

ANDROSCOGGIN LAKE WATERSHED SURVEY 2022



Acknowledgments

Project Partners

This project was led by 30 Mile River Watershed Association (30 Mile) with support from Androscoggin Lake Improvement Corporation (ALIC), The towns of Wayne and Leeds, Androscoggin Valley Soil & Water Conservation District (AVSWCD), and the Maine Department of Environmental Protection (Maine DEP).

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Introduction

Androscoggin Lake and its Watershed

Androscoggin Lake is a threatened¹ lake located in the towns of Wayne and Leeds, 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.

Androscoggin Lake is the terminal lake in the 30 Mile River chain. Its upstream watershed is roughly 60 square miles and includes the watersheds of Pocasset Lake, Lovejoy Pond, Echo Lake, Minnehonk Lake, Flying Pond, Parker Pond, David Pond, and many other small ponds, streams, and wetlands that eventually flow to Mill Stream, Androscoggin's largest inlet located at the southern end of Pocasset Lake in Wayne. The lake's direct watershed covers 23 square miles in the towns of Wayne, Leeds, Monmouth and Fayette, and includes the smaller drainages of several intermittent and perennial streams that drain directly to the lake. (Figure 1, next page).

Androscoggin Lake is a relatively shallow lake with a maximum depth of 12m (38 ft) and an average depth of just 4m (14 ft). Though shallow, the lake has a very large surface area of nearly 4,000 acres and for this reason is a destination for boaters both locally and from afar. The lake is utilized heavily for recreation, including boating, fishing, swimming, birding, and hunting (Dead River). Many sandy beaches line the lake's shoreline, making this lake a popular swimming destination for many in the summer months.

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.

¹ Androscoggin Lake appears on Maine DEP's list of "Threatened Lakes" on the NPS Priority Watersheds List due to its sediment chemistry. Sediment results suggest that the lake is more vulnerable to internal phosphorus loading, a phenomenon that can occur when deep waters become anoxic (DO loss <2 ppm) resulting in phosphorus release from the bottom sediments exposed to anoxic waters.

Under typical flow conditions, the lake drains to a single outlet, the Dead River, which flows west for seven miles to the Androscoggin River. However, due to the relatively flat gradient between the lake surface and the Androscoggin River at normal water level (stage), a rise in stage in the Androscoggin River from precipitation and/or spring thaw results in flow reversal (or back flushing) of water from the Androscoggin River into Androscoggin Lake via the Dead River. In other words, when flood waters rise in the Androscoggin River, the Dead River reverses its flow, and Androscoggin Lake acts as a flood storage reservoir for the Androscoggin River.

Due to this phenomenon of flow reversal, the Dead River Dam (aka Dead River Pollution Control Facility) was built in the 1930s to limit the flow of severely polluted

river water into the lake, which in the past occurred several times per year on average, and most recently in October 2022. The Androscoggin River Watershed above the Dead River includes more than 2,500 square miles and 11 licensed wastewater discharges (8 municipal, 3 industrial). Androscoggin Lake is the only lake in the state that receives floodwaters from a Class C river² through a natural flow reversal phenomenon (Maine DEP, 2004).

Androscoggin Lake is a valuable resource for the general public, many of whom use it for fishing, swimming, camping, canoeing, kayaking, cross-country skiing, snowmobiling, and ice fishing.



The Dead River pollution control facility in October 2021 (top) and flow reversal in October 2022 after heavy rains caused the Androscoggin River to rise ~16 feet (bottom).

² The State of Maine has four classes for freshwater rivers: AA, A, B, and C. Class AA is the highest classification and Class C the lowest. A higher classification means greater protections from pollution. For example, upgrading a Class C river to a Class B river means that licensed dischargers are more strictly regulated to protect a broader range of uses and a higher quality of habitat.

There are three public boat launches on Androscoggin: A state-owned launch on Main Street (Route 133), a town-owned launch on Stinchfield Beach Road in Leeds (Leeds residents only), and the town-owned launch at the Androscoggin Yacht Club in Wayne Village. Private access is also provided at three campgrounds (Jellystone Campground, Androscoggin Lake Campground (beach access only), and Riverbend Campground (via Dead River)), and at two private summer camps (Camp Tekakwitha and Camp Androscoggin). Kennebec Land Trust manages property on Norris Island that includes a swimming beach, two tent sites, and a cabin site open for public use. Winter anglers can access the lake from most anywhere on its 27 miles of shoreline. Several bass fishing tournaments occur annually on Androscoggin Lake, bringing anglers from across the state to the public and private launches around the lake.

Androscoggin Lake supports a warm water fishery and provides important habitat for black bass and chain pickerel, which the lake is particularly well-known for producing in large size. A landlocked alewife population was established in the lake in the 1980s that provides excellent forage for gamefish.

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.

In an undeveloped, forested watershed, stormwater runoff is slowed and filtered by tree and shrub roots, grasses, leaves, and other natural debris on the forest floor. It then soaks into the uneven forest floor and filters through the soil. In a developed watershed, however, stormwater does not always receive the 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 through tributary streams.

Why is Polluted Stormwater Runoff a Problem?

The problem is not necessarily the water itself; it is the sediment and nutrients 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.

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.

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.

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 these 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, shoreline 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 a lake's water quality has declined, it can be difficult, costly, or even impossible to restore.

Androscoggin Lake Water Quality

Water quality data has been collected from Androscoggin Lake since the 1970s. The parameter most collected is Secchi Disk Transparency (SDT). SDT is an indicator of water clarity. Historically, SDT data was collected on Androscoggin during 47 of the past 52 years, and readings have ranged from 1.1 m (1999) to 7.3 m (1972).

Androscoggin Lake has a history of reduced water clarity readings during summer months. Looking at the distribution of data collected since 1970, near-bloom conditions (SDT 2-3 meters deep) were documented during 16 years with lake-wide bloom conditions (SDT <2 meters) documented just three years in 1991, 1999, and 2021 (Figure 2). Maine DEP defines a “lake-wide algal bloom” as Secchi Disk Transparency less than 2 meters (~6 ft) deep at Station #1 (the deepest point in the lake).



ALIC Volunteer monitor, Patt Koscinski, collects clarity data using a Secchi disk and scope in September, 2021.

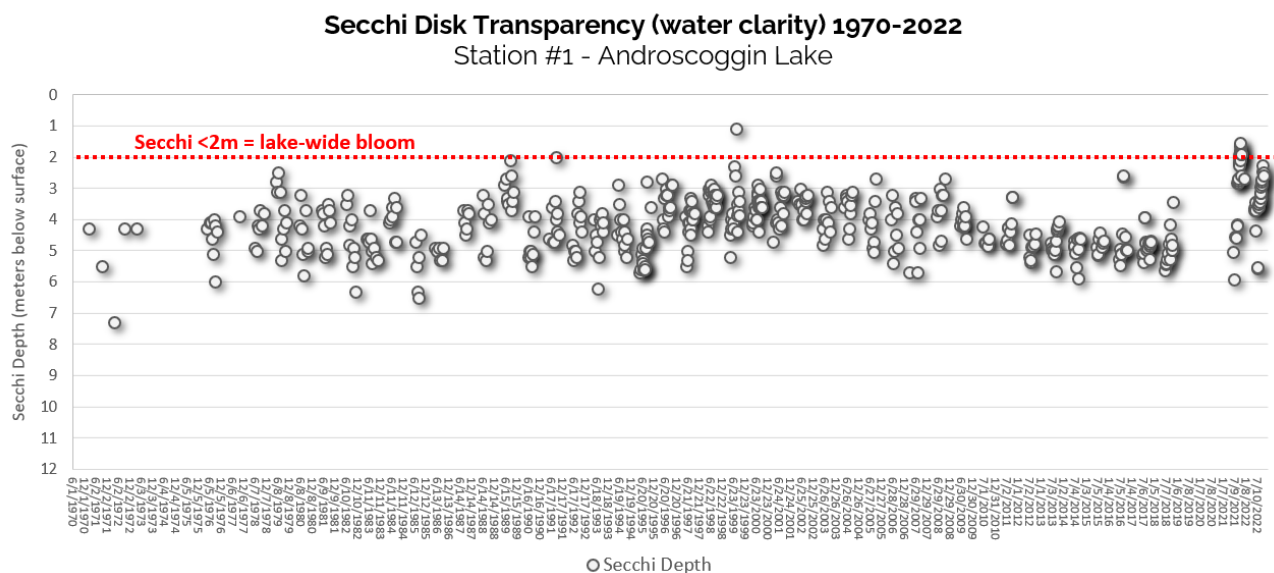


Figure 2. Secchi Disk Transparency (Water Clarity) in Androscoggin Lake, Station 1, 1970-2022

In 2021, Androscoggin Lake suffered a severe algae bloom; starting in late August, officially reaching lake-wide bloom status in late September, and remained below or just above 2 meters at Station #1 through October and November. In 2022, bloom conditions were less severe with water clarity readings decreasing through the monitoring season to between 2 and 3 meters for all September and October 2022.



Shoreline scum formation at the public boat launch on Route 133 in Wayne – October 13, 2021.

The blooms in 2021 and 2022 were composed of cyanobacteria, a type of algae formerly called blue-green algae because dense blooms will turn the water green or blue-green. Cyanobacteria are a natural and important part of the lake ecosystem, and are found in lakes all over the world. However, when phosphorus concentrations increase and conditions are just right, their population can explode. The result is what we call a “cyanobacteria bloom” or “algal bloom.”

The species in this bloom has the ability to produce toxins, but we do not have toxin results at the time of this report. Of all the toxin samples Maine DEP has collected from Maine lakes over the past decade, there were only a few open water samples that exceeded EPA’s Drinking Water standard for the algal toxin microcystin for infants and non-school-age children. None of the samples exceeded the standard for school-age children or adults. No open water samples have exceeded EPA’s Recreational Standard – even when collected from lakes with blooms that are chronic and severe.

However, Maine DEP has detected very high concentrations of the algal toxin microcystin on other lakes in downwind algal scums that can accumulate along shorelines. This is why we advise everyone to stay away from any concentrated scums or accumulations near shorelines or in downwind coves. Do not inadvertently drink the water in these areas, and do not let small children, pets, or livestock play in these areas or drink from the lake. Shower after swimming, and do not use lake water for household uses like cooking or drinking. Out of an abundance of caution: When in Doubt - Stay Out!

Tracking in-lake phosphorus levels over time is another way of monitoring change in lake water quality trends. Phosphorus data have been collected from Androscoggin Lake since 1976. Generally speaking, in-lake phosphorus concentrations (epilimnetic core samples) less than 10-12 ppb (parts per billion) are ideal. Lakes with in-lake phosphorus concentrations of 13 ppb or more are known to sustain algal blooms, and blooms become frequent as average concentrations approach 20 ppb.

Historically, annual average in-lake phosphorus concentration in Androscoggin Lake ranged from 9 ppb (1978 and 2013) to 22 ppb (2003) with an average historical average of 14 ppb (Figure 3).

Laboratory results for phosphorus samples collected in 2021 ranged from 11 ppb to 20 ppb with an average of 16 ppb.

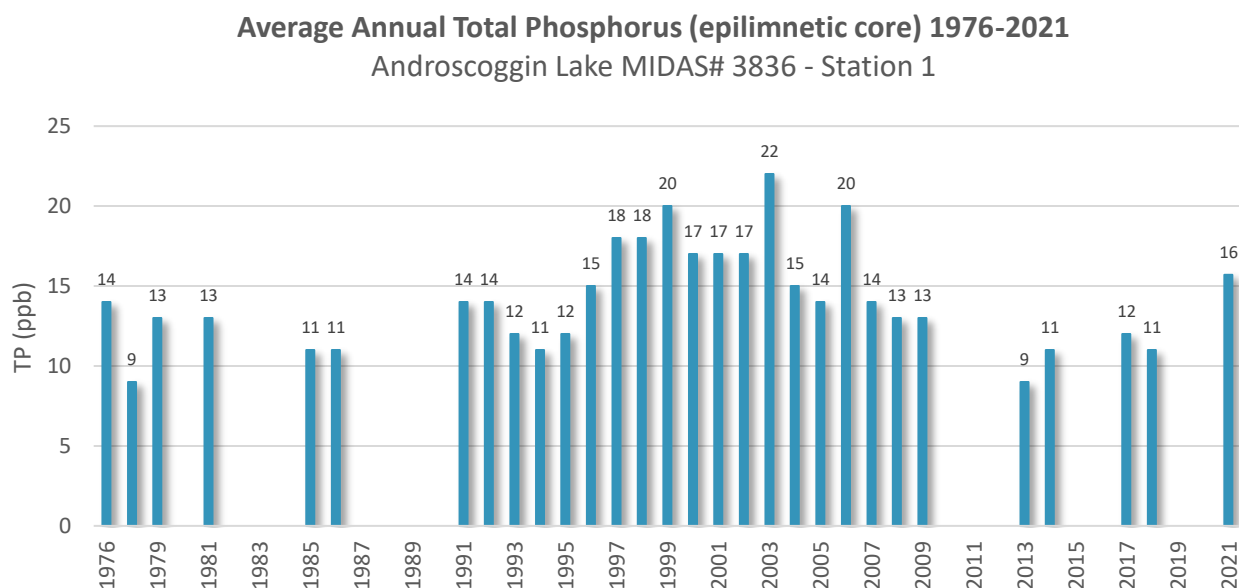


Figure 3. Average Annual Total Phosphorus (TP) Androscoggin Lake, 1976-2021

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.**

2022 Watershed Survey Purpose & Methods

In May 2022, 30 Mile River Watershed Association (30 Mile), with the support of its partners and local volunteers, conducted a survey of the Androscoggin 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 recommending solutions to correct the problems identified.

Trained volunteers and technical leaders surveyed the developed areas of the Androscoggin Lake Watershed, identifying **142** erosion sites that are impacting or have the potential to impact water quality. This report provides the survey results and prioritizes next steps. It was designed specifically for landowners living in the Androscoggin Lake watershed, and includes the towns of Wayne, Leeds, and Monmouth.

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 Androscoggin 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 2021, and was coordinated by 30 Mile with tremendous support from ALIC and a watershed steering committee composed of representatives from various partner organizations, watershed towns, and state agencies.

In April 2022, 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 850 landowner notifications sent, 18 properties (2%) were excluded from the survey.

On May 11, 2022, 15 volunteers and five technical leaders gathered to participate in a training session on survey techniques. Following the classroom training, the volunteers and technical staff were broken into nine teams, and spent the following two days (May 12 & 13) traveling on foot and by car, documenting potential erosion problems in their assigned sectors (Figure 5). All developed areas of the entire watershed were surveyed, other than properties that opted out. The teams collected data using standardized forms. Additional survey work occurred on May 16 and July 15, 2022. 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, teams also recommended solutions 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 by the watershed steering committee. This report includes the survey findings, remediation priorities, site maps, next steps, and a complete list of identified erosion sites.



Androscoggin Lake watershed survey volunteers on May 12, 2022 kicking off the first day of field surveys.

Survey Sectors

| | |
|----------|--|
| Sector 1 | SE Wayne Village east of Mill Pond Dam. Includes Old Winthrop Road, Gott Road, Davis Point, Cedar Point to Osprey Lane in Wayne. |
| Sector 2 | Dole's Beach Road and The Blvd, Lincoln Point Road and arterials: Poulin Road, Harwood Lane, Brooks Boulevard, and Holman Terrace in Wayne. |
| Sector 3 | Town Farm Road, Perkins Beach Road, Moose Run Road, and Norris Road in Wayne. |
| Sector 4 | Wilson Pond Road (Monmouth), Campground Road and Jellystone Campground property (Wayne/Leeds), and Bog Road (Monmouth). |
| Sector 5 | SW side of Dead River and Lake. Includes Camp Tekakwitha, Angel Cove Drive, Bishop Hill Road, Bernie Hartford Road, Routes 106 and 219 W of Dead River, Ridge Road, and North Road in Leeds. |
| Sector 6 | NE side of Dead River. Includes Routes 106 and 219 NE of Dead River, Riverbend Campground, Barker Road, and Rolling Knoll Drive in Leeds. |
| Sector 7 | Lakeshore Drive and Stinchfield Beach Road (and arterials) in Leeds. |
| Sector 8 | Route 219 NE of Lakeshore Drive, Coolidge Road, Leadbetter Road, Westacres & Woods Roads, Camp Androscoggin, and Strickland Ferry Road in Wayne. |
| Sector 9 | Memorial Park, Lake Street, Androscoggin Yacht Club, Main Street, Kings Hwy, Berry Road, and Mullen Road/ Bear Brook Lane in Wayne. |

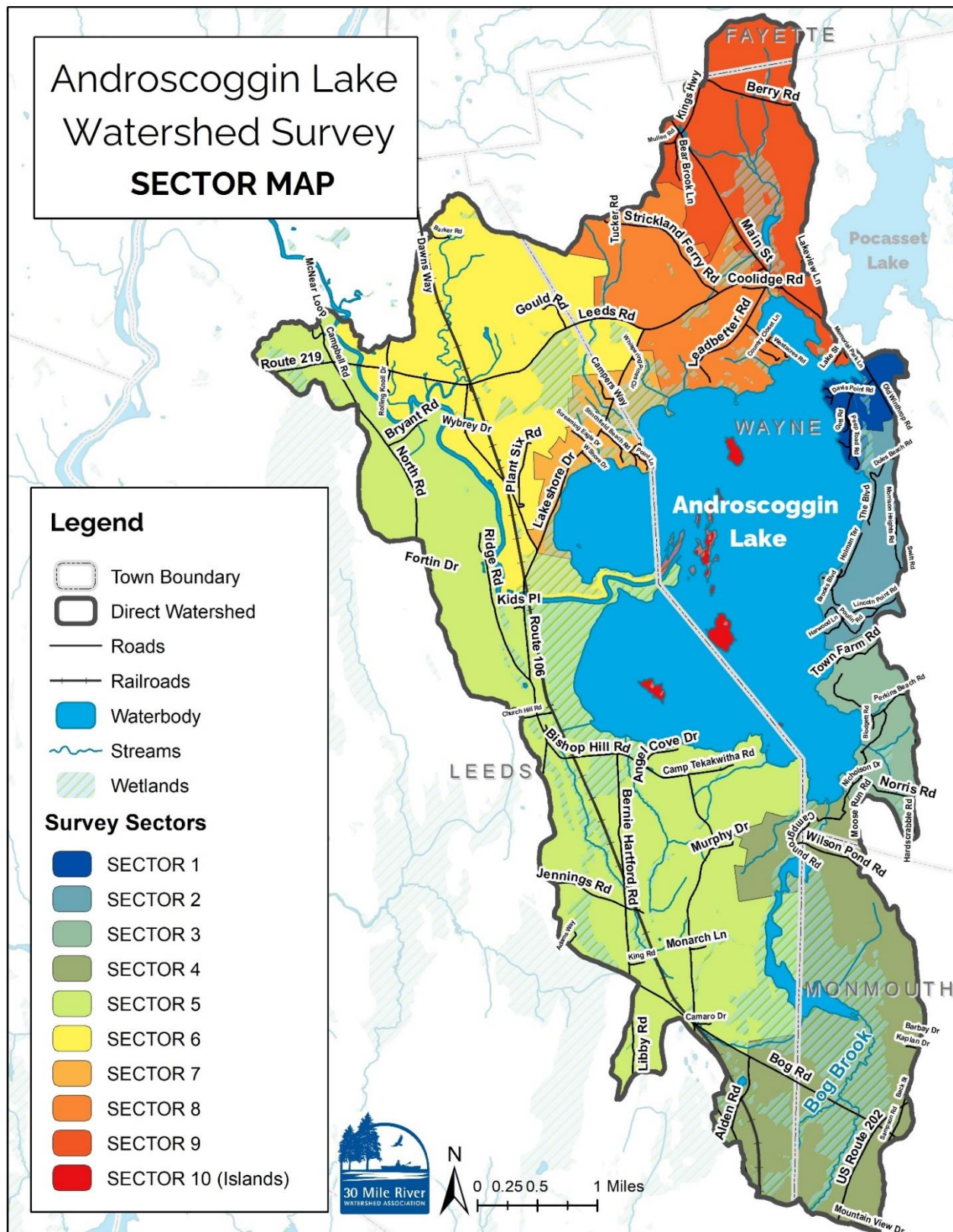


Figure 5. Watershed "sectors" created for the 2022 watershed survey of Androscoggin Lake

Watershed Survey Findings

Overall, 142 sites were identified during the survey as current or potential sources of pollution to Androscoggin Lake (Table 1 and Figure 6). Seventy-nine (79) sites, or 56% of all sites identified, were located in the Town of Wayne. Sixty (60) sites (43%) were located in the Town of Leeds, and three (3) sites (2%) were identified within the Town of Monmouth.

Residential areas (not including driveways) constituted the largest category of identified erosion sites (28% of all sites). Private roads constituted the second largest category of erosion sites (20%), with town roads third (15%). The results of the survey and summary of the data are discussed here. A complete listing of all sites can be found in the table in Appendix A.

Key Findings:

- ✓ Sixteen (16) or approximately 11% of all sites identified were rated as **high impact** to water quality. High impact sites were associated mainly with private and town roads.
- ✓ Seventy-nine (79) sites, or 56% of all identified sites, were rated as **medium impact** and were most commonly associated with private and town roads, residential properties, commercial properties, and beach access land use categories.
- ✓ High and medium impact sites together account for more than 2/3 of all sites. These sites typically contribute higher amounts of pollution to the pond and should be of highest priority for remedial action. High and medium impact sites were documented on a wide range of land use types – highlighting the fact that EVERYONE has a role to play in lake protection.
- ✓ 33% of all identified sites were classified as **low impact** to water quality (47 sites). More than 40% of all low impact sites were found on residential properties (19 low-impact residential sites). 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, or through 30 Mile's Youth Conservation Corps Program.
- ✓ Forty (40) sites, or nearly 30% of all survey sites, were documented on **residential properties**. Of the 40 residential sites, 1 site was rated high impact, 20 sites were rated as medium impact, and another 19 sites were determined to be low impact to water quality.








- ✓ Sites associated with **roads and driveways** made up 42% of all sites (59 sites total) and had varying impact ratings: ten (10) high, 28 medium, and 21 low impact sites. 29 sites were documented on private roads, 22 sites on town roads, seven (7) problems were found on state roads, and one (1) driveway erosion site was documented for a total of 59 sites.
- ✓ **Commercial properties** make up the fourth largest land use category of erosion problems found, accounting for 13% of all sites (19 sites total). Erosion documented on commercial properties was largely rated as having a medium impact to water quality (15 sites). Two commercial sites were rated as high-impact, and another two sites were rated low-impact.

Table 1. NPS site summary - 2022 Androscoggin Lake Watershed Survey

| LAND USE | IMPACT RATING | | | TOTAL |
|------------------|---------------|-----------|-----------|------------|
| | High | Med | Low | |
| Agriculture | 0 | 2 | 0 | 2 |
| Beach Access | 1 | 9 | 2 | 12 |
| Boat Access | 1 | 6 | 1 | 8 |
| Commercial | 2 | 15 | 2 | 19 |
| Driveway | 1 | 0 | 0 | 1 |
| Municipal/Public | 0 | 0 | 1 | 1 |
| Residential | 1 | 20 | 19 | 40 |
| Private Road | 6 | 10 | 13 | 29 |
| Town Road | 4 | 11 | 7 | 22 |
| State Road | 0 | 6 | 1 | 7 |
| Trail or Path | 0 | 0 | 1 | 1 |
| TOTAL | 16 | 79 | 47 | 142 |

Androscoggin Lake Watershed Survey 2022 Identified NPS Sites

Legend

-  Watershed Boundary
-  Roads
-  Railroads
-  Town Boundary
-  Waterbody
-  Streams
-  Wetlands

Survey Sites by Impact Rating

-  Low
-  Medium
-  High



Data Source: Maine DEP, 30 Mile River,
NHID, Maine GeoLibrary
Projection: NAD 1983 UTM Zone 19N
Map created by: Whitney Baker,
30 Mile River Watershed Association
October 2022
Service Layer Credits:

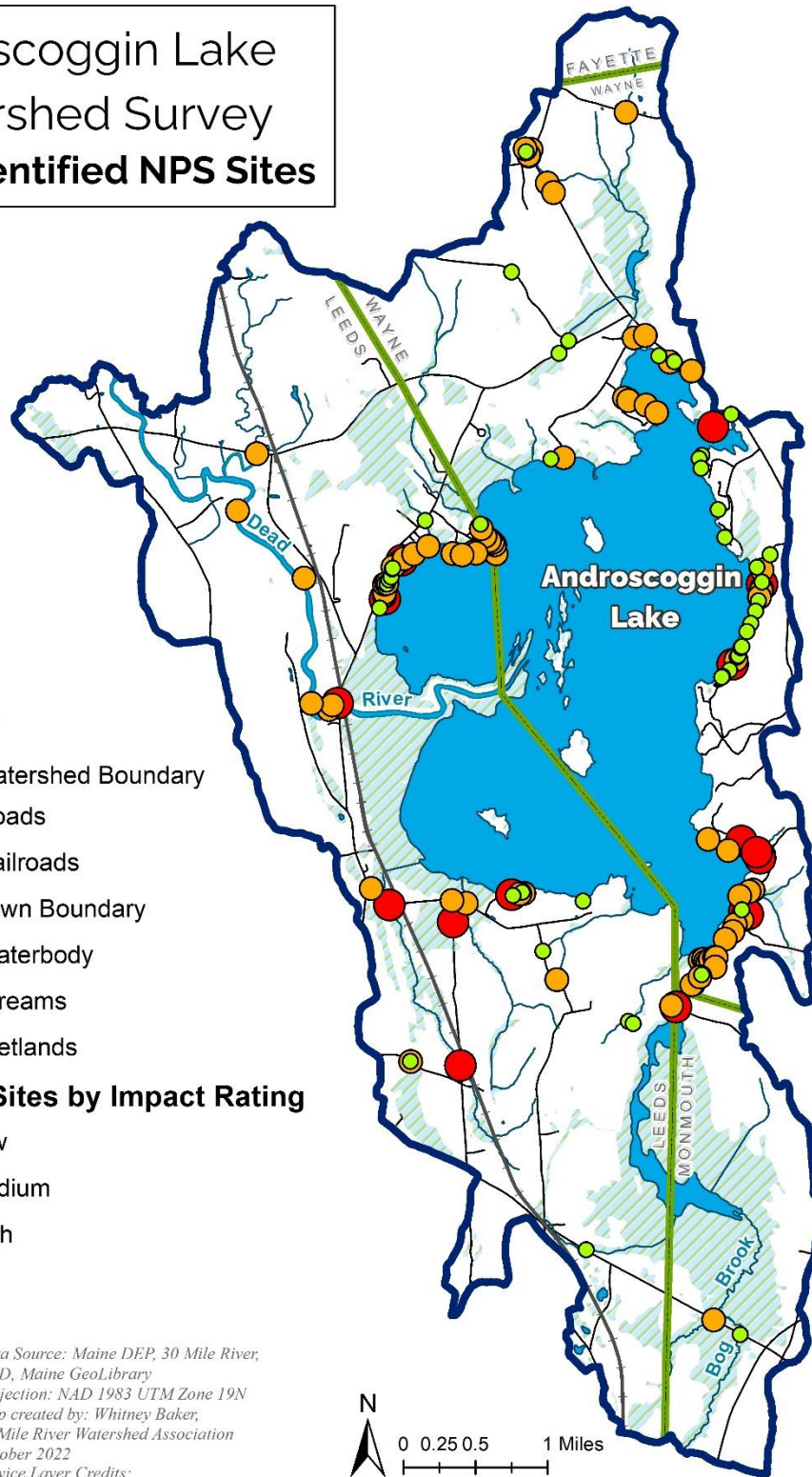
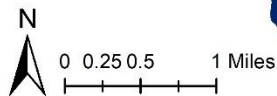


Figure 6. Map of sites identified during the 2022 Androscoggin Lake watershed survey

Land Use Breakdown

Forty (40), or 28% of all sites identified during the survey were associated with **residential land uses**. The majority of these sites were rated medium impact (20 sites) and low impact (19 sites) to water quality. Only one (1) site was rated high impact. At least 30 of the residential sites documented, which includes many of the low and medium impact sites, were determined to be suitable for remediation by 30 Mile's Youth Conservation Corps (YCC). **Private roads** accounted for 20% of all sites identified

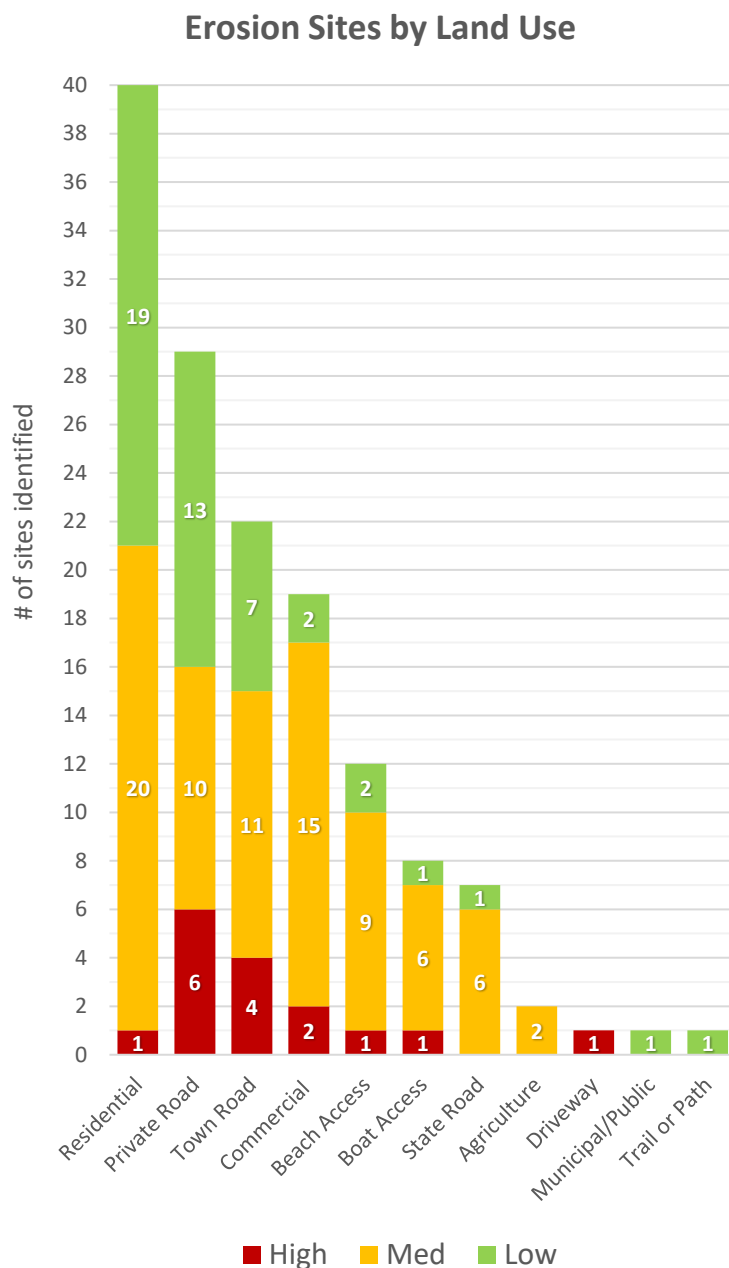


Figure 7. identified sites by land use category and impact level

(29 sites), and **town roads** (both paved and dirt) accounted for 15% of all sites identified during the survey (22 sites). 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.

Beach and boat access points account for another 15% of documented erosion problems, with 12 and eight (8) sites, respectively. **Commercial properties** represent 13% of identified sites (19 sites). The remaining 12 sites, or approximately 9% of all identified sites, represent five (5) other land uses, including state roads (7 sites), agriculture (2 sites), driveways (1 site), municipal/public (1 site), and trail/path (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.

Forty-seven (47), or roughly a third of all sites (33%) were identified as being low impact. However, seventy-nine (79) sites, more than half of all identified sites (56%), were identified as medium impact. Another fifteen (16) sites (11%) were rated as having a high impact on water quality, and the cumulative effect of all of these sites is quite significant.

2022 Androscoggin Watershed Survey Sites
Impact Rating

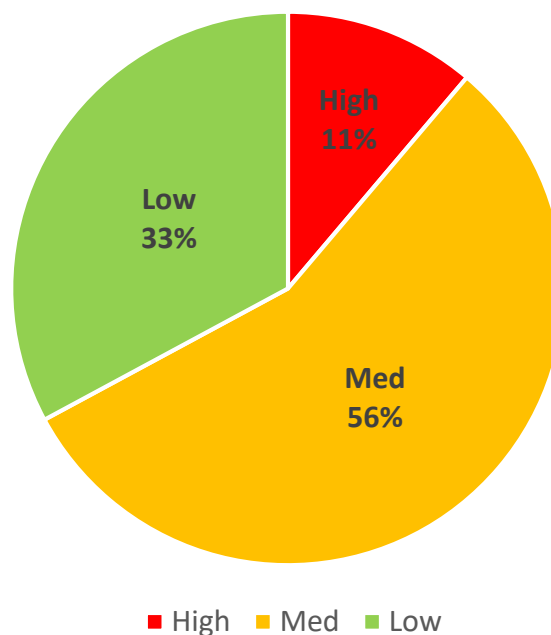


Figure 8. Impact ratings of identified erosion sites

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 20%, can be fixed at low cost (under \$500). Seventy-seven (77) sites, or just over half of all sites (54%) can be fixed at medium cost (\$500-\$2,500), and another thirty-seven (37) sites, or 26%, require high cost fixes (over \$2,500) (Figure 9).

**2022 Androscoggin Watershed Survey Sites
Cost to Fix**

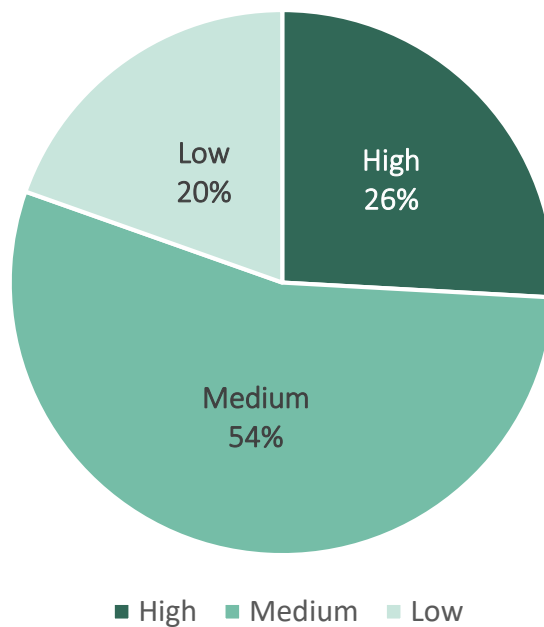


Figure 9. Cost to fix identified erosion sites

Top Land Use Categories:

Road Sites (59)

NPS sites found on private, town, and state roads (including driveways) account for 42% of all sites identified during the 2022 survey. 11 of the total 16 high-impact sites identified during the survey were associated with roads and driveways.

- Twenty-nine (29) sites were identified on **private roads** – nearly half of all documented road sites. Private road sites are concentrated on the eastern shoreline where gravel camp roads travel along steep hillsides located between Morrison Heights and Hardscrabble Roads and the lake. Six (6) private road sites were rated high impact.
- Twenty-two (22) sites were identified on **town roads** in the towns of Leeds (13 sites), Wayne (5 sites), and Monmouth (4 sites). Four of the 22 sites documented on town roads are considered high impact to water quality.
- Seven (7) sites were identified on **state roads** – one (1) site on Route 219/Leeds Road, and six (6) sites on Route 133/Main Street. One (1) state road site was rated medium impact, and the remaining six (6) were rated as low impact to water quality.
- One (1) high-impact driveway site was documented on Lakeshore Drive.

Common Problems Identified:

- ✓ Unstable culvert inlet/outlet
- ✓ Crushed, broken, undersized culvert
- ✓ Improper gravel surface materials
- ✓ Winter sand build-up in ditch or stream
- ✓ Road surface/shoulder/ditch erosion
- ✓ Improper road shape/poor drainage
- ✓ Road ditch empties to stream or 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 to manage road runoff.
- ✓ Install ditch turnouts or check dams
- ✓ Install plunge pool/basins to settle out sediment in road runoff.



Ditch, culvert, and road surface erosion identified on a private gravel road that drains to Androscoggin Lake.

Runoff from paved and gravel road surfaces is one of the biggest sources of pollution in Maine ponds and lakes. 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 drains directly to the lake.

Residential Sites (40)

Residential areas (not including driveways) were associated with approximately 28% of all sites identified during the 2022 watershed survey. Only one (1) residential site was estimated to have a high impact on water quality. Twenty (20) residential sites were identified as having a medium impact, and nineteen (19) 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.



Surface erosion on a pathway leading to Androscoggin Lake.

Common Problems Identified:

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

Recommended Solutions:

- ✓ Define and stabilize footpaths
- ✓ Rain garden
- ✓ Establish buffer vegetation
- ✓ Revegetate bare areas with exposed soils
- ✓ Erosion Control Mulch (ECM)
- ✓ Install runoff diverters or water bars

Eighteen (18) residential erosion sites identified were estimated to be fixed at low cost (\$500). The remaining twenty-two (22) sites can be fixed at medium cost (\$500-\$2,500). No residential sites were estimated to have high-cost fixes,

The greatest concentration of residential erosion sites were documented on the western shoreline in the Lakeshore Drive and Stinchfield Beach area in Leeds. However, residential sites were documented throughout the Androscoggin Lake shoreline.

Beach and Boat Access (20)

Beach and boat access points account for another 15% of documented erosion problems with 12 and eight (8) sites documented, respectively. This category of sites includes two (2) high-impact, 15 medium-impact, and three (3) low-impact sites located largely on residential shoreline properties around the lake.

Common Problems Identified:

- ✓ Surface erosion and bare soil
- ✓ Unstable or eroding shoreline
- ✓ Lack of shoreline vegetation
- ✓ Delivering runoff into lake from adjacent areas

Recommended Solutions:

- ✓ Define and narrow access opening
- ✓ Establish shoreline buffer vegetation
- ✓ Cover eroding surfaces with ECM or crushed stone
- ✓ Install runoff diverter across boat or beach access to prevent runoff from entering the lake.



Example beach/boat access site identified in Sector 3.

Beach and boat access areas can be both a source of erosion to the lake, and/or a vector for delivering polluted stormwater runoff from adjacent development, like roads or driveways, directly into the lake untreated. Openings through the shoreline buffer should be minimal in number, and narrow (less than 6 feet wide). Installing a runoff diverter (rubber razor or open-top culvert) across boat launch and access points can prevent runoff from flowing down these access points and into the lake.

Commercial Properties (19)

Nineteen (19) erosion sites were documented on commercial properties throughout the watershed and associated with campgrounds, a youth summer camp, a gas station, and a boating club. Two (2) commercial NPS sites were rated as high impact, 15 sites were documented as medium impact, and another two (2) sites were low impact to water quality.

Common Problems Identified:

- ✓ Surface erosion and bare soil
- ✓ Unstable or eroding shoreline access
- ✓ Lack of shoreline vegetation
- ✓ Poor/eroding surface materials on gravel roads

Recommended Solutions:

- ✓ Define and narrow lake access openings
- ✓ Establish shoreline buffer vegetation
- ✓ Cover eroding surfaces with ECM or crushed stone, or revegetate
- ✓ Resurface eroding road gravel and reshape to a crown
- ✓ Redirect runoff on road or pathways into stable vegetation.



Example commercial property site, JS-07, identified in Sector 4

Due to the beauty and large size of Androscoggin Lake, it is no surprise that there are several commercial properties located on its shoreline. However, commercial properties are often at greater risk of developing erosion and runoff issues because they have a much larger development footprint with higher amounts and densities of impervious surfaces like roads, driveways, roof tops, and decks.

Focus Areas:

The following have been selected as high-priority focus areas, and are detailed below as either individual sites with the most severe issues, or as a group of related sites that collectively have a significant impact to water quality (i.e. multiple sites on a single gravel road) and are listed by land use category and location in the watershed.

High-Priority Roads

Dole's Beach Rd. and the Boulevard, Wayne

Dole's Beach Road and the Boulevard are private gravel roads that service roughly 15 parcels on the northeastern shoreline of Androscoggin Lake. Dole's Beach Road travels down the steep hillside between Morison Heights Road and Androscoggin Lake. Erosion issues on Dole's Beach Road are associated by runoff on the road surface, shoulders, and ditches travelling downhill at high velocities. The Boulevard is more gently sloping. Erosion problems found here are associated with natural runoff from the steep hillside above washing over the road surface due to undersized ditches and cross culverts. The majority of the developed lots are seasonal use, and the road is not plowed or maintained through the winter months.

Site Number(s): 2-01 through 2-09 and 2-11 (10 sites total)

Road type: Gravel (private road)

Problems: Unmaintained ditches and undersized culverts resulting in stormwater runoff over-topping road – eroding road surface and shoulder before flowing into lake.

Recommendations: Clean out, improve, and stabilize ditches, replace undersized culverts and armor or vegetate inlet/outlet. Plunge pools at culvert outlets will capture sediment from ditch and road and prevent it from entering the lake. New/correct gravel surface material and crown needed.



Erosion sites identified on Dole's Beach Road / The Boulevard in Sector 2. Runoff over-topping the road (Site 2-06) and eroding a channel in the road surface, and overwhelmed ditch full of sediment that drains to Androscoggin Lake (Site 2-03), and an unstable culvert outlet (Site 2-09).

Holman Terrace, Wayne

Holman Terrace is a private gravel road servicing 11 shorefront lots on the eastern shoreline north of Lincoln Point. With the exception of the south end, much of the roadway is gently sloping. The majority of properties are seasonal and the road is not plowed in the winter. Many of the erosion problems found on Holman Terrace are related to unstable ditches, culvert inlets/outlets, and road shoulders.

Site Number(s): 2-12 through 2-15, 2-15b, 2-16, and 2-17 (7 sites total)

Road type: Gravel (private road)

Problems: Ditch bank failure erosion, undersized and clogged cross culvert, unstable culvert inlet/outlet, unstable road shoulders, and road surface erosion.

Recommendations: Improve ditch and stabilize bank slopes with rock and erosion control mulch, clean out or replace undersized/clogged culvert, and vegetate road shoulders to stabilize. Plunge pools at culvert outlets will capture sediment from the ditch and prevent it from entering the lake. New/correct gravel surface material and crown needed.



Private road sites 2-12, 2-14, and 2-15 documented on Holman Terrace in Sector 2.

Perkins Beach Road, Wayne

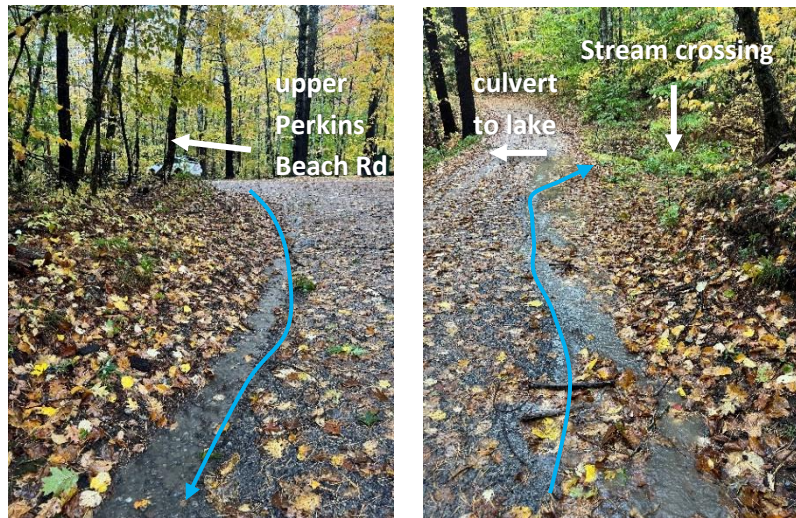
Perkins Beach Road is a private gravel road located on the south eastern shore of Androscoggin lake and services several waterfront properties on the lower portion of Perkins Beach Road and Blodgett Road in Wayne. The upper portion of Perkins Beach Road, between Hardscrabble Road and the intersection with Blodgett Road, gradually slopes toward Androscoggin Lake for 0.6 miles.

Site Number(s): 3-12, 3-12 b, and 3-15 (3 sites total)

Road type: Gravel (private road)

Problems: Road runoff flowing directly into stream or lake.

Recommendations: In-road diversions (for example, broad-based dips) are needed to break up runoff flow on the upper portion of Perkins Beach Road. This will significantly reduce the amount of runoff making it to the bottom of the hill that is currently entering the stream culvert/the lake.



High-impact site 3-15 on Perkins Beach Road in Sector 3.

Moose Run Road, Wayne

Moose Run Road is located just east of the Leeds/Wayne town line on the southern shoreline of Androscoggin Lake.

Site Number(s): 3-04 and 3-05 (2 sites)

Road type: Gravel (private road)

Problems: Gully erosion on road surface (3-05) because runoff is not able to flow off of roadway. Stormwater flows downhill and into lake via a residential access (3-04).

Recommendations: Build up road with new/correct surface gravel and install an in-road runoff diversion to move stormwater off the road surface and prevent erosion as it flows downhill.



Site 3-05 (left) and site 3-04 (right) identified on Moose Run Road in Sector 3.

Bishop Hill and Bernie Hartford Roads, Leeds

Bishop Hill Road and Bernie Hartford Road are town-owned gravel roads located in the south end of the watershed in Leeds between Bishop Hill to the east, and Route 106 to the west. Several unnamed streams cross under these gravel roads at no less than eight culvert crossing locations – all of which are potential entry points for polluted road runoff to enter the stream and ultimately Androscoggin Lake.

Site Number(s): 5-02 through 5-06 and 5-09 through 5-12 (9 sites total)

Road type: Gravel (town road)

Problems: Poor surface gravel is easily erodible and transported. Significant plow/grader berms on road shoulders are preventing runoff from quickly exiting road surfaces and draining to surrounding woodlands. Evidence that runoff travels on road surface and shoulders for long distances, eroding the gravel and entering the lake indirectly via several stream culvert crossings.

Recommendations: Remove plow/grader berms, resurface with new/correct gravel surface material, and stabilize road shoulders. Formal ditches and ditch turnouts are needed in select locations to prevent drainage from roads and ditches from entering streams and flowing to lake.



Site 5-11 (left) and site 5-09 (right) identified on Bishop Hill and Bernie Hartford Roads in Sector 5.

High-Priority Stream Culverts

Stream culvert crossings on roadways can be a significant source of erosion and NPS pollution to the stream itself, and the lake or waterbody that it feeds. Severely undersized or improperly installed culverts are considered a future NPS and public safety threat, should a complete road failure or washout occur during periods of intense rain or high flow.

In many cases, undersized stream crossings will experience ponding and clogging of debris upstream, and scouring or erosion from high flow velocities at the culvert outlet. This leads to

degradation of the road base, side slopes, and the stream bed. Undersized crossings often require more frequent maintenance over time, ultimately a shorter service life of the structure, and lasting impacts to habitat and water quality. The following culvert crossing were identified as priorities for Androscoggin Lake:

Wilson Pond Road, Monmouth (Bog Brook)



Site 4-01 in Wilson Pond Road in Monmouth – crushed culvert inlet.

Site Number(s): 4-01

Road type: Gravel (town road)

Problems: Culvert has a crushed/broken inlet and is severely undersized. Side slopes are unstable and stormwater runoff flow from gravel roadway surface enters brook via road shoulders above culvert. Potential flood risk.

Recommendations: Replace with a larger culvert or open-bottom structure. Stabilize side slopes and reshape road as it approaches the brook, installing road ditch turnouts to redirect runoff into the woods before it reaches the new crossing.

Holman Terrace, Wayne (Unnamed Stream)



Bank failure at a culvert outlet (site 2-13) on Holman Terrace in Sector 2.

Site Number(s): 2-13

Road type: Gravel (private road)

Problems: Double-barrel culverts are undersized. Bank failure on downstream side slopes (tree root system has broken away from bank and fallen into streambed below) and banks of stream channel are severely undercut between crossing outlet and the lake.

Recommendations: This site will likely require significant technical assistance and an engineered design.

Bishop Hill Road, Leeds (2 Unnamed Streams)



Site Number(s): 5-02 and 5-05

Road type: Gravel (town road)

Problems: Culverts are severely undersized and “pinching” the natural stream channel. Erosion on crossing side slopes, washing into stream that then flows to Androscoggin Lake.

Recommendations: Replace with a larger culvert or open-bottom structure. Stabilize crossing side slopes and reshape/resurface road as it approaches the new crossing to turnout runoff into the woods before it reaches the stream.



Site 5-02 (top) and site -02 (bottom) identified on Bishop Hill Road in Sector 5.

Other NPS Hot-Spots

Western Shoreline, Leeds

19 erosion sites were documented in the area of Lakeshore Drive in Leeds - on the western shore of Androscoggin Lake north of the Dead River.

Site Number(s): 7-14 through 7-31 (19 sites total)

Land Use Type(s): Residential, Beach Access, Boat Access, and Driveway



Example sites identified on Lakeshore Drive in Sector 7: Site 7-20 (left) medium-impact residential, site 7-28 (middle) high-impact beach access erosion, and site 7-15 (right) high-impact driveway erosion.

Most Common Problems: Surface erosion, bare soil, lack of or inadequate shoreline vegetation, shoreline erosion, runoff entering lake via boat launch or beach access.

Recommendations: Cover bare soil with Erosion control mulch or re-vegetate, establish or improve shoreline vegetation, install runoff diverters, install rain gardens.

Another 12 erosion sites were identified in the area of Stinchfield Beach Road – on the northwest shoreline of Androscoggin Lake.

Site Number(s): 7-01 through 7-13 (12 sites total)

Land Use Type(s): Residential and Beach Access

Most Common Problems: Surface erosion, bare soil, lack of or inadequate shoreline vegetation, undefined and unstable pathways.

Recommendations: Cover bare soil with erosion control mulch or re-vegetate, establish or improve shoreline vegetation, define and stabilize pathways, install runoff diverters.



Example sites identified in the Stinchfield Beach neighborhood in Sector 7: Site 7-06 (left) erosion on a shorefront pathway, site 7-11 (middle) unstable soils on a steep slope, and site 7-09 (right) runoff from a town parking lot is creating a channel with flow to Androscoggin Lake.

Southeastern Shoreline, Wayne

Located on the southeast shoreline just east of the Leeds town line, several gravel roads provide access to shorefront properties by way of Hardscrabble Road in Wayne. Most common problems identified in this areas are related to lake access points (boat and/or beach access) conveying stormwater runoff to the lake.

Site Number(s): 3-02, 3-03, 3-6 through 3-11, 3-13 and 3-14 (10 sites total)

Land Use Type(s): Residential, Beach Access, Boat Access

Most Common Problems: Bare soil, lack of or inadequate shoreline vegetation, runoff entering lake via boat or beach access.

Recommendations: Cover bare soil with Erosion control mulch or revegetate, do not rake needles or duff, establish or improve shoreline vegetation, install runoff diverters across boat and beach access to prevent runoff from entering lake untreated.



Examples of sites identified in Sector 3: Site 3-02 (left) erosion on a beach access, site 3-08 (middle) bare soils and sheet erosion over a lawn without a shoreline buffer, and site 3-13 (right) erosion documented on a shorefront path.

High-Priority Commercial Properties

Due to the beauty and large size of Androscoggin Lake, it is no surprise that there are several commercial properties located on its shoreline. The lake is home to three campgrounds, two youth summer camps, and a private boat club. Erosion problems identified on these properties were included in the “commercial” land use category, and include 19 high or medium impact sites. Commercial properties are often at greater risk of developing erosion and runoff issues because they have a much larger development footprint with higher amounts and densities of impervious surfaces like roads, driveways, roof tops, and decks.

Site Number(s):

6-02, 6-03, 6-04, 9-09, 9-14, DR -NPS3, JS-01 through JS-12, and TK-01 (19 sites total)

Selected high-priority NPS sites documented on commercial properties:

Site 6-04 (Commercial boat launch)

Documented NPS Problem: Rill surface erosion on launch and gravel access roads that access it. Stormwater runoff from Route 106, property entrance, and gravel roads flows downhill and enters the river via launch.



Erosion documented at a commercial boat launch in Sector 6 (site 6-04).

Recommendations: Resurface gravel areas draining to launch with an appropriate, hard-packing crushed gravel surface (e.g. crushed bluestone gravel) and install runoff diverters (e.g. rubber razors or broad-based dips) at select locations on access roads to redirect runoff on road surfaces away from the launch and into stable vegetated areas where it can be absorbed.

Site 9-14 (Commercial boat launch, beach, and adjacent recreation areas)

Documented NPS Problem: Stormwater runoff from Lake Street and adjacent land uses is flowing unimpeded down boat launch and into Androscoggin Lake. Bare and eroding soils documented in common/recreational spaces (fire pit/picnic area, boat storage area, and swimming beach access). Erosion at building driplines resulting from roof runoff. Lack of adequate vegetative buffer.



Recommendations: Stormwater runoff diversions needed near parking lot and Lake Street to prevent runoff from flowing down boat launch and into the lake untreated. Define and stabilize common areas with erosion control mulch (ECM) or crushed stone, and add vegetation around edge to define, Capture and infiltrate roof runoff by installing a dripline trench or rain gardens. Improve stand of vegetation between developed spaces and the beach/lake.



Erosion at roof driplines and adjacent common spaces (top) and boat launch (bottom) documented at site 9-14 in Wayne

Sites JS-1 & JS-2 (Commercial beach access and boat launch)

Documented NPS Problem: Gully erosion documented on gravel beach access road that flows directly into Androscoggin Lake. Large gravel opening on the lakeshore without adequate vegetative buffer or opportunities to infiltrate runoff from above.

Recommendations: Define the beach area as a separate space from access road and surrounding shorefront camp sites by creating a planted area or rain garden at the base of slope just inland of the swimming beach. Install a runoff diverter at top of the beach access road and improve road surface by reshaping with new crushed bluestone surface material. At the boat launch area,

demarcate a wider (deeper) vegetative buffer zone between lake and boat launch access road. Define and stabilize all access points, and install runoff diversions across pathway and roads that lead to the launch area to prevent unimpeded runoff flow into the lake.



Site JS-01 (left, beach access) and site JS-02 (right, boat launch) at a commercial property in

Sites JS-5 through JS-8 (lake access and gravel erosion)

Documented NPS Problem: Stormwater runoff flowing over adjacent campsites and gravel roads (sites JS-7 and JS-8) flows downhill causing further erosion and entering the lake via sites JS-5 and JS-6.

Recommendations: Build up site surface material with better gravel and reshape smooth. Close existing gaps/openings in the shoreline buffer with new vegetation and mulch and install runoff diversion across gravel roadways draining to these access points.

Install a broad-based dip at top of Eagle Lane and send runoff into the vegetated area on the west side of the road.



Site JS-5 (left) and site JS-6 (right) – stormwater runoff entry points.



Site JS-7 (left) and site JS-8 (right) – documented erosion sites flowing to lake via Sites JS-5 and JS-6.

Next Steps – Where do we go from here?

This survey provided a “snapshot” of the condition of the watershed, in the areas surveyed on two particular days in May 2022. 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 Androscoggin 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, ALIC, 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. Develop a Watershed-based Protection Plan for Androscoggin Lake that will guide this watershed protection effort over the next 5-10 years. A watershed plan is needed to become eligible to apply for Clean Water Act, Section 319 grant funding through Maine DEP/U.S. EPA.
4. Apply for Clean Water Act, Section 319, grant funding through Maine DEP/U.S. EPA. “319 grants” support the implementation of approved watershed plans and provide cost-sharing funds to landowners, road groups, and municipalities working to fix identified erosion and runoff problems in the watershed.

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 Androscoggin Lake.

Individual Landowners:

- ✓ For landowner with identified survey sites: Address the erosion or runoff issue(s) identified on your property during the 2022 survey. Contact 30 Mile or ALIC if you need more information or technical assistance.
- ✓ Host a LakeSmart visit from ALIC's LakeSmart team and learn more about how you can improve your property and better protect Androscoggin Lake. Contact lakesmart@androscogginlake.org to schedule a visit with the ALIC team.
- ✓ Host a conservation project by 30 Mile's Youth Conservation Corps (YCC). Visit <https://30mileriver.org/youth-conservation-corps/> 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 pre-date the state's subsurface wastewater disposal rules, and are most at risk of contributing pollutants to groundwater and Androscoggin 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 ALIC 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 42) 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
- ✓ 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:

- ✓ 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 Androscoggin 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 ALIC on remediation projects and ongoing monitoring of lake water quality and watershed erosion problems.

Androscoggin Lake Improvement Corporation (ALIC):

- ✓ Help disseminate the watershed survey report and summary handout.
- ✓ Share information on “Best Management Practices” and how we can work together to help protect and improve water quality.
- ✓ Conduct community outreach and organize educational workshops for watershed landowners.
- ✓ Continue collaboration with 30 Mile and watershed towns on remediation projects and ongoing monitoring of erosion problems in the watershed.
- ✓ Continue to deliver LakeSmart programming, and conduct targeted outreach to landowners with erosion sites identified in the 2022 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 the services of 30 Mile's Youth Conservation Corps (YCC) to fix erosion problems suitable for remediation by the YCC.
- ✓ 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 ALIC, watershed towns, and community members.
- ✓ Maintain a database of erosion problems in the watershed and track them over time.
- ✓ Continue to partner with ALIC, watershed towns, county soil and water conservation districts, NRCS, Maine DEP, and others to develop a watershed plan, seek funding sources, and implement projects to protect lake water quality.

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

| 2022 ANDROSCOGGIN 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, ALIC, 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 PWD or 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. |
| Commercial Properties | Provide a summary report of identified NPS sites to commercial property contacts. 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. Apply for Clean Water Act (Section 319) grant funding to provide cost-sharing to landowners with priority problems. |
| Education & Outreach | Conduct outreach & organize educational workshops/seminars for watershed landowners. |
| Focus Areas & High-priority Sites (high and medium-impact) | |
| Roads | |
| Dole's Beach / The Boulevard | 2-02, 2-04 , 2-05, 2-06, & 2-07 |
| Holman Terrace | 2-12 & 2-14 |
| Perkins Beach Road | 3-12 , 3-12b , & 3-15 |
| Moose Run Road | 3-01, 3-05 , & 3-07 |
| Bishop Hill & Bernie Hartford | 5-02, 5-03, 5-04, 5-05 , 5-06, 5-09 , 5-10 , & 5-12 |
| Culverts | |
| Wilson Pond Road (Bog Brook) | 4-01 (and road site draining to culvert crossing: JS-13) |
| Holman Terrace | 2-13 |
| Bishop Hill Road (2) | 5-02 & 5-05 |
| Residential Hot Spots (includes residential, boat/beach access, and driveway sites) | |
| Sector 7 south | 7-15 , 7-16, 7-17, 7-18, 7-20, 7-22, 7-27, 7-27b, 7-28 , 7-29, 7-30, & 7-31 |
| Sector 7 north | 7-01, 7-02, 7-03, 7-04, 7-05, 7-06, 7-07, 7-09, 7-10, 7-11, & 7-12 |
| Sector 5 | 5-13, 5-15, & 5-16 |
| Sector 3 | 3-02, 3-03, 3-06 , 3-08, 3-09, 3-10, & 3-11 |
| Commercial Properties | |
| Jellystone Campground | JS-01, JS-02, JS-03, JS-04, JS-05, JS-06, JS-07, JS-08, JS-10, JS-11, JS-12, & JS-13 |
| Riverbend Campground | 6-02, 6-03, 6-04 , and DR-NPS3 |
| Androscoggin Yacht Club | 9-14 |

bold red text = high impact site

Conservation Practices for Homeowners

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

[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](#)

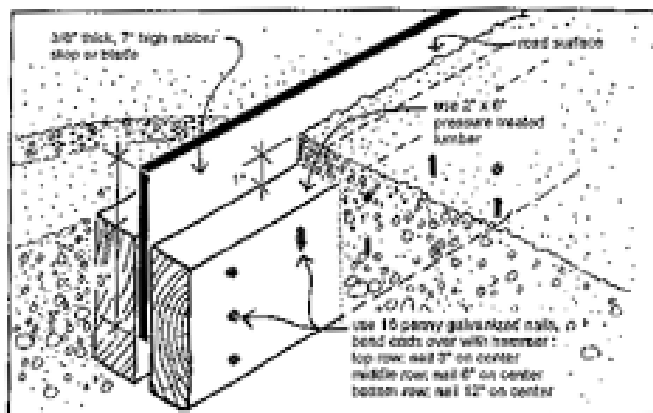
[Lake Shoreline Riprap](#)

[Plants - shade & dry](#)

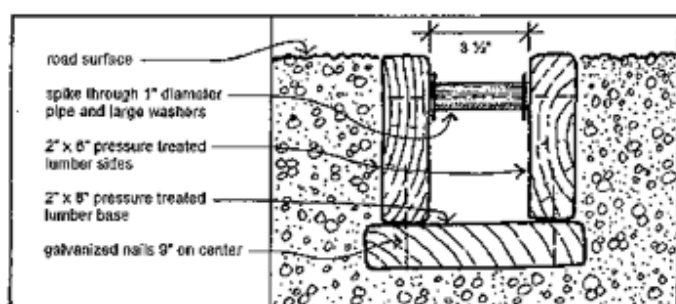
[Waterbars](#)

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.

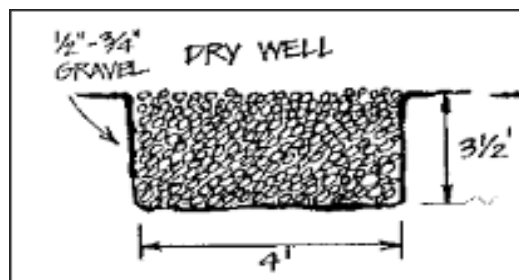


Open Top Culvert:



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.

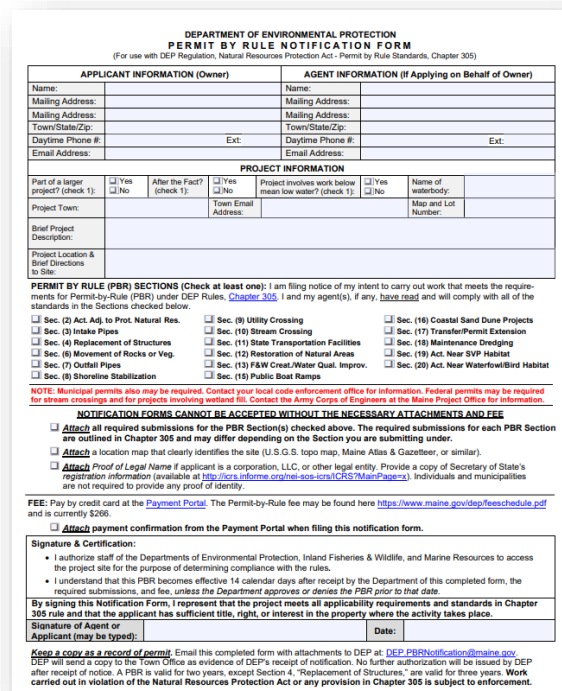
Contact the DEP and your town's code enforcement officer (CEO) if you have any plans to construct, expand or relocate a structure, clear vegetation, create a new path or driveway, stabilize a shoreline or otherwise disturb the soil on your property. Even if projects are planned with the intent of enhancing 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 42 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 stream-lined 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.
- ☐ 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.

The image shows a 'DEPARTMENT OF ENVIRONMENTAL PROTECTION PERMIT BY RULE NOTIFICATION FORM'. It is a detailed form with sections for 'APPLICANT INFORMATION (Owner)', 'AGENT INFORMATION (if Applying on Behalf of Owner)', and 'PROJECT INFORMATION'. The 'PROJECT INFORMATION' section includes checkboxes for various project types such as 'Part of a larger project?', 'Project involves work below mean low water?', and 'Project involves work on a stream crossing'. Below these sections are 'PERMIT BY RULE (PBR) SECTIONS' with checkboxes for specific activities like 'Sec. (2) Act. Adj. to Prot. Natural Res.', 'Sec. (3) Intake Pipes', 'Sec. (4) Replacement of Structures', 'Sec. (5) Movement of Rocks or Veg.', 'Sec. (7) Outfall Pipes', 'Sec. (8) Shoreline Stabilization', 'Sec. (9) Utility Crossing', 'Sec. (10) Stream Crossing', 'Sec. (11) State Transportation Facilities', 'Sec. (12) Restoration of Natural Areas', 'Sec. (13) F&W Creat./Water Qual. Improv.', 'Sec. (15) Public Boat Ramps', 'Sec. (16) Coastal Sand Dune Projects', 'Sec. (17) Transfer/Permit Extension', 'Sec. (18) Maintenance Dredging', 'Sec. (19) Act. Near SVP Habitat', and 'Sec. (20) Act. Near Waterfowl/Bird Habitat'. A 'NOTE' section mentions that municipal permits may also be required. The 'NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS AND FEE' section lists requirements: 'Attach all required submissions for the PBR Section(s) checked above', 'Attach a location map that clearly identifies the site', and 'Attach Proof of Legal Name if applicant is a corporation, LLC, or other legal entity'. The 'FEE' section states that the fee is \$200 and can be paid by credit card or cash. The 'Signature & Certification' section requires the applicant to sign and certify that the project meets all requirements. The form also includes a 'Date' field and a 'Signature of Agent or Applicant (may be typed)' field.

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?

30 Mile River Watershed Association

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

(207) 860-4043; www.30mileriver.org

Provides free and reduced-cost services including site evaluations and recommendations for landowners; camp road maintenance and planning assistance for road associations; and the Youth Conservation Corps to fix identified erosion problems. Include mission statement and a little more about what we do?

Androscoggin Lake Improvement Corporation

P.O. Box 307, Wayne, ME 04284

alic@androscogginlake.org / www.androscogginlake.org

The mission of the Androscoggin Lake Improvement Corporation (ALIC) is to preserve and protect Androscoggin Lake. ALIC supports a local LakeSmart team, providing lake protection education to landowners interested in improving their properties for the benefit of lake water quality.

Maine Department of Environmental Protection

17 State House Station, Augusta, ME 04333

(800) 452-1942 or (207) 287-7688; 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

Town of Leeds: Larry Grant – (207) 524-5171 / leedsceo.19@gmail.com

Town of Monmouth: Richard Greenwald – (207) 931-7448 / rgreenwald@monmouthmaine.gov

Androscoggin Valley Soil and Water Conservation District

Emma Lorusso, Project Director

254 Goddard Rd., Lewiston, ME 04240

(207) 241-5374 / projectdirector@androscogginswcd.org

Offers technical assistance, at a fee, for assisting with re-vegetation plans, offering guidance on erosion control issues, helping with planning for your environmental or natural resource-based workshop/events, and helping with outreach and education plans.

Kennebec County Soil and Water Conservation District

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

(207) 622-7847 ext.3; 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)

Androscoggin County – Lewiston Service Center

254 Goddard Rd, Lewiston, ME 04240

(207) 753-9400 / jim.johnson@usda.gov

Kennebec County – Augusta Service Center

2305 North Belfast Ave., Augusta, ME 04330

(207) 622-7847 / 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

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

A Guide to Forming Road Associations.

Maine Department of Environmental Protection. January 2020.

www.maine.gov/dep/land/watershed/road_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

Conservation Practices for Homeowners.

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

www.maine.gov/dep/land/watershed/materials.html

Contractors Certified in Erosion Control Practices.

Maine DEP. www.maine.gov/dep/land/training/ccec.html

The Lake Book: A handbook for Lake Protection.

Maine Lakes. www.lakes.me/lakebook

Protect Your Pond Brochure.

Maine Lakes. 2021. 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-llike-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: 2022 Watershed Survey – List of Identified Sites

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|---|--|---------------|----------------------------|
| 1-01 | Directly into lake | Residential | Surface Erosion (Sheet); Unstable Shoreline Access | Install a runoff diverter across water access, cover bare soils with ECM or crushed stone, re-seed/vegetate. | Low | Low: Less than \$500 |
| 1-02 | Directly into lake | Residential | Surface Erosion (Sheet) | Install an infiltration trench or runoff diverter at the top of slope; stabilize eroding soils with ECM or crushed stone; request a free site visit for further technical assistance. | Low | Medium: \$500-\$2,500 |
| 1-03 | Directly into lake | Residential | Surface Erosion (Sheet); Bare Soils | Cover bare soils with ECM, define footpath and stabilize with ECM or crushed stone. | Low | Low: Less than \$500 |
| 1-04 | Directly into lake | Residential | Surface Erosion (Sheet); Bare Soils | Cover bare soils with ECM, define footpath and stabilize with ECM or crushed stone, establish a vegetated shoreline buffer, Reseed bare soil & thinning grass. | Low | Low: Less than \$500 |
| 1-05 | Directly into lake | Residential | Surface Erosion (Sheet); Bare Soils | Cover bare soils with ECM, define footpath and stabilize with ECM or crushed stone, Establish a vegetated shoreline buffer. | Low | Low: Less than \$500 |
| 1-06 | Stream | Municipal / Public | Surface Erosion (Sheet); Bare Soils; Roof Runoff Erosion | Cover bare soils with ECM, define footpath and stabilize with ECM or crushed stone, Install a dripline trench @ roof driplines, or a rain barrel/dry well/rain garden at gutter downspouts. | Low | Medium: \$500-\$2,500 |
| 2-01 | Directly into lake | Private Road | Road surface Erosion (Rill), Ditch erosion (Sheet), Road Shoulder Erosion (Rill), runoff is flowing along shoulders and over road surface onto Dole's Beach and the lake | Install new ditch and cross culvert with armored inlet/outlet, install detention basin/plunge pool at culvert outlet to settle out any sediment in runoff. | Low | High: Greater than \$2,500 |
| 2-02 | Minimal Vegetation | Private Road | Road Surface Erosion (Sheet and Rill), Unstable Culvert inlet/outlet, Ditch Bank Failure and Erosion (Sheet and Rill), Road Shoulder Erosion (Sheet and Rill) | Armor culvert Inlet/Outlet, install a detention basin/plunge pool at culvert outlet, stabilize ditch by vegetating and/or armoring with stone, Reshaped ditch backwalls to reduce steepness so that vegetation can grow or ECM can be placed to protect soils, clean out sediment accumulating in ditch and vegetate road shoulders. | Medium | Medium: \$500-\$2,500 |
| 2-03 | Stream | Private Road | Undersized ditch with sediment accumulation. Natural seep/flow from hillside above is depositing a huge amount of fine sediment and clay (?) into the ditch. Ditch is overwhelmed and will soon over-top the road if not addressed. | Remove debris/sediment accumulation in ditch. Improve size of ditch and vegetate to stabilize. | Low | Medium: \$500-\$2,500 |
| 2-04 | Stream | Private Road | Surface erosion (Gully), Unstable culvert inlet/outlet, Undersized culvert, Ditch erosion, Road shoulder erosion, and Road surface erosion. Evidence of runoff flow overtopping ditch and culvert and flowing over road surface. Downstream channel seems new/widened, and is severely eroded straight to lake. | Install larger culvert with armored inlet/outlet, install plunge pool at culvert outlet and stabilize. Remove debris/sediment accumulation in ditch and stabilize with vegetation or armor with stone. Resurface roadway gravel surface and reshape to a crown. | High | Medium: \$500-\$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|--|--|---------------|----------------------------|
| 2-05 | Stream | Private Road | Road surface erosion (Sheet and Rill), Road shoulder erosion (Rill and Gully). Site includes two small culverts ~30 feet apart. Both culverts and ditch are undersized causing runoff to overtop the road surface. Erosion at upstream and downstream shoulders. | Enlarge culverts and armor inlet/outlet, install plunge pools and culvert outlets, reshape ditch and vegetate or armor with stone, vegetate road shoulder, build up/add new and harder-packing road surface gravel and reshape to a crown. | Medium | High: Greater than \$2,500 |
| 2-06 | Stream | Private Road | Road surface erosion (Sheet, Rill, & Gully), Road shoulder erosion (Sheet & Rill), Ditch is filling up with deposited fine sediment from hillside seep above causing runoff flow to overtop the road and erode road surface and shoulders. | Install culvert and armor culvert inlet/outlet, install plunge pool at culvert outlet, remove sediment in ditch, reshape ditch and vegetate and/or armor with stone, add new and harder-packing road surface gravel and build up/reshape to a crown, vegetate road shoulders to stabilize. | Medium | Medium: \$500-\$2,500 |
| 2-07 | Ditch | Private Road | Clogged and undersized culvert, unstable inlet/outlet, undersized ditch. | Enlarge and replace culvert and armor inlet/outlet, install a plunge pool at culvert outlet, reshape ditch and vegetated and/or armor with stone, build up road surface with new and harder-packing surface gravel and reshape to a crown, vegetate road shoulders. | Medium | Medium: \$500-\$2,500 |
| 2-08 | Stream | Private Road | Road shoulder erosion (sheet and Rill) | Vegetate road shoulder or cover with thick layer of ECM. | Low | Medium: \$500-\$2,500 |
| 2-09 | Stream | Private Road | Unstable culvert inlet/outlet, road shoulder erosion. | Armor culvert inlet/outlet, install rock apron or plunge pool at culvert outlet, vegetate road shoulder or cover with thick layer of ECM. | Low | Low: Less than \$500 |
| 2-10 | Directly into lake | Residential | Surface erosion (Sheet and Rill), undefined footpath, unimpeded runoff flow over shorefront and into lake. | Define and stabilize footpaths, install runoff diverters or water bars, revegetate bare areas or cover soils with ECM, Add to shoreline buffer vegetation. | Low | Low: Less than \$500 |
| 2-11 | Ditch | Private Road | Ditch bank failure and erosion. | Reshape ditch to reduce steepness of ditch backwalls and revegetate or cover with ECM. | Low | Medium: \$500-\$2,500 |
| 2-12 | Ditch | Private Road | Ditch bank failure and erosion. | Reshape ditch to reduce steepness of ditch backwalls and revegetate or cover with ECM. | Low | Medium: \$500-\$2,500 |
| 2-13 | Directly into lake | Private Road | Unstable culvert inlet/outlet, Bank failure on downstream side of double barrel culverts, | Armor culvert inlet/outlet. Remove tree that has separated from bank and reshape slope, add very large angular stone to protect banks on downstream side during high flow events. This site will likely require engineering assistance. | High | High: Greater than \$2,500 |
| 2-14 | Directly into lake | Private Road | Road Surface erosion (Rill & Sheet), Undersized culvert, Undersized ditch, Road Shoulder Erosion (Sheet & Rill), Soil delta | Enlarge culvert and armor inlet/outlet, remove debris/sediment, add new and harder-packing road surface gravel and build up/reshape to a crown, vegetate road shoulders to stabilize. | Medium | Medium: \$500-\$2,500 |
| 2-15 | Minimal Vegetation | Private Road | Road Surface Erosion (Gully), Road Shoulder Erosion (Gully) | Install Culvert and Armor inlet/outlet, repair road surface by adding new and harder-packing road surface gravel and build up/reshape to a crown, vegetate road shoulders to stabilize. | Low | High: Greater than \$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|---|--|---------------|----------------------------|
| 2-15b | Stream | Private Road | Unstable culvert inlet/outlet, Road Shoulder Erosion (Rill & Gully), Low section in road with new culvert, Shoulders surrounding existing culvert armoring are eroding, no geo fabric under rock currently, bank is loose and unstable. | Armor culvert inlet/outlet, build up road surface with harder-packing road surface gravel and reshape to a crown, vegetate road shoulders to stabilize, extend armoring out further from culvert or vegetate. | Low | Low: Less than \$500 |
| 2-16 | Ditch | Private Road | Culvert Clogged, Flow continuing down to next cross culvert | Clear culvert and increase ditch capacity around inlet. | Low | Low: Less than \$500 |
| 2-17 | Ditch | Private Road | Road Surface Erosion (Rill), Culvert Clogged, Ditch Erosion (Rill), Road Shoulder Erosion (Sheet), Bare soil. Shoulder on outlet side of culvert is very soft and eroding. | Remove Clog and stabilize road shoulders. | Low | Medium: \$500-\$2,500 |
| 2-18 | Minimal Vegetation | Residential | Surface Erosion (Rill and Sheet), Lots of bare soil on yard area between driveway and the lake | Reseed bare soil & thinning grass, or vegetate and add Erosion Control Mix. Great location for rain garden or otherwise revegetate to stabilize. | Low | Medium: \$500-\$2,500 |
| 2-19 | Minimal Vegetation | Residential | Surface Erosion (Rill and Sheet) | Stabilize Foot Path with Erosion Control Mulch or crushed stone, reseed bare soil & thinning grass, Do Not Rake, Gravel driveway could be smoothed out with new gravel surface. | Low | Medium: \$500-\$2,500 |
| 2-20 | Minimal Vegetation | Residential | Surface Erosion (Rill), Ditch Erosion (Rill & Gully) | Install Culvert and Armor Inlet/Outlet, Install Detention Basin or Plunge Pool at culvert outlet. | Low | Medium: \$500-\$2,500 |
| 3-01 | Stream | Private Road | Surface Erosion (Rill), Unstable Culvert inlet/outlet | Armor culvert Inlet and Outlet and vegetate shoulders | Medium | High: Greater than \$2,500 |
| 3-02 | Directly into lake | Beach Access | Surface Erosion (Sheet), Bare Soil, Lack of Shoreline Vegetation, Shoreline Erosion | Cover Bare Soil with Erosion Control Mulch or Crushed Stone | Medium | Low: Less than \$500 |
| 3-03 | Minimal Vegetation | Boat Access | Surface Erosion (Rill), thinning grass and bare soils on moderate slopes going to the lake. | Install Culvert on driveway, Install Runoff Diverter (water bar), Install Infiltration Trench, cover bare soil with Erosion Control Mulch and revegetate, Stop mowing some sections and plant shrubs, stop raking. Crate areas where runoff can collect and infiltrate by creating rain gardens. | Medium | Medium: \$500-\$2,500 |
| 3-04 | Directly into lake | Boat Access | Surface Erosion (Rill), Bare Soil | Install Runoff Diverter (water bar), Cover bare soils with Erosion Control Mulch, add crushed stone to further stabilize if keeping as boat access. | Low | Medium: \$500-\$2,500 |
| 3-05 | Minimal Vegetation | Private Road | Surface Erosion (Gully) | Very steep road is eroding, needs comprehensive road planning, request technical assistance. | High | High: Greater than \$2,500 |
| 3-06 | Directly into lake | Residential | Surface Erosion (Rill), Bare Soil, Soil Delta in Stream/Lake | Define Foot Path and Stabilize with ECM or crushed stone, Install Runoff Diverter (water bar), Cover bare soils with Erosion Control Mulch, Add to Buffer by plantings native shrubs. | High | Medium: \$500-\$2,500 |
| 3-07 | Minimal Vegetation | Private Road | Surface Erosion (Rill), Bare Soil | Add new hard packing gravel, build up and Reshape to crown, Install Runoff Diverter (Broad-based Dip) at top of slope to redirect runoff into stable area away from the lake where it can be absorbed. | Medium | High: Greater than \$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|---|--|---------------|----------------------------|
| 3-08 | Directly into lake | Residential | Surface Erosion (Rill), Bare Soil, Lack of Shoreline Vegetation | Establish Shoreline Buffer, Do Not Rake, reseed bare soil & thinning grass, Create Rain Garden in low-lying area and reduce size of lawn. | Medium | Medium: \$500-\$2,500 |
| 3-09 | Directly into lake | Boat Access | Surface Erosion (Rill), Bare Soil, Lack of Shoreline Vegetation | Add crushed stone, Install Runoff Diverters (Water bar) to redirect runoff down slope into stable vegetate where it can be absorbed away from the lake, cover bare soils with Mulch/Erosion Control Mix or revegetate, establish a shoreline buffer by planting native shrubs. | Medium | Medium: \$500-\$2,500 |
| 3-10 | Stream | Residential | Surface Erosion (Rill), Bare Soil | Do Not Rake, reseed bare soil & thinning grass, Cover bare soil with Mulch/Erosion Control Mix | Medium | Medium: \$500-\$2,500 |
| 3-11 | Directly into lake | Beach Access | Surface Erosion (Rill), Bare Soil, Shoreline Erosion | Cover bare soil with Erosion Control Mulch, Install Runoff Diverter (water bar) to redirect runoff into stable area where it can be absorbed away from the lake. | Medium | Medium: \$500-\$2,500 |
| 3-12 | Stream | Private Road | Road Surface Erosion (Rill), Road Shoulder Erosion (Rill) | Build Up with new gravel and Reshape to establish a Crown, Install Catch Basin, Install Runoff Diverters (Broad-based Dip), Road runoff is washing directly into stream, request technical assistance. | High | Medium: \$500-\$2,500 |
| 3-12b | Minimal Vegetation | Private Road | Road Surface Erosion (Rill), Road Shoulder Erosion (Gully) | Build Up with new hard packing surface gravel and Reshape to establish a crown or super elevate, pitch road so that runoff flows in the other direction, currently washing into adjacent driveway and across the septic toward lake. | High | Medium: \$500-\$2,500 |
| 3-13 | Directly into lake | Residential | Surface Erosion (Sheet & Rill), Bare Soil | Add to Buffer, Do Not Rake, reseed bare soil & thinning grass, stabilize foot paths with ECM or crushed stone, Improve existing infiltration steps. | Medium | Medium: \$500-\$2,500 |
| 3-14 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil | Define Foot Path, and Stabilize with ECM or crushed stone, do not Rake needles or leaves and allow duff layer to accumulate and protect soil. | Medium | Low: Less than \$500 |
| 3-15 | Directly into lake | Private Road | Road Surface Erosion (Sheet & Rill), Road Shoulder Erosion, Road runoff is flowing directly into stream at culvert crossing and into lake - revisited during rain event on 10/14/22. | Add new hard packing crushed gravel and reshape to crown or super elevate, install runoff diversions (broad-based dips) and turnouts along stretch of roadway sloping toward the lake/stream crossing, comprehensive road plan need, request technical assistance | High | High: Greater than \$2,500 |
| 4-01 | Stream | Town Road | Surface Erosion (Gully), Crushed/Broken Culvert, Unstable Culvert inlet/outlet, Road Shoulder Erosion | Replace, Enlarge, and Lengthen Culvert, Armor culvert Inlet/Outlet, Vegetate Road Shoulder, reshape road surface around culvert with new gravel and create turnouts to direct road runoff into wooded buffer and away from Bog Brook. | High | High: Greater than \$2,500 |
| 4-02 | Stream | Private Road | Culvert Clogged, Culvert Crushed/Broken, Culvert Undersized, could not locate culvert Inlet, Drains to large beaver pond. Stream banks are undercut with evidence of scouring related to higher flow at culvert outlet. | Replace and enlarge culvert, armor inlet/outlet, woods road will potentially be upgraded/rebuilt as part of new development, and will need to be addressed. | Low | High: Greater than \$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|---|--|---------------|----------------------------|
| 4-03 | Stream | Private Road | Culvert Crushed/Broken, Unstable Culvert inlet/outlet | Replace On road east of site 4-02. Same issues with future development. | Low | High: Greater than \$2,500 |
| 4-04 | Stream | Town Road | Surface Erosion (Rill), Crushed/Broken Culvert, Road Shoulder Erosion (Sheet), Inlet is crushed, culvert connects wetland bisected by Bog Rd. | Replace and Lengthen culvert, armor inlet & outlet, vegetate road shoulders. | Low | High: Greater than \$2,500 |
| 4-05 | Stream | Town Road | Surface Erosion (Rill), Crushed/Broken Culvert, Clogged Culvert, Road Shoulder Erosion (Rill) | Replace Culvert, Remove Invasive Plants. Located ~20 feet away from another larger cross culvert. Currently this culvert is not working, maybe just remove instead of replacement? | Medium | High: Greater than \$2,500 |
| 5-01 | Stream | Town Road | Unstable culvert inlet/outlet, Road Shoulder Erosion (Sheet & Rill) | Replace, Enlarge, and Lengthen Culvert. Armor Culvert Inlet/Outlet, vegetate road shoulders. | Low | Medium: \$500-\$2,500 |
| 5-02 | Stream | Town Road | Surface Erosion (Gully, Rill, & Sheet), Unstable Culvert inlet/outlet, Undersized Culvert, Road Shoulder Erosion Gully, Rill, & Sheet), Bare Soil, and Winter Sand Buildup. | Replace, Enlarge, and Lengthen Culvert, Armor Culvert Inlet/Outlet, Vegetate Road Shoulders | Medium | High: Greater than \$2,500 |
| 5-03 | Stream | Town Road | Road Surface Erosion (Rill & Sheet), Bare Soil, Winter Sand Buildup, plow/grader berms preventing runoff from exiting road surface. | Remove Grader/Plow Berms, install new ditch and Ditch Turnouts, Build Up road with new harder-packing gravel and Reshape to a crown, Vegetate Road Shoulders. | Medium | High: Greater than \$2,500 |
| 5-04 | Minimal Vegetation | Town Road | Road Surface Erosion (Sheet, Rill, & Gully), Unstable Culvert inlet/outlet, Clogged Culvert, Undersized Culvert, Ditch Erosion (Gully), Road Shoulder Erosion (Rill), Bare Soil, Winter Sand Buildup. This site includes multiple cross culverts btw median and north side of road with outlets into wetland on Andro Lake. Road surface is severely eroding/rutted and plow/grader berms prevent runoff from exiting road surface. | Replace, Enlarge, and Lengthen Culverts and Armor Inlet/Outlet, Vegetate and Reshape Ditches, Build Up Road with new gravel and Reshape to a Crown, Install Detention Basin/plunge pool at culvert outlet to provide more treatment before entering wetland/lake. | Medium | High: Greater than \$2,500 |
| 5-05 | Stream | Town Road | Road Surface Erosion (Rill), Undersized Culvert, Unstable Culvert inlet/outlet, Road Shoulder Erosion (Rill & Gully). Eroded gullies on crossing shoulders and banks - most notably around the water access on inlet side of culvert. Road runoff flowing over banks and into stream. | Replace with larger culvert and armor Culvert Inlet/Outlet, install new Ditch and Ditch Turnouts, add new and harder-pacing road surface gravel Build Up and Reshape to a Crown, Remove Grader/Plow Berms to allow runoff to exit into ditches, Vegetate Road Shoulders. Crowning road and installing ditch turnouts into wooded buffer before crossing would help reduce flow over banks and into stream. | High | Medium: \$500-\$2,500 |
| 5-06 | Minimal Vegetation | Town Road | Road Surface Erosion (Rill), Road Shoulder Erosion (Gully & Rill), Winter Sand Buildup | Add recycled asphalt or new crushed gravel and Reshape to a crown, Vegetate Road Shoulders, Remove Grader/Plow Berms | Medium | Medium: \$500-\$2,500 |
| 5-07 | Stream | Town Road | Unstable Culvert inlet/outlet, Road Shoulder Erosion (Rill), Winter Sand Buildup | Armor Culvert Inlet/Outlet, Reshape and Vegetate Road Shoulder | Low | Medium: \$500-\$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|--|--|---------------|----------------------------|
| 5-08 | Stream | Town Road | Road Surface Erosion (Rill & Sheet), Road Shoulder Erosion (Rill), Bare Soil, Winter Sand Buildup | Install Ditch, Install Turnouts, Remove Grader/Plow Berms, add new harder-packing crushed gravel or recycled asphalt surface and reshape to Crown, Vegetate Road Shoulder, Gravel road surface is very loose and easily transported off the road surface. This site refers to the road on both sides of culvert crossing (site 5-07) draining to stream. | Medium | High: Greater than \$2,500 |
| 5-09 | Minimal Vegetation | Town Road | Ditch Erosion (Gully), Ditch Bank Failure, Road Shoulder Erosion (Gully), Bare Soil, Winter Sand Buildup. Ditch erosion starts at intersect of Jennings and Bernie Hartford. Continues north past cemetery and continues to culvert crossing. Seems that potential cemetery expansion erosion control is failing at edges. Lots of gullies exiting cemetery property into ditch that drains into culvert crossing. | Re-establish erosion controls on bank at edge of cemetery and vegetate all bare soils, remove debris/sediment accumulating in ditch, Reshape Ditch and vegetate, Install Turnouts to direct ditch runoff into woods before culvert crossing or Install Check Dams, Vegetate Road Shoulders. | High | High: Greater than \$2,500 |
| 5-10 | Minimal Vegetation | Town Road | Road Surface Erosion (Rill), Ditch Erosion (Gully & Rill & Sheet), Ditch Bank Failure, Road Shoulder Erosion (Rill & Gully), Bare Soil, Winter Sand accumulation. Existing ditches are eroded and lots of bank failures throughout. Very large grader/plow berms preventing runoff from exiting road surface. Entire length of road is loose gravel at least 2"+ in size (does not seem to be rolled/compacted) w/o proper ditching or drainage. | Remove Grader/Plow Berms, remove debris/sediment accumulation, install ditches and turnouts and vegetate or armor with stone, add new harder-packing surface gravel 1" minus in size and Reshape to Crown, Vegetate Road Shoulders. Entire length of road is loose gravel at least 2"+ (does not seem to be rolled/compacted) w/o proper ditching or drainage. | High | High: Greater than \$2,500 |
| 5-11 | Stream | Town Road | Surface Erosion (Rill & Sheet), Culvert Crushed/Broken, Culvert Undersized, Ditch Erosion (Gully & Rill), Road Shoulder Erosion (Rill & Sheet), Winter Sand Buildup. | Enlarge, Replace, and Armor culvert Inlet/Outlet, install ditch and ditch turnouts, add new road surface gravel and Build Up | Low | Medium: \$500-\$2,500 |
| 5-12 | Stream | Town Road | Road Surface Erosion (Rill & Sheet), Unstable Culvert inlet/outlet, Ditch Erosion (Rill & Gully), Road Shoulder Erosion (Sheet & Rill), Winter Sand Buildup, Bare Soil | Armor Culvert Inlet/Outlet, install ditch and ditch turnouts, Remove Grader/Plow Berms, add gravel and Reshape to Crown, Vegetate Road Shoulder | Medium | High: Greater than \$2,500 |
| 5-13 | Directly into lake | Boat Access | Surface Erosion (Gully) | Cover bare soils with ECM, define a narrower foot path to dock and retrofit existing terracing into infiltration steps to stabilize, Establish Buffer vegetation along shoreline by planting native shrubs, add plantings and ECM on the remaining open area around footpath to stabilize the slope. Add a water bar at the top of slope to redirect runoff from the end of the road away from the footpath and into a stable area where it can be absorbed. | Medium | Medium: \$500-\$2,500 |
| 5-14 | Minimal Vegetation | Trail or Path | Surface Erosion (Sheet & Rill), Bare Soil - Need to address washout at edge of landing/sitting area. | Reseed bare soil & thinning grass, Add to Shoreline Buffer, Add plants along the edges of landing immediately above rock wall and cover landing with ECM or other stable surface material (crushed stone, for example). | Low | Low: Less than \$500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|---|--|---------------|----------------------------|
| 5-15 | Minimal Vegetation | Private Road* | Surface Erosion (Gully) | Install runoff diverter into an infiltration basin/trench or planted rain garden where runoff can be absorbed, or discontinue use of this access point and naturalize with plantings and ECM berms along slope. | Medium | Medium: \$500-\$2,500 |
| 5-16 | Directly into lake | Boat Access* | Surface Erosion (Gully) | Add gravel to smooth out existing eroded gullies/erosion, Install Runoff Diverters (Broad-based Dip or rubber razor) across the launch and send runoff into a new Rain Garden or infiltration basin where it can be absorbed instead of flowing into lake. | High | Medium: \$500-\$2,500 |
| 5-17 | Directly into lake | Residential | Surface Erosion (Sheet) | Install planted infiltration swales or ECM berms across the slope to help slow the runoff flowing down from hillside above. Currently flow is concentrating and entering boat launch area, adding to the erosion problem there (Site 5-16). | Low | Medium: \$500-\$2,500 |
| 6-01 | Stream | Agriculture | Surface Erosion (Rill), Bare Soil, Lack of Shoreline Vegetation, Shoreline Erosion, Potential Livestock Access to Waterbody. | Unsure if Livestock accessing water is having waste or erosion impact. Ensure livestock is fenced in away from stream and re-establish a vegetated buffer strip around stream. | Medium | Medium: \$500-\$2,500 |
| 6-02 | Stream | Commercial | Surface Erosion (Rill), Undercut Shoreline, Lack of Shoreline Vegetation, Shoreline Erosion, Unstable Water Access. Lots of bare soil washing into water, and river bank erosion from foot traffic over bank to access boats and docks. | Reseed bare soil & thinning grass and add ground covers and shrubs to define campsites, campsites with bare soils can be resurfaced with stable materials like ECM or crushed stone. Establish a vegetated shoreline buffer, minimize the total number of access points/openings through the buffer for dock/boat access and close off others. Site photos are sites 73 and 75, but erosion issues documented on sites 59, 60, 63, 67, 67a, & 68. Water access erosion identified on sites 70, 71, 72, 73, 74, & 75. | Medium | Medium: \$500-\$2,500 |
| 6-03 | Stream | Commercial | Surface Erosion(Sheet), Shoreline Erosion, Unstable Shoreline Access, Lack of Shoreline Vegetation. | Reseed bare soil & thinning grass, Establish Shoreline Buffer, install pervious pavers/crushed stone/ECM where docks attach to shoreline, plant shrubs and close off access in other areas. | Medium | Medium: \$500-\$2,500 |
| 6-04 | Stream | Commercial | Surface Erosion (Rill), Road runoff from Route 106 flows down gravel access roads and downhill on boat launch draining to lake. | Install Runoff Diverters (Broad-based Dip, rubber razor, or other), add gravel and Reshape to Crown, Install Catch Basin. | High | High: Greater than \$2,500 |
| 7-01 | Directly into lake | Residential | Surface Erosion, Shoreline Erosion | Some Undercutting but could be natural and caused by the lake water and ice. Install live stakes within bare soils to establish shrubs along the buffer edge to stabilize. | Medium | Medium: \$500-\$2,500 |
| 7-02 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Lack of Shoreline Vegetation | Define Foot Path and stabilize bare soils with ECM, install Infiltration steps on steep portions of pathway, Reseed bare soil & thinning grass | Medium | Medium: \$500-\$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|--|---|---------------|-----------------------|
| 7-03 | Directly into lake | Beach Access | Surface Erosion | Reseed bare soil & thinning grass, define walking path and cover with stable material like ECM or crushed stone, Add Rain Garden or ECM Berm before rocks on shore, add to shoreline buffer by planting native shrubs. | Medium | Medium: \$500-\$2,500 |
| 7-04 | Directly into lake | Beach Access | Surface Erosion (Sheet), Lack of Shoreline Vegetation, Shoreline Erosion | Define Foot Path and stabilize with ECM or crushed stone, install Infiltration Steps on steepest portions of pathway, establish shoreline Buffer by planting native shrubs, Reseed bare soil & thinning grass. | Medium | Medium: \$500-\$2,500 |
| 7-05 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil | Define Foot Paths and stabilize with ECM or crushed stone, Install Runoff Diverter (water bars) along pathway slopes create infiltration areas (for example, rain gardens) where runoff can infiltrate and be absorbed away from the lake, establish a shoreline Buffer, Reseed bare soil & thinning grass. | Medium | Medium: \$500-\$2,500 |
| 7-06 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Lack of Shoreline Vegetation, Shoreline Erosion | Define Foot Paths and stabilize with ECM or crushed stone and add water bars or Install Infiltration Steps on steep portions, cover bare soils with ECM, add to shoreline Buffer and install live stakes to establish shrubs on immediate shoreline where bare soil/erosion documented, Reseed bare soil & thinning grass. | Medium | Medium: \$500-\$2,500 |
| 7-07 | Directly into lake | Residential | Shoreline Erosion, Lack of Shoreline Vegetation, ice damage to shoreline | Add to shoreline buffer, install live stakes to establish shrubs on immediate shoreline where erosion/ ice damage documented. | Medium | Medium: \$500-\$2,500 |
| 7-08 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Lack of Shoreline Vegetation, Shoreline Erosion | Define Foot Path and cover with ECM or crushed stone, Establish Shoreline Buffer Vegetation, Reseed bare soil & thinning grass. | Low | Low: Less than \$500 |
| 7-09 | Directly into lake | Beach Access | Surface Erosion (Rill), Bare Soil, Lack of Shoreline Vegetation, Shoreline/Beach Erosion | Establish a Shoreline Buffer by installing hardy shrubs and ECM between the large rocks along beach area and parking area, minimize the size of parking area if possible, install additional Runoff Diverters across access road to divert flow into woods and away from lake and repair or replace existing rubber razor. Gravel parking area could be resurfaced with a better crushed gravel that will not erode/wash away. Define and minimize picnic areas and stabilize ground with ECM or crushed stone, allow other areas to naturalize with vegetation and do not rake or mow. | Medium | Medium: \$500-\$2,500 |
| 7-10 | Directly into lake | Residential | Surface Erosion (Rill), Bare Soil, Shoreline Erosion | Define Foot Paths and stabilize with ECM or crushed stone, Install Runoff Diverters (water bars) across pathway, establish shoreline Buffer vegetation, and Reseed bare soil & thinning grass. | Medium | Medium: \$500-\$2,500 |
| 7-11 | Directly into lake | Residential | Surface Erosion (Gully), Bare Soil, Lack of Shoreline Vegetation, Shoreline Erosion, Unstable Access | Install Runoff Diverter (water bar) and Establish Shoreline Buffer | Medium | Medium: \$500-\$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|--|--|---------------|----------------------------|
| 7-12 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Shoreline Erosion, Lack of Shoreline Buffer Vegetation. | Define Foot Paths and stabilize with ECM or crushed stone, define and minimize recreational areas within sandy area btw camp and lake, and cover bare soils with crushed stone or ECM, let all other bare space naturalize with vegetation, establish a vegetated shoreline buffer behind large rocks on shoreline and behind small beach area by planting native shrubs and ground covers with ECM. | Medium | Low: Less than \$500 |
| 7-13 | Stream | Town Road | Surface Erosion (Sheet), Road shoulder erosion, road ditch line drains directly to culvert/stream. | Vegetate Road Shoulders and create ditch turnouts to divert ditch runoff into woods instead of stream. | Low | Medium: \$500-\$2,500 |
| 7-14 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Shoreline Erosion | Define Foot Path and Stabilize with ECM or crushed stone, Install Runoff Diverter (water bar) on pathway, add to shoreline Buffer Vegetation, Reseed bare soil & thinning grass. | Low | Low: Less than \$500 |
| 7-15 | Directly into lake | Driveway | Surface Erosion (Sheet) | Assuming seasonal use, Install Runoff Diverter(s) (Rubber Razors, for example) across the driveway to redirect runoff flowing down drive into adjacent stable vegetation and away from the lake. Create a rain garden to receive runoff flow, if needed. | High | High: Greater than \$2,500 |
| 7-16 | Directly into lake | Boat Access | Surface Erosion (Rill), Lack of Shoreline Vegetation, Shoreline Erosion | Add to shoreline Buffer, add stone to launch area if use is disturbing soils on shoreline banks. | Medium | High: Greater than \$2,500 |
| 7-17 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil | Bare spot is result of weed barrier installed to smother an infestation of Japanese knotweed nearing the shoreline. Reseed bare soils & thinning grass with conservation seed mix or clover, cover area immediate surrounding horseshoe pit, where foot traffic is heaviest, with ECM (or relocate horseshoe pits), add to shoreline buffer vegetation. | Medium | Medium: \$500-\$2,500 |
| 7-18 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Winter sand. Two pipes of unknown origin discharge to lake. | Install Runoff Diverter at top of driveway to prevent road runoff from entering drive, install infiltration trench at base of paved access to capture runoff from driveway, Define Foot Paths and stabilize with ECM or crushed stone, Establish Shoreline Buffer, Reseed bare soil & thinning grass. | Medium | Medium: \$500-\$2,500 |
| 7-19 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Roof Runoff Erosion | Install infiltration trench at roof driplines. | Low | Low: Less than \$500 |
| 7-20 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Shoreline Erosion | Define Foot Path top shorefront and stabilize with ECM or crushed stone, Install Runoff Diverter (water bar) ear top of slope to redirect runoff into stable vegetation where it can be absorbed away from the lake. Add to shoreline buffer by planting native shrubs. | Medium | Low: Less than \$500 |
| 7-21 | Directly into lake | Residential | Surface Erosion (Sheet), Soil-Bare, Lack of Shoreline Vegetation | Establish shoreline Buffer, cover bare soil with ECM or revegetate. | Low | Medium: \$500-\$2,500 |
| 7-22 | Directly into lake | Residential | Surface Erosion (Rill), Bare Soil | Install an Infiltration Trench @ roof dripline, Establish Shoreline Buffer Vegetation, Remove trash near shoreline. | Medium | Low: Less than \$500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|---|---|---------------|-----------------------|
| 7-23 | Directly into lake | Residential | Surface Erosion (Sheet), Lack of Shoreline Vegetation | Revegetate bare areas or cover with stable material like ECM or crushed stone, define foot paths and install a Runoff Diverter (water bar), Establish shoreline buffer vegetation. | Low | Low: Less than \$500 |
| 7-24 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Shoreline Erosion, Lack of Shoreline Buffer Vegetation. | Establish shoreline Buffer vegetation, to capture/treat runoff over the large lawn above and stabilize shoreline, by plantings native shrubs, trees, and ground covers and adding ECM. | Low | Low: Less than \$500 |
| 7-25 | Directly into lake | Beach Access | Surface Erosion (Sheet), Bare Soil, Shoreline Erosion, Lack of Shoreline Vegetation. Erosion of beach/dock access opening on shoreline. | Add angular stone over geotextile fabric on eroded portion of bank at dock/beach access point (where tree roots are exposed). Add ECM and native plantings above to further stabilize bar soils. | Low | Medium: \$500-\$2,500 |
| 7-26 | Directly into lake | Beach Access | Surface Erosion (Rill), Bare Soil, Shoreline erosion | Vegetate ice berm as much as possible with hardy native shrubs with good root systems, deepen/widen shoreline buffer zone, request technical assistance to see if angular stone (riprap) would be permitted here. | Low | Medium: \$500-\$2,500 |
| 7-27 | Directly into lake | Beach Access | Surface Erosion (Gully) | Investigate source of flow. If natural, establish and maintain a vegetative buffer zone around the channel including the channel's outlet at the lake. Remove unnatural debris placed at outlet. | Medium | Low: Less than \$500 |
| 7-27b | Directly into lake | Boat Access | Surface Erosion(sheet), Shoreline Erosion | Install runoff diverters across launch/ROW and stabilize bare soils by revegetating or covering with ECM or crushed stone. | Medium | Medium: \$500-\$2,500 |
| 7-28 | Directly into lake | Beach Access | Surface Erosion (Sheet), Bare Soil, Shoreline Undercut, Shoreline Erosion, Unstable Access | Define foot paths and water/beach access points and stabilize surface with ECM or crushed stone, establish shoreline buffer vegetation and add ECM to cover soils throughout the shorefront and on immediate shoreline to prevent further erosion, existing retaining wall is failing and should be removed, request technical assistance to better understand if a shoreline stabilization project using angular stone (riprap) could be permitted here. | High | Medium: \$500-\$2,500 |
| 7-29 | Directly into lake | Beach Access | Surface Erosion (Rill), Shoreline Erosion | Install Runoff Diverters Rubber razor or Water bar) to prevent flow down pathway and into lake, potentially could add crushed stone to stabilize surface (depending on use). | Medium | Medium: \$500-\$2,500 |
| 7-30 | Directly into lake | Beach Access | Surface Erosion (Sheet & Rill), Shoreline Erosion | Install Runoff Diverters across access road, add better packing gravel or crushed stone to parking/access road surface to stabilize soils, reseed bare soil & thinning grass, Add vegetation on the shoreline and adjacent stream banks. Cover remaining bare soils with ECM or crushed stone, or vegetate. | Medium | Low: Less than \$500 |
| 7-31 | Directly into lake | Beach Access | Surface Erosion (Gully), Shoreline/beach Erosion | Install Runoff Diverters (Water bar or Rubber Razor) Establish Shoreline Buffer Vegetation, Reseed bare soil & thinning grass. | Medium | Medium: \$500-\$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|---|--|---------------|----------------------------|
| 8-01 | Stream | Town Road | Unstable Culvert inlet/outlet, Road Shoulder Erosion (Rill), Winter Sand Buildup | Armor Culvert Inlet/outlet, Vegetate road shoulder | Low | Medium: \$500-\$2,500 |
| 8-02 | Stream | Town Road | Surface Erosion (Rill), Unstable culvert inlet/outlet, Road Shoulder Erosion (Rill), Plow and grader berms | Armor culvert inlet/Outlet, vegetate road shoulder | Low | Low: Less than \$500 |
| 8-03 | Stream | State Road | Surface Erosion (Sheet), Unstable culvert inlet/outlet, Culvert Crushed/Broken, Road Shoulder Erosion (Sheet), Culvert completely rusted out on bottom. | Replace Culvert and Armor culvert Inlet/Outlet, Armor road shoulder or revegetate | Low | High: Greater than \$2,500 |
| 8-04 | Stream | Town Road | Surface Erosion (Rill), Unstable culvert inlet/outlet | Armor culvert inlet/Outlet and revegetate | Medium | Low: Less than \$500 |
| 8-05 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil | Stabilize Foot Path and stabilize with ECM or crushed stone. Stone might be better to stabilize the path because the water often covers the path in the spring. | Low | Low: Less than \$500 |
| 8-06 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Inadequate Shoreline Vegetation, erosion on long, gravel/grassed path goes all the way to the lake. | Reseed bare soil & thinning grass, Add to Shoreline Buffer Vegetation, Path surface needs stabilization with ECM or crushed stone and runoff diverter across. Landowner needs path to still be drivable. | Medium | Medium: \$500-\$2,500 |
| 8-07 | Stream | Private Road | Unstable culvert inlet/outlet, Road Shoulder Erosion (Rill). | Armor Culvert Inlet/outlet, Vegetate road shoulder | Medium | Low: Less than \$500 |
| 8-08 | Ditch | Private Road | Surface Erosion (Gully), Culvert Undersized, Culvert Unstable inlet/outlet, Ditch Undersized, runoff is overtopping road and eroding a gully. | Install Plunge Pools on both sides of culvert, replace with larger culvert set at lower elevation, reshape ditch to increase capacity and vegetate or armor with stone, reshape road to a crown and resurface with new crushed gravel. | Medium | High: Greater than \$2,500 |
| 8-09 | Directly into lake | Residential | Surface Erosion (Gully), Failing retaining structure on shoreline- timbers are failing and dirt falling through into lake. | Request site visit from Maine DEP and 30 Mile for technical assistance. | Medium | Medium: \$500-\$2,500 |
| 8-10 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Inadequate Shoreline Vegetation, Dirt path is a conduit for runoff directly to lake. | Define and Stabilize Foot Path with ECM or crushed stone, Install Runoff Diverter (water bar) across path to redirect runoff on path surface into adjacent stable vegetation where it can be absorbed away from the lake, Add to Shoreline Buffer. | Medium | Low: Less than \$500 |
| 9-01 | Stream | Town Road | Unstable Culvert inlet/outlet, Culvert Undersized, Road Shoulder Erosion (Gully), Winter Sand Buildup. | Replace, Lengthen, and Enlarge culvert, Armor Culvert Inlet/Outlet, Armor entire road shoulder, we could not assess culvert condition banks too steep. | Medium | High: Greater than \$2,500 |
| 9-02 | Stream | Town Road | Unstable culvert inlet/outlet, Road Shoulder Erosion (Gully), Winter Sand Buildup | Armor culvert Inlet/Outlet, Clean up winter sand | Medium | Medium: \$500-\$2,500 |
| 9-03 | Ditch | State Road | Unstable Culvert inlet/outlet, Culvert Undersized, Culvert Crushed/Broken, there are 2-3 culverts that cross under the road to drain the ditch that are unstable. | Replace culverts, Armor culvert Inlet/Outlet, add plunge pools at culvert outlet. | Medium | High: Greater than \$2,500 |
| 9-04 | Ditch | State Road | Culvert Crushed/Broken, Ditch Erosion (Gully), Road Shoulder Erosion (Gully), Winter Sand Buildup, Ditch runoff is going around culvert rather than through it. | Replace culvert, Reshape Ditch, Install Check Dams, Clean up winter sand | Medium | High: Greater than \$2,500 |

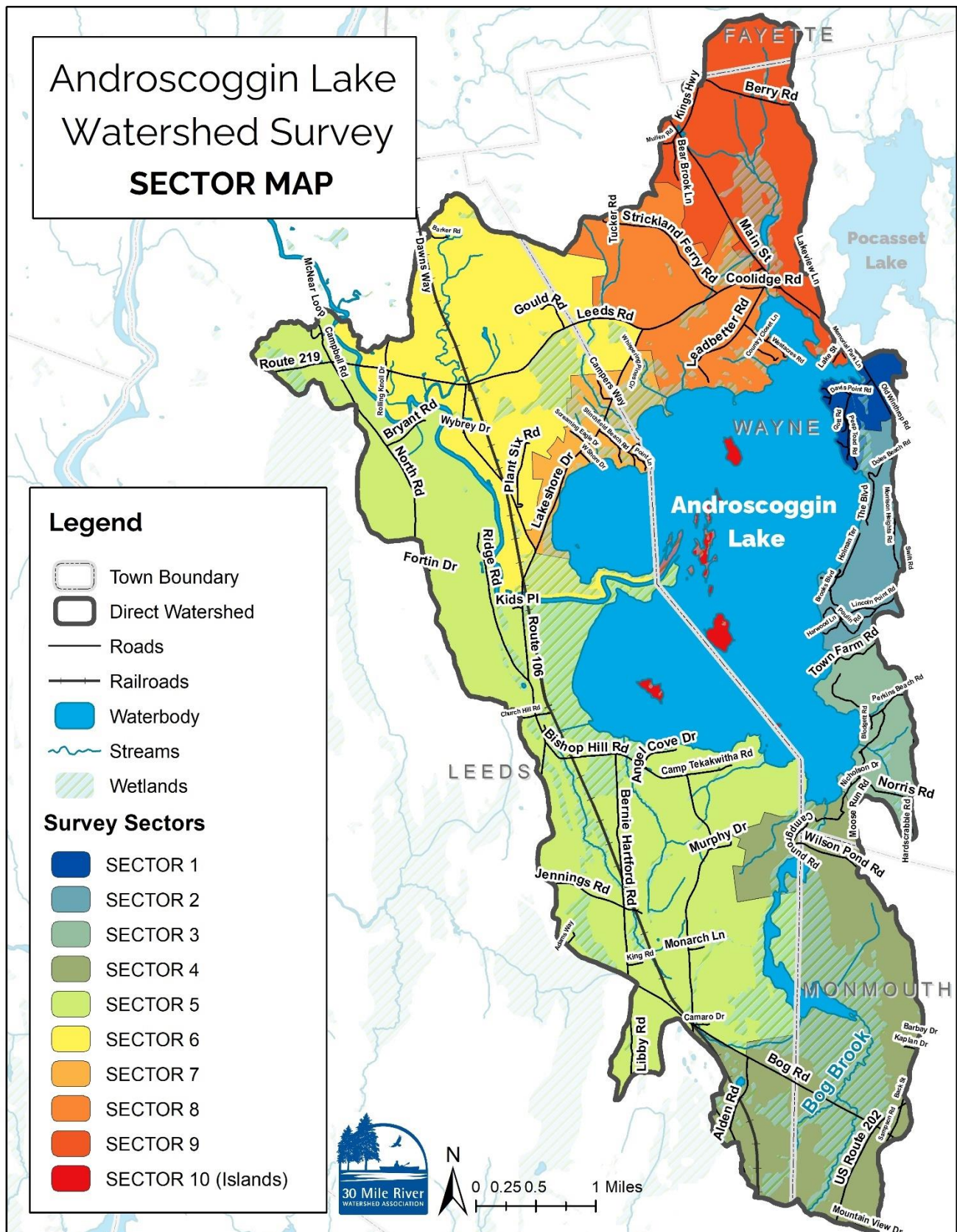
| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|---|---|---------------|----------------------------|
| 9-05 | Ditch | Private Road | Culvert Crushed/Broken, Unstable culvert inlet/outlet, Ditch Erosion (Rill), Road Shoulder Erosion (Sheet), Winter Sand Buildup | Replace culvert, Armor culvert Inlet/Outlet, vegetate ditch or armor with stone, remove winter sand, vegetate road shoulders. | Low | Medium: \$500-\$2,500 |
| 9-06 | Ditch | State Road | Unstable culvert inlet/outlet, Road Shoulder Erosion (Gully), Winter Sand Buildup | Replace with longer culvert and armor inlet/outlet, Repair road shoulder, vegetate, and remove winter sand. | Medium | High: Greater than \$2,500 |
| 9-07 | Stream | State Road | Unstable culvert inlet/outlet, Ditch Erosion (Sheet), Road Shoulder Erosion (Gully), Winter Sand Buildup, Ditch drains directly to stream, Culvert perched on outlet side. | Replace culvert and Armor Inlet/Outlet, Install Sediment Pools, Vegetate Road Shoulder, remove winter sand, investigate upstream of culvert for sources contributing historical erosion, investigate pipe in bank from adjacent lot - could be foundation drain or other. | Medium | High: Greater than \$2,500 |
| 9-08 | Stream | State Road | Culvert Crushed/Broken, Unstable culvert inlet/outlet, Ditch Erosion (Rill), Road Shoulder Erosion (Sheet), Winter Sand Buildup, False ditch leading to stream. | Armor culvert Inlet/Outlet, replace culvert, and add riprap to area where false ditch is forming. Culvert is perched on outlet side- Extend curb on road and round it into driveway. | Medium | High: Greater than \$2,500 |
| 9-09 | Ditch | Commercial | Surface Erosion (Sheet), Surface Erosion (Rill & Gully), Unstable culvert inlet/outlet, Bare Soil, Sediment basin needs maintenance, culvert on Coolidge Rd leads to catch basin, lots of gravel in ditch around culvert. | Armor culvert Inlet/Outlet, remove debris/sediment in catch basin, culvert, and, riprap basin, stabilize sandy/gravel area surrounding catch basin with pavement or recycled asphalt. | Medium | High: Greater than \$2,500 |
| 9-10 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Lack of Shoreline Vegetation, Shoreline Erosion | Define Foot Path and Stabilize with ECM or crushed stone, Install Runoff Diverter (water bar) across path), Add to Shoreline Buffer. | Low | Low: Less than \$500 |
| 9-11 | Directly into lake | Residential | Surface Erosion (Sheet), Bare Soil, Lack of Shoreline Vegetation | Define Foot Path and Stabilize with ECM or crushed stone, Infiltration Steps could be installed on steep sections, reseed bare soil & thinning grass, No Raking, establish a vegetated shoreline buffer zone, and create opportunities to infiltrate runoff by planting vegetation along slope and/or adding ECM berms. | Medium | Medium: \$500-\$2,500 |
| 9-12 | Directly into lake | Residential | Uncovered Soil Pile, Looks like big gravel pile from plowing/winter maintenance about 30 ft. from lake. | Remove pile, or in the very least, cover with a tarp and surround with ECM berms or silt fence so it cannot wash into lake. | Low | Low: Less than \$500 |
| 9-13 | Ditch | State Road | Culvert Crushed/Broken, Ditch Erosion (Rill), Two culverts that cross the road at different angles. Sink hole at one culvert outlet. Culvert rusted out and needs replacement. | Replace culvert and armor inlet/outlet, install sediment pools and armor with stone, Remove debris/sediment buildup. | Medium | High: Greater than \$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|---------|--------------------|--------------------|---|--|---------------|----------------------------|
| 9-14 | Directly into lake | Commercial | Surface Erosion (Rill), Very steep slope next to boat launch, eroded bare soils throughout, runoff from roofs is eroding soils as it flows across front of property and onto beach, boat launch conveys runoff into lake. | Dripline trenches or rain gardens at roof driplines needed, install stable surface materials (ECM or crushed rock) on gathering areas around picnic tables, grill, and boat racks. Define all pathways, stabilize, and install water bars where needed. Improve stand of vegetation between club and beach and retrofit rain gardens where possible to increase infiltration throughout. Boat launch needs a runoff diversion higher up toward Lake Road / Parking lot to divert some flow into woods or other stable area. More rock could be added to western edge of launch area. Adding a ditch closer to lake with check dams would be a big project here with very limited space and no place to turn out. | High | Medium: \$500-\$2,500 |
| DR-NPS1 | Directly into lake | Agriculture | Livestock fencing and very minimal buffer immediately above eroded section of riverbank | Vegetate riverbank and increase width of the maintained vegetated buffer between river and fields to ensure bank stability, prevent further erosion, and increase infiltration and treatment of runoff from above. | Medium | Medium: \$500-\$2,500 |
| DR-NPS3 | Directly into lake | Commercial | Surface Erosion (Sheet & Rill), Bare Soil, Unstable shoreline | Define footpaths and cover with ECM or crushed stone, establish more robust buffer throughout shoreline, the number of boat access points should be minimized and more narrow access points defined, eroded soils stabilized with vegetation, ECM, or rock. Temporary gang ways that can span the shoreline bank could be used to minimize the impact to a degradation of banks from continued foot traffic to docks. | Medium | Medium: \$500-\$2,500 |
| DR-NPS4 | Directly into lake | Boat Access | Shoreline erosion, Lack of shoreline vegetation. | Establish a vegetated buffer. Define narrow access points and stabilize worn or bare soil with ECM or crushed stone. Use seasonal gangways that span the shoreline bank and prevent foot traffic on riverbank itself. | Medium | Medium: \$500-\$2,500 |
| JS-01 | Directly into lake | Commercial | Surface Erosion (Rill & Gully), Bare Soil, Lack of Shoreline Vegetation | Define the beach as a separate space from access road and surrounding shorefront camp sites by creating a planted area or rain garden at the base of slope just inland of the swimming beach entrance. Install a runoff diverter at top of the beach access road and improve road surface by reshaping with new crushed bluestone surface material. | Medium | High: Greater than \$2,500 |
| JS-02 | Directly into lake | Commercial | Surface Erosion (Sheet, Rill, & Gully), Bare Soil, Inadequate Shoreline Vegetation, Shoreline Erosion, Unstable Shoreline Access, Lack of Shoreline Vegetation | Define and stabilize access points Demarcate a wider (deeper) vegetative buffer zone between lake and boat launch access road by not mowing and planting native shrubs, ground covers, and grasses. Define and stabilize all access points with ECM or crushed stone, and install runoff diversions across pathway and roads that lead to the launch area to prevent unimpeded runoff flow into the lake. | Medium | Medium: \$500-\$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|--------------------|--|--|---------------|----------------------------|
| JS-03 | Directly into lake | Commercial | Surface Erosion (Sheet & Rill), Bare Soil, Lack of Shoreline Vegetation, Shoreline Erosion, Unstable shoreline Access | Establish buffer along bank between campsite and Bog Brook, reseed bare soil & thinning grass, define pathways and access points to stream/beach, and stabilize surfaces with ECM or crushed stone. | Medium | Medium: \$500-\$2,500 |
| JS-04 | Directly into lake | Commercial | Surface Erosion (Sheet & Rill), Soil Bare, Lack of Shoreline Vegetation, Shoreline Erosion, Unstable shoreline Access. | Define Foot Path and Stabilize with ECM or crushed stone, Install Runoff Diverters (water bars) across pathways, establish a more robust buffer throughout by planting native shrubs and ground covers, reseed bare soil & thinning grass, stabilize open/eroded section of shoreline next to bridge, define footpath along east stream bank and stabilize. Could improve buffer throughout entire area. | Medium | Medium: \$500-\$2,500 |
| JS-05 | Directly into lake | Commercial | Surface Erosion (Gully), Bare Soil, Inadequate Shoreline Vegetation, Shoreline Erosion, Unstable Shoreline Access, gap in shoreline buffer conveys runoff from adjacent campsite and roadway above. | Build up road and campsite site surface material with better hard-packing gravel and reshape smooth or add crushed stone (on campsite only). Discontinue lake access point and fill in gap in shoreline buffer with vegetation and ECM, OR better define access and stabilize with rock, ECM and plantings. | Medium | Medium: \$500-\$2,500 |
| JS-06 | Directly into lake | Commercial | Surface Erosion (Rill), Bare Soil, Lack of Shoreline Vegetation, Shoreline Erosion, Unstable Shoreline Access. Currently used as boat launch / water access point. Erosion on site #220 flows across roadway and into launch/lake. | Owner unsure if they will keep launch open. If not, close in current gap in buffer vegetation by adding native shrubs and add mulch. If launch remains, stabilize surface with crushed stone and install a runoff diverter to prevent runoff from entering lake. Gravel in site # 220 should be improved with bluestone gravel or clean crushed stone. | Medium | Medium: \$500-\$2,500 |
| JS-07 | Minimal Vegetation | Commercial | Surface Erosion (Gully) | Build Up roadway with new hard-packing crushed gravel (crushed bluestone) and reshape to a crown, install a runoff diverter (Broad-based Dip) at top of slope and send runoff into vegetated area on left when looking at the lake from top of slope to reduce the amount of flow downhill toward the lake. | Medium | Medium: \$500-\$2,500 |
| JS-08 | Minimal Vegetation | Commercial | Surface Erosion (Rill & Sheet) | Build up road with new hard-packing crushed gravel (crushed bluestone) and reshape to a crown, install a runoff diverter (Broad-based Dip) to send runoff into adjacent vegetation and reduce the amount of flow going downhill toward the lake. | Medium | High: Greater than \$2,500 |
| JS-09 | Stream | Commercial | Surface Erosion (Sheet & Rill), Bare Soil, Soil Delta in Stream/Lake. Surface sediment from campsite is eroding down between rocks and into stream. | Add ECM and native plantings to the edge of campsite above boulders and berm up ECM at edges. Resurface campsite better, hard-packing gravel and reshape smooth. | Low | Medium: \$500-\$2,500 |
| JS-10 | Stream | Commercial | Surface Erosion (Sheet, Rill, and Gully), Bare Soil. Playground sand migrating toward bog brook. Runoff leaving basketball court causing erosion. | Contain playground sand by installing a retaining structure at edge of playground, install infiltration trench or vegetate/mulch edge of basketball court to capture and infiltrate runoff flow. Mulch or reseed/vegetate all remaining bare areas. | Medium | Medium: \$500-\$2,500 |

| Site # | Flow into lake via | Land use/ Activity | PROBLEMS | RECOMMENDED FIX | Impact Rating | Cost to Fix |
|--------|--------------------|-----------------------|--|--|---------------|----------------------------|
| JS-11 | Minimal Vegetation | Commercial | Surface Erosion (Rill), Bare Soil, Roof Runoff Erosion. | Install an Infiltration Trench @ roof dripline, Reseed bare soil & thinning grass. | Medium | Medium: \$500-\$2,500 |
| JS-12 | Stream | Commercial | Surface Erosion(Sheet, Rill, & Gully), Road Shoulder Erosion (Rill), Bare Soil, Soil Delta in Stream/Lake, Shoreline Erosion. Road runoff is washing directly into Bog Brook at bridge crossing. | Build up and add better hard-packing gravel (bluestone gravel) and reshape to crown, vegetate shoulders. Need to manage runoff flowing to stream crossing from both sides by installing a broad-based dip that sends runoff into turnouts into woods away from stream. | Medium | High: Greater than \$2,500 |
| JS-13 | Ditch | Commercial/ Town Road | Surface Erosion (Rill), Road Shoulder Erosion (Rill) | Install ditch and cross culvert west of campground entrance and to redirect runoff to wooded area in opposite side of road. Improved ditch and turnout needed in ditch line east of entrance to reduce runoff flowing from campground entrance/parking into stream crossing at end of ditch line. | Medium | High: Greater than \$2,500 |
| TK-01 | Directly into lake | Commercial | Surface Erosion (Rill & Gully), Bare Soil. | Beach access is currently paved, but crumbling. May remove pavement surface over time and replace with ECM. Reseed/vegetate surrounding bare soils. Existing culvert has heaved and is currently acting as a runoff diverter. If culvert is replaced/removed in the future, make sure to maintain a runoff diverter at top of slope. | Low | Medium: \$500-\$2,500 |

Appendix B: 2022 Watershed Survey Maps



Androscoggin Lake Watershed Survey

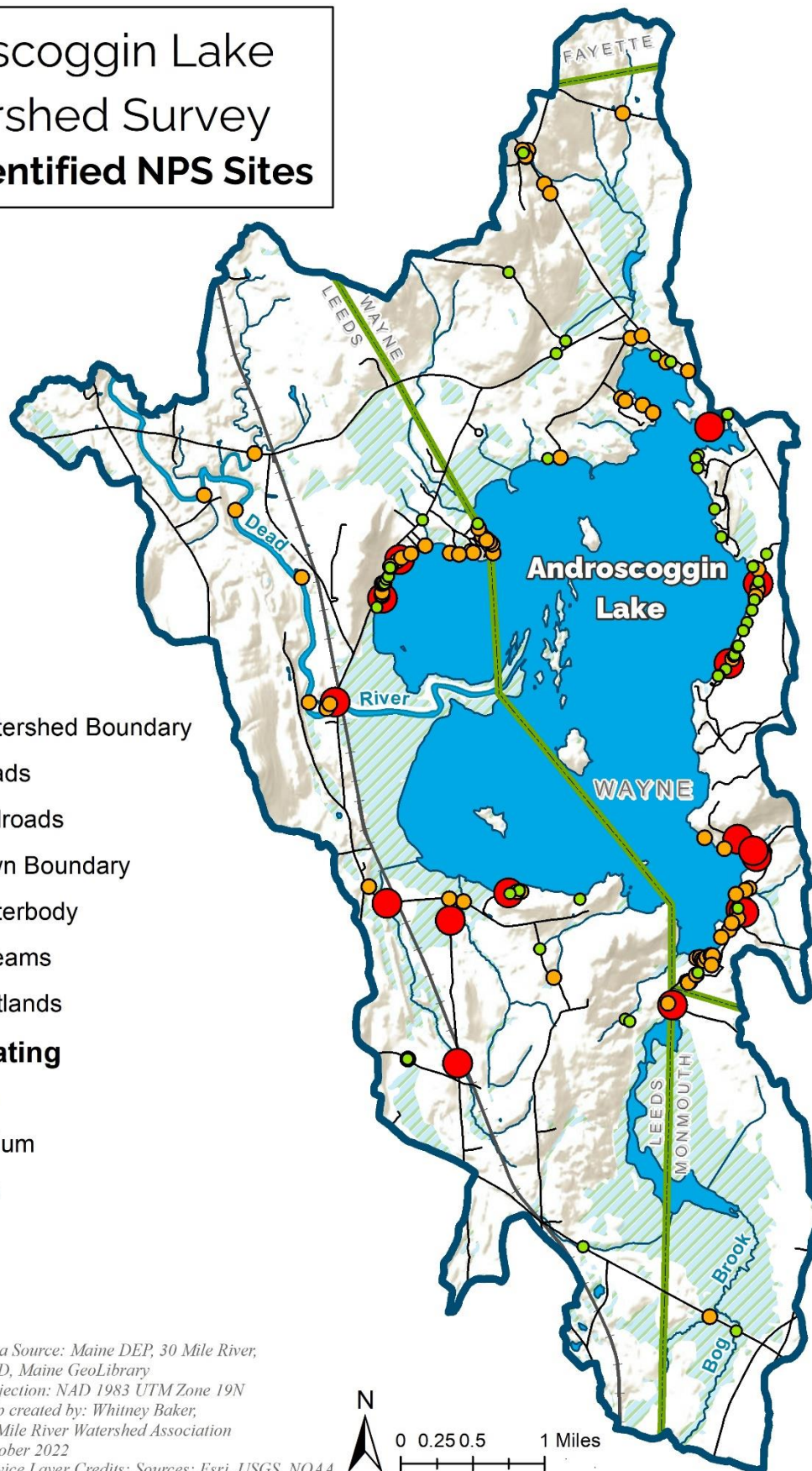
2022 Identified NPS Sites

Legend

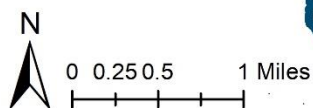
-  Watershed Boundary
-  Roads
-  Railroads
-  Town Boundary
-  Waterbody
-  Streams
-  Wetlands

Impact Rating

-  Low
-  Medium
-  High



Data Source: Maine DEP, 30 Mile River, NHD, Maine GeoLibrary
 Projection: NAD 1983 UTM Zone 19N
 Map created by: Whitney Baker,
 30 Mile River Watershed Association
 October 2022
 Service Layer Credits: Sources: Esri, USGS, NOAA





Androscoggin Lake Watershed Survey SECTOR 1 Sites

**Androscoggin
Lake**

Legend

-  Watershed Boundary
-  Roads
-  Railroads
-  Town Boundary
-  Stream/River
-  Wetlands

2022 Survey Sites: Land Use Category & Impact

-  Municipal / Public, Low
-  Residential, Low



Data: Maine DEP, 30 Mile, NHD, Maine GeoLibrary
Projection: NAD 1983 UTM Zone 19N
Map created by: Whitney Baker,
30 Mile River Watershed Association, Oct. 2022

0 200 400 800 Feet



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Androscoggin Lake Watershed Survey SECTOR 2 Sites

Androscoggin
Lake

WAYNE

Legend

-  Watershed Boundary
-  Roads
-  Railroads
-  Town Boundary
-  Stream/River
-  Wetlands

2022 Survey Sites: Land Use Category & Impact

-  Residential, Low
-  Road, Low
-  Road, Medium
-  Road, High



Data: Maine DEP, 30 Mile, NHID, Maine GeoLibrary
Projection: NAD 1983 UTM Zone 19N
Map created by: Whitney Baker,
30 Mile River Watershed Association, Oct. 2022







0 250 500 1,000 Feet



Androscoggin Lake Watershed Survey

SECTOR 3 Sites

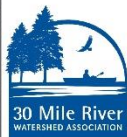
Legend

-  Watershed
-  Town Boundary
-  Roads
-  Stream/River
-  Railroads
-  Wetlands

2022 Survey Sites:

Land Use Category & Impact

-  Residential, Medium
-  Residential, High
-  Road, Medium
-  Road, High
-  Beach Access, Medium
-  Boat Access, Low
-  Boat Access, Medium



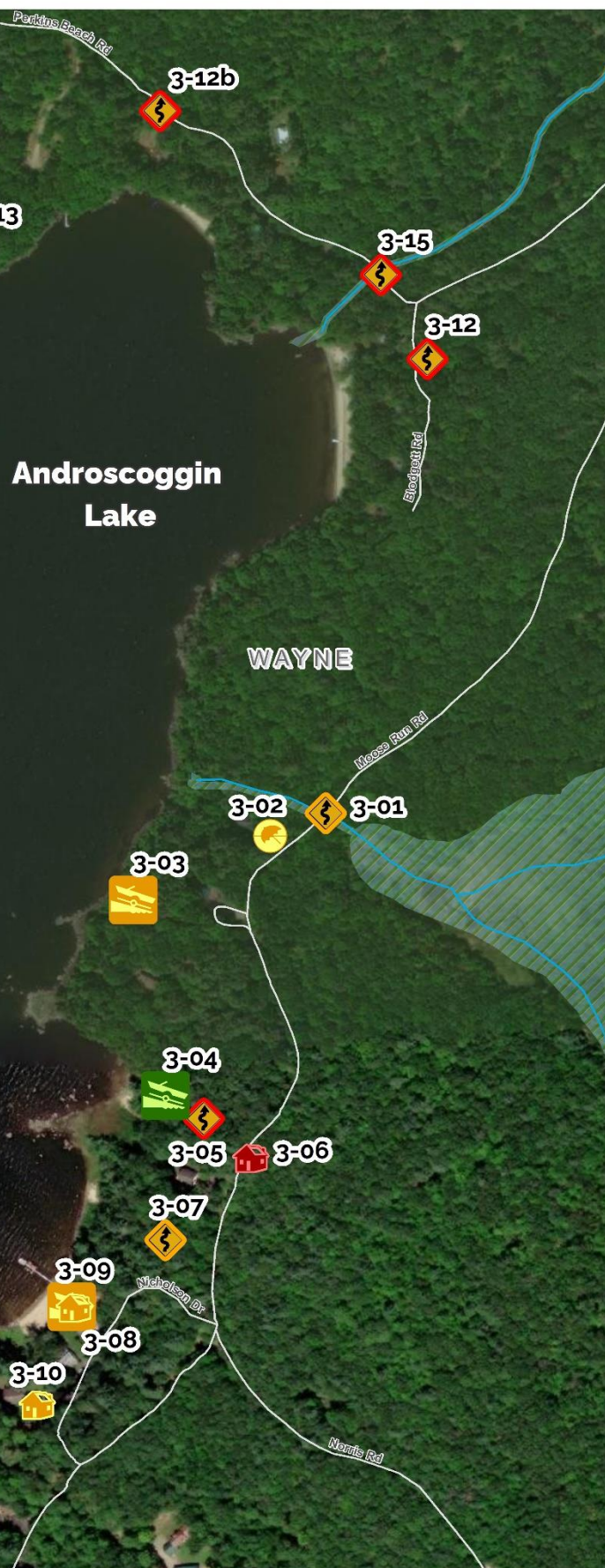
Data: Maine DEP, 30 Mile, NHD, Maine GeoLibrary
 Projection: NAD 1983 UTM Zone 19N
 Map created by: Whitney Baker,
 30 Mile River Watershed Association, Oct. 2022

0 175 350 700 Feet



Androscoggin Lake







WAYNE



Androscoggin Lake Watershed Survey

SECTOR 4 Sites (ALL)

Legend

-  Watershed
-  Town Boundary
-  Roads
-  Stream/River
-  Railroads
-  Wetlands

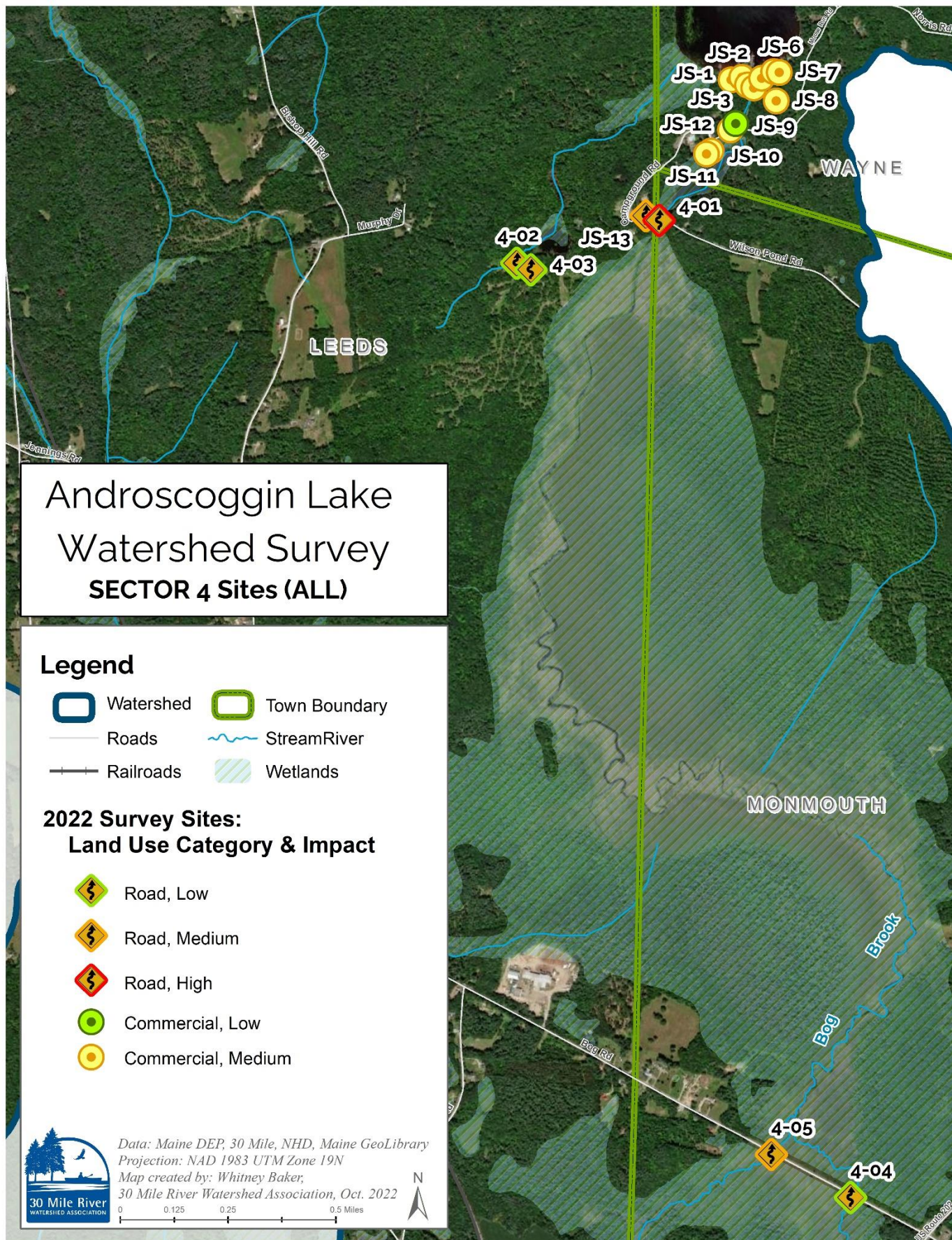
2022 Survey Sites: Land Use Category & Impact

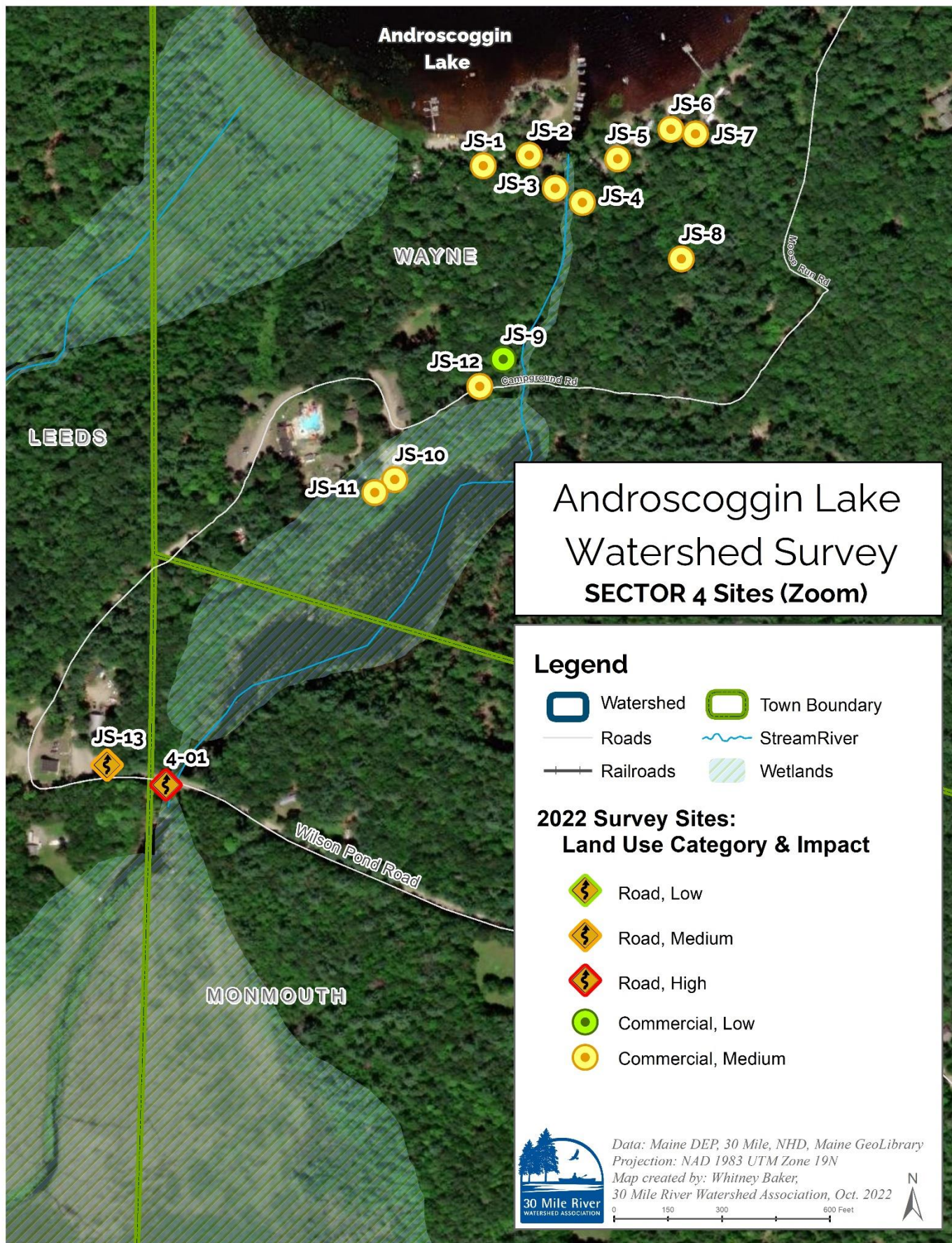
-  Road, Low
-  Road, Medium
-  Road, High
-  Commercial, Low
-  Commercial, Medium



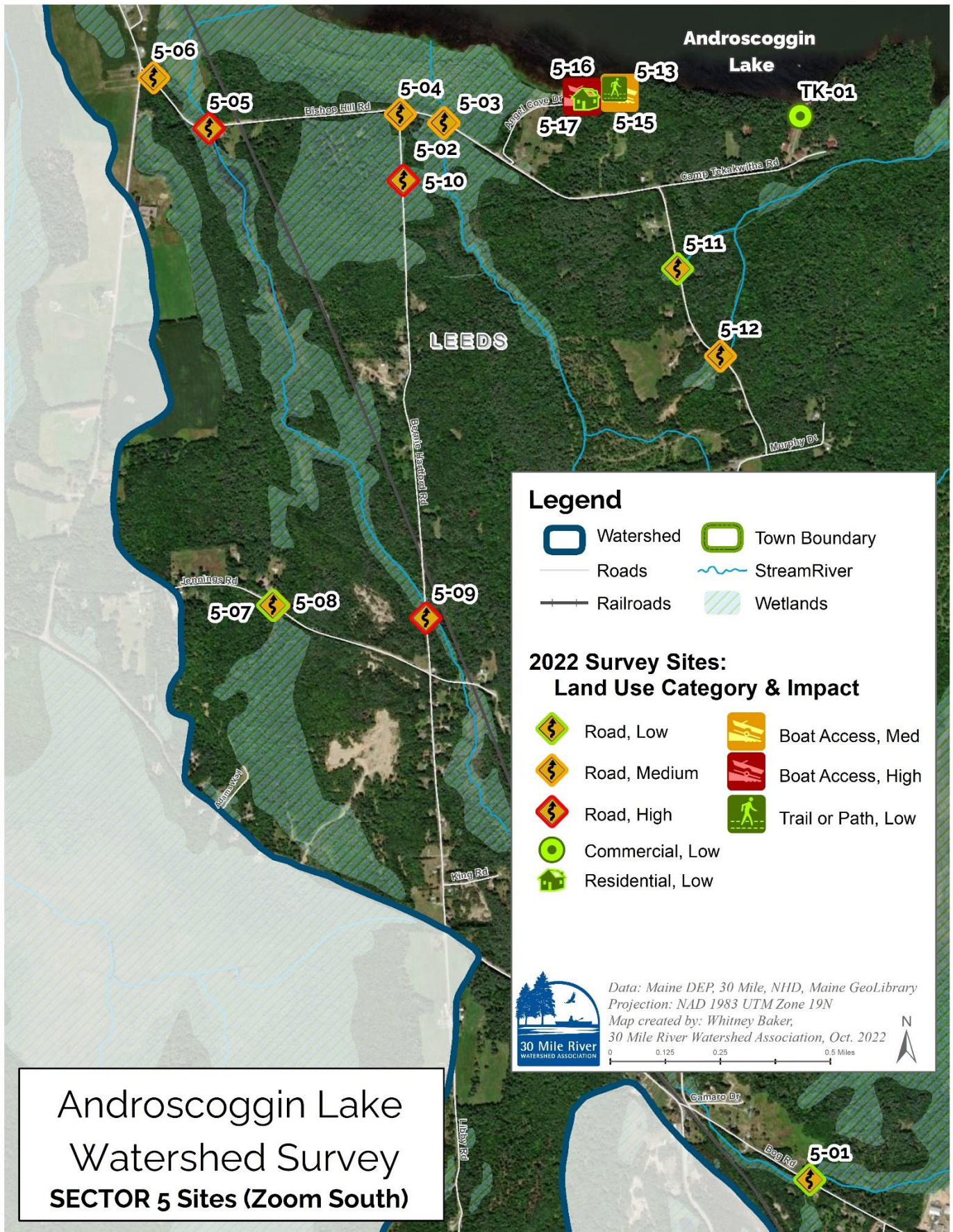
Data: Maine DEP, 30 Mile, NHD, Maine GeoLibrary
 Projection: NAD 1983 UTM Zone 19N
 Map created by: Whitney Baker,
 30 Mile River Watershed Association, Oct. 2022

0 0.125 0.25 0.5 Miles

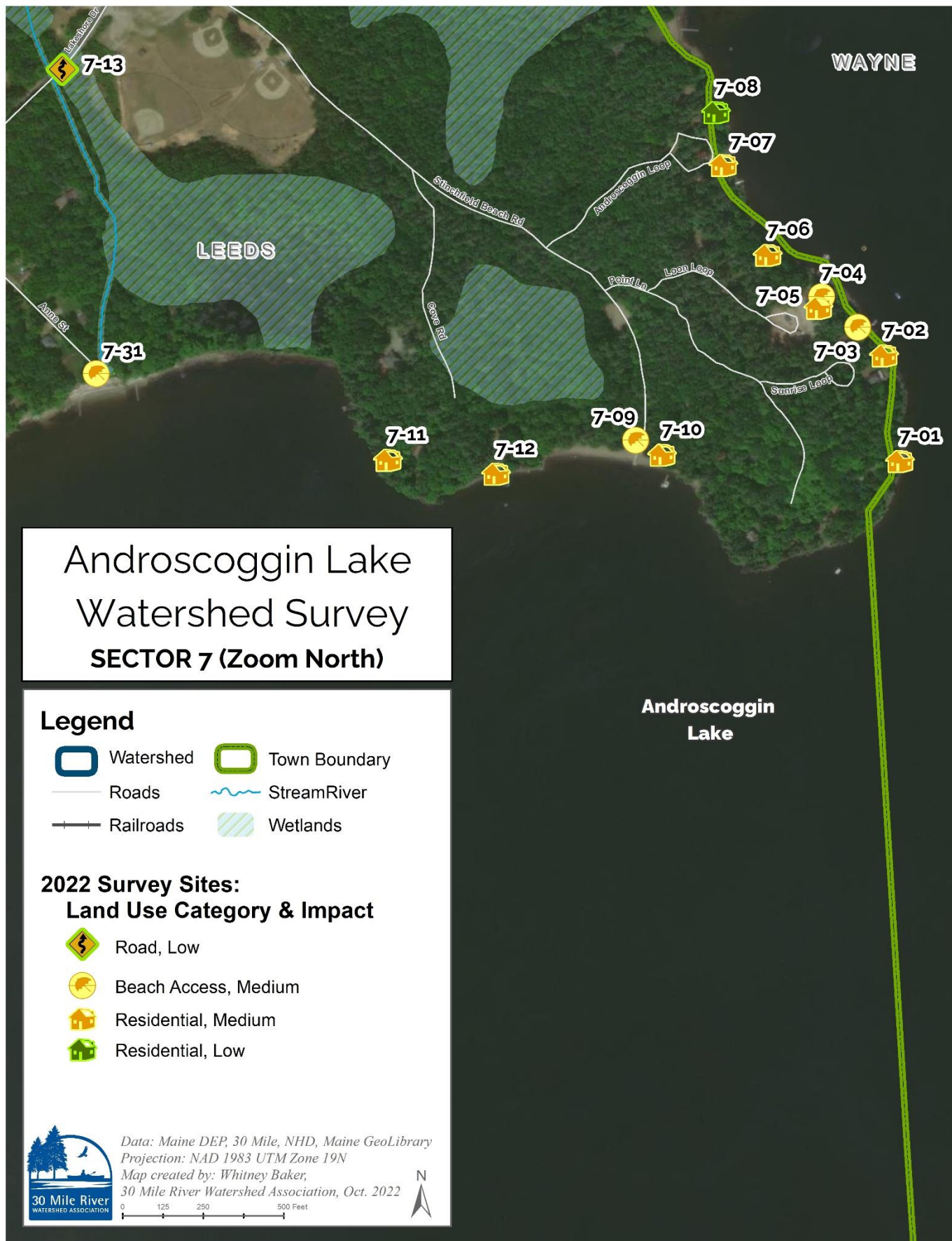


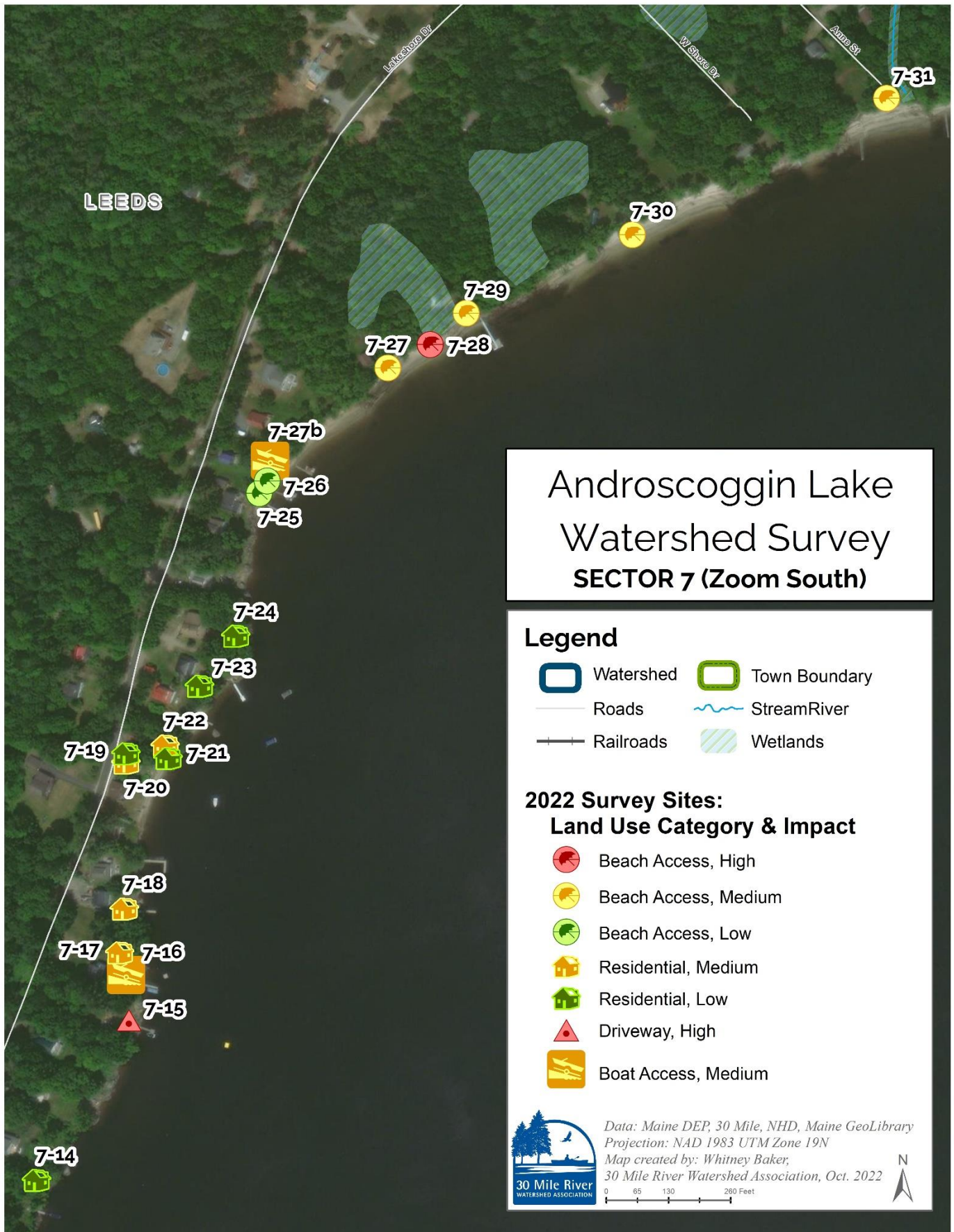


















Androscoggin Lake Watershed Survey SECTOR 8

Legend

-  Watershed
-  Town Boundary
-  Roads
-  Stream/River
-  Railroads
-  Wetlands

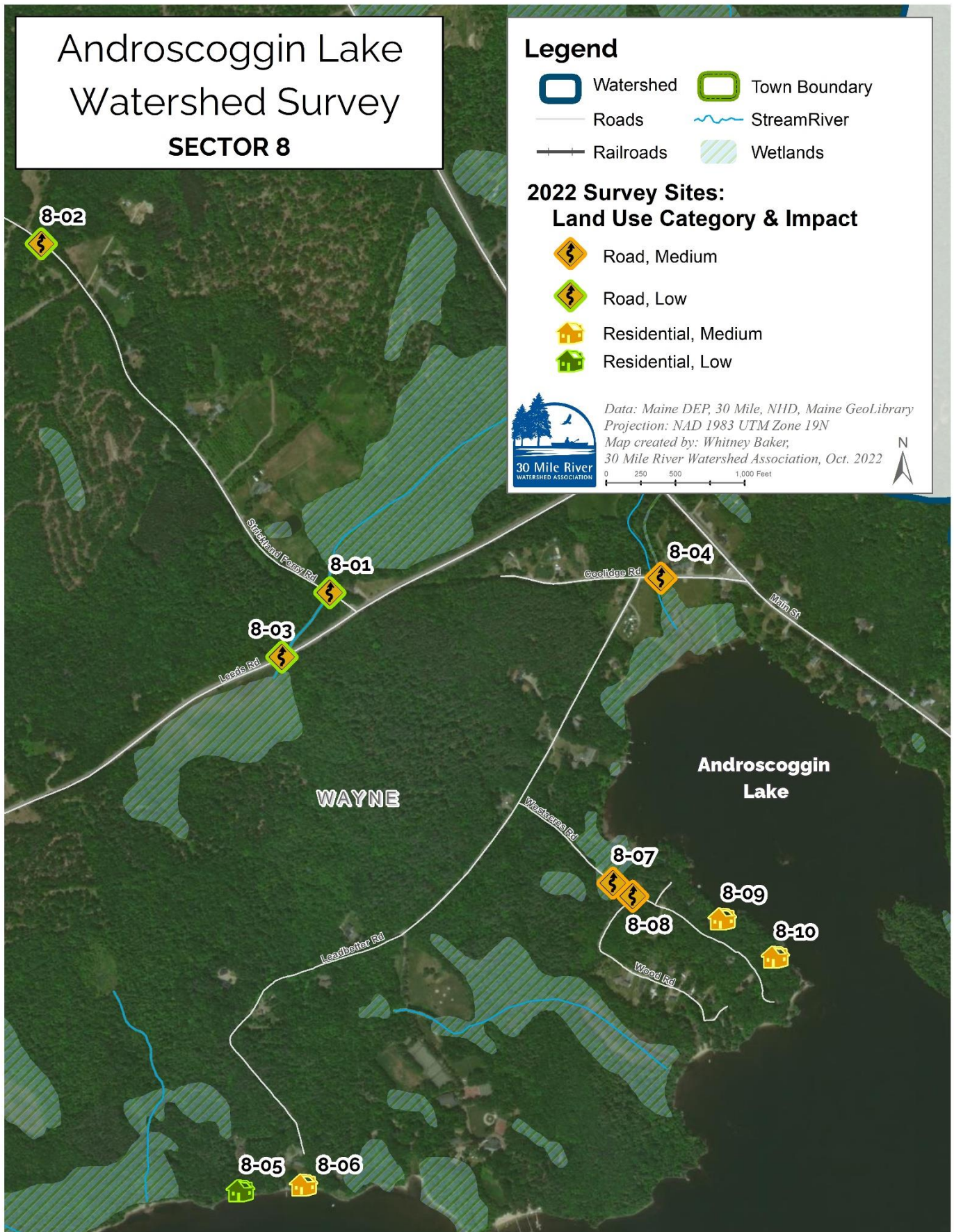
2022 Survey Sites: Land Use Category & Impact

-  Road, Medium
-  Road, Low
-  Residential, Medium
-  Residential, Low









Data: Maine DEP, 30 Mile, NHD, Maine GeoLibrary
Projection: NAD 1983 UTM Zone 19N
Map created by: Whitney Baker,
30 Mile River Watershed Association, Oct. 2022

0 250 500 1,000 Feet



Androscoggin Lake Watershed Survey SECTOR 9

Legend

-  Watershed
-  Town Boundary
-  Roads
-  Stream/River
-  Railroads
-  Wetlands

2022 Survey Sites: Land Use Category & Impact

-  Commercial, High
-  Commercial, Medium
-  Road, Medium
-  Road, Low
-  Residential, Medium
-  Residential, Low



Data: Maine DEP, 30 Mile, NHD, Maine GeoLibrary
Projection: NAD 1983 UTM Zone 19N
Map created by: Whitney Baker,
30 Mile River Watershed Association, Oct. 2022

0 250 500 1,000 Feet

