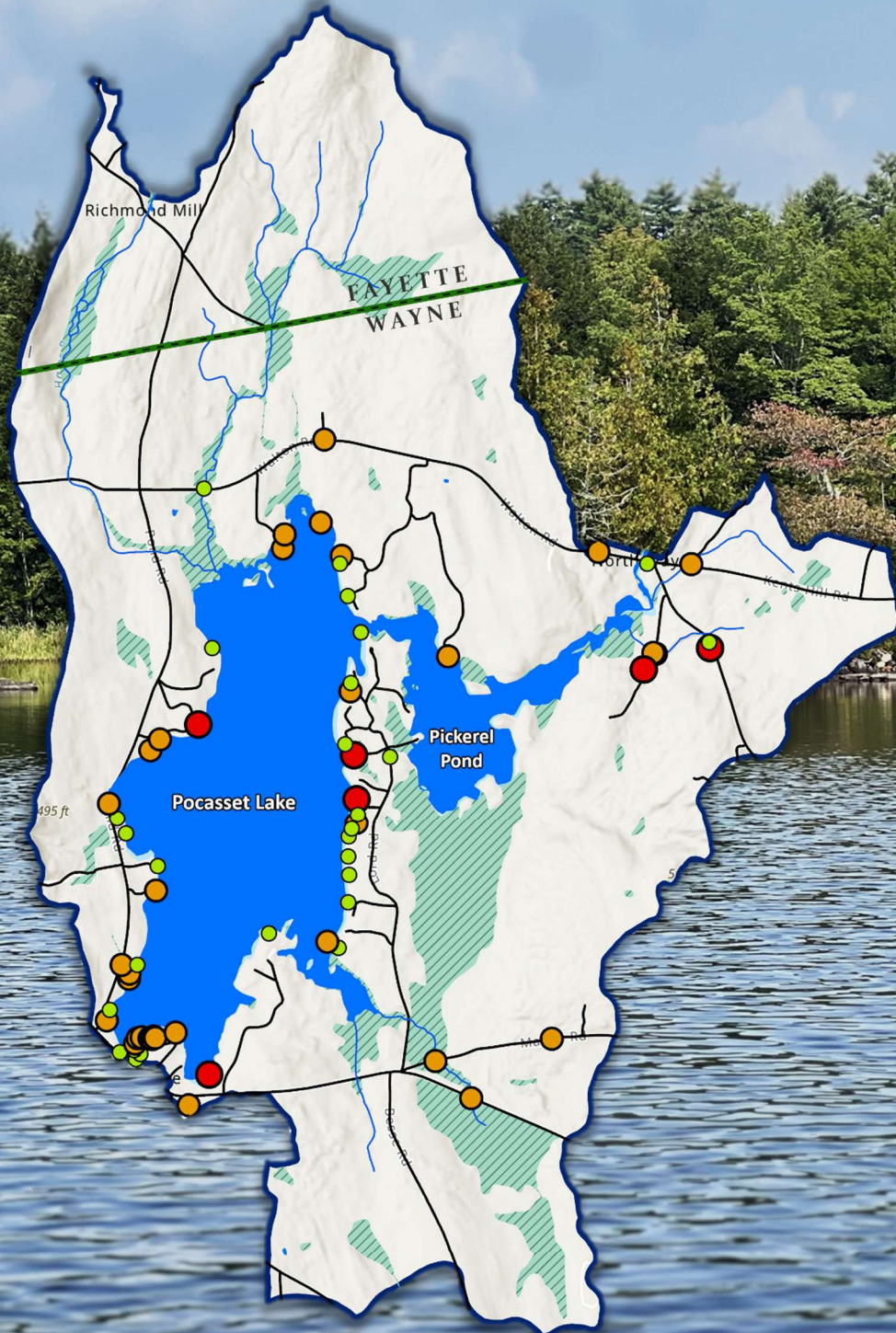


# 2023 POCASSET LAKE WATERSHED SURVEY



# Acknowledgments

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## Project Partners

This project was led by the 30 Mile River Watershed Association (30 Mile) with support from Pocasset Lake Association (PLA), the Town of Wayne, and the Maine Department of Environmental Protection (Maine DEP).

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# Introduction

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## Pocasset Lake and its Watershed

Pocasset Lake is located in the town of Wayne in Kennebec County, Maine and is part of the 30 Mile River watershed – a connected chain of lakes that drain roughly 90 square miles of land area across eight towns and three counties in Central Maine, west of Augusta.

Pocasset Lake has an upstream watershed of roughly 53 square miles that includes the watersheds of Lovejoy Pond, Echo Lake, Minnehonk Lake, Flying Pond, Parker Pond, David Pond, and many other small ponds, streams, and wetlands that eventually flow to Pickerel Pond, Pocasset's largest inlet located at the northeastern end of the lake in Wayne. The lake's outlet is located on the southern end of the lake and delivers water to the mill pond in Wayne Village, above the Wayne Dam, before flowing into downstream Androscoggin Lake. Pocasset Lake's direct watershed covers 4 square miles in the towns of Wayne and Fayette and includes the smaller drainages of several intermittent and perennial streams that drain directly to the lake. The 2023 watershed survey also included the drainage area surrounding upstream Pickerel Pond, adding another 2 square miles to the watershed area surveyed by volunteers and staff (Figure 1, next page).

Pocasset is a shallow lake with a maximum depth of 6 meters (20 feet) and an average depth of just 4 meters (13 feet). The lake has a surface area of approximately 600 acres and is utilized largely by local residents and landowners who have access to the lake. At the southern end of Pocasset Lake, situated in downtown Wayne, scenic views can be seen by those passing by vehicle or walking through the historic Wayne Village.

### WHAT IS A WATERSHED?

**A watershed is all the land that surrounds a pond that drains or sheds its water into the pond through streams, ditches, directly over the ground surface or through groundwater. It includes everything within its borders—the land, air, plants, animals, towns, farms and people. Activities in this entire area (not just the shoreline areas) eventually impact the lake's water quality, for better or worse.**

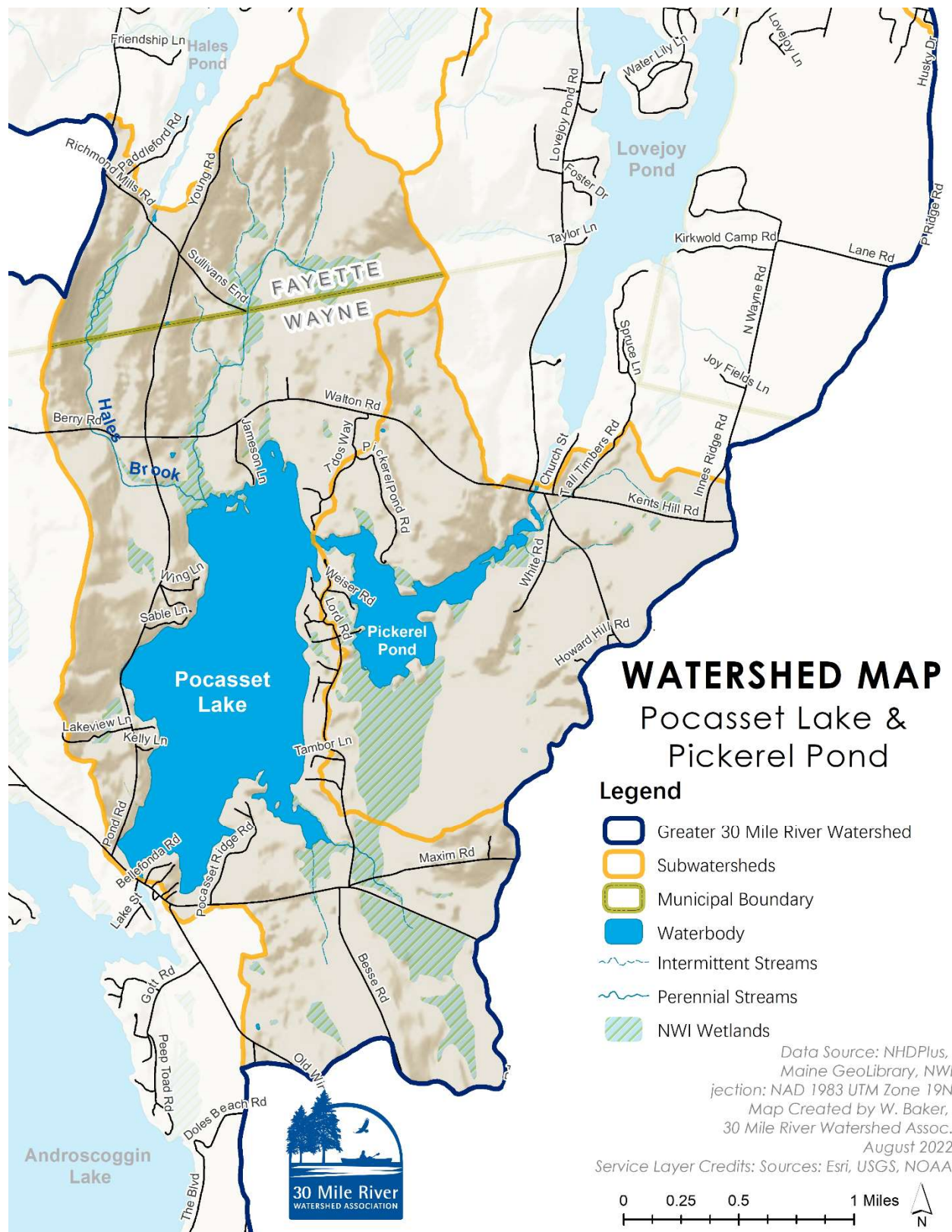


Figure 1. Pocasset Lake's and Pickerel Pond's direct watersheds

Though there is no state or town-owned public access for trailered boats on Pocasset Lake, paddlers and swimmers can access the lake in several locations. There are two “carry-in” launches owned by the Town of Wayne, one is located on the Mill Pond in Memorial Park, and the other is approximately halfway up the western shoreline on Pond Road. Richardson’s Beach, a private beach association formed in the 1950s, is located on the eastern shoreline and provides trailered boat access and an excellent area for swimming, kayaking, boating, etc. for its members.

Pocasset Lake supports a warm water fishery and provides important habitat for bass and chain pickerel, which the lake is particularly well-known for producing large in size. Anglers will often also access Pickerel Pond via Pocasset Lake, which is also known to produce an abundant number of fish.

## Threats to Water Quality

The biggest pollution threat to all Maine lakes is [polluted stormwater runoff](#) or nonpoint source (NPS) pollution. Stormwater runoff occurs when water from rain and snowmelt flows over the landscape, picking up soil, nutrients, and other pollutants as it flows across the land.

### **POLLUTED STORMWATER RUNOFF:**

**Also called nonpoint source (NPS) pollution, polluted stormwater runoff is made up of soil, fertilizers, septic waste, pet waste, and other pollutants from diffuse sources across the landscape that are carried into the pond by rainfall or snowmelt.**

In an undeveloped forested watershed, stormwater runoff is slowed and filtered by tree and shrub roots, grasses, leaves, conifer needles, and other natural debris. It then soaks into the uneven forest floor and filters through the soil. In a developed watershed, however, stormwater does not always receive the treatment the forest once provided. Rainwater picks up speed as it flows across impervious surfaces like rooftops, compacted soil, gravel camp roads, and pavement, and it becomes a destructive and erosive force. In this way, runoff from the developed areas in the watershed often washes directly into the lake from shoreline areas, or indirectly through drainage ditches and tributary streams.

## Why is Polluted Stormwater Runoff a Problem?

The problem is not necessarily the water itself; it is the sediment, nutrients, and other pollutants in the runoff that can be bad news for lake water quality. Studies have shown that runoff from developed areas has 5 to 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 our lakes.

### PHOSPHORUS:

**A common nutrient found in soil and organic matter, carried to the lake via stormwater runoff from the lake's watershed. Phosphorus is the nutrient that controls the level of algae production in lakes. Excess phosphorus levels can cause dense blooms of cyanobacteria (aka blue-green algae) resulting in murky green water, depleted oxygen levels, and fish kills.**

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

### Why is it important to protect our lakes from polluted runoff?

- ✓ They provide recreational opportunities to watershed residents and to visitors.
- ✓ They are important contributors to the local economy.
- ✓ Lakes contain valuable habitat for fish, birds and other wildlife.
- ✓ A 1996 University of Maine study demonstrated that pond water quality affects property values. For every meter (3 ft.) decline in water clarity, shorefront property values can decline as much as 10 to 20 percent! Declining property values affect individual landowners as well as the economics of the entire community.
- ✓ Once water quality has declined, it can be difficult, costly, or even impossible to restore.



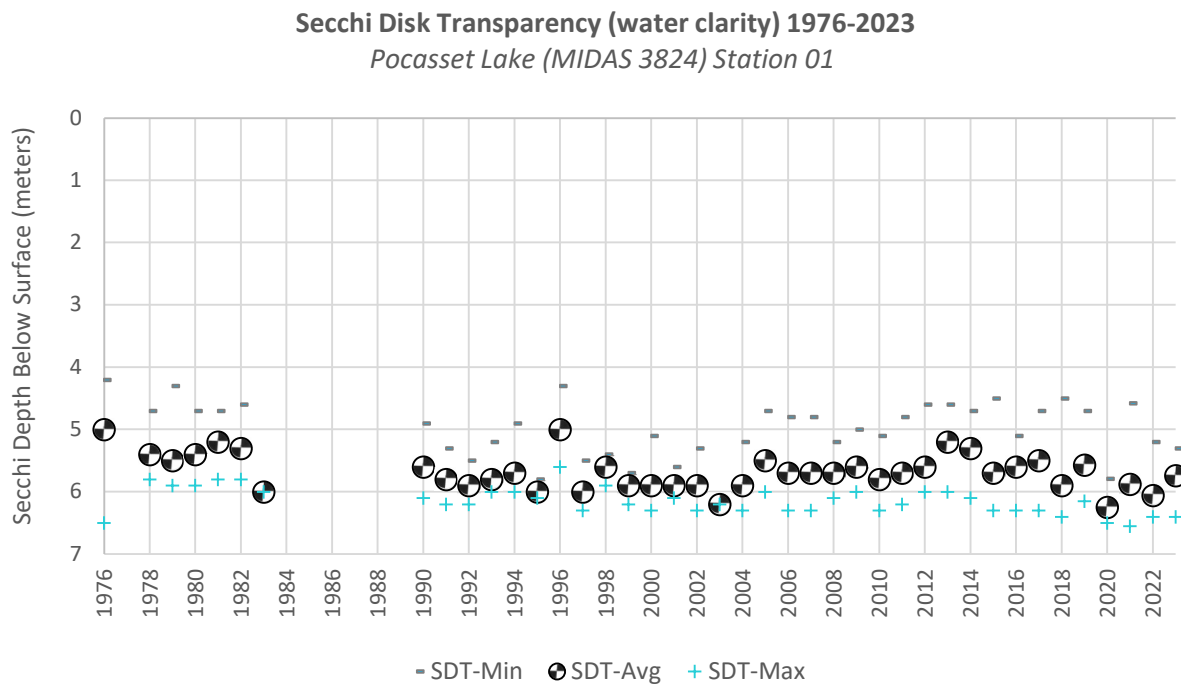
## Pocasset Lake Water Quality

Water quality data has been collected from Pocasset Lake since the 1970s. The parameter most collected is Secchi Disk Transparency (SDT); also known as Water Clarity. Historically, SDT data was collected on Pocasset Lake during 42 of the past 47 years, and readings have ranged from 4.2 meters or 13.8 feet (1976) to 6.6 meters or 21.7 feet (2021), with an average annual reading of 5.7 meters or 18.7 feet.



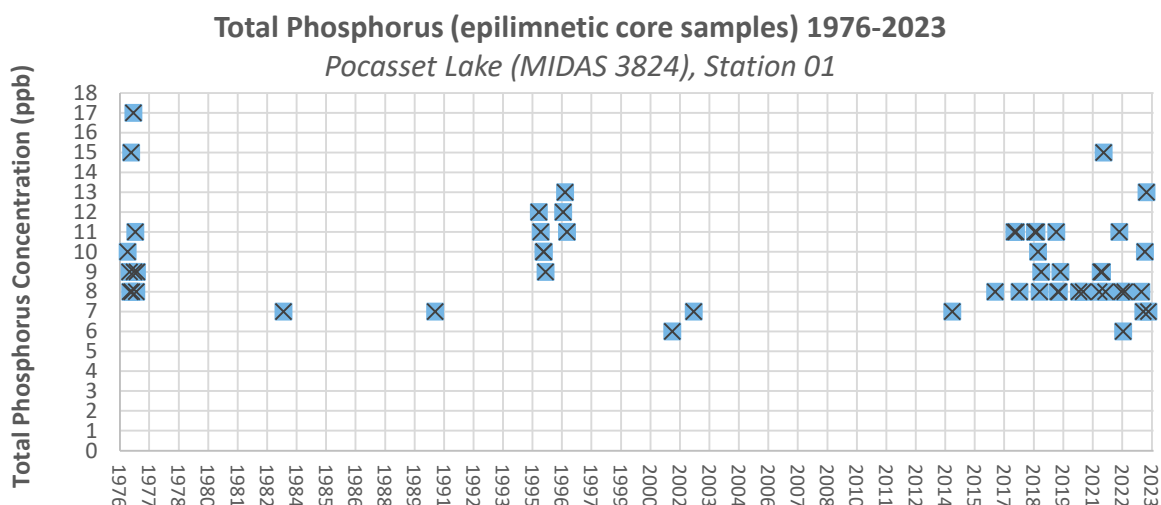
*PLA volunteer monitor, Deb Duplisea, records a water clarity reading at the Pocasset Lake monitoring station.*

Pocasset Lake's water clarity has been somewhat consistent over the long-time monitoring record. This is in part due to the lake's high flushing rate of nearly 8.5 flushes per year. With this, relatively low chlorophyll (the pigment found in algae) concentrations have been observed in Pocasset Lake, and Secchi disk readings have reached the bottom of the lake during 28 years throughout the 47-year monitoring record.



*Figure 2. Secchi Disk Transparency (Water Clarity) in Pocasset Lake, Station 1, 1976-2023*

Tracking in-lake phosphorus levels over time is another way of monitoring change in water quality. Phosphorus data have been collected from Pocasset Lake since 1976. Generally speaking, in-lake phosphorus concentrations (epilimnetic core samples) less than 10 ppb (parts per billion) are ideal. Lakes with in-lake phosphorus concentrations of approximately 13 ppb or more are known to sustain algal blooms, and blooms become frequent as average annual concentrations approach 20 ppb.



*Figure 3. Total Phosphorus (TP) concentrations from epilimnetic core water samples, Pocasset Lake, 1976-2023*

Historically, phosphorus concentrations (epilimnetic core samples) collected from Pocasset Lake have ranged between 6 ppb (2001 and 2022) and 17 ppb (1976), with a historical average of 9 ppb (Figure 3). Laboratory results for phosphorus samples collected in 2023 ranged from 7 ppb to 13 ppb with an average of 9 ppb.

### What can be done to reduce the amount of phosphorus entering the lake?

The answer: Improve the *quality* of the stormwater runoff entering the lake from the surrounding watershed. If we improve the condition of the land in the watershed, we improve the quality of stormwater runoff, and can therefore improve water quality in the lake. **But to be successful, it takes all watershed landowners working together, each doing their part to eliminate erosion on their properties for a better lake.**

# Watershed Survey Purpose & Methods

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On September 28<sup>th</sup>, 2023, 30 Mile River Watershed Association (30 Mile), with the support of its partners and local volunteers, conducted a survey of the Pocasset Lake watershed. The purpose of the survey was to protect and improve water quality in the lake by identifying sources of soil erosion and polluted runoff that are now, or could in the future, pose a risk to water quality, and recommend solutions to correct the problems identified.

Trained volunteers and technical leaders surveyed the developed areas of the greater Pocasset Lake Watershed, identifying **69 erosion sites** that are impacting or have the potential to impact water quality. This report presents the survey results, prioritizes next steps, and is designed specifically for landowners living in the Pocasset Lake watershed.

## Purposes of the Watershed Survey

The purpose of the watershed survey was to identify and prioritize for remediation existing sources of polluted runoff, particularly soil erosion sites, within the Pocasset Lake watershed. However, of equal importance, other benefits of the survey include:

- ✓ Raise public awareness of the connection between land use and water quality, and the impact of polluted runoff.
- ✓ Inspire people to become active stewards of the watershed.
- ✓ Use the information gathered as one component of a long-term pond protection strategy.
- ✓ Make 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. Local citizen participation was essential in completing the watershed survey and will be even more important in upcoming years. Through the leadership of the 30 Mile River Watershed Association, and with assistance from local groups and agencies concerned with water quality, the opportunities for stewardship are limitless.

## Watershed Survey Method

Planning for the watershed survey began in 2022, and was coordinated by 30 Mile with support from PLA. In August 2023, all landowners within the watershed were contacted to inform them of the survey and give them the opportunity to “opt-out” their property (Figure 4). Out of the 354 landowner notifications sent by mail, only three properties (<1%) were excluded from the survey.

On September 27, 2023, survey volunteers and technical leaders met via Zoom to participate in a training session led by 30 Mile and Maine DEP. On the following day, September 28<sup>th</sup>, 14 volunteers and six technical staff were divided into five survey teams and spent the day traveling on foot and by car, documenting potential erosion problems in their assigned sectors (Figure 5). All developed areas within the watershed were surveyed, with the exception of properties that opted out. The teams collected data using standardized forms. Additional survey work occurred on October 4<sup>th</sup>, 2023 by 30 Mile staff. Data collected included information on the type of land use, a description of the problem, and the level of impact on water quality (See Appendix A for the complete list of identified sites). During the field survey, technical staff also recommended solutions or best management practices (BMP's), to remediate each identified erosion source, along with estimates of the cost and technical level required to do so.

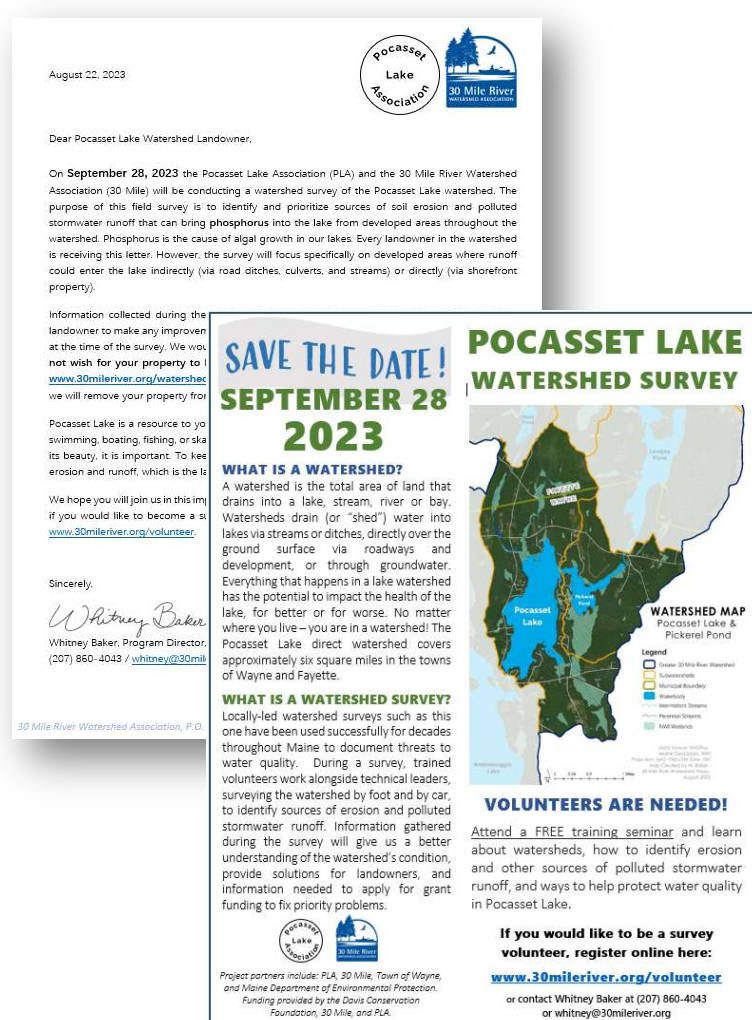


Figure 4. Landowner notification letter and informational flier



The collected data were entered into a database and the documented erosion sites were plotted on maps and prioritized based on impact to water quality and cost to fix. This report includes the survey findings, remediation priorities, site maps, next steps, and a complete list of identified erosion sites.



*Pocasset Lake watershed survey volunteers on September 28, 2023, kicking off the survey day.*

## Survey Sectors

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- |                 |  |
|-----------------|--|
| <b>Sector 1</b> | Wayne Village along Mainstreet and West of Besse Road. Includes Bellefonda Road, Pocasset Ridge Road, Wings Pond Way, Icehouse Lane, and Lake Ridge Circle in Wayne  |
| <b>Sector 2</b> | Lord Road from Main Street north to Pickerel Pond outlet. Includes all private roads off Lord Road in Wayne.   |
| <b>Sector 3</b> | North Wayne Village, South to the East side of Besse Road. Includes Kents Hill Road, North Wayne Road, White Road, and the Maxim Road in Wayne.  |
| <b>Sector 4</b> | Eastern half of Walton Road up to the Lovejoy Pond outlet. Includes Pickerel Pond Road, Jennings Stream Road, and Tdos Way in Wayne.   |
| <b>Sector 5</b> | Walton Road west of bridge below N. Wayne dam, Pond Road north of Murray Drive, and Richmond Mills Road to the outlet of Hales Pond in Fayette. Includes Sullivan's End in Fayette, and Berry Road, Jameson Lane, Sable Lane, Sunrise Way, and Wing Lane in Wayne. |
| <b>Sector 6</b> | South end of Pond Road and Main Street between Pond Road intersection and the Pocasset Lake outlet. Includes Kelly Lane, Murray Drive, and Lakeview Lane in Wayne.   |

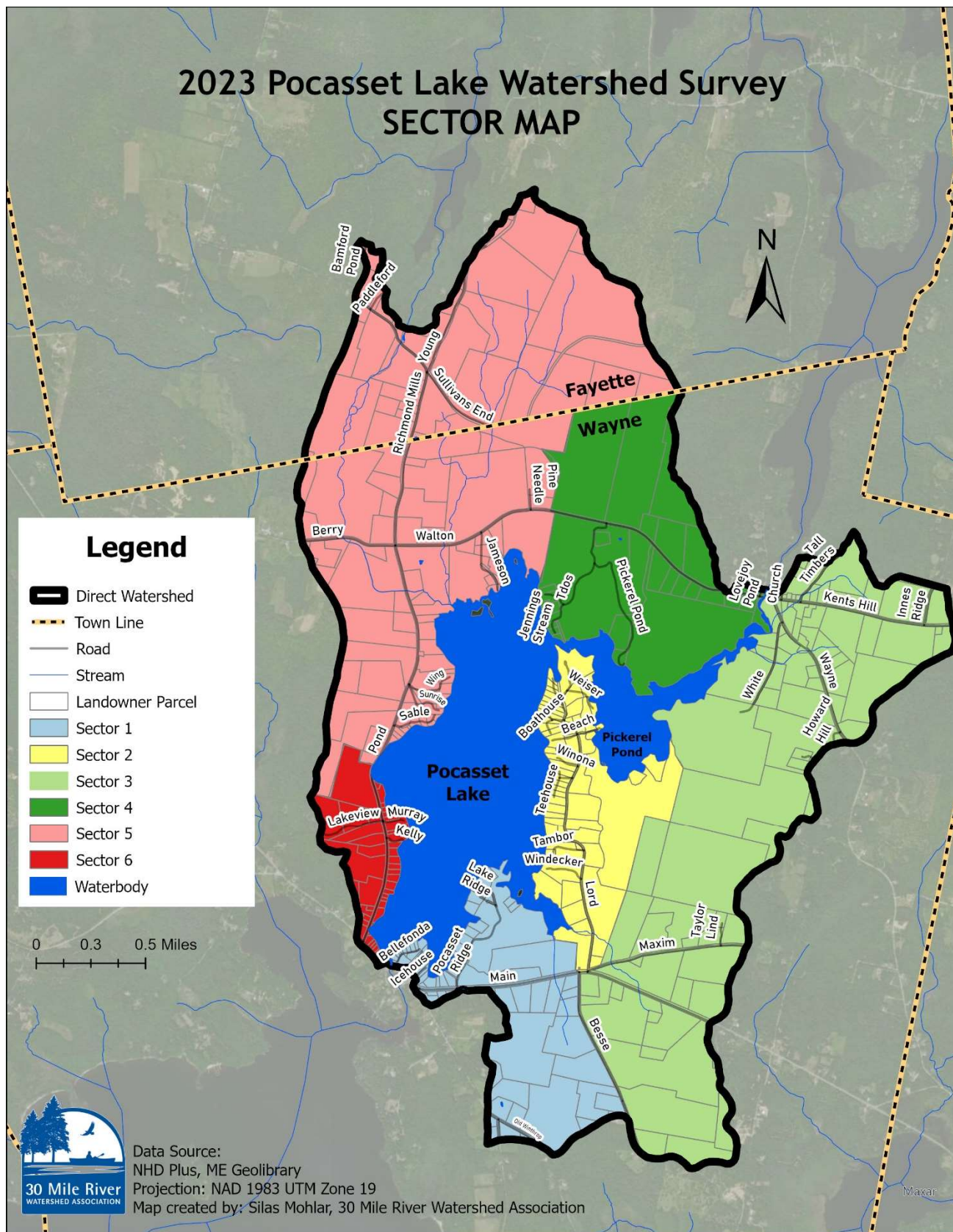


Figure 5. Watershed survey sectors created for the 2023 watershed survey of Pocasset Lake

# Watershed Survey Findings

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69 erosion sites were identified during the survey as current or potential future sources of pollution to Pocasset Lake (Table 1 and Figure 6). All 69 sites were located within the Town of Wayne.

Residential areas (not including driveways) constituted the largest category of identified erosion sites (59% of all sites). Town roads made up the second largest category of erosion sites (13%), with driveways third (7%). The results of the survey and summary of the data are discussed here. A complete listing of all identified sites can be found in the table in Appendix A.

## Key Findings:

- ✓ 6 sites or approximately 9% of all sites identified were rated as **high impact** to water quality. Half of the high impact sites (3 sites) identified were associated with residential properties.
- ✓ 33 sites, or 48% of all identified sites, were rated as **medium impact**. These sites were documented on nearly all land uses identified.
- ✓ **High and Medium impact sites (57%)** should be the highest priority for remediation as they contribute the highest amount of phosphorus and other pollutants to the lake, and were identified on all land use types – highlighting the fact that EVERYONE has a role to play in lake protection.
- ✓ 30 sites, or 43% of all identified sites, were classified as **low impact** to water quality. More than half of all low impact sites were identified on residential properties (21). Though low impact sites likely contribute less pollution individually, many sites can collectively have a big impact. Luckily, remediation of many of these low impact sites have straightforward solutions that could easily be completed by homeowners on their own.
- ✓ 41 sites, or 59% of all survey sites, were documented on **residential properties**. Of the 41 residential sites, 3 sites were rated high impact, 17 sites were rated as medium impact, and another 21 sites were determined to be low impact to water quality.
- ✓ Sites associated with **roads and driveways** made up 29% of all sites (20 sites total) and had varying impact ratings: 2 high, 11 medium, and 7 low impact sites. 5 sites were documented on private roads, 9 sites on town roads, 5 on driveways, and 1 problem was found on a state road for a total of 20 sites.

- ✓ Beach access, Municipal/Public land, Trail or Path, and Other (seating area and bridge) make up the final 8 erosion sites found, accounting for close to 12% of all sites. One (1) of these erosion sites documented among these four categories were listed as high impact, five were listed as medium impact, and two were listed as low impact.

Table 1. NPS site summary - 2023 Pocasset Lake Watershed Survey

<i>LAND USE</i>	<b>IMPACT RATING</b>			<i>TOTAL</i>
	<i>High</i>	<i>Med</i>	<i>Low</i>	
Residential	3	17	21	<b>41</b>
Town Road	1	6	2	<b>9</b>
Private Road	0	3	2	<b>5</b>
Driveway	1	1	3	<b>5</b>
Trail or Path	1	0	1	<b>2</b>
Municipal/Public	0	2	0	<b>2</b>
Beach Access	0	2	0	<b>2</b>
Other	0	1	1	<b>2</b>
State Road	0	1	0	<b>1</b>
<b>TOTAL</b>	<b>6</b>	<b>33</b>	<b>30</b>	<b>69</b>



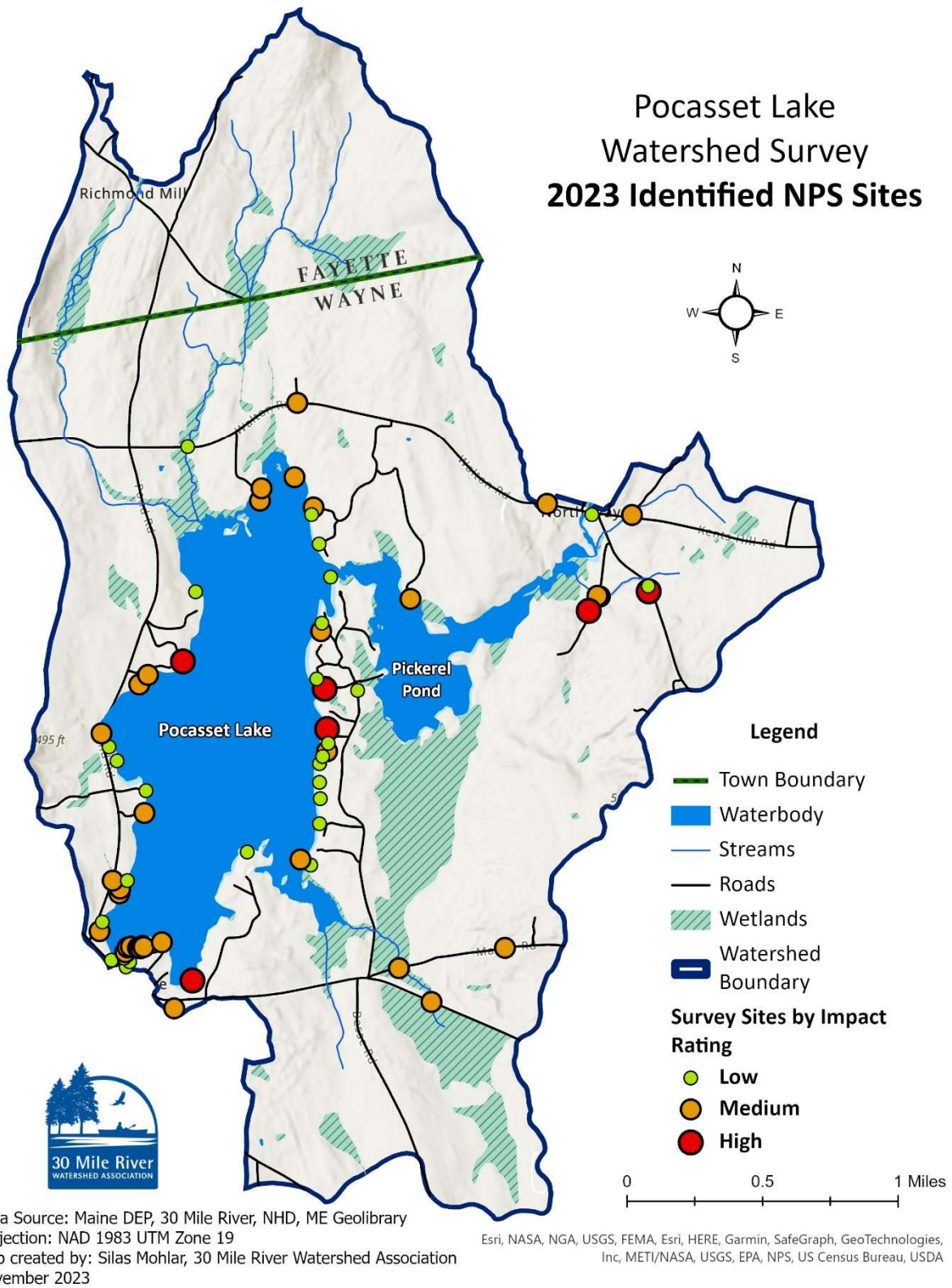


Figure 6. Map of erosion sites and associated impact ratings from the 2023 Pocasset Lake watershed survey

## Land Use Breakdown

41 (59%) of all sites identified during the survey were associated with **residential land uses**. The majority of these sites were rated low impact (21 sites) and medium impact (17 sites) to water quality. Only three (3) sites were rated high impact. Many of the medium to low impact rated sites have potential for the landowner to improve the site on their own, with minimal tools and supplies. **Town roads** accounted for 13% of all sites identified (9 sites), **driveways** accounted for 7% of all sites

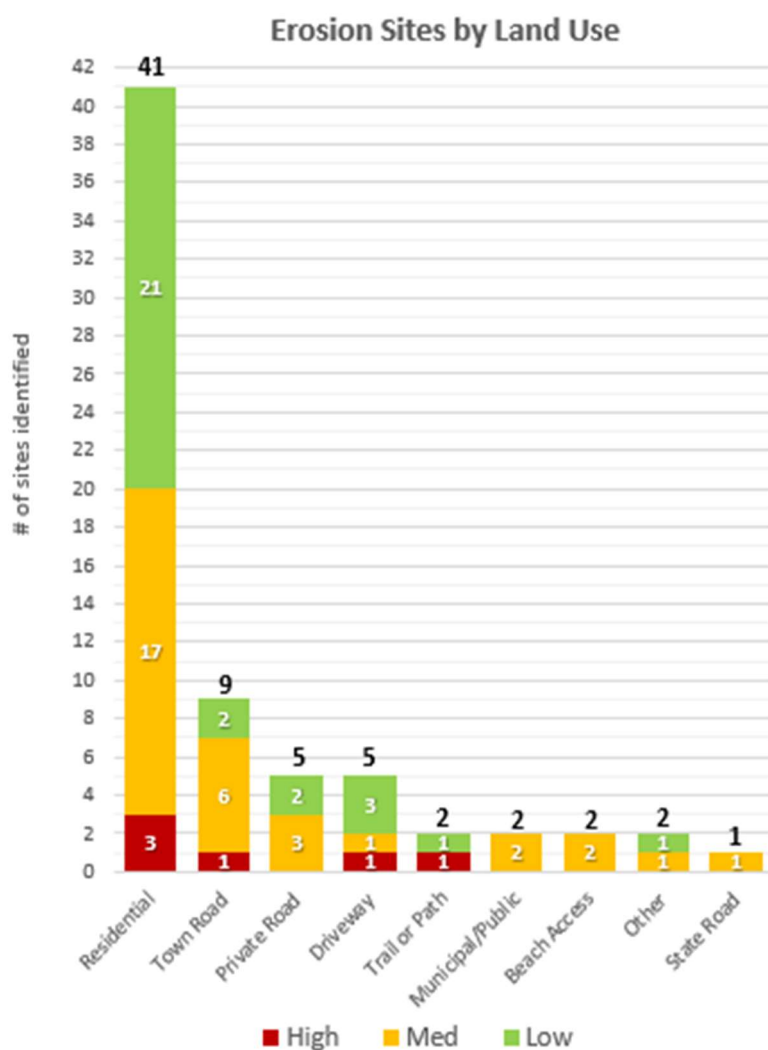


Figure 7. identified sites by land use category and impact level.

identified during the survey (5 sites) and **private roads** accounted for 7% (5 sites). Together, issues on town roads, private roads, and driveways account for nearly 28% of all sites identified. Remediation of road problems will require the full cooperation of private road landowners and the towns. Comprehensive planning by a road association or the town is critical to ongoing road maintenance. 30 Mile is available to assist in planning efforts.

The remaining nine (9) sites, or approximately 13% of all identified sites, represent five other land uses, including, municipal/public (2 sites), trail or path (2 sites), beach access (2 sites), Other (2 sites), and state roads (1 site).

## Erosion Sites by Impact Rating

Each site identified during the survey was rated for its potential impact to the lake (Figure 8). Impact was based on the size of the site, its slope, amount of soil eroded, and proximity to water.

- ✓ **Low Impact** sites are those with limited soil transport off-site; a small site with no evidence of rills or gullies.
- ✓ **Medium Impact** sites are those where sediment is transported off-site, but not a high magnitude.
- ✓ **High Impact** sites are large sites with significant erosion that flows directly into a stream or the lake.

Thirty (30), or 43% were identified as being low impact. Thirty-three (33) sites, or 48% of identified sites, were identified as medium impact. Another six (6) sites (9%) were rated as having a high impact on water quality, with the cumulative effect of all of these sites being quite significant.

2023 Pocasset Watershed Survey Sites Impact Rating

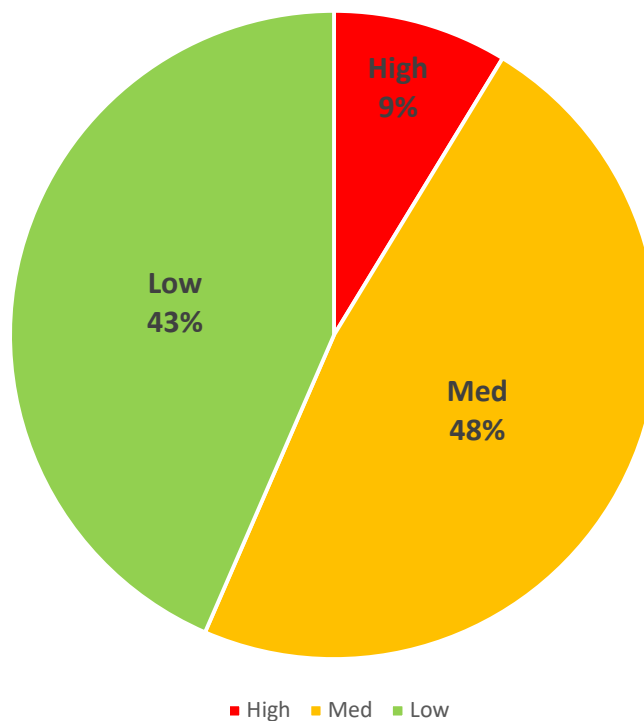


Figure 8. Impact ratings of identified erosion sites

## Cost of Addressing Identified Problems

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

- ✓ **Low Cost:** Less than \$500
- ✓ **Medium Cost:** \$500-\$2,500
- ✓ **High Cost:** Greater than \$2,500

Twenty-eight (28) sites, or 41%, can be fixed at low cost (under \$500). Thirty-one (31) sites, or just under half of all sites (45%) can be fixed at medium cost (\$500-\$2,500), and the remaining ten (10) sites, or 14%, require high-cost fixes (over \$2,500) (Figure 9).

2023 Pocasset Watershed Survey Sites  
Cost to Fix

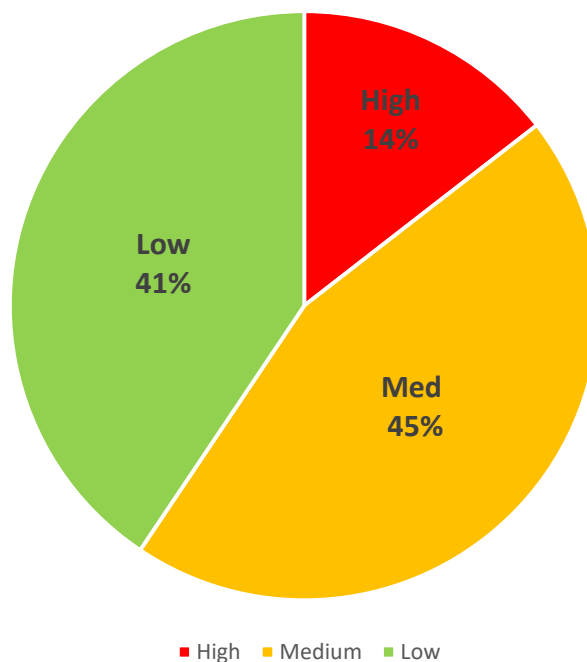


Figure 9. Cost to fix identified erosion sites.



## Top Land Use Categories:

### Residential Sites (41)

Residential areas (not including driveways) were associated with approximately 59% of all sites identified during the 2023 watershed survey. Three (3) residential sites were estimated to have a high impact on water quality. Seventeen (17) residential sites were identified as having a medium impact, and twenty-one (21) sites were found to have a low impact on water quality. It is the cumulative impact of all these sites together that causes water quality to decline. Fortunately, many of these sites can be addressed with simple, low-cost fixes.

#### Example sites identified on residential properties:



*Surface erosion on a pathway leading to the lake exposes tree roots and bare soil (site 2-11, left). Shoreline bank erosion delivers sediment directly to the lake (site 2-14, center). Runoff from developed areas causes gully erosion on a Pocasset Lake shorefront (site 6-05, right).*

#### Common Problems Identified:

- ✓ Surface erosion and bare soil
- ✓ Unstable paths & walkways
- ✓ Shoreline erosion
- ✓ Unstable lake access
- ✓ Lack of shoreline vegetation
- ✓ Roof runoff erosion

#### Recommended Solutions:

- ✓ Define and stabilize footpaths
- ✓ Install runoff diverters or waterbars
- ✓ Install rain gardens
- ✓ Establish shoreline buffer vegetation
- ✓ Revegetate bare areas with exposed soils
- ✓ Cover bare soil with Erosion Control Mulch (ECM)
- ✓ Install drywell or dripline trench at roof dripline

Twenty (20) residential erosion sites identified were estimated to be fixed at low cost (\$500). Nineteen (19) sites can be fixed at medium cost (\$500-\$2,500), while the remaining two residential sites were estimated to have high-cost fixes (Greater than \$2,500). For the most part, residential sites were documented evenly around the shoreline of Pocasset lake, indicating that addressing runoff from residential properties needs to occur lake-wide.

## Road Sites (20)

Erosion sites found on private roads, town roads, state roads, and driveways account for nearly 29% of all sites identified during the 2023 survey. Almost half of the road sites (9 sites) found were located on town roads.

- Five (5) sites were identified on **private roads** and are concentrated out on the Lord Road peninsula, and Pine Needle Alley. Three (3) sites were rated medium impact while the other two were rated as medium impact.
- Five (5) **driveway** sites were identified – all located on the south end of the lake on Main Street, Bellefonda Road, Pond Road, and Pocasset Ridge Road. One site was rated high impact, one medium impact, and three were rated as having low impact to water quality.
- All nine (9) **town road** sites were located in the town of Wayne. One site was rated as high impact and six (6) of the 9 sites documented on town roads were considered medium impact to water quality. The other two sites were rated as low impact to water quality.
- One (1) **state road** site was identified on rt. 133 (Main Street) heading East towards Winthrop at a stream crossing and was rated as having low impact to water quality.

Runoff from paved and gravel road surfaces is one of the biggest sources of pollution in Maine lakes and ponds. Proper maintenance is essential to prevent erosion from road surfaces, shoulders and roadside ditches. Unpaved gravel camp roads are a major source of pollution, in particular. While a one-time fix may cost more up front, it will reduce the amount of pollution entering the lake, and reduce the annual costs borne by the groups or landowners who pay to maintain these roads. Even roads that are miles away from the lake can have a big impact if road erosion is washing into a stream or culvert that eventually drains directly to the lake.

Example road and driveway-related erosion sites:



*Road shoulder and surface erosion on a town road at the carry-in launch location on Pond Road (site 6-13, left). Road surface erosion on a private gravel camp road (site 2-01, center). Runoff exiting a driveway causes rill and gully erosion and delivers pollutants directly to the lake via boat and dock access points (site 1-14, right).*

Common Problems Identified:

- ✓ Unstable culvert inlet/outlet
- ✓ Crushed, broken, undersized culvert
- ✓ Improper gravel surface materials
- ✓ Winter sand build-up
- ✓ Road/shoulder/ditch erosion
- ✓ Improper road shape/poor drainage
- ✓ Road ditch empties to stream/lake
- ✓ Driveway runoff delivers sediment directly to the lake.

Recommended Solutions:

- ✓ Armor/vegetate culvert inlet/outlet
- ✓ Replace and enlarge culvert
- ✓ Resurface w/ correct crushed gravel
- ✓ Remove winter sand
- ✓ Crown road, stabilize shoulders, and install ditch
- ✓ Install ditch turnouts or check dams
- ✓ Install plunge pool/basins
- ✓ Install runoff diverters (i.e., rubber razor, broad-based dip, etc.)

# Sector Overview & Priority Sites

---

Each sector surveyed has its own unique characteristics such as intensity of development, terrain features, land cover types, developed area within or adjacent to shoreland zones. Here, we break down each sector to provide an overview of the findings within each sector and high priority sites.

## Sector 1

Wayne Village along Mainstreet and West of Besse Road. Includes Bellefonda Road Pocasset Ridge Road, Wings Pond Way, Icehouse Lane, and Lake Ridge Circle in Wayne.

Sector 1 encompasses one of the most developed areas within the Pocasset Lake watershed. A total of Fifteen (15) erosion sites were identified in Sector 1. One (1) site was identified as high impact, nine (9) were identified as medium impact, and five (5) sites were identified as low impact to water quality. Land uses of identified erosion problems varied with sites identified on driveways (3), residential property (7), beach access locations (2), trails (1), and municipal/public property (1), and “other” (1). 10 of the 15 sites had erosion of some extent and bare or exposed soil noted as problems. Nearly all sites noted a lack of or non-existing vegetated shoreline buffer zone.

### *Top priority sites for remediation in Sector 1:*

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Site Number: 1-14

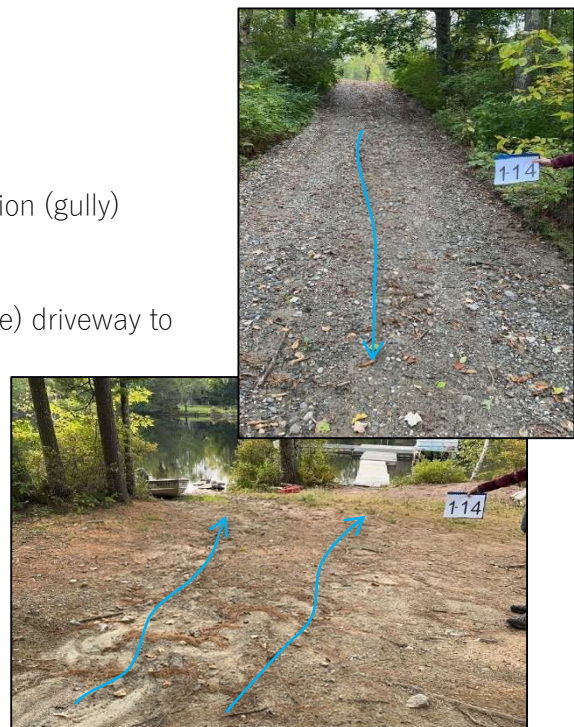
Impact Rating: High

Land use type: Driveway

Problem(s): Runoff flow and subsequent surface erosion (gully) delivers soil directly into Pocasset Lake.

Recommendation(s): Reshape (crown or super-elevate) driveway to help shed water into adjacent wooded area.

Depending on winter use, install multiple runoff diverters - rubber razor blades (not recommended on driveways plowed in the winter time) or broad-based dips on driveway and nearing shoreline to break up runoff flow and send it to stable areas away from the lake. Add to shoreline buffer.



*High impact driveway site 1-14*





Site Number: 1-04

Land use type: Beach Access

Impact Rating: Medium

Problem(s): Surface erosion (gully), lack of vegetation, and inadequate buffer along the shoreline.

Recommendation(s): Establish native shoreline buffer vegetation immediately above the beach area to help keep soil

intact and help slow/treat runoff that is currently eroding shoreline soils. Define a narrow access point to the beach (less than 4-6' wide) and allow existing vegetation to grow up a bit as you near the shorefront (reduce size of lawn and encourage buffer growth).

Site Number: 1-10

Land use type: Other (seating area)

Impact Rating: Medium

Problem(s): Surface erosion, lack of shoreline buffer vegetation, and bare soils.

Recommendation(s): Establish native shoreline buffer vegetation and define a narrow access point to the water (less than 4-6' wide). Additional plantings could boarder seating area and would



*Medium impact erosion site 1-10 off Bellefonda Road.*

help capture additional runoff – especially if planted immediately up slope of the seating area.

Cover bare soil with erosion control mulch (ECM), clean  $\frac{3}{4}$ " crushed stone with or without pavers, or other stable and permeable surface material that will cover and protect soil and prevent future erosion. Both practices, the planting and covering of soil will slow runoff velocity and allow water to infiltrate into the soil before entering Pocasset Lake.

## Sector 2

Lord Road peninsula – including all private secondary roads off Lord Road.

Sector 2 is also one of the more developed areas within the Pocasset Lake watershed and includes mostly shorefront residential lots. A total of sixteen (16) sites were documented in Sector 2. Two (2) sites were identified as high impact, three (3) were identified as medium impact, and eleven (11) sites were identified as low impact to water quality. The most common land use was residential (13), with three (3) more sites identified on private roads. 10 of the 15 sites had surface erosion of some extent and bare soil noted as problems.

### *Top priority sites for remediation in Sector 2:*

---

Site Number: 2-10

Land use type: Residential

Impact Rating: High

Problem(s): Surface erosion (rill and gully), bare soil, roof runoff runoff from access road/driveway causing erosion and delivering sediment directly into Pocasset Lake.

Recommendations: Install runoff diverter (water bar, broad-based dip, rubber razor, etc.) to deliver runoff into the wooded buffer along each side of the road, and/or reshape (crown or super elevate) the road to move runoff off of the road surface as quickly as possible. To address the roof runoff erosion, landowner is actively working on improvements to the existing gutter system with an outlet into the low-lying area behind the building. It is highly recommended that any outlets deliver runoff into vegetation where it can be infiltrated, and not directly to any surface waters. Contact 30 Mile for a free site visit and comprehensive site plan.



*High impact erosion site 2-10 at Richardson's Beach.*



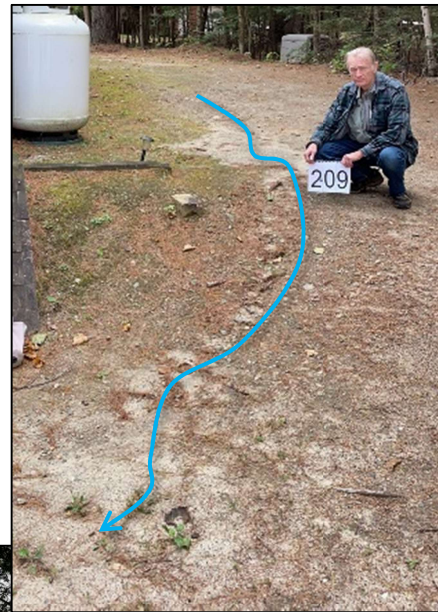
Site Number(s): 2-09

Land use type: Residential

Impact Rating: High

Problem(s): Surface erosion (sheet and rill), bare soil, roof runoff erosion, and driveway runoff causing erosion and delivering sediment directly to Pocasset Lake. Lack of shoreline understory buffer vegetation.

Recommendation(s): Establish understory buffer vegetation through native plantings, and allowing the area between the shoreline and the building to revegetate or encourage new growth by reseeding with conservations seed mix. Define and then stabilize narrow footpaths with erosion control mulch (ECM) or  $\frac{3}{4}$ " clean crushed stone, and install waterbars along the path. Install an infiltration trench underneath roof dripline to infiltrate runoff and prevent erosion. Address runoff on driveway by installing rain garden at driveway end to capture runoff or install runoff diverters (rubber razor blade or broad-based dips) to deliver runoff into adjacent stable, wooded areas where runoff can be treated away from the lake.



*High impact erosion site 2-09 located on a residential property*

Site Number(s): 2-07

Land use type: Private Road /Driveway

Impact Rating: Medium

Problems: Unstable culvert outlet causing ditch erosion (gully)

Recommendations: Re-seed and armor the culvert outlet with angular stone (~4-6" riprap) to help hold the soil to the bank. Install a plunge pool/infiltration basin at the culvert outlet, lined with same angular stone riprap over non-woven geotextile fabric (contact 30 Mile to purchase at cost). Line

center of swale with crushed rock and direct flow into wooded buffer area. Allow entire eroded area to revegetate naturally and jumpstart growth by over seeding with conservation or contractor seed mix (typically available at your local farmers union).



*High impact erosion site 2-09 at a residential property with surface erosion (rill) and bare soil on a driveway leading down to water access.*

## **Sectors 3 & 4**

North Wayne Village south to the East side of Besse Road. Includes Kents Hill Road, North Wayne Road, White Road, and the Maxim Road in Wayne.

Sector 3 had very few shorefronts lots and covered a larger, more forested area than the other sectors. Because development in Sector 3 was more spread out, many miles of roadway was assessed, along with pockets of shoreline development. A total of fifteen (15) sites were identified. Two (2) sites were rated as high impact, nine (9) were identified as medium impact, and the remaining four (4) sites were identified as low impact to water quality. Nearly half the sites were documented on a town roads (7), and the remaining sites were documented on private residential properties (4), private roads (1), state roads (1), trails (1), and other (1) land use categories. Seven (7) of the 15 sites were related to culvert crossings.



*Top priority sites for remediation in Sector 3:*

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Site Number: 3-08

Land use type: Town Road

Impact Rating: High

Problem(s): Culvert is unstable, misaligned, has too small of a diameter, and likely has larger upstream drainage issues that need to be investigated. Road bank at culvert outlet is blown out, eroding the road base and undermining the road.

Recommendation(s): Assess upstream drainage area

and replace with a new and larger culvert – armored at both ends with angular stone (aka riprap). It is likely that the culvert needs to be realigned and reset at a different elevation. Install a plunge/sediment pool and/or level-lip spreader or riprap apron at the culvert outlet to armor the downstream road bank.



*High impact erosion site 3-08 on the White Road in North Wayne.*

*The culvert outlet is severely washed out with failing banks posing a large threat to public safety and water quality.*

Site Number(s): 3-04

Land use type: Trail/Path

Impact Rating: High

Problem(s): Snowmobile trail cross-culvert in stream/ditch line has failed, likely due to misalignment and improper sizing. Stream and ditch flow north to bottom of hill on N. Wayne Road and outlet into a tributary to Pickerel Pond.

Recommendation(s): Replace culvert with proper sizing and alignment. May consider removing culvert completely and installing a bridge structure instead. A thorough investigation of upstream



sources of flow and drainage area assessment recommended. Ditch turnouts installed along the ditch line uphill of this sight could help reduce volume and velocity of flow at bottom of hillside.



*High impact erosion site 3-04 on N. Wayne Road in North Wayne. Snowmobile trail cross-culvert failure.*



Site Number: 3-09

Land use type: Private Road

Impact Rating: Medium

Problem(s): Unstable culvert inlet/outlet, surface erosion, and bank failure downstream of culvert.

Recommendation(s): Enlarge and realign culvert. Armor culvert inlet/outlet with angular stone. Streambank stabilization needed on downstream banks potentially from high-velocity flow from culvert hitting the downstream bank. Extend armoring to cover bank at culvert outlet and add live stakes throughout

*Medium impact erosion site 3-09 on the Tall Timber Road in North Wayne.*

## Sector 5

Walton Road west of bridge below N. Wayne dam, Pond Road north of Murray Drive, and Richmond Mills Road to the outlet of Hales Pond in Fayette. Includes Sullivan's End in Fayette, and Berry Road, Jameson Lane, Sable Lane, Sunrise Way, and Wing Lane in Wayne.

Sector 5 covered more land area than any other survey sector. Though large in size, this sector includes large tracts of undeveloped forest land. Surveyors focused largely on the developed shorefront lots on the northwestern shorelines of Pocasset Lake, and the town-owned roads surrounding Hales Brook. A total of ten (10) erosion sites were identified in Sector 5 and the majority of these sites, eight (8) in total, were documented on residential properties. One site was identified on a private road, and one (1) site was identified on a town road.

### *Top priority sites for remediation in Sector 5:*

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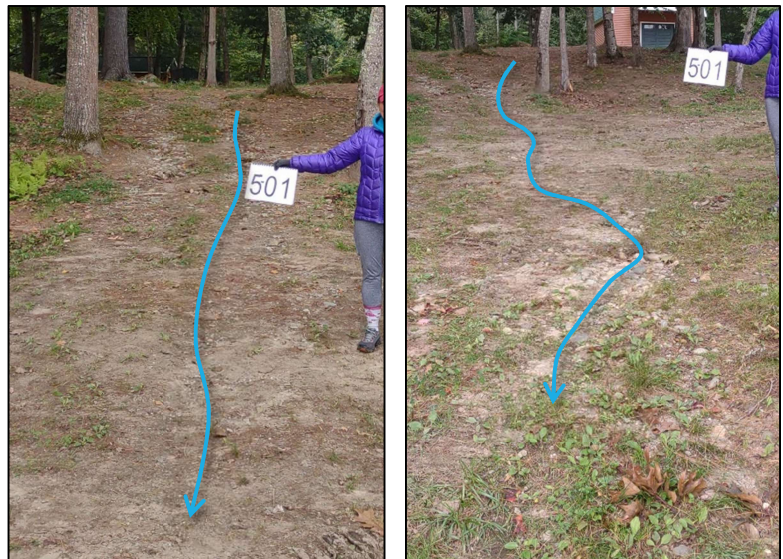
Site Number: 5-01

Land use type: Residential

Impact Rating: High

Problem(s): Surface erosion (rill), bare soil, and shoreline erosion.

Recommendation(s): Define a narrow and meandering pathway to the water and stabilize with erosion control mulch (ECM) or clean  $\frac{3}{4}$ " crushed stone. Install runoff diverters (waterbars) above and along walking paths to prevent runoff flow downhill toward the lake and instead direct runoff into a stable, vegetated areas. Do not rake leaves or needles. Revegetate bare soil and/or reseed thinning grass. Consider establishing planted areas in naturally existing low spots to help slow and infiltrate runoff.



*High impact erosion site 5-01 with surface erosion and bare soil.*





*Medium impact erosion site 5-02 where runoff has caused gully erosion on a residential beach access.*

Site Number: 5-02

Land use type: Residential

Impact Rating: Medium

Problem(s): Surface erosion (gully), unstable shoreline access, runoff is concentrating on beach and eroding a gully.

Recommendation(s): Install runoff diverters (waterbars or similar) above the beach to break up flow and redirect it into stable areas

where it can be absorbed/treated away from the lake. Install a rain garden to create a stable area to receive flow if needed. Create a vegetated buffer area behind the beach to add a perimeter buffer that will capture and infiltrate additional runoff flowing toward beach and lake.

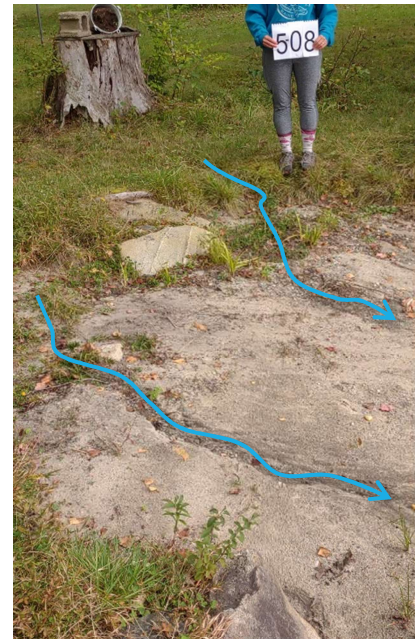
Site Number: 5-08

Land use type: Residential

Impact Rating: Medium

Problem(s): Surface erosion (rill), bare soil, unstable shoreline access.

Recommendation(s): Define a stable footpath and water access point (no more than 4-6 ft wide). Vegetate the remaining shoreline surrounding the defined access point by installing native plantings throughout to improve/establish a shoreline buffer zone and stabilize shoreline soils.



*Medium impact erosion site 5-08 where runoff has caused gully erosion on a residential beach access.*

## Sector 6

South end of Pond Road and Main Street between Pond Road intersection and the Pocasset Lake outlet. Includes Kelly Lane, Murray Drive, and Lakeview Lane in Wayne.

Sector 6 encompasses one of the more developed areas within the Pocasset Lake watershed. A total of 13 erosion sites were identified during the survey. Six (6) sites were identified as medium

impact and seven (7) sites were identified as low impact to water quality. No high impact erosion sites were identified. Land uses of identified erosion problems were largely associated with private residential property, nine (9) sites total, and another two (2) sites found on private driveways. One (1) site was identified on town roads, and another one site was identified on a municipal/public property. The majority of the erosion sites identified on residential property were noted to have a thin or lacking vegetated shoreline buffer zone.

#### *Top priority sites for remediation in Sector 6:*

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Site Number: 6-02

Land use type: Residential

Impact Rating: Medium

Problem(s): Surface erosion (sheet), unstable shoreline access.

Recommendation(s): Install two runoff diverters (rubber razor or water bar) across boat launch to redirect flow into stable wooded areas where it can be absorbed and treated away from the lake.



*Medium impact erosion site 6-02 on a residential boat access.*



*Medium impact erosion site 6-05 with beach shoreline erosion on a residential property.*

Site Number: 6-05

Land use type: Residential

Impact Rating: Medium

Problem(s): Surface erosion (gully), lack of shoreline vegetation

Recommendation(s): Reduce the amount of runoff exiting developed spaces by installing an infiltration trench at roof driplines. Install a rain garden, infiltration trench, or diversion at the end of the driveway to help capture or divert driveway runoff to a stable area where it can be treated away from the lake. Add native plantings to the shoreline buffer and consider establishing a rain garden in low spots where water is running around/over the shoreline berm and causing erosion.

Site Number: 6-07

Land use type: Municipal/Public

Impact Rating: Medium

Problem(s): Roof runoff erosion, and large amounts of surface flow from impervious surfaces delivered across Pond Road and onto driveways of residential properties on Pocasset Lake.

Recommendation(s): Reduce runoff from roofs, parking areas, and driveways by installing rain barrels or drywells at gutter downspouts. Install additional ditches, infiltration swales, and grated culverts to capture runoff from paved surfaces and reduce export of runoff across the street.



*Medium impact erosion site 6-07 has large areas of impervious surfaces that deliver surface runoff across Pond Road toward Pocasset Lake.*

## **Vegetated Shoreline Buffer Zones**

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In addition to the many identified erosion sites with recommendations that included establishing or enhancing the vegetated shoreline buffer, an additional 31 properties with no shoreline buffers were noted by the survey teams. These properties were not documented as a watershed survey site because no active erosion was identified. Adding this total to the 30+ documented survey sites with shoreline buffer improvement recommendations means that **over 60 properties** on the shoreline of Pocasset Lake are lacking or have inadequate shoreline buffer zones to properly capture and treat runoff from adjacent development.

The vegetated shoreline buffer is the “last line of defense” in protecting the lake from stormwater runoff inputs. Buffers with many tiers or layers of vegetation (duff, ground covers, shrubs, mid-story trees, and canopy trees) provide the most protection as they are able to intercept the most rain and the deep roots of native plants help absorb runoff and extract phosphorus and other pollutants before it can enter the lake. A robust and healthy shorefront buffer can still beautifully frame your lake view.

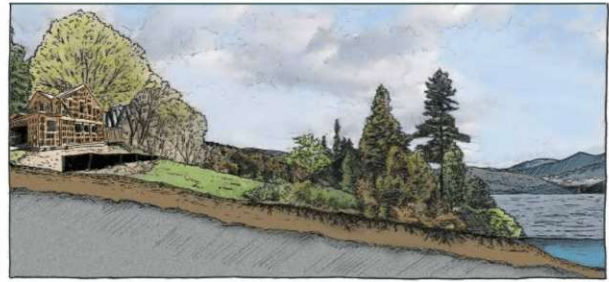
Remember, trees do not live forever. It is important to nurture the next generation of big trees on your shoreline by allowing some of the saplings in the buffer understory to grow and mature. One day, these will take the place of the larger trees currently growing on your lake front.



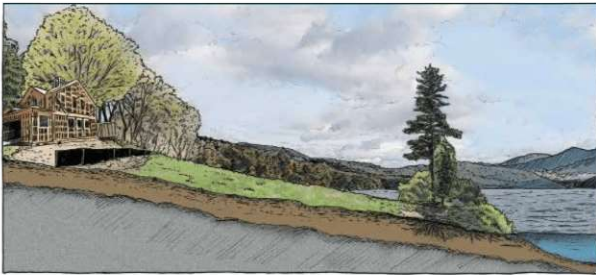
1 73% of stormwater runoff infiltrated by grass lawn and 100-foot wide buffer.



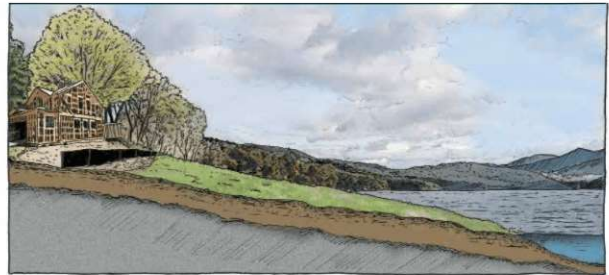
2 58% of stormwater runoff infiltrated by grass lawn and 50-foot wide buffer.



3 32% of stormwater runoff infiltrated by grass lawn and 10-foot wide buffer.



4 18% of stormwater runoff infiltrated by grass lawn.



*The benefits of vegetated shoreline buffer zones. Image source: Lake George Association:*

<https://lakegeorgeassociation.org/act-now/do-it-yourself-water-quality/create-or-expand-shoreline-buffer>.

Shoreline buffer zones also provide habitat to wildlife and is critical to the health of the greater lake ecosystem. Functioning shoreline zones not only protect water quality, but also the wildlife that live in and around the lake, or rely on it for their survival. In fact, more animals can be found in shoreland habitats than in any other habitat type in Maine – hundreds of species depend on shoreland zones for survival. We, humans, are also attracted to the lakefront, but as populations grow and development around the lake increases, natural shoreland habitat is decreasing.

One of the easiest and most effective ways to eliminate geese problems on a lakefront property is to maintain a robust stand of shoreline buffer vegetation at least waist high (the taller, the better!). Geese will only inhabit areas where they have a clear line of sight to the water without any barriers. They also molt each summer and cannot fly for a period of time. During this time, they will not stay at any location where they cannot see or easily access the water. Areas of lawn close by the water are prime real estate for geese. Maintaining a robust buffer is not only good for water quality and shoreline stability, but also keeps geese off your shorefront (and all that waste, too!).

In order to maintain water quality and protect wildlife, it is important to preserve and maintain naturally vegetated shoreland areas. [Maine's Mandatory Shoreland Zoning Act](#) requires municipalities to adopt land use regulations for all areas within the shoreland zone. Administered by your local Code Enforcement Officer (CEO), this law regulates construction, vegetation clearing, and soil movement within 250' of lakes, ponds, and wetlands, and within 75' of streams. Here are just a few of the minimum standards set by the State of Maine:

- ✓ New buildings, septic systems, and other structures (decks, patios, and portions of dock installed above the normal water line) must be set back 100' from shore.
- ✓ A winding footpath, no more than 6' wide, is allowed. The path should be meandering, so runoff is more likely to be trapped by vegetation and natural depressions.
- ✓ Cleared openings may be maintained, but shall not be enlarged.
- ✓ Clearing vegetation within 75' of shore is prohibited in "resource protection" zones.
- ✓ In other shoreland zones, vegetation removal is limited:
  - Tree removal requires a town permit. Contact your CEO & consult a forester.
  - State law prohibits new cleared openings from being created within the buffer area.
  - Existing openings that have naturalized with woody vegetation cannot be re-cleared.
  - Pruning only the lower 1/3 of branches of a tree is allowed.
  - Vegetation <3 ft. in height CANNOT be cut, covered, or removed, except to provide for a footpath. This includes ground cover, leaf litter, and the natural duff layer (accumulated leaves, needles, and twigs).

# Next Steps – Where do we go from here?

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This survey provided a “snapshot” of the condition of the watershed, in the areas surveyed on a particular day in late September. New erosion sites can develop quickly, particularly after heavy rain or snowmelt. As new sites are identified, they can be added to the watershed NPS site list (Appendix A). Paying attention to run-off problems and identifying sites in need of work should be a continued and ongoing activity done by everyone interested in protecting Pocasset Lake.

Specific post-survey follow-up priorities identified by the Watershed Survey Steering Committee include:

1. Present watershed survey results, distribute the final watershed survey report and 2-page summary to all watershed stakeholders, and make accessible to all landowners and the general public online via 30 Mile, PLA, and town websites.
2. Generate and mail follow-up letters to all landowners with identified survey sites. Letters will include a summary of the identified erosion problem and include recommendations to correct identified problem, along with guidance materials, factsheets, and contact information for additional technical assistance for landowners with sites that might require technical support.
3. Identify funding sources to support and incentivize remediation at high priority erosion sites.
4. Establish a LakeSmart Team on Pocasset Lake to provide education to shorefront landowners.
5. Develop a vegetated buffer campaign and hold an annual buffer workshop to promote shoreline buffer improvements around the lake.

Fixing the erosion sites identified during this survey and in the future will require efforts by individual homeowners, road associations, municipal officials, lake associations, and 30 Mile. Here is what you can do right now to support this effort and protect Pocasset Lake.

## Individual Landowners:

- ✓ For landowner with identified survey sites: Address the erosion or runoff issue(s) identified on your property during the 2023 survey. Contact 30 Mile or PLA if you need more information or technical assistance.

- ✓ Request a FREE technical assistance visit from 30 Mile. Visit <https://30mileriver.org/technical-assistance/> or email [whitney@30mileriver.org](mailto:whitney@30mileriver.org) to learn more!
- ✓ Check with your town's Code Enforcement Officer before cutting, removing, or disturbing vegetation within 250 feet of the shoreline, as this may violate shoreland zoning regulations.
- ✓ Be careful not to unnecessarily disturb the ground that drains to the lake and avoid exposing bare soil. Seed or mulch any bare soils right away.
- ✓ Stop mowing and raking, and let lawn and raked areas revert back to natural plants. Remember, lakes like LESS lawn!
- ✓ Encourage shrubs and trees to grow on your shoreline, as their deep roots help hold the shoreline together and are better at extracting nutrients from runoff before it enters the lake.
- ✓ Capture runoff in depressions or divert flow to vegetated areas. If needed, create areas where runoff can be infiltrated, for example by installing a rain garden or infiltration trench.
- ✓ Maintain your septic system. Pump septic tanks every 2 to 3 years for year-round residences, or seasonal rental properties. Pump every 4 to 5 years if seasonal.
- ✓ Replace outdated septic systems. Systems built prior to 1974 which pre-date the state's subsurface wastewater disposal rules, and are most at risk of contributing pollutants to groundwater and Pocasset Lake. Permitted systems installed between 1974 (septic rules enacted) and 1995 (septic rules amended) might also be at risk due to rapid percolation in coarse and gravelly soils, and should be inspected by a licensed site evaluator.
- ✓ Join PLA and 30 Mile to support their water quality and conservation projects.

Road Associations (or private road owners without associations):

- ✓ For groups with identified erosion sites: Review your follow-up letter with your road association board and contractor. Contact 30 Mile for additional technical assistance (see page 39) and to learn more about potential grant cost-sharing opportunities.
- ✓ Get a copy of *Gravel Road Maintenance Manual – A Guide for Landowners*, a must for anyone managing a camp or other gravel road:  
[www.maine.gov/dep/land/watershed/camp/road/gravel\\_road\\_manual.pdf](http://www.maine.gov/dep/land/watershed/camp/road/gravel_road_manual.pdf)
- ✓ Minimize road runoff by doing regular, comprehensive maintenance. (Contact 30 Mile for technical assistance - see contact information below.)
- ✓ Form a road association if one does not already exist.

#### Municipalities:

- ✓ Help disseminate the watershed survey report and summary handout.
- ✓ Conduct regular maintenance on town roads in the watershed and fix town road problems identified here.
- ✓ Enforce shoreland zoning ordinance to assure full protection of Pocasset Lake.
- ✓ Participate in and support long-term watershed management and protection projects.
- ✓ Promote training for road crews and contractors, planning boards, conservation commissions and other decision-makers.
- ✓ Continue collaboration with 30 Mile and PLA on remediation projects and ongoing monitoring of lake water quality and watershed erosion problems.

#### Pocasset Lake Association (PLA):

- ✓ Help disseminate the watershed survey report and summary handout.
- ✓ Share information on “Best Management Practices” and how we can work together to help protect Pocasset Lake.
- ✓ Conduct community outreach and organize workshops for watershed landowners.
- ✓ Continue collaboration with 30 Mile and watershed towns on remediation projects and ongoing monitoring of erosion problems in the watershed.
- ✓ Help assemble a LakeSmart team that can deliver LakeSmart programming, and conduct targeted outreach to landowners with erosion sites identified in the 2023 survey.

#### 30 Mile River Watershed Association (30 Mile):

- ✓ Contact all landowners with identified erosion sites. Describe the erosion issues, make recommendations for remediation, and provide technical assistance when requested.
- ✓ Provide free site evaluations and recommendations for landowners.
- ✓ Provide camp road maintenance and planning assistance for road associations and groups.
- ✓ Provide educational resources and guidance to PLA, towns, and community members.
- ✓ Maintain a database of erosion problems in the watershed and track them over time.
- ✓ Continue to partner with PLA, watershed towns, Maine DEP, and others to develop a watershed plan, seek funding sources, and implement projects to protect lake water quality.
- ✓ Provide training and support for volunteers to establish a LakeSmart team on Pocasset Lake.



Table 2. Summary of priority follow-up actions and high-priority sites

2023 POCASSET LAKE WATERSHED SURVEY - FOLLOW-UP SUMMARY	
Priority Post-survey Follow-up Actions	
Presentation of Survey Results	Present survey results, distribute the final report and 2-page summary to all watershed stakeholders, and make accessible online via 30 Mile, PLA, and town websites.
State Roads	Provide a list of identified NPS sites to the Maine Department of Transportation (Maine DOT) to include in future budgets.
Town Properties	Provide a summary report of identified NPS sites to each watershed town. Meet with town road commissioners, and discuss potential funding opportunities.
Private Roads	Provide a summary report to primary road contacts for all private roads with identified NPS sites. Meet with road groups to review sites, offer technical assistance, and discuss potential funding opportunities.
Residential & Other Sites	Mail follow-up letters to all landowners with identified survey sites. Provide technical assistance when requested.
Watershed Planning & Grants	Develop a watershed plan that will guide the work needed to address NPS threats in the watershed.
Education & Outreach	Conduct outreach & organize educational workshops/seminars for watershed landowners.
Focus Areas & High-priority Sites (high and medium-impact) by Sector and Land Use	
Sector 1	Site Number (bold red text = high impact site)
Residential	1-06, 1-07, 1-09, 1-11
Driveway	1-12, <b>1-14</b>
Beach Access	1-04, 1-05
Municipal/Public	1-15
Other	1-10
Sector 2	Site Number
Residential	2-01, <b>2-09</b> , <b>2-10</b> , 2-12
Private Road	2-07
Sector 3 & 4	Site Number
Town Road	3-02, 3-03, 3-06, 3-07, <b>3-08</b> , 3-15
Residential	3-10, 3-13
State Road	3-01
Trail or Path	<b>3-04</b>
Private Road	3-09
Sector 5	Site Number
Residential	<b>5-01</b> , 5-02, 5-04, 5-06, 5-07, 5-08
Private Road	5-09
Sector 6	Site Number
Residential	6-02, 6-04, 6-05, 6-09
Town Road	6-13
Municipal/Public	6-07

# Conservation Practices for Homeowners

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Making the leap from concept to construction can be a challenge on the lakefront. To help homeowners who want to make their properties more “lake-friendly”, 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 Stormwater Best Management Practices (BMPs):

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 small color photos of each plant to make plant selection easier:

Homeowner BMP Fact Sheets are available online to help you install conservation practices on your property. Download at:  
[www.maine.gov/dep/land/watershed/materials.html](http://www.maine.gov/dep/land/watershed/materials.html)

[Construction BMPs](#)

[Live staking](#)

[Plants - shade & moist/wet](#)

[Dripline Trench](#)

[Open-Top Culverts](#)

[Plants - part sun & dry](#)

[Dry Wells](#)

[Paths and Walkways](#)

[Plants - part sun & moist/wet](#)

[Erosion Control Mix \(ECM\)](#)

[Permitting](#)

[Rain Barrels](#)

[Infiltration Steps - New](#)

[Planting Vegetation](#)

[Rain Gardens](#)

[Infiltration Steps - Retrofit](#)

[Plants - full sun & dry](#)

[Rubber Razors](#)

[Infiltration Trench](#)

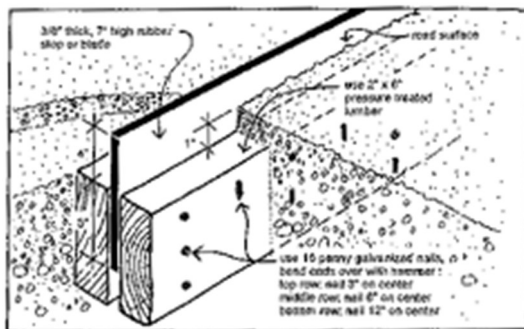
[Plants - full sun & moist/wet](#)

[Turnouts](#)

[Lake Shoreline Riprap](#)

[Plants - shade & dry](#)

[Waterbars](#)

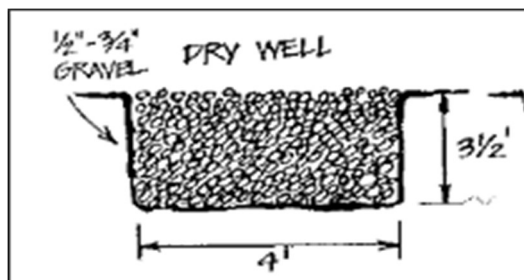
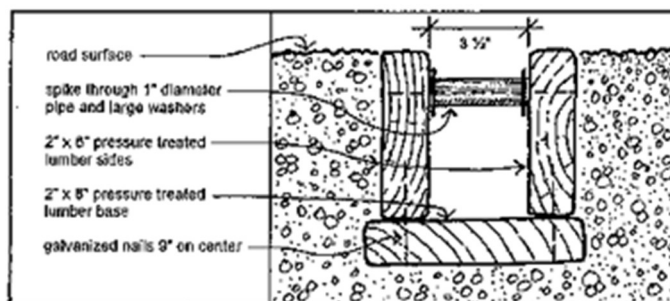


### Rubber Razor Blade:

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 is not plowed in the winter. Place at a 30-degree angle to the road edge and point the outlet into stable vegetation. Remove leaves/debris as needed.



### Dry Well:

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

## Permitting ABCs

The 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.

Contact the DEP and your town's code enforcement officer (CEO) 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. The following laws and ordinances require permits for activities adjacent to wetlands and water bodies:

[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 each town through the Code Enforcement Officer and the Planning Board. Please note that some municipalities have established ordinances that are even more restrictive than the state requirements, so always contact your local CEO before you begin any project. See page 39 for contact information.

[Natural Resources Protection Act \(NRPA\)](#) – Soil disturbance and other activities within 75 feet of the lakeshore or stream also fall under the NRPA, which is administered by the Maine 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 projects.

How to apply for a Permit by Rule Notification with Maine DEP:

- ☐ Fill out a notification form before starting any work. Forms are available from your CEO, Maine DEP, offices, or online at [www.maine.gov/dep/land/nrpa/nrpa-pbr-notification.pdf](http://www.maine.gov/dep/land/nrpa/nrpa-pbr-notification.pdf).
- ☐ The permit will be reviewed by DEP. If you do not hear from DEP in 14 days, you can assume your permit is approved and you can proceed with 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 ([NRPA Chapter 305](#)) so you will be familiar with the law's requirements.

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**PERMIT BY RULE NOTIFICATION FORM**  
(For use with DEP Regulation, Natural Resources Protection Act - Permit by Rule Standards, Chapter 305)

APPLICANT INFORMATION (Owner)				AGENT INFORMATION (if Applying on Behalf of Owner)			
Name:				Name:			
Mailing Address:				Mailing Address:			
Town/State/Zip:				Town/State/Zip:			
Daytime Phone #:		Ext.:		Daytime Phone #:		Ext.:	
Email Address:				Email Address:			
PROJECT INFORMATION							
Part of a larger project? (check 1):		<input type="checkbox"/> Yes <input type="checkbox"/> No		After the Fact? (check 1):		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Project Town:		Town Email Address:		Project involves work below mean low water? (check 1):		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Brief Project Description:				Name of waterbody:		Map and Lot Number:	
Project Location & Brief Directions to Site:							

**PERMIT BY RULE (PBR) SECTIONS (Check at least one):** I am filing notice of my intent to carry out work that meets the requirements for Permit-by-Rule (PBR) under DEP Rules, [Chapter 305](#), and my agent(s), if any, have read and will comply with all of the standards in the Sections checked below.

<input type="checkbox"/> Sec. (2) Act. Adj. to Prot. Natural Res.	<input type="checkbox"/> Sec. (9) Utility Crossing	<input type="checkbox"/> Sec. (16) Coastal Sand Dune Projects
<input type="checkbox"/> Sec. (3) Intake Pipes	<input type="checkbox"/> Sec. (10) Stream Crossing	<input type="checkbox"/> Sec. (17) Transfer/Permit Extension
<input type="checkbox"/> Sec. (4) Replacement of Structures	<input type="checkbox"/> Sec. (11) State Transportation Facilities	<input type="checkbox"/> Sec. (18) Maintenance Dredging
<input type="checkbox"/> Sec. (5) Movement of Rocks or Veg.	<input type="checkbox"/> Sec. (12) Restoration of Natural Areas	<input type="checkbox"/> Sec. (19) Act. Near DNR Habitat
<input type="checkbox"/> Sec. (7) Outfall Pipes	<input type="checkbox"/> Sec. (13) FAW Creat./Water Qual. Improv.	<input type="checkbox"/> Sec. (20) Act. Near Waterfowl/Bird Habitat
<input type="checkbox"/> Sec. (8) Shoreline Stabilization	<input type="checkbox"/> Sec. (15) Public Boat Ramps	

**NOTE:** Municipal permits also may be required. Contact your local code enforcement office for information. Federal permits may be required for stream crossings and for projects involving wetland fill. Contact the Army Corps of Engineers at the Maine Project Office for information.

**NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS AND FEE**

- ☐ **Attach** all required submissions for the PBR Section(s) checked above. The required submissions for each PBR Section are outlined in Chapter 305 and may differ depending on the Section you are submitting under.
- ☐ **Attach** a location map that clearly identifies the site (U.S.G.S. topo map, Maine Atlas & Gazetteer, or similar).
- ☐ **Attach** Proof of Legal Name if applicant is a corporation, LLC, or other legal entity. Provide a copy of Secretary of State's registration information (available at <http://sos.maine.gov/nec-sos-crs/CRS/MainPage.aspx>). Individuals and municipalities are not required to provide any proof of identity.

**FEE:** Pay by credit card at the [Payment Portal](#). The Permit-by-Rule fee may be found here <https://www.maine.gov/dep/feeschedule.pdf> and is currently \$205.

☐ **Attach** payment confirmation from the Payment Portal when filing this notification form.

<b>Signature &amp; Certification:</b>	
<ul style="list-style-type: none"><li>• I authorize staff of the Departments of Environmental Protection, Inland Fisheries &amp; Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules.</li><li>• I understand that this PBR becomes effective 14 calendar days after receipt by the Department of this completed form, the required submissions, and fee, unless the Department approves or denies the PBR prior to that date.</li></ul>	
By signing this Notification Form, I represent that the project meets all applicability requirements and standards in Chapter 305 rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.	
Signature of Agent or Applicant (may be typed):	Date:

**Keep a copy as a record of permit:** Email this completed form with attachments to DEP at: [DEP.PBRNotification@maine.gov](mailto:DEP.PBRNotification@maine.gov). DEP will send a copy to the Town Office as evidence of DEP's receipt of notification. No further authorization will be issued by DEP after receipt of notice. A PBR is valid for two years, except Section 4, "Replacement of Structures," are valid for three years. Work carried out in violation of the Natural Resources Protection Act or any provision in Chapter 305 is subject to enforcement.

Watch Maine DEP's video, 'NRPA Basics and Submitting a PBR Notification' for more detailed instructions: <https://www.maine.gov/dep/land/nrpa/index.html#form>.

# Where do I get more information?

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## 30 Mile River Watershed Association

P.O. Box 132, Mount Vernon, ME 04352

(207) 860-4043; [www.30mileriver.org](http://www.30mileriver.org)

30 Mile's mission is to work as a community for clean and healthy lakes, ponds, and streams in our watershed. With this mission, 30 Mile has numerous programs including water quality monitoring, invasive plant surveying and remediation, courtesy boat inspections, watershed surveys, etc. Alongside these programs, 30 Mile provides free and reduced-cost services including site evaluations and recommendations for landowners; camp road maintenance and planning assistance for road associations.

## Pocasset Lake Association

<http://www.pocassetlakewayne.org/>

The Pocasset Lake Association (PLA) works together to preserve the lake and habitat around Pocasset Lake and Pickerel Pond. For over 30 years dedicated PLA volunteers have monitored water clarity via Secchi disk readings to help identify trends and changes over time. PLA also has a group of volunteers who complete an invasive aquatic plant survey of Pocasset Lake each season.

## Maine Department of Environmental Protection

17 State House Station, Augusta, ME 04333

(800) 452-1942 or (207) 287-7688; [www.maine.gov/dep](http://www.maine.gov/dep)

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

## Code Enforcement Officers

Municipal Code Enforcement Officers (CEOs) administer and enforce local Shoreland Zoning Ordinances for all areas within the shoreland zone. Shoreland zoning ordinances include limitations for building, development, and disturbance, cutting, or removal of vegetation within 100 feet of a lake, and 75 feet of streams and wetlands.

Town Wayne: Chip Stevens – (207) 685-4983 / [ceolpi@waynemaine.org](mailto:ceolpi@waynemaine.org)

Town of Fayette: Jessica Leighton – (207) 685-4373 / [fayetteceo@gmail.com](mailto:fayetteceo@gmail.com)



## Kennebec County Soil and Water Conservation District

21 Enterprise Drive, Suite #1, Augusta, ME 04330

(207) 622-7847 ext.3; [www.kcswcd.org](http://www.kcswcd.org)

Provides technical assistance to landowners, road associations, lake associations, municipalities, and other conservation groups.

## U.S. Dept of Agriculture (USDA) / Natural Resources Conservation Service (NRCS)

Kennebec County – Augusta Service Center

2305 North Belfast Ave., Augusta, ME 04330

(207) 622-7847 / [peter.abello@usda.gov](mailto:peter.abello@usda.gov)

NRCS provides farmers, ranchers, and forest landowners with free technical assistance, or advice, for boosting agricultural productivity and protecting our natural resources through conservation. Programs are available to provide financial assistance to implement these recommendations.

# Guidance, Factsheets, and Other Helpful Information for Landowners

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Gravel Road Maintenance Manual: A Guide for Landowners on Camp and other Gravel Roads.

Kennebec County Soil and Water Conservation District and Maine DEP. April 2016.

[www.maine.gov/dep/land/watershed/camp/road/gravel\\_road\\_manual.pdf](http://www.maine.gov/dep/land/watershed/camp/road/gravel_road_manual.pdf)

A Guide to Forming Road Associations.

Maine Department of Environmental Protection. January 2020.

[www.maine.gov/dep/land/watershed/roads\\_assoc\\_guide\\_2020\\_edit.pdf](http://www.maine.gov/dep/land/watershed/roads_assoc_guide_2020_edit.pdf)

Maine Shoreland Zoning – A Handbook for Shoreland Owners.

Maine Department of Environmental Protection. Spring 2008.

[www.mainerealtors.com/wpcontent/uploads/2019/02/citizenguide.pdf](http://www.mainerealtors.com/wpcontent/uploads/2019/02/citizenguide.pdf)

Conservation Practices for Homeowners.

Maine DEP and Portland Water District. 2006. 24 fact sheets.

[www.maine.gov/dep/land/watershed/materials.html](http://www.maine.gov/dep/land/watershed/materials.html)

### **Contractors Certified in Erosion Control Practices.**

Maine DEP. [www.maine.gov/dep/land/training/cccec.html](http://www.maine.gov/dep/land/training/cccec.html)

### **The Lake Book: A handbook for Lake Protection.**

Maine Lakes. [www.lakes.me/lakebook](http://www.lakes.me/lakebook)

### **Protect Your Pond Brochure.**

Maine Lakes. 2021. [www.lakes.me/protect](http://www.lakes.me/protect).

### **Common Shrubs for Central Maine Shorelines.**

Sue Gawler and Jack Bouchard for Maine Lakes. <https://cdn.branchcms.com/DrynVOJoIo-1457/docs/Lake%20Library/Common-Shrubs-5.14.21.pdf>

### **Lakes Like Less Lawn.**

Portland Water District. 2017. [www.pwd.org/sites/default/files/lakes-like-less-lawn.pdf](http://www.pwd.org/sites/default/files/lakes-like-less-lawn.pdf)

### **Lakeside Living: Caring for your Septic System.**

Maine Lakes. 2021. <https://cdn.branchcms.com/DrynVOJoIo-1457/docs/Lake%20Library/Septic-two-pager-11x17-FINAL-5.14.21.pdf>

### **Septic System Permit Search.**

This service provided by The Division of Environmental and Community Health of the Maine Department of Health and Human Services allows citizens to search for the septic plans for a provided address. This service is provided by a third party working in partnership with the State of Maine: <https://apps.web.maine.gov/cgi-bin/online/mecdc/septicplans/index.pl>

# Appendix A: 2023 Watershed Survey – List of Identified Sites

Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
1-01	Minimal Vegetation	Driveway	Surface erosion (sheet). Parking area has exposed soil that's at risk of flowing across road and into Pocasset Lake	Install runoff diverters (open-top culvert), reshape (crown), install catch basin, add to buffer	Low	Medium: \$500-\$2,500
1-02	Ditch	Residential	Surface erosion (sheet) and inadequate shoreline buffer	Establish buffer, erosion control mulch, add vegetation to bank	Low	Low: Less than \$500
1-03	Directly into lake	Residential	Surface erosion (sheet), Soil-Bare	Add to buffer, erosion control mulch	Low	Low: Less than \$500
1-04	Directly into lake	Beach Access	Surface erosion (gully), lack of vegetation, and inadequate buffer along the shoreline.	Establish native shoreline buffer vegetation immediately above the beach area to help keep soil intact and help slow/treat runoff that is currently eroding shoreline soils. Define a narrow access point to the beach (less than 4-6' wide) and allow existing vegetation to grow up a bit as you near the shorefront (reduce size of lawn and encourage buffer growth).	Medium	Low: Less than \$500
1-05	Directly into lake	Beach Access	Surface erosion (rill), bare soil	Reseed bare soil and thinning grass, add to buffer, no raking, erosion control mulch	Medium	Low: Less than \$500
1-06	Directly into lake	Residential	Surface erosion (sheet), bare soil, lack of shoreline vegetation. Footpath traffic down to dock access has exposed soil, allowing it to runoff into the lake.	Stabilize footpath by placing erosion control mulch (ECM) or clean ¾" crushed stone on pathway to cover exposed soil, establish or expand shoreline buffer vegetation, use erosion control mulch to cover bare soil throughout or allow to revegetate.	Medium	Medium: \$500-\$2,500
1-07	Directly into lake	Residential	Surface erosion (sheet), bare soil, inadequate shoreline vegetation, and shoreline erosion	Define a stable footpath to the lake by covering the path with erosion control mulch (ECM) or clean ¾" crushed stone, reseed areas of bare soil and thinning grass, add to shoreline buffer vegetation with new native plantings, and place erosion control mulch to hold bare soil from washing away.	Medium	Low: Less than \$500

Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
1-08	Minimal Vegetation	Trail or Path	Surface erosion (sheet), bare soil. Exposed soil along footpath(s) allowing soil to be carried into the lake.	Stabilize footpath with erosion control mulch and add to shoreline buffer vegetation.	Low	Low: Less than \$500
1-09	Minimal Vegetation	Residential	Surface erosion (rill), bare soil from roof runoff erosion/ or foot traffic on bank	Define and stabilize a footpath by placing erosion control mulch (ECM) or clean ¾" crushed stone, install infiltration steps if slope allows, install a dripline trench at driplines to capture runoff leaving roofs, reseed areas of bare soil and thinning grass, add to shoreline buffer zone with new native plantings.	Medium	Medium: \$500-\$2,500
1-10	Directly into lake	Other	Surface erosion (sheet), lack of shoreline vegetation, bare soils	Establish native shoreline buffer vegetation and define a narrow access point to the water (less than 4-6' wide). Additional plantings could boarder seating area and would help capture additional runoff – especially if planted immediately up slope of the seating area. Cover bare soil with erosion control mulch (ECM), clean ¾" crushed stone with or without pavers, or other stable and permeable surface material that will cover and protect soil and prevent future erosion. Both practices, the planting and covering of soil will slow runoff velocity and allow water to infiltrate into the soil before entering Pocasset Lake.	Medium	Medium: \$500-\$2,500
1-11	Directly into lake	Residential	Surface erosion (rill), bare soil, lack of shoreline vegetation	Establish shoreline buffer vegetation, reseed areas of bare soil and thinning grass, no raking, allow unused space to re-naturalize.	Medium	Medium: \$500-\$2,500
1-12	Directly into lake	Driveway	Driveway runoff causing surface erosion (rill)	If full length of driveway is not needed, consider covering extension/end near lake with erosion control mulch (ECM) and/or revegetate to become natural space. Otherwise, cover driveway with crushed stone or reshape and add crushed bluestone gravel to stabilize.	Medium	Medium: \$500-\$2,500

Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
1-13	Minimal Vegetation	Residential	Surface erosion (sheet) and bare soil near shorefront	Cover bare soils with erosion control mulch (ECM) and minimize opening in shoreline vegetation by allow some of the unused space to revegetate/re-naturalize. Add to shoreline buffer vegetation with new native plantings, and do not rake away leaves or needles (allowing them to accumulate to form a natural "duff" layer will protect soils and prevent erosion).	Low	Low: Less than \$500
1-14	Directly into lake	Driveway	Runoff flow and subsequent surface erosion (gully) delivers soil directly into Pocasset Lake.	Reshape (crown or super-elevate) driveway to help shed water into adjacent wooded areas. Depending on winter use, install multiple runoff diverters - rubber razor blades (not recommended on driveways plowed in the winter time) or broad-based dips on driveway and nearing shoreline to break up runoff flow and send it to stable areas away from the lake. Cover area at base of driveway near shoreline with erosion control mulch (ECM) or revegetate, Add to shoreline buffer vegetation with new native plantings.	High	High: Greater than \$2,500
1-15	Stream	Municipal / Public	Surface erosion (sheet), snowplow pushing gravel into stream/wetland, dumping leaves and grass clippings into the water	Stop pushing snowbanks into wetland	Medium	Low: Less than \$500
2-01	Minimal Vegetation	Private Road	Surface erosion (sheet). Road shape allows for water to flow directly down tire track depressions.	Install runoff diverter or water bar to move runoff flow off the roadway and into adjacent wooded areas.	Low	Low: Less than \$500
2-01 (2)	Directly into lake	Residential	Surface erosion (rill) and shoreline erosion.	Define a footpath (4-6 ft. wide) to the water access and cover erosion control mulch (ECM) or clean ¾" crushed stone to stabilize, install a runoff diverter (waterbar) on pathway to redirect runoff away from access point, add to shoreline buffer vegetation.	Medium	Low: Less than \$500
2-02	Directly into lake	Residential	Surface erosion (sheet) with runoff coming down slope to dock access/boat launch.	Install runoff diverters (waterbars) across launch opening to redirect runoff away from dock/launch and into adjacent forest land, consider installing an infiltration trench and/or a layer of clean crushed stone immediately above boat launch "ramp" to slow/infiltrate runoff flow and prevent erosion of shoreline soils.	Low	Low: Less than \$500



Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
2-03	Directly into lake	Residential	Surface erosion (sheet) flowing directly into Pocasset Lake, and lack of shoreline buffer vegetation.	Define a narrow footpath (4-6 ft. wide) to the lake access and cover path with a stable surface material like erosion control mulch (ECM) or clean crushed stone. Installation of a dripline trench along roofline would further reduce amount of runoff flowing across shorefront, establish shoreline buffer vegetation with new native plantings.	Low	Medium: \$500-\$2,500
2-04	Directly into lake	Residential	Surface erosion, bare soil, unstable pathway, and roof runoff erosion.	Define footpath(s) and stabilize with erosion control mulch (ECM) or clean crushed stone, install a drywell at gutter downspout, add to shoreline buffer vegetation with new native plantings. Some runoff is exiting the driveway and flowing around the house toward the lake. Consider installing an infiltration trench at the edge of the pavement to catch runoff exiting the driveway surface or install runoff diverters (waterbars) on the side of house below driveway to divert runoff into adjacent wooded areas where it can be treated away from the lake.	Low	Medium: \$500-\$2,500
2-05	Directly into lake	Residential	Surface erosion, bare soil, roof runoff erosion.	Define footpath (no wider than 4-6 f) and stabilize bare/exposed soils with erosion control mulch (ECM) or clean crushed stone, install a dripline trench at roof driplines, and add to shoreline buffer vegetation with new native plantings.	Low	Medium: \$500-\$2,500
2-06	Directly into lake	Residential	Surface erosion (sheet), bare soil, and roof runoff erosion	Define footpath (no more than 4-6 ft. wide) and stabilize pathway surface with erosion control mulch (ECM), install a drywell at gutter downspout, and a dripline trench around roof driplines.	Low	Medium: \$500-\$2,500
2-07	Ditch	Private Road/Driveway	Unstable culvert inlet and outlet causing ditch erosion (gully)	Re-seed and armor the culvert outlet with angular stone (~4-6" riprap) to help hold the soil to the bank. Install a plunge pool/infiltration basin at the culvert outlet, lined with the same angular stone riprap over non-woven geotextile fabric (contact 30 Mile to purchase at cost). Line center of swale with crushed rock and direct flow into wooded buffer area away from the lake. Allow entire eroded area to revegetate naturally and jumpstart growth by over seeding with conservation or contractor seed mix (typically available at your local farmers union).	Medium	Medium: \$500-\$2,500

Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
2-08	Directly into lake	Residential	Surface erosion (rill), bare soil along pathway(s)	Stabilize footpath with erosion control mulch (ECM) and install runoff diverter (waterbar) to divert runoff from slope above into adjacent wooded area.	Low	Medium: \$500-\$2,500
2-09	Directly into lake	Residential	Surface erosion (sheet and rill), bare soil, roof runoff erosion, and driveway runoff causing erosion and delivering sediment directly to Pocasset Lake. Lack of shoreline understory buffer vegetation.	Establish understory buffer vegetation through native plantings and allow the area between the shoreline and the building to revegetate or encourage new growth by reseeding with conservations seed mix. Define and then stabilize narrow footpaths with erosion control mulch (ECM) or ¾" clean crushed stone and install waterbars along the path. Install an infiltration trench underneath roof dripline to infiltrate runoff and prevent erosion. Address runoff on driveway by installing rain garden at driveway end to capture runoff or install runoff diverters (rubber razor blade or broad-based dips) to redirect runoff into adjacent stable, wooded areas where it can be treated away from the lake.	High	High: Greater than \$2,500
2-10	Directly into lake	Residential	Surface erosion (rill and gully), bare soil, roof runoff from access road/driveway causing erosion and delivering sediment directly into Pocasset Lake.	Install runoff diverter (water bar, broad-based dip, rubber razor, etc.) to deliver runoff into the wooded buffer along each side of the road, and/or reshape (crown or super elevate) with appropriate hard-packing road surface gravel to move runoff off the road surface as quickly as possible. To address the roof runoff erosion, landowner is actively working on improvements to the existing gutter system with an outlet into the low-lying area behind the building. It is highly recommended that any outlets deliver runoff into vegetation where it can be infiltrated, and not directly to any surface waters	High	High: Greater than \$2,500
2-11	Directly into lake	Residential	Surface erosion (sheet), bare soil, and roof runoff erosion	Define footpath and stabilize path surface with erosion control mulch (ECM) or clean crushed stone to cover exposed soils and prevent further erosion, install runoff diverter (waterbar), install a dripline trench at roof driplines and drywell at gutter downspout to reduce amount of runoff slowing across shorefront, establish and add to shoreline buffer vegetation with new native plantings.	Low	Medium: \$500-\$2,500

Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
2-12	Directly into lake	Residential	Surface erosion (rill) along tire track depressions and on footpaths.	Install runoff diverter (rubber razor) across driveway to prevent flow downslope toward lake, define walkways and stabilize path surface with erosion control mulch (ECM) or clean crushed stone.	Medium	Low: Less than \$500
2-13	Directly into lake	Residential	Surface erosion (sheet), bare soil, roof runoff erosion	Install runoff diverter (waterbar), define and stabilize footpaths, cover bare soils with erosion control mulch (ECM), and install drywell at gutter downspout.	Low	Medium: \$500-\$2,500
2-14	Directly into lake	Residential	Surface erosion (sheet), lack of shoreline vegetation, shoreline erosion; an old tree had uprooted and fallen here.	Add to shoreline buffer vegetation and stabilize bare bank with a mix of small plantings, conservation seed mix (available at local farmers market), live stakes, and erosion control mulch (ECM). Reach out to 30 Mile about acquiring/installing native live stakes to stabilize this site.	Low	Low: Less than \$500
2-15	Minimal Vegetation	Private Road	Surface erosion (sheet), surface erosion (rill)	Build-up, add gravel, reshape (crown), install runoff diverters (broad-based dip), In general private section of Lord Road could use a better crown and harder packed crushed gravel. Low lying wet areas throughout surrounding woods may be hydrologically connected to the lake.	Low	Medium: \$500-\$2,500
3-01	Stream	State Road	Clogged culvert, culvert diameter too small, possibly larger culvert drainage issues, road shoulder erosion (sheet)	Replace, enlarge, realign, assess drainage area, vegetate shoulder	Medium	High: Greater than \$2,500
3-02	Stream	Town Road	Unstable culvert inlet/outlet, culvert diameter too small, surface erosion (sheet), surface erosion (rill), road shoulder erosion (rill)	Enlarge and armor inlet/outlet, install turnouts, install ditch, vegetate shoulder, reshape (crown) road.	Medium	Medium: \$500-\$2,500
3-03	Stream	Town Road	Unstable culvert inlet/outlet, surface erosion (rill), surface erosion (sheet), road shoulder erosion (rill road shoulder erosion (sheet), soil delta in stream/lake	Enlarge and armor inlet/outlet. Install turnouts, reshape (crown), install runoff diverters (broad-based dip) vegetate shoulder. Site documents culvert east of 100 Maxim Rd. Road runoff follows shoulder and over bank on culvert outlet. Sediment in stream.	Medium	High: Greater than \$2,500

Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
3-04	Stream	Trail or Path	Snowmobile trail cross-culvert in stream/ditch line has failed, likely due to misalignment and improper sizing. Stream and ditch flow north to bottom of hill on N. Wayne Road and outlet into a tributary to Pickerel Pond.	Replace culvert with proper sizing and alignment. May consider removing culvert completely and installing a bridge structure instead. A thorough investigation of upstream sources of flow and drainage area assessment recommended. Ditch turnouts installed along the ditch line uphill of this sight could help reduce volume and velocity of flow at bottom of hillside.	High	High: Greater than \$2,500
3-05	Ditch	Town Road	Road shoulder erosion (rill)	Reshape and vegetate shoulder starting at top of hill to get runoff into existing ditch line (good ditch here!)	Low	Medium: \$500-\$2,500
3-06	Stream	Town Road	Unstable culvert inlet/outlet, culvert diameter too small, surface erosion (rill), surface erosion (sheet), ditch bank failure, road shoulder erosion (gully)	Replace, enlarge, adjust length, armor inlet/outlet. Lots of streambank erosion upstream of culvert. Seems like spring storms have altered the flow and channel here. Lots of deposited material and eroded banks. Needs some stream and restoration work with	Medium	High: Greater than \$2,500
3-07	Stream	Town Road	Surface erosion (rill)	Install runoff diverters (broad-based dip), reshape (crown), add gravel, and build up	Medium	High: Greater than \$2,500
3-08	Stream	Town Road	Unstable culvert inlet/outlet, misaligned culvert, hanging culvert outlet, culvert diameter too small, larger culvert drainage issues, blown out culvert, culvert too short/long, surface erosion (gully), ditch bank failure	Replace, enlarge, adjust length, install plunge pool, assess drainage area, armor with stone, install sediment pools, build-up and reshape (crown). Culvert outlet is severely eroded and starting to undermine the road base. Worried this might be a complete road failure in future storm.	High	High: Greater than \$2,500
3-09	Stream	Private Road	Unstable culvert inlet/outlet, surface erosion (sheet), ditch bank failure	Enlarge, realign, armor inlet/outlet. Streambank stabilization needed - especially on downstream bank. Flow may be hitting bank at outlet. Extend armoring on downstream bank and add live stakes throughout.	Medium	Medium: \$500-\$2,500



Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
3-10	Directly into lake	Residential	Surface erosion, bare soil, and inadequate shoreline buffer vegetation.	<p>Define footpaths and stabilize path surfaces with erosion control mulch (ECM) or clean crushed stone. Reseed bare soil and thinning grass and do not rake fallen needles and leaves to expose sand beneath – allowing needles and leaves to accumulate will create a natural “duff” layer and is a natural form of erosion control that will protect the soils below and help keep them in place.</p> <p>Establish understory vegetation on the immediate shoreline with new native plantings and ECM surrounding new plants to add texture that will help slow flow and infiltrate runoff within new buffer plantings.</p> <p>Define spaces based on use. For example, define parking area, sitting areas, walking paths, boat storage area, etc. and vegetate/naturalize, or otherwise stabilize, other spaces. Install a runoff diverter at end of the drive to prevent runoff from exiting the driveway and flowing across shorefront.</p>	Medium	Medium: \$500-\$2,500
3-11	Directly into lake	Residential	Surface erosion, lack of shoreline vegetation, minimal duff accumulation and bare soil exposed on pathways.	<p>Define footpaths and stabilize path surfaces with erosion control mulch (ECM) or clean crushed stone, install infiltration steps, or retrofit into existing steps to water, install a runoff diverter (waterbar) along pathway at side of camp, install a dripline trench at roof driplines to further reduce runoff flowing across shorefront, and add to shoreline buffer vegetation with new native plantings. Do not rake fallen needles and leaves – allowing needles and leaves to accumulate will create a natural “duff” layer and is a natural form of erosion control that will protect the soils below and help keep them in place.</p>	Low	Medium: \$500-\$2,500

Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
3-12	Directly into lake	Residential	Surface erosion (sheet), inadequate shoreline vegetation, unstable access to shoreline.	Define footpath between camp and water access and stabilize path surface with erosion control mulch (ECM) or clean crushed stone, add waterbars along path to break up and divert flow, reseed bare soil and thinning grass, add to shoreline buffer vegetation with new native plantings, and allow unused shorefront areas to naturalize and revegetate. Do not rake fallen needles and leaves – allowing needles and leaves to accumulate will create a natural “duff” layer and is a natural form of erosion control that will protect the soils below and help keep them in place.	Low	Medium: \$500-\$2,500
3-13	Directly into lake	Residential	Surface erosion, bare soil, uncovered soil pile. Runoff flows on driveway surface to end toward cabin at far end of property.	Install runoff diverters (broad-based dips) or similar BMP along driveway to divert runoff off the driveway surface and into the woods. If use is seasonal, consider adding erosion control mulch (ECM) to portions of driveway receiving most use to cover exposed soil and prevent further erosion. Footpath between far cabin and lake could be stabilized with a layer of ECM or clean crushed stone. Contain sand pile by covering with tarp when not in use to ensure non washes into the lake. Otherwise, revegetate sandy area or cover with ECM.	Medium	Medium: \$500-\$2,500
3-14	Stream	Other	Surface erosion (sheet), surface erosion (rill), surface erosion (gully), shoreline erosion. This spot may be used by people who fish/stand on the bank here. Soil and vegetation washed away and only soil and exposed Geofabric remains.	Vegetate stream bank and/or add crushed stone if allowing access by foot. Otherwise revegetate with plantings or live stakes and cover with erosion control mulch.	Low	Low: Less than \$500
3-15	Stream	Town Road	Road shoulder erosion (gully), road shoulder erosion (rill), road shoulder erosion (sheet), Runoff isn't getting into existing ditch line and instead follows pavement edge and mail truck ruts in front of mailboxes and flows downhill to Lovejoy stream.	Direct runoff back into ditches by building up, reshaping and revegetating roads shoulders. Add check dams along ditch slope to improve treatment of runoff (no place to turnout but needs further investigation). Add harder packing gravel or pave in front of mailboxes to prevent rutting and erosion.	Medium	Medium: \$500-\$2,500

Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
5-01	Directly into lake	Residential	Surface erosion (rill), bare soil, and shoreline erosion	Define a narrow and meandering pathway to the water and stabilize with erosion control mulch (ECM) or clean ¾" crushed stone. Install runoff diverters (waterbars) above and along walking paths to prevent runoff flow downhill toward the lake and instead direct runoff into a stable, vegetated areas. Do not rake leaves or needles. Revegetate bare soil and/or reseed thinning grass. Consider establishing planted areas in naturally existing low spots throughout to help slow and infiltrate runoff from above.	High	Medium: \$500-\$2,500
5-02	Directly into lake	Residential	Surface erosion (gully), unstable shoreline access, runoff is concentrating at the beach, causing gully erosion.	Install runoff diverters (waterbars or similar) above the beach to break up flow and redirect it into stable areas where it can be absorbed/treated away from the lake. Install a rain garden to create a stable area to receive flow if needed. Create a vegetated buffer area behind the beach to add a perimeter buffer that will capture and infiltrate additional runoff flowing toward beach and lake.	Medium	Low: Less than \$500
5-03	Directly into lake	Residential	Surface erosion (sheet), bare soil	Define and stabilize footpath by adding erosion control mulch (ECM) or clean ¾" crushed stone to path surface. Install a waterbar runoff diverter to prevent flow down path into lake. Create rain garden at waterbar outlet.	Low	Medium: \$500-\$2,500
5-04	Directly into lake	Residential	Outlet pipes draining to lake	Assess drainage area to confirm source. Install drywell at pipe end, in location set back from lake.	Medium	Medium: \$500-\$2,500
5-05	Directly into lake	Residential	Surface erosion (sheet), bare soil, shoreline erosion	Define footpath to shorefront and stabilize path surface with erosion control mulch (ECM) or clean ¾" crushed stone. Add erosion control mulch (ECM) to cover bare soils in location where swim raft is stored.	Low	Low: Less than \$500
5-06	Directly into lake	Residential	Surface erosion, bare soil, undercut shoreline, shoreline erosion.	Define a narrow access point to water (4-6 ft wide), consider installing a small set of infiltration steps or temp. stairs at water access to limit travel directly on bank, improve the stand of understory vegetation on immediate shoreline by planting native plants or live stakes to further stabilize small bank, define and stabilize footpaths with erosion control mulch or clean crushed stone.	Medium	Low: Less than \$500

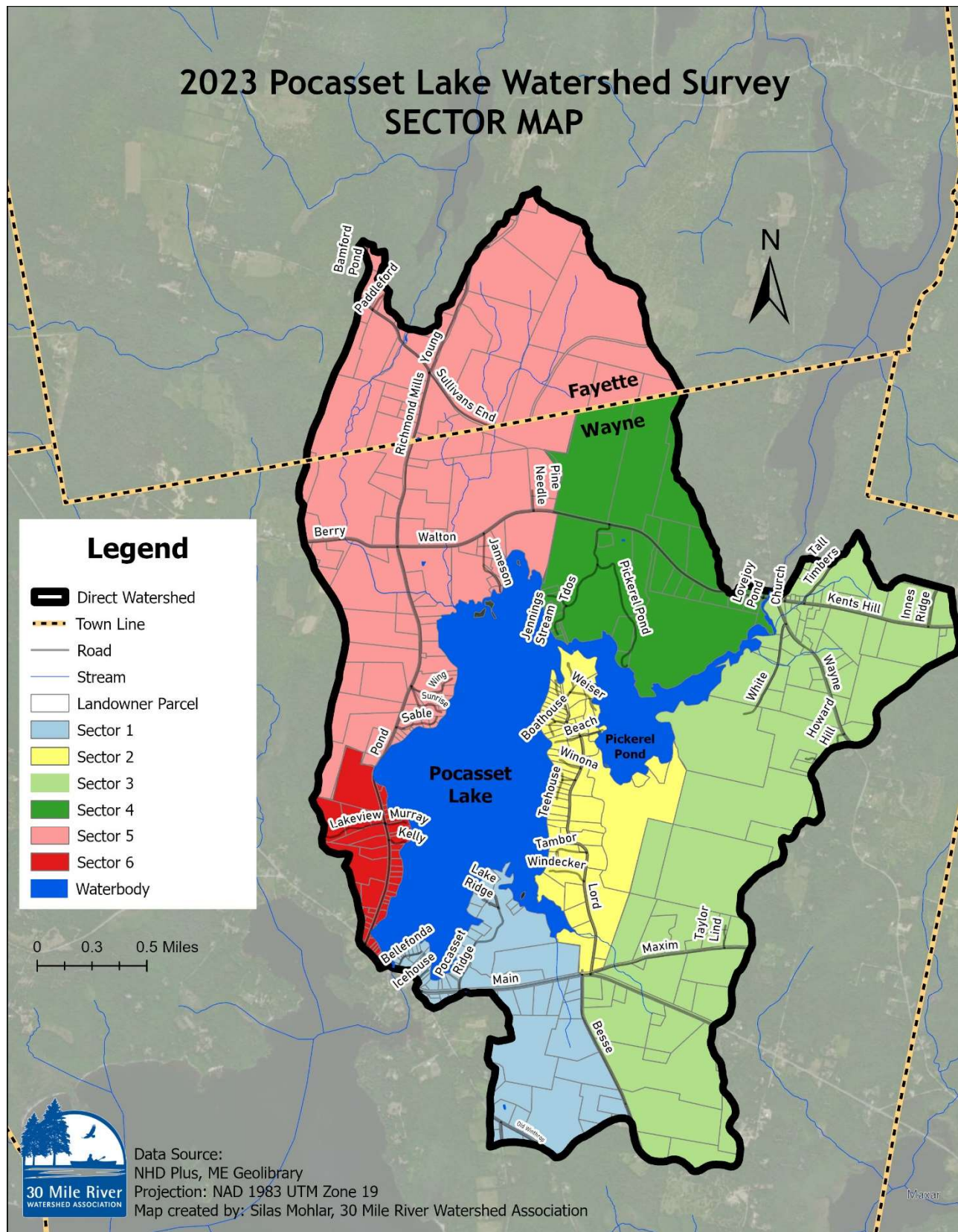
Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
5-07	Directly into lake	Residential	Surface erosion (sheet), bare-soil, erosion at boat/water access	Armor ditch with stone, stabilize footpaths with erosion control mulch (ECM) or clean crushed stone, reseed or vegetate bare soils/thinning grass, stabilize boat/water access by adding clean crushed stone, and establish/improve stand of vegetation along shoreline with native plantings and erosion control mulch (ECM).	Medium	Medium: \$500-\$2,500
5-08	Directly into lake	Residential	Surface erosion (rill), bare soil, unstable shoreline access	Define a stable footpath and water access point (no more than 4-6 ft wide). Vegetate the remaining shoreline surrounding the defined access point by installing native plantings throughout to improve/establish a shoreline buffer zone and stabilize shoreline soils.	Medium	Low: Less than \$500
5-09	Ditch	Private Road	Surface erosion, runoff flows down end of private road - erodes end and continues into ditch that drains to tributary stream.	Add a hard-packing crushed gravel (1.5" minus) with 7-10% fines and reshape road to crown, install a runoff diverter (broad-based dip) toward top of slope to breakup flow and divert runoff into woods so it cannot continue to end of road.	Medium	Medium: \$500-\$2,500
5-10	Stream	Town Road	Road shoulder erosion (sheet), Road shoulder at crossing (upstream end) and north side shoulder east of crossing on hillside (more severe).	reshape and revegetate shoulder so runoff can exit into ditch/woods instead of flowing along pavement edge and eroding shoulder.	Low	Low: Less than \$500
6-01	Minimal Vegetation	Driveway	Surface erosion (sheet) and bare soil on driveway, road runoff running down driveway towards the lake.	Install rain garden along driveway edge to capture and infiltrate runoff from road and driveway surfaces and prevent flow downhill to the lake. Consider extending the garden to corner of garage and tie in flow leaving existing channel drain in front of garage door.	Low	Low: Less than \$500
6-02	Directly into lake	Residential	Surface erosion (sheet) and unstable shoreline access	Install two runoff diverters (rubber razor or water bar) across boat launch to redirect flow into stable wooded areas where it can be absorbed and treated away from the lake.	Medium	Low: Less than \$500
6-03	Minimal Vegetation	Residential	Surface erosion (sheet) along dock access path.	Erosion control mulch/mix to cover bare soil	Low	Low: Less than \$500



Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
6-04	Directly into lake	Residential	Surface erosion (sheet) across shorefront.	Add erosion control mulch/mix (ECM) to cover and protect soils in high traffic areas, install an infiltration trench along driveway to help capture driveway runoff and reduce amount of runoff flowing across shorefront. Define a narrower water access (4-6 ft. wide) and add to/establish shoreline buffer vegetation near dock access.	Medium	Low: Less than \$500
6-05	Directly into lake	Residential	Surface erosion (gully), lack of shoreline vegetation	Reduce the amount of runoff exiting developed spaces by installing an infiltration trench at roof driplines. Install a rain garden, infiltration trench, or diversion at the end of the driveway to help capture or divert driveway runoff to a stable area where it can be treated away from the lake. Add native plantings to the vegetated shoreline buffer and consider establishing a rain garden in low spots where water is running around/over the shoreline berm and causing erosion.	Medium	Medium: \$500-\$2,500
6-06	Minimal Vegetation	Driveway	Surface erosion (sheet), road shoulder erosion	Potentially part of larger drainage issue – request site visit from 30 Mile for further investigation and site-specific recommendations.	Low	Medium: \$500-\$2,500
6-07	Minimal Vegetation	Municipal / Public	Roof runoff erosion	Reduce runoff from roof and driveways, which is currently running off onto driveways and to the shoreline across the street. Rain barrel, drywell at gutter downspout. Add additional ditches and infiltration swales, grates to direct water off into ditches	Medium	High: Greater than \$2,500
6-08	Directly into lake	Residential	Surface erosion (sheet) with inadequate shoreline buffer to help slow and infiltrate runoff.	Add erosion control mulch/mix (ECM) to cover bare soils. Add to shoreline buffer vegetation with native plantings and ECM around new plants.	Low	Low: Less than \$500
6-09	Directly into lake	Residential	Surface erosion (sheet) and lack of shoreline vegetation	Install a dripline trench beneath roofline, establish and add to shoreline buffer vegetation, and place erosion control mulch/mix (ECM) or clean ¾" crushed stone to cover bare soils in high traffic areas. Remove boat access point to the right of the dock, plant and cover with ECM. Further define the boat launch area and reduce the size/width, covering bare soil and road material with ECM or crushed stone.	Medium	Low: Less than \$500

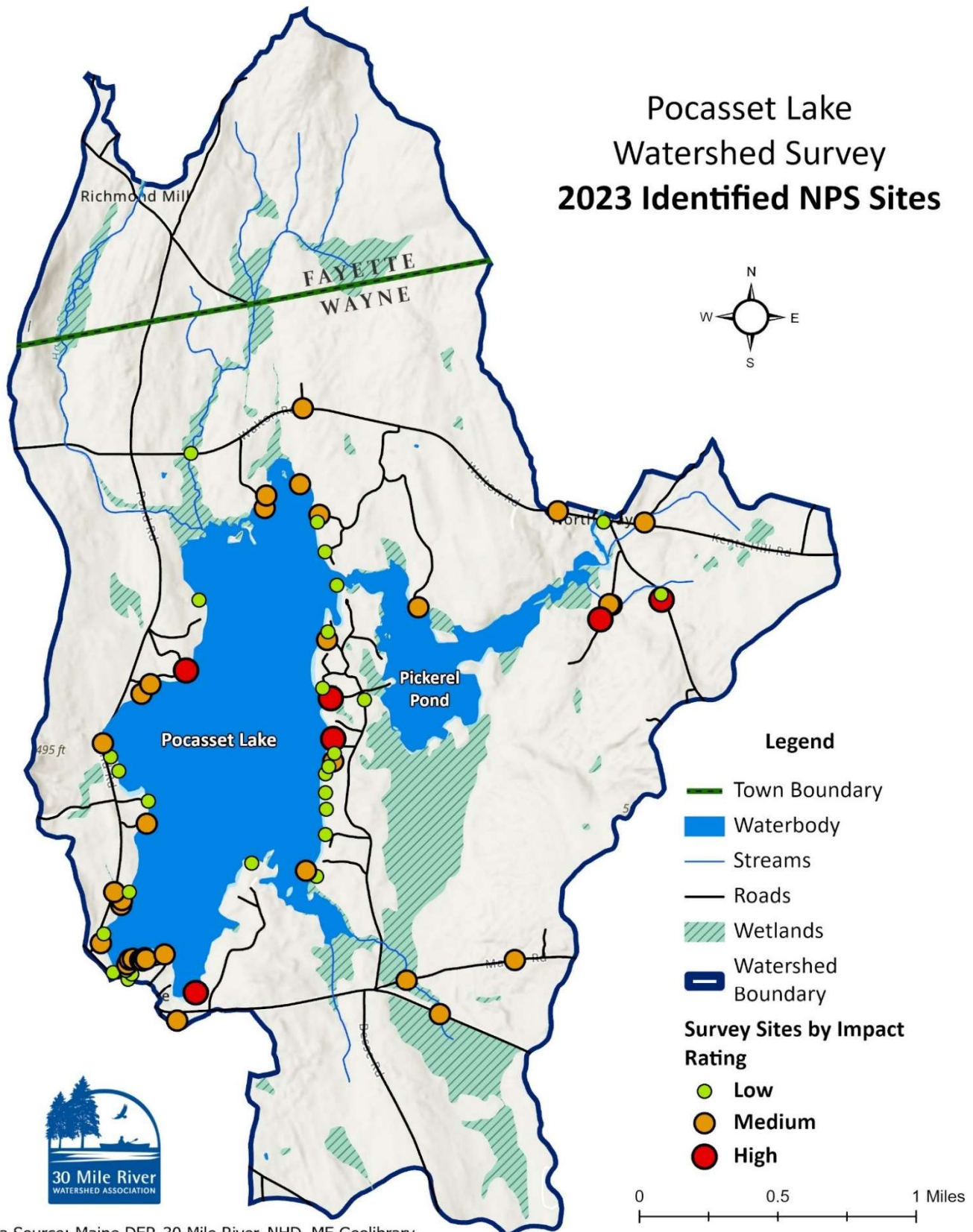
Site #	Flow into lake via	Land use/Activity	PROBLEMS	RECOMMENDED FIX	Impact Rating	Cost to Fix
6-10	Directly into lake	Residential	Surface erosion (sheet) and bare soil	Add to and expand vegetated shoreline buffer around dock and launch area, in particularly on the bank slopes on either side of launch. Cover top part of boat launch with erosion control mulch/mix (ECM) and add clean crushed stone toward water. Runoff diversion and infiltration opportunities are needed along the property uphill to ultimately reduce the amount of runoff flowing toward the launch. Consider installing a water bar at top of boat launch slope and create a rain garden to accept runoff leaving waterbar diverter.	Low	Low: Less than \$500
6-11	Directly into lake	Residential	Surface erosion (sheet), bare soil, lack of shoreline vegetation	Add to shoreline buffer vegetation with new native plantings and erosion control mulch/mix (ECM), no raking – allow duff (fallen needles and leaves) and vegetation to accumulate. Establish and define footpaths and stabilize path surfaces with ECM or clean crushed stone.	Low	Low: Less than \$500
6-12	Directly into lake	Residential	Surface erosion (sheet), lack of shoreline vegetation	Install a dripline trench at rooflines, establish and add to shoreline buffer vegetation with new native plantings. No raking – allow duff (fallen needles and leaves) to accumulate and protect the soil/prevent erosion. Allow vegetation to grow and naturalize the shoreline.	Low	Low: Less than \$500
6-13	Directly into lake	Town Road	Surface erosion, road shoulder erosion, bare soil, lack of shoreline vegetation, inadequate shoreline vegetation, shoreline erosion, unstable access to shoreline	Vegetate shoulder, define foot path, establish and add to buffer, add crushed stone or hard packing gravel to parking area and improve buffer vegetation and add to duff by placing ECM. Launch access could be improved to help direct flow into vegetation a	Medium	Medium: \$500-\$2,500

## Appendix B: 2023 Watershed Survey Maps





# Pocasset Lake Watershed Survey 2023 Identified NPS Sites



Data Source: Maine DEP, 30 Mile River, NHD, ME Geolibrary  
 Projection: NAD 1983 UTM Zone 19  
 Map created by: Silas Mohlar, 30 Mile River Watershed Association  
 November 2023

Esri, NASA, NGA, USGS, FEMA, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA







## 2023 Pocasset Lake Watershed Survey Site Maps: Land Use Category & Impact

### Legend

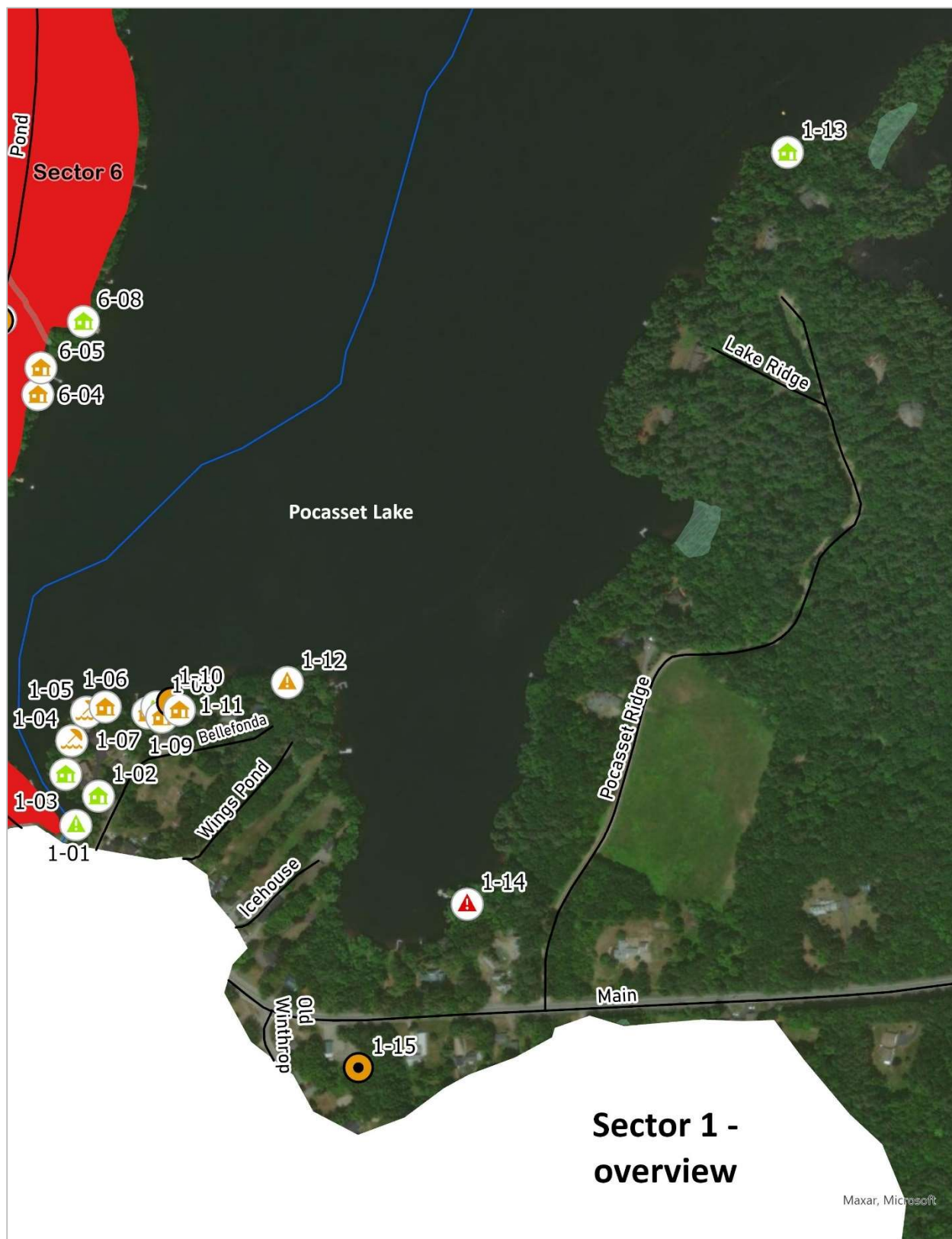
#### Land Use Type

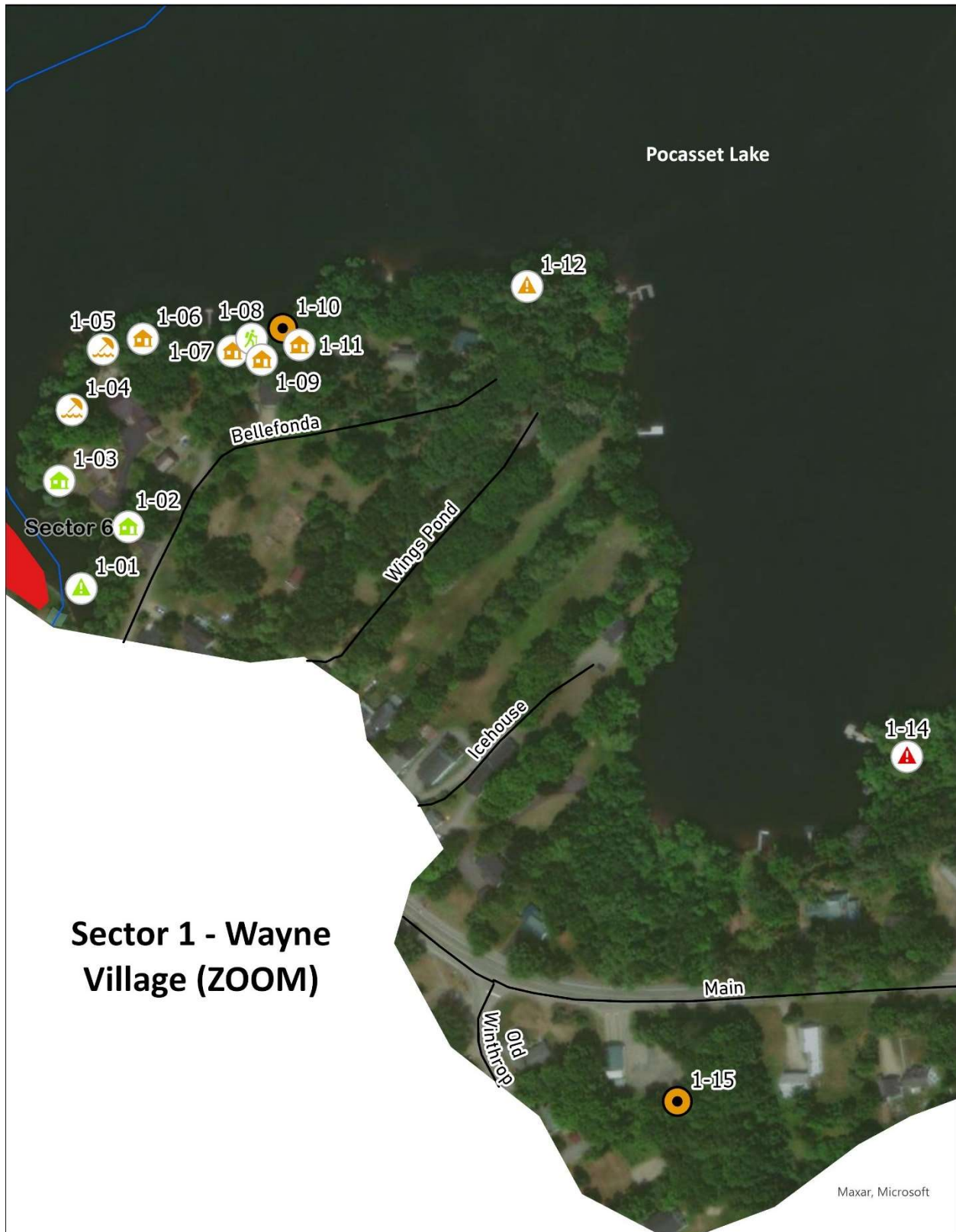
-  Beach Access, Medium
-  Boat Access, Low
-  Road or Driveway, High
-  Road or Driveway, Medium
-  Road or Driveway, Low
-  Municipal / Public, Medium
-  Trail or Path, High
-  Trail or Path, Low
-  Residential, High
-  Residential, Medium
-  Residential, Low
-  Other, Medium
-  Other, Low

-  Roads
-  Town Boundary
-  Streams
-  Wetlands

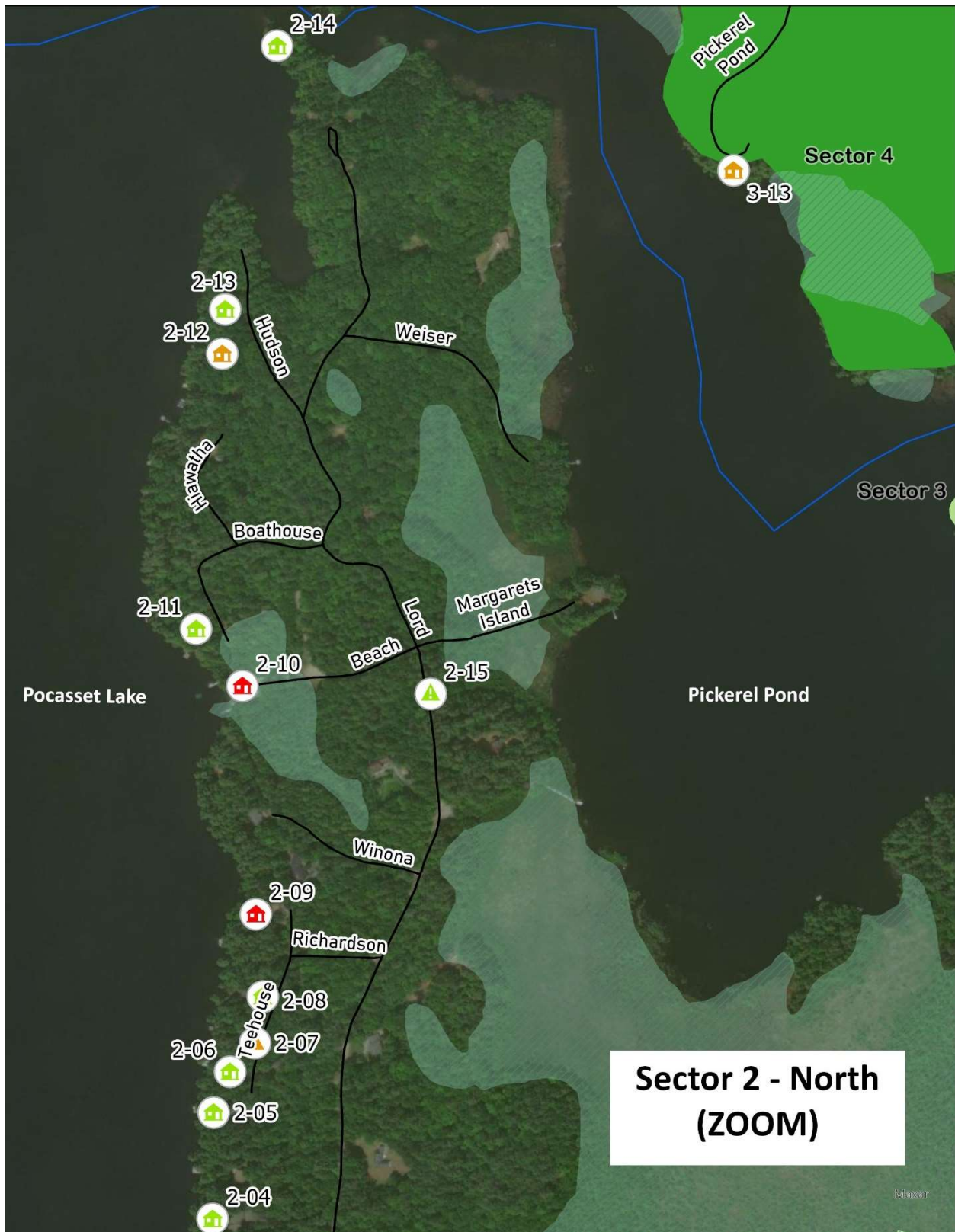


Data: Maine DEP, 30 Mile, Maine GeoLibrary  
Projection: NAD 1983 UTM Zone 19N  
Maps created by: Silas Mohlar, 30 Mile River  
Watershed Association, December 2023

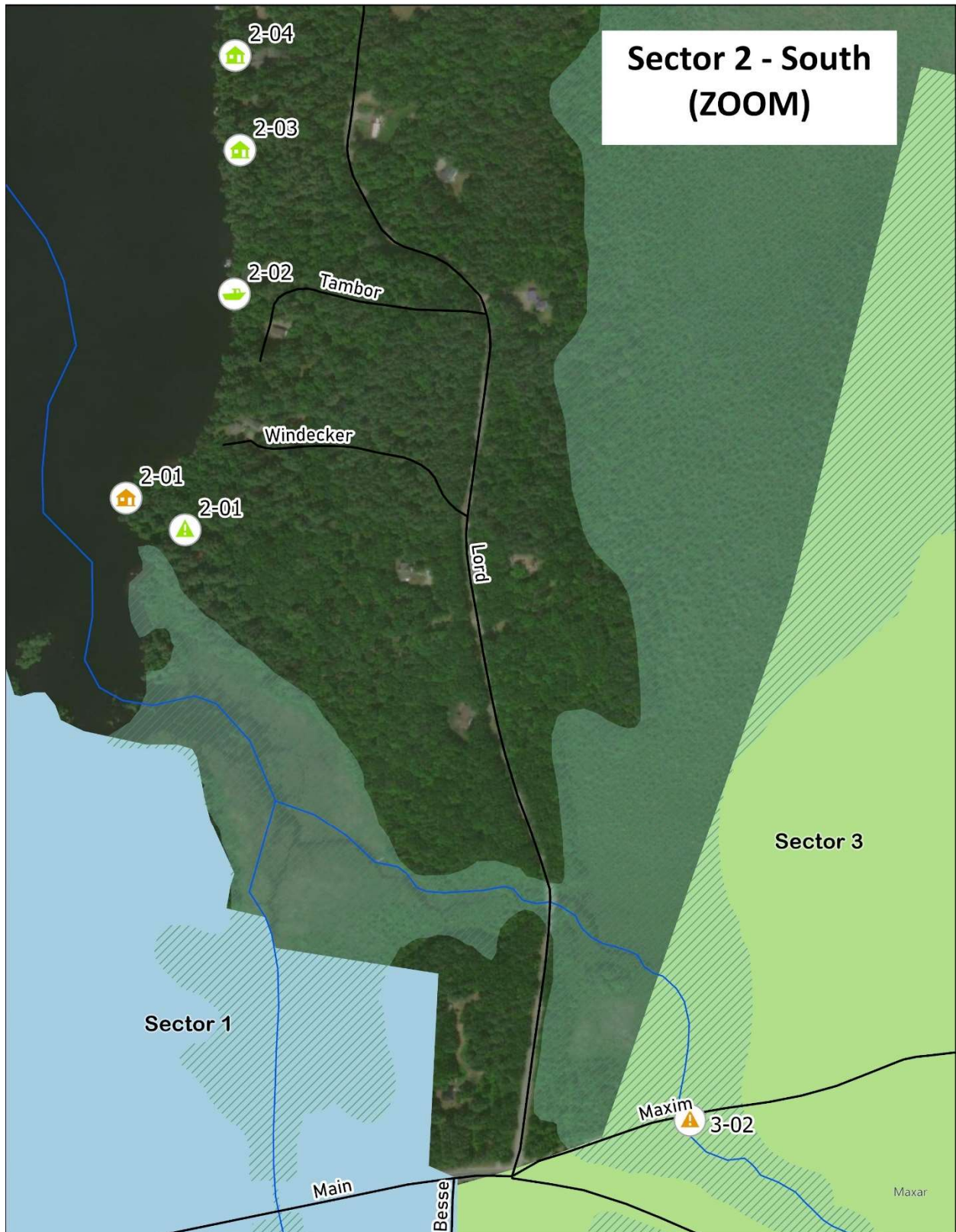




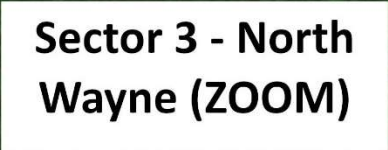


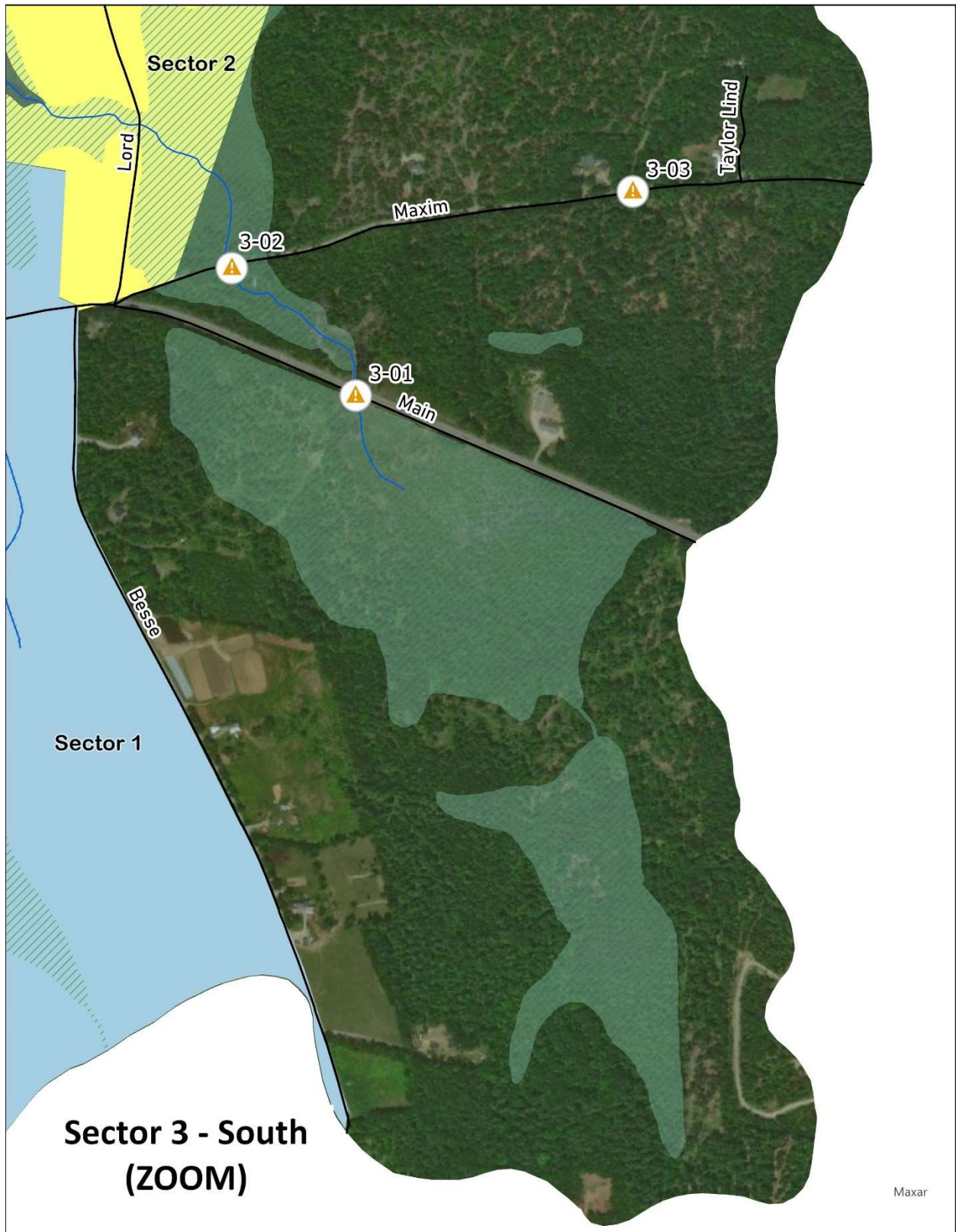




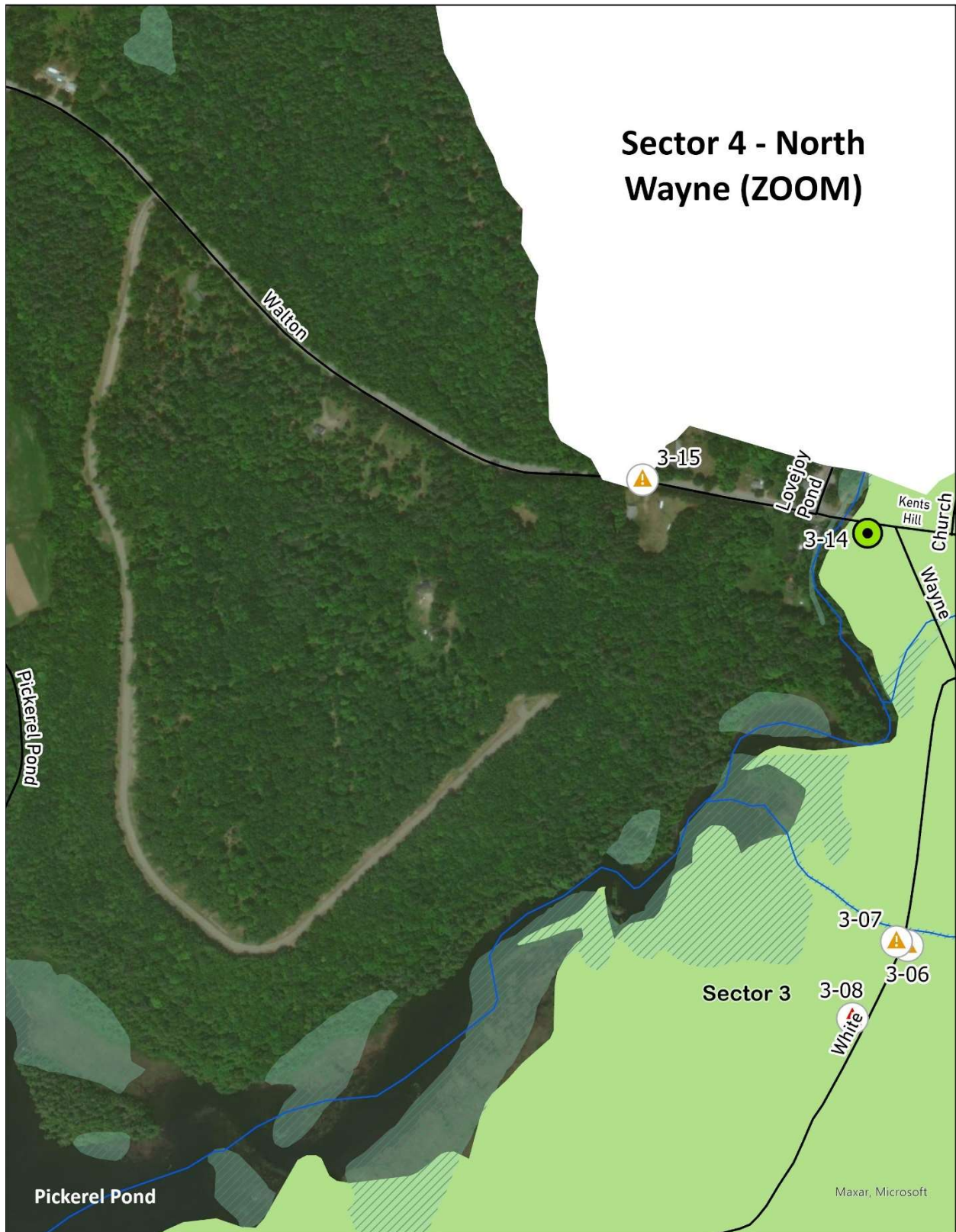


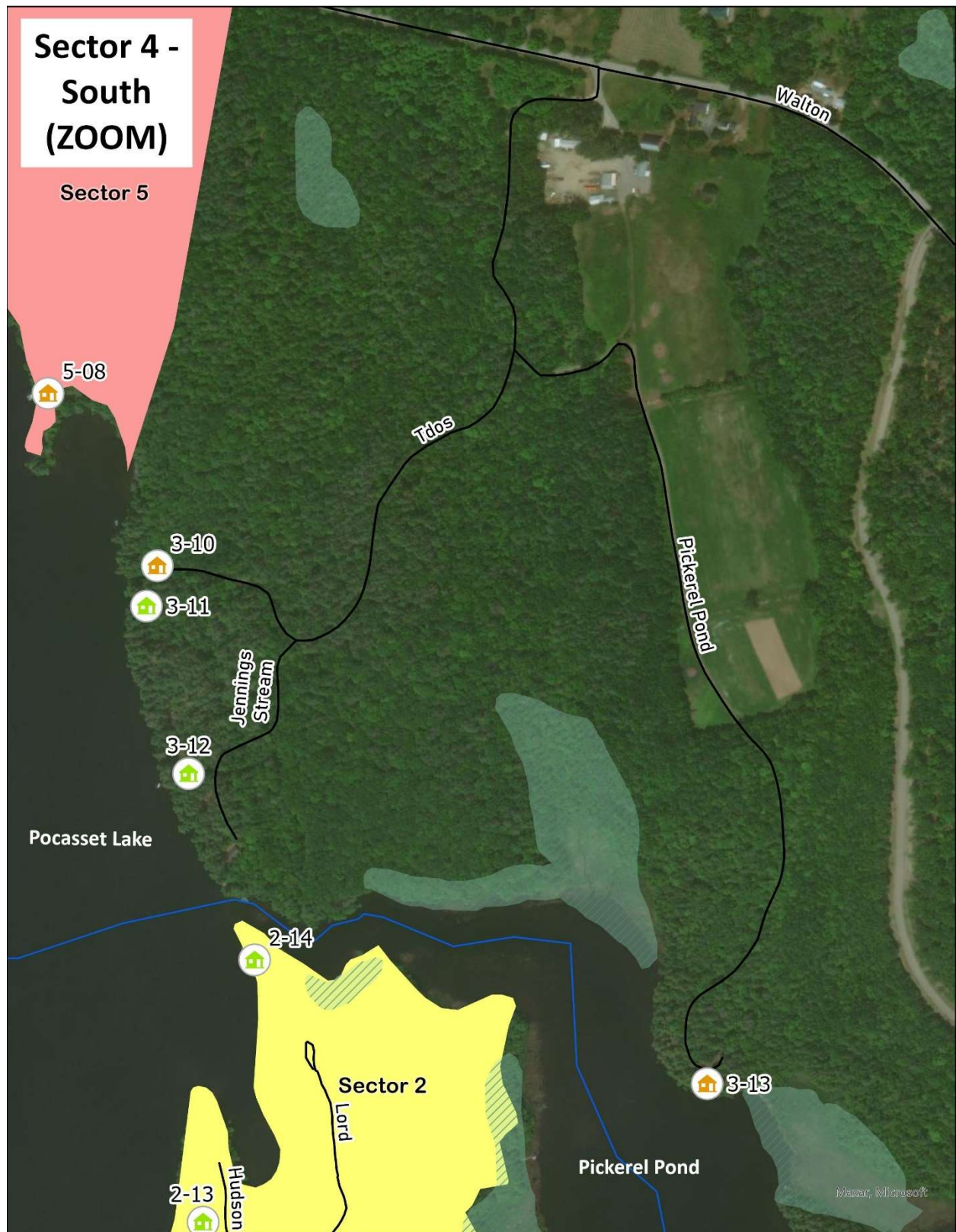














## Sector 5 - Southeast (ZOOM)



