

Square Pond Watershed Survey Report



York County Soil & Water Conservation District
Square Pond Improvement Association
Maine Department of Environmental Protection

May 2007

Acknowledgments

The following people and organizations were instrumental in the Square Pond Watershed Survey Project and deserve special recognition for their efforts:

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Dennis Ahern, Sr.	Mike Hodge	Terri Ball
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Sponsors

York County Soil & Water Conservation District
Maine Department of Environmental Protection
Square Pond Improvement Association

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When combined with many other similar sites throughout a watershed, even erosion from small sources such as this can have a significant impact on lake water quality.

Introduction

This report is specifically designed for citizens living in the Square Pond Watershed. It provides the results and analysis of a soil erosion survey conducted in the Square Pond Watershed in 2006. The survey was conducted in response to concerns about Square Pond's water quality and a desire to preserve the pond's pristine quality for future generations to enjoy.

Square Pond's Water Quality

Square Pond has an average depth of 20 feet, a maximum depth of 44 feet, and a very slow flushing rate of .27 times per year. Square Pond flows into Goose Pond which then flows into Mousam Lake. Square had been identified in the 2003 TMDL final report (Maine DEP and Maine Association of Conservation Districts) as an indirect watershed contributor of phosphorus to Mousam Lake. More than 130kg per year of phosphorous likely flows from Square and Goose Ponds and enters the sensitive upper basin of Mousam Lake. Mousam Lake has recently been removed from Maine's impaired waters list so it is crucial to keep the phosphorus loading from Square Pond to a minimum.

As with many of Maine's Lakes, Square Pond's water quality is threatened by nonpoint source pollution (NPS) from developed areas in the watershed. It is suspected that residential development (and accompanying septic systems sited on sandy soils) and private roads are the major sources of phosphorus to the pond. Residential developments potentially contribute phosphorus to the pond since there is a high density of homes, many homes have aging septic systems, and the lots are small and lack shorefront buffers. There is an abundance of private roads in the watershed, over 19 miles in length, most of which are located within 250 feet of the lake. In addition, there are no established road associations in the watershed and existing road maintenance efforts are insufficient.

The local Square Pond Improvement Association (SPIA) was formed by Square Pond shore-front property owners in 1958 to promote the welfare of the property owners surrounding Square Pond, and to safeguard and improve the lake water. The SPIA and Maine DEP have been testing water quality in Square Pond since 1983. As a result of this monitoring and the area's development trends, Square has been placed on the State's "watch list", due to the concerns relating to dissolved oxygen depletion during the summer months. Square Pond has also been listed on the Maine Nonpoint Source Priority Watersheds List. Spurred by the efforts on Mousam Lake, the SPIA formed a water-quality committee in fall 2003 to gather more information on Square Pond's declining water quality, to create awareness of the water quality issues, and to recruit assistance in correcting pollution sources.

The Towns of Acton and Shapleigh recognize the importance of protecting the water quality in the Square Pond Watershed individually and as part of the larger Mousam Lake Watershed, and have been committed to supporting these efforts. In fact, the towns have provided financial support for the Acton Shapleigh Youth Conservation Corps (ASYCC) that has been successfully implementing conservation projects and providing technical assistance to landowners over the past six years in the Mousam Lake region.

Why is the Water Quality at Risk?

The biggest pollution culprit in Square Pond and other Maine lakes is **polluted runoff** or nonpoint source (NPS) pollution. Stormwater runoff from rain and snowmelt picks up soil, nutrients and other pollutants as it flows across the land, and washes into the lake.

In an undeveloped, forested watershed, stormwater runoff is slowed and filtered by tree and shrub roots, grasses, leaves, and other natural debris on the forest floor. It then soaks into the uneven forest floor and filters through the soil.

In a developed watershed, however, stormwater does not always receive the filtering treatment the forest once provided. Rain water picks up speed as it flows across impervious surfaces like rooftops, compacted soil, gravel camp roads and pavement, and it becomes a destructive erosive force.



Runoff erodes sediment and carries it into Square Pond.

Why is Runoff a Problem?

The problem is not necessarily the water itself. It's the sediment and nutrients in the runoff that can be bad news for Maine lakes. Studies have shown that runoff from developed areas has 10 times the amount of **phosphorus** compared to runoff from forested areas.

The nutrient, phosphorus, is food for algae and other plants and is found in soils, septic waste, pet waste and fertilizers. In natural conditions, the scarcity of phosphorus in a lake limits algae growth. However, when a lake receives extra phosphorus, algae growth increases dramatically. Sometimes this growth causes choking blooms, but more often it results in small changes in water quality that, over time, damage the ecology, aesthetics and economy of lakes.



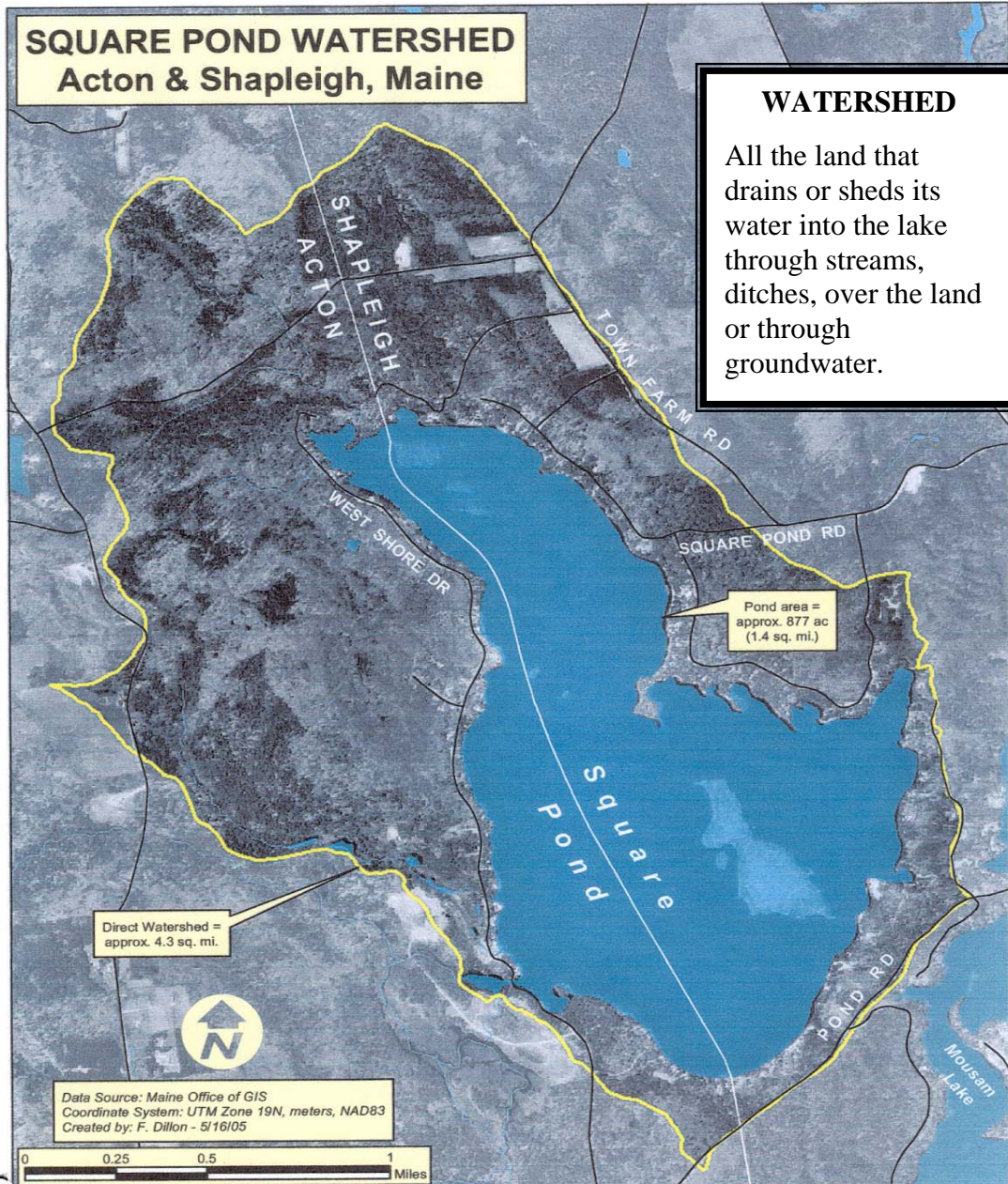
Excess **phosphorus** can “fertilize” a lake and lead to nuisance **algal blooms**.

Soil is the biggest source of phosphorus to Maine lakes. As every gardener knows, phosphorus and other nutrients are naturally present in the soil. So, we are essentially “fertilizing” Square Pond with the soil that erodes from our driveways, roads, ditches, pathways and beaches.

Square Pond's Watershed

Square Pond (below) is a 877 acre lake with a 4.3 square mile watershed in Acton and Shapleigh. All of the land within the yellow highlighted area drains directly into the pond through a network of streams, ditches and overland flow.

The Square Pond watershed is highly developed with over 500 seasonal camps and year-round homes. A growing number of seasonal residences are being converted to year-round usage. The pond also has a public beach that is owned by the Town of Shapleigh, and a public boat launch that is owned by the State of Maine. Activities in this entire area—not just the shoreline areas—affect Square Pond's water quality. Long-term protection of Square Pond will require coordinated stewardship in the entire watershed.





Why should we protect Square Pond from polluted runoff?

- Once a lake has declined, it can be difficult or impossible to restore. Prevention is the key.
- The lake contains valuable habitat for fish, birds and other wildlife. Square Pond is a well known fishing spot for:

- Alewife, landlocked
- American eel
- Brown bullhead
- Brown trout
- Chain pickerel
- Common shiner
- Golden shiner
- Largemouth bass
- Pumpkinseed
- Smallmouth bass
- White perch
- White sucker
- Yellow perch



Richard and Kendra Sherman caught this 32", 15 lb. female brown trout on January 28, 2001 in Square Pond, York County.

- Square Pond provides excellent recreational opportunities to local residents and to visitors. It is an important contributor to the local economy.
- A 1996 University of Maine study found that lake water quality affects property values. For every 3-foot decline in water clarity, shorefront property values can decline as much as 10 to 20%! Declining property values affect individual landowners as well as the entire community.



What is being done to protect Square Pond?

The Square Pond Association (SPIA) and its members work with agencies, municipal officials and watershed residents to promote lake protection. Their volunteers have tested water quality in the pond for over 24 years as part of the Maine Volunteer Lake Monitoring Program.

In 2006, the SPIA, York County Soil and Water Conservation District (SWCD) and local volunteers collaborated to conduct a watershed survey. The information collected through the survey will be shared with landowners in the hopes that they can then take measures to fix their erosion problems. The SPIA & YCSWCD applied for a 319 grant through the Maine DEP to help fix some of the larger identified problems. The ASYCC is also available to provide technical assistance and labor to fix problems.

The Purpose of the Watershed Survey

The primary purpose of the watershed survey was to:

- Identify and prioritize existing sources of polluted runoff, particularly soil erosion sites, in the Square Pond Watershed.
- Raise public awareness about the connection between land use and water quality, and the impact of soil on Square Pond. Inspire people to become active watershed stewards.
- Provide the basis to obtain additional funds to assist in fixing identified erosion sites.
- Use the information gathered as one component of a long term lake protection strategy.
- Make general recommendations to landowners for fixing erosion problems on their properties.

The purpose of the survey was NOT to point fingers at landowners with problem spots, nor was it to seek enforcement action against landowners not in compliance with ordinances. It is the hope that through future projects, the SPIA can work together with landowners to solve erosion problems on their property, or help them learn how best to accomplish solutions on their own.

Local citizen participation was essential in completing the watershed survey and will be even more important in upcoming years. With the leadership of the SPIA and assistance from agencies concerned with lake water quality, the opportunities for stewardship are limitless.

The SPIA hopes that you will think about your own property as you read this report, and then try some of the recommended conservation measures. Everyone has a role to play in lake protection!

The Survey Method

The survey was conducted by volunteers with the help of trained technical staff from the DEP and YCSWCD. 27 volunteers were trained in survey techniques during a two hour classroom workshop in May 20, 2006. Following the classroom training, the volunteers and technical staff spent the remainder of the day documenting erosion on the roads, properties, driveways, and trails in their assigned sectors using cameras and standardized forms. The teams worked together throughout the spring to complete their sectors. Technical staff conducted follow-up examinations of sites in the summer and fall of 2006 to verify data accuracy.

The collected data was entered into a computer database to create a spreadsheet, and the documented erosion sites were plotted on maps. The sites were broken out into categories (driveways, roads, private residences) and ranked based on their impact on the lake, the technical ability needed to fix the problem, and the estimated cost of fixing the problem.

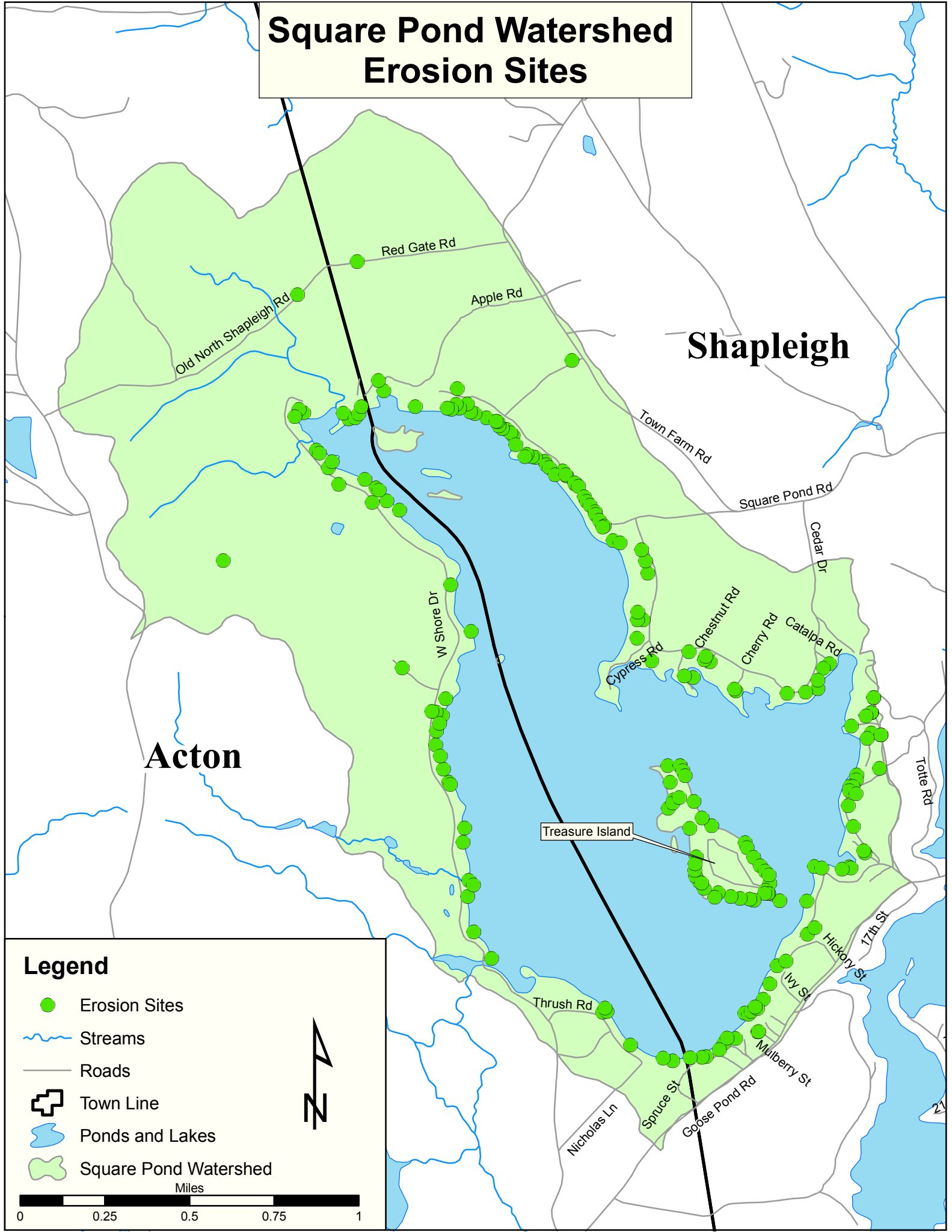
A description of sites and associated rankings are discussed in the next section of this report. Maps of the erosion sites are located in Appendix A, and a spreadsheet with data from the documented sites is located in Appendix B. Contact SPIA or YCSWCD more additional site information.

Summary of Watershed Survey Findings

Volunteers and technical staff identified 207 sites in the Square Pond Watershed that are impacting or have the potential to impact water quality. Some key conclusions include:

- 139 of the identified sites (67%) were found on residential areas. These sites tend to have less severe erosion and can be fixed easily with low cost. Individual landowners can play a big role in helping address these problems.
- A smaller but significant percentage of the remaining erosion sites were associated with beaches or beach access (10%), driveways (8%), and then roads (town and private and town roads-8%). These sites tend to be larger erosion problems with a greater lake impacts.
- 55 sites were found to have sand added to their beaches or excessively large beaches. Beaches are highly erodible and the sand also carries phosphorus to the lake. For those reasons, adding sand to shorefronts or existing beaches is also illegal. Hopefully, these problems can be eliminated through education.
- Most sites can be fixed with low to moderate labor and materials cost. In fact, 6 of the 207 sites were rated with a high cost of materials and labor (over \$2500).
- Erosion sites were identified all around the watershed and on eleven different types of land uses. As such, everyone has a role to play in lake protection. The Towns of Acton and Shapleigh shorefront property owners, business owners, road associations, lakefront landowners and even people living far from the lake can all take measures to reduce lake pollution.

Square Pond Watershed Erosion Sites









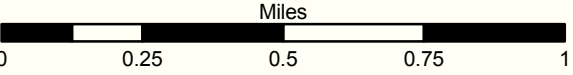
Shapleigh

Acton

Treasure Island

Legend

-  Erosion Sites
-  Streams
-  Roads
-  Town Line
-  Ponds and Lakes
-  Square Pond Watershed



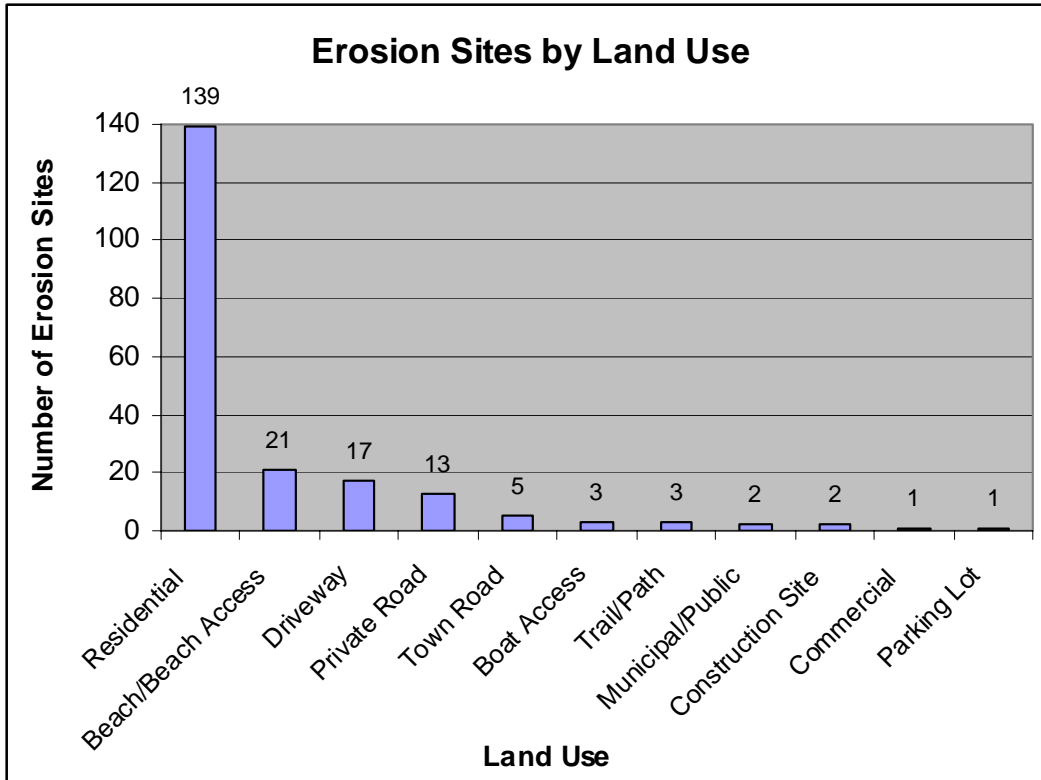
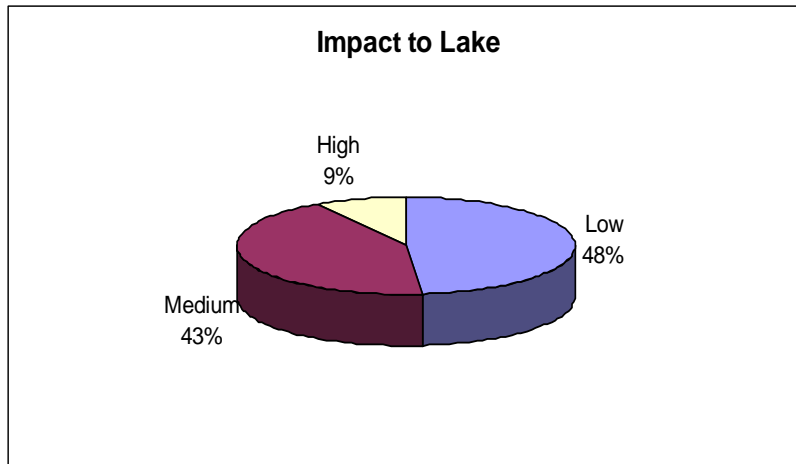


Table 1. Breakdown of site by land use categories and impact to lake.

Category	High Impact	Medium Impact	Low Impact	Total
Residential	4	66	69	139
Town Road	0	2	3	5
Private Road	3	7	3	13
Construction Site	1	1	0	2
Driveway	5	5	7	17
Commercial	0	1	0	1
Boat Access	0	3	0	3
Beach/Beach Access	3	13	5	21
Trail/Path	0	2	1	3
Municipal/Public	0	1	1	2
Parking Lot	1	0	0	1
Total	17	101	89	207

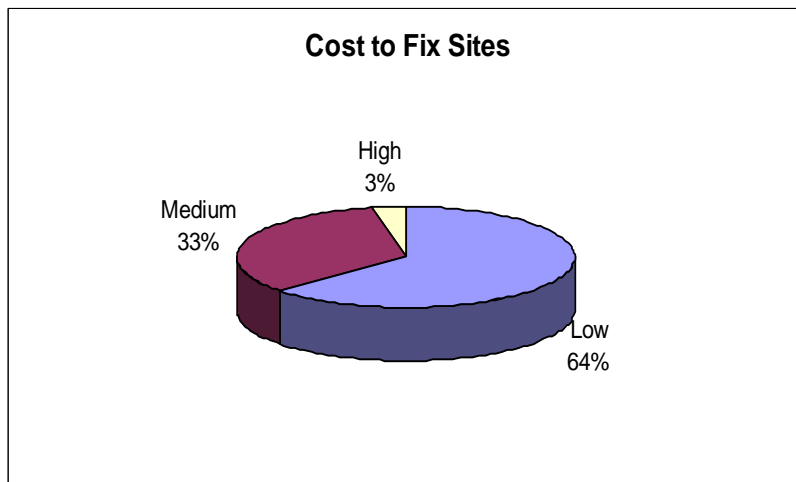
Impact to Lake—Each site was rated for its potential impact to the lake. Only 9% (18 of 207) were deemed to have a high impact.



Impact was based on slope, soil type, amount of soil eroding, proximity to water or buffer, and buffer size.

- “Low impact sites are those with limited soil transport off-site.
- At “medium” impact sites, sediment is transported off-site, but the erosion doesn’t reach a high magnitude.
- “High” impact sites are large sites with significant erosion that flows directly into a stream or the lake.

Cost of Materials to Fix Sites—Recommendations were made for fixing each site, and the associated cost of labor and materials were estimated. Only 3% (or 18 sites) entail a high cost. As shown below, most can be fixed inexpensively with low-cost materials like mulch and stone.



Cost is an important factor in planning for restoration. The cost of labor and materials to fix each site was rated as follows:

- “Low” cost sites were estimated to cost less than \$500.
- An estimate of \$500 to \$2,500 was rated “medium”.
- If the estimated cost to fix a site exceeded \$2,500, a “high” rating was assigned.

Residential Areas

Of the 139 sites associated with residential areas, 69 were low impact, 66 were medium impact, and 4 were high impact. Some of the most common problems and recommended conservation practices are pictured below.



Roof Runoff—Install stone-filled trenches along the roof dripline to help infiltrate runoff.



Before

Loose, bare soil washed down hill directly into lake.



After

A winding path was created and covered with crushed stone.

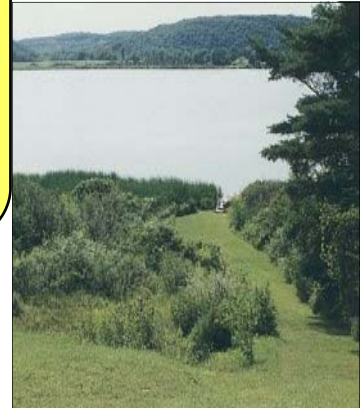
Sides of the path were covered with bark mulch and planted with attractive shrubs.



Mulch—Place mulch such as P&K Gravel's "fine erosion control mix" on bare soil.



Waterbars—Place timbers or log "speed bumps" across paths to slow runoff and trap soil.



Buffers—Plant trees and shrubs along the shoreline or let them grow back naturally.

Residential areas were associated with over 2/3 (67%) of the identified sources of polluted runoff. These problems pose a significant threat to lake water quality. Fortunately, most of these sites can be corrected with easy, low cost fixes.

Private Roads

13 private road sites had documented erosion problems. 3 of these had a high impact, 7 had medium impact and 3 had low impact. 10 of the 13 sites can be fixed at a medium cost (\$500-\$2500) or low cost (under \$500). Some of the most common problems and recommended conservation practices are pictured below.



Rubber Razors—Direct water off the driveway and into vegetation with rubber razors.



Problem— Inadequate ditching with erosion and sediment accumulation
Solution— Reshape ditch, clean out sediment, vegetate, and install check dams



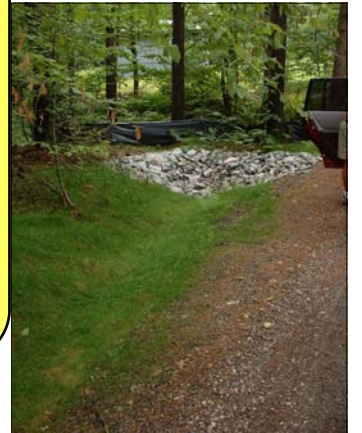
Problem— Culvert clogged with debris
Solution— Remove debris and regularly inspect culverts to ensure proper functioning



Open Top Culverts— Direct water off the driveway with open top culverts.



Road Material— Add hard-packing, cohesive surface material to the driveway.



Ponding Areas— Create small ponding areas to trap sediment and infiltrate driveway runoff.

Beach & Beach Access

During the survey, it was documented that 55 properties on Square Pond showed evidence of excessive beach area or sand being added to beaches. When sandy beaches wash into Square Pond, phosphorus is carried along and essentially “fertilizes” the lake. This reduces water clarity and feeds algae. The sand itself also decreases spawning habitat for fish and provides the perfect breeding ground for invasive plants such as milfoil.



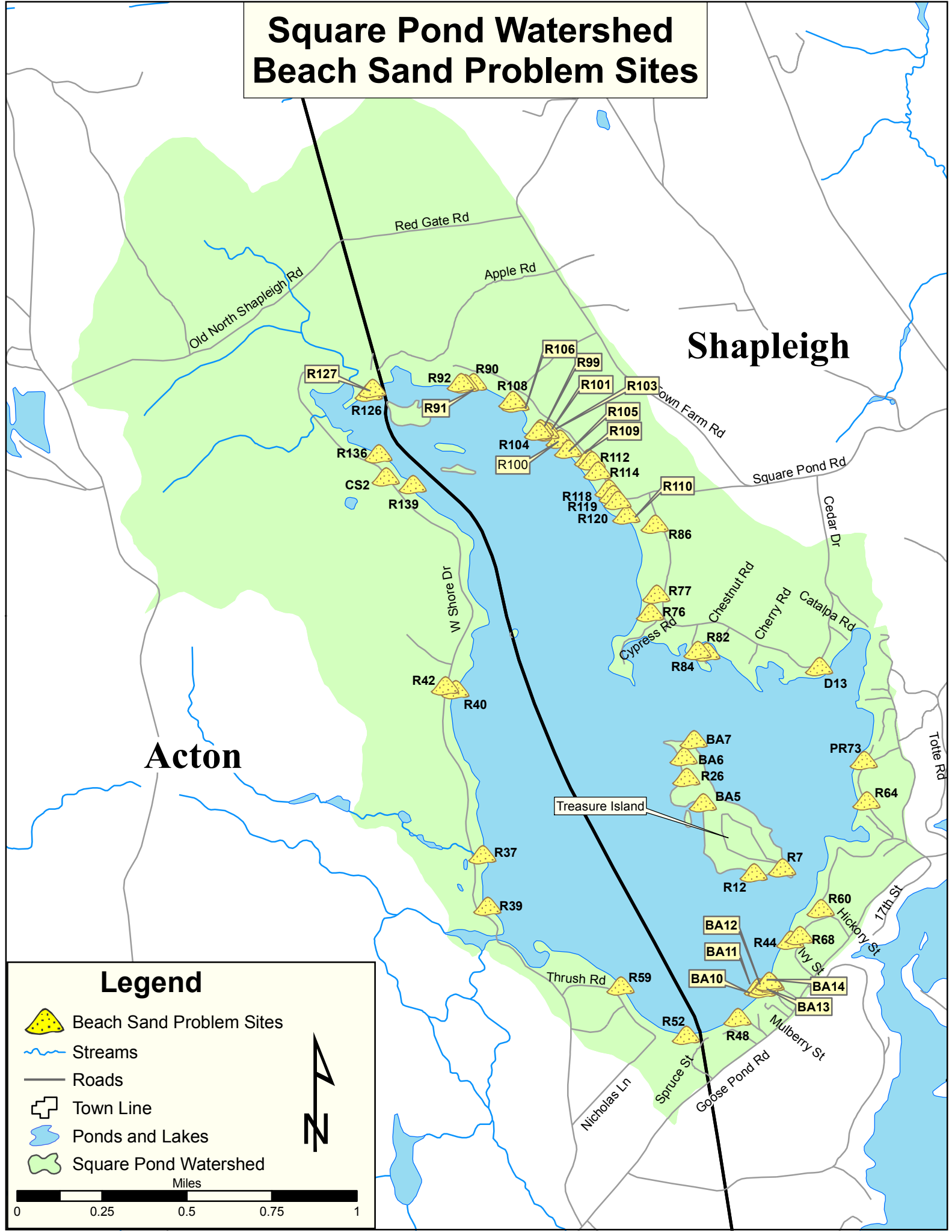
Excessive quantities of sand is never a good thing for water quality. Keep this in mind the next time you think that you need to add sand. Try to address the problems that are causing the sand to wash into the lake first. If that works then more material will not have to be brought in.

Examples of a good beach area:



Please remember that it is illegal to add sand to a beach area. Landowners would be forced to remove any added sand and may be subject to fines and other enforcement action by the Maine DEP or Town.

Square Pond Watershed Beach Sand Problem Sites



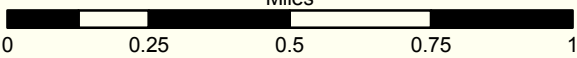
Shapleigh

Acton

Treasure Island

Legend

- Beach Sand Problem Sites
- Streams
- Roads
- Town Line
- Ponds and Lakes
- Square Pond Watershed



Next Steps ~ Where Do We Go From Here?

Fixing the sites identified in this survey will require efforts by individuals, the Square Pond Improvement Association, road associations and municipal officials.

Square Pond Improvement Association

- Distribute copies of the survey report to property owners, road associations and towns with identified erosion problems and encourage them to make improvements.
- Apply for DEP and other grants to help fix erosion problems identified in the survey.
- Support the ASYCC and encourage landowners to nominate their properties as project sites.
- Continue to increase and empower the association's membership, and provide educational materials and guidance to members of the Square Pond watershed community.
- Continue to partner with York County SWCD, Maine DEP, Town of Acton, Town of Shapleigh, and Acton-Shapleigh YCC to seek funding and implement projects to protect lake water quality.
- Organize workshops and volunteer "work parties" to start fixing identified erosion problems and teach citizens how to fix similar problems on their own properties.
- Educate municipal officials about lake issues and work cooperatively to find solutions.

Individual Landowners

- Look in the report or contact the SPIA or Acton-Shapleigh YCC to see if you have a identified erosion problem. If so, try to start fixing it. Call the YCSWCD or DEP for free advice about how to get started.
- Minimize beach areas and never bring in new sand. Encourage your neighbors to do the same.
- Stop mowing and raking your shoreline and parts of your property. Let lawn and raked areas revert back to natural plants. Deep shrub and tree roots help hold the soil.
- Avoid exposing bare soil. Seed and mulch bare areas. Erosion Control Mulch is available at Jeff Simpson's, (207) 324-5412.
- Read "Permitting ABCs" on page 13 and call the Town Code Enforcement Officer and DEP before starting any cutting or soil disturbance projects.
- Maintain septic systems properly. Pump septic tanks (every 2 to 3 years for year round residences; 4-5 years if seasonal) and upgrade marginal systems.
- Join the Square Pond Improvement Association and get involved with their activities.

Municipal Officials

- Enforce shoreland zoning and other ordinances to ensure protection of Square Pond.
- Conduct regular maintenance on town roads in the watershed, and fix town road problems identified in this survey.
- Support lake projects, SPIA and ASYCC.
- Promote training for road crews, boards, commissions, and other decision-makers.

Conservation Practices for Homeowners

After reading this report, you probably have a general idea about how to make your property more lake-friendly. However, making the leap from concept to construction may be a challenge.

The Maine DEP and Portland Water District developed a series of fact sheets that answer many common how-to questions. The 22 factsheets profile common conservation practices and include detailed instructions, diagrams and color photos about installation and maintenance. The series includes the following:

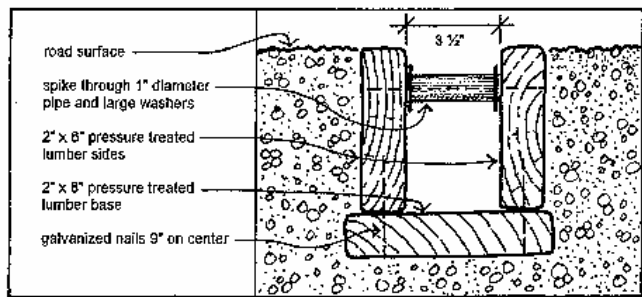
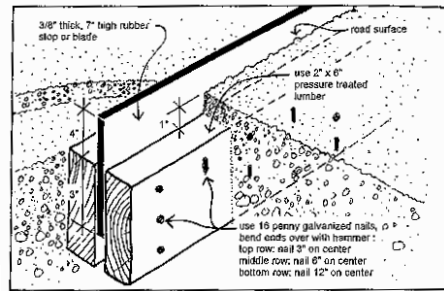
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|------------------------|------------------------|---------------|
| Construction BMPs | Infiltration Trench | Rain Barrels |
| Dripline Trench | Native Plant Lists (6) | Rain Gardens |
| Drywells | Open-Top Culverts | Rubber Razors |
| Erosion Control Mix | Paths and Walkways | Turnouts |
| Infiltration Steps (2) | Permitting | Waterbars |

The series also includes four native plant lists. Each one is tailored to different site conditions (e.g., full sun and dry soils). The lists include plant descriptions from the DEP's *Buffer Handbook* and small color photos of each plant to make plant selection easier.



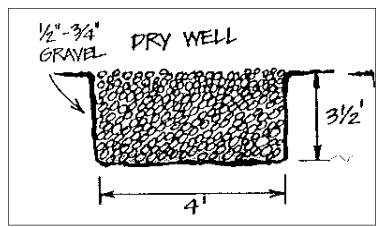
Fact sheets are available to help you install conservation practices on your property
Download at <http://www.maine.gov/dep/blwq/docwatershed/materials.htm>.

Rubber Razor Blade: Use this structure in a gravel driveway or camp road. It can be plowed over only if the plow operator is aware of its presence and lifts the plow blade slightly. Place it at a 30 degree angle to the road edge and direct the outlet toward a stable vegetated area.



Open Top Culvert: Use this structure in a gravel driveway or camp road that does not get plowed in the winter. Place it at a 30 degree angle to the road edge and point the outlet into stable vegetation. Remove leaves and debris as needed.

Drywell: Use a drywell to collect runoff from roof gutter downspouts. Drywells can be covered with sod, or left exposed for easy access and cleanout. Drywells and infiltration trenches work best in sandy or gravelly soils.



Permitting ABC's

Protection of Maine's watersheds is ensured through the goodwill of lake residents and through laws and ordinances created and enforced by the State of Maine and local municipalities. The following laws and ordinances require permits for activities adjacent to wetlands and waterbodies.

Shoreland Zoning Law—Construction, clearing of vegetation and soil movement within 250 feet of lakes, ponds, and many wetlands, and within 75 feet of most streams, falls under the Shoreland Zoning Act, which is administered by the Town through the Code Enforcement Officer and the Planning Board.

Natural Resources Protection Act (NRPA) - Soil disturbance & other activities within 75 feet of the lakeshore or stream also falls under the NRPA, which is administered by the DEP.

Contact the DEP and Town Code Enforcement Officer if you have any plans to construct, expand or relocate a structure, clear vegetation, create a new path or driveway, stabilize a shoreline or otherwise disturb the soil on your property. Even if projects are planned with the intent of enhancing the environment, contact the DEP and town to be sure.

How to apply for a Permit by Rule with DEP:

To ensure that permits for small projects are processed swiftly, the DEP has established a streamlined permit process called **Permit by Rule**. These one page forms (shown here) are simple to fill out and allow the DEP to quickly review the project.

- Fill out a notification form before starting any work. Forms are available from your town code enforcement officer, Maine DEP offices, or online at: <http://www.state.me.us/dep/blwq/docstand/nrpa/pbrform.pdf>
- The permit will be reviewed by DEP within 14 days. If you do not hear from DEP in 14 days, you can assume your permit is approved and you can proceed with work on the project.
- Follow all standards required for the specific permitted activities to keep soil erosion to a minimum. It is important that you obtain a copy of the standards so you will be familiar with the law's requirements.

6/2006 DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT BY RULE NOTIFICATION FORM
(For use with DEP Regulation, Chapter 305)

PLEASE TYPE OR PRINT IN BLACK INK ONLY

Name of Applicant: (owner)	Sandy Waters		Applicant Mailing Address:	123 Blueberry Lane	
Town/City:	Brunswick		State:	Maine	
Zip Code:	Daytime Telephone No: (include area code)	Project Location: (town)			
County:	Map #:	Lot #:	Name of Wetland or Waterbody:		
	Cumberland	20	50	Sabbathdaylake	
Name of Agent:			Agents Telephone No: (include area code)		
Detailed Directions to Site: 121 Outlet Road, Rte 26 North, turn right onto Outlet Road, 121 Outlet Road is on the left 4th to 5 houses before Barefoot Beach.					
Description of Project: Installation of a drywell to allow infiltration of roof runoff			UTM Northing: (if known)	UTM Easting: (if known)	
			Part of a larger project?	Yes	No <input checked="" type="checkbox"/>

(CHECK ONE) This project: does does not involve work below mean low water.

I am filing notice of my intent to carry out work which meets the requirements for Permit by Rule (PBR) under DEP Rules, Chapter 305. I and my agents, if any, have read and will comply with all of the standards in the Sections checked below.

Sec. (2) Act. Adjacent to Protected Natural Res. Sec. (8) Shoreline stabilization Sec. (14) REPEALED

Sec. (3) Intake Pipes Sec. (9) Utility Crossing Sec. (15) Public Boat Ramps

Sec. (4) Replacement of Structures Sec. (10) Stream Crossing Sec. (16) Coastal Sand Dune Projects

Sec. (5) REPEALED Sec. (11) State Transportation Facilities Sec. (17) Transfer/Permit Extension

Sec. (6) Movement of Rocks or Vegetation Sec. (12) Restoration of Natural Areas Sec. (18) Maintenance Dredging

Sec. (7) Outfall Pipes Sec. (13) F&W Creation/Enhance/Water Quality Improvement

I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules. I also understand that this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.

I have attached the following required submittals. NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:

Attach a check for \$55 (non-refundable) made payable to: "Treasurer, State of Maine".

Attach a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.

Attach all other required submissions as outlined in the PBR Sections checked above.

By signing this Notification Form, I represent that the project meets all applicability requirements and standards in the rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.

Signature of Agent or Applicant:	Sandy Waters	Date:	3/4/06
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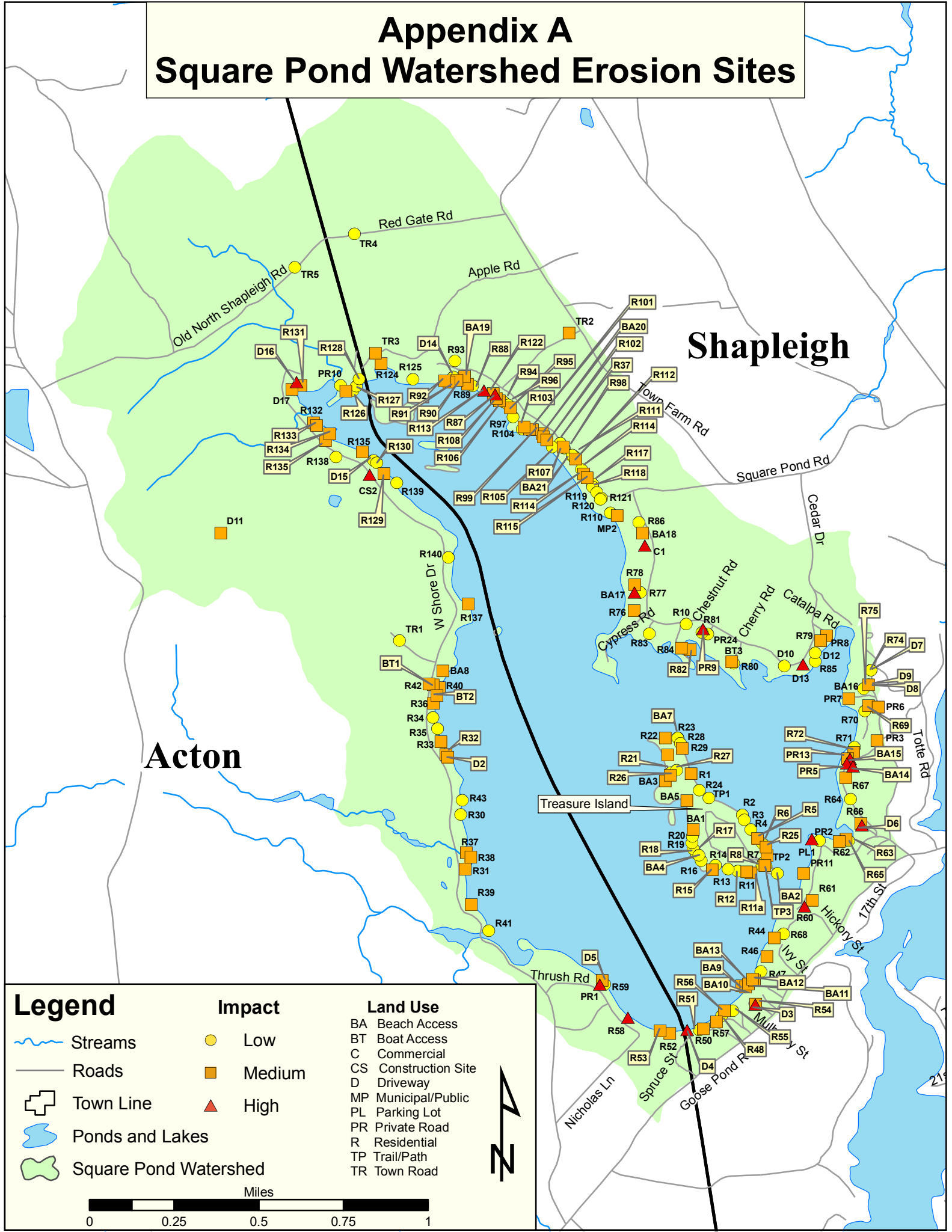
Keep a copy as a record of permit. Send the town with attachments via certified mail to the Maine Dept. of Environmental Protection at the appropriate regional office listed below. The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Permits are valid for two years. Work carried out in violation of any standard is subject to enforcement action.

AUGUSTA DEP STATE HOUSE STATION 17 AUGUSTA, ME 04333-0017 (207)987-2111	PORTLAND DEP 312 CANCO ROAD PORTLAND, ME 04103 (207)852-6300	BANGOR DEP 106 HOGAN ROAD BANGOR, ME 04401 (207)841-4570	PRESQUE ISLE DEP 1226 CENTRAL DRIVE PRESQUE ISLE, ME 04760 (207)764-0477
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OFFICE USE ONLY	Cl.#	Staff	Staff
PBR #	FP	Acc. Date	Def. Date
DEPLW0306-12006			After Photos

Appendix A

Square Pond Watershed Erosion Sites



Legend

- Streams
- Roads
- Town Line
- Ponds and Lakes
- Square Pond Watershed

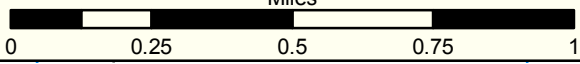
Impact

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- Medium
- High

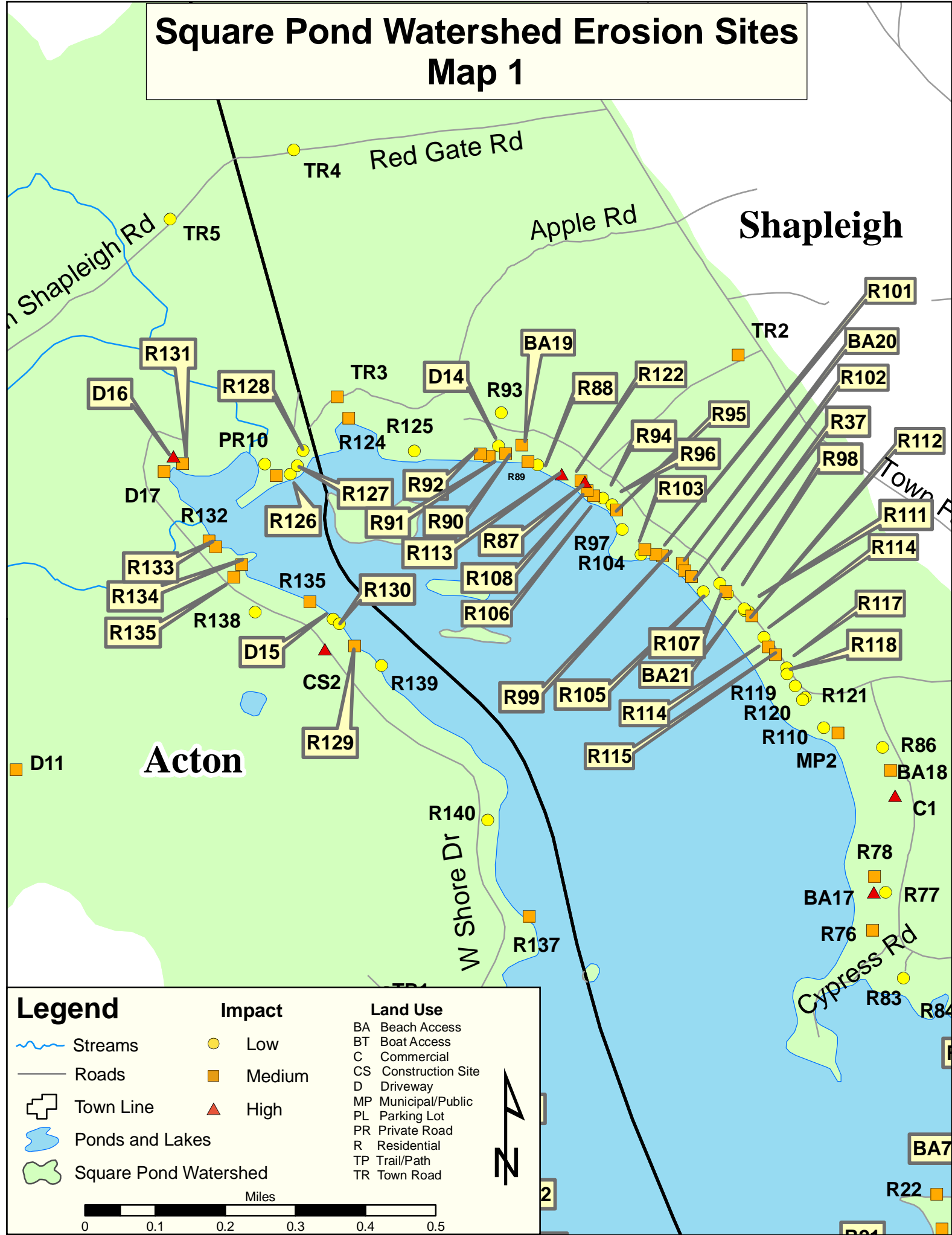
Land Use

- BA Beach Access
- BT Boat Access
- C Commercial
- CS Construction Site
- D Driveway
- MP Municipal/Public
- PL Parking Lot
- PR Private Road
- R Residential
- TP Trail/Path
- TR Town Road

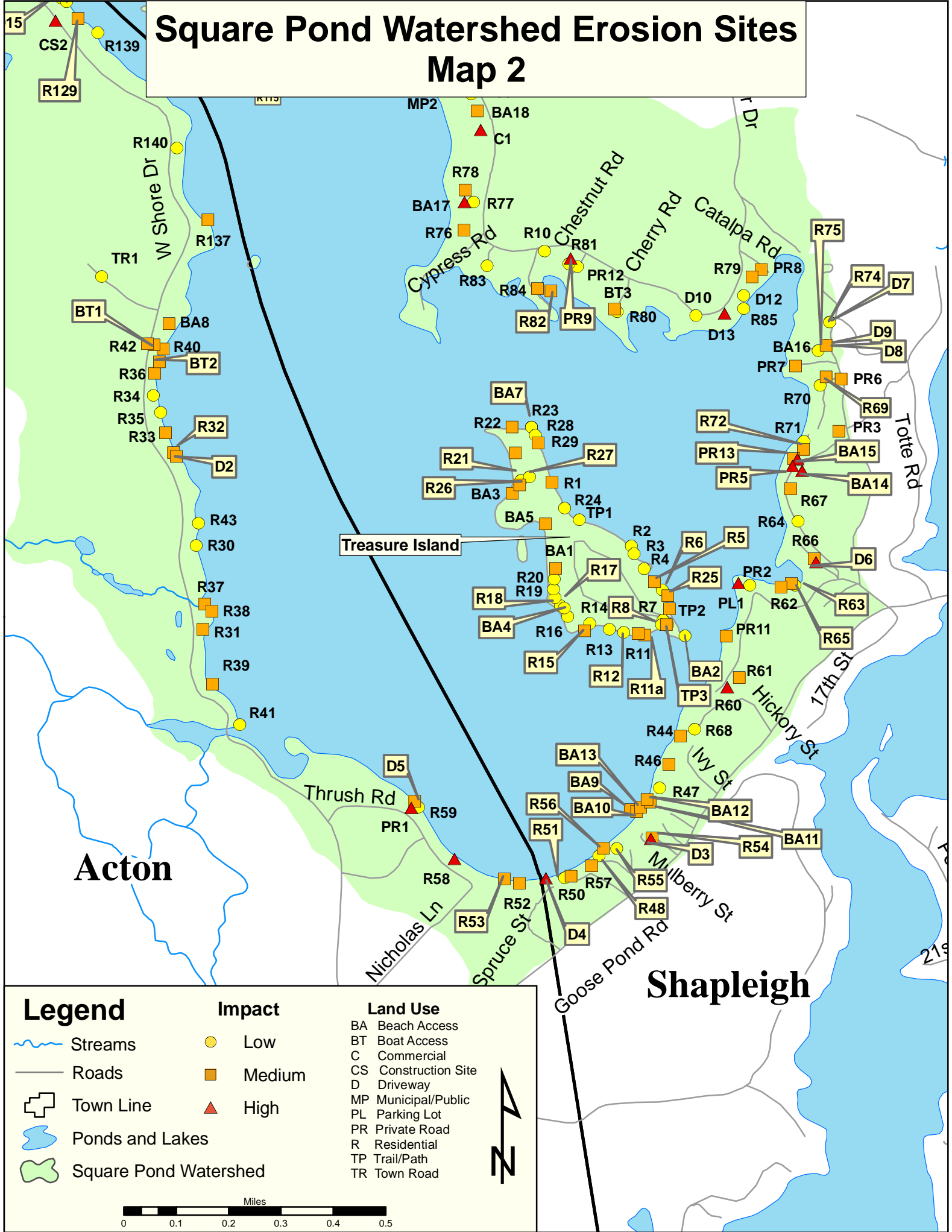
Miles



Square Pond Watershed Erosion Sites Map 1



Square Pond Watershed Erosion Sites Map 2



Legend

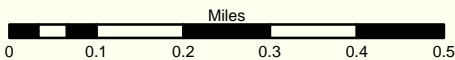
- Streams
- Roads
- Town Line
- Ponds and Lakes
- Square Pond Watershed

Impact

- Low
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Land Use

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- BT Boat Access
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- CS Construction Site
- D Driveway
- MP Municipal/Public
- PL Parking Lot
- PR Private Road
- R Residential
- TP Trail/Path
- TR Town Road



Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
BA1	10-1	33-62	77 Treasure Island	Beach Access	Severe surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion; Unstable access	25'x13'	Mulch; Establish buffer; No raking	No	Medium	Medium
BA2	10-19	33-84	Treasure Island	Beach Access	Slight surface erosion; Bare soil; Shoreline erosion	30'x5'	Build up path and define with mulch	No	Low	Low
BA3	10-4	33-42	129 Treasure Island	Beach Access	Slight surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion	10'x10'	Mulch; Install rain garden at bottom of hill; Rock barrier or gravel; No raking; Rip rap	No	Medium	Medium
BA4	10-40	33-67	61 Treasure Island	Beach Access	Slight surface erosion; Bare Soil; Lack of shoreline vegetation	50'x30'	Define foot path by camp; Mulch; Establish buffer; No raking	No	Low	Low
BA5	10-42	33-23	94 Treasure Island	Beach Access	Slight surface erosion; Bare soil; Lack of shoreline vegetation	50'x25'	Define foot path; Mulch; Establish buffer; Minimize beach area	Yes	Medium	Low
BA6	10-44	33-35	149 Treasure Island	Beach Access	Bare soil; Lack of shoreline vegetation	10'x20'	Mulch; Establish buffer; Minimize beach area; No new sand	Yes	Medium	Low
BA7	10-48	33-30	114 Treasure Island	Beach Access	Slight surface erosion; Bare soil	15'x10'	define footpath; install runoff diverter to send water into shrubs; Mulch and minimize beach area	Yes	Low	Low
BA8	1-1	124-021	West Shore Drive	Beach Access	Moderate erosion;bare soil	8 x 90'	stabilize bank in drive w/mulch; stabilize undercut; broad based dip	No	Medium	Low
BA9	2-13	29-017	13 Mulberry Street	Beach Access	Slight surface erosion; large beach area	Multiple properties	Minimize beach; No new sand	Yes	Medium	Low
BA10	2-13a	29-019	818 Goose Pond Rd	Beach Access	Slight surface erosion; large beach area	Multiple properties	Minimize beach; No new sand	Yes	Medium	Low
BA11	2-13b	29-020	820 Goose Pond Rd	Beach Access	Slight surface erosion; large beach area	Multiple properties	Minimize beach; No new sand	Yes	Medium	Low
BA12	2-13c	29-021	824 Goose Pond Rd	Beach Access	Slight surface erosion; large beach area	Multiple properties	Minimize beach; No new sand	Yes	Medium	Low
BA13	2-13d	29-022	828 Goose Pond Road	Beach Access	Slight surface erosion; large beach area	Multiple properties	Minimize beach; No new sand	Yes	Medium	Low
BA14	4-17	30-31	Elm Street	Beach Access	Severe surface erosion; Bare soil (maybe ROW)	20'x70'	See suggestions for Map Site PR6 (Survey Site 4-16)	No	High	High

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
BA15	4-18	30-30	22 Elm Street	Beach Access	Lack of Shoreline vegetation; Shoreline erosion; Unstable shoreline	76'x10'	Build up road w/recycled asphalt; Reshape; Install turnout; Install catch basin; Install rubber razor; Establish steps for foot path coming down embankment; Send water off beside shed to natural area	No	High	Medium
BA16	4-7	32-22	10 Daffodil Rd	Beach Access	Slight surface erosion; Bare soil; Lack of shoreline vegetation	10'x30'	Establish buffer; Enhance w/grass seed	No	Low	Low
BA17	5-16	35-29	380 Cedar Dr	Beach Access	Severe surface erosion; Shoreline erosion	87'x10'	Install runoff diverter (timber); Mulch; Enhance w/buffer; Close off boat ramp w/timbers	No	High	Medium
BA18	5-21	35-37	462 Cedar Dr	Beach Access	Moderate surface erosion; Bare soil; Roof runoff erosion; Lack of shoreline vegetation; Shoreline erosion	36'x50'	Install plunge pools off from driveway; Install detention basin; Define foot path; Infiltration trench along porch roofline; Drywell @ gutter downspout; Mulch; Establish buffer; Enhance w/planting in front of porch.	No	Medium	Medium
BA19	6-23	37-25-26A	336 Indian Village Rd	Beach Access	Moderate surface erosion; Bare soil; Lack of shoreline vegetation; Unstable beach access	75'x25'	Install rubber razor; Define foot path; Mulch; Establish buffer; No raking; Close off to vehicle access	No	Medium	Medium
BA20	6-36	36-18	Indian Village Rd	Beach Access	Moderate surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion; Unstable access	60'x15'	Reshape (crown) access; Grade driveway; Install rubber razor; Secure sandy beach; Close off to vehicle traffic	No	Medium	Medium
BA21	6-46	36-11&12	134 Indian Village Rd	Beach Access	Moderate to severe surface erosion; Bare soil in places; Possible runoff from Site 6-40	10'x30'	Berm at top of path; Change land use-close off to vehicle access; Vegetate pathway to lake; Mulch	No	Low	Low
BT1	1-2a	124-023	936 West Shore Drive	Boat Access	Moderate erosion	6'x40'	Infiltration trench	No	Medium	Low
BT2	1-4	124-026	902 West Shore Drive	Boat Access	Slight erosion from tarred boat access	9'x125'	Install waterbar or culvert on West Shore Drive to divert water running into lake	No	Medium	Medium

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
BT3	5-7	34-26	13 Cherry Rd	Boat Access	Moderate surface erosion; Bare soil; Shoreline erosion; Boat launch/driveway gravel/sand	75'x10'	Define foot path; Install runoff diverter (waterbar); Mulch; Install rain garden; Discontinue use of extended driveway; Nice buffer already established; Continue establishing buffer	No	Medium	Medium
C1	5-20	35-36	448 Cedar Dr	Commercial	Large Blacktop area with runoff from Cedar Dr.; Previously a marina (for sale)	12,000 sq ft.	Install runoff diverters in parking lot (catch basins or drywells); Infiltration trench; Establish buffer	No	High	Medium
CS1	1-6	124-030	West Shore Drive Lot	Construction Site	Bare/uncovered soil on new construction site	200'x200'	Install Silt fence/erosion control berms; Install check dams	No	Medium	Low
CS2	8-12 multi	121-025	1308 West Shore Dr	Construction Site	Severe surface erosion; Bare and uncovered soil; Failed silt fence	10'x200'	Mulch; Stabilize silt fence; Seed/Hay; Stabilize bare soil piles	Yes	High	Low
D1	1-7	124-031	858 West Shore Drive	Driveway	Moderate surface erosion; Bare soil	2'x50'	Install Broad-based dip	No	Medium	Low
D2	1-8	125-011	792 West Shore Drive	Driveway	Moderate surface erosion; lack of shoreline vegetation	3'x150'	Install catch basin; Install detention basin and/or runoff diverter; Establish buffer at retaining wall; Enhance with rain garden at end of driveway; Define foot path	No	Medium	Medium
D3	2-1	29-17	13 Mulberry Street	Driveway	No silt fence downhill of driveway during construction; Moderate surface erosion; moderate bank erosion; bare soil; inadequate shoreline vegetation	20'x150'	Add new surface material to driveway (recycled asphalt); Vegetate shoulder; install runoff diverter; Establish buffer; Re-establish silt fence until vegetated; No raking	No	High	High
D4	2-6	29-2	68 Spruce Street	Driveway	Hot top driveway enables runoff to flow directly to lake; Bare soil; Lack of shoreline vegetation	5'x21'	Establish rain garden at end of driveway; Enhance w/buffer; Limit vehicle access to beach	No	High	Medium
D5	2-9	126-018	87 Thrush Road	Driveway	Moderate surface erosion; Concrete driveway/boat launch sloped to lake	10'x63'	Add 3/4" stone at top of concrete drive; Infiltration trench; Establish buffer alongside of roadside	No	Medium	Medium

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
D6	3-5	30-46	23 Treasure Island Rd	Driveway	Moderate surface erosion; moderate road shoulder erosion; bare soil; delta in lake; Lack of shoreline vegetation; shoreline erosion; Driveway used as snowmobile trail in winter.	150'x15'	Add new gravel; Vegetate shoulder; Install runoff diverter; Mulch on banking; establish buffer; No raking	No	High	Medium
D7	4-3	32-34	138 Dogwood Dr.	Driveway	Slight surface erosion; bare soil	25'x150'	Install runoff diverter in driveway	No	Low	Low
D8	4-5	32-31	120 Dogwood Dr.	Driveway	Moderate surface erosion	10'x300'	Install turnouts & runoff diverters & add new surface material	No	Low	Low
D9	4-6	32-28	106 Dogwood Dr.	Driveway	Slight surface erosion; bare soil	20'x15'	Install runoff diverter; berm end of driveway; Establish buffer	No	Low	Low
D10	5-6	34-20	166 Cedar Dr	Driveway	Slight to moderate surface erosion; Slight road shoulder erosion; Dirt drive and boat launch	120'x8'	Add new surface material to drive, i.e. recycled asphalt; Reshape crown; Install runoff diverters or speed bump; Close off from use; Establish buffer along driveway	No	Low	Low
D11	5-21a	35-37	462 Cedar Dr	Driveway	Severe surface erosion	150'x10'	Add new surface material to driveway; Reshape (crown) driveway; Install detention basins @ outlets of paved swales; Possibly separate driveway site to divert runoff	No	Medium	Medium
D12	5-3a		128 Cedar Dr	Driveway	Direct flow of runoff from Cedar Drive, down paved driveway into lake	120'x8'	Install paved waterbar/speedbump; discontinue access	No	Low	Low
D13	5-4	34-13	148 Cedar Dr	Driveway	Moderate surface erosion; Bare soil; Drive/Boat launch not paved	130'x12'	Install catch basin, Install runoff diverters; Discontinue use of lower lakeside drive; Establish buffer; Vegetate banking	Yes	High	Medium
D14	6-25	37-21	364 Indian Village Rd	Driveway	Moderate surface erosion; Bare soil	40'x10'	Add new crushed stone to driveway; Install waterbar across top of bank by driveway; No raking waterfront	No	Low	Low
D15	8-10			Driveway	Moderate surface erosion; Bare soil		See Map Site R136 (Survey Site 8-9)	No	Low	Low

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
D16	8-3	121-004	1554 West Shore Dr	Driveway	Severe surface erosion; Bare and uncovered soil near top of driveway; Lack of shoreline vegetation; Shoreline erosion	182'x10'	Install ditch and/or detention basin near bottom of driveway; Install runoff diverter (waterbar @ base & top) to keep sand out- possibly diverting toward buffered area in middle; Add new surface material to driveway, i.e. recycled asphalt; Establish buffer	No	High	High
D17	8-4	121-005	1516 West Shore Dr	Driveway	Slight ditch erosion; Moderate road shoulder erosion; Paved ditch broken up	30'x6'	Pave/repave section of drive that is broken up ; Install runoff diverters; Add speed bump at top of driveway	No	Medium	Medium
MP1	4-1	32-35	25 Gatehouse Rd	Municipal/ Public	Moderate surface erosion; bare soil; lack of shoreline vegetation; shoreline erosion	10'x25'	Mulch; Establish buffer; EC Berms	No	Low	Low
MP2	6-67	35-43	Town Beach	Municipal/ Public	Moderate surface erosion; Bare soil; Inadequate shoreline vegetation	60'x40'	Rip rap eroded edge (L) of retaining wall; Define foot path; Install runoff diverter (waterbar); Mulch; Establish buffer; No raking; Vegetate Water retention swales	No	Medium	Low
PL1	3-2	30-59	Treasure Island Parking Lot	Parking Lot	Slight sheeting erosion; bare soil; Inadequate/Lack of shoreline vegetation; Potential oil/gas pollution coming from parking lot (vehicle/boat traffic); Lots of small rills throughout lot; Runoff linked to Treasure Island Road	200'x100'	Add new surface material, i.e. gravel, recycled asphalt, crushed stone; Install runoff diverters; Establish buffer	No	High	High
PR1	2-19	126	Thrush Road/near 87 Thrush Rd	Private Road	Moderate surface erosion; moderate road shoulder erosion; bare soil	60'x225'	Reshape ditch; install turnouts; install ditch/detention basin; Vegetate shoulder eroding from banking	No	High	High
PR2	3-3	30	Treasure Island Road/near parking lot	Private Road	Moderate surface erosion; bare coarse gravel exposed	90'x12'	Install runoff diverter, open top culvert or rubber razor	No	Low	Medium

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
PR3	3-8	30-32 A/B	44 Dogwood Dr.	Private Road	Severe surface erosion; Clogged culvert; Slight road shoulder erosion	227'x6'	Remove clog from culvert; Enlarge and reroute culvert to off road; Install runoff diverters - i.e. broad-based dip or rubber razor; Existing open top culvert replaced with rubber razor	No	Medium	Medium
PR4	4-13	32-16	Dogwood/Dahlia Rd	Private Road	Runoff from Dogwood onto Dahlia due to slope; Eroding Dahlia St.	150'x6'	Site linked to Map Site PR8 (Survey Site 4-9); Install runoff diverter (open top culvert and/or waterbar)	No	Medium	Medium
PR5	4-16	30-32	Elm Street	Private Road	Severe surface erosion; Severe ditch erosion; Severe road shoulder erosion; Bare soil	14'x250'	Install turnouts; Install ditch; Install detention basin; Install runoff diverter; Install rubber razor 25' from water add new material to reshape road.	No	High	Medium
PR6	4-8	32	Daisy Rd	Private Road	Moderate surface erosion; Road shoulder erosion		Install runoff diverters; Establish buffer at end of drive; Add new surface material	No	Medium	Low
PR7	4-9	32-16	13 Dahlia Street	Private Road	Moderate road shoulder erosion; Bare soil with exposed roots; Shoreline erosion	12'x50'	Site is linked to Map Site PR5 (Survey Site 4-13); Install ditch; Install runoff diverters	No	Medium	Low
PR8	5-1	34-4	12&14 Catalpa Rd	Private Road	Moderat surface erosion; roof runoff erosion	6'x200'	Add new surface material to driveway; Install runoff diverters, i.e. rubber razor; Install infiltration trench	No	Medium	Medium
PR9	5-9	34-34	286 Cedar Dr.	Private Road	Severe surface erosion; Shoreline erosion; Drive black topped to 60' of water - sand to lake	60'x10'	Reshape drive (crown); Install runoff diverter; Discontinue use of boat launch; Install waterbar; Establish rain garden; No raking; Roof runoff from next door may be adding to erosion	Yes	High	Medium
PR10	7-2	37-4	Apple Rd	Private Road	Moderate surface erosion; Slight road shoulder erosion	20'x30'	Install rubber razor and/or waterbar; Enhance with buffer at opening of drainage area	No	Low	Low

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
PR11	3-1	30-61	86 Treasure Island Rd	Private Road	Large rocks/coarse gravel exposed; ruts; Site linked to Treasure Island Parking lot (see site 3-2);	75'x200'	Add new gravel at top of private drive/edge of parking lot; install runoff diverter; Berm to side of road; establish buffer along shoreline	No	Medium	Low
PR12	5-24	34-33	9 Conifer Rd	Private Road	Slight surface erosion; Bare soil; Lack of shoreline vegetation	20'x20'	Install runoff diverter (rubber razor); Define foot path; Drywell @ gutter downspout; Install timbers/waterbar across beach access	No	Low	Low
PR13	4-15	32-03	32 Elm Street	Private Road	Moderate surface erosion; Bare soil; Roof runoff erosion	30'x70'	Crushed stone under deck; Infiltration trench; Rain garden and/or buffer; Install gutters; Minimize beach area	Yes	Medium	Medium
R1	10-10	33-22	90 Treasure Island	Residential	Bare soil; Undercut shoreline; Shoreline erosion; Unstable shoreline access	30'x20'	Define/establish foot path with rocks to guard shoulder; Mulch; Establish buffer; No raking	No	Medium	Low
R2	10-13	33-10	48 Treasure Island	Residential	Bare soil; Lack of shoreline vegetation; Shoreline erosion	10'	Define foot and trail path; Mulch; Establish buffer; No raking	No	Low	Low
R3	10-14	33-7	34 Treasure Island	Residential	Bare soil; Shoreline erosion	20'	Define foot and trail path; Mulch; Establish buffer; No raking	No	Low	Low
R4	10-15	33-6	32 Treasure Island	Residential	Slight surface erosion; Bare soil; Shoreline erosion	15'	Mulch; No raking	No	Low	Low
R5	10-16	33-4	26 Treasure Island	Residential	Slight surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion	4'x10'	Define foot path with mulch; Mulch; Establish buffer	No	Medium	Low
R6	10-17	33-3	24 Treasure Island	Residential	Bare soil; Shoreline erosion	40'	Define foot path/trail with berm; Mulch; Establish buffer; Enhance w/ buffer- island w/pine needles between path & beach	No	Low	Low
R7	10-20	33-83	9 Treasure Island	Residential	Slight surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion	30'	Mulch; Establish buffer; No raking; Stone/rock buffer; Minimize beach area; No new sand	Yes	Low	Low

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R8	10-21	33-82	11 Treasure Island	Residential	Slight surface erosion; Bare soil; Roof runoff erosion; Lack of shoreline vegetation; Shoreline erosion	30'x30'	Mulch; Stone/rock buffer; Establish buffer; No Raking; infiltration trench for roof runoff	No	Low	Low
R9	10-23	33-81	13 Treasure Island	Residential	Slight surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion	25'	Mulch; Establish buffer; Stone/rock buffer; No raking	No	Low	Low
R10	5-10	34-37A	6 Chestnut Rd	Residential	Moderate surface erosion; Culvert takes runoff directly to lake	25'x25'	Consider removal of culvert or divert culvert into new rain garden at top of culvert; Mulch; Establish grass or buffer above beach; No raking	No	Low	Low
R11	10-24	33-79	17 Treasure Island	Residential	Slight surface erosion; Mild root exposure; Shoreline erosion	20'	Mulch; Stone/rock buffer; Establish buffer; No raking	No	Medium	Medium
R11a	10-25	33-78	21 Treasure Island	Residential	Slight to moderate surface erosion; Bare soil; Shoreline erosion; Roof runoff erosion	35'x35'	Mulch; Vegetate w/buffer; No raking; Rock wall; Rip rap	No	Medium	Medium
R12	10-26	33-76	27 Treasure Island	Residential	Slight surface erosion; Bare soil; Shoreline erosion	40'x4'	Mulch; Establish buffer; Minimize beach area; No raking	Yes	Low	Low
R13	10-27	33-74	33 Treasure Island	Residential	Bare soil; Lack of shoreline vegetation; Shoreline erosion	10'x5'	Mulch	No	Low	Low
R14	10-28	33-73	35 Treasure Island	Residential	Slight surface erosion; Bare soil; Shoreline erosion	15'	Mulch; Vegetate w/buffer; No raking; Rock wall;	No	Low	Low
R15	10-29	33-71	39 Treasure Island	Residential	Slight surface erosion; Bare/loose pebbles; Lack of shoreline vegetation; Shoreline erosion	8'x20'	Mulch; Establish buffer; Rock diverters; No raking	No	Medium	Low
R16	10-33	33-68	57 Treasure Island	Residential	Slight surface erosion; Shoreline erosion	5'x15'	Mulch; Rock/stone buffer; No raking; Install runoff diverter at top of path from beach; Rip rap	No	Low	Low
R17	10-36	33-65	69 Treasure Island	Residential	Slight surface erosion; Bare soil; Shoreline erosion	8'x15'	Mulch; Rock/stone buffer; No raking	No	Low	Low
R18	10-37	33-64	71 Treasure Island	Residential	Slight surface erosion; Bare soil	15'x5'	Mulch; Rock/stone buffer; No raking	No	Low	Low
R19	10-38	33-63	73 Treasure Island	Residential	Slight surface erosion; Bare soil	10'x10'	Mulch; No raking	No	Low	Low
R20	10-41			Residential	Slight surface erosion	10'x10'	Define foot path; mulch; No raking	No	Low	Low

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R21	10-43	33-39	137 Treasure Island	Residential	Bare soil; Lack of shoreline vegetation; Shoreline erosion	50'x25'	Infiltration steps; Drywell @ gutter downspout; Mulch; Rain garden trenched behind pavers; Enhance w/buffer	Yes	Low	Low
R22	10-45	33-31/32/33	120 Treasure Island	Residential	Moderate surface erosion; Undercut shoreline; Lack of shoreline vegetation; Shoreline erosion	53'x5'	Establish buffer; Rip rap	No	Medium	Medium
R23	10-46	33-30	114 Treasure Island	Residential	Moderate surface erosion; Undercut shoreline; Lack of shoreline vegetation; Unstable retaining wall	10'x10'	Rip Rap - remake retaining wall	No	Low	Medium
R24	10-47	33-19	80 Treasure Island	Residential	Bare soil; Lack of shoreline vegetation; Shoreline erosion	10'x2'	Define foot path; Mulch; Build berm up in front of beach access; Rip rap edge of beach	No	Low	Low
R25	10-49	33-002	20 Treasure Island	Residential	Moderate surface erosion; Bare soil; Shoreline undercut; Lack of shoreline vegetation	10'x5'	Define foot path with trail berm; Rip rap along shoreline; Buffer islands planted near beach	No	Medium	Medium
R26	10-5	33-40	135 Treasure Island	Residential	Bare soil; Lack of shoreline vegetation; Shoreline erosion	25'x15'	Mulch; Establish buffer; No raking; No new sand	Yes	Medium	Low
R27	10-6	33-38	141 Treasure Island	Residential	Slight surface erosion; Bare soil; Shoreline erosion	25'x15'	Define foot path; Infiltration trench off roof line; Drywell @ gutter downspout; Mulch; Increase height of ledge leading to water; No raking	No	Low	Low
R28	10-7	33-29	112 Treasure Island	Residential	Slight surface erosion; Bare soil; Shoreline erosion	5'x10'	Mulch; No raking	No	Low	Low
R29	10-8	33-24	98 Treasure Island	Residential	Slight surface erosion; Bare soil; Shoreline erosion	10'x10'	Mulch; No raking; Add rip rap along shoreline; Add berm at bottom of hill by camp	No	Medium	Low
R30	1-10	125-019	706 West Shore Drive	Residential	Moderate surface erosion; bare soil	3'x20'	Remove loam; Enhance established stone tiers with mulch to stabilize; Establish buffer along gabion basketed wall; Leave lip on steps	No	Low	Low

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R31	1-11	125-026	616 West Shore Drive	Residential	Moderate surface erosion; bare soil; lack of shoreline vegetation; erosion; unstable access	15'x70'	Vegetate top of driveway (@ sand banking); Install runoff diverter and rain garden at edge of driveway; mulch	No	Medium	Low
R32	1-12	125-012	782 West Shore Drive	Residential	Moderate surface erosion; lack of shoreline vegetation; erosion; unstable access	6'x10'	Install drywell at gutter downspout; Mulch; Establish buffer; Close off area to vehicles	No	Medium	Low
R33	1-13	124-033	824 West Shore Drive	Residential	Runoff from road into driveway; Bare soil; Lack of shoreline vegetation	25'x50'	Install culvert; Install detention basin off driveway; install runoff diverter; Install speed bump; Define foot path; Infiltration steps; drywall @ gutter downspout, enhanced with rain garden; mulch; Establish buffer; Crush stone foot path to replace slate pavers	No	Medium	Medium
R34	1-14	124-030	868 West Shore Drive	Residential	Slight surface erosion; Shoreline erosion	17'x50'	Install runoff diverter; Infiltration trenches on both side of house; drywell @ gutter downspout; Mulch; Enhance w/buffer	No	Low	Low
R35	1-15	124-032	842 West Shore Drive	Residential	Moderate surface erosion; Bare soil; lack of shoreline vegetation; Shoreline erosion	30'x10'	Install infiltration steps at bottom of stone steps; Mulch; Establish a buffer at edge of beach; add crushed stone to establish foot path from steps	No	Low	Low
R36	1-16	124-027	894 West Shore Drive	Residential	Roof runoff; Lack of shoreline vegetation; Shoreline erosion	40'x25'	Define foot path; Install drywell/infiltration trenches @ gutter downspout and bottom of steps; Mulch; Establish buffer	No	Medium	Low
R37	1-17	125-024	650 West Shore Drive	Residential	Moderate surface erosion; Lack of shoreline vegetation; Shoreline erosion; unstable access	40'x10'	Mulch; Establish buffer at edge of beach; Maintain berm at end of driveway; Minimize beach area	Yes	Medium	Medium
R37	6-37	36-14	154 Indian Village Rd	Residential	Bare soil; Roof runoff erosion; Inadequate shoreline vegetation; Shoreline erosion	50'x10'	Define foot path/steps at beach area; Drywell @ gutter downspout; Mulch path; Establish buffer	No	Low	Low
R38	1-18	125-025	634 West Shore Drive	Residential	Lack of Shoreline vegetation; Shoreline erosion; Unstable shoreline	5'X200'	Rip rap; establish buffer	No	Medium	Medium

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R39	1-19	126-009	550 West Shore Drive	Residential	Slight surface erosion; Bare soil	20'x10'	Install infiltration trench at end of driveway; Establish rain garden at edge of driveway; Minimize beach area	Yes	Medium	Low
R40	1-2	124-023	936 West Shore Drive	Residential	Bare soil with direct flow to beach	50'x20'	Install diverter into new rain garden on beach area to lessen sandy beach; establish buffer; no raking; minimize beach area	Yes	Medium	Low
R41	1-20	126-012	514 West Shore Drive	Residential	Shoreline undercut; Inadequate shoreline vegetation; unstable retaining wall	150'	Enhance with buffer; Install rip rap along shore	No	Low	Medium
R42	1-3	124-024	918 West Shore Drive	Residential	Moderate erosion; bare soil; shoreline erosion from under building	6'x50'	Infiltration trench; Install runoff diverter; replace new sand w/mulch; Install culvert to divert water coming down road to other side of road (not lakeside) where a small pool already exists	Yes	Medium	High w/culvert
R43	1-9	125-017	730 West Shore Drive	Residential	Slight surface erosion; Bare soil; Shoreline erosion	2'x10'	Vegetate shoulder of driveway; Define foot path; Drywell at gutter downspout; Mulch	No	Low	Low
R44	2-10	29-027	24 Ivy Street	Residential	Moderate surface erosion; bare soil; lack of shoreline vegetation; shoreline erosion	20'x30'	Install paved waterbar; Drywell at edge of beach from gutter; Establish buffer and/or rain garden; Minimize beach	Yes	Medium	Medium
R46	2-11	29-024	18 Ivy Street	Residential	Slight surface erosion; lack of shoreline vegetation	20'x70'	Define/Install pathway at bottom of stairs; infiltration steps; mulch; establish buffer; Planting at retainer wall near beach	No	Medium	Medium
R47	2-12	29-023	836 Goose Pond Rd	Residential	Slight surface erosion; lack of shoreline vegetation	40'x10'	Mulch on bare soil by lawn; enhance w/buffer	No	Low	Low
R48	2-14			Residential	Slight surface erosion; bare soil; inadequate shoreline vegetation		Install runoff diverter into new rain garden; mulch; enhance w/buffer; Minimize beach	Yes	Low	Low
R50	2-15			Residential	Moderate surface erosion;	60'x5'	Install drywell @ gutter downspout; Mulch; Install rain garden; enhance w/buffer; Add to rock retainer wall	No	Medium	Low

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R51	2-16	29-004	774 Goose Pond Rd	Residential	Slight surface erosion; Roof runoff erosion; lack of shoreline vegetation	6'x15'?	Drywell @ gutter downspout; Mulch path; Install plunge pool at end of rock ditch; Establish buffer and/or rain garden	No	Low	Low
R52	2-17	128-009	49 Spruce Street	Residential	Moderate surface erosion; moderate ditch erosion; bare soil	20'x5'	Clean out plunge pool & enlarge; Mulch by plunge pool; establish buffer; No raking; Minimize beach (volleyball area)	Yes	Medium	Medium
R53	2-18	128-008	47 Spruce Street	Residential	Moderate surface erosion; bare soil; lack of shoreline vegetation	37'x3'	Install Infiltration trench at end of driveway or install runoff diverter into rain garden; mulch; enhance w/buffer	No	Medium	Medium
R54	2-2	29-16	16 Mulberry Street	Residential	Hot top driveway on hill causing erosion; slight surface erosion; Lack of shoreline vegetation	10'x50'	Install catch basin; Install Infiltration steps; Install rain garden/buffer driveway runoff; Trench between driveway and beach	No	Medium	Low
R55	2-3	29-11	13 Poplar Street	Residential	Slight surface erosion; Driveway washing out	10'x8'	Infiltration trench; Plantings at roof dripline; Establish buffer along lakefront	No	Low	Low
R56	2-4	29-10	17 Poplar Street	Residential	Slight surface erosion; Roof runoff faces lake	16'	Infiltration trench; Drywell @ gutter downspout; Mulch; Enhance w/buffer	No	Medium	Low
R57	2-5	29-8	17 Quail Road	Residential	Slight surface erosion; Bare soil; lack of shoreline vegetation; Shoreline erosion, unstable lake access	100'x8'	Enhance infiltration trench; install runoff diverter (waterbar) Mulch; Establish buffer	No	Medium	Low
R58	2-7	127-004	West Shore Dr/Thrush Rd	Residential	Moderate surface erosion; Bare soil; Fairly steep slope with runoff along driveway and side of house	9'x117'	Install diverter at top of driveway; Establish buffer; revegetate banking; Cut off to vehicle traffic; Terracing bank; Mulch	No	High	Medium
R59	2-8	127-001	97 Thrush Road	Residential	Slight surface erosion; Bare soil; Roof runoff facing lakefront	33'	Infiltration trench; drywell @ gutter downspout; Mulch; Enhance w/buffer; Install diverter; Establish rain garden on side of house; Minimize beach	Yes	Low	Low

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R60	3-10	30-64	23 Hickory Lane	Residential	Severe surface erosion; Severe hillside erosion on both sides of house w/bare soil; Undercut shoreline; Lack of shoreline vegetation; Shoreline erosion; Driveway eroding into lake (6 ft away)	20'x20'	Install ditch and armor w/stone; Build up driveway w/new surface material; Vegetate shoulder; Install detention basin; Install runoff diverters; Mulch; Establish buffer; Limit vehicle access	Yes	High	Medium
R61	3-11	30-62	11 Hickory Lane	Residential	Unstable construction (semi) site; Moderate surface erosion; bare soil; Inadequate shoreline vegetation on hillside; Shoreline erosion due to hillside deterioration due to construction.	100'x50'	Mulch; Establish buffer; Enhance with junipers; Silt fence/EC berms need to be installed to stabilize hillside; Seed/Hay	No	Medium	Medium
R62	3-12	30-56	45 Treasure Island Rd	Residential	Moderate surface erosion; Bare soil; Lack of shoreline vegetation	75'x20'	Define foot path; Infiltration trench; Mulch; Enhance w/buffer; No raking	No	Medium	Medium
R63	3-13	30-54 & 55	33 & 41 Treasure Island Rd	Residential	Bare soil; Lack of shoreline vegetation; Shoreline erosion	50'x25'	Define foot path; Mulch; Establish buffer	No	Low	Low
R64	3-14	30-041	26 Hawthorne Rd	Residential	Slight surface erosion; bare soil; Lack of Shoreline vegetation; Shoreline erosion	25'x30'	Define foot path; Infiltration trench along front porch; drywell @ gutter downspout or divert into vegetated area side of house; Mulch; Install rain garden; Establish buffer	Yes	Low	Low
R65	3-4	30-57	49 Treasure Island Rd	Residential	Moderate surface erosion; bare soil; lack of shoreline vegetation; Roof runoff	15'x15'	Define foot path; Install infiltration trench near roof ; Mulch; Establish buffer	No	Medium	Low
R66	3-6	30-42	21 Hemlock Road	Residential	Moderate surface erosion (sheets & rills); Bare soil; Delta in lake; Inadequate shoreline vegetation; Shoreline erosion; Unstable access; Runoff from Hemlock Rd	75'x50'	Install diverter; Mulch; Replace railroad ties or raise/establish buffer at ties; More shoreline vegetation needed	No	Medium	Medium
R67	3-7	30-40	30 Hawthorne Rd	Residential	Moderate surface erosion (sheets & rills); lack of shoreline vegetation; Shoreline erosion	8'x40'	Install runoff diverter (waterbar); Establish buffer strips; Reinstall retainer wall	No	Medium	Medium
R68	3-9	29-29	43 Hickory Lane	Residential	Slight surface erosion with exposed roots; Bare soil; Inadequate shoreline vegetation; Lots of exposed roots	5'x10'	Install crushed stone under roofline; Mulch; Enhance w/buffer; No raking - duff could be used as mulch	Yes	Low	Low

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R69	4-10	32-9A	27 Dahlia Street	Residential	Moderate surface erosion; Bare soil with exposed roots; Lack of shoreline vegetation; Roof runoff	70'x100'	Mulch; Install rain garden; Establish buffer	No	Medium	Low
R70	4-11	32-08	35 Dahlia Street	Residential	Moderate surface erosion; Bare soil with exposed roots; Roof runoff	50'x75'	Infiltration trench (under roofline); Mulch: Install rain garden	No	Low	Low
R71	4-12	32-07	45 Dahlia Street	Residential	Slight surface erosion; bare soil: Roof runoff erosion	5'x75'	Infiltration trench; Establish rain garden; Add gutter	No	Low	Low
R72	4-14	32-05	37 Elm Street	Residential	Moderate surface erosion; Roof runoff erosion	200'x50'	Define foot path; Install infiltration trench; Mulch; Establish rain garden and/or buffer; No raking	No	Medium	Low
R74	4-2	32-34	138 Dogwood Dr.	Residential	Slight surface erosion; bare soil	20'x10'	Mulch bare area next to decking, mulch/seed, establish buffer	No	Low	Low
R75	4-4	32-31	120 Dogwood Dr.	Residential	Slight surface erosion; Bare soil	6'x30'	Establish buffer; Install infiltration steps; Install runoff diverters	No	Medium	Medium
R76	5-12	35-24	360 Cedar Dr	Residential	Slight surface erosion; Bare soil; Shoreline erosion; Drain area bermed at lake shore w/sand; Roof runoff	25'x3'	Add new gravel to driveway and grade; Define foot path; Rebuild infiltration steps; Install drywell @ gutter downspout; Mulch; Establish buffer	Yes	Medium	Low
R77	5-14	35-29	380 Cedar Dr	Residential	Moderate surface erosion; Bare soil; Shoreline erosion; Undersized stone causing ineffective diversion of runoff	25'x25'	Define foot path at end of pave walkway; Mulch; Add berm behind stones; Enhance w/buffer; Vegetate banking; Minimize beach area	Yes	Low	Medium
R78	5-18	35-30	386 Cedar Dr	Residential	Severe surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion; Unstable access	44'x50'	Install runoff diverters at top of driveway; Send run off from roof on porch into a new rain garden; Install waterbar; Establish buffer; No raking; Close off to vehicle access	Yes	Medium	Medium
R79	5-2	34-6	114 Cedar Dr	Residential	Moderat surface erosion; Bare soil; Lack of shoreline vegetation	50'x50'	Install runoff diverters (rubber razor); Drywell @ gutter downspout; Install rain garden at end of driveway; Establish buffer; No raking	No	Medium	Medium

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R80	5-23	34-25	14 Cherry Rd	Residential	Slight surface erosion; Bare soil; Lack of shoreline vegetation; May be adding to next door (10 Cherry Rd) erosion down beach access	30'x10'	Define foot path; Infiltration steps at base of wooden steps; Drywell @ gutter downspout; Establish buffer; No raking beach area	No	Low	Low
R81	5-25	34-35	288 Cedar Dr	Residential	Moderate surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion	10'x5'	Infiltration dripline trench w/small swale for dripline; Drywell @ gutter downspout; Mulch; Establish buffer by beach area	No	Low	Low
R82	5-26	34-44	49 Chestnut Rd	Residential	Moderate surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion; Unstable access	75'x30'	Mulch exposed sand; Establish buffer; Remove excess sand; Add rip rap	Yes	Medium	Medium
R83	5-27	35-4	14 Cranberry Rd	Residential	Slight surface erosion; Bare soil; Inadequate shoreline vegetation; Shoreline erosion	20'x40'	Define foot path; Install roof dripline trench; Mulch beach and banking; Install rain garden by porch; Establish/enhance buffer; No raking	No	Low	Low
R84	5-28	35-22	21 Cypress Rd	Residential	Bare soil; Lack of shoreline vegetation; Shoreline erosion	50'x35'	Define foot path; Install infiltration steps; Drywell @ gutter downspout; Mulch; Establish buffer; No raking; Build up walkway along aide of house from roof runoff - add gutters; Infiltrate along patio walkway; Minimize beach-no new sand; Vegetate along side of house along roof drip line; Build retaining wall or vegetate banking	Yes	Medium	Medium
R85	5-3	34-8	128 Cedar Dr	Residential	Roof runoff; Boat launch/driveway hot topped - runoff from Cedar Dr.	20'x15'	Install runoff diverters; Roof gutter needs catch basin; Establish rain garden and/or buffer. Discontinue use of boat launch	No	Low	Low

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R86	5-30	35-41	480 Cedar Dr	Residential	Moderate surface erosion; Bare Soil; Lack of shoreline vegetation; Shoreline erosion; Unstable access	50'x10'	Install diverters to runoff to side of driveway; Define foot path; Infiltration steps @ bottom of cement steps; Mulch; Extend rock wall across beach area; Establish/enhance w/buffer	Yes	Low	Low
R87	6-14	37-27	306 Indian Village Rd	Residential	Moderate to severe surface erosion; Bare soil; Lack of shoreline vegetation	50'x15'	Define foot path beside house; Install infiltration trench behind garage; Establish buffer; Mulch	No	High	Medium
R88	6-19	37-26	322 Indian Village Rd	Residential	Severe surface erosion; Bare soil; Inadequate shoreline vegetation	20'x30'	Add new surface material to driveway (recycled asphalt); Reshape (crown) driveway; Add timbers at base of driveway; Define foot path on bank; Infiltration trench; Mulch; Establish buffer on embankment	No	Low	Low
R89	6-22	37-25	336 Indian Village Rd	Residential	Moderate surface erosion; Roof runoff erosion	8'x10'	Stablize surface material at boat launch; Reset timber at shoreline to minimize soil erosion; Infiltration trench; Install runoff diverter (waterbar); Good buffer already established	No	Medium	Low
R90	6-24	37-23	356 Indian Village Rd	Residential	Bare soil; Roof runoff erosion	60'x40'	Minimize beach; No new sand; Drywell @ gutter downspout; Mulch; No raking	Yes	Medium	Low
R91	6-26	37-20	370 Indian Village Rd	Residential	Bare soil; Roof runoff erosion; Inadequate shoreline vegetation; Shoreline erosion	50'x50'	Define or remove foot path; Mulch; Establish buffer; No raking; Minimize beach area	Yes	Medium	Low
R92	6-27	37-19	380 Indian Village Rd	Residential	Roof runoff erosion	60'x50'	Landscaping appears to be in progress; Minimize beach; Mulch stairway side of house	Yes	Medium	Low
R93	6-28	37-18	388 Indian Village Rd	Residential	Roof Runoff erosion	50'x10'	Define foot path; Drywell @ gutter downspout; Mulch; Establish buffer on bank by footpath; No raking	No	Low	Low
R94	6-30	37-32	266 Indian Village Rd	Residential	Moderate surface erosion; Bare soil	50'x8'	Mulch/vegetate banking next to house; Drywell @ gutter downspout; Mulch; Establish buffer	No	Low	Low

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R95	6-33	36-25	248 Indian Village Rd	Residential	Moderate surface erosion; Bare soil	50'x50'	Install plunge pool by driveway; Mulch; Establish buffer; No raking; Add infiltration off patio and below speed bump @ end of driveway	No	Medium	Medium
R96	6-34	37-33	260 Indian Village Rd	Residential	Bare soil	25'x10'	Continue to let naturalize; Vegetate shoulder area along driveway; Mulch banking; No raking	No	Low	Low
R97	6-35	36-24	238 Indian Village Rd	Residential	Moderate surface erosion; Bare soil; Roof runoff erosion; Inadequate shoreline vegetation; Runoff may be coming from Stone Post Rd	50'x50'	Continue to let naturalize-nice grass area on beach; Enlarge rock drainage area; Install infiltration trench at edge of paved driveway	No	Low	Low
R98	6-40	36-12	142 Indian Village Rd	Residential	Slight surface erosion in parking area; Bare soil runs to Rt of Way (next lot)		Add crushed stone to driveway area; Infiltration trench along side camp; Drywell @ gutter downspout	No	Low	Low
R99	6-41	36-19	202 Indian Village Rd	Residential	Moderate surface erosion; Bare soil; Lack of shoreline vegetation; Sand added to beach	50'x25'	Mulch; Establish buffer; No raking; Minimize beach area; No new sand	Yes	Medium	Low
R100	6-42	36-17	182 Indian Village Rd	Residential	Slight-moderate surface erosion; Bare soil; Lack of shoreline vegetation; New Sand	50'x40'	Establish buffer; Extend/raise timbers to enclose sand; Let naturalize; Don't replenish sand	Yes	Medium	Low
R101	6-142	36-20	206 Indian Village Rd	Residential	Moderate surface erosion; Bare soil; Lack of shoreline vegetation; Sand added to beach	75'x25'	Mulch; Establish buffer; No raking; Minimize beach area; No new sand	Yes	Medium	Low
R102	6-43	36-16	166 Indian Village Rd	Residential	Bare soil; Moderate surface erosion; Lack of shoreline vegetation	75'x15'	Mulch bare soil; Establish shoreline buffer; Infiltration steps between camp & lake.	No	Medium	Low
R103	6-143	36-22	220 Indian Village Rd	Residential	Moderate surface erosion; Bare soil; Lack of shoreline vegetation; Unstable beach; Sand added in past	35'x35'	Mulch; Establish buffer; No raking; Minimize beach area; No new sand	Yes	Medium	Low
R104	6-144	36-23	228 Indian Village Rd	Residential	Slight surface erosion; Bare soil at beach area; Inadequate shoreline vegetation	25'x25'	Mulch; Enhance w/buffer vegetation; No raking; No new sand; Continue to let naturalize	Yes	Low	Low

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R105	6-44	36-15	160 Indian Village Rd	Residential	Moderate surface erosion; Bare soil; Lack of shoreline vegetation	40'x25'	Establish buffer; No raking; Add rain garden between patio and lake; Do not replenish sand on beach	Yes	Low	Medium
R106	6-145	37-31	272 Indian Village Rd	Residential	Bare soil; Inadequate shoreline vegetation; Shoreline erosion	15'x15'	Mulch; Establish buffer; No raking; No new sand	Yes	Medium	Low
R107	6-45	36-13	150 Indian Village Rd	Residential	Moderate surface erosion; Bare soil	25'x20'	Add crushed stone to harden surface; Close off to vehicle traffic; Infiltration trench at edge of pavement; Drywell @ gutter downspout; Mulch	No	Medium	Medium
R108	6-146	37-30	278 Indian Village Rd	Residential	Slight surface erosion; Bare soil; Lack of shoreline vegetation; Added material on shore front	40'x15'	Mulch; Establish buffer; No rakin; Timbers to be reset/re-established; No new sand	Yes	Medium	Low
R109	6-47	36-10	130 Indian Village Rd	Residential	Bare soil; Roof runoff erosion; Inadequate shoreline vegetation	5'x25'	Infiltration trench along camp; Drywell @ gutter downspout; Mulch; Establish buffer near front & side of house; New Sand	Yes	Low	Low
R110	6-147	35-44	40 Indian Village Rd	Residential	Moderate surface erosion; Inadequate shoreline vegetation	15'x15'	Mulch; Establish buffer; No raking; No new sand	Yes	Low	Low
R111	6-48	36-11	134 Indian Village Rd	Residential	Moderate to severe surface erosion back of house near road; Bare soil	10'x30'	Drywell @ gutter downspout; Mulch are soils/old boat access; Establish vegetation around house & terrace; No raking	No	Low	Low
R112	6-49	36-9	126 Indian Village Rd	Residential	Moderate surface erosion; Bare soil; Roof runoff erosion (side & front of house); Lack of shoreline vegetation (front of cottage to beach)	8'x75'	Define foot path; Infiltration trench along drip edge; Mulch; Establish buffer; No raking; No new sand	Yes	Medium	Medium
R113	6-5	37-29	286 Indian Village Rd	Residential	Severe surface erosion; Severe ditch erosion; Bare/Uncovered soil; Roof runoff erosion; Inadequate shoreline vegetation	10'x15'	Vegetate ditch; Install check dams/sediment pools at top of driveway; Vegetate shoulder; Install catch basin by driveway; Define foot path; Infiltration trench along ede of boat house; Mulch; Install rain garden (top of beach/end of ditch); Establish buffer; No raking	No	High	High

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R114	6-51	36-7	114 Indian Village Rd	Residential	Newly remodeled-landscaping in progress; Lack of shoreline vegetation	8'x30'	Establish buffer; Use phosphorus free fertilizer	Yes	Low	Low
R115	6-53	36-6	104 Indian Village Rd	Residential	Severe surface erosion; Bare soil; Shoreline erosion	15'x75'	Install runoff diverters; Infiltration trench; Mulch; Establish buffer; No raking; Water retention swales; Close off boat access	No	Medium	Medium
R116	6-56	36-5	94 Indian Village Rd	Residential	Moderate surface erosion; Bare soil; Roof runoff erosion; Lack of shoreline vegetation	25'x20'	Infiltration trench side & front of house; Install runoff diverter (waterbar); Mulch; Establish buffer; Rip rap beach area	No	Medium	Low
R117	6-57	36-4	88 Indian Village Rd	Residential	Bare soil in many places; Roof runoff erosion front/side of house; Buried plastic pipes surfacing near waterline and discharging toward lake	30'x35'	Drywell @ pipe outlet; Mulch; Establish buffer; No raking	No	Low	Low
R118	6-62	36-3	82 Indian Village Rd	Residential	Bare soil; Lack of shoreline erosion	108'x40'	Making positive changes; Establish buffer; Use of phosphorus free fertilizer on lawn; Stabilize new sand; No new sand	Yes	Low	Low
R119	6-63	36-2	70 Indian Village Rd	Residential	Bare/unstable new soil; Lack of shoreline vegetation	108'x40'	Add new surface material to harden launch; Add crushed stone to existing launch; Establish buffer; Use phosphorus free fertilizer on lawn; No new sand	Yes	Low	Medium
R120	6-64	36-1A	58 Indian Village Rd	Residential	Bare soil; Inadequate shoreline vegetation	10'x40'	Drywell @ pipe outlet; Establish buffer; No raking; Use phosphorus free fertilizer	Yes	Low	Low
R121	6-66	35-46	50 Indian Village Rd	Residential	Slight to moderate surface erosion; Bare soil (lakeside)	5'x10'	Mulch; Establish rain garden; No raking	No	Low	Low
R122	6-8	37-28	294 Indian Village Rd	Residential	Moderate surface erosion; Bare soil; Lack of shoreline vegetation	50'x20'	Install sediment pools; Grade driveway; Vegetate shoulder and banking; Define foot path - add infiltration steps; Mulch; Enhance w/groundcover or buffer	No	Medium	Medium

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R123	7-1	37-4	162 Apple Rd	Residential	Slight surface erosion; Bare soil; :Roof runoff erosion; Lack of shoreline vegetation	100'x10'	Install turnouts in driveway; Install runoff diverter (rubber razor); Install rain garden/buffer; Make "v" shape with existing timber	No	Medium	Low
R124	7-12	37-12	128 Apple Rd	Residential	Slight surface erosion	50'x25'	Mulch; Install runoff diverter (waterbar); Mulch; Enhance w/buffer along w/ timbers along shoreline; Install diverter near timbers	No	Medium	Low
R125	7-14	37-14	108 Apple Rd	Residential	Slight surface erosion		Infiltration trench; Install rain garden along side of property line	No	Low	Low
R126	7-3	37-5	160 Apple Rd	Residential	Moderate surface erosion; Bare soil	24'x2'	Infiltration trench; Install runoff diverter; Mulch; Establish buffer with more planting on retaining wall; No raking; Minimize beach area	Yes	Low	Low
R127	7-4	37-6	152 Apple Rd	Residential	Slight surface erosion		Mulch; Install rain garden; Enhance w/buffer near bottom of slope near beach area; Minimize beach area	Yes	Low	Low
R128	7-5	37-7	150 Apple Rd	Residential	Slight surface erosion; lack of shoreline vegetation	50'x10'	Infiltration trench; Install runoff diverter; Mulch; Enhance w/buffer	No	Low	Low
R129	8-01	121-026	1296 West Shore Dr	Residential	Moderate surface erosion; Bare soil; Roof runoff erosion; Inadequate shoreline vegetation (house under some construction); Erosion under camp	75'x25'	Vegetate banking (terracing, buffer); Armor w/stone; Install sediment pools; Drywell @ gutter downspout; Install runoff diverter; Mulch; Install plunge pool at edge of driveway on top of bank; Newly paved driveway still may need crushed stone to right side of driveway; Enhance w/buffer	No	Medium	Medium
R130	8-11			Residential	Moderate surface erosion; Bare soil		See adjacent Map Site R136 (Survey Site 8-9)	No	Low	Low
R131	8-2	121-003	1560 West Shore Dr	Residential	Moderate surface erosion; Slight ditch erosion; Bare soil	50'x10'	Install check dams @ end of stone ditch; Install rubber razor at end of driveway; Establish foot path; Mulch; Estalish buffer	No	Medium	Low

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Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
R132	8-5	121-013	1436 West Shore Dr	Residential	Moderate surface erosion; Lack of shoreline vegetation	10'x10'	Install smaller stones at edge of retaining wall to keep runoff from eroding beach; Establish buffer at top of retaining wall	No	Medium	Low
R133	8-6	121-014	1432 West Shore Dr	Residential	Moderate surface erosion; Lack of shoreline vegetation	10'x10'	Add stone to edge of beach at retaining wall to keep runoff at bay. Establish buffer at top of retaining wall	No	Medium	Low
R134	8-7	121-017	1410 West Shore Dr	Residential	Moderate surface erosion; Lack of shoreline vegetation	20'x10'	Infiltration trench at base of stoned bank; Rain garden near base of banking (dig out sand sediment) Mulch; Establish buffer at top of stoned bank	No	Medium	Medium
R135	8-8	121-019	1406 West Shore Dr	Residential	Bare soil; Roof runoff erosion; Lack of shoreline vegetation	25'x12'	Define and mulch foot path; Establish buffer; Infiltration trench; Install gutters	No	Medium	Medium
R136	8-9			Residential	Moderate surface erosion; Bare soil; Inadequate shoreline vegetation	40'x5'	Add rip rap on bank along driveway; Define and mulch foot path on side of house; Install downspout; Mulch; Add more buffer; No new sand	Yes	Medium	Medium
R137	9-1	123-030	1052 West Shore Dr	Residential	Moderate surface erosion; Bare soil; Winter sand; Lack of shoreline vegetation; Shoreline erosion	26'x10'	Define foot path; Infiltration trench; Drywell @ gutter downspout; Install runoff diverter; Mulch; Establish buffer; Enhance w/ECM; Install rain garden	No	Medium	Medium
R138	9-2	123-016	1180? West Shore Dr	Residential	Slight surface erosion; Bare soil; Roof runoff erosion; Lack of shoreline vegetation; Shoreline erosion	22'x14'	Infiltration trench; Mulch	No	Low	Low
R139	9-3	121-028	1268 West Shore Dr	Residential	Bare soil; Lack of shoreline vegetation	20'x10'	Mulch or add stone to steps; Mulch beds and bare soil; Establish buffer by retaining wall; No new sand	Yes	Low	Low
R140	9-4	123-019	1140 West Shore Dr	Residential	Bare soil; Inadequate shoreline vegetation; Shoreline erosion	15'x15'	Mulch; Install waterbar to divert into vegetation; Enhance w/buffer at end of driveway	No	Low	Low

Appendix B - Square Pond Watershed Survey

Map ID	Site #	Tax Map & Lot	Location	Land Use	Problem	Area	Recommended Actions	Beach Problem	Impact	Cost
TP1	10-11	33-Beach	Bet. 66-74 TI	Trail or Path	Moderate surface erosion down to beach; Bare soil; Lack of shoreline vegetation; Shoreline erosion	75'	Infiltration steps on path down hill; Mulch along hillside path; Rock wall' Establish vegetation	No	Low	Medium
TP2	10-18	33-Access Rd	Bet Lot 1 & 84	Trail or Path	Moderate surface erosion on both path and ROW; Bare soil; Shoreline undercut; Shoreline erosion	173'x6'	Build up path with new material (gravel); Crown path to divert runoff; Mulch; Rip Rap; Enhance w/buffer	No	Medium	Medium
TP3	10-22	33-82/83	9-11 Treasure Island	Trail or Path	Slight surface erosion; Bare soil; Lack of shoreline vegetation; Shoreline erosion	15'x130'	Build up path; Reshape; Establish buffer; Mulch	No	Medium	Low
TR1	1-5	124-013	Corner Willow St/West Shore Dr	Town Road	Moderate surface erosion; severe ditch erosion; moderate shoulder erosion; Recent work done, but not vegetated	1000'	Vegetate ditch; Install check dams; Use larger angular rip rap in ditch	No	Low	Medium
TR2	6-1	37	Stone Post Road	Town Road	Considerable erosion on dirt road; Lots along road recently logged and being developed; Runoff into small brook area		Install culvert; Add new surface material to road and crown; Ditch; Detention basins	No	Medium	Medium
TR3	7-15	37	Apple Rd	Town Road	Moderate surface, ditch, road shoulder erosion; Bare soil		Enlarge culvert; Vegetate ditch and shoulder; Reshape (crown) road; Install rubber razor	No	Medium	Medium
TR4	7-18	213	Old N. Shap Road	Town Road	Unstable culvert inlet/outlet; Undersized culvert (too short)	5'x5'	Armor Inlet/Outlet culvert; Lengthen culvert	No	Low	Medium
TR5	7-19	213	Red Gate Rd/Old N.Shap Rd	Town Road	Unstable inlet/outlet; Clogged or crushed culvert; Undersized culvert; Moderate road shoulder erosion (2nd Culvert from Shapleigh side plus another undersized culvert .1 miles from this one) Potential for road washout	15'x5'	Armor Inlet/Outlet Culvert; Replace and enlarge culvert	No	Low	Medium

Where Do I Get More Information?

Contacts

Square Pond Improvement Association

www.squarepondme.com or president@squarepondme.com

York County Soil and Water Conservation District

21 Bradeen Street, Suite 104 Springvale, ME 04083

(207) 324-0888, ext.214

Offers assistance with watershed planning and surveys, environmental education, engineering support, seminars and training sessions, and education on the use of conservation practices.

Acton-Shapleigh Youth Conservation Corps

c/o Duane Snyder

144 Deering Ridge Road

East Waterboro, ME 04030

(207) 247-4130

Maine Department of Environmental Protection

28 Station House Station, Augusta, ME 04333

Toll Free in Maine (888) 452-1942 or (207) 287-7688

Provides permit applications and assistance, LakeSmart evaluations, numerous reference materials, environmental education, funding opportunities, and stewardship activities for lakes.

Publications

Camp Road Maintenance Manual: A Guide for Landowners. Kennebec County SWCD and Maine DEP. 2000. 54 pgs. www.state.me.us/dep/blwq/docwatersheds

Conservation Practices for Homeowners. Maine DEP and Portland Water District. 2006. 20 fact sheets. <http://www.maine.gov/dep/blwq/docwatershed/materials.htm>.

A Homeowner's Guide to Environmental Laws Affecting Shorefront Property in Maine's Organized Towns. Maine DEP. 2003. DEPLW0320-D2003. Booklet. 42 pgs. www.state.me.us/dep/blwq/docwatershed/materials

Maine Shoreland Zoning—A Handbook for Shoreland Owners. Maine DEP. 1999. DEPLW 1999-2. 34 pgs.

A Guide to Forming Road Associations. York County SWCD. 2004. 57 pgs. & CD ROM. <http://www.maine.gov/dep/blwq/docwatershed/roadassociation.htm>