Forest Lake Maine

2017 Forest Lake Watershed Survey

September 2017 ~ Forest Lake Association

Prepared by
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Forest Lake Association
2017 Watershed Survey Steering Committee

Acknowledgements

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Cover Photo

Photo by Tyler E. Dunlea

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Introduction

This report was specifically designed for citizens living in the Forest Lake Watershed. It provides the results and analysis of a watershed survey conducted on April 29, 2017. In addition, the report includes basic information about how to protect lake water quality.

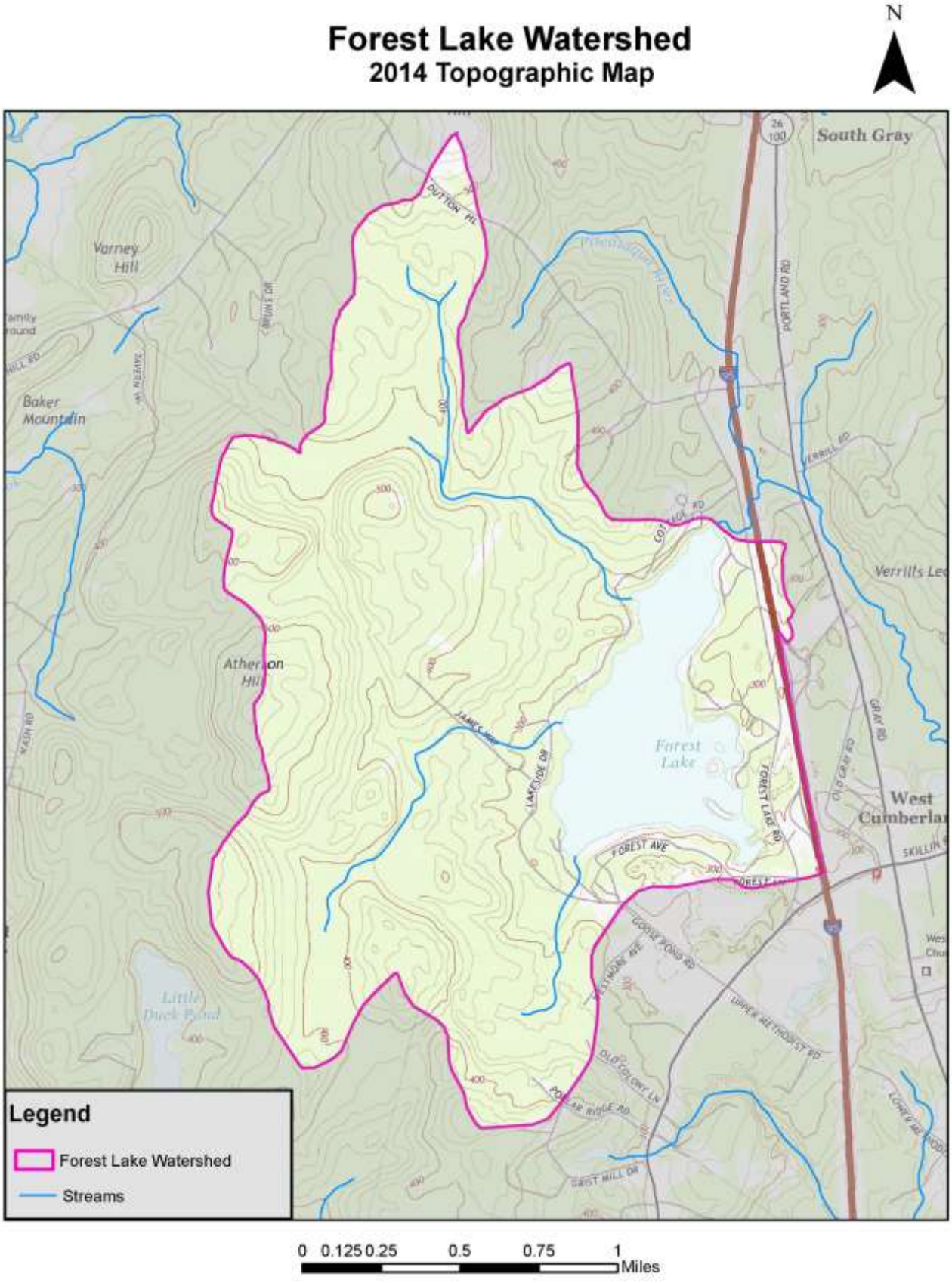
A watershed survey was first conducted in April 2003. As a result, 112 sites were identified with potential to impact the water quality in Forest Lake. Subsequent mitigation work helped to alleviate and/or ameliorate some of these issues. Our 2017 survey serves to supplement/enhance previous findings, identify new potential sources of runoff pollution, and to update planning for the continued protection of Forest Lake water quality.

Forest Lake Watershed

For the purposes of this report, "the watershed" refers to the network of streams, ditches, and land that flow to Forest Lake (Figure 1). Our lake lies at the juncture of the towns of Cumberland, Gray, and Windham in Cumberland County, Maine. Forest Lake serves as the headwaters to the Piscataqua River, which then flows into the Presumpscot River and Casco Bay. Formerly also known as Goose Pond, the lake has a surface area of 211 acres, with over 4 miles of shoreline, most of which is privately owned. The entire watershed area encompasses just under 400 properties and covers about 3.3 square miles (2174 acres), a small portion of which extends into Falmouth, Maine. The majority of development in the watershed in recent years has been on the western shore, located in the Town of Windham. The 4.3 mile perimeter is developed with 179 lakefront properties, 96 properties adjacent to the lakefront, and an additional 119 properties in the surrounding watershed area according to a recent Forest Lake Association compilation of property assessment records.

The maximum depth of the lake is 38 feet with a mean depth of 12 feet. According to statistics maintained by the Volunteer Lake Monitoring Program (*VLMP), there are no known aquatic infestations as of this writing, and the water quality is noted as "above average".*

FIGURE 1: FOREST LAKE TOPOGRAPHIC WATERSHED MAP



Water Quality

Forest Lake Water Quality

The Forest Lake Association has tested water quality in Forest Lake for more than 35 years. This testing has found the lake's water quality to be slightly above average based on Secchi disk transparency, total phosphorus and chlorophyll-a measurements.

However, as a result of development trends in the area and the water quality conditions, Forest Lake has been placed on the March 2017 Maine Department of Environmental Protection (MDEP) Nonpoint Source Priority List (NPS) as one of 151 threatened lakes because it is "sensitive to additional phosphorus inputs".[1]

The purpose of this list is to encourage NPS abatement work in watersheds most vulnerable to NPS pollution. The list is used to help prioritize DEP NPS water pollution control efforts and attract local communities to take action to restore or protect waters impaired or threatened by NPS pollution. The NPS priority watersheds list is a part of the Maine NPS Management Plan.

The Maine Department of Environmental Protection (ME-DEP) and the Volunteer Lake Monitoring Program (VLMP) have collaborated in the collection of lake data to evaluate water quality, track algal blooms, and determine water quality trends. This dataset does not include bacteria, mercury, or nutrients other than phosphorus.

NPS Priority Watersheds

Maine DEP maintains a list of watersheds where water quality is impaired or considered particularly threatened by polluted runoff.

A watershed must be listed by as a NPS Priority Watershed in order to be eligible to apply for 319 grant funding under the Clean Water Act.

Forest Lake is on the NPS Priority Watersheds list.

Water quality monitoring data for Forest Lake have been collected since 1974. During this period, 15 years of basic chemical information was collected in addition to Secchi Disk Transparencies (SDT).

In summary, the water quality of Forest Lake is considered above average based on measures of SDT, total phosphorus (TP), and Chlorophyll-a (Chla). The potential for nuisance algal blooms on Forest Lake is moderate.

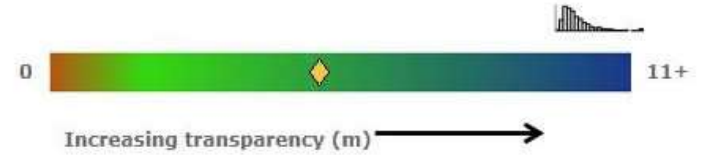
Water Quality Measures

Forest Lake is a non-colored lake (average color 19 SPU) with an average SDT of 5.2 m (17.1 ft.). The range of water column TP for Forest Lake is 6 - 12 parts per billion (ppb) with an average of 8 ppb. Chla ranges from 1.4 - 8.5 ppb with an average of 3.4 ppb. Recent dissolved oxygen (DO) profiles show moderate DO depletion in deep areas of the lake. The potential for phosphorus to leave the bottom sediments and become available to algae in the water column (internal loading) is moderate. Oxygen levels below 5 parts per million stresses certain cold water fish and persistent loss of oxygen may eliminate or reduce habitat for sensitive cold water species.

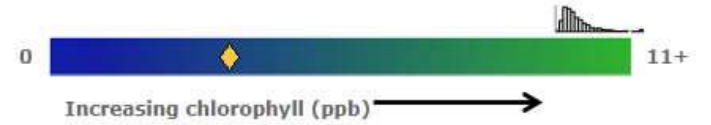
The following charts provided by VLMP display the values of water quality indicators for Forest Lake as compared to the range of values seen across all of Maine's surveyed lakes. Color ramps represent the range of values across all lakes. Yellow diamonds display the mean values for Forest Lake, as averaged across all sampling sites.

[1] Maine Department of Environmental Protection; Nonpoint Source Priority Watersheds List; http://www.maine.gov/dep/land/watershed/nps_priority_list/NPS%20Priority%20List%20-%20Lakes.pdf

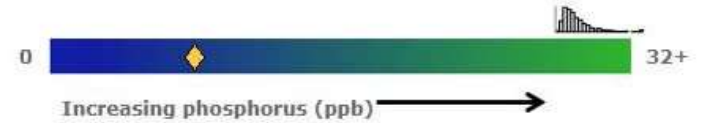
TABLE 1: WATER QUALITY INDICATORS



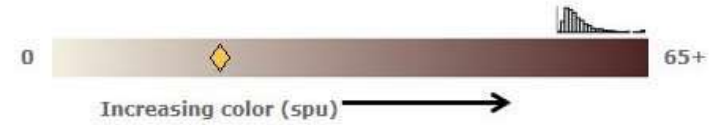
Secchi Transparency (m): 5.1



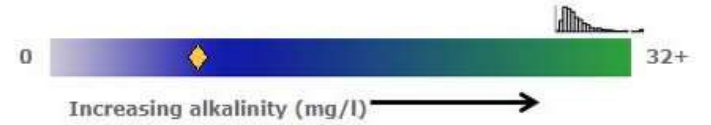
Chlorophyll-a (ppb): 3.4



Total phosphorus (ppb): 8

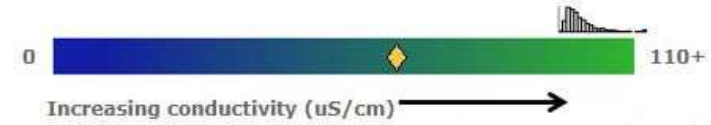


Color (SPU): 19



Alkalinity (mg/l): 8.2

pH: 6.41



Conductivity (uS/cm): 65

The color bars display the range of data seen in Maine lakes for each parameter. Lakes at the blue end of each range are generally clear. Lakes at the green end support more algae. Parameters having no to little effect on algae are monochrome. The yellow diamond indicates where 'your' lake falls on this range. Place your cursor over the diamond (1) to see the average value for your lake. Click on the Column Chart Icon (2) for more information on how your lake compares to other Maine lakes. Below the horizontal line at the bottom of the chart are numbers which align with values indicated by the Color Chart. Red lines (3) indicate data values for each lake station. Red lines superimposed on each other indicate that values are nearly identical (4). The vertical scale at the left of the chart (5) provides insight into what percentage of lakes are represented by the height of each column. Note that the column above the number '5' (for example) includes lakes with parameter values from 5.0 to 5.99. Data exceeding the maximum scale value are plotted to the extreme right of Color Bar and Column Chart (6).

Water Quality Monitors

We are fortunate to have a dedicated group of trained and certified volunteers to monitor lake water quality and to patrol invasive plant species. Together, our Monitors and Patrollers create a first alert system, keeping careful watch for potential problems. As of this writing, our volunteers are:

Certified Water Quality Monitors

- Paula Curcio
- Jim Gameros
- John Gorham
- Janene Gorham

Certified Invasive Plant Patrollers

- Mike Caiola
- Jim Gameros
- Janene Gorham
- John Gorham
- Karen Hall
- Elizabeth Hamilton
- Donald Hughes
- Jen Hughes
- David Russell
- Duncan Smith
- William Spitzinger
- Cathy Whorf

Threats to Lake Water Quality

What puts water quality at risk? The biggest pollution culprit in Forest Lake and other Maine lakes is **polluted runoff or nonpoint source (NPS) pollution.** Polluted runoff is found in storm water runoff from rain and snowmelt. During and after storms and snowmelt, streams and overland flow washes soil into lakes from the surrounding landscape.

In an undeveloped, forested watershed, stormwater runoff is slowed and filtered by tree and shrub roots, understory plants, 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. Runoff shed from impervious surfaces, such as rooftops, compacted soil, and gravel camp roads collects and speeds up, often channelized. The runoff becomes a destructive erosive force as it is greater in both velocity and volume than stormwater in an undeveloped landscape

POLLUTED RUNOFF

Also called nonpoint source pollution or NPS. Pollution from diffuse, seemingly insignificant sources (such as erosion, roads, septic systems) that, when combined, add up to a significant amount of pollution to a watershed.

Not only is the increase in stormwater volume and velocity problematic in a developed watershed, but also the nutrients and the sediment in the stormwater runoff can be bad news. Large volumes of sediment can settle out in the lake, creating an ideal substrate for nuisance and invasive aquatic plants such as variable-leaved water milfoil. **Phosphorus**, a nutrient that is common on land and in stormwater runoff, is a primary food for all plants, including **algae**.

Phosphorus 101[2]

In natural conditions, the scarcity of phosphorus in a lake limits algae growth. Increases in phosphorus levels, however, usually result in noticeable changes to water. Algae need phosphorus in order to grow. So,

[2] Volume II: Phosphorus Control in Lake Watersheds: Appendix A: A Technical Guide to Evaluating New Development; http://www.maine.gov/dep/land/stormwater/stormwaterbmps/vol2/appa.pdf

when phosphorus levels increase, lake algal populations also increase, causing a decline in water transparency. These algal blooms may eventually lead to depletion of the lake water's oxygen supply, often resulting in the eventual loss of some fish species.

The quality of water in a lake depends on the condition of the land in its watershed. Phosphorus is abundant in the environment, but in an undisturbed environment it is tightly bound up by soil and organic matter for eventual use by plants. Natural systems conserve and recycle nutrients, water, and other materials needed to sustain plant growth. Water is stored in depressions on the uneven forest floor and seeps into the ground to become groundwater, thereby preventing it from running over the land surface and exporting valuable nutrients from the system. Land development changes the natural landscape in ways that alter the normally tight cycling of phosphorus. The removal of vegetation, smoothing of the land surface, compaction of soils, and creation of impervious surfaces combine to reduce the amount of precipitation stored and retained onsite, dramatically increasing the amount of water running off the land as surface runoff.

These changes to the land surface and the associated increase in surface runoff dramatically increase phosphorus export. Land disturbance upsets the environment's ability to retain phosphorus. Stormwater flowing over the land surface picks up phosphorus and transports it in soluble form or attached to eroded soil particles. The phosphorus in stormwater comes from natural and human sources, including eroded soil, road dust, plants, lawn fertilizer and detergents. The smooth surfaces, closely cropped lawns, and compacted soils common in developed areas do not retain phosphorus, and only speed its removal by generating surface runoff. The end result is more phosphorus in stormwater, and thus more phosphorus in lakes.

Why Protect the Lake?

Why should we protect the lake from polluted runoff?

- The lake contains valuable habitat for fish, birds and other wildlife.
- Forest Lake provides recreational opportunities to watershed residents and to visitors. It is an important contributor to the local economy.
- A 1996 University of Maine study demonstrated that lake water quality affects property values. For every meter (3Ft.) decline in water clarity, shorefront property values can decline as much as 10 to 20 percent![3] Declining property values affect individual landowners as well as the economics of the entire community.
- Once a lake has declined, it can be difficult and prohibitively expensive to restore.
- Sediment and nutrients that wash into the pond encourage the growth of invasive plants and can cause algae blooms, all of which impact the habitat for fish and other lake species.

What Are We Doing Now?

What is being done to protect the lake from polluted runoff?

The steering committee for the Forest Lake Watershed Survey formed in order to identify soil erosion issues in the watershed, raise funds to conduct a survey, and continue educating users of the lake how to protect it now and for future generations. Volunteer watershed surveys have been found to be one of the most

[3] Bouchard, Roy; Boyle, Kevin; Michael, Holly, "Water Quality Affects Property Prices: A Case Study of Selected Maine Lakes," 1996. University of Maine.

effective ways to protect lake water quality by getting citizens involved in identifying existing and potential sources of polluted runoff.

It is the hope of the steering committee that through the survey and the creation of the watershed plan, the local community will find the social and financial resources it needs to further guard against the degradation of Forest Lake. Our 2017 Forest Lake Watershed Survey is the foundation of an overall watershed plan, which is needed in order to apply for federal funding to remedy some of the issues identified during the survey. Already, the community has secured municipal and private support. Both the financial and community support will need to grow in order for the plan to be put into action.

Watershed Survey Overview

Purpose of the Watershed Survey

The primary goals of the 2017 Forest Lake Watershed Survey are to:

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

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. Watersheds are complex and interconnected. While it is important to be accountable for the problems that arise, there is no individual or single entity responsible for any current or future water quality issues of Forest Lake. Rather it is the accumulation of all inputs, past and present that are responsible for water quality degradation. It is the hope that through future projects, the steering committee can work together with landowners to solve erosion problems on their properties, 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 as protection planning and project funding goals are pursued. With the leadership of the steering committee and assistance from agencies concerned with lake water quality, the opportunities for stewardship are limitless.

The steering committee 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

A watershed survey gives an idea of soil erosion impacts at one point in time. Land use in the Forest Lake watershed is constantly changing. All sites that were fixed after or throughout the survey could not be captured here. There may be improvements to or degradation of the watershed that is not represented in the report. It will be up to future surveyors to incorporate those changes.

Problem Sites

If soil erosion reaches a stream or ditch that connects with the lake, it is considered a problem site. The distance to the lake does not make a difference. The attached or dissolved phosphorus can eventually reach the lake. According to DEP, the same holds true for erosion that enters wetlands.

The survey was conducted by volunteers with the assistance of trained technical staff from the DEP, CCSWCD, and hired independent consultants. On April 29, 2017, our fourteen (14) volunteers were trained in survey techniques during a two hour classroom workshop. Following the classroom training, the volunteers and technical staff spent the remainder of that day documenting erosion on the roads, properties, driveways, and trails in their assigned sectors using cameras, GPS units and standardized forms. The teams worked together throughout May and June to complete any unfinished sectors, putting in more than 400 combined hours. Although it was not originally planned as part of the project, a brief watercraft survey was also

conducted in July to assess the condition of shoreline area of three Forest Lake islands: Long Island, Cumberland; Loon Island, Windham; and little Loon Island, Gray.

For each identified NPS site, survey teams completed a Forest Lake Watershed Survey form (Appendix B). Volunteers rated the overall impact of each site using the rating system shown on the Lake Watershed Survey form (Figure 2). Project staff attempted to minimize variance in ratings by carefully reviewing surveyor notes and photos. Follow-up site visits were also conducted for sites where the documentation was insufficient. Adjustments were made to ratings that clearly deviated from these general guidelines.

TABLE 1: LAKE SURVEY FORM – METHOD OF ASSIGNING IMPACT

Impact: Circle one choice in each column, add the three selected numbers together, and then circle the site's corresponding impact rating (high, medium, or low).

Type of Erosion	Area	Buffers and Other Filters	IMPACT
Gully - **3**	Large - **3**	No filter, all channelized direct flow into lake or stream - **3**	High: 8-9 pts
Rill - **2**	Medium - **2**	Some buffer or filtering, but visible signs of concentrated flow and/or sediment movement through buffer and into lake - **2**	Med: 6-7 pts
Sheet - **1**	Small - **1**	Significant buffer or filtering* - **1**	Low: 3-5 pts

** Confirm there is likely sediment/runoff delivery. If not, do not write up as a site.*

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 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 the Forest Lake Watershed Committee for additional site information.

Survey Sectors

Sector Teams

Sector 1

- **Jeff Stern, Leader**
- **Bill Devoe**
- **Janene Gorham**
- **John Gorham**
- **Cathy Whorf**

Sector 2

- **Betty Smith, Leader**
- **Debi Curry**
- **Jon Curry**
- **Susan C.H. Siu**

Sector 3

- **Wendy Garland, Leader**
- **Ted Ney**
- **Glenn Sylvester**

Sector 4

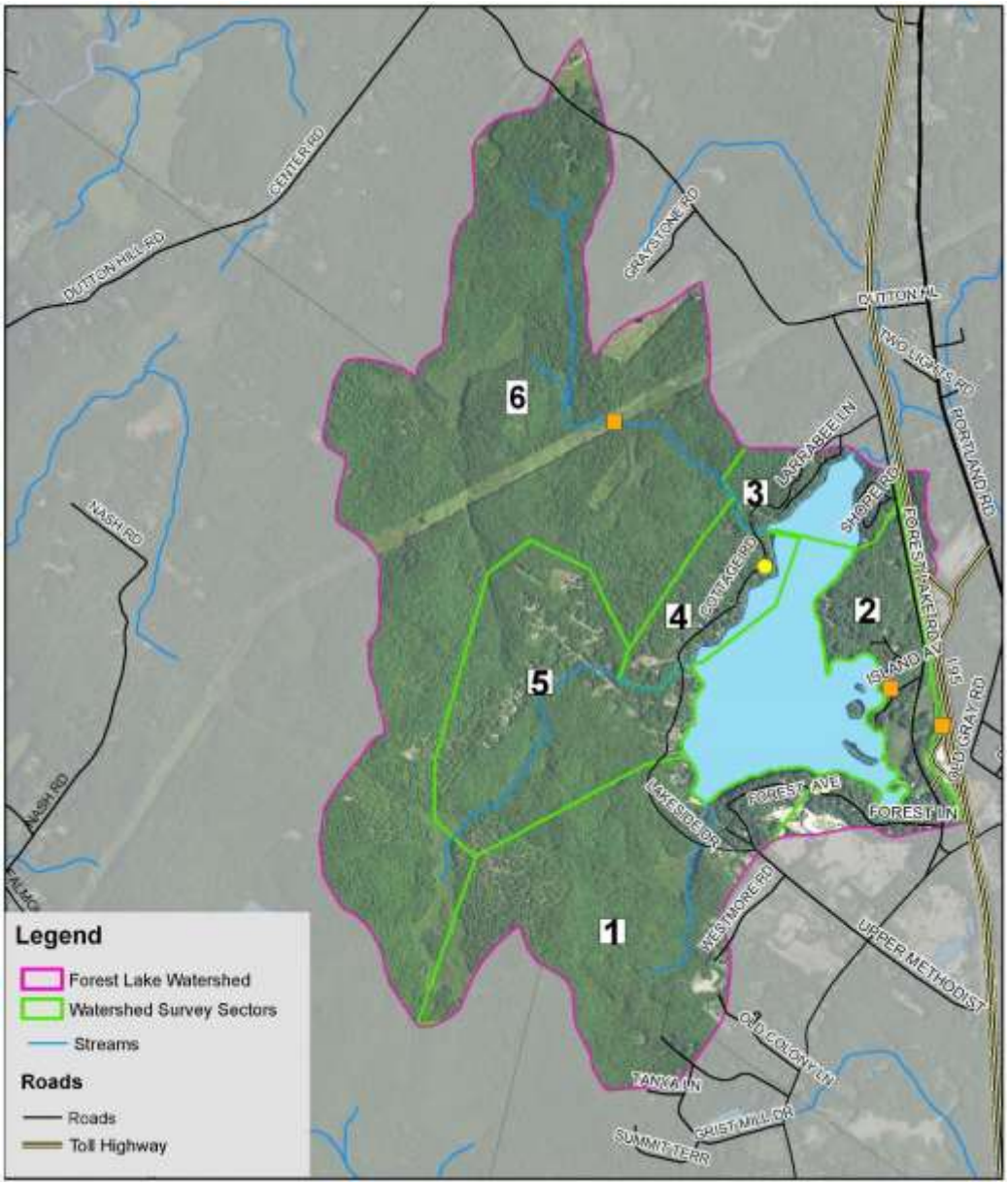
- **Kristin Feindel, Leader**
- **Vanessa Blair-Glanz**
- **Paula Curcio**

Sector 5

- **Heather True, Leader**
- **Greg Schulz**
- **Don Scipione**

Sector 6

- **Wendy Garland**
- **John Maclaine**



Survey volunteers were split into five teams to conduct field observation and documentation on April 29, 2017.

Throughout this report, sites are identified consecutively within each survey sector, using the format Sector 1, Site 1 and often abbreviated in the format 1-1, 1-2, 1-3, etc. Follow up field observation was completed by DEP representatives at a later date and identified collectively as Sector 6.

An overview map of the entire watershed area is provided here; a larger version is found in Appendix A along with detail maps that identify site locations by sector/site number.

Watershed Survey Findings

Summary of Watershed Survey Findings

Volunteers and technical staff documented 77 sites across the watershed that are currently, or have the potential to negatively affect the water quality of Forest Lake. The number of sites documented were fairly evenly distributed among the five primary sectors with (15) sites in Sector 1, (14) in Sector 2, (18) in Sector 3, (17) in Sector 4, and (11) in Sector 5. An additional two sites were documented by DEP technical staff at a later date and identified as Sector 6. Some key conclusions from the survey include:

As previously stated, each site was rated high, medium or low impact based on the type of erosion, the size of the area eroded, and the type of buffering or filtering that the erosion underwent before entering a stream, ditch, or the lake.

Of these, 33 sites were rated as low impact, 31 sites as medium impact and 13 as high impact (Table 2: Impact Counts per Sector). Overall, 57% of the sites found were rated high or medium impact.

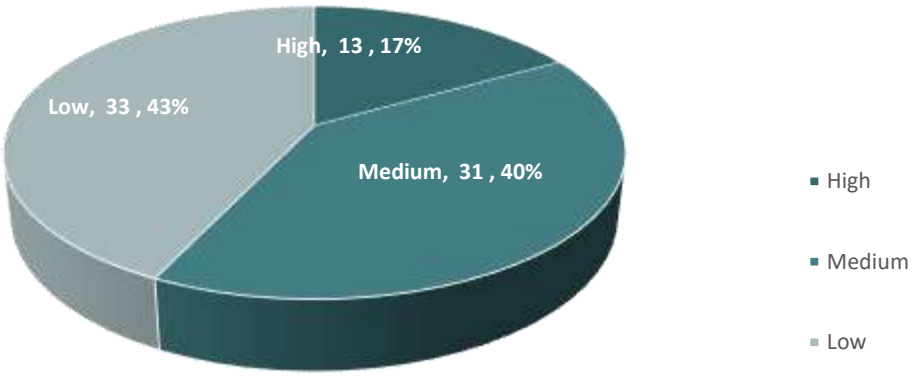
Some key conclusions include:

- **Everyone has a stake in improving water quality**. That's because NPS sites were identified across a variety of different land uses throughout the watershed. The residential landowners, towns, and the state will all need to work together to reduce the impact that NPS pollution has on the lake.
- **Residential Development:** In rural lake watersheds, residential development is typically located along the shoreline serviced by predominantly private gravel roads. Forest Lake is no exception, with dense residential development (year-round and seasonal) located off Cottage Road, Lakeside Drive, Forest Avenue, Forest Lane, and a number of smaller, unpaved gravel roads. The number of NPS sites stemming from residential development exceeds any other land-use type surveyed in the watershed (61%).
- **Driveways:** Although identified as a separate category of land use, private driveways account for an additional (10) sites, or almost 13% of the sites documented.
- **Roads:** In rural watersheds, development is typically focused along major roads with private gravel roads servicing residential homes. Eroding culverts and road shoulders and build-up of winter sand can have a significant impact on water quality if not well maintained. Combined, state, town and private road sites made up just 35% of all survey sites, with the greatest number of sites on private roads (25 sites). High impact road sites (10 sites), should be considered high priority for lake protection.

TABLE 2: IMPACT COUNTS PER SECTOR

Sector	Total Count	High (8-9)	Low (3-5)	Medium (6-7)
1	15		7	8
2	14		10	4
3	18	5	7	6
4	17	2	7	8
5	11	6	2	3
6	2			2
TOTALS	**77**	**13**	**33**	**31**

CHART 1: IMPACT RATING BY NUMBER AND PERCENT



Primary Land Use Activity

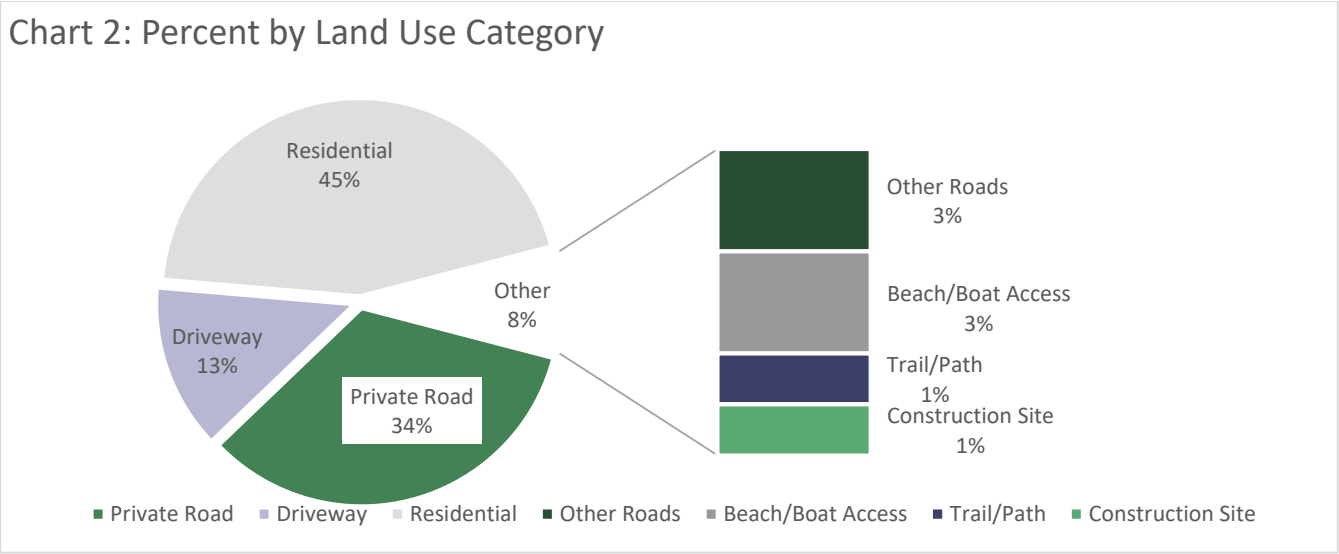
While documenting erosion sites, surveyors were also asked to select land use categories associated with each site. These categories included roads/driveways, residential, commercial, municipal/public, beach access, boat access, trail/path, logging, agriculture, and construction sites. Any site that was not clearly defined by one of these categories was called "other"; in the case of the Forest Lake Watershed Survey, only one property – an associate right of way – was classified as "other".

TABLE 3: LAND USE/ACTIVITY BY SECTOR

Sector:	1	2	3	4	5	6	Total of Use/Activity
Residential	7	9	10	7			33
Private Road	3	3	7	4	8		25
Driveway	2			5	3		10
Boat Access		1	1				2
Trail or Path	1					1	2
State Road						1	1
Town Road		1					1
Beach Access	1						1
Construction Site				1			1
Other	1						1

The overwhelming majority of sites were classified as residential properties (42%), private roads (32%), or driveways (13%). Most of the cited driveways were located on residential properties.

Residential sites accounted for the land use with the greatest number of sites. There were a total of 33 sites, plus an additional 10 driveways cited; the combined 43 sites account for 56% of sites identified. Private Roads accounted for 32% (25). All remaining land use types combined for 12% of the total with nine total sites documented as having an impact. Each of these categories will be explained in more detail in the subsequent land use sections.

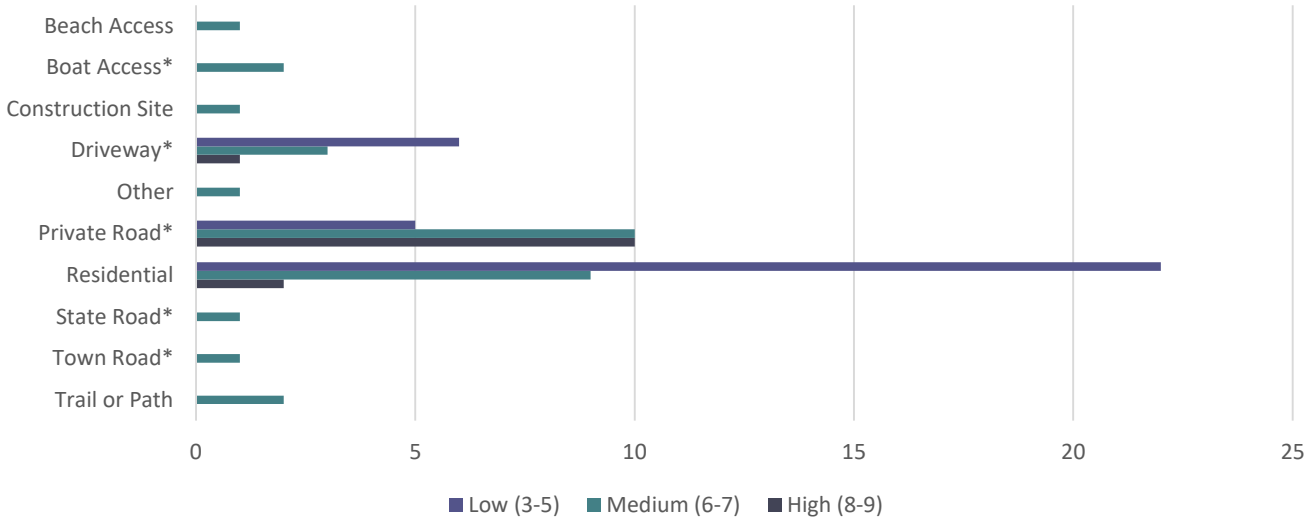


Another way of looking at the data is to compare the number of the high, medium, or low sites for each land use category (Table 5). Private Roads contributed the most medium to high impact sites (20 total). Only Residential sites neared this number, with eleven (11) sites in the medium to high impact category. Although all sites are important in the overall picture of a healthy watershed, these two land uses predominate; only thirteen (13) sites fell into the medium to high impact category in all other land use/activity categories.

TABLE 4: IMPACT RATING BY LAND USE

Primary Land Use Activity	High (8-9)	Medium (6-7)	Low (3-5)	Total Count
Residential	2	9	22	33
Private Road	10	10	5	25
Driveway	1	3	6	10
Boat Access		2		2
Trail or Path		2		2
Beach Access		1		1
Construction Site		1		1
Other		1		1
State Road		1		1
Town Road		1		1

CHART 3: IMPACT RATINGS OF EACH LAND USE CATEGORY



Summary of Findings by Land Use Type

Residential Sites

Residential sites (33) included any erosion that occurred on a residential property, including foot paths, roof runoff, ditches, shoreline erosion, and any other bare soil areas that delivered soil to a surface water body. The majority of residential sites were medium or low impact. Only two (2) residential sites were rated as having high impacts on the lake.

Bare soil, sheet erosion, and lack of shoreline vegetation account for 62% of the problems reported on residential sites.

Examples:

Bare Soil
Bare soil surfaces directly affect runoff rates, which increase because there is nothing to absorb the rain water. Conversely, vegetation allows for greater infiltration because the roots in the plants absorb the water and pulls it into the ground.

Sheet Erosion

Sheet erosion occurs when a thin layer of topsoil is removed by water runoff.

Lack of Shoreline Vegetation

Native vegetation usually found at the shoreline strengthens its structural integrity and prevents the land from breaking apart. The deep roots of these plants bind the earth together while their foliage and branches protect from the erosion caused by rainfall and winds. Removing these plants can cause the shore to weaken and easily crumble into the water.

TABLE 5: SUMMARY OF FINDINGS FOR RESIDENTIAL SITES

Problem Description	Count of Sites
Soil: Bare	23
Surface Erosion: Sheet	18
Shoreline: Lack of Shoreline Vegetation	10
Roof Runoff Erosion	9
Surface Erosion: Rill	8
Shoreline: Inadequate Shoreline Vegetation	6
Surface Erosion: Gully	3
Shoreline: Erosion	2
Shoreline: Unstable Access	2
Agriculture: Manure Washing off Site	1

Private Roads

Surveyors identified a total of twenty-five (25) private road sites, almost all of which were associated with gravel roads as opposed to pavement or other surfaces. Rill erosion, winter sand, and gully erosion accounted for 38% of the problems reported on private roads.

Examples:

Surface Erosion: Rill
Rill erosion forms small channels, often only .3 cm deep. Rills are caused when water running across the surface of the ground gathers in a natural depression in the soil, and the concentrated water flows through and further erodes the depression.

Winter Sand

Phosphorus is attached to winter sand. Winter sand along the road shoulder can also interrupt the flow of stormwater and cause erosion of the road surface or shoulder. When grading the road, blade the edge of the shoulder to eliminate any build-up of sand and gravel.

Gully Erosion

Gully erosion is similar to rill erosion; it can occur when sheet flow becomes concentrated in large defined channels. This may occur in unrepaired rill erosion areas. It is associated with larger volumes of soil erosion.

TABLE 6: SUMMARY OF FINDINGS FOR PRIVATE ROADS

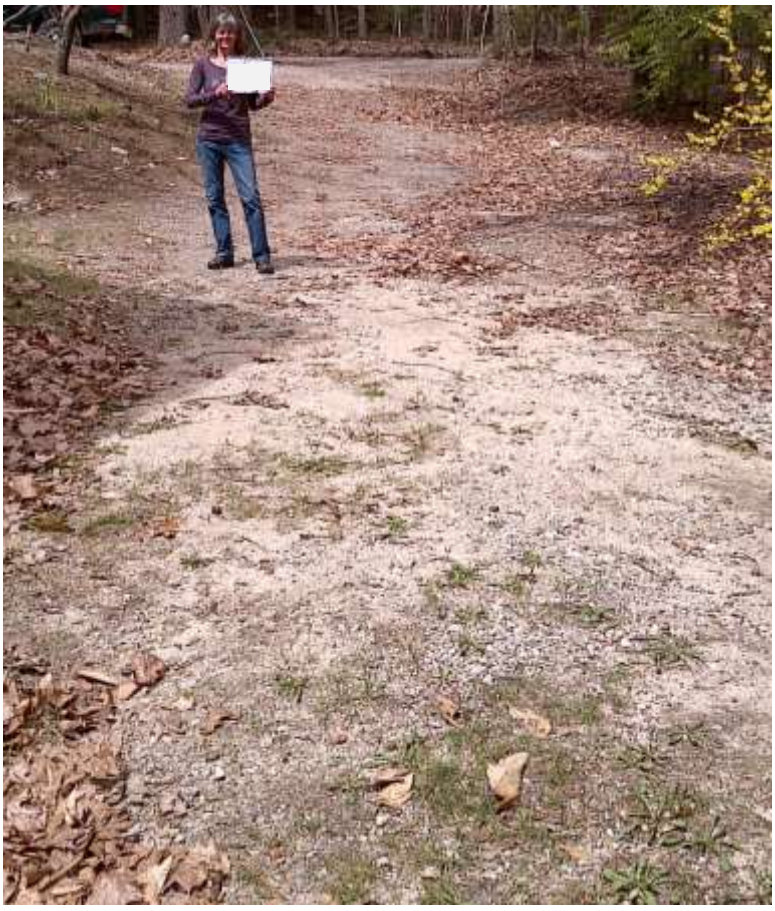
Problem Description	Count of Sites
Surface Erosion: Rill	12
Soil: Winter Sand	9
Surface Erosion: Gully	7
Culvert: Unstable Inlet/outlet	6
Road Shoulder Erosion: Rill	5
Road Shoulder Erosion: Gully	5
Roadside Plow/Grader Berm	4
Soil: Bare	4

Surface Erosion: Sheet	3
Culvert: Clogged	3
Culvert: Undersized	3
Ditch: Rill Erosion	3
Ditch: Gully Erosion	3
Ditch: Bank Failure	2
Soil: Delta in Stream/Lake	2
Road Shoulder Erosion: Sheet	1

Driveways

In some watersheds, driveways tend to be problematic. In the Forest Lake watershed, driveways contributed to a small percentage of the overall residential impacts, with a total of ten (10) sites. One (1) of the driveway sites was rated as high impact, three (3) were medium impact, and six (6) were low impact.

Examples:



Surface Erosion: Rill
Rill erosion forms small channels, often only .3 cm deep. Rills are caused when water running across the surface of the ground gathers in a natural depression in the soil, and the concentrated water flows through and further erodes the depression.

Gully Erosion
Gully erosion is similar to rill erosion; it can occur when sheet flow becomes concentrated in large defined channels. This may occur in unrepaired rill erosion areas. It is associated with larger volumes of soil erosion.

TABLE 7: SUMMARY OF FINDINGS FOR DRIVEWAYS

Problem Description	Count of Sites
Surface Erosion: Rill	4
Surface Erosion: Gully	4
Soil: Bare	3
Surface Erosion: Sheet	1
Culvert: Clogged	1
Culvert: Crushed/Broken	1
Culvert: Undersized	1
Roof Runoff Erosion	1

Other Land Use Findings

The remaining nine (9) sites were found in the land use categories boat or beach access, trail or path, construction site, association right of way (ROW) and town roads.

TABLE 8: SUMMARY OF FINDINGS FOR OTHER LAND USES

Problem Description	Beach Access	Boat Access	Construction	ROW	Town Road	Trail or Path	#
Soil: Bare	1	1	1	1	1		5
Surface Erosion: Gully	1		1		1	1	4
Surface Erosion: Rill		2			1		3
Surface Erosion: Sheet		2					2
Shoreline: Inadequate Shoreline Vegetation			1	1			2
Culvert: Unstable Inlet/outlet					1		1
Road Shoulder Erosion: Rill					1		1
Road Shoulder Erosion: Gully					1		1
Soil: Delta in Stream/Lake	1						1
Shoreline: Erosion		1					1
Shoreline: Unstable Access						1	1

Survey Recommendations

Summary of Recommendations by Sector

Recommendation	Total	Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	Sec.6
Construction Site: Check Dams	1						1
Construction Site: Mulch	2				2		
Construction Site: Seed/Hay	1						1
Construction Site: Silt Fence/EC Berms	1				1		
Culvert: Armor Inlet/Outlet	7	1	2	1	2	1	
Culvert: Enlarge	3			1		2	
Culvert: Install Culvert	3			1		2	
Culvert: Install Plunge Pool	4			1		3	
Culvert: Lengthen	1		1				
Culvert: Remove Clog	4	1		1	2		
Culvert: Replace	1				1		
Ditch: Armor with Stone	6	2	1	2		1	
Ditch: Install	5		1	1		3	
Ditch: Install Check Dams	1					1	
Ditch: Install Sediment Pools	2					2	
Ditch: Install Turnouts	5		2			3	
Ditch: Remove Debris/Sediment	3			1		2	
Ditch: Reshape	8	2	1	3	1	1	
Ditch: Vegetate	3		1	1		1	
Other: Infiltration Trench	1		1				
Other: Install Runoff Diverter	6	3	2	1			
Other: Mulch/Erosion Control Mix	22	5	5	7	5		
Paths & Trails: Define Foot Path	11	2	3	3	3		
Paths & Trails: Infiltration Steps	5	1	2	2			
Paths & Trails: Install Runoff Diverter	4		2		2		
Paths & Trails: Stabilize Foot Path	5	1		3	1		
Roads/Driveways: Remove Grader/Plow Berms	7	1	1	2	2	1	
Roads/Driveways: Add New Material: Gravel	15	4	2	4	2	3	
Roads/Driveways: Add New Material: Pave	2					2	
Roads/Driveways: Add New Material: Recycled Asphalt	4		1	2		1	
Roads/Driveways: Build Up	6		1	1		4	
Roads/Driveways: Install Catch Basin	4	3				1	
Roads/Driveways: Install Detention Basin	2			1		1	
Roads/Driveways: Reshape Crown	12	1	2	4	3	2	
Roads/Driveways: Runoff Diverters: Broad-Based Tip	2					2	
Roads/Driveways: Runoff Diverters: Rubber Razor	4	1		1	1	1	
Roads/Driveways: Runoff Diverters: Unspecified Type	13			2	10		1
Roads/Driveways: Runoff Diverters: Waterbar	8	4	1	2	1		
Roads/Driveways: Vegetate Shoulder	2	1	1				
Roof Runoff: Drywell at Gutter Downspout	3	2	1				
Roof Runoff: Infiltration Trench at Dripline	10	5	4	1			
Roof Runoff: Rain Barrel	3	3					
Vegetation: Add to Buffer	16	7	4	2	3		
Vegetation: Establish Buffer	14	2	2	7	3		
Vegetation: No Raking	4	2	1		1		
Vegetation: Reseed Bare Soil/Thinning Grass	4	2	1	1			

Next Steps

Where Do We Go From Here?

The Forest Lake Steering Committee intends to utilize the information from the survey report in creating a watershed plan to be approved by the Maine DEP. This initial plan will include action steps towards:

- Comparing sites recorded in 2017 to those from our 2003 survey to see which sites are newly identified and which sites have ongoing issues.
- Looking for/identifying contributing factors for those sites previously identified/addressed that still have issues
- Organizing a continuous group effort for watershed protection and steering plan into action.
- Fundraising for remediation projects.
- Applying for federal 319 grant funding under the Clean Water Act to help carry out the plan.
- Continuous monitoring and updating a database of survey sites.
- Expanding outreach and education efforts.

Where Do I Get More Information?

Contacts

- **Forest Lake Association Steering Committee**
  25 Forest Lane, Cumberland, ME 04021
  Janene Gorham, Chair
  (207) 829-3878 / jgorham6@maine.rr.com
- **Cumberland County Soil & Water Conservation District**
  35 Main Street Suite 3, Windham, ME 04062
  Heather True, Project Manager
  (207) 892-4700 / htrue@cumberlandswcd.org
  www.cumberlandswcd.org
- **Maine Department of Environmental Protection**
  Division of Environmental Assessment, Bureau of Water Quality
  312 Canco Road, Portland, ME 04103
  John Maclaine, Environmental Specialist
  (207) 615-3279/ John.Maclaine@maine.gov
- **Volunteer Lakes Monitoring Program**
  24 Maple Hill Road, Auburn, ME 04210
  Scott Williams, Executive Director
  (207) 783-7733 / scott.williams@mainevlmp.org,

Permitting Basics

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 eachTown 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 rules are properly followed.

How to apply for a Permit by Rule with DEP:

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

- Fill out a notification form and submit fee and any required materials before starting any work. Forms are available from your town code enforcement officer, Maine DEP offices, or online at www.maine.gov/dep/land/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.

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 constructive change may be a challenge.

The Maine DEP and Portland Water District produced a series of 24 fact sheets that answer many common how-to questions. The fact sheets profile common conservation practices that homeowners can use to protect water quality and include detailed instructions, diagrams and color photos about installation and maintenance. The series includes the following:

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

The series also includes six native plant lists. Each one is tailored to different site conditions (e.g., full sun and dry soils). The lists include plant descriptions and color photos of each plant to make plant selection easier.

Fact sheets are available to help you implement conservation techniques on your property. Download at: http://www.maine.gov/dep/land/watershed/materials.html

Example Recommendations

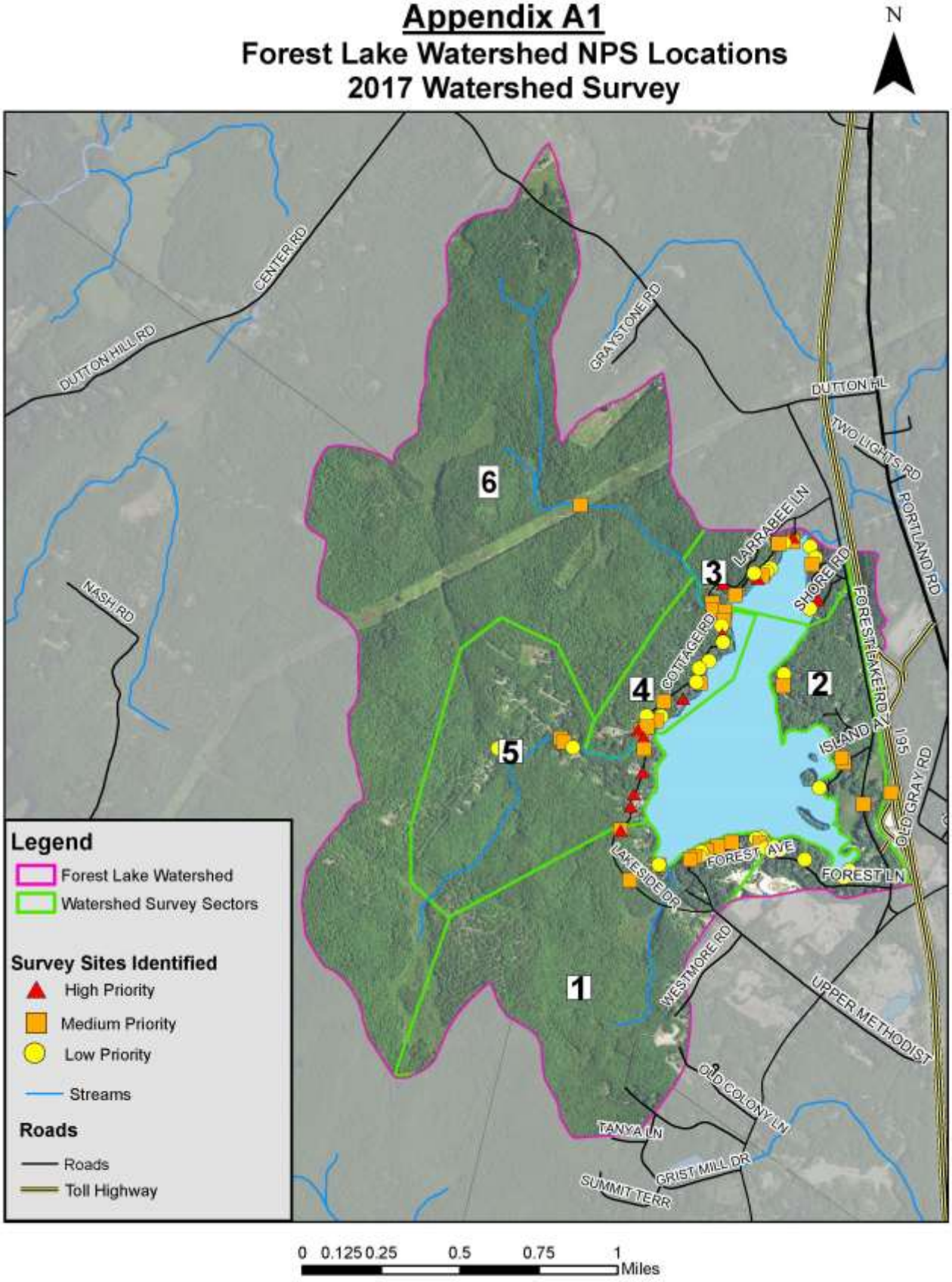
Following are brief descriptions of common runoff mediation recommendations and the number of sites with these recommendations (in parenthesis). Property owners are encouraged to discover additional information on the Forest Lake website.

Recommendation (#sites)	Description
CULVERTS	
Armor Inlet/Outlet (7)	Material, typically stone, installed to protect sloped sides of culvert from erosion. Riprap should not be placed across the entire stream channel; it should be limited to the culvert inlet/outlet and banks of the stream around the crossing only. Placing riprap in the stream channel can smother habitat and cause problems with fish passage.
Install Plunge Pool (4)	Plunge pools are designed to dissipate the flow of high velocity runoff. Plunge pools should NOT be installed in a stream channel.
DITCHES	
Install Turnouts (5)	Turnouts return stormwater runoff as sheet flow to natural drainage areas. Often turnouts are simply extensions of ditches that redirect water into the woods and disperse runoff before it can cause erosion. Turnouts reduce the speed of runoff, allowing soil particles to settle out instead of being transported to a stream, river, or lake. Water and nutrients can then be filtered and absorbed by the surrounding vegetation. Learn more about turnouts: https://www.pwd.org/sites/default/files/turnouts.pdf
ROADS / DRIVEWAYS	
Gravel Road Maintenance	Refer to the Gravel Road Maintenance Manual: a Guide for Landowners on Camp and Other Gravel Roads for tips on surface materials, culverts, ditches, and general maintenance related to reduction in runoff and erosion. http://www.maine.gov/dep/land/watershed/camp/road/gravel_road_manual.pdf

Runoff Diverters Rubber Razor (4)	Rubber Razors divert water off gravel driveways and camp roads into stable vegetated areas. These structures are well suited for seasonal roads that are not plowed. They can be plowed over if the location is clearly marked and the plow operator lifts the plow blade slightly. Learn more: https://www.pwd.org/sites/default/files/rubber_razors.pdf
Runoff Diverters Waterbar (8)	A waterbar intercepts water traveling down footpaths, trails and other areas and diverts it into stable vegetated areas. Learn more: https://www.pwd.org/sites/default/files/waterbar.pdf
PATHS & TRAILS	
Infiltration Steps (5)	Infiltration steps use crushed stone to slow down and infiltrate runoff. They are effective on moderate slopes, but consider building wooden stairways on 1:1 slopes (45°) or areas where rocks or surface roots make it difficult to set infiltration steps in the ground. Learn more: https://www.pwd.org/sites/default/files/infiltration_steps.pdf
ROOF RUNOFF	
Drywell at Gutter Downspout (3)	Drywells collect and infiltrate runoff at gutter downspouts and other places where large quantities of concentrated water flow off rooftops. These systems help control erosive runoff on your property, and reduce wear on your house by minimizing back splash Lean more: https://www.pwd.org/sites/default/files/dry_wells.pdf
Infiltration Trench at Dripline (10)	Dripline trenches collect and infiltrate stormwater, and control erosive runoff from the rooftop. The trenches collect roof runoff and store it until it soaks into the soil. These systems also minimize wear on your house by reducing back splash. Learn more: https://www.pwd.org/sites/default/files/dripline_trench.pdf
Rain Barrel (3)	Rain barrels provide an innovative way to capture rainwater from your roof, and store it for later use. Water collected from rain barrels can be used to water lawns, gardens, and indoor plants. This water would otherwise run off your roof or through downspouts and become stormwater, picking up pollutants on its way to a storm drain, stream, or lake. You can lower your water bill, conserve well water in the dry season, and reduce polluted stormwater runoff. Learn more about rain barrels: https://www.pwd.org/sites/default/files/rain_barrels.pdf
OTHER	
Mulch/Erosion Control Mix (22)	Mulching is the application of an organic cover over exposed soil to protect its structure from the impact of raindrops, to reduce the potential for erosion, and to maintain soil permeability and moisture for vegetation uptake. Mulch must remain until the site is permanently stabilized or revegetated.
VEGETATION	*Vegetated buffers are trees, shrubs and groundcover plants that catch sediment and other pollution before it reaches lakes or streams. Trees and shrubs intercept raindrops and reduce their impact on the soil.*
Add to (16) or establish a vegetative buffer (14).	Install additional plant material, especially in areas closest to the lake and other bodies of water. Select plants suitable to the growing zone, light and soil conditions of the planting area. Ideally, native plants should be selected since these are better adapted to

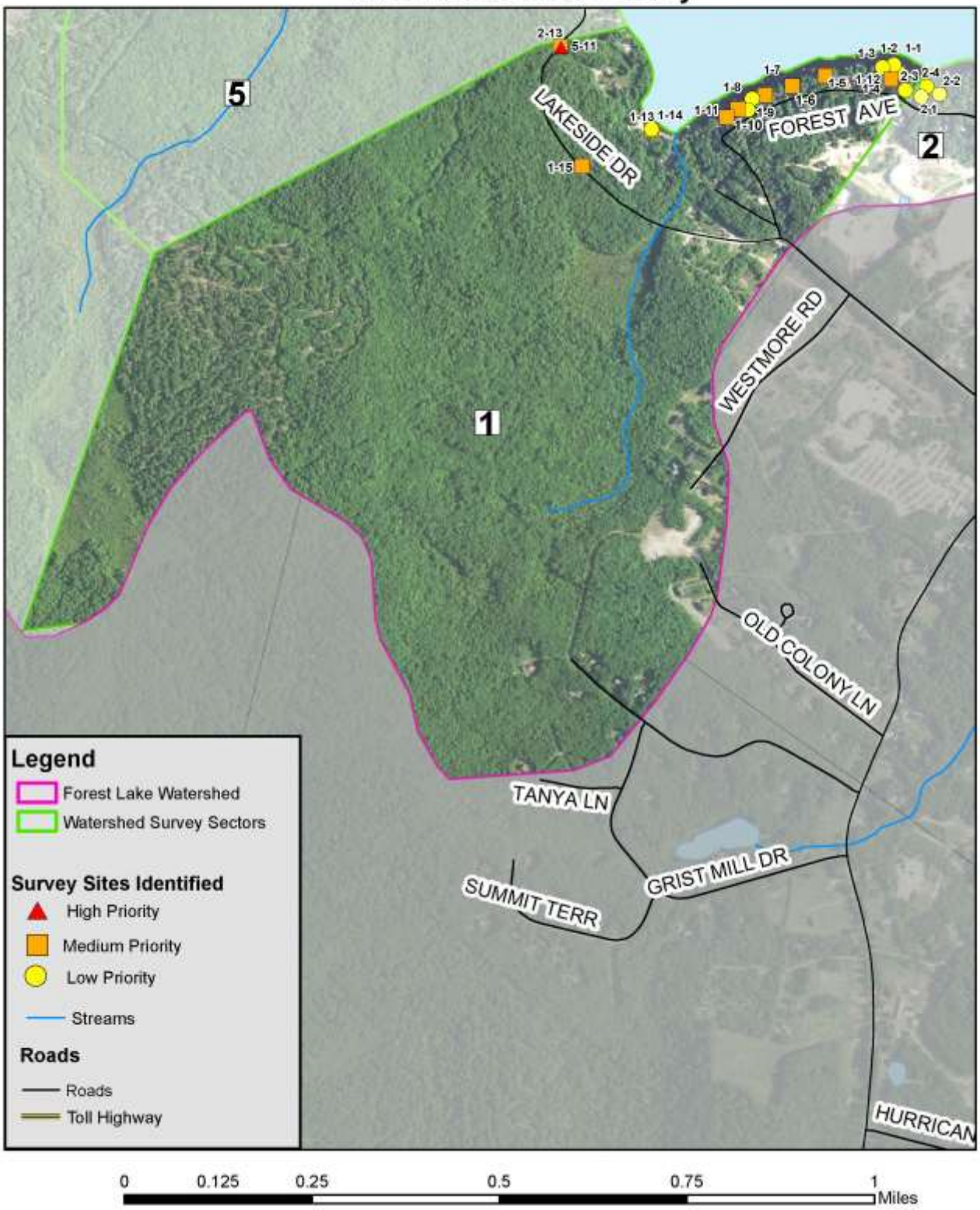
Reseed Bare Soil and/or Thinning Grass (4)	local conditions, fit in with the natural landscape and do not require fertilizers or pesticides.
No Raking (4)	Avoid raking fallen leaves and other plant material which, when left in place, can act as a natural mulch and assist with erosion control.

Appendix A: Survey Maps



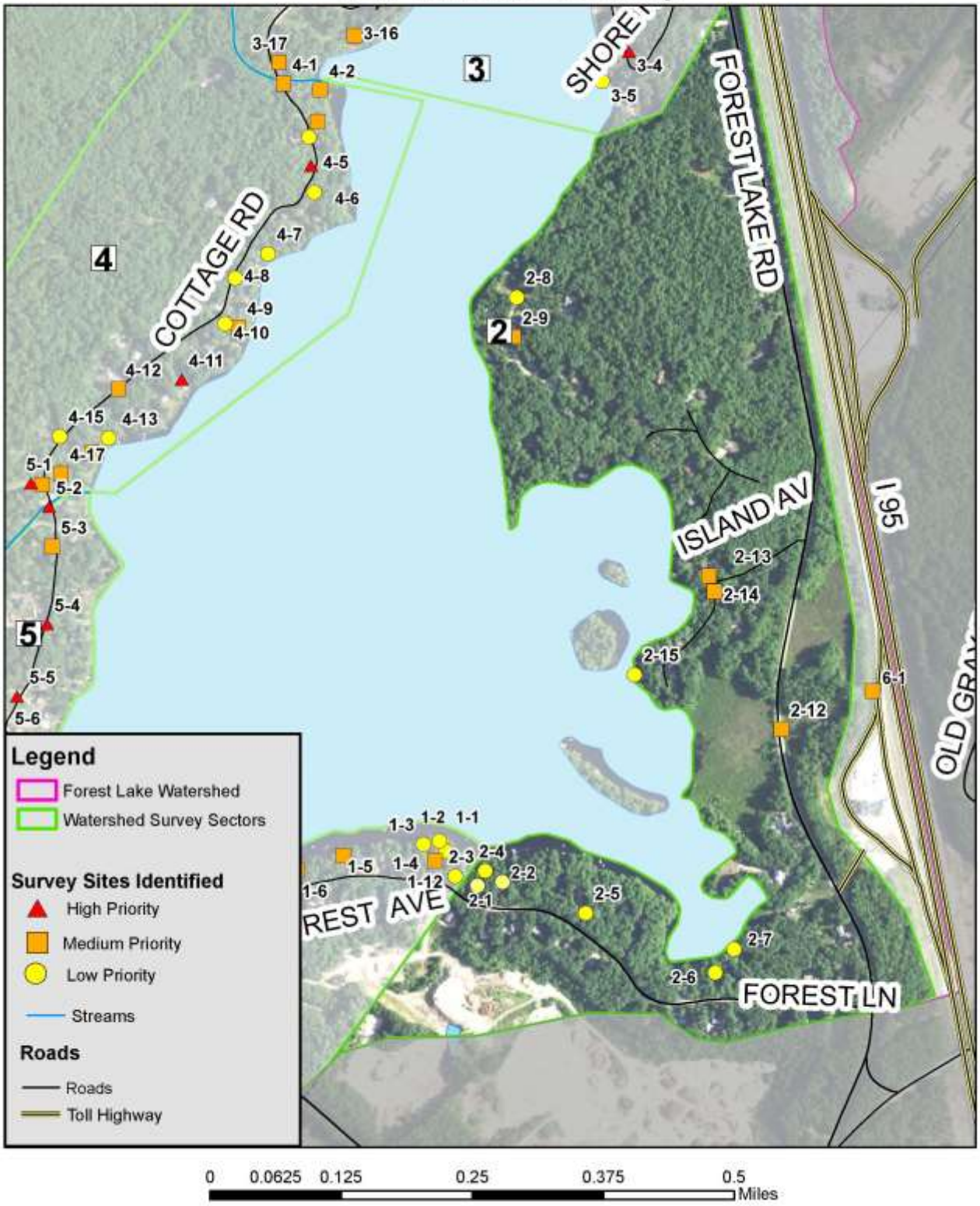
Appendix A2 : Sector 1

Forest Lake Watershed NPS Locations
2017 Watershed Survey



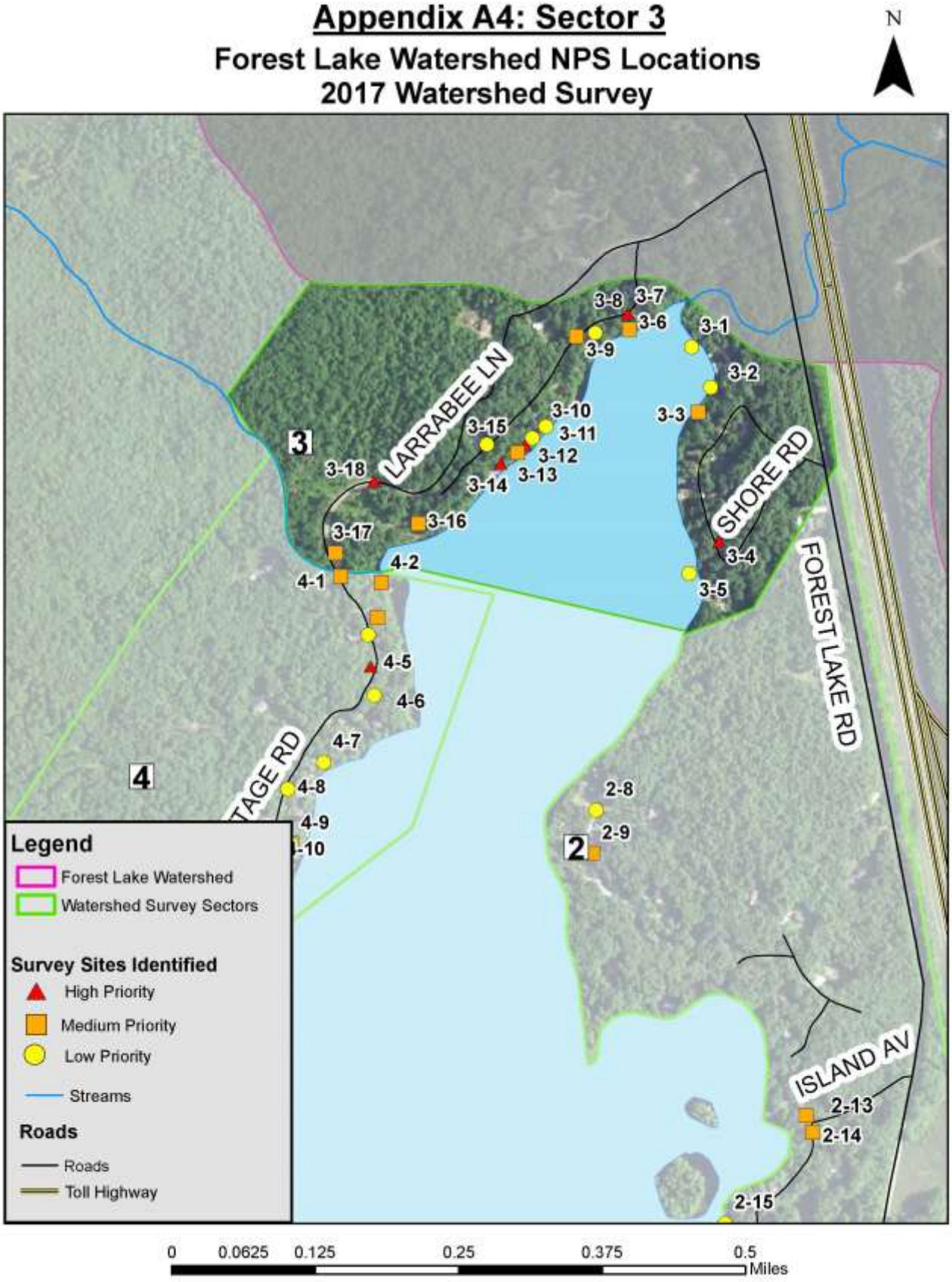
Appendix A3: Sector 2

Forest Lake Watershed NPS Locations
2017 Watershed Survey



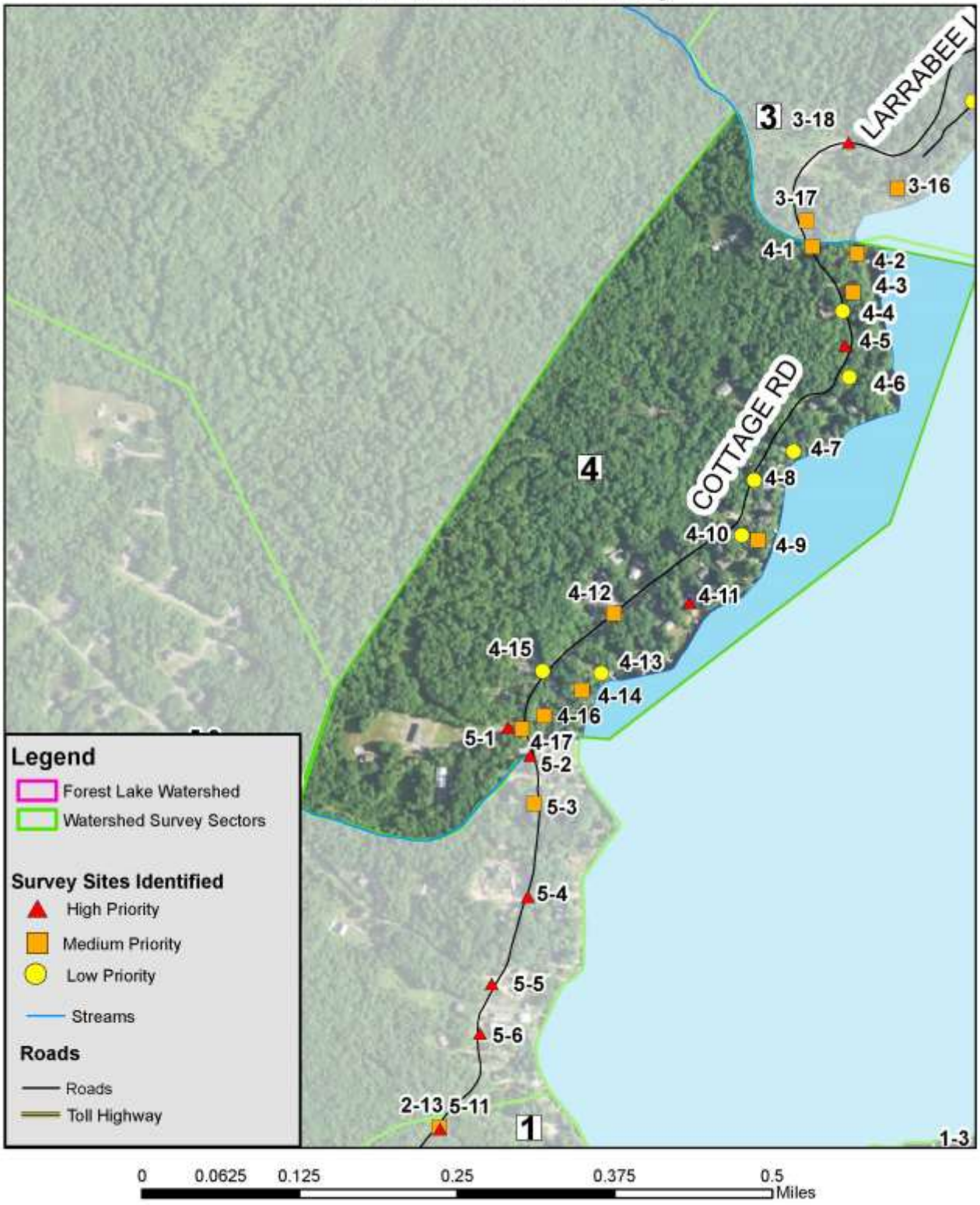
Appendix A4: Sector 3

Forest Lake Watershed NPS Locations
2017 Watershed Survey



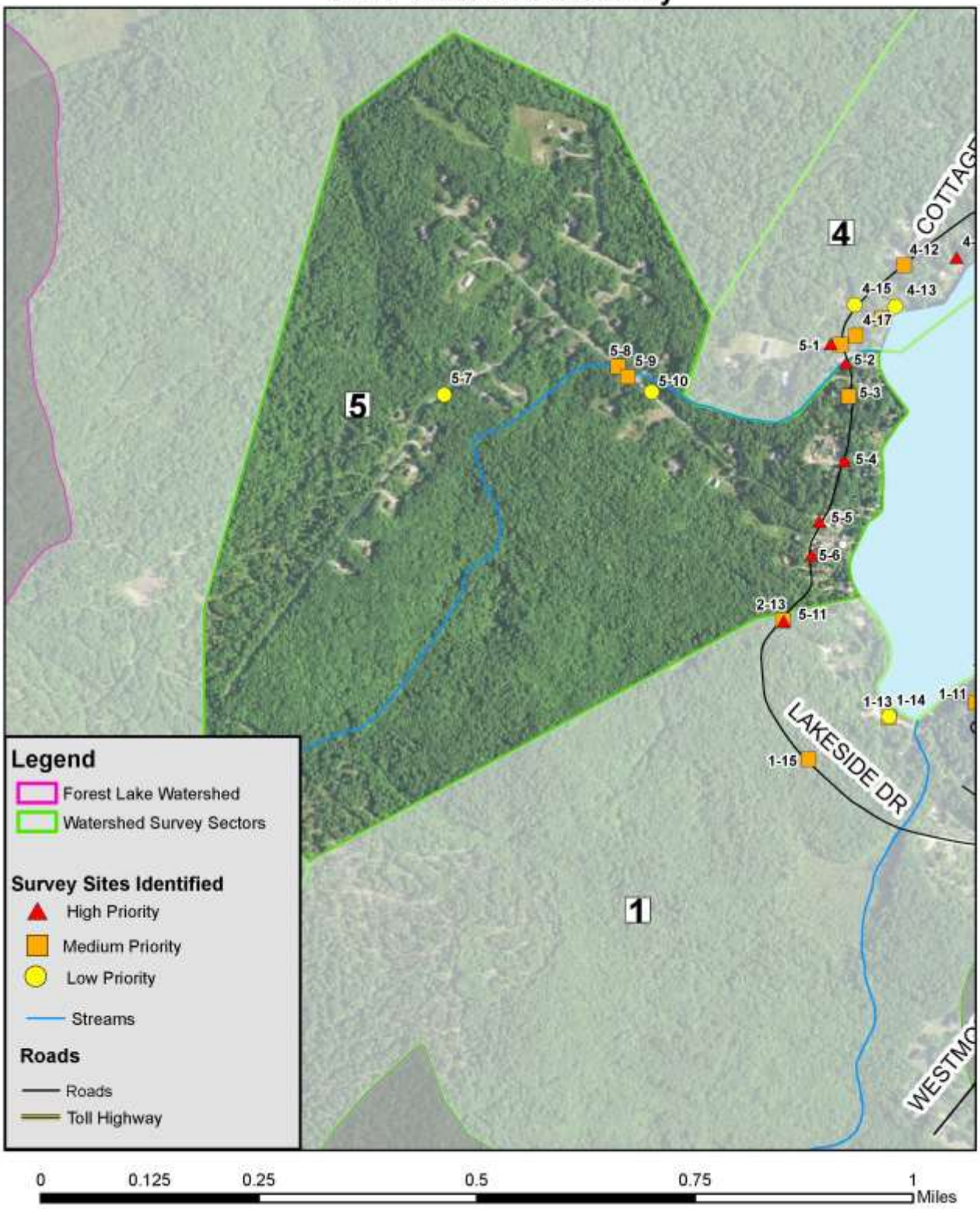
Appendix A5: Sector 4

Forest Lake Watershed NPS Locations
2017 Watershed Survey



Appendix A6: Sector 5

Forest Lake Watershed NPS Locations
2017 Watershed Survey

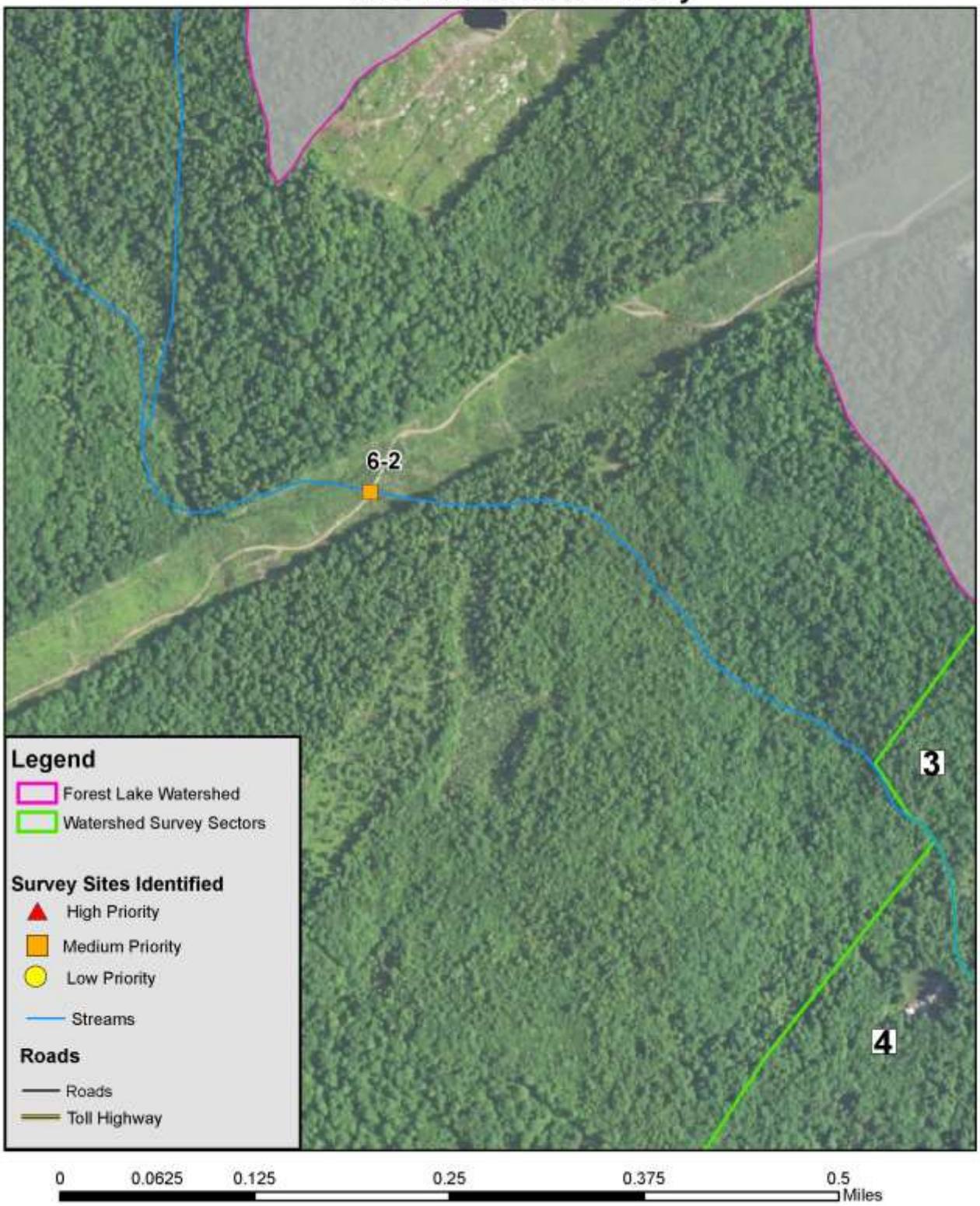


Appendix A7 : Site 6-1

Forest Lake Watershed NPS Locations
2017 Watershed Survey

Appendix A8 : Site 6-2

Forest Lake Watershed NPS Locations
2017 Watershed Survey



Appendix B: Forest Lake Watershed Survey Form

Final Site #_____ Checked by _____ Date _____

Forest Lake Watershed Survey

REMINDER: Only write up if there is likely transport of sediment or phosphorus into the lake.

Sector & Site _____ Date_____ Surveyor Initials _____

Location *(house #, road, utility pole #)* _____

Building Color _____ Landowner Name _____

Tax Map & Lot _____ Talked to Landowner? _____

Flow into Lake via (check ONE): ❒ Directly into Lake ❒ Stream ❒ Ditch ❒ Minimal Vegetation

Note: If flow does not make it into lake, do not fill out a form. It would not be considered a site.

GPS Coordinates in **UTM**

(no degrees or decimal points)

0						

Land Use/Activity Circle ONE	**Description of Problems** Circle ALL that apply	
State Road*	**Surface Erosion**	**Soil**
Town Road*	Sheet	Bare
Private Road*	Rill	Uncovered Pile
Driveway*	Gully	Delta in Stream/Lake
Residential	**Culvert**	Winter Sand
Commercial	Unstable Inlet / Outlet	**Roof Runoff Erosion**
Municipal / Public	Clogged	**Shoreline**
Beach Access	Crushed / Broken	Undercut
Boat Access*	Undersized	Lack of Shoreline Vegetation
Trail or Path	**Ditch**	Inadequate Shoreline Vegetation
Logging	Sheet Erosion	Erosion
Agriculture	Rill Erosion	Unstable Access
Construction Site	Gully Erosion	**Agriculture**
OTHER:	Bank Failure	Livestock Access to Waterbody
	Undersized	Tilled Eroding Fields
* Is it: paved, gravel or other/unknown?	**Road Shoulder Erosion**	Manure Washing off Site
	Sheet	**OTHER:**
	Rill	
	Gully	
	Roadside Plow/Grader Berm	

Slope: ❒ Flat ❒ Moderate ❒ Steep **Size of Area Exposed or Eroded** (length & width): _____

Recommendations		
Culvert	**Roads / Driveways**	**Paths & Trails**
Armor Inlet/Outlet	Remove Grader/Plow Berms	Define Foot Path
Remove Clog	Build Up	Stabilize Foot Path
Replace	Add New Surface Material	Infiltration Steps
Enlarge	• Gravel	Install Runoff Diverter (waterbar)
Lengthen	• Recycled Asphalt	**Roof Runoff**
Install Culvert	• Pave	Infiltration Trench @ roof dripline
Install Plunge Pool	Reshape (Crown)	Drywell @ gutter downspout
Ditch	Vegetate Shoulder	Rain Barrel
Vegetate	Install Catch Basin	**Other**
Armor with Stone	Install Detention Basin	Install Runoff Diverter (waterbar)
Reshape Ditch	Install Runoff Diverters	Mulch / Erosion Control Mix
Install Turnouts	• Broad-based Dip	Rain Garden
Install Ditch	• Open Top Culvert	Infiltration Trench
Install Check Dams	• Rubber Razor	Water Retention Swales
Remove debris/sediment	• Waterbar	**Vegetation**
Install Sediment Pools	**Construction Site**	Establish Buffer
Other Suggestions:	Mulch	Add to Buffer
	Silt Fence / EC Berms	No Raking
	Seed / Hay	Reseed bare soil & thinning grass
	Check Dams	

Impact: Circle one choice in each column, add the three selected numbers together, and then circle the site's corresponding impact rating (high, medium, or low).

Type of Erosion	Area	Buffers and Other Filters	IMPACT
Gully - **3**	Large - **3**	No filter, all channelized direct flow into lake or stream - **3**	High: 8-9 pts
Rill - **2**	Medium - **2**	Some buffer or filtering, but visible signs of concentrated flow and/or sediment movement through buffer and into lake - **2**	Med: 6-7 pts
Sheet - **1**	Small - **1**	Significant buffer or filtering* - **1**	Low: 3-5 pts

* Confirm there is likely sediment/runoff delivery. If not, do not write up as a site.

Cost to Fix

High:	Greater than $2,500
Medium:	$500-$2,500
Low:	Less than $500

Technical Level to Install

High:	Site requires engineered design
Medium:	Technical person should visit site & make recommendations
Low:	Property owner can accomplish with reference materials

Appendix C: Survey Data Detail

1 - 01 Map/Lot 036049000000 GPS UTM Coordinates: 0393203 4852391

Site Problems

Surface Erosion: Sheet
Soil: Bare

Recommendations

Roads/Driveways: Runoff Diverters: Waterbar
Paths & Trails: Define Foot Path
Paths & Trails: Infiltration Steps
Roof Runoff: Infiltration Trench at Dripline
Other: Mulch/Erosion Control Mix
Vegetation: No Raking

Plant Pachysandra/minimize bare areas. Waterbar at corner of drive.

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Medium**

1 - 02 Map/Lot 036049000000 GPS UTM Coordinates: 0393192 4852407

Site Problems

Surface Erosion: Rill
Soil: Bare
Roof Runoff Erosion

Recommendations

Roads/Driveways: Runoff Diverters: Waterbar
Roof Runoff: Infiltration Trench at Dripline
Other: Mulch/Erosion Control Mix
Vegetation: Add to Buffer

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

1 - 03 Map/Lot 036049A000 GPS UTM Coordinates: 0393168 4852402

Site Problems

Surface Erosion: Sheet
Soil: Bare
Shoreline: Lack of Shoreline Vegetation

Recommendations

Roof Runoff: Drywell at Gutter Downspout
Roof Runoff: Rain Barrel
Other: Mulch/Erosion Control Mix
Vegetation: Add to Buffer
Vegetation: No Raking

Left side of house as you face lake

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Low**

1 - 04 Map/Lot 0360494000 GPS UTM Coordinates: 0393186 4852377

Site Problems

Surface Erosion: Sheet

Bare. There is a drywell @ very end.

Recommendations

Roads/Driveways: Vegetate Shoulder
Vegetation: Add to Buffer

Don't park at very end of driveway. Berm at end and side.

Overall Impact: Medium (6-7) **Approx. Cost: High** **Skill Level: High**

1 - 05 Map/Lot 036043A000 GPS UTM Coordinates: 0393045 4852384

Site Problems

Surface Erosion: Gully
Shoreline: Unstable Access

Recommendations

Roads/Driveways: Runoff Diverters: Waterbar
Paths & Trails: Define Foot Path
Vegetation: Add to Buffer

Buffer plantings at water's edge; logs to slow the process down. Define meandering foot path.

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

1 - 06 **Map/Lot 036040000000** **GPS UTM Coordinates: 0392974 4852362**

Site Problems	Recommendations
Surface Erosion: Rill Roof Runoff Erosion	Roof Runoff: Infiltration Trench at Dripline Other: Install Runoff Diverter Vegetation: Add to Buffer

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Low**

1 - 07 **Map/Lot 0360360000000** **GPS UTM Coordinates: 0392916 4852342**

Site Problems	Recommendations
Roof Runoff Erosion	Roof Runoff: Rain Barrel

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

1 - 08 **Map/Lot 0360350000000** **GPS UTM Coordinates: 0392888 4852334**

Site Problems	Recommendations
Soil: Bare Roof Runoff Erosion	Roof Runoff: Drywell at Gutter Downspout Roof Runoff: Rain Barrel Good vegetation!

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

1 - 09 **Map/Lot 036033000000** **GPS UTM Coordinates: 0392879 4852311**

Site Problems	Recommendations
Soil: Bare Shoreline: Inadequate Shoreline Vegetation Shoreline: Erosion	Roof Runoff: Infiltration Trench at Dripline Vegetation: Add to Buffer
Needs buffer plants. Retention wall was put in early 2000's by YCC on lakefront.	Needs retaining wall on road side

Overall Impact: Low (3-5) **Approx. Cost: High** **Skill Level: Medium**

1 - 10 **Map/Lot** **GPS UTM Coordinates: 0392857 4852312**

Site Problems	Recommendations
Soil: Bare Shoreline: Inadequate Shoreline Vegetation	Roads/Driveways: Runoff Diverters: Rubber Razor Paths & Trails: Stabilize Foot Path Other: Mulch/Erosion Control Mix Vegetation: Establish Buffer
Pathway erosion on Association ROW	Buffer needed at bottom of steps to right.

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

1 - 11 **Map/Lot 0360310000000** **GPS UTM Coordinates: 0392833 4852295**

Site Problems

Surface Erosion: Rill
Soil: Bare
Roof Runoff Erosion
Shoreline: Lack of Shoreline Vegetation
Shoreline: Inadequate Shoreline Vegetation

Recommendations

Roof Runoff: Infiltration Trench at Dripline
Other: Install Runoff Diverter
Other: Mulch/Erosion Control Mix
Vegetation: Establish Buffer
Vegetation: Add to Buffer
Vegetation: Reseed Bare Soil/Thinning Grass

Stick to stairs; don't create new paths

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

1 - 12 **Map/Lot** **GPS UTM Coordinates: 0393392 4852318**

Site Problems

Surface Erosion: Rill
Road Shoulder Erosion: Sheet
Soil: Bare
Soil: Winter Sand

Unpaved dirt road

Recommendations

Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Reshape Crown
Roads/Driveways: Install Catch Basin
Vegetation: Reseed Bare Soil/Thinning Grass

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Medium**

1 - 13 **Map/Lot 036019000000** **GPS UTM Coordinates: 0392672 4852267**

Site Problems

Surface Erosion: Gully
Soil: Bare
Soil: Delta in Stream/Lake

The property is posted "no trespassing/private property". Question whether to report to/inform landowner potentially bringing into question our access, even though we had permission of family member.

Recommendations

Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Install Catch Basin
Roads/Driveways: Runoff Diverters: Waterbar

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

1 - 14 **Map/Lot** **GPS UTM Coordinates: 0392672 4852269**

Site Problems

Surface Erosion: Sheet
Surface Erosion: Rill
Ditch: Gully Erosion
Road Shoulder Erosion: Gully
Soil: Bare
Soil: Winter Sand

Area is Lakeside Drive from Goose Pond Rd to first cluvert at wetland. Road is washing away on both sides. Possible private/public road.

Recommendations

Culvert: Armor Inlet/Outlet
Culvert: Remove Clog
Ditch: Armor with Stone
Ditch: Reshape
Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Install Catch Basin
Other: Install Runoff Diverter

On culvert, water passing through is washing out the banks; banks need to be reinforced with rocks and wire. Sand runs directly into southern-most culvert.

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Medium**

1 - 15 **Map/Lot** **GPS UTM Coordinates: 0392524 4852190**

Site Problems	Recommendations
Surface Erosion: Sheet Surface Erosion: Gully Ditch: Gully Erosion Ditch: Bank Failure Road Shoulder Erosion: Gully Soil: Bare Soil: Winter Sand	Ditch: Armor with Stone Ditch: Reshape Roads/Driveways: Remove Grader/Plow Berms Roads/Driveways: Add New Material: Gravel
Road is washing away on sides	Second culvert on Lakeside coming from Goose Pond Rd at intersection with Glendale. Water passing through to the lake is washing out the banks; banks need to be rocked with wire reinforcement.

Overall Impact: Medium (6-7) **Approx. Cost: High** **Skill Level: Medium**

2 - 01 **Map/Lot 05060-0u22-000** **GPS UTM Coordinates: 0374005 4901817**

Site Problems	Recommendations
Surface Erosion: Sheet	Roof Runoff: Infiltration Trench at Dripline Other: Mulch/Erosion Control Mix Vegetation: Add to Buffer Vegetation: No Raking Additional vegetation at side of stairs

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Low**

2 - 02 **Map/Lot 05060-0u22-000** **GPS UTM Coordinates: 0374005 4901817**

Site Problems	Recommendations
Roof Runoff Erosion Agriculture: Manure Washing off Site	Roof Runoff: Infiltration Trench at Dripline Other: Mulch/Erosion Control Mix
Large area of pet waste on steep slope running directly into lake 25'	Retaining wall construction in progress in lake - no evidence of permits.

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

2 - 03 **Map/Lot 05060-0u22-000** **GPS UTM Coordinates: 0393217 4852353**

Site Problems	Recommendations
Surface Erosion: Sheet Roof Runoff Erosion	Roof Runoff: Infiltration Trench at Dripline Vegetation: Establish Buffer Add mulch to lake side of house.

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

2 - 04 **Map/Lot 05060-0u22-000** **GPS UTM Coordinates: 0393263 4852361**

Site Problems	Recommendations
Surface Erosion: Sheet Soil: Bare	Paths & Trails: Define Foot Path Paths & Trails: Install Runoff Diverter Other: Install Runoff Diverter Vegetation: Establish Buffer Vegetation: Add to Buffer

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

2 - 05 **Map/Lot 05060-0u22-000** **GPS UTM Coordinates: 0393417 4852296**

Site Problems	Recommendations
Roof Runoff Erosion	Roof Runoff: Infiltration Trench at Dripline

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

2 - 06 **Map/Lot** **GPS UTM Coordinates: 0393616 4852205**

Site Problems

Surface Erosion: Sheet

Recommendations

Paths & Trails: Define Foot Path
Paths & Trails: Infiltration Steps
Paths & Trails: Install Runoff Diverter

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

2 - 07 **Map/Lot 05060-0u22-001** **GPS UTM Coordinates: 0393645 4852241**

Site Problems

Surface Erosion: Sheet
Soil: Bare

Recommendations

Paths & Trails: Define Foot Path
Paths & Trails: Infiltration Steps
Other: Mulch/Erosion Control Mix
Vegetation: Add to Buffer
Vegetation: Reseed Bare Soil/Thinning Grass

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Low**

2 - 08 **Map/Lot** **GPS UTM Coordinates: 0393311 4853241**

Site Problems

Culvert: Unstable Inlet/outlet
Culvert: Undersized
Soil: Bare
Soil: Winter Sand

Culvert too short

Recommendations

Culvert: Armor Inlet/Outlet
Culvert: Lengthen

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Medium**

2 - 09 **Map/Lot** **GPS UTM Coordinates: 0393306 4853181**

Site Problems

Surface Erosion: Rill
Ditch: Rill Erosion
Road Shoulder Erosion: Rill
Roadside Plow/Grader Berm

Recommendations

Ditch: Install Turnouts
Ditch: Install
Roads/Driveways: Remove Grader/Plow Berms
Roads/Driveways: Build Up
Roads/Driveways: Add New Material: Recycled Asphalt
Roads/Driveways: Reshape Crown

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

2 - 10 **Map/Lot** **GPS UTM Coordinates:**

Site Problems

Surface Erosion: Sheet
Soil: Bare
Roof Runoff Erosion

Recommendations

Roof Runoff: Drywell at Gutter Downspout
Other: Mulch/Erosion Control Mix
Vegetation: Add to Buffer

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

2 - 12 **Map/Lot** **GPS UTM Coordinates: 0393718 4852579**

Site Problems

Surface Erosion: Rill
Surface Erosion: Gully
Culvert: Unstable Inlet/outlet
Road Shoulder Erosion: Rill
Road Shoulder Erosion: Gully
Soil: Bare

Recommendations

Culvert: Armor Inlet/Outlet
Ditch: Vegetate
Ditch: Armor with Stone
Ditch: Reshape
Ditch: Install Turnouts

Shoulder

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

2 - 13 **Map/Lot abutting 05060-** **GPS UTM Coordinates: 0392477 4852446**

Site Problems

Surface Erosion: Sheet
Surface Erosion: Rill
Soil: Bare

Bare dirt access

Recommendations

Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Reshape Crown

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Low**

2 - 14 **Map/Lot 0422000220000** **GPS UTM Coordinates: 0393615 4852790**

Site Problems

Surface Erosion: Gully

Recommendations

Other: Mulch/Erosion Control Mix
Other: Infiltration Trench

Potential for French drain or dry well

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Low**

2 - 15 **Map/Lot 05060OU220033** **GPS UTM Coordinates: 0393492 4852662**

Site Problems

Surface Erosion: Sheet
Soil: Bare

Recommendations

Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Vegetate Shoulder
Roads/Driveways: Runoff Diverters: Waterbar
Other: Install Runoff Diverter

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

3 - 01 **Map/Lot 073-202-032-000** **GPS UTM Coordinates: 0393445 4853890**

Site Problems	Recommendations
Surface Erosion: Sheet Slight beach erosion; possible septic	Inspect septic system; possible high impact; futher attention needed.

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

3 - 02 **Map/Lot 073-202-002-000** **GPS UTM Coordinates: 0393472 4853834**

Site Problems	Recommendations
Surface Erosion: Sheet Soil: Bare	Paths & Trails: Stabilize Foot Path Other: Install Runoff Diverter Other: Mulch/Erosion Control Mix Vegetation: Establish Buffer

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

3 - 03 **Map/Lot 073-202-003-000** **GPS UTM Coordinates: 0393455 4853799**

Site Problems	Recommendations
Surface Erosion: Sheet Soil: Bare Shoreline: Lack of Shoreline Vegetation	Paths & Trails: Stabilize Foot Path Paths & Trails: Infiltration Steps Other: Mulch/Erosion Control Mix Vegetation: Add to Buffer

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Low**

3 - 04 **Map/Lot 073-202-021-000** **GPS UTM Coordinates: 0393484 4853618**

Site Problems	Recommendations
Surface Erosion: Rill Culvert: Clogged Roadside Plow/Grader Berm	Roads/Driveways: Remove Grader/Plow Berms Roads/Driveways: Add New Material: Gravel Roads/Driveways: Reshape Crown Install turnouts

Overall Impact: High (8-9) **Approx. Cost: Medium** **Skill Level: Medium**

3 - 05 **Map/Lot 075-202-026-000** **GPS UTM Coordinates: 0393442 4853573**

Site Problems	Recommendations
Surface Erosion: Sheet Soil: Bare Shoreline: Inadequate Shoreline Vegetation	Paths & Trails: Define Foot Path Other: Mulch/Erosion Control Mix Vegetation: Establish Buffer

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

3 - 06 **Map/Lot near 072-202-03** **GPS UTM Coordinates: 0393358 4853915**

Site Problems

Surface Erosion: Sheet
Surface Erosion: Rill
Shoreline: Erosion

Recommendations

Roads/Driveways: Runoff Diverters: Rubber Razor
Roads/Driveways: Runoff Diverters: Waterbar
Paths & Trails: Define Foot Path

Stabilize boat ramp

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Low**

3 - 07 **Map/Lot 072-202-035-000** **GPS UTM Coordinates: 0393356 4853937**

Site Problems

Surface Erosion: Rill
Ditch: Rill Erosion
Soil: Winter Sand

Recommendations

Ditch: Reshape
Ditch: Remove Debris/Sediment
Roads/Driveways: Add New Material: Recycled Asphalt
Roads/Driveways: Reshape Crown

Overall Impact: High (8-9) **Approx. Cost: High** **Skill Level: High**

3 - 08 **Map/Lot 072-202-037-000** **GPS UTM Coordinates: 0393310 4853910**

Site Problems

Surface Erosion: Sheet
Surface Erosion: Rill
Soil: Bare
Roof Runoff Erosion
Shoreline: Lack of Shoreline Vegetation

Recommendations

Roads/Driveways: Runoff Diverters: Waterbar
Roof Runoff: Infiltration Trench at Dripline
Vegetation: Establish Buffer

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

3 - 09 **Map/Lot** **GPS UTM Coordinates: 0393284 4853905**

Site Problems

Surface Erosion: Rill
Culvert: Unstable Inlet/outlet
Culvert: Clogged
Road Shoulder Erosion: Rill

Recommendations

Culvert: Armor Inlet/Outlet
Culvert: Remove Clog
Culvert: Enlarge
Culvert: Install Plunge Pool
Ditch: Vegetate
Ditch: Armor with Stone
Ditch: Reshape
Roads/Driveways: Build Up
Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Reshape Crown

Rirap seeps on back slope ditch

Overall Impact: Medium (6-7) **Approx. Cost: High** **Skill Level: Medium**

3 - 10 **Map/Lot 073-202-043-000** **GPS UTM Coordinates: 0393241 4853779**

Site Problems	Recommendations
Surface Erosion: Sheet	Other: Mulch/Erosion Control Mix
Soil: Bare	Vegetation: Establish Buffer
Shoreline: Inadequate Shoreline Vegetation	Vegetation: Reseed Bare Soil/Thinning Grass

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

3 - 11 **Map/Lot 072-202-045-000** **GPS UTM Coordinates: 0393222 4853763**

Site Problems	Recommendations
Surface Erosion: Sheet	Other: Mulch/Erosion Control Mix
Soil: Bare	Vegetation: Add to Buffer
Shoreline: Inadequate Shoreline Vegetation	

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

3 - 12 **Map/Lot** **GPS UTM Coordinates: 0393212 4853753**

Site Problems	Recommendations
Surface Erosion: Rill	Culvert: Install Culvert
	Ditch: Install
	Roads/Driveways: Add New Material: Recycled Asphalt
	Roads/Driveways: Install Detention Basin
Lots of sediment in stream	Or pave?

Overall Impact: High (8-9) **Approx. Cost: High** **Skill Level: High**

3 - 13 **Map/Lot 072-202-049-000** **GPS UTM Coordinates: 0393201 4853742**

Site Problems	Recommendations
Surface Erosion: Rill	Paths & Trails: Infiltration Steps
Surface Erosion: Gully	Other: Mulch/Erosion Control Mix
Soil: Bare	Vegetation: Establish Buffer
Shoreline: Lack of Shoreline Vegetation	

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

3 - 14 **Map/Lot 072-202-051-000** **GPS UTM Coordinates: 0393178 4853727**

Site Problems	Recommendations
Surface Erosion: Rill	Roads/Driveways: Add New Material: Gravel
Soil: Bare	Roads/Driveways: Runoff Diverters: Unspecified Type
Shoreline: Unstable Access	

Overall Impact: High (8-9) **Approx. Cost: Medium** **Skill Level: Medium**

3 - 15 **Map/Lot 072-202-053-000** **GPS UTM Coordinates: 0393158 4853754**

Site Problems

Soil: Bare
Shoreline: Lack of Shoreline Vegetation

Recommendations

Paths & Trails: Define Foot Path
Paths & Trails: Stabilize Foot Path
Other: Mulch/Erosion Control Mix
Vegetation: Establish Buffer

Interested in f???g ROW & Road. RD ASSN Pres?

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

3 - 16 **Map/Lot 072-203-001** **GPS UTM Coordinates: 0393062 4853643**

Site Problems

Surface Erosion: Rill

Recommendations

Roads/Driveways: Runoff Diverters: Unspecified Type
Vegetation: Establish Buffer

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

3 - 17 **Map/Lot** **GPS UTM Coordinates: 0392946 4853602**

Site Problems

Surface Erosion: Rill
Road Shoulder Erosion: Rill

Recommendations

Roads/Driveways: Remove Grader/Plow Berms

Install turnouts

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

3 - 18 **Map/Lot** **GPS UTM Coordinates: 0393000 4853702**

Site Problems

Surface Erosion: Rill
Road Shoulder Erosion: Rill

Recommendations

Ditch: Armor with Stone
Ditch: Reshape
Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Reshape Crown

Overall Impact: High (8-9) **Approx. Cost: Low** **Skill Level: Low**

4 - 01 **Map/Lot** **GPS UTM Coordinates: 0392953 4853569**

Site Problems

Surface Erosion: Gully
Soil: Winter Sand

Recommendations

Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Reshape Crown
Roads/Driveways: Runoff Diverters: Unspecified Type

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

4 - 02 **Map/Lot 074-203-003-000** **GPS UTM Coordinates: 0393010 4853560**

Site Problems

Surface Erosion: Gully
Soil: Bare
Shoreline: Inadequate Shoreline Vegetation
Shoreline: Erosion

Recommendations

Roads/Driveways: Runoff Diverters: Rubber Razor
Roads/Driveways: Runoff Diverters: Waterbar
Paths & Trails: Define Foot Path
Paths & Trails: Install Runoff Diverter
Vegetation: Add to Buffer

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

4 - 03 **Map/Lot 074-203-005-000** **GPS UTM Coordinates: 0393005 4853511**

Site Problems

Surface Erosion: Rill
Soil: Bare

Recommendations

Paths & Trails: Define Foot Path
Paths & Trails: Install Runoff Diverter
Other: Mulch/Erosion Control Mix
Vegetation: No Raking

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

4 - 04 **Map/Lot 074-203-005-001** **GPS UTM Coordinates: 0392992 4853487**

Site Problems

Surface Erosion: Rill
Soil: Bare

Contributing to road erosion

Recommendations

Roads/Driveways: Runoff Diverters: Unspecified Type

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

4 - 05 **Map/Lot** **GPS UTM Coordinates: 0392995 4853443**

Site Problems

Surface Erosion: Gully
Culvert: Unstable Inlet/outlet
Roadside Plow/Grader Berm
Soil: Winter Sand

Recommendations

Culvert: Armor Inlet/Outlet
Roads/Driveways: Remove Grader/Plow Berms
Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Reshape Crown
Roads/Driveways: Runoff Diverters: Unspecified Type

Overall Impact: High (8-9) **Approx. Cost: High** **Skill Level: Medium**

4 - 06 **Map/Lot 074-203-011-000** **GPS UTM Coordinates: 0392999 4853376**

Site Problems	Recommendations
Surface Erosion: Rill	Roads/Driveways: Runoff Diverters: Unspecified Type

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

4 - 07 **Map/Lot 074-203-018-000** **GPS UTM Coordinates: 0392929 4853308**

Site Problems	Recommendations
Surface Erosion: Sheet	Other: Mulch/Erosion Control Mix
Soil: Bare	Vegetation: Establish Buffer
Shoreline: Lack of Shoreline Vegetation	

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

4 - 08 **Map/Lot 074-203-022-000** **GPS UTM Coordinates: 0392879 4853271**

Site Problems	Recommendations
Surface Erosion: Rill	Roads/Driveways: Runoff Diverters: Unspecified Type

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

4 - 09 **Map/Lot 074-203-028-000** **GPS UTM Coordinates: 0392884 4853195**

Site Problems	Recommendations
Surface Erosion: Gully	Construction Site: Mulch
Soil: Bare	Construction Site: Silt Fence/EC Berms
Shoreline: Inadequate Shoreline Vegetation	Vegetation: Add to Buffer

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

4 - 10 **Map/Lot 074-203-028-000** **GPS UTM Coordinates: 0392863 4853201**

Site Problems	Recommendations
Surface Erosion: Gully	Roads/Driveways: Runoff Diverters: Unspecified Type
	Define driveway better

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

4 - 11 **Map/Lot 035025000000** **GPS UTM Coordinates: 0392797 4853115**

Site Problems	Recommendations
Surface Erosion: Gully	Paths & Trails: Define Foot Path
Soil: Bare	Paths & Trails: Stabilize Foot Path
Shoreline: Lack of Shoreline Vegetation	Other: Mulch/Erosion Control Mix
	Vegetation: Establish Buffer

Overall Impact: High (8-9) **Approx. Cost: Medium** **Skill Level: Medium**

4 - 12 **Map/Lot 035030000000** **GPS UTM Coordinates: 0392700 4853101**

Site Problems

Culvert: Unstable Inlet/outlet
Culvert: Clogged
Ditch: Rill Erosion
Roadside Plow/Grader Berm

(4) driveway crossings

Recommendations

Culvert: Armor Inlet/Outlet
Culvert: Remove Clog
Ditch: Reshape
Roads/Driveways: Remove Grader/Plow Berms

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

4 - 13 **Map/Lot 035032000000** **GPS UTM Coordinates: 0392684 4853025**

Site Problems

Surface Erosion: Sheet
Shoreline: Lack of Shoreline Vegetation
Shoreline: Unstable Access

Recommendations

Construction Site: Mulch
Vegetation: Establish Buffer

Overall Impact: Low (3-5) **Approx. Cost: Low** **Skill Level: Low**

4 - 14 **Map/Lot 035033000000** **GPS UTM Coordinates: 0392659 4853003**

Site Problems

Surface Erosion: Rill
Soil: Bare

Recommendations

Roads/Driveways: Runoff Diverters: Unspecified Type
Other: Mulch/Erosion Control Mix

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

4 - 15 **Map/Lot 035010000000** **GPS UTM Coordinates: 0392609 4853028**

Site Problems

Surface Erosion: Gully
Culvert: Clogged
Culvert: Crushed/Broken

Paved driveway causing road issues

Recommendations

Culvert: Remove Clog
Culvert: Replace
Roads/Driveways: Runoff Diverters: Unspecified Type

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Medium**

4 - 16 **Map/Lot** **GPS UTM Coordinates: 0392583 4852954**

Site Problems

Surface Erosion: Rill

Recommendations

Roads/Driveways: Reshape Crown
Roads/Driveways: Runoff Diverters: Unspecified Type

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

4 - 17 **Map/Lot 035036000000** **GPS UTM Coordinates: 0392611 4852971**

Site Problems

Surface Erosion: Rill
Shoreline: Lack of Shoreline Vegetation

Recommendations

Roads/Driveways: Runoff Diverters: Unspecified Type
Other: Mulch/Erosion Control Mix
Vegetation: Add to Buffer

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

5 - 01 **Map/Lot 017025000000** **GPS UTM Coordinates: 0392565 4852956**

Site Problems

Surface Erosion: Gully
Soil: Winter Sand

Recommendations

Roads/Driveways: Add New Material: Recycled Asphalt
Roads/Driveways: Runoff Diverters: Broad-Based Tip

Need diverters/check dams and sed basin per diagram

Overall Impact: High (8-9) **Approx. Cost: Medium** **Skill Level: Low**

5 - 02 **Map/Lot** **GPS UTM Coordinates: 0392593 4852920**

Site Problems

Road Shoulder Erosion: Gully
Soil: Delta in Stream/Lake

Recommendations

Culvert: Install Plunge Pool
Ditch: Vegetate
Ditch: Reshape
Ditch: Remove Debris/Sediment
Roads/Driveways: Remove Grader/Plow Berms
Roads/Driveways: Build Up
Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Reshape Crown

Unstable ditch

Overall Impact: High (8-9) **Approx. Cost: High** **Skill Level: High**

5 - 03 **Map/Lot** **GPS UTM Coordinates: 0392598 4852859**

Site Problems

Surface Erosion: Gully
Soil: Bare

Recommendations

Roads/Driveways: Build Up
Roads/Driveways: Add New Material: Gravel

Dry well for sump pump

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Low**

5 - 04 **Map/Lot 035002000000** **GPS UTM Coordinates: 0392590 4852740**

Site Problems

Surface Erosion: Gully

Recommendations

Culvert: Install Culvert
Ditch: Install
Roads/Driveways: Runoff Diverters: Rubber Razor
Roads/Driveways: Runoff Diverters: Broad-Based Tip

Driveway of #32 washes across road and down driveways of #31 & #33

Overall Impact: High (8-9) **Approx. Cost: Medium** **Skill Level: High**

5 - 05 **Map/Lot** **GPS UTM Coordinates: 0392544 4852629**

Site Problems

Surface Erosion: Gully

Recommendations

Culvert: Install Culvert
Ditch: Install

Overall Impact: High (8-9) **Approx. Cost: High** **Skill Level: Medium**

5 - 06 **Map/Lot** **GPS UTM Coordinates: 0392529 4852566**

Site Problems	Recommendations
Culvert: Unstable Inlet/outlet	Culvert: Install Plunge Pool
Road Shoulder Erosion: Gully	Ditch: Install Turnouts
	Ditch: Install
	Ditch: Install Sediment Pools

Overall Impact: High (8-9) **Approx. Cost: Medium** **Skill Level: Medium**

5 - 07 **Map/Lot** **GPS UTM Coordinates: 0391851 4852862**

Site Problems	Recommendations
Surface Erosion: Rill	Ditch: Install Turnouts
	Roads/Driveways: Add New Material: Pave
Water pooling on top of culvert	Along steep hill

Overall Impact: Low (3-5) **Approx. Cost: Medium** **Skill Level: Low**

5 - 08 **Map/Lot** **GPS UTM Coordinates: 0392172 4852914**

Site Problems	Recommendations
Culvert: Unstable Inlet/outlet	Culvert: Armor Inlet/Outlet
Road Shoulder Erosion: Rill	

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

5 - 09 **Map/Lot 017025A07000** **GPS UTM Coordinates: 0392190 4852895**

Site Problems	Recommendations
Culvert: Undersized	Culvert: Enlarge
(2) 4' culverts with occassional washout	

Overall Impact: Medium (6-7) **Approx. Cost: Medium** **Skill Level: Medium**

5 - 10 **Map/Lot** **GPS UTM Coordinates: 0392234 4852867**

Site Problems	Recommendations
Surface Erosion: Rill	Roads/Driveways: Build Up
Culvert: Undersized	Roads/Driveways: Add New Material: Pave
(2) 4' culverts with occassional washout	

Overall Impact: Low (3-5) **Approx. Cost: High** **Skill Level: Medium**

5 - 11 **Map/Lot** **GPS UTM Coordinates: 0392478 4852444**

Site Problems

Surface Erosion: Gully
Culvert: Undersized
Ditch: Gully Erosion
Ditch: Bank Failure
Road Shoulder Erosion: Gully
Soil: Delta in Stream/Lake
Soil: Winter Sand

Recommendations

Culvert: Enlarge
Culvert: Install Plunge Pool
Ditch: Armor with Stone
Ditch: Install Turnouts
Ditch: Install Check Dams
Ditch: Remove Debris/Sediment
Ditch: Install Sediment Pools
Roads/Driveways: Build Up
Roads/Driveways: Add New Material: Gravel
Roads/Driveways: Reshape Crown
Roads/Driveways: Install Catch Basin
Roads/Driveways: Install Detention Basin

Overall Impact: High (8-9) **Approx. Cost: High** **Skill Level: High**

6 - 01 **Map/Lot** **GPS UTM Coordinates: 0393833 4852573**

Site Problems	Recommendations
	Construction Site: Seed/Hay Construction Site: Check Dams
ECM Berm has concerns	Rake out ECM and allow to sheet flow into buffer

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**

6 - 02 **Map/Lot** **GPS UTM Coordinates: 0392285 4854129**

Site Problems	Recommendations
	Roads/Driveways: Runoff Diverters: Unspecified Type
Slight erosion; stream crossing broken	Repair and reset stream crossing bridge; install signs

Overall Impact: Medium (6-7) **Approx. Cost: Low** **Skill Level: Low**