwater best management practices (BMPs)** employed to reduce associated runoff. Practices that reduce runoff volume will lower DCIA. Note that practices that remove stormwater pollutants but do not provide runoff reduction benefits are not considered effective at reducing DCIA.

This information must be obtained from site plans and verified by as-built drawings or site inspection upon project completion. For all completed projects:

(1) Determine the former and new IA for each site.

(2) Determine the number and type of existing and/or new BMP(s) used, and calculate the amount of IA removed, managed, and unmanaged draining to each BMP.

(3) For each BMP designed in accordance with specifications provided in New Hampshire Stormwater Manual Stormwater Handbook (Vol. 2, Ch. 4), select the appropriate "disconnection" multiplier from **Table 3**. For infiltration trenches or basins, determine appropriate runoff volume reduction using **Tables 4** and **5** depending on site-specific soil infiltration rates and runoff depth captured as derived from the EPA 2010 BMP Performance Curves. Use **Equation 3** to generate the "disconnection" multiplier.

Eq. 3 Multiplier = 1 - % Runoff Reduction Volume/100

(4) Calculate DCIA for each BMP using **Equation 4** if adding newly created IA at new construction or redevelopment site, <u>OR</u> by using **Equation 5** if reducing existing IA in a retrofit or redevelopment scenario.

Eq. 4 Added $DCIA_{BMPi}$= IA_{BMPi} * BMP Multiplier

Eq. 5 Reduced $DCIA_{BMPi}$= IA_{BMPi} * (1 – BMP Multiplier)

(5) Calculate DCIA for entire project site draining to BMPs by summing DCIA for individual BMPs using **Equation 6**.

Eq. 6 Site $DCIA_{added} = \sum_{i=1}^{n} DCIA_{BMPi}$ + New Unmanaged IA

Table 3. Determining DCIA based on Interim Default BMP Disconnection Multiplier or EPA's Infiltration Curves

BMP Description	% Runoff Volume Reduction[1]	BMP "Disconnection" Multiplier[2]
Removal of pavement; restore infiltration capacity	100%	0
Redirection of rooftop runoff to infiltration areas, rain gardens or dry wells	85%	0.15
Permeable pavement, bioretention, dry/vegetated water quality swales	75%	0.25
Infiltration trenches	15-100%	0.85-0
Infiltration basins	13-100%	0.87-0
Non-runoff reduction practices (i.e., detention ponds, wetlands, sand filters, hydrodynamic separators, etc)	0%	1.0

[1] Interim default values for % runoff reduction are based on Schueler 2009 and are subject to change as more data becomes available. Values for infiltration trenches and basins are based on soil infiltration rates and depth of runoff treated. See Tables 3 and 4 to determine the site specific values to apply.

[2] BMP multiplier = 1 - %Runoff Volume Reduction/100

Step 3. Report Net Change in IA & DCIA

Starting in year 2, permittees must include a summary of net changes in IA/DCIA by subbasin and document methodology in its annual report.

Permittees will be required to summarize IA and DCIA estimates for all completed construction, redevelopment, and retrofit projects within each subbasin. **EPA will provide a tracking spreadsheet to assist in the calculation and tracking of this information.** For individual BMPs at each site, permitees will need to track the type of practice, the IA captured, and the % runoff reduction and "disconnection" multiplier assigned to that practice. Consider incorporating these DCIA accounting elements into your program's existing BMP tracking database.

Table 4. Infiltration Trench: Percent Runoff Reduction based on EPA's Infiltration Curves

Storage Capacity: Runoff Depth from DCIA (inches)	Soil Infiltration Rate (in/hr)					
	0.17	0.27	0.52	1.02	2.41	8.27
0.1	15%	18%	22%	26%	34%	54%
0.2	28%	32%	38%	45%	55%	76%
0.4	49%	55%	62%	68%	78%	93%
0.6	64%	70%	76%	81%	88%	97%
0.8	75%	79%	84%	88%	93%	99%
1.0	82%	85%	89%	92%	96%	100%
1.5	92%	93%	95%	97%	99%	100%
2.0	95%	96%	97%	98%	100%	100%

Table 5. Infiltration Basin: Percent Runoff Reduction based on EPA's Infiltration Curves

Storage Capacity: Runoff Depth from DCIA (inches)	Soil Infiltration Rate (in/hr)					
	0.17	0.27	0.52	1.02	2.41	8.27
0.1	13%	16%	20%	24%	33%	55%
0.2	25%	30%	36%	42%	54%	77%
0.4	44%	51%	58%	66%	78%	93%
0.6	59%	66%	73%	79%	88%	98%
0.8	71%	76%	81%	87%	93%	99%
1.0	78%	82%	87%	91%	96%	100%
1.5	89%	91%	94%	96%	99%	100%
2.0	94%	95%	97%	98%	100%	100%

Are We Required to Follow This Protocol?

Permittees are encouraged to refine IA and DCIA baseline estimates where local data is more accurate; however the general methodology for calculating annual change in IA and DCIA should be applied. Deviations from the methodology are subject to review by EPA and must be described in the annual report.

Example Subbasin DCIA Calculations

Baseline conditions for subbasin #54203 were estimated to include 100 acres IA and 50 acres DCIA. By the second year of NPDES reporting, two construction projects were completed that resulted in an overall change in the amount of subbasin IA and DCIA as follows:

Project 1: New 5-acre residential townhome complex with 4 acres of new IA, of which, 0.9 acres drain to a bioretention facility, 3 acres drain to an infiltration basin, and 0.1 acres drain untreated to the main road. The infiltration basin is designed based on a soil infiltration rate of 0.52 in/hr and 0.8 inches of runoff captured.

Step 1. Establish new IA to add to baseline = 4.0 ac

Steps 2 -4. Determine DCIA per BMP

Eq. 3 $\text{Multiplier}_{\text{inf. basin}} = 1 - 81/100 = 0.19$

Eq. 4 $\text{DCIA}_{\text{bioretention}} = 0.9 \text{ ac} * 0.25 = 0.23 \text{ ac}$
$\text{DCIA}_{\text{inf. basin}} = 3.0 \text{ ac} * 0.19 = 0.57 \text{ ac}$

Step 5. Sum DCIA for entire site

Eq. 6 Total Project DCIA= 0.23 ac + 0.57 ac + 0.1 $\text{ac}_{\text{unmanaged}}$
– 0.9 ac DCIA to add to baseline

Project 2: Redevelopment of an 8-acre retail outlet with 5.5 acres of existing IA. After redevelopment, there are now 6.0 acres total IA. 3.0 acres of IA continues to drain to an existing detention pond, but 1.0 acre of overflow parking was converted to pervious pavement. A new bioretention retrofit now captures 0.7 acres of IA that used to drain to the pond, as well as 0.5 acres of newly added IA. The remaining 0.8 acre of site IA remains untreated.

Step 1. Establish new IA to add to baseline = 6.0 ac - 5.5 ac
– 0.5 ac

Steps 2 -4. Determine DCIA per BMP to be added or subtracted from baseline.

Eq. 4 Added $\text{DCIA}_{\text{bioretention-new IA}} = 0.5 \text{ ac} * 0.25 = 0.13 \text{ ac}$

Eq. 5 Reduced $\text{DCIA}_{\text{porous pavement}} = 1 \text{ ac} *(1-0.25) = 0.75 \text{ ac}$
Reduced $\text{DCIA}_{\text{drypond}} = 3.0 \text{ ac} *(1-1.0) = 0 \text{ ac}$
Reduced $\text{DCIA}_{\text{bio-existing IA}} = 0.7 \text{ ac} *(1-0.25) = 0.53 \text{ ac}$

Step 5. Sum DCIA for entire site.

Eq. 6 Total Project Added DCIA = 0.13 ac + 0 $\text{ac}_{\text{new unmanaged IA}}$
= 0.13 ac DCIA to add to baseline

Eq. 6 Total Reduced DCIA = 0.75 ac + 0 ac+0.53 ac
= 1.28 ac DCIA to subtract from baseline

End of Year Report: Totals for Subbasin #54203:

IA = 100 $\text{ac}_{\text{baseline}}$ + 4.0 $\text{ac}_{\text{project 1}}$ + 0.5 $\text{ac}_{\text{project 2}}$
= 104.5 ac *(net gain of **4.5 ac**)*

DCIA = 50 $\text{ac}_{\text{baseline}}$ +0.9 $\text{ac}_{\text{project 1}}$ + 0.13 $\text{ac}_{\text{project 2}}$ – 1.28 $\text{ac}_{\text{project 2}}$
= 49.75 ac DCIA *(net reduction of **0.25 ac**)*

Checklist of What to Expect EPA to Provide

EPA will provide all regulated MS4 communities in New Hampshire with the following information:

- Delineation of subbasin boundaries.
- Baseline estimates of IA and DCIA for each subbasin in your regulated area in tabular format.
- DCIA calculation and tracking spreadsheet.

How Does LID Influence IA and DCIA?

Incorporating LID techniques into site design can reduce IA & DCIA, protect natural areas, and minimize alterations to existing hydrology on site. The use of BMPs that maximize runoff reduction benefits (e.g., practices with low BMP Multipliers in **Table 2** and those shown in **Figure 2**) can result in a higher "disconnection" factor than if using traditional detention ponds. Your community can help reduce total IA and DCIA by:

- Adopting LID design requirements for new development projects.
- Requiring documentation of design methods used to minimize site IA and to disconnect IA.
- Requiring site designers to calculate and submit %IA and %DCIA for each site.
- Retrofitting existing, unmanaged impervious areas.

Figure 2. BMPs such as the bioretention, porous pavers, and infiltration trenches seen here are designed to provide water quality treatment and maximize runoff reduction through improved infiltration, evapotranspiration, and plant uptake. These are effective practices for reducing DCIA.

What are the Costs of Annual DCIA Tracking?

The cost will vary depending on the size of the regulated area, amount of existing IA, sophistication of existing GIS, number of new projects requiring tracking, and the level of effort required to obtain information for each site. Refining the EPA-provided baseline estimates of IA and DCIA may require collecting new data, purchasing new software/GIS, and additional staff time. This effort may not be worth the cost if the annual **net change** in IA and DCIA is the true measure of interest. Factors that will add to overall effort may include:

- Refining EPA's baseline estimates, particularly if local IA mapping doesn't already exist.
- Over-complicating the analysis by refining given equations.
- Not easily obtaining required IA and BMP information from proposed site plans. Determine the most efficient method to obtain this information as soon as possible – changing applicant reporting requirements may be a solution.
- Verifying as-built conditions with individual site visits. Consider alternatives (e.g., occupancy certifications).
- Maintaining an updated impervious and stormwater infrastructure layer in GIS, particularly if new projects have to be hand-digitized. Possibly require applicants to submit plans electronically.
- Not integrating effort with other existing programs (i.e., plan review, building inspection, or stormwater utility).

Where Can I go for More Information?

For more information regarding the new permit requirements, go to the New Hampshire Small MS4 webpage at:
www.epa.gov/ne/npdes/stormwater/MS4_2008_NH.html

Here you will find links to relevant permit documents; community-specific mapping and statistics for baseline IA and DCIA estimates; detailed descriptions of methods used to calculate IA and DCIA estimates; and the calculation and tracking spreadsheet template.

References

Cappiella K. and K. Brown. 2001. Impervious Cover and Land Use in the Chesapeake Bay Watershed.

Center for Watershed Protection. 2003. The Impacts of Impervious Cover on Aquatic Systems. Watershed Protection Research Monograph No. 1. Ellicott City, MD. www.cwp.org/Resource_Library/Center_Docs/IC/Impacts_IC_Aq_Systems.pdf

Schueler, T. 2009. Guidance for meeting NPDES Permit Requirement in Montgomery County, MD

Stanfield and Kilgour, 2006. Effects of Percent Impervious Cover on Fish and Benthos Assemblages and Instream Habitats in Lake Ontario Tributaries. American Fisheries Society Symposium 48: 577-599.

Sutherland. 2000. Methods for Estimating Effective Impervious Cover. Article 32 in *The Practice of Watershed Protection*, Center for Watershed Protection, Ellicott City, MD.

Tetra Tech Inc., 2010. Stormwater BMP Performance Analysis. www.epa.gov/region1/npdes/stormwater/assets/pdfs/BMP-Performance-Analysis-Report.pdf

Wenger, S. et al., 2008. Stream fish occurrence in response to impervious cover, historic land use, and hydrogeomorphic factors. Can.J. Fish Aquatic Sci. 65 1250-1264.

Fact Sheet
Squamscott River Outfall Restoration Project October, 2015

About Unitil

Unitil Corporation provides energy for life by safely and reliably delivering natural gas and electricity in New England. We are committed to the communities we serve and to developing people, business practices and technologies that lead to dependable, more efficient energy. Unitil Corporation is a public utility holding company with operations in Maine, New Hampshire and Massachusetts. Together, Unitil's operating utilities serve approximately 101,700 electric customers and 73,700 natural gas customers. For more information, visit www.unitil.com.

Project Description

Unitil, in conjunction with the Town of Exeter and the New Hampshire Department of Environmental Services (NHDES), will be conducting an environmental restoration project in the Squamscott River adjacent to Swasey Parkway. The project will remove sediment near a storm water outfall that had been impacted by the operation of a Manufactured Gas Plant (MGP) at the corner of Green and Water Streets during the period of 1864 to1955. The facility provided fuel for lighting and heating to Exeter prior to the introduction of interstate natural gas pipelines in the 1950s.

Prior to its 2008 purchase by Unitil, Northern Utilities, the previous owner of the property, completed an environmental cleanup of the lot during the period between 2001 and 2002. A Certificate of Completion was issued for the work by NHDES. In recent years, subsequent investigations by Unitil revealed a by-product of the coal gasification process, coal tar, present in the sediments of the Squamscott River adjacent to an outfall from the municipal storm water system.

Coal tar is similar in composition to asphalt or driveway sealer and can have a characteristic odor, which is often described as mothball-like. The restoration project is designed to remove the sediment containing the coal tar and improve the function of the outfall, which is currently covered by sediment.

In order to minimize disruption to the parkway, all of the restoration work will be conducted using equipment on barges in the river. Project access to the river will be limited to an area within the Exeter Department of Public Works facility on Newfields Road approximately one mile upstream. Field activities will be managed for Unitil by AECOM Technical Services, an environmental engineering with local offices in New Hampshire and Massachusetts. The project will conducted during the period of mid-October to early December 2015, ensuring adherence to the requirements of the NHDES Fish and Game Department and limiting work activities to the day light hours as a means of minimizing inconvenience to nearby residents.

For additional Information Please Contact:

Utility Questions
Unitil Customer Service for NH Gas
Telephone: (866-933-3820)

Site Questions
Mark McCabe
AECOM Project Manager
Telephone: (508-423-9018)

2015 Spring clean up of Swasey Parkway Norris Brook Buffer

Stream Buffer Display at Norris Brook

Think Blue Exeter

As rain and snow-melt, also known as stormwater, flows across streets, parking lots, and other surfaces it collects dirt, debris, and chemicals carrying them directly to our rivers and streams. This polluted run-off is called Stormwater Pollution. Our habits play a major role in this type of pollution.

Click the Homeowners category below to learn ways you can help reduce Stormwater Pollution because...CLEAN WATER STARTS WITH YOU!!!

What is Stormwater Pollution?

As stormwater (or rain and snow-melt) flows across buildings, streets, parking lots, and other surfaces it collects dirt, debris, and chemicals and carries them directly to our rivers and streams. Collectively, these surfaces which do not allow water to penetrate are called impervious surfaces. The polluted run-off that flows across them and into our streams is called Stormwater Pollution.

What's the Water Quality Status of Exeter's Streams and Rivers?

As a result of water testing, NH Department of Environmental Services has designated the majority of Exeter's streams and rivers as "impaired" for one or more uses. This means the water contains pollutants which can be harmful to aquatic life, fish consumption, or humans during either direct or indirect contact.

To view how widespread this designation is, click HERE to view Exeter's "impaired rivers". As you look at this map remember, **BLUE** means the water course meets standards, **RED** means it does not. With the majority of Exeter's waterways in red on this map, you may be starting to understand the purpose of the THINK BLUE program.

How Can You Help?

Our habits play a major role in this type of pollution. To find out what simple changes you can make to reduce the amount of pollutants entering our rivers, explore the links below and be sure to check out our "Ducky Ads" at the bottom of the page. You may have seen or heard them on Channel 98 or WXEX.

We need more people to THINK BLUE because **CLEAN WATER STARTS WITH YOU**!!!

About Us Homeowners Kids Toolbox

Click any thumbnail image to view a slideshow

Supporting Documents

- Stormwater Rubber Duck PSA
- Devil Ducky Lawncare PSA
- Rainstorm Radio Ad
- Car Wash Radio Ad
- Healthy Lawns Clean Water - Lawn Care

Exeter, NH Public Works
September 23, 2015 ·

There are great handouts at the Town Office on display about septic smart week! Go take a look and keep track of your maintenance!

Proper Care | Septic (Onsite / Decentralized) Systems ...

Whether you flush it down the toilet, grind it in the garbage disposal, or pour it do...

WATER.EPA.GOV

Like Comment Share

Exeter NH Conservation Commission via **Exeter, NH Public Works**
September 23, 2015 ·

Like Page

Hey its Septic System week! When was the last time you had your system pumped?

Show Attachment

NH Certified Green SnowPro

Like Comment Share

Hazardous Waste in *Your* Home??

Hazardous Waste is not just an industrial problem. Many household products contain hazardous chemicals. We are all hazardous waste generators!

2015 HOUSEHOLD HAZARDOUS WASTE COLLECTION
EXETER, STRATHAM, NEWFIELDS, EAST KINGSTON, EPPING & SEABROOK

SATURDAY, OCTOBER 3, 2015

8:00 am—1:00 pm

Exeter Public Works Garage, Newfields Road (Route 85), Exeter

FROM THE ***YARD***	*FROM THE* ***GARAGE***	*FROM THE* ***HOUSE***	*FROM THE* ***WORKBENCH***
Pesticides	Motor Oil	Rechargeable Batteries	Rust Remover
Insect Sprays	Auto Batteries	Drain & Oven Cleaners	Wood Preservatives
Rodent Killers	Antifreeze	Furniture Polish	Paint Thinners
Pool Chemicals	Brake Fluid	Metal Polish	Oil Based Paints
Muriatic Acid	Wax & Polish	Fluorescent Light bulbs	Solvents
No-Pest Strips	Engine Degreasers	Photo Chemicals	Degreasers
Lead sinkers, flashing	Carburetor Cleaner	Mercury Thermometers	Mercury
Creosote	Asbestos (wetted and double bagged)	Fire Extinguishers	

LIMIT PER HOUSEHOLD: 10 GALLONS or Equivalent
LATEX Paint and Alkaline Batteries not Accepted (not hazardous)
NOTE: Electronic Recycling will not be held at HHW day.

IMPORTANT NOTE:

The following wastes **cannot be accepted**: Gas Cylinders, Explosive Materials, Ammunition, Radioactive Materials, Infectious and Biological Wastes, Prescription Medicines/Syringes, Esters, and Unknown Materials.
Please don't bring them!

COLLECTION IS FOR EXETER, STRATHAM, NEWFIELDS, EAST KINGSTON, EPPING & SEABROOK RESIDENTS ONLY

Sponsored by the Towns of Exeter, Stratham, Newfields, East Kingston, Epping, Seabrook & RPC.
Organized by Rockingham Planning Commission—778-0885.
For more information: Exeter: 778-0591; Stratham: 772-4741; Newfields: 772-5070; East Kingston: 642-8406; Epping: 679-5441; and Seabrook: 474-9771.

***** A DONATION OF $5 PER HOUSEHOLD IS REQUESTED TO HELP OFFSET COSTS. *****

Meeting: Spring Leaf Pick-up
Date/Time: Mon, May 18th (All day) - Fri, May 22nd (All day)
Location: Exeter, NH

Spring 2015 leaf pick-up is May 18 - 22 on your regular pick-up day (12 bag limit per residence).

Northside Carting picks up leaves curbside twice each year (once in the spring and once in the fall). Leaves must be in biodegradable paper bags and placed curbside by 7 a.m. on your rubbish collection day. Bags are available to purchase at local hardware and grocery stores. In addition, leaves can be taken directly to the Transfer Station (no permit required) during hours of operation.

Leaves taken to the Transfer Station or collected curbside are composted. Compost is available to residents free of charge. For availability contact Public Works at 773-6157.

Town of Exeter, NH shared Exeter, NH Public Works's photo.
October 13, 2015 ·

Exeter, NH Public Works
October 8, 2015 ·

Make sure your rakes & lawn care equipment are ready for leaves! Leaf pick-up will be on your pick-up day during the week of Nov. 16th, but you can always bring them to the Transfer Station (during hours of operation), permits are not required! http://exeternh.gov/publicworks/leaf-disposal

Exeter, NH Public Works

Like Comment Share

Exeter Conservation Commission's Guest Speaker Night

May 12th

7:00 – 8:00 pm

Jeff Barnum
Great Bay – Piscataqua Waterkeeper Presents

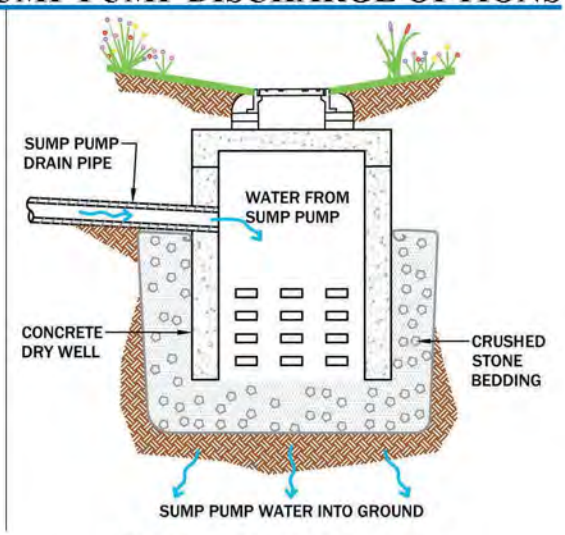
"The Challenges Facing Great Bay"

Jeff will discuss the water quality of this important estuary and with our direct connection to the Bay via the Exeter/Squamscott River, what the community of Exeter can do locally to protect it.

Nowak Meeting Room
Exeter Town Office
10 Front Street, Exeter
more info: kmurphy@exeternh.gov

clf
conservation law foundation

SUMP PUMP DISCHARGE OPTIONS



INFILTRATION BASINS

RAIN GARDENS

MUNICIPAL DRAIN SERVICES

TOWN ORDINANCE

Chapter 15 – Sewer Regulations

Article 1506.1

No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer

Section 1504.1, Paragraph 6

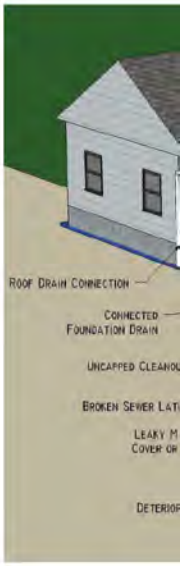
No person shall make connection of roof down-spouts, foundation drains, area drains, or other surface runoff or groundwater to a building sewer

WHAT YOU CAN DO TO HELP

Check to see if your home contributes I/I:

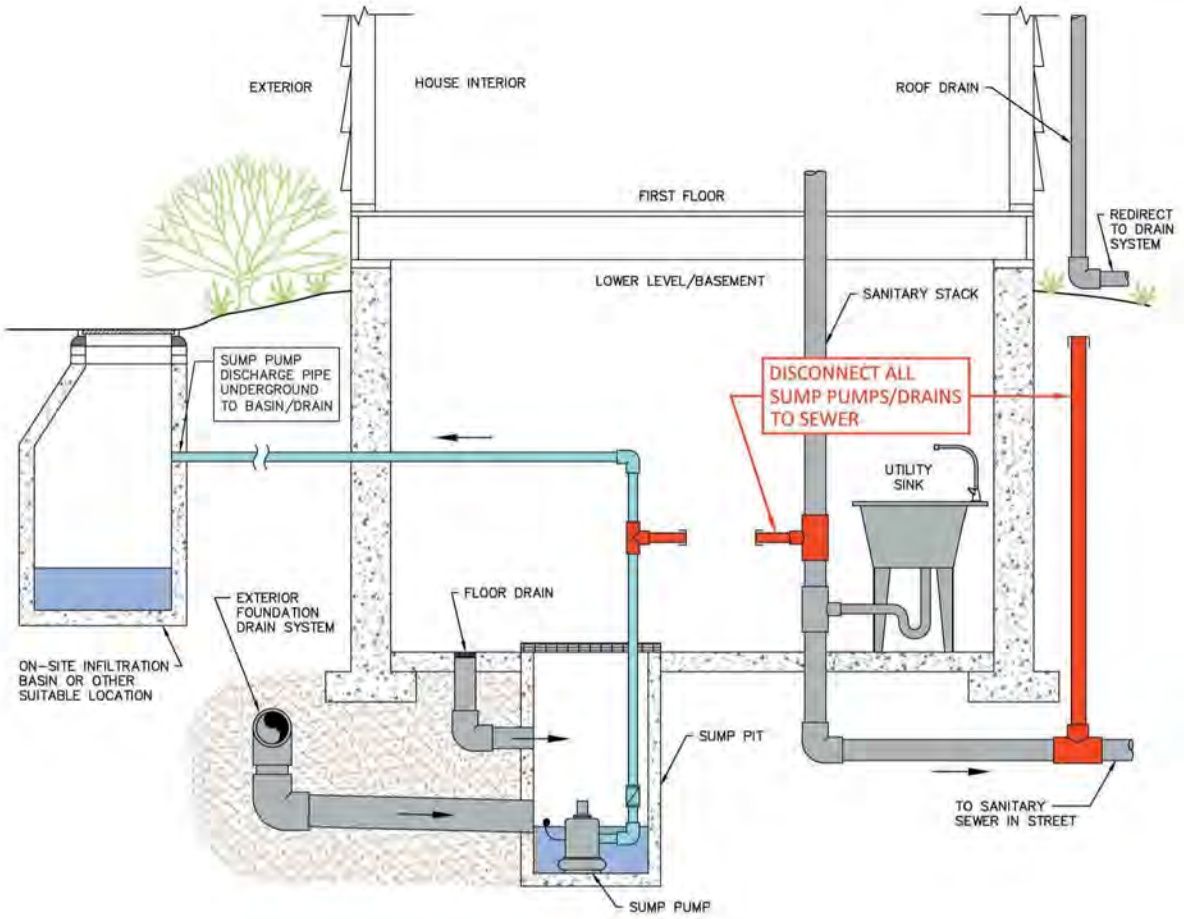
- Look for I/I connections yourself in your basement and on the outside of your house.
- Look for additional information that will be provided by the Town.
- Contact the Town by calling Matt Berube at 773-6157 to set up an appointment and check for I/I connections to the sewer or for more information.

Brochure produced by:
Public Works Department
13 Newfields Rd
603-773-6157



What is Infiltration and Inflow (I/I)?

I/I is clean water that gets into the sewer system and is treated at the wastewater treatment facility. Since the water is clean, it doesn't really need to be treated like sewage ("dirty" water) does. However, because it gets into the sewer system it is processed like sewage and treated. Treatment costs money (from ratepayers) and treating clean water is a waste of money and energy. Removing the clean water from the sewer system will reduce the costs of treatment and provides other benefits to the Town. ***This brochure*** *summarizes some of the important points you should know about I/I in your house and how you can help!*



WHY IT'S A BIG DEAL

- Ratepayers pay to treat wastewater. It is estimated that 50% of the flow at the treatment facility is I/I and much of this I/I from private property.
- Too much I/I can overwhelm the sewer system and cause dirty water to overflow to the Squamscott River (called a combined sewer overflow (CSO).
- Treating I/I at the wastewater treatment facility leaves less space for treating sewage and requires capital improvements to treat these higher flows.
- I/I from private property violates The Town's Sewer Use Ordinance. For more info go to www.town.exeter.nh.us/sewer.

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Also
Tell a
about the

Print Page

By Lara Bricker
newsletter@seacoastonline.com

November 16. 2015 3:33PM

Restoration work underway in Squamscott River

EXETER — A barge arrived on the Squamscott River adjacent to Swasey Parkway last week as part of an environmental restoration project being done by Unitil in conjunction with the town of Exeter and the N.H. Department of Environmental Services.

The project involves removing contaminated soil from the river bottom left by the Exeter Gas Light Company, which operated at the corner of Green and Water Streets from 1864 to 1955. In recent years, subsequent investigations by Unitil revealed a byproduct of the coal gasification process — coal tar — present in the sediments of the Squamscott River adjacent to an outfall from the municipal storm water system.

The restoration project is designed to remove the sediment containing the coal tar and improve the function of the outfall, which is currently covered by sediment. In order to minimize disruption to the parkway, all of the restoration work will be conducted using equipment on barges in the river. The project is expected to be completed by early December.

The barge moved from the Swasey site back to the sewer lagoons at Public Works at the end of last week as workers had completed installation of the coffer dams, which will be used for containment of the river sediments in the area they are dredging. The barge will move back upriver to start dredging and excavation this week, according to Jennifer Perry, Department of Public Works director.

A barge is seen on the Squamscott River adjacent to Swasey Parkway as part of an environmental restoration project being done by Unitil in conjunction with the town of Exeter and the N.H. Department of Environmental Services. Photo by Lara Bricker/Seacoastonline

Print Page

The Exeter Conservation Commission is pleased to announce our partnership with The Great American Rain Barrel Company. We are offering Exeter residents an opportunity to purchase rain barrels at the discounted rate of $79!!!

Orders must be placed by **May 23rd** and will be distributed on **May 30th from 9am-11am** at the Department of Public Works. For more information and to place your order click the link below.

Why pay to water your garden when nature provides what you need for free?

Web Links

Exeter Rain Barrel Program

2015 EXETER RIVER WATERSHED VRAP DATA

Measurements not meeting New Hampshire surface water quality standards
Measurements not meeting NHDES quality assurance/quality control standards

[A] Specific conductance > 835 µS/cm indicate exceedance of chronic chloride standard of 230 mg/L
[B] Chronic water quality standard
[C] Calculated using 1/2 of the 0.25 mg/L detection limit of TKN (0.125 mg/L)

15-EXT, Exeter River, Haigh Road, Exeter - NHDES Trend Station

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)	Chloride (mg/L)	*E. coli* (CTS/100m
Standard	**NA**	**>5.0**	**>75% Daily Average**	**6.5-8.0**	**<10 NTU above background**	**835 µS/cm[A]**	**NA**	**230[B]**	**>406**
04/09/2015	13:00	13.2	96.1	5.71	0.8	151.0	2.2	33	<10
06/23/2015	12:00	7.85	87.9	6.89	1.4	229.8	21.0	45	120
07/27/2015	12:20	7.93	90.8	6.84	1.4	241.5	22.0	51	80
08/25/2015	12:35	7.01	82.5	6.95	1.0	274.4	23.5	63	100

15-EXT, Exeter River, Haigh Road, Exeter (Cont.)

Date	Time of Sample	Total Phosphorus (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Nitrite (NO2)+ Nitrate(NO3) (mg/L)	Total Nitrogen (mg/L)
Standard	**NA**	**Narrative**	**Narrative**	**Narrative**	**Narrative**
04/09/2015	13:00	0.00965	< 0.25	0.12	0.25[C]
06/23/2015	12:00	0.0192	< 0.25	0.20	0.33[C]
07/27/2015	12:20	0.0175	0.87	0.14	1.01
08/25/2015	12:35	0.0152	0.40	0.07	0.47

14-EXT, Exeter River, Pickpocket Dam/Cross Road Bridge, Exeter

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cm[A]	NA
06/26/2015	07:46	5.72	63.9	6.37	3.8	230.7	20.8
07/07/2015	09:00	5.82	66.4	6.47	2.9	209.4	21.9
07/21/2015	09:00	5.57	66.5	6.53	2.3	231.7	24.7

13-EXT, Exeter River, Kingston Road (Route 111) Bridge, Exeter

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cm[A]	NA
06/26/2015	08:25	8.38	93.5	6.41	3.6	229.4	20.7
07/07/2015	09:34	8.46	96.6	6.54	2.1	213.6	21.9
07/21/2015	09:49	7.41	87.8	6.44	1.8	233.8	23.9

12A-EXT, Exeter River, Linden Street Bridge, Exeter

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cm[A]	NA
06/26/2015	08:50	8.03	89.4	6.45	4.2	230.3	20.6
07/07/2015	09:53	7.94	89.6	6.36	3.4	214.3	21.6
07/21/2015	10:08	6.27	75.2	6.41	2.9	237.3	24.5

12-EXT, Exeter River, Court Street/Route 108 Bridge, Exeter

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cm[A]	NA
06/26/2015	09:18	7.55	85.0	5.97	4.6	229.8	21.2
07/07/2015	10:34	6.51	75.9	6.31	3.3	202.7	22.6
07/21/2015	10:27	5.71	68.7	6.28	3.8	237.3	24.6

05-LTE, Little River, Garrison Road Bridge, Exeter

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cm[A]	NA
06/26/2015	10:08	7.81	87.1	6.58	5.3	237.3	21.1
07/06/2015	09:02	8.20	90.1	6.48	5.3	241.8	20.0
07/20/2015	08:45	7.59	89.3	6.79	4.9	259.6	23.5

02-LTE, Little River, Linden Street Bridge, Exeter

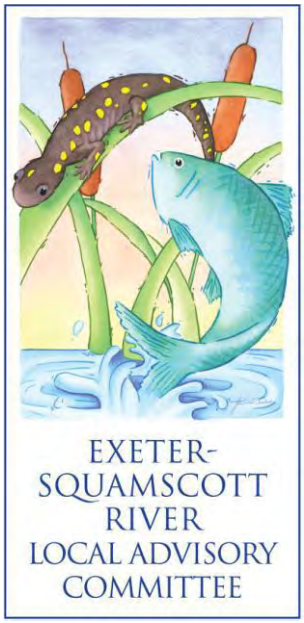
Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cm[A]	NA
06/26/2015	10:35	6.79	77.1	6.26	6.9	242.1	21.5
07/06/2015	09:24	6.92	77.9	6.33	7.3	239.1	21.1

00-LTE, Little River, Gilman Street Bridge, Exeter

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cm[A]	NA
06/26/2015	11:00	6.02	69.7		6.3	242.7	21.7
07/06/2015	09:39	6.29	72.9	6.19	6.8	247.2	22.7
07/20/2015	09:13	6.73	87.6	6.41	9.7	321.5	25.7

09-EXT, Exeter River, High Street Bridge, Exeter

Date	Time of Sample	DO (mg/L)	DO (% sat.)	pH	Turbidity (NTUs)	Specific Conductance (µS/cm)	Water Temp. (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cm[A]	NA
06/26/2015	09:39	6.08	68.6	6.06	4.3	222.3	21.3
07/07/2015	10:19	6.76	79.5	6.30	3.8	214.1	23.7
07/21/2015	10:45	7.89	94.6	6.51	3.4	243.1	24.5



ESRLAC Representatives:

Brentwood:	Emily Schmalzer
	Eric Turer
Chester:	Vacant
Danville:	Vacant
East Kingston:	Vacant
Exeter:	Donald Clement
	Peter Richardson
Fremont:	Ellen Douglas
	John Roderick
Kensington:	Vacant
Kingston:	Evelyn Nathan
Newfields:	William Meserve
Raymond:	Vacant
Sandown:	Mark Traeger
Stratham:	Donna Jensen
	Nathan Merrill

2015 Annual Report
Exeter-Squamscott River Local Advisory Committee

The Exeter-Squamscott River Local Advisory Committee (ESRLAC) is comprised of dedicated volunteers representing the twelve communities in the Exeter-Squamscott River watershed: Chester, Raymond, Fremont, Sandown, Danville, Kingston, East Kingston, Brentwood, Kensington, Exeter, Stratham and Newfields. The Exeter-Squamscott River is one river with two names, reflecting the fresh water (Exeter River) and salt water (Squamscott River) portions of this major tributary to Great Bay.

ESRLAC celebrated its 19th year of stewardship of the river and its watershed in 2015. The year was marked by several activities, including on-going discussions with municipalities and state and federal agencies about water quality in the river and its impact on water quality in Great Bay, the review of development proposals along the river corridor, and assisting with stormwater management projects. Several ESRLAC members participated in Project WISE, an innovative project designed to identify ways in which the Towns of Exeter, Stratham, and Newfields can work together to cost effectively protect water quality in the river. Development and population growth in the Exeter-Squamscott River watershed result in an increasing amount of pollutants entering the river from lawns, septic systems, roads and parking lots.

In 2016, ESRLAC will continue to work with residents and towns to reduce the amount of pollution entering the river to improve water quality and wildlife habitat, and increase public access and recreational opportunities on the river. ESRLAC looks forward to the removal of the Great Dam in downtown Exeter in 2016, as dam removal will improve fish passage along the river and restore the river's natural flow, improving water quality.

The Exeter-Squamscott River is enrolled in the New Hampshire Rivers Management and Protection Program, a unique partnership between citizens and state and local governments designed to promote and protect the river's outstanding natural and cultural resources. ESRLAC seeks members from all communities in the watershed. Please call the Rockingham Planning Commission at 603-778-0885 for more information.

Fish Ladder Tour

Saturday, May 23rd 10 am

Rain or shine!

Meet Next To
11 Water Street Restaurant
In Downtown Exeter

This family friendly event is sponsored by:

Exeter Squamscott River
LOCAL ADVISORY COMMITTEE
Discovering the Past, Preserving the Future