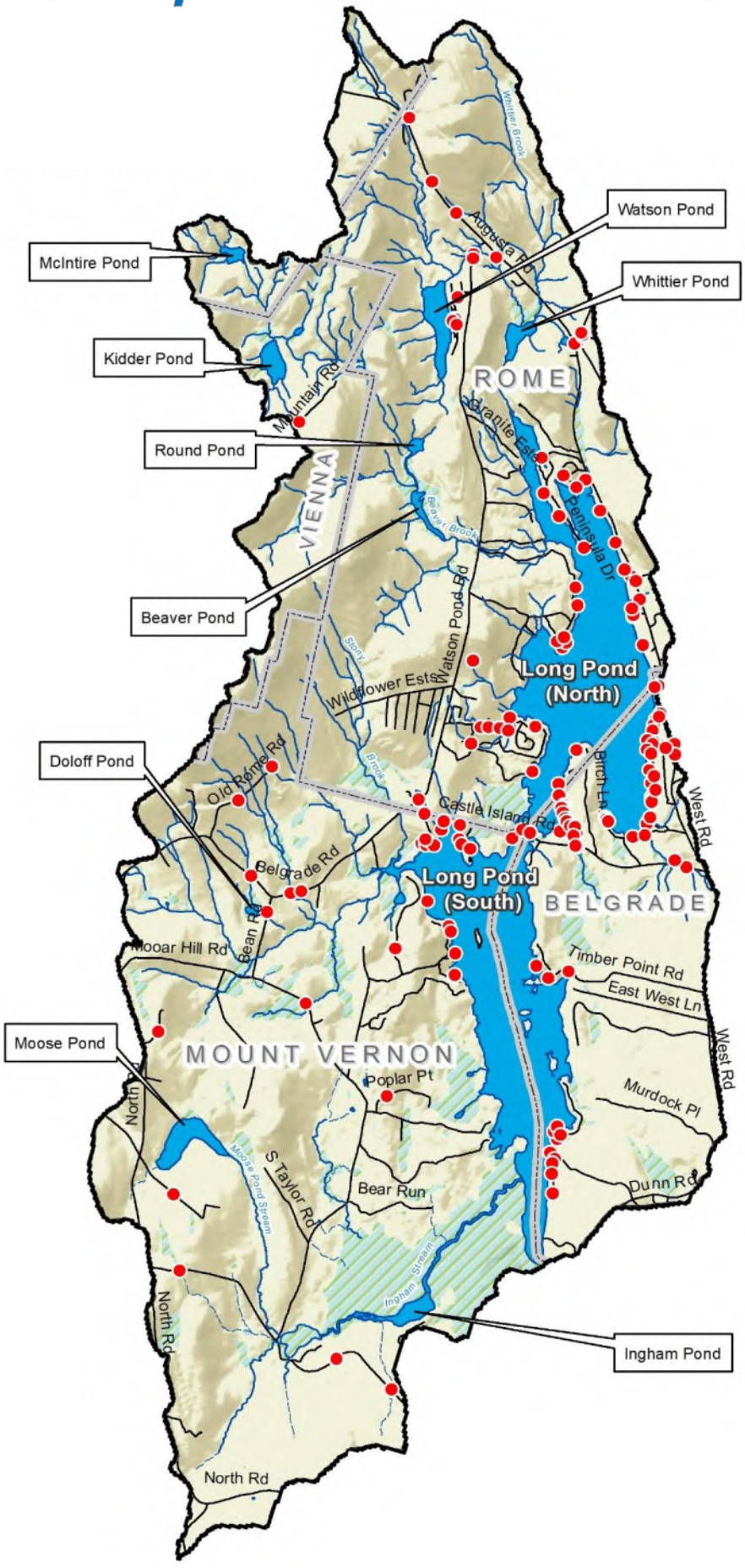
WATERSHED SURVEY REPORT

LONG POND, BELGRADE LAKES



APRIL 2021

LONG POND
WATERSHED SURVEY REPORT

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Cover Images: *Survey photos (BLA) and results map (Ecological Instincts)*

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Report Prepared by: Ecological Instincts

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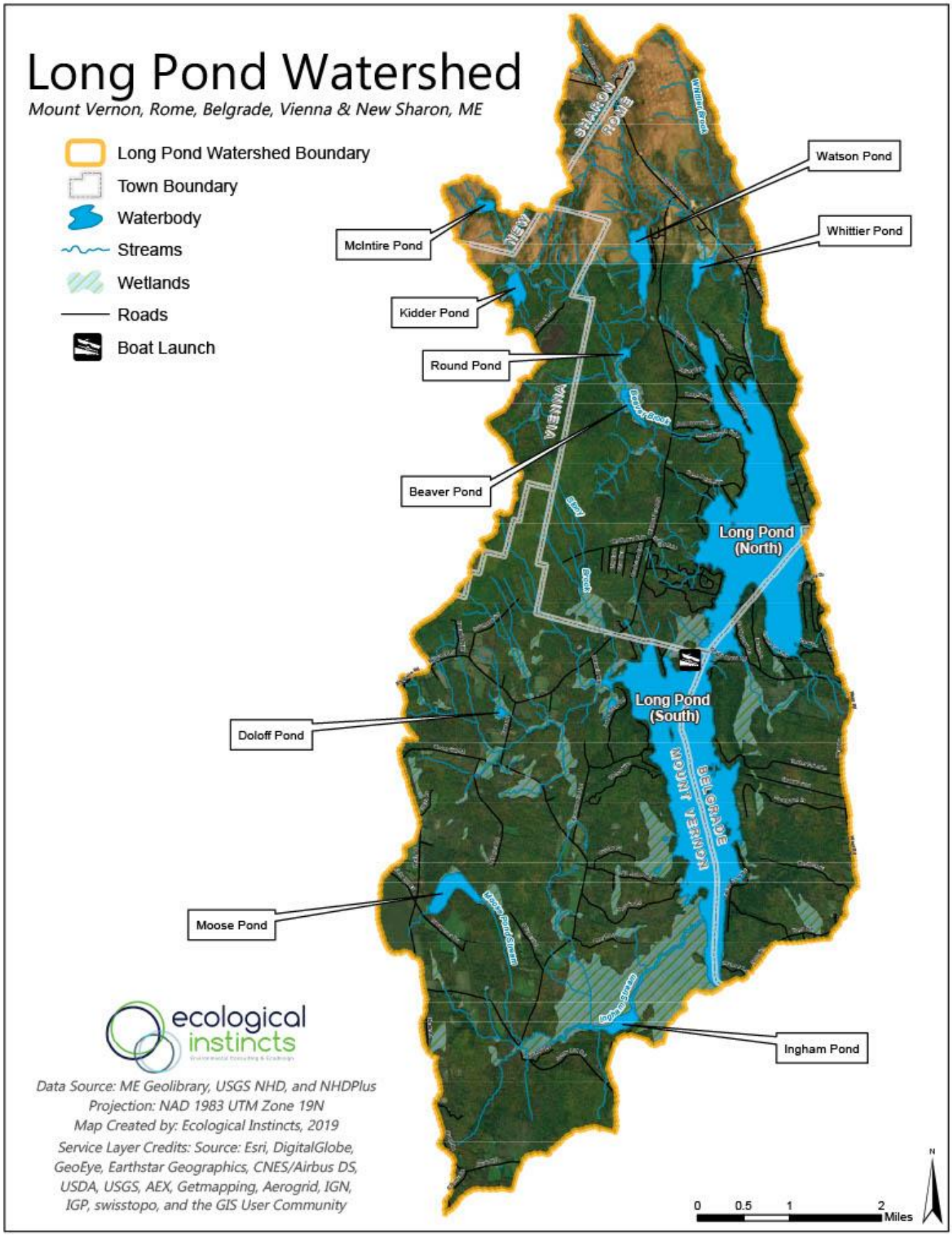


Figure 1. Map of the Long Pond watershed.

GLOSSARY OF TERMS

BEST MANAGEMENT PRACTICES (BMPs) Best Management Practices (BMPs) are conservation practices designed to minimize discharge of nonpoint source (NPS) pollution from developed land. BMPs include planting buffers, stabilizing steep slopes, upgrading culverts, using erosion control mulch on bare soil. "Non-structural" BMPs include road salt management, land conservation and improving ordinances to protect water quality.

CHLOROPHYLL-A (CHL-A) A measurement of the green pigment found in all plants, including microscopic plants such as algae. It is used as an estimate of algal biomass; higher Chl-a equates to greater amount of algae in the lake.

DISSOLVED OXYGEN Dissolved oxygen (DO) is the measure of the amount of oxygen dissolved in the water. Organisms living in lakes use the oxygen in the water to breathe. Low DO conditions can severely reduce the diversity and populations of aquatic organisms. Water with < 1 part per million (ppm) of oxygen is considered anoxic (no oxygen present); less than 5 ppm of oxygen is considered so stressful that most coldwater fish will avoid these areas. Anoxic conditions can also promote phosphorus release (internal loading) from the lake sediments.

MIDAS (Maine Information Display and Analysis System) MIDAS numbers are unique identification numbers assigned in the 1970's to Maine lakes and ponds monitored and managed by Maine state agencies.

NONPOINT SOURCE POLLUTION (NPS) Nonpoint Source pollution, or polluted stormwater runoff comes from a number of diffuse sources within a watershed. This includes soil, fertilizers, septic waste, and other pollutants from diffuse sources across the landscape that are carried into a waterbody by rainfall.

SECHHI DISK TRANSPARENCY (SDT) A vertical measure of water transparency (ability of light to penetrate water) obtained by lowering a black and white disk into the water until it is no longer visible. Measuring SDT is one of the most useful ways to show whether a lake is changing from year to year. Changes in transparency may be due to increased or decreased algal growth, or the amount of dissolved or particulate materials in a lake, resulting from human disturbance or other impacts to the lake watershed area. Factors that affect transparency include algae, water color, and sediment. Since algal density is usually the most common factor affecting transparency in Maine lakes, transparency is an indirect measure of algae abundance.

TOTAL PHOSPHORUS (TP) The total concentration of phosphorus found in the water, including organic and inorganic forms. TP is one of the major nutrients needed for plant growth. It is generally present in small amounts and limits plant growth in freshwater ecosystems. As phosphorus increases, the amount of algae generally increases. Humans can add phosphorous to a lake through stormwater runoff, lawn, or garden fertilizers, and leaky or poorly maintained septic tanks.

FLUSHING RATE The rate at which the entire volume of water in a lake is replaced. For example, a lake with a flushing rate of two flushes twice per year. A lake with a flushing rate of 0.5 flushes once every two years.

INTRODUCTION

Long Pond (MIDAS 5272) is located in Kennebec County, in the central Maine towns of Belgrade, Mount Vernon, and Rome. Long Pond is a dual-basin pond, with the North Basin being separated from the South basin by the narrows at Castle Island Road in Belgrade. Long Pond is located in the southwest region of the larger Belgrade Lakes watershed and is sixth in the chain of seven Belgrade Lakes (Figure 2).

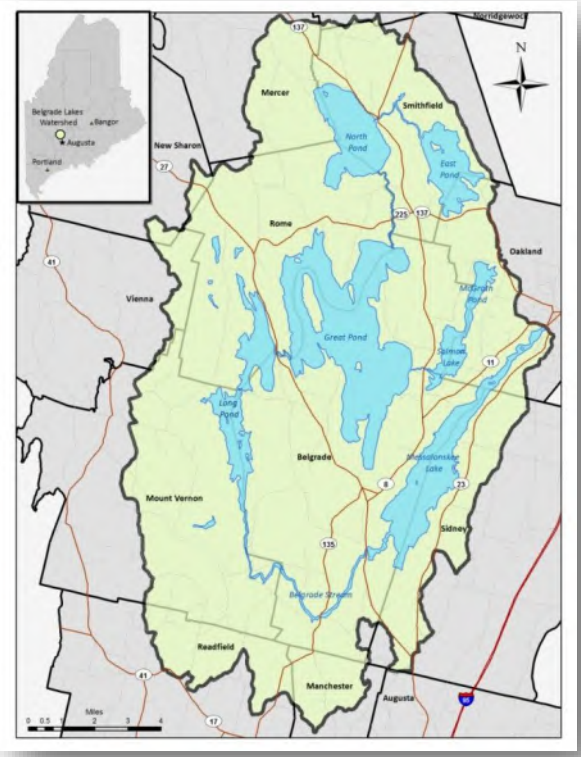


Figure 2. Map of the Belgrade Lakes watershed. (Colby.edu)

Approximately 85% of the water that flows into Long Pond annually comes from the watersheds of the upstream lakes.[1] A majority of this water comes from Great Pond to the northeast, which accounts for more than 70% of the indirect watershed area draining to Long Pond[2], and approximately 53% of the phosphorus load.[1] Water also flows into the north basin of Long Pond from Whittier Pond through Whittier Brook, and from Beaver Pond through Beaver Brook. The south basin receives water from Stony Brook, and Ingham Pond through Ingham Brook. Long Pond drains over the Wings Mill Dam at its southernmost point into Belgrade Stream. From there, water flows into Messalonskee Lake, the last lake in the Belgrade Lakes chain, before draining to the Kennebec River and into the Atlantic Ocean.

Long Pond's direct watershed covers 37 square miles, while the total drainage area, which includes the watersheds of Great Pond (27,900 acres), North Pond, East Pond, and Salmon-McGrath Pond Lake (4,100 acres), covers about 86 square miles.[3] The watershed area includes five municipalities, with the largest land area in the towns of Belgrade, Rome, and Mount Vernon. Smaller areas of the watershed are located in New Sharon and Vienna.

WATERSHED
The area of land around a lake that drains (or sheds) its water into the lake through streams, ditches, as overland flow, or through groundwater.

[1] *Long Pond Watershed-Based Management Plan*. Kennebec County SWCD. December 2009.
[2] *Phosphorus Control Action Plan and Total Maximum Daily Load Report.* Maine Department of Environmental Protection. April 2008.
[3] *Phosphorus Control Action Plan and Total Maximum Daily Load Report.* Maine Department of Environmental Protection. April 2008.

A portion of the northwest watershed is protected as part of the Kennebec Highlands. Studies by Colby College in 1995-1996 indicated there are 537 developed or developable lots on the shoreline of Long Pond with 349 of these lots developed at the time of the studies.[4]

Long Pond and its surrounding watershed are used extensively for swimming, fishing, and boating as well as bird watching and hiking in the summer, and ice fishing, skiing, and snowmobiling in the winter. Long Pond is a prominent scenic fixture in the landscape as it is part of the scenic backdrop for Belgrade Village and is visible from the top of the Kennebec Highlands' hiking trails which overlook the watershed. The cool deep waters of Long Pond have historically provided an excellent cold water fishery (brook trout and land-locked salmon) as well as warm-water species such as bass, among others. Maintaining the coldwater fishery and water quality for recreation is important to local residents.

The steepest slopes in the watershed are located on the north end of the pond including The Mountain to the northeast, French Mountain between Watson Pond and Whittier Pond, Vienna Mountain in the northwest corner of the watershed, and Blueberry Hill on the west shore of the north basin of Long Pond. The shoreline of the south basin of Long Pond is relatively flat and includes the low-lying wetland areas on the west and southwest the south end of the lake including Ingham Pond.

Water-quality data has been collected in Long Pond since 1970. The water quality of Long Pond has shown a steady decline since monitoring began, despite decades of watershed improvement projects to address nonpoint source (NPS) pollution in the Long and Great Pond watersheds. Although the water quality of Long Pond is currently considered good, the long-term decline in water

Topographic map showing the areas of higher elevation in the Kennebec Highlands on the north end of the lake.

Table 1. Lake characteristics, Long Pond. (Source: LakesofMaine.org)

Lake Characteristics	Long Pond
Surface Area	2,557 acres
Perimeter	31 mi
Maximum Depth	106 ft
Average Depth	35 ft
Flushing Rate (North)	3.0/yr
Flushing Rate (South)	3.5/yr

[4] *Land Use Patterns in Relation to Lake Water Quality in the Long Pond, North Basin Watershed (1995), and Land Use Patterns in Relation to Lake Water Quality in the long Pond, South Basin Watershed (1996). Department of Biology, Colby College.*

quality indicates a need to take additional actions to prevent further declines. Long Pond was listed as an impaired by the Maine DEP in 2006. The large size of the watershed, extent of development, phosphorus inputs from the direct watershed and the watershed of upstream Great Pond (also impaired), and the effects of a changing climate all play a role in the lake's declining water quality.

Blooms of *Gloeotrichia echinulata* (a cyanobacteria species), are also becoming more common in the lake. *Gloeotrichia* grows where lake sediments have abundant available phosphorus, and adequate light for photosynthesis. Blooms have increased in lakes throughout the northeast in the recent decade, including in nearby lakes.

Decreasing dissolved oxygen (DO) levels are also a concern because DO is essential to the plants and animals that live in the lake. Recent data shows anoxia (DO <2 ppm) in the deeper areas of the lake, with the greatest extent of anoxia in the north basin to depths as shallow as 10 m during the summer months, resulting in loss of deep water habitat for fish and release of sediment-bound phosphorus into the water column (internal loading). The release of nutrients into the water column can fuel filamentous algal blooms in late October when the lake turns over. Once a cycle of oxygen loss in deep water and increasing availability of phosphorus from sediment become established, watershed management is unlikely to reverse that trend, and a combination of watershed and in-lake methods becomes essential to maintaining the desirable features of a lake.[6]

Table 2. Water quality averages for Long Pond, Stations 1 & 2 (1970-2018). (Data Source: LakesofMaine.org)

Water Quality Parameter[5]	Station 1	Station 2
SDT	6.4 m	6.2 m
TP	8.2 ppb	8.6 ppb
TP Range	5-12 ppb	6-11 ppb
Chl-a	4.8 ppb	4.4 ppb
Color	9.6 PCU	12 PCU

Water quality data has been collected by Maine DEP and the Lake Stewards of Maine/Volunteer Lake Monitoring Program in cooperation with the Belgrade Lakes Association (BLA) and the 7 Lakes Alliance.

Figure 3 shows the annual average water clarity for Long Pond. Variability in water clarity measurements over time may be

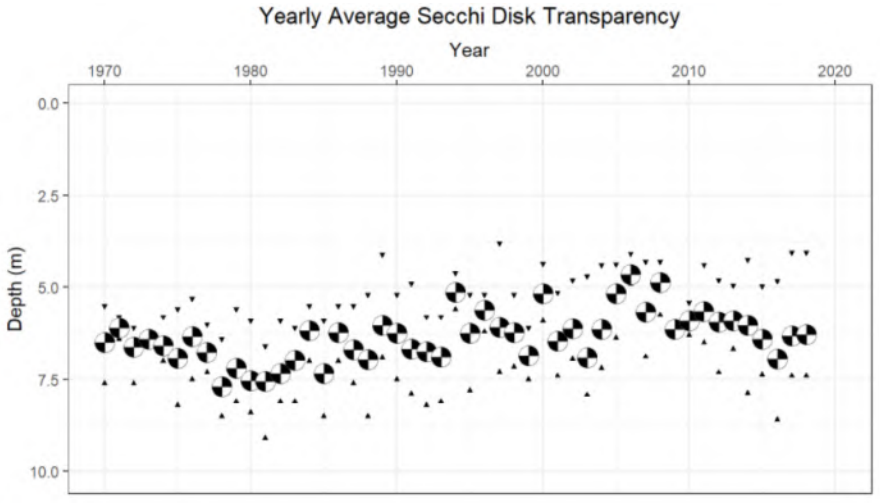


Figure 3. Average annual water clarity data for Long Pond (Station 1). (Source: LakesofMaine.org)

[5] Maine DEP Lake Reports for Long Pond. Averages are based on data collected between 1970-2018 at Station 1.
[6] WRS (2016). Great Pond. Phosphorus Loading and Related Lake Management Considerations for Great Pond, Belgrade Lakes, Maine.

influenced by weather (e.g., annual fluctuations in rain/snow), or land-use changes in the watershed (e.g., period of heavy development or forestry activities or watershed improvements).

LONG POND WATER QUALITY – WHY IS WATER QUALITY AT RISK?

Along with phosphorus loading from upstream Great Pond, a primary contributor to the long-term decline in water clarity in Long Pond is **polluted runoff** or nonpoint source (NPS) pollution. Stormwater runoff from rain and snowmelt picks up soil, nutrients, and other pollutants as it flows across the land and washes into the lake.

POLLUTED RUNOFF
Also called NPS or nonpoint source pollution. Soil, fertilizers, septic waste, and other pollutants from diffuse sources across the landscape that are carried into a waterbody 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 filtering treatment the forest once provided. Rainwater picks up speed as it flows across impervious surfaces like rooftops, compacted soil, gravel roads and pavement, and it becomes a destructive erosive force.

More than two centuries of runoff from developed land, agriculture, and forestry in the watershed has resulted in delivery of phosphorus-laden sediment that accumulates in the bottom of the lake, adding to the potential for internal phosphorus loading when dissolved oxygen levels are low at the bottom of the lake. Runoff from current development and roads, as well as future development and conversion of small camps to larger year-round homes should be managed properly to prevent delivery of pollutants into Long Pond. Roads and their counterparts- poorly maintained gravel roads, and driveways, road shoulders, winter sanding, ditches, and culverts- all influence lake water quality.

*Long Pond is on **Maine DEPs Nonpoint Source Impaired Lakes Priority List** due to a declining trophic state (water clarity) caused by nonpoint source pollution.*

WHY IS RUNOFF A PROBLEM?

The problem with runoff is not the water itself, but the sediment and nutrients that get carried by and delivered to lakes in stormwater runoff. **Phosphorus**, a naturally occurring element, is considered a nutrient that provides food for algae and other aquatic plants. Phosphorus is found in soils, septic waste, animal waste, and fertilizers among other sources.

Soil erosion delivers phosphorus to the lake.

Under natural conditions, phosphorus is limited in freshwater systems, which helps limit algae growth. However, when a lake receives extra phosphorus from developed land, 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 in Maine lakes. As every gardener knows, phosphorus and other nutrients are naturally present in the soil. So, we are essentially "fertilizing" our lakes and ponds with the soil that erodes from our driveways, roads, ditches, pathways, and beaches. Studies have shown that runoff from even stable developed areas has **5 to 10 times the amount of phosphorus** compared to runoff from forested areas. Runoff from forestry activities can also contribute significant inputs of nutrients and sediments if not managed properly. Proper management strategies may include limiting clear cutting, protecting natural vegetative buffers along waterbodies (lakes and streams) and wetlands, and limiting runoff from roads that serve as access to the forest resources.

WHY PROTECT OUR LAKES FROM POLLUTED RUNOFF?

- Phosphorus reductions from developed land are needed to help protect the water quality of Long Pond.
- The U.S. Fish & Wildlife Service identified three priority wetland habitat types located throughout the watershed (grass/shrub, freshwater, and forest).
- The Maine Department of Inland Fisheries and Wildlife (MDIFW) documented two rare wildlife occurrences around the narrows at Castle Island Road, as well as multiple areas of protected waterfowl and wading bird habitat (IWWH), and numerous deer wintering areas which also provide habitat for resident moose populations.
- There are 2,176 acres of wetlands, 5,086 acres of riparian habitat and 129 miles of streams in

the Long Pond watershed.[7]

- The cool deep waters of Long Pond have historically provided an excellent coldwater fishery (brown trout and land-locked salmon) as well as warm-water species such as bass, among others. Maintaining the coldwater fishery is important to local residents.
- The 2020 Maine Audubon Loon count reports 31 adult loons but no chicks on Long Pond.[8]
- Long Pond is susceptible to changes in water quality resulting from too much phosphorus. Proper management of shorelines, maintenance of roads, and minimizing the effects existing and new development and forestry activities are critical lake protection activities.
- Sediment deposited into lakes and ponds from erosion creates the ideal environment for invasive aquatic plant species. A combination of sediment deposits and phosphorus-rich water could make Long Pond susceptible to the establishment of new invasive species. Establishment of variable watermilfoil in Great Pond puts Long Pond at risk if allowed to spread.
- A 1996 University of Maine study found that lake water quality affects property values. For every three-foot decline in water clarity, shorefront property values can decline as much as 10 to 20%! Declining property values affect individual landowners as well as the entire community.

WHAT IS BEING DONE TO PROTECT LONG POND?

The BLA, watershed partners, and landowners have already begun taking steps to protect the water quality of Long Pond. In addition to the activities listed below, BLA holds an annual meeting for its members and the public each July, coordinates the LakeSmart program for Great and Long ponds, organizes the annual Stop Milfoil Campaign and Courtesy Boat Inspection (CBI) Program, participates in invasive plant patrols and water quality monitoring, and sponsors water quality research. A summary of primary historical watershed activities is provided below:

- **Clean Water Act Section 319 funds-** Since 2009, four 319 implementation grants (Phase I, II, III, and IV) have supported 51 town and camp road construction projects on Long Pond and on Great Pond. Under these grants, 173 BMPs have been installed, including 65 on Great Pond. PCR reports have documented a reduction of 337 pounds of phosphorus loading annually, including a reduction of 174 pounds to Long Pond.

[7] Long Pond Watershed Based Management Plan, 2009
[8] Maine Audubon, 2020 Maine Loon Count Results. Online: https://www.lakesofmaine.org/lake-loons.html

- **Youth Conservation Corps (YCC)** - Since 2009, four 319 implementation grants (Phases I-IV) have supported YCC projects on Long Pond and Great Pond. As a result, YCC has installed 483 BMPs, including 192 on Long Pond.
- **LakeSmart**- In response to documented changes in water quality in Great and Long ponds, BLA started a LakeSmart program. Since 2004, 359 shorefront properties have been evaluated and 145 LakeSmart awards have been distributed.[9]
- **Land Conservation**- 7 Lakes Alliance has conserved 10,000 acres in the Belgrade Lakes, 30 Mile River and Sandy River watersheds since its founding in 1988, including the 6,000 acre Kennebec Highlands, much of which is located in the Long Pond watershed. Land conservation is an important watershed management strategy because it protects sensitive headwater streams, riparian corridors, and lake shorelines.

Programs such as the 7 Lakes Alliance's Youth Conservation Corps (YCC) and BLA's LakeSmart program help landowners to protect the lake. (Photo: 7 Lakes Alliance)

BLA anticipates updating the 2009 Long Pond Watershed-Based Management Plan beginning in 2021.

[9] Great Pond Watershed-Based Management Plan Development Project Work Plan, 2018.

SURVEY PURPOSE & METHODS

PURPOSE OF THE WATERSHED SURVEY

The primary purpose of the watershed survey is to:

- Identify and prioritize existing sources of polluted runoff, particularly soil erosion and stormwater runoff in the Long Pond watershed;
- Raise public awareness about the connection between land use and water quality and the impact of soil erosion on the water quality of Long Pond;
- Inspire people to become active watershed stewards by participating in watershed programs such as LakeSmart and the 7 Lakes Alliance's YCC Program;
- Use the information gathered to help update the 2009 Watershed-Based Management Plan;
- Provide the basis to obtain funding to assist with addressing identified NPS sites;
- Provide recommendations to landowners so that they can voluntarily address NPS issues identified on their properties.

The purpose of the survey was NOT to point fingers at landowners with a documented NPS site, nor was it to seek enforcement action against landowners not in compliance with local ordinances. The BLA hopes to work cooperatively with landowners, road associations, and towns to protect and improve water quality.

Thirty-five watershed survey volunteers and technical leaders participated in the 2020 Long Pond Watershed Survey over the course of the two-day survey.

Local citizen participation was essential in completing the watershed survey and will be even more important in coming years. With the leadership of BLA and partners such as the 7 Lakes Alliance, Kennebec County Soil & Water Conservation District (KCSWCD), the towns of Belgrade, Mount Vernon and Rome, and the Maine DEP, there are ample opportunities for stewardship. The hope is that landowners will reflect on the results of the survey recommendations and make improvements on their own properties. Everyone in the watershed has a stake in helping protect and improve the water quality of Long Pond.

SURVEY METHODS

The Long Pond watershed survey took place on September 22 - 23, 2020 with the help of more than 35 volunteers from the BLA, 7 Lakes Alliance, the Town of Belgrade, local residents, and interested individuals from the nearby Belgrade Lakes watersheds. Trained technical staff from BLA, 7 Lakes Alliance, Maine DEP, and Ecological Instincts helped lead volunteers across thirteen watershed survey sectors (Figure 4). Prior to the survey, BLA sent out 1,345 letters with an accompanying informational handout to all of the property owners in the watershed. 161 properties were not included in the survey at the landowners' request.

Thirty volunteers and technical leaders attended trainings hosted by Ecological Instincts and Maine DEP prior to the survey. Survey volunteers who were not able to attend the webinar were provided with a recording to watch. The survey commenced on September 22nd with volunteers and technical leaders spreading out across the watershed to document sources of nonpoint source pollution (NPS). Roads and road crossings, commercial and residential properties and beach/boat landing sites were assessed using tablets equipped with Survey 123 fillable data forms, cameras, and GPS capability. Volunteers also carried paper datasheets (Appendix A) as backup. Volunteers were assigned to one or more of the thirteen survey sectors (see Figure 4 and sector descriptions on page 11).

Sources of NPS pollution were identified within each of the thirteen sectors. Potential solutions were recommended, rough estimates were made for the cost of labor and materials for improving the sites, and the overall impact to water quality and the level of technical assistance needed to complete the recommendations were also determined in the field for each site along with photographs and a GPS point. If there was not a direct

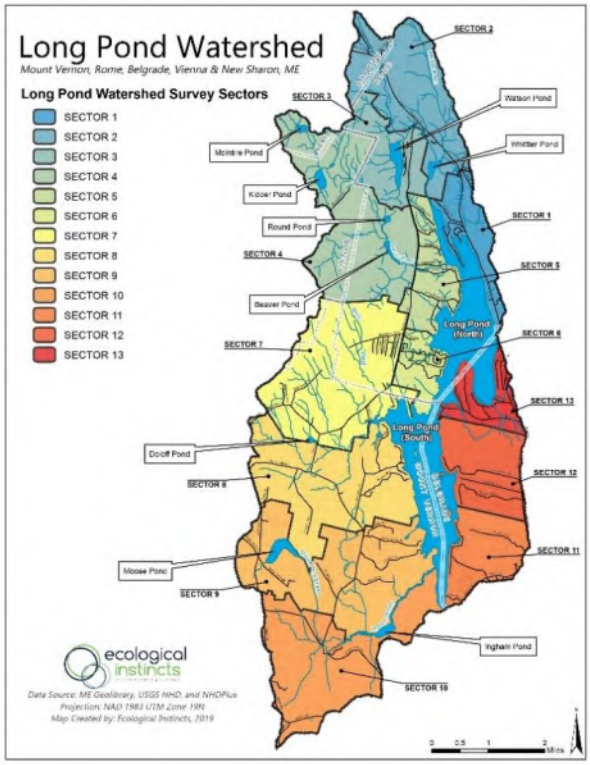
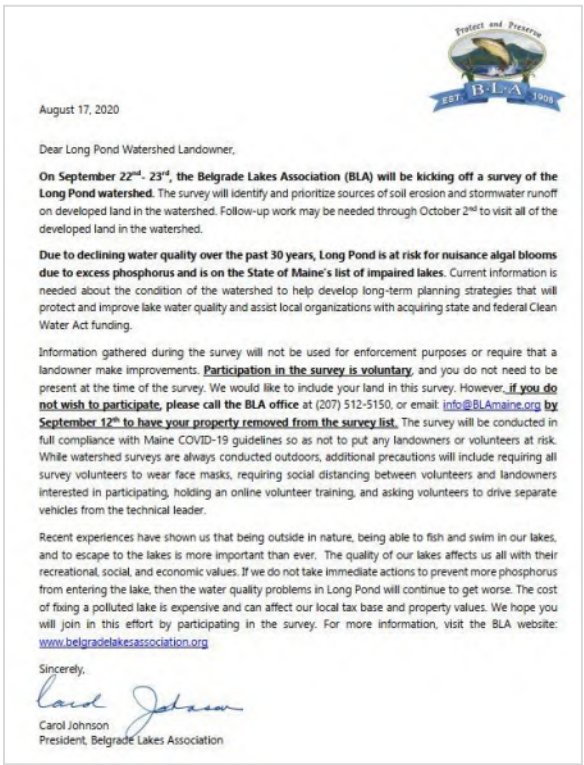


Figure 4. Map of the 13 survey sectors for the 2020 Long Pond Watershed Survey.



August 17, 2020

Dear Long Pond Watershed Landowner,

On September 22nd- 23rd, the Belgrade Lakes Association (BLA) will be kicking off a survey of the Long Pond watershed. The survey will identify and prioritize sources of soil erosion and stormwater runoff on developed land in the watershed. Follow-up work may be needed through October 2nd to visit all of the developed land in the watershed.

Due to declining water quality over the past 30 years, Long Pond is at risk for nuisance algal blooms due to excess phosphorus and is on the State of Maine's list of impaired lakes. Current information is needed about the condition of the watershed to help develop long-term planning strategies that will protect and improve lake water quality and assist local organizations with acquiring state and federal Clean Water Act funding.

Information gathered during the survey will not be used for enforcement purposes or require that a landowner make improvements. **Participation in the survey is voluntary**, and you do not need to be present at the time of the survey. We would like to include your land in this survey. However, **if you do not wish to participate, please call the BLA office** at (207) 512-5150, or email: info@BLAmaine.org **by September 12th to have your property removed from the survey list.** The survey will be conducted in full compliance with Maine COVID-19 guidelines so as not to put any landowners or volunteers at risk. While watershed surveys are always conducted outdoors, additional precautions will include requiring all survey volunteers to wear face masks, requiring social distancing between volunteers and landowners interested in participating, holding an online volunteer training, and asking volunteers to drive separate vehicles from the technical leader.

Recent experiences have shown us that being outside in nature, being able to fish and swim in our lakes, and to escape to the lakes is more important than ever. The quality of our lakes affects us all with their recreational, social, and economic values. If we do not take immediate actions to prevent more phosphorus from entering the lake, then the water quality problems in Long Pond will continue to get worse. The cost of fixing a polluted lake is expensive and can affect our local tax base and property values. We hope you will join in this effort by participating in the survey. For more information, visit the BLA website: www.belgradelakesassociation.org

Sincerely,

Carol Johnson
President, Belgrade Lakes Association

Copy of the landowner letter that was sent to 1,345 landowners in the Long Pond watershed in August 2020.

connection from the potential source of NPS pollution to a ditch, stream, wetland, or the lake, then the site was not documented on the field sheet (e.g., an eroding hillslope in which the soil did not leave the site). The BLA plans to send follow-up letters to all landowners with an identified watershed survey site. The letter will let them know the problem identified and recommendations for addressing the problem as well a list of options for helping complete the project.

Properties that did not meet the criteria of an NPS site (active erosion with a direct connection the waterbody) but were deemed worthy of some additional technical support to protect the lake were documented on a "LakeSmart Referral" field sheet. Examples of properties in this category may include sites with lots of lawn and no buffer, small buffers that need enhancing, shorelines with invasive plants, landowners that requested a LakeSmart visit or YCC assistance, and private boat launches. The BLA intends to follow-up with educational materials to these landowners and offer technical assistance where it is needed.

Examples of volunteers documenting NPS sites in the Long Pond watershed.

The data collected during the survey was uploaded from the tablets and entered into an Excel database. Documented NPS sites were plotted on maps using Geographical Information Systems (GIS). Mapping coordinates were manually corrected if needed to account for poor satellite reception or human error in the field based on recorded address or tax map/lot number. A description of NPS sites, recommended actions, and associated costs are discussed in the next section.

DESCRIPTION OF SURVEY SECTORS

The watershed was divided into 13 survey sectors based on the number of roads and developed lots in each area of the watershed and the estimated time needed to survey these areas. Most of the sectors extend from the shoreline to the high point of the watershed. The exception is Sectors 2, 3, and 4 which are entirely in the upper watershed and contain no shoreline on Long Pond. However, Sector 3 includes shoreline properties on Watson Pond. A brief description of each sector is provided below.

Sector 1- Sector 1 is located in the Town of Rome and includes a narrow stretch of land along the eastern side of Long Pond's North Basin. It is a highly developed area with a lot of shoreline properties. Major roads in the sector include Augusta Rd (Rt. 27), Tracy Cove Drive, Peninsula Drive, and North Cove Drive.

Sector 2- This sector is located within the towns of Rome and New Sharon. It begins just north of Long Pond and encompasses the northeastern portion of the watershed. It includes Whittier Pond, which has no shoreline development, the wetlands adjacent to Whittier Pond, and the entirety of Whittier Brook. Augusta Road runs through the length of the sector, which also includes Austin Drive, Mountain Road, and portions of Rome Road, Mile Hill Road, and Hampshire Hill Road.

Sector 3- This sector is entirely within the Town of Rome in the northwest portion of the watershed. It is intersected by Watson Pond Road and it includes Watson Pond and its associated streams and wetlands, as well as the development along the Watson Pond shoreline including Wonderview Estates and Echo Valley Estates. A large portion of this sector is undeveloped and conserved as part of the Kennebec Highlands.

Sector 4- This Sector is located within the towns of Rome, Vienna, and New Sharon in the northwest portion of the watershed, south of Sector 3. It includes McIntire Pond, Kidder Pond, Round Pond, and Beaver Pond, and their associated streams and wetlands. Most of this sector falls within the area of the protected Kennebec Highlands and is therefore undeveloped. The only road in Sector 4 is Mountain Road in Vienna. This sector is outside the immediate shoreline of Long Pond.

Sector 5- This sector is located in the Town of Rome, on the northwest shore of Long Pond's North Basin. It is bordered to the west by Sector 4 and Watson Pond Road. Most of the shoreland development in this sector is located in Beaver Brook Estates and Blackberry Estates.

Sector 6- Sector 6 is within the towns of Rome and Mount Vernon and encompasses the southwest shore of the north basin of Long Pond just south of Sector 5, as well as a small portion of the north shore of the south basin. It is bordered to the west by Sector 7 and Watson Pond Road. Balsam Estates, Fir Estates, and Aspen Estates are all highly developed roads that run along the shoreline in Sector 6. Castle Island Road also runs through the southernmost portion of this sector.

Sector 7- This sector is located in the towns of Rome and Mount Vernon, with a small portion in Vienna. It encompasses part of the shoreline at the north end the South Basin, as well as the upland portion of the watershed to the west of Sector 6. This sector includes almost the entirety of Stony Brook, as well as Doloff Pond on the sector's southern edge. It also includes Pinewood Point on the north shore of Long Pond's South Basin. Major roads in this sector include Belgrade Road, Castle Island Road, Pinewood Point Road, and LaPosa Drive.

Sector 8- This sector is entirely within the Town of Mount Vernon and extends from the west shore of Long Pond south to the upper reaches of the west side of the watershed. It includes developed shoreline on Long Pond's South Basin on Porcupine Ridge Road, Lake Ridge Road, and Bonzo's Hollow. Bean Road runs through the middle of this sector, which also includes Journey's End Road, North Taylor Road, and Moar Hill Road.

Sector 9- Sector 9 is entirely within the Town of Mount Vernon, in the southwestern corner of the watershed. It includes Moose Pond and a portion of Moose Pond Stream and is bordered on the southeast by Ingham Pond and Ingham Stream. Bean Road runs through the middle of this sector, and North Road runs through the western edge. Other major roads include South Taylor Road, Hovey Luce Road, Long Acres Road, and Jacobs Road. There is little shoreline development in this sector.

Sector 10- This sector is in the Town of Mount Vernon at the southern tip of the watershed. It includes a portion of Moose Pond Stream and is bordered to the north by Sector 9, Ingham Pond, and Ingham Stream. This sector also includes a small portion of undeveloped shoreline on the southwest end of Long Pond. Major roads include Cottle Hill Road, North Road, and Bean Road.

Sector 11- This sector, located entirely within the Town of Belgrade, is located on the southeast shore of Long Pond. It includes the highly developed shoreline along Sandy Cove Road and South Sandy Cove Road, and also includes portions of Dunn Road, Stetson Lane, and Murdock Place. The Belgrade Transfer Station is also in this sector.

Sector 12- This sector is located in the Town of Belgrade and includes developed shoreline on the east shore of Long Pond South on Timber Point Road, East West Lane, and Rockwood Drive. The northern half of the sector includes large undeveloped forest and wetlands. West Road follows the eastern edge of this sector along the watershed boundary.

Sector 13- This sector is entirely within the Town of Belgrade just north of Sector 12 and includes a portion of Main Street in Belgrade Village and a large portion of the south shore of Long Pond North. In addition to a portion of Main Street, roads in the sector include Lake Shore Drive, Foster Lane, Club House Drive (and a small section of the west side of the golf course and a tributary that begins at the golf course), Caret Lane, Long Lake Lane, West Road, Castle Island Road, Lynch Cove, Birch Lane, Castle View Lane, and Herman Drive. The north end of the sector is located at the stream flowing in from Great Pond in Belgrade Village.

WATERSHED SURVEY RESULTS

SUMMARY OF SURVEY FINDINGS

Volunteers and technical staff identified 148 sites across the watershed that are currently affecting or have the potential to negatively affect the water quality of Long Pond (Appendix C). The greatest number of sites were documented on the east shore of Long Pond's north basin, with Sector 13 having by far the greatest number of total sites (50 sites). There was at least one site documented in each of the 13 survey sectors. Some key conclusions from the survey include:

A total of 148 NPS pollution sites were documented in the Long Pond watershed.

- **Everyone has a stake in improving water quality** because NPS sites were identified across 12 different land-use types throughout the watershed. Residential and commercial landowners, homeowner and road associations, and state and town officials will all need to work together to reduce the impact that NPS pollution has on the water quality of Long Pond.

- **Residential Development:** In rural lake watersheds, residential development is typically located along the shoreline serviced by both major roadways and private gravel roads. Long Pond is no exception, with dense residential development (year-round and seasonal) along the shoreline. The number of NPS sites stemming from residential development far exceeds any other land-use type surveyed in the watershed (43%). High- (6 sites) and medium-impact sites (18 sites) should be considered a priority for lake protection. Low-impact residential sites make up the majority of the documented residential sites (39 sites) and could easily be addressed by landowners with assistance of programs such as the BLA LakeSmart program and the 7 Lakes Alliance YCC program to provide guidance to landowners about designing and installing Best Management Practices (BMPs), including establishing or adding to existing shoreline buffers, building rain gardens, mulching bare soil, and installing roof dripline trenches.

  Lack of shoreline vegetation and bare soil near the shoreline creates erosion problems that allow nutrients and sediments to get to the lake.

  Many of the other documented problems such as trails and paths, and boat and beach access are associated with residential development, making the total impact from residential development higher than what is reflected in the summary statistics.

- **Beach, Boat Access & Trails & Paths:** Easy access to our lakes is an important consideration for

shoreland residents and recreational enthusiasts alike. However, the soil in these areas can become compacted as a result of vehicle and foot traffic over many years creating a direct route for soil erosion to get into the lake. Combined, shoreline access issues including trails and paths leading to the beach, and beach and boat access sites on Long Pond account for 10% of all documented NPS sites (14 sites), eight of which ranked either high- or medium-impact. Two sites are associated with the public boat launch and the hand-carry boat launch on Castle Island Rd. Beach access sites are also associated with common areas managed by homeowner associations such as the LaPosa Drive parking area and the Wildwood Estates common beach.

- **Driveways & Private Roads:** In rural watersheds, development is typically focused along major roads servicing residential homes. Cumulatively, poorly maintained gravel driveways and private roads, culverts, road shoulders and build-up of winter sand can have a significant impact on water quality if not well maintained. Combined, driveways and private-road sites account for another 21% of survey sites (15 driveway sites, 17 private-road sites) including 22 high- or medium-impact sites.

Driveway erosion can result in significant delivery of nutrients and sediments to Long Pond.

- **Commercial Development:** Commercial development often contains larger areas of impervious surfaces (e.g., roads, buildings, parking lots, etc.), as well as a more intensive use (e.g., greater foot and vehicle traffic). Therefore, commercial properties have a greater potential for stormwater runoff and erosion if not managed properly. A total of four commercial sites were documented, three of which are associated with businesses in Belgrade Village. Commercial sites make up just 3% of all survey sites.

- **State and Towns Roads:** Combined, state and town road sites make up 20% of all documented NPS sites in the watershed. Town road sites were documented at 16 locations including two in the Town of Rome, 10 in Mount Vernon, and four in Belgrade. There are 13 state road sites, associated mostly with Castle Island Road, Belgrade Road, and Augusta Road.

- **Other (Municipal/Public & Construction):** Two municipal/public sites were documented during the survey including one at Centennial Park and one at Long Pond Beach. Both are located in Belgrade, within Sector 13. These sites are medium- and low-impact. NPS pollution caused by construction was documented at two residential sites where surface erosion was actively occurring. Follow-up visits should be conducted over the next year to ensure that the problems have been resolved following completion of the construction.

Survey results are presented in more detail below. Survey data is provided in Appendix C.

RESULTS LONG POND WATERSHED

A total of 148 NPS sites were documented in the Long Pond watershed across 12 different land-use types (Figures 5 & 6). (Note: residential homes and driveways were documented separately in the field for tracking purposes.) The number of residential properties far outweighed the other land-use types. Similarly, many other sites associated with trails/paths, boat/beach access and construction are also located on residential properties.

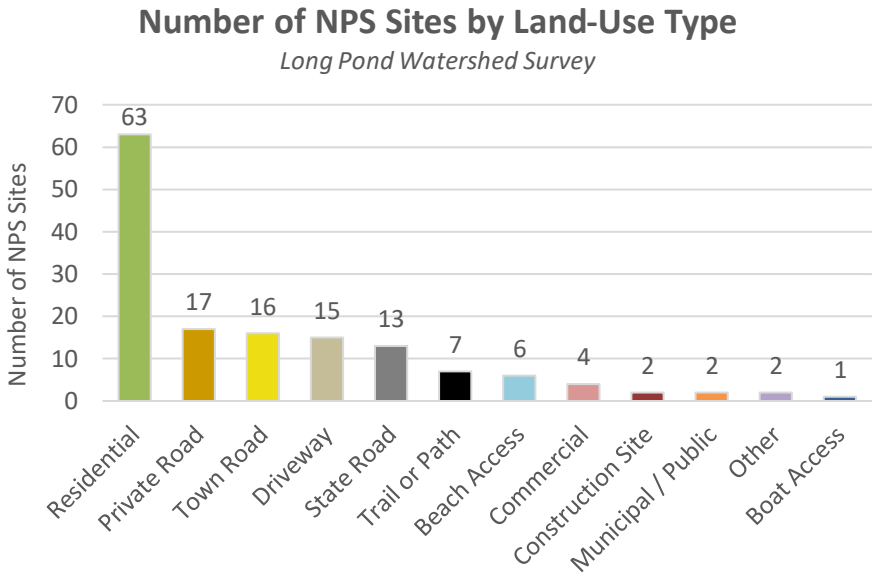


Figure 5. NPS sites in the Long Pond watershed by land-use type.

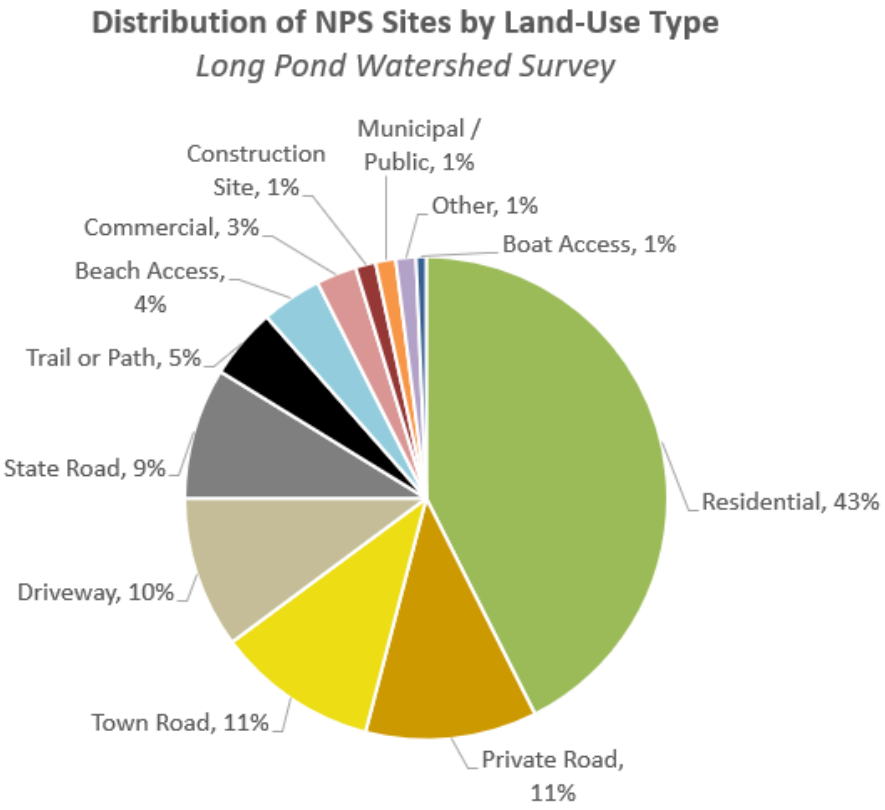


Figure 6. Distribution of NPS sites in the Long Pond watershed by land-use type.

Geographically, NPS sites were fairly well distributed (mostly along the shoreline) across the watershed. Most sites outside of the immediate shoreline are located on state/town roads and involved stream crossings or ditches, especially on the north and southeast side of the watershed.

The greatest number of sites were documented in Sector 13 (Belgrade Lakes Village/Commercial District), followed by Sector 1 (directly north of Sector 13) which includes dense shoreline development on the east shore of Long Pond, and Sector 7, which includes the densely developed shoreline on the north shore of Long Pond South (Figure 7). Density of residential development appears to be a primary factor in the number of sites per sector.

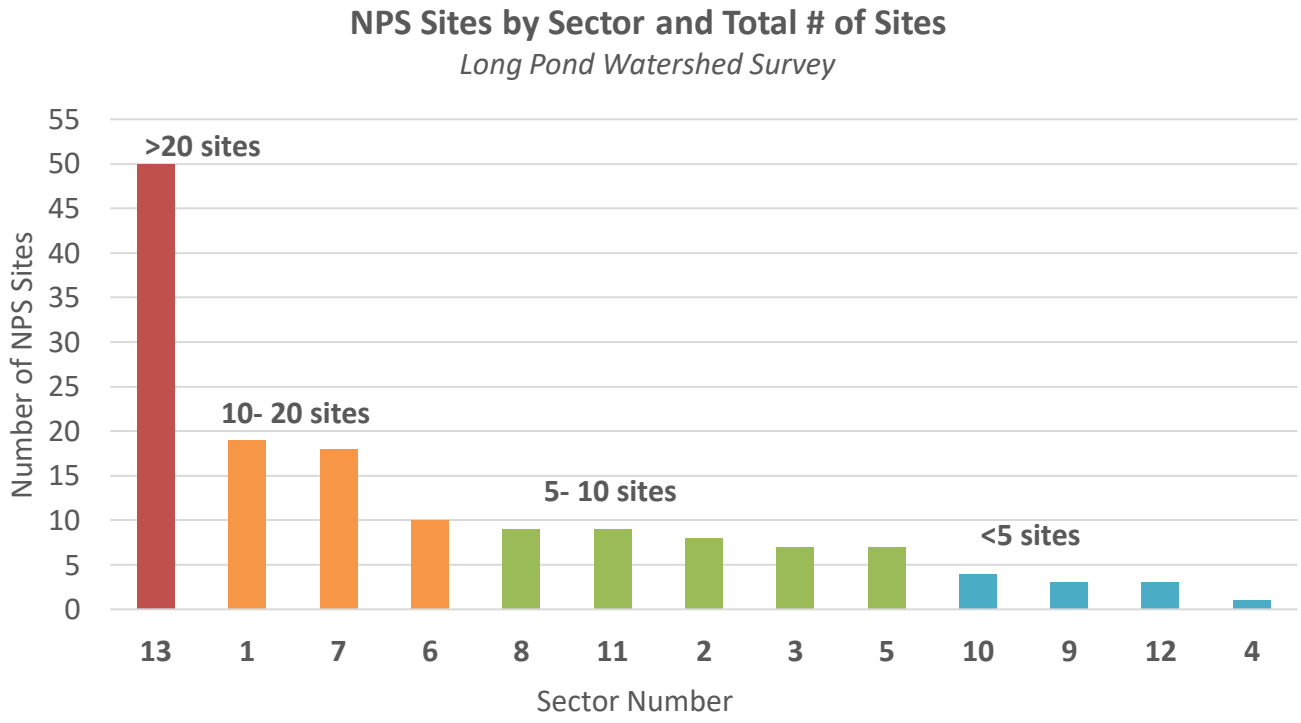


Figure 7. NPS sites by sector in the Long Pond watershed.

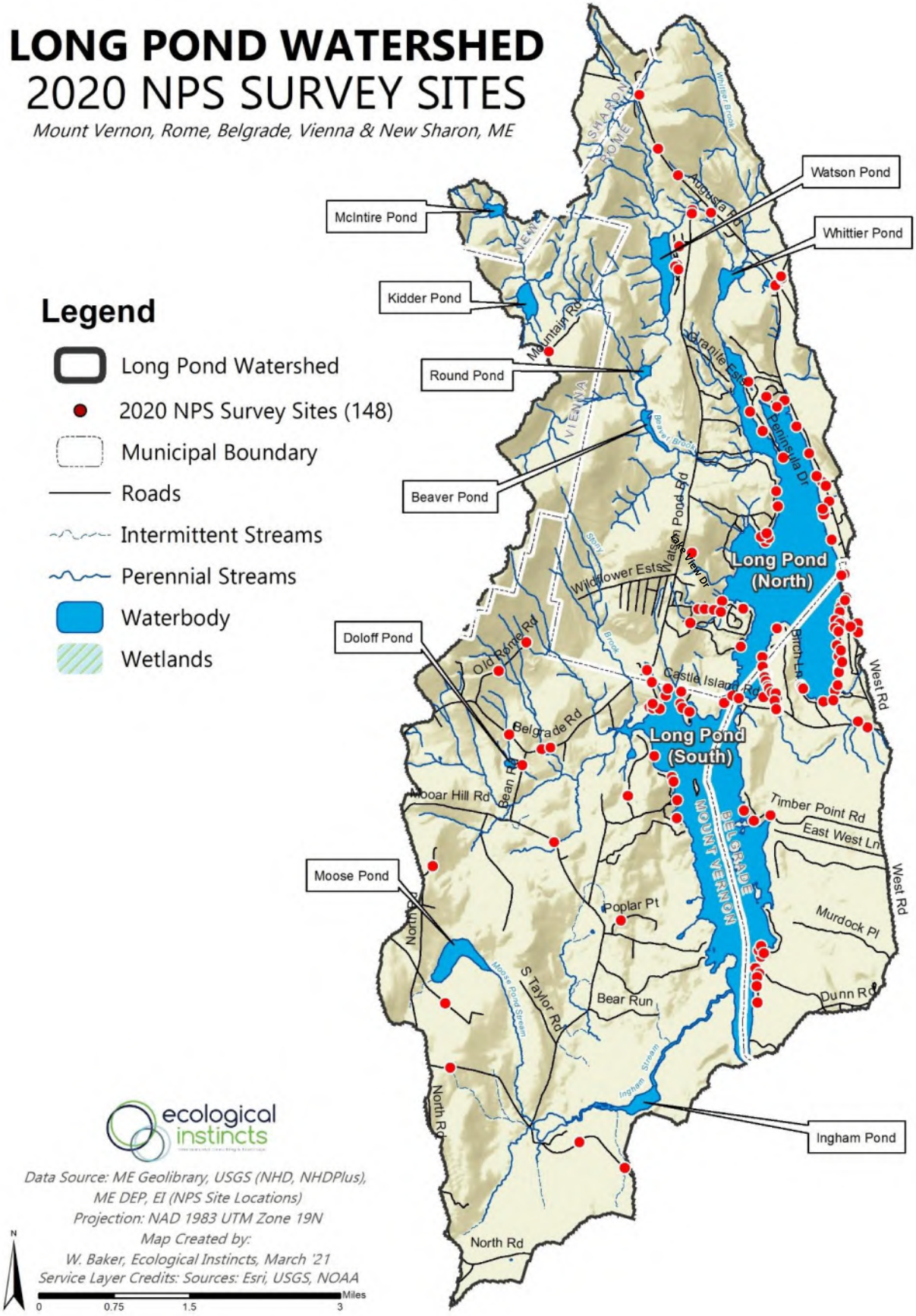


Figure 8. Map of NPS sites in the Long Pond watershed.

Impact of NPS Sites: The impact that documented NPS sites may have on the water quality of Long Pond was determined in the field based on the proximity to a waterbody and the magnitude of the problem. Factors such as slope, soil type, amount of eroding soil, and buffer size were also considered. A closer look at the estimated impact of these sites indicates that only 16 of the 148 NPS sites ranked high-impact compared to 61 medium- and 71 low-impact sites (Table 3). Residential NPS sites had the greatest number of high-, medium-, and low-impact sites, accounting for 43% of all sites, and 55% of the low-impact sites.

Table 3. Summary of NPS sites in the Long Pond watershed by land use and impact.

Land Use	High Impact	Medium Impact	Low Impact	Total	% of Total
Residential	6	18	39	63	43%
Private Road	2	11	4	17	11%
Town Road	1	8	7	16	11%
Driveway	1	8	6	15	10%
State Road	2	8	3	13	9%
Trail or Path	2	2	3	7	5%
Beach Access	0	3	3	6	4%
Commercial	0	2	2	4	3%
Construction Site	0	0	2	2	1%
Municipal / Public	1	0	1	2	1%
Other	1	0	1	2	1%
Boat Access	0	1	0	1	1%
Total	**16**	**61**	**71**	**148**	**100%**

Examples of residential NPS sites: a) Shoreline erosion caused by removal of native vegetation to create a beach on a residential site in Sector 13 (above); and b) a compacted and eroding path to the lake in Sector 6 (right).

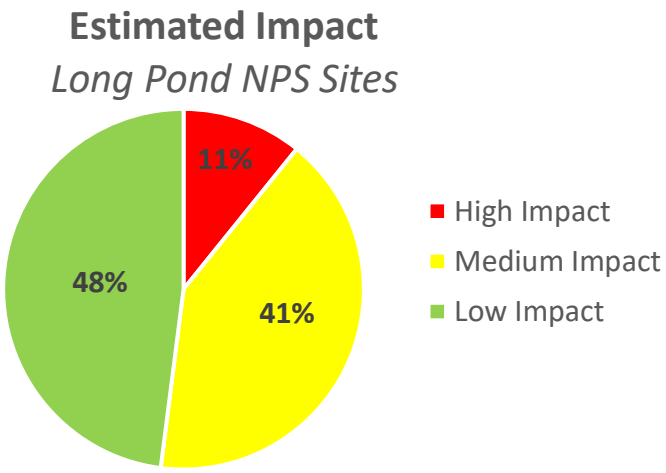


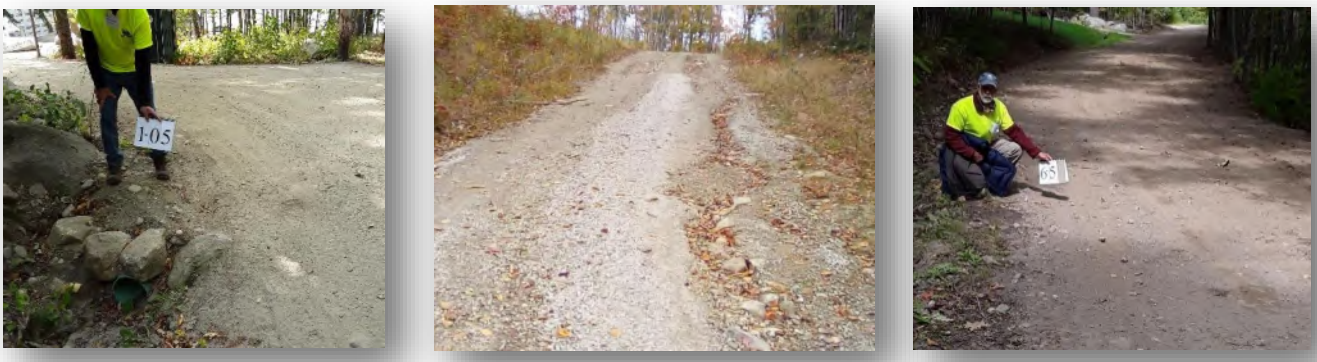
Figure 9. Estimated impact of NPS sites in the Long Pond watershed.

Low-impact sites are those with limited transport of soil off-site.

Medium-impact sites exhibit sediment transportation off-site, but the erosion does not reach high magnitude.

High-impact sites are those with large areas of significant erosion and direct flow to water.

Examples of residential sites ranked high (left), medium (middle), and low (right) impact.



Examples of road sites ranked high (left), medium (middle), and low (right) impact.

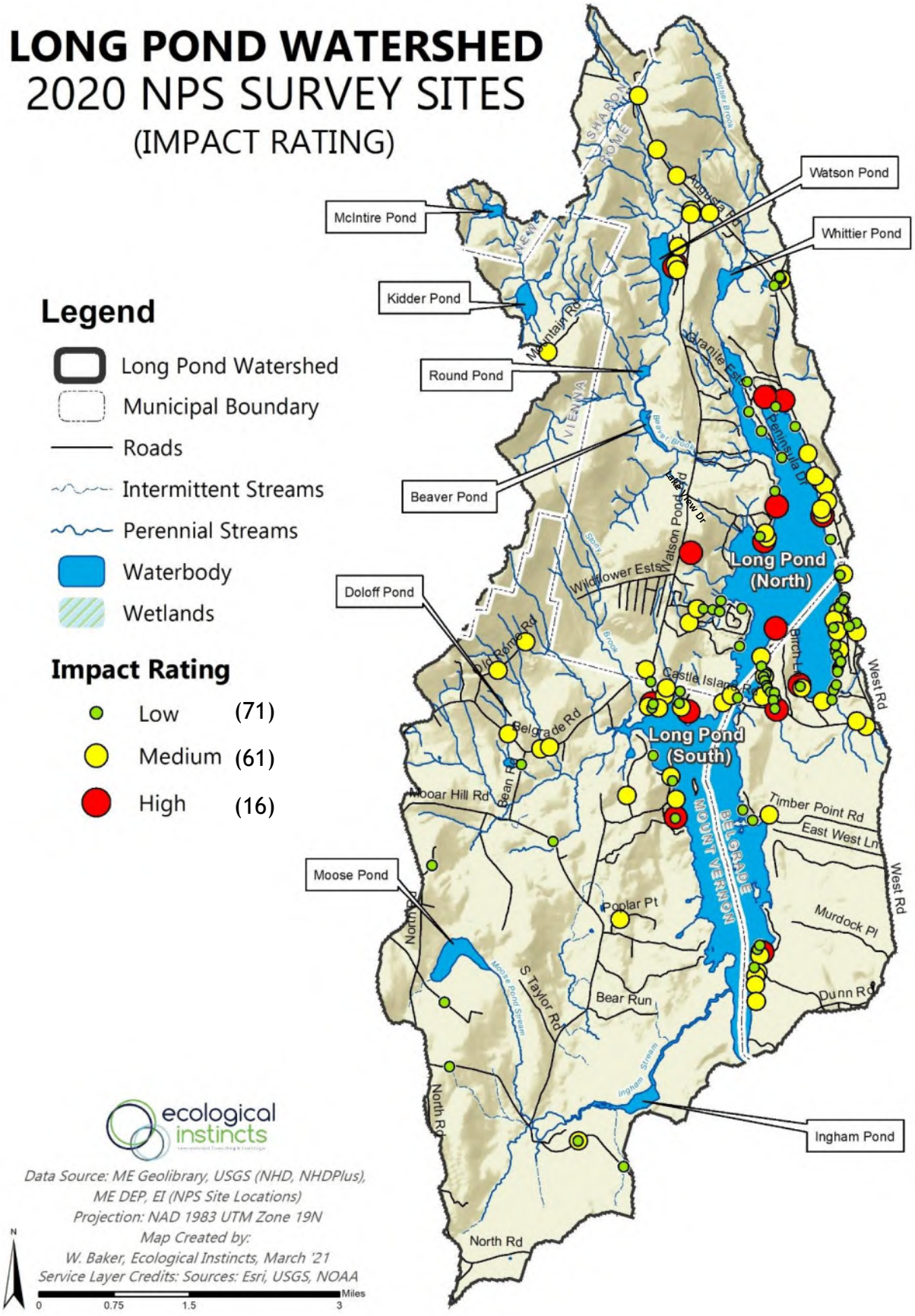


Figure 10. Map of NPS sites in the Long Pond watershed by impact ranked low to high.

The majority of sites are medium- or low-impact (89%), while only 11% of sites are high-impact. High-impact sites are primarily associated with residential properties (38%), and roads (32%- state, town and private). Maps showing NPS results by sector, land-use type and impact are presented in Appendix C.

Example of a high-impact residential site in Sector 13.

Residential: Sixty-three (63) residential sites were documented in the Long Pond watershed, representing 43% of the total documented sites. Common problems include bare soil, surface erosion, roof runoff, unstable access to the shoreline, and lack of shoreline vegetation to filter and prevent runoff from getting to the lake. While the majority of residential sites are low-impact (39 of the 63 sites), the cumulative impact of these sites, combined with the 18 medium- and 6 high-impact sites undoubtedly results in a significant load of phosphorus making its way to the lake.

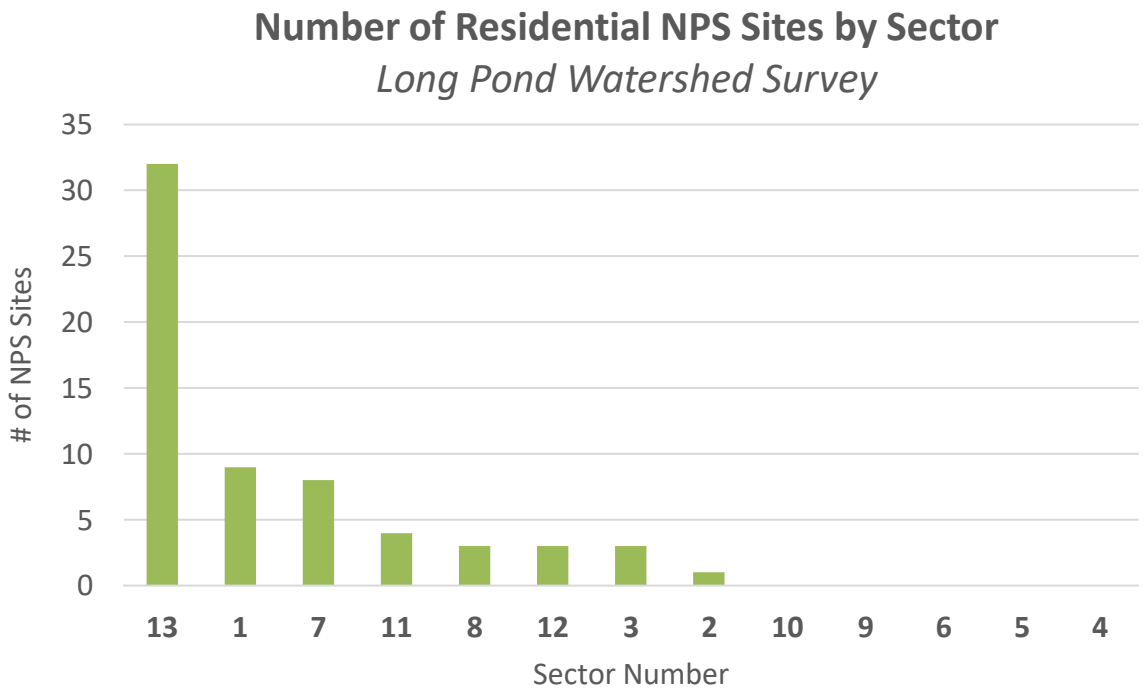


Figure 11. Residential NPS sites by sector in the Long Pond watershed.

Driveways: Driveways provide conduits for water to travel during rainstorms, and if not properly built or maintained, or with proper runoff controls, can result in surface erosion, carrying nutrients and sediment to the nearest ditch, stream or directly to the lake. Driveways often lead directly to a house on the shoreline, are unpaved (gravel), run perpendicular to the lake, and create a straight path for runoff to flow into the lake.

- Gravel driveway sites account for 15 of the 148 documented NPS sites across the watershed including eight medium-impact, six low-impact, and one high-impact site.
- All of the driveway sites are associated with residential development. Geographically, the sites are located throughout the watershed.

Example of a medium-impact driveway site on Sandy Cove Road in Sector 11.

Roads: Road sites generally have larger erosion problems, which in turn result in a more significant impact on the water quality of the lake and can be more costly than other fixes. A total of 46 road sites were documented in the watershed including private, town, and state roads. Two private-road sites, one town-road site, and two state-road sites ranked high-impact. These sites should be prioritized for remediation in the near future.

Example of a high-impact private-road site in Sector 7.

- **Private-road** sites make up the majority of documented road sites (17 sites), or 37% of all road sites. Common problems associated with private roads include surface erosion (resurfacing needed), plow/grader berms, ditch erosion, and unstable, clogged and/or undersized culverts.
- Sixteen **town-road** sites were documented in the watershed. Most of the sites resulted in flow of nutrients and sediments into a stream that connects to Long Pond, but some are on roads directly adjacent to the lake and had the potential to cause erosion through small ditches or drainage areas with inadequate vegetation. The majority of these sites are located in Mount Vernon. Problems with town road sites are a result of unstable, clogged culverts, direct discharge to a stream (need turnouts and retention/detention basins), and unstable road shoulders.
- Six of the 13 **state-road** sites are located on Rt. 27 (Augusta Road), four are located on Castle Island Road, and three on Belgrade Road on the west side of the watershed. Problems at these sites include winter sand build-up, road shoulder erosion, and unstable and/or undersized culverts.

Trails/Paths: Seven trail/path sites are associated primarily with residential properties to access the shoreline, docks, boats, or camp sites. Erosion on paths is exacerbated by continuous foot traffic, bare soil, and moderate to steep slopes. Trails and paths without runoff diverters, infiltration steps or erosion control mulch will continue to carry runoff into the lake.

- While three of these sites ranked low-impact, another four sites ranked medium- or high-impact and should be prioritized for remediation.
- Four trail/path sites were documented on Blackberry Estates, three of which were given an impact rating of medium- or high-impact.

An old walkway requires repair to prevent soil erosion from getting to the lake on this high-impact site in Sector 5.

Commercial: A total of four commercial NPS sites were documented during the survey. These sites are associated mostly with businesses in Belgrade Village (Sectors 1 and 13)

- Two of the commercial sites ranked medium-impact, and two ranked low-impact. The majority of problems are associated with surface erosion as a result of bare soil, roof runoff, and inadequate shoreline vegetation. A clogged culvert was documented at one of the sites, and lack of shoreline vegetation was documented at another.

Lack of shoreline vegetation and a steep slope is causing erosion at this commercial site in Sector 1.

Boat & Beach Access: In addition to trails and paths that lead to the lake, and additional six beach-access and one boat-access site was documented in the watershed. Three of the beach access sites are located on residential properties, while two are common beach areas for private roads, and one was associated with the state-owned hand-carry launch on Castle Island Road. The boat access site is located near the state-owned public boat launch on the north side of Castle Island Road. There are no high-impact boat or beach-access sites, and most sites are medium-impact (four of the seven sites).

Example of a medium-impact beach-access site in Sector 8.

Cost of NPS Sites: Recommendations were made for improving each site, along with the estimated cost of labor and materials for all 148 sites. Only 21 of these sites are estimated to incur a high cost (over $2,500), while the remainder of sites were split between low- (less than $500/ 71 sites) and medium-cost ($500- $2,500/56 sites) (Figure 12). Private roads (7), town roads (4 sites), and residential properties (4 sites) have the greatest number of high-cost sites. Residential sites make up the greatest number of medium (11) and low-cost (48) sites. There are 17 more high-cost sites than high-impact sites as a result of two high-cost, low-impact sites and 15 high-cost, medium-impact sites. On the other hand, a dozen of the high-impact sites ranked either low or medium-cost. These should be prioritized for remediation. A high percentage of residential sites are both low-impact and low-cost. This is reflected in the map in Figure 13 (green circles).

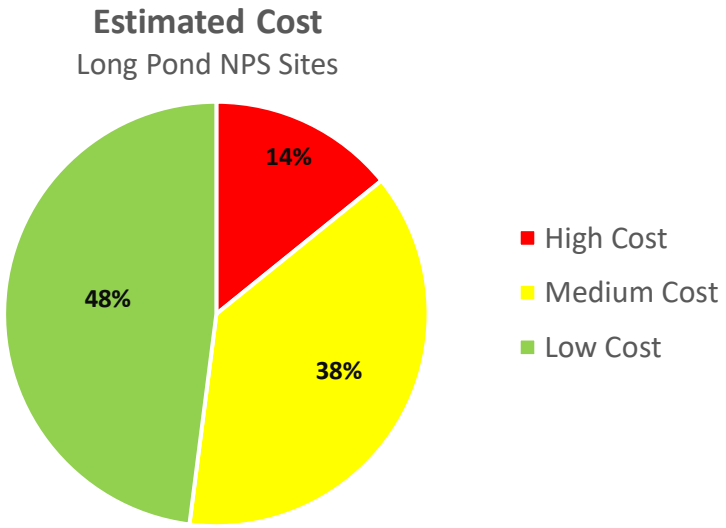


Figure 12. Estimated cost of NPS sites in the Long Pond watershed.

Low-cost sites are estimated to cost less than $500.

Medium-cost sites range from $500 to $2,500.

High-cost refers to sites estimated to cost more than $2,500.

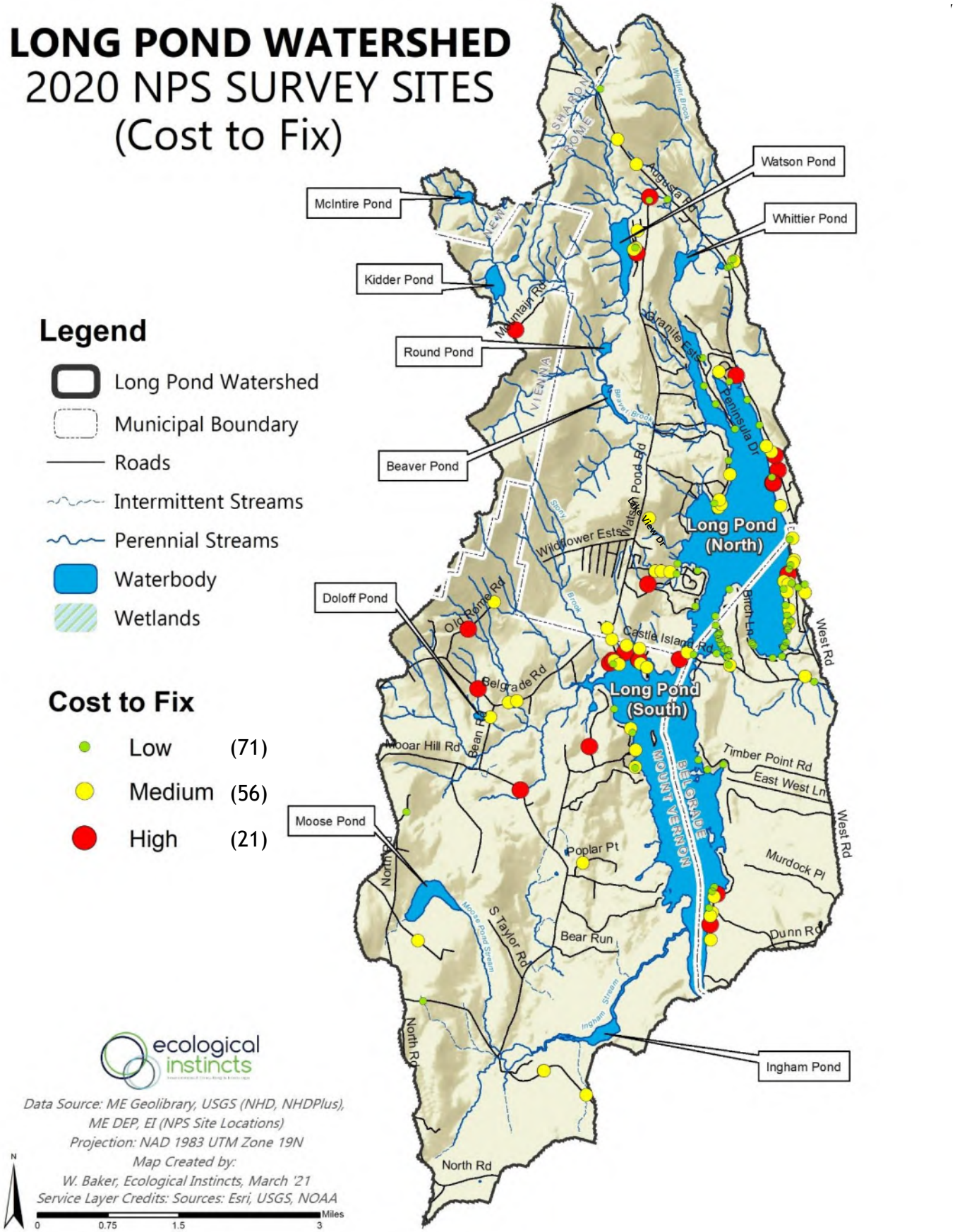


Figure 13. Location and cost of NPS sites in the Long Pond watershed.

SECTOR OVERVIEW (See Appendix B for sector specific results maps.)

Sector 1

A total of 19 NPS sites were documented in this sector including nine residential sites, four state road and three private road sites, a driveway, a commercial property, and a trail/path. Sites in Sector 1 make up 13% of the total number of sites across the watershed. Most of the sites are medium or low-impact (8 sites each). Sector 1 encompasses most of the eastern shore of Long Pond North.

Roof dripline erosion at a residential site in Sector 1.

Sector 2

A total of eight sites were documented in Sector 2, including two driveway sites, two state road sites (Rt. 27), a residential, a private road (Country Acres Lane), a commercial site, and a construction site. While there are no high-impact sites in Sector 2, five of the eight sites are medium-impact.

A construction site with insufficient erosion control measures in Sector 2.

Sector 3

Sector 3 had a total of seven documented NPS sites, or 5% of total sites. Three sites are residential, two are driveways, and two are on town roads. Two of the residential sites are high-impact, and the rest are medium-impact. There are no low-impact sites in this sector. Both of the high-impact sites are low-cost, meaning that they could be good sites to prioritize for improvement.

A sink hole on the Watson Pond Road crossing in Sector 3.

Sector 4

Only one NPS site was documented in Sector 4. This site is located on Vienna Mountain Road, a private road in the upper watershed. Much of Sector 4 is undeveloped due to protection of the Kennebec Highlands.

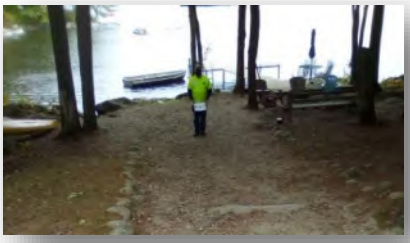
Gully erosion on Vienna Mountain Road in Sector 4.

Sector 5

A total of seven NPS sites were documented in Sector 5, five of which are trail/path sites. Two sites were recorded as "other" for the land-use type which include a stream flowing partially through a residential

This shoreline access path in Sector 5 requires stabilization.

property, and a dry stream bed near the lakeshore. The trail and path sites are located on residential properties at Blackberry Estates and Beaver Brook Estates.



An eroding shoreline access path requires stabilization in Sector 6.

Sector 6

Sector 6 had a total of 10 documented NPS sites, or 7% of the total sites. Five of the sites are on private roads and two of the sites are beach access sites. There is also one driveway site, one trail/path, and one boat access site in this sector. Most of the sites are low-impact (6 sites) or medium-impact (4 sites), including the boat access site and a beach access site at Castle Island Boat Launch.

An eroding bank at the shoreline in Sector 7.

Sector 7

A total of 19 sites were documented in Sector 7. These include eight residential sites, and eight sites on private, town, and state roads. Two driveway sites and one beach access site were also documented. Most of the sites (11 sites) are medium-impact, six are low-impact, and two are high-impact.

The addition of a vegetated buffer at this residential property in Sector 8 would prevent soil from washing into the lake.

Sector 8

A total of eight NPS sites were documented in Sector 8, including three residential, two town road sites, a private road (Lake Ridge Road), a driveway, and a beach access site. The residential and driveway sites are located on Porcupine Ridge Road and Bonzo's Hollow. One residential site was ranked high-impact due to a large amount of bare soil on the shoreline. Of the rest of the sites, four are low-impact and three are medium-impact.

A roadside ditch in Sector 9 requires vegetation and re-shaping to prevent sediment from flowing into the lake.

Sector 9

There are only three NPS sites located in Sector 9, one private road, one town road, and one construction site, where a farm pond under construction needs soil stabilization. Follow-up on this site is needed to determine whether the problem has been addressed as following construction. Road shoulder erosion was documented at both road sites. Sector 9 is not heavily developed and included only a few shoreline properties.

Sector 10

A total of four sites were documented in Sector 10 in Mt. Vernon, all of which are located on town roads. Three of these sites are located on Cottle Hill Rd, and one on Bean Rd. Three of the four sites are low-impact, mostly due to the distance of the sites from the lake, and one site is medium-impact. Although Sector 10 includes a portion of undeveloped shoreline on Long Pond South.

Sheet erosion and an unstable culvert in Sector 10.

Sector 11

A total of nine NPS sites were documented in Sector 11. This includes four residential sites, three private road sites, a town road, and a driveway site. All the sites in this sector are located on Sandy Cove Rd. One site is high-impact, five are medium-impact, and three are low-impact. All of the residential sites are low-impact, while the medium- and high-impact sites are located on roads.

Bare soil on lakeshore properties like this one in Sector 11 can deliver sediment directly to the lake.

Sector 12

Sector 12 has three documented residential NPS sites including one medium and two low-impact sites. All three sites are located on Timber Point Road, which is the most densely developed road in the sector.

Runoff and lack of vegetation on a residential property in Sector

Sector 13

Sector 13 contains the greatest number of sites of any sector with 50 sites, or 34% of the total sites. It has more than double the number of sites of Sector 1, which has the second most NPS sites. Most of the sites are residential (32 sites) along with five driveway sites associated with residential properties. Two of the four commercial sites documented are located in Sector 13, along with both of the documented municipal/public sites which are associated with Centennial Park and Long Pond Beach. This sector also contains seven road sites (1 private, 3 town, and 3 state), and two beach access sites. Thirty-two sites are low-impact (32), 14 are medium-impact, and four are high-impact. The four high-impact sites include a culvert on Castle Island Road, Long Pond Beach, and two residential sites on Lynch Cove Road and Birch Lane.

A steep slope and lack of shoreline vegetation results in shoreline erosion in Sector 13.

RESIDENTIAL AREAS

Problem: BARE SOIL, SURFACE EROSION, INADEQUATE SHORELINE VEGETATION

Solution: Control runoff from impervious surfaces. Use erosion control mulch in areas with exposed soil, and plant hardy native vegetation along the shoreline to stabilize banks and filter runoff. Consider planting vegetation before using rip rap, or use a combination of both, minimize lawn areas, and add dripline trenches to roof driplines.

Sector 13B: Site 10

Vegetated buffers filter out pollutants
(Photo: Maine DEP)

Erosion control mulch & vegetative planting
(Photo: AWWA)

Problem: UNSTABLE BEACH & BOAT ACCESS

Solution: Stabilize eroding shorelines by planting a vegetated buffer consisting of a combination of native plants and erosion control mulch or install a rain garden. The roots from these plants will stabilize the shoreline, filter pollutants running off the land, and provide habitat for wildlife. Alternatively, just let the shoreline naturalize by not mowing a wide strip along the shoreline.

Sector 1A: Site 1

Allow the shoreline to naturalize by not mowing right to the edge
(Photo: Maine DEP)

Gather neighbors to plant a buffer of flowering shrubs that attract butterflies and provide color year-round
(Photo: J. Jespersen)

Residential Areas Continued…

Problem: UNSTABLE TRAILS & PATHS & ERODING ROOF DRIPLINES

Solution: Retrofit trails and paths so that they are well defined, narrow (<3 ft), and winding. Install water bars or infiltration steps on steeper slopes to divert or infiltrate runoff and mulch all bare soil areas.

Sector 11: Site 4

Dripline trench & erosion control mulch (Photo: AWWA)

Infiltration steps protect steep slopes w/foot traffic

DRIVEWAYS & ROADS

Problem: MODERATE TO SEVERE SURFACE EROSION ON DRIVEWAYS

Solution: Re-grade, reshape and/or crown driveways; add new surface material; install runoff diverters such as rubber razors or water bars; maintain and repair existing rubber razors or other driveway runoff diverter annually and after large storm events.

Sector 7: Site 4

Rubber razors direct water off driveways and into vegetation

Resurfacing driveways with hard-packing, cohesive surface material prevents erosion

Problem: ROAD EROSION, UNSTABLE OR UNDERSIZED CULVERTS

Solution: Reshape and regrade gravel roads, add new surface material, install ditching where needed, and line ditches with rock and vegetate for stability. Replace failing, plugged, crushed or undersized culverts, and stabilize inlets/outlets with rip rap; add runoff diverters; clean up winter sand.

Sector 6: Site 7

Reshape gravel roads, add new surface material, and install runoff diverters

Replace undersized and perched culverts, remove clogs, armor inlets/outlets and install plunge pools

CONSTRUCTION SITES

Problem: ROOF RUNOFF EROSION, SURFACE EROSION, BARE SOIL

Solution: Install temporary Best Management Practices (BMPs) before construction begins to prevent delivery of sediment to the lake. These may include erosion control mulch berms, hay bales or silt fences. Permanent BMPs must be installed following construction to stabilize all bare soil areas. This includes installing a healthy buffer of vegetation along the shoreline and vegetating or mulching all bare soil.

Sector 9: Site 1

Install temporary BMPs such as an erosion control mulch berm prior to beginning construction (Photo: Maine DEP)

Install permanent BMPs once construction is complete including seed/ haying bare soil and installing vegetation on the shoreline (Photo: Maine DEP)

SUMMARY & NEXT STEPS

SUMMARY

The 2020 Long Pond watershed survey identified 148 individual NPS sites. The survey focused on all developed land (with permitted access) that drains to or has the potential to drain to the lake, carrying stormwater and other pollutants of concern. Survey results indicate that a significant portion of NPS sites are located on residential properties, mostly associated with lack of native vegetation on the shoreline to filter pollutants. This does not account for all beach and boat access sites, driveways, or trails and paths located on residential properties, or the private gravel roads that provide access to these homes and camps.

Example of an excellent shoreline buffer between the lake and the house with multiple types and heights of vegetation.

The cumulative effect of all NPS sites across numerous land-use types results in the delivery of excess phosphorus to Long Pond via stormwater runoff. With leadership from the BLA's LakeSmart Program and help from the 7 Lakes Alliance's YCC, landowners can be better informed about the impact that their property has on the lake and have access to the right tools to address these problems. Follow-up work is needed to meet with state and town officials, and road and homeowner associations to discuss next steps and potential funding opportunities.

PRIORITIZING NPS SITES

Addressing runoff from existing watershed development is currently the best solution for protecting and improving water quality in the Long Pond as well as supporting activities that result in reduction of pollutants in upstream lakes. An efficient means by which to prioritize sites includes sorting all sites by impact and cost to select sites with the greatest impact to water quality for the lowest cost to fix. Additional factors include identifying sites with a high likelihood of being completed (landowner willingness), and consideration of sites with a good educational value (public beach, boat launch, etc.).

Preliminary prioritization of the 148 survey sites began with feedback from the watershed survey steering committee at the February 16, 2021 meeting (Table 4). Further prioritization and specific recommendations for these sites will be completed by BLA and 7 Lakes Alliance.

Table 4. Prioritized list of NPS sites in the Long Pond watershed.

Location	Notes
Sector/Site Specific Priorities	
Sectors 1 & 2	High and medium impact sites with steep banks (road and residential sites) along Augusta Road (Rt. 27) including drainage ditches that drain water from the state road directly into the lake; Colonel Bogert Drive, driveway on Tracy Cove Rd. (1-13)
Sector 3	Sink hole at stream crossing on Watson Pond Road & Watson Pond residential sites; high-impact residential sites (3-5 and 3-6)
Sector 5	Four trail/path sites at Blackberry Estates (5-2 through 5-5)
Sector 6	Castle Island Hand-Carry Boat Launch (6-10) and Public Boat Launch (6-9), Wildwood Estates Beach as an educational opportunity (6-1)
Sector 7	Maine Chance Lane, LaPosa Drive (common area, driveways, residential, and private road sites), Castle Island Rd (State road sites)
Sector 8	Residential site on Bonzo's Hollow (8-7); medium impact sites on Porcupine Ridge Road (8-3 and 8-5); ditches on Bean Rd. (town road)
Sectors 9 & 10	Ditches and culverts on town roads in Mt. Vernon (Cottle Hill)- training for town road crews
Sector 11	Road and residential sites on South Sandy Cove Rd. and Sandy Cove Rd.
Sector 12	Three residential sites on Timber Point Rd.
Sector 13A	Residential sites on Castle View Lane, commercial sites on Main Street, high-impact state road site on Castle Island Road (13A-03); residential properties on Birch Lane and Lynch Cove Road
Sector 13B	Long Pond Beach, residential and driveway sites on Lake Shore Drive, commercial sites on Main Street; State road site on Caste Island Road (13B-24)
General Follow-up Priorities	
State and Town Sites	Prepare a list of town-owned NPS sites and send to the towns for their annual budget planning (town beaches, parks and roads); set up a meeting with Maine DOT to discuss sites located on state roads
Private Roads	Prepare a list of NPS sites on private roads and reach out to road associations; send a letter and present results at annual road association meetings
Residential Neighborhoods & Homeowner Associations	Target residential neighborhoods with multiple sites for greater reach and impact (e.g. Castle View Lane, Sandy Cove Rd); target high-impact residential sites in Phase I restoration efforts
Village District	Host meeting with commercial business owners with NPS sites to discuss survey results and possible funding opportunities
LakeSmart	Follow-up with 74 landowners on LakeSmart referral form with educational materials on buffers and runoff; reach out to three landowners with existing LakeSmart sites with NPS issue.

NEXT STEPS - WHERE DO WE GO FROM HERE?

Improving the NPS sites identified during the watershed survey will require efforts by state and local municipal officials, BLA, 7 Lakes Alliance, commercial businesses, individual landowners, and road and homeowner associations. Developing a plan for addressing these sites should be a high priority for the BLA and watershed towns. An updated Watershed-Based Management Plan (WBMP) is needed to ensure that high- and medium-impact sites are addressed within a reasonable timeframe, and that a plan is developed for the many low-impact residential sites across the watershed. The plan will also help to identify potential funding sources and identify the roles and responsibilities of partners and local stakeholders over the next 10 years. Action steps in the Long Pond WBMP may include:

1. Presenting the results of the survey to the public, distributing summaries of the survey results to key stakeholders, and posting copies of the survey report on the BLA, 7 Lakes Alliance, and town websites;
2. Sending letters to all property owners with a documented NPS site, and giving them guidance and recommendations for addressing the problems;
3. Setting up meetings with state and town officials to review survey results and to develop a schedule for addressing these sites;
4. Developing a detailed funding and implementation plan and schedule;
5. Submitting a 319 grant to address high-priority NPS sites and to help fund YCC for shoreline properties;
6. Identifying potential LakeSmart properties and developing a strategic outreach strategy to address the numerous low-impact shoreline sites.

In addition to the actions identified by the steering committee, there are many things that individual landowners, commercial property owners, and municipal officials can start doing now to help with this effort.

Individual Landowners

- If you have a documented NPS site on your property, contact the BLA today for advice about how to get started.
- Become LakeSmart! Join together with your neighbors to certify your property through the BLA's successful LakeSmart program by establishing best practices on your properties. Call the BLA LakeSmart Coordinator today at (207) 512-5150 to get started!
- Replace portions of your lawn with a rain garden, buffer strip or let naturalize to filter pollutants before they reach the lake.

Install native vegetation along the shoreline to stabilize the soil, improve wildlife habitat and help keep shoreline areas shaded and cool.

Remember - the long-term health of Long Pond depends on you! Help protect and improve the water quality of our lakes for future generations!

- Stop mowing and raking your shoreline and other parts of your property to bare soil. Let lawn and raked areas revert back to natural vegetation. Deep shrub and tree roots help hold the soil in place and help prevent erosion.
- Avoid exposing bare soil. Seed and mulch bare areas. Use erosion control mulch.
- Manually remove invasive terrestrial plants that are growing on the shoreline. Contact the Kennebec County Soil & Water Conservation District for advice on managing these plants.
- Never use herbicides or pesticides in the shoreland zone unless you have a permit.
- Avoid using fertilizer within 250 ft. of the lake, and always get a soil test before applying fertilizer outside the shoreland zone to determine the correct application rate.
- Read "Permitting ABCs" (below) and call your local Code Enforcement Officer and Maine DEP before starting any cutting or soil disturbance projects.
- Maintain septic systems properly. Pump septic tanks (every 2 to 3 years for year-round residences; 4-5 years if seasonal) and upgrade marginal systems or old systems installed prior to the current state plumbing codes for septic systems (pre-1995).
- Support BLA and the 7 Lakes Alliance by becoming a member, and get involved with their programs and activities, including annual meetings, LakeSmart, YCC, and other workshops.

Commercial Property Owners

- Work with BLA to become LakeSmart-certified. Clean lakes are good for business!
- Consider sponsoring a stewardship event to plant buffers and spread mulch as a marketing tool and invite the press.
- Work with the 7 Lakes Alliance to line up free labor and technical assistance to address NPS sites through the Youth Conservation Corps.

Municipal Officials

- Conduct regular maintenance on town roads in the watershed and address the town road and public sites documented in this survey.
- Enforce shoreland zoning and other ordinances to ensure the long-term protection of Long Pond.

- Participate in and support long-term watershed management projects by serving on watershed committees, serving as a sponsor for grant applications and setting aside funding for long-term water quality monitoring and lake protection projects.
- Promote education and training for road crews, code enforcement officers, selectmen, planning board members and other decision makers.

CONSERVATION PRACTICES FOR HOMEOWNERS

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

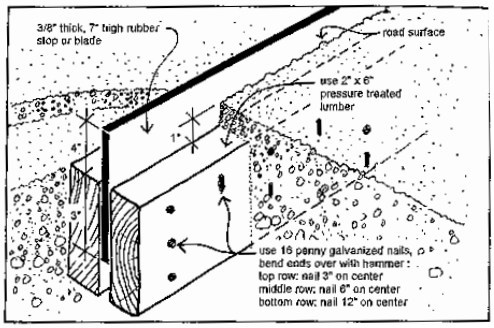
Fact sheets are available to help you install conservation practices on your property. Download at: https://www.pwd.org/publications

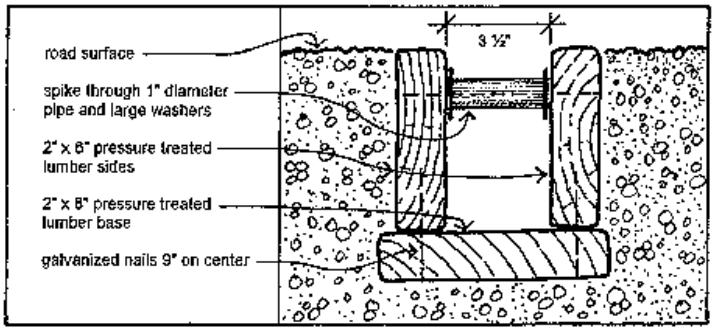
A series of fact sheets are available that answer many common how-to questions about installing Best Management Practices (BMPs). The fact sheets profile 20 common conservation practices and include detailed instructions, diagrams and color photos about installation and maintenance. The series includes the following:

Construction BMPs	Native Plant Lists (4)	Rain Gardens
Dripline Trench	Open-Top Culverts	Rubber Razors
Drywells	Paths and Walkways	Shoreline Riprap
Erosion Control Mix	Permitting	Turnouts
Infiltration Steps (2)	Pervious Pathways	Waterbars
Infiltration Trench	Planting & Maintaining Buffers	Selecting Plants for Shade (3)
Live Staking	Rain Barrels	Selecting Plants for Sun (3)

Each one is tailored to different site conditions (e.g., full sun and dry soils). The lists include plant descriptions from the DEP's *Buffer Handbook* and small color photos of each plant to make plant selection easier. Below are a few examples of Best Management Practices (BMPs), including how to install a rubber razor and open top culvert- both of which are used for getting water off of gravel roads and driveways. A drywell is useful for collecting runoff from gutters. Similarly, a gravel dripline trench can be used on homes that do not have gutters. These are typically 18 - 24" wide and slightly longer than the roof.

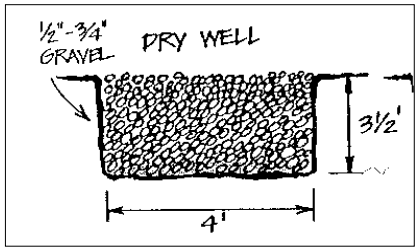
Rubber Razor Blade: Use this structure in a gravel driveway or camp road. It can be plowed over only if the plow operator is aware of its presence and lifts the plow blade slightly. Place it at a 30 degree angle to the road edge and direct the outlet toward a stable vegetated area.





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

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



PERMITTING ABC'S

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

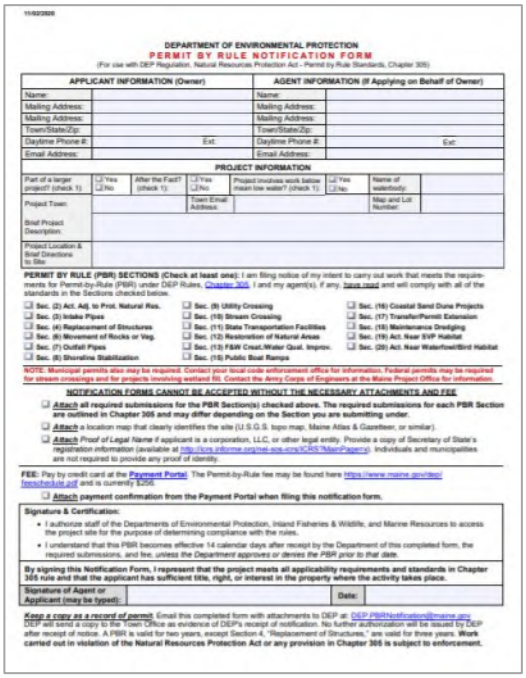
Shoreland Zoning Law - Construction, clearing of vegetation and soil movement within 250 feet of lakes, ponds, and many wetlands, and within 75 feet of most streams, falls under the Shoreland Zoning Act, which is administered by the Town through the Code Enforcement Officer and the Planning Board.

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

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

HOW TO APPLY FOR A PERMIT BY RULE WITH THE MAINE DEP

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



DEPARTMENT OF ENVIRONMENTAL PROTECTION

PERMIT BY RULE NOTIFICATION FORM

(For use with DEP Regulation, Natural Resources Protection Act - Permit by Rule Standards, Chapter 305)

APPLICANT INFORMATION (Owner)	AGENT INFORMATION (If Applying on Behalf of Owner)
Name:	Name:
Mailing Address:	Mailing Address:
Mailing Address:	Mailing Address:
Town/State/Zip:	Town/State/Zip:
Daytime Phone #: Ext:	Daytime Phone #: Ext:
Email Address:	Email Address:

PROJECT INFORMATION

Part of a larger project? (check 1) ☐Yes ☐No | After the Fact? (check 1): ☐Yes ☐No | Project involves work below mean low water? (check 1): ☐Yes ☐No | Name of waterbody:

Project Town: | Town Email Address: | Map and Lot Number:

Brief Project Description:

Project Location & Brief Directions to Site:

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

☐ Sec. (2) Act. Adj. to Prot. Natural Res.
☐ Sec. (3) Intake Pipes
☐ Sec. (4) Replacement of Structures
☐ Sec. (6) 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
☐ Sec. (20) Act. Near Waterfowl/Bird Habitat

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

NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS AND FEE

☐ **Attach** all required submissions for the PBR Section(s) checked above. The required submissions for each PBR Section are outlined in Chapter 305 and may differ depending on the Section you are submitting under.

☐ **Attach** a location map that clearly identifies the site (U.S.G.S. topo map, Maine Atlas & Gazetteer, or similar).

☐ **Attach** *Proof of Legal Name* if applicant is a corporation, LLC, or other legal entity. Provide a copy of Secretary of State's registration information (available at http://icrs.informe.org/nei-sos-icrs/ICRS?MainPage=x). Individuals and municipalities are not required to provide any proof of identity.

FEE: Pay by credit card at the Payment Portal. The Permit-by-Rule fee may be found here https://www.maine.gov/dep/feeschedule.pdf and is currently $250.

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

Signature & Certification:

- I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules.
- I understand that this PBR becomes effective 14 calendar days after receipt by the Department of this completed form, the required submissions, and fee, *unless the Department approves or denies the PBR prior to that date.*

By signing this Notification Form, I represent that the project meets all applicability requirements and standards in Chapter 305 rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.

Signature of Agent or Applicant (may be typed):	Date:

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

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

CONTACT INFORMATION

Belgrade Lakes Association
Carol Johnson, President
Phone: (207) 512-5150
Email: info@BlaMaine.org
Web: belgradelakesassociation.org

7 Lakes Alliance
Charlie Baeder
137 Main St. Belgrade Lakes, ME 04918
(207) 495-6039 or charlie.baeder@7lakesalliance.org
Web: www.7lakesalliance.org

Kennebec County Soil & Water Conservation District
Dale Finseth, Executive Director
2305 N. Belfast Ave. Augusta, ME 04333
(207) 622-7847 x 3 or dale@kcswcd.org ~ Web: kcswcd.org

Maine Lakes ~ LakeSmart Program
Susan Gallo, Executive Director
P.O. Box 427, Brunswick, ME 04011
Phone: (207) 495-2301 ~ Web: lakes.me

Maine Department of Environmental Protection
17 State House Station, Augusta, Maine 04333
Toll Free in Maine (800) 452-1942 **or** (207) 287-7688
Web: http://www.maine.gov/dep/land/watershed/index.html

PUBLICATIONS & OTHER RESOURCES

A Guide to Forming Road Associations. Maine DEP. July 2014. DEPLW-1071. 21 pgs.
https://www.maine.gov/dep/land/watershed/road_assoc_guide_2020_edit.pdf

Contractors Certified in Erosion Control Practices. Maine DEP.
maine.gov/dep/land/training/ccec.html

Environmental Fact Sheets, Brochures, and Posters. Portland Water District. pwd.org/publications

Gravel Road Maintenance Manual: A Guide for Landowners on Camp and Other Gravel Roads. Kennebec County SWCD and Maine DEP. April 2016.
maine.gov/dep/land/watershed/camp/road/gravel_road_manual.pdf

LakeSmart Toolkit. Maine Lakes. lakes.me/LakeSmart-resources

Maine Mandatory Shoreland Zoning- Supplemental Materials. Maine DEP.
maine.gov/dep/land/slz/index.html

Town of Belgrade, Maine Website. townofbelgrade.com

Town of Rome, Maine Website. romemaine.com

Town of Mt. Vernon, Maine Website. mtvernonme.org

APPENDICES

APPENDIX A: WATERSHED SURVEY FIELD DATA SHEET

Final Site #_____ Checked by _____ Date _____

2020 Long Pond Watershed Survey

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

Sector & Site_____ Date_____ Surveyor Initials _____ Time_____

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

Building Color _____ Landowner Name _____

Tax Map & Lot _____ Talked to Landowner? _____

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

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

GPS Coordinates in **UTM**

(no degrees or decimal points)

0						

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

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

Site is linked to another: Cause of Site # _____ Result of Site # _____

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

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

Type of Erosion	Area	Buffers and Other Filters
Gully - **3**	Large - **3**	No filter, all channelized direct flow into lake or stream - **3**
Rill - **2**	Medium - **2**	Some buffer or filtering, but visible signs of concentrated flow and/or sediment movement through buffer and into lake - **2**
Sheet - **1**	Small - **1**	Significant buffer or filtering* - **1**

IMPACT

High: 8-9 pts

Med: 6-7 pts

Low: 3-5 pts

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

Cost to Fix

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

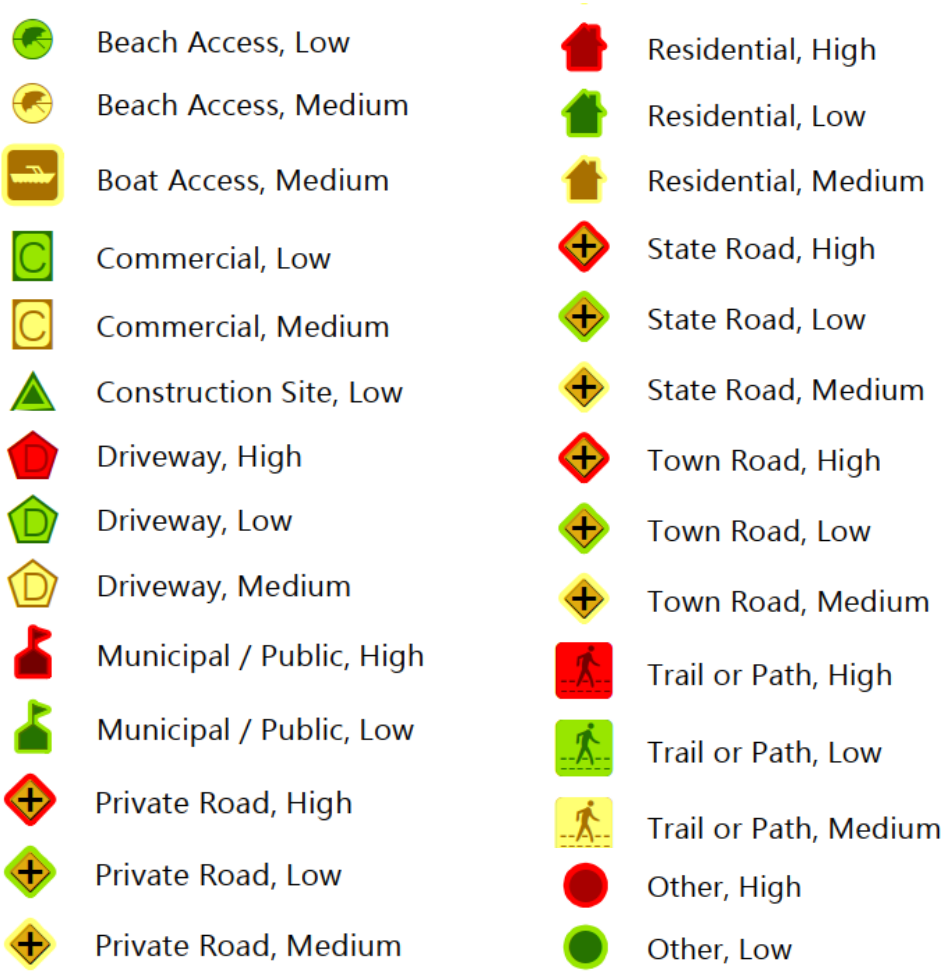
Technical Level to Install

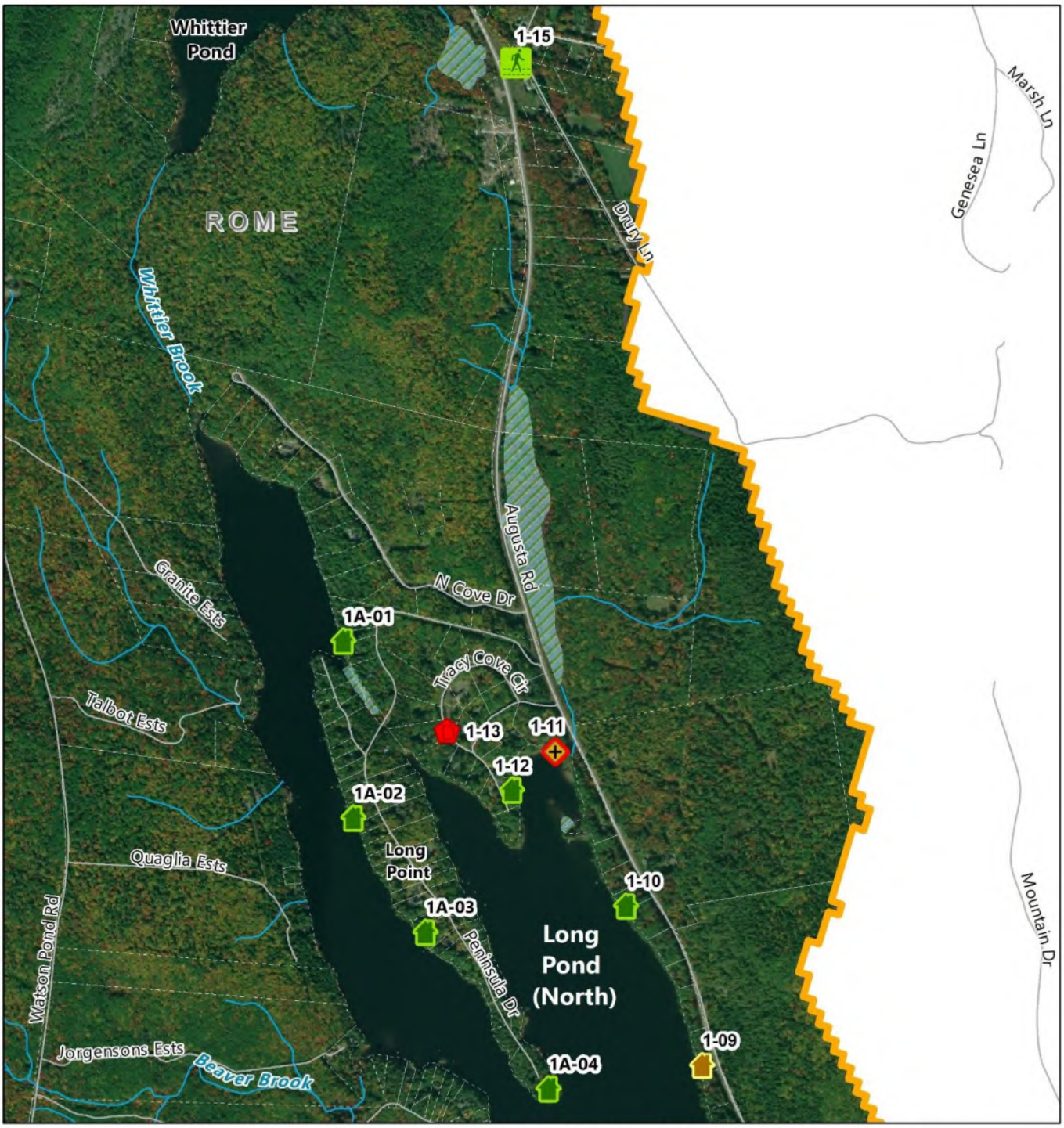
High:	Site requires engineered design
Medium:	Technical person should visit site & make recommendations
Low:	Property owner can accomplish with reference materials

Certified LakeSmart Property? ❒ Yes ❒ No **Potential YCC Project?** ❒ Yes ❒ No ❒ Maybe

APPENDIX B: SECTOR SPECIFIC WATERSHED MAPS

Legend (Land Use, Impact Rating)





2020 LONG POND WATERSHED SURVEY- SECTOR 1 (North)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 0.1 0.2 0.4 Miles N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 1 (South)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

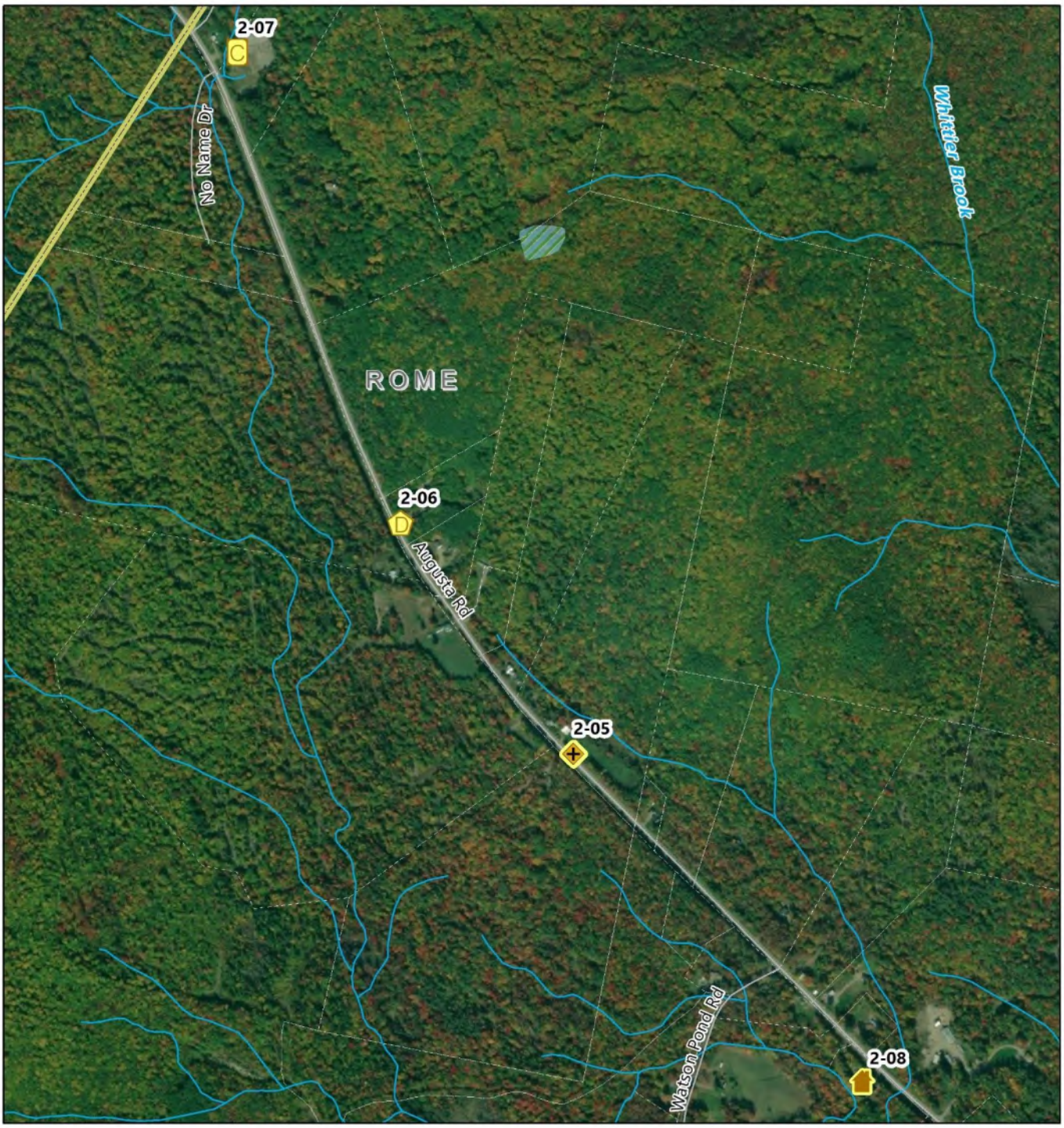
Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 0.05 0.1 0.2 Miles N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2020 LONG POND WATERSHED SURVEY- SECTOR 2 (North)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 250 500 1,000 Feet

N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 2 (South)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 100 200 400 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 3 (North)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 62.5 125 250 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 3 (South)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

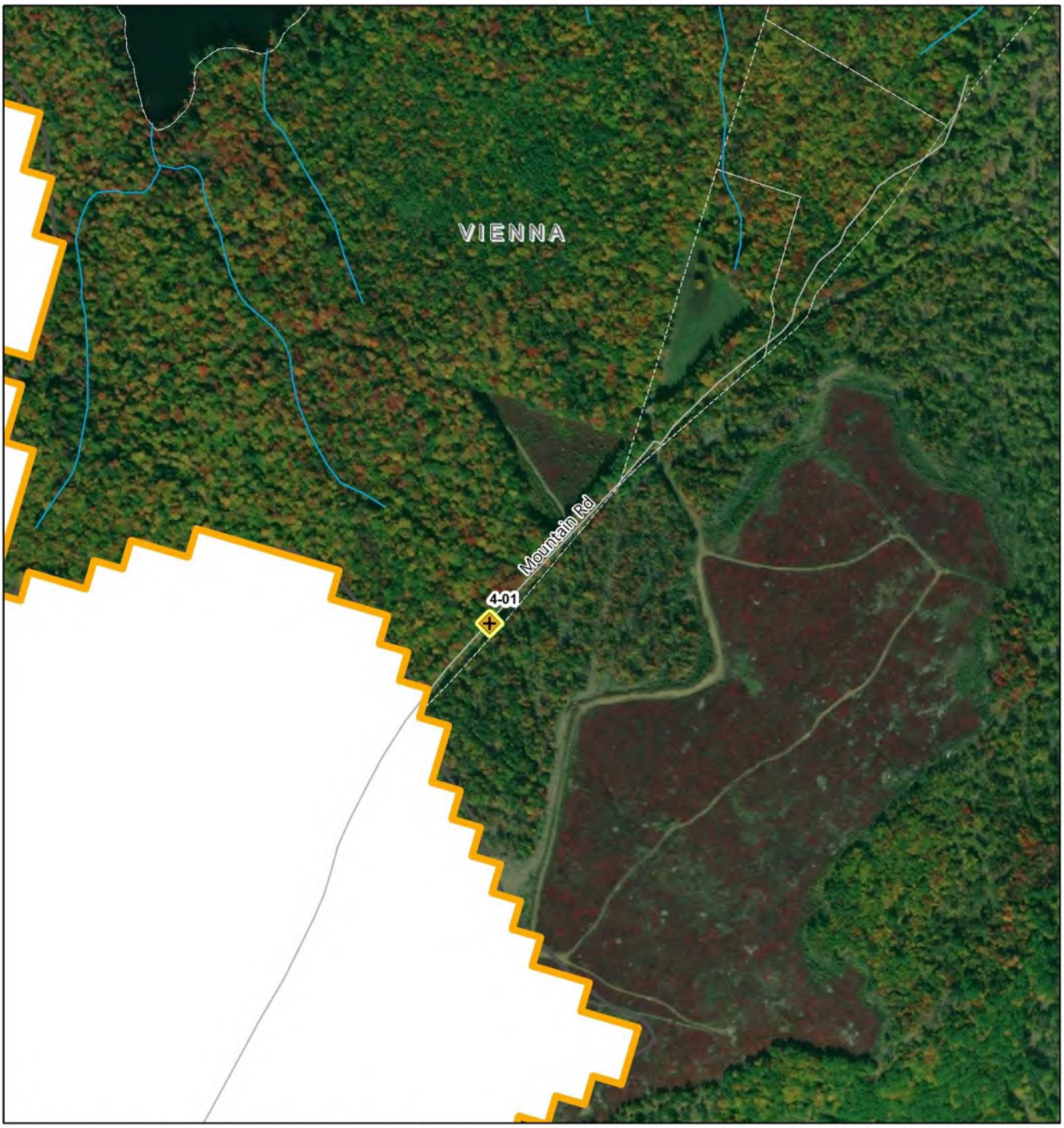
Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 50 100 200 Feet

N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2020 LONG POND WATERSHED SURVEY- SECTOR 4

Long Pond Watershed | Municipal Boundary | Roads | Parcels

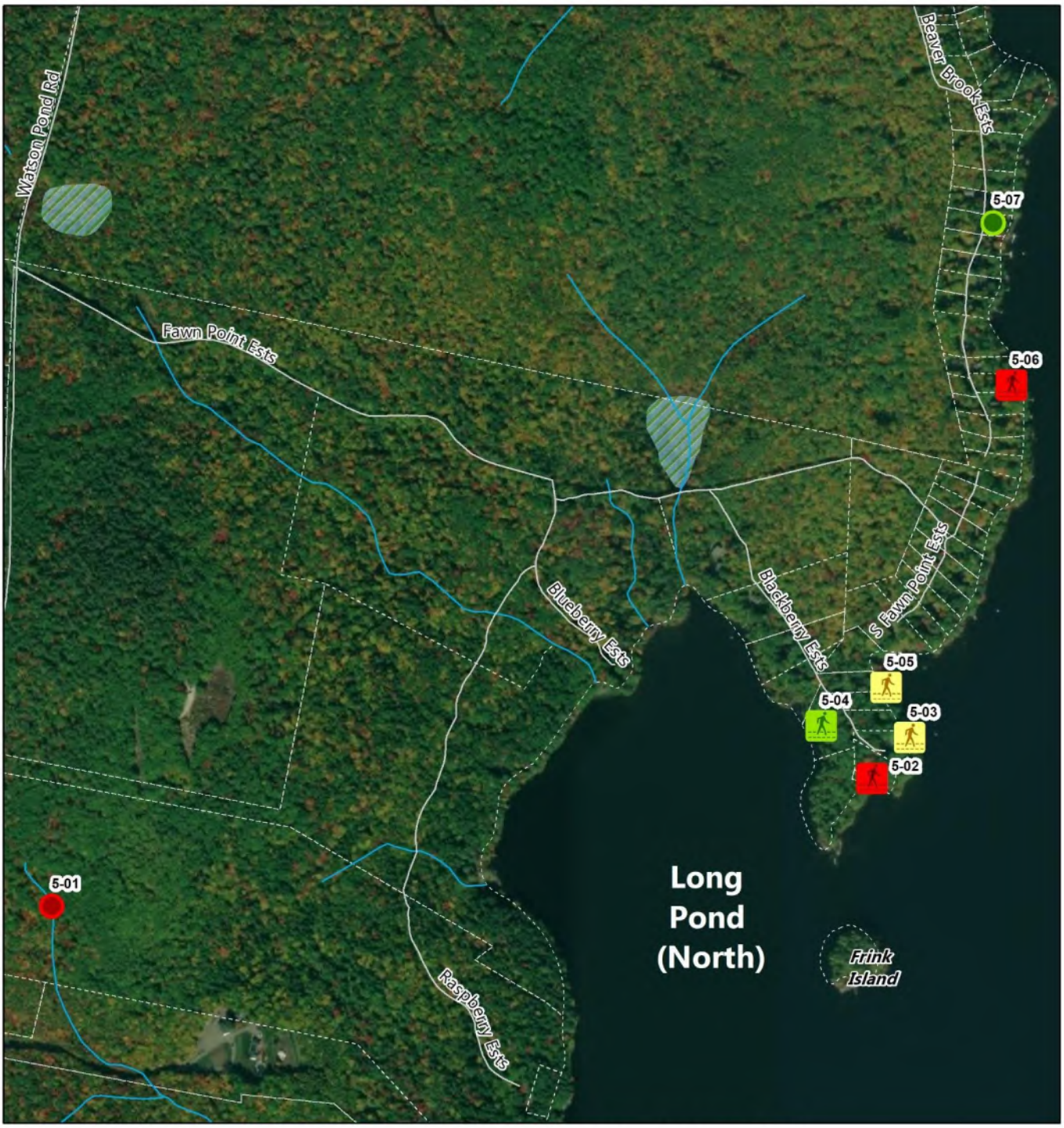
Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 125 250 500 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2020 LONG POND WATERSHED SURVEY- SECTOR 5

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 175 350 700 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 6 (North)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

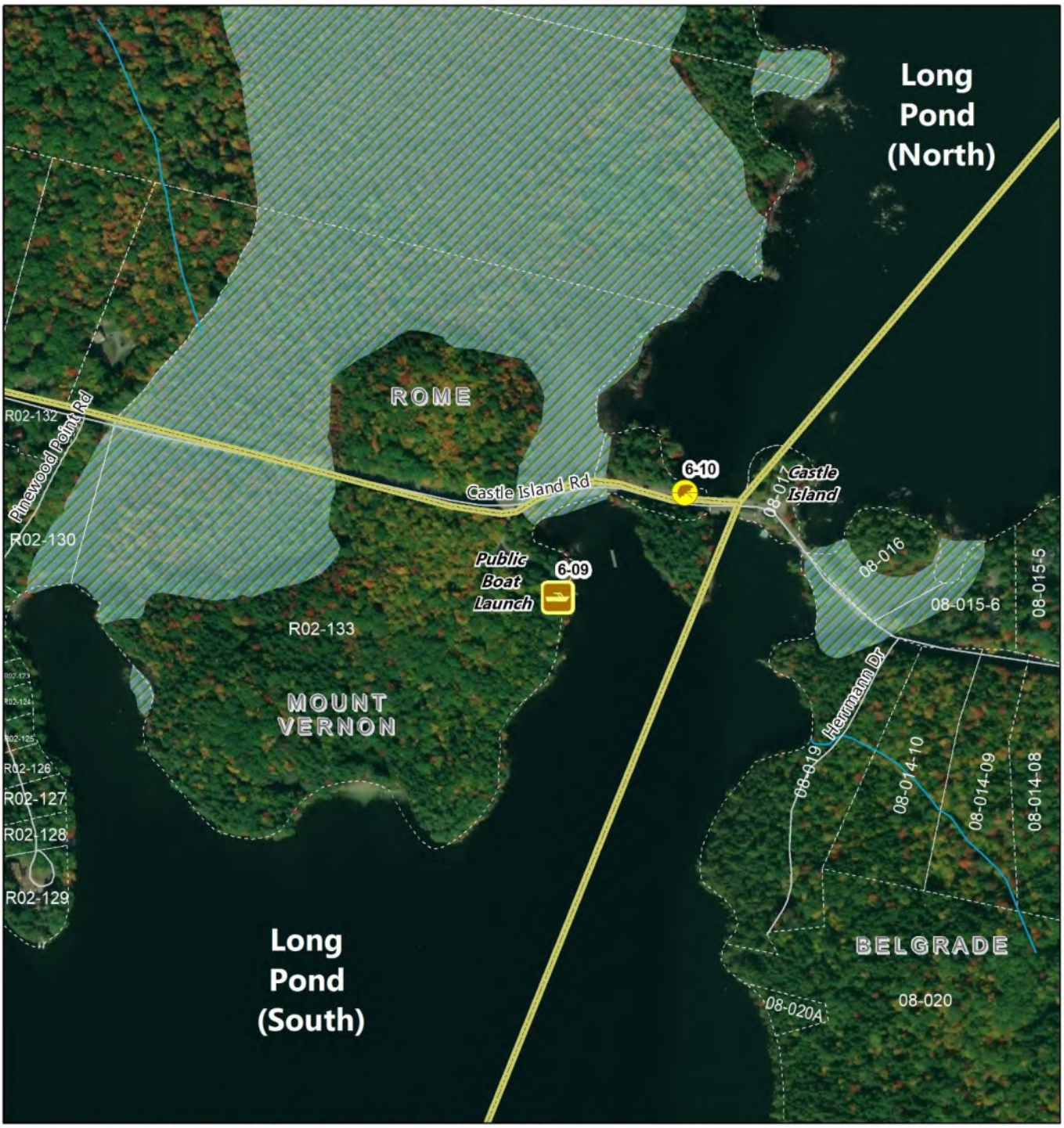
Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 150 300 600 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2020 LONG POND WATERSHED SURVEY- SECTOR 6 (South)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 150 300 600 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 7 (East)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

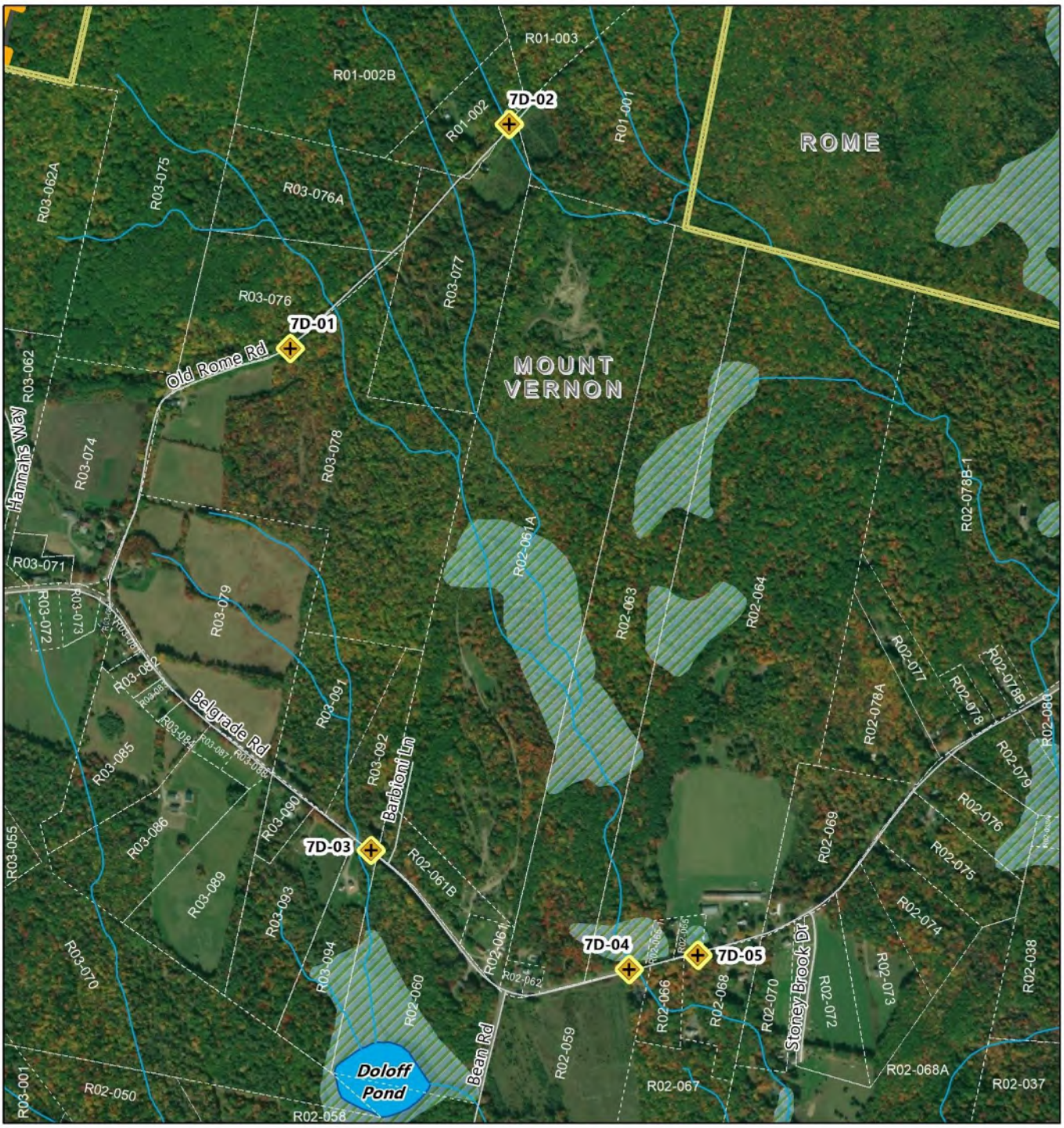
Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 125 250 500 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2020 LONG POND WATERSHED SURVEY- SECTOR 7 (West)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 250 500 1,000 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 8 (East)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 150 300 600 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 8 (West)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

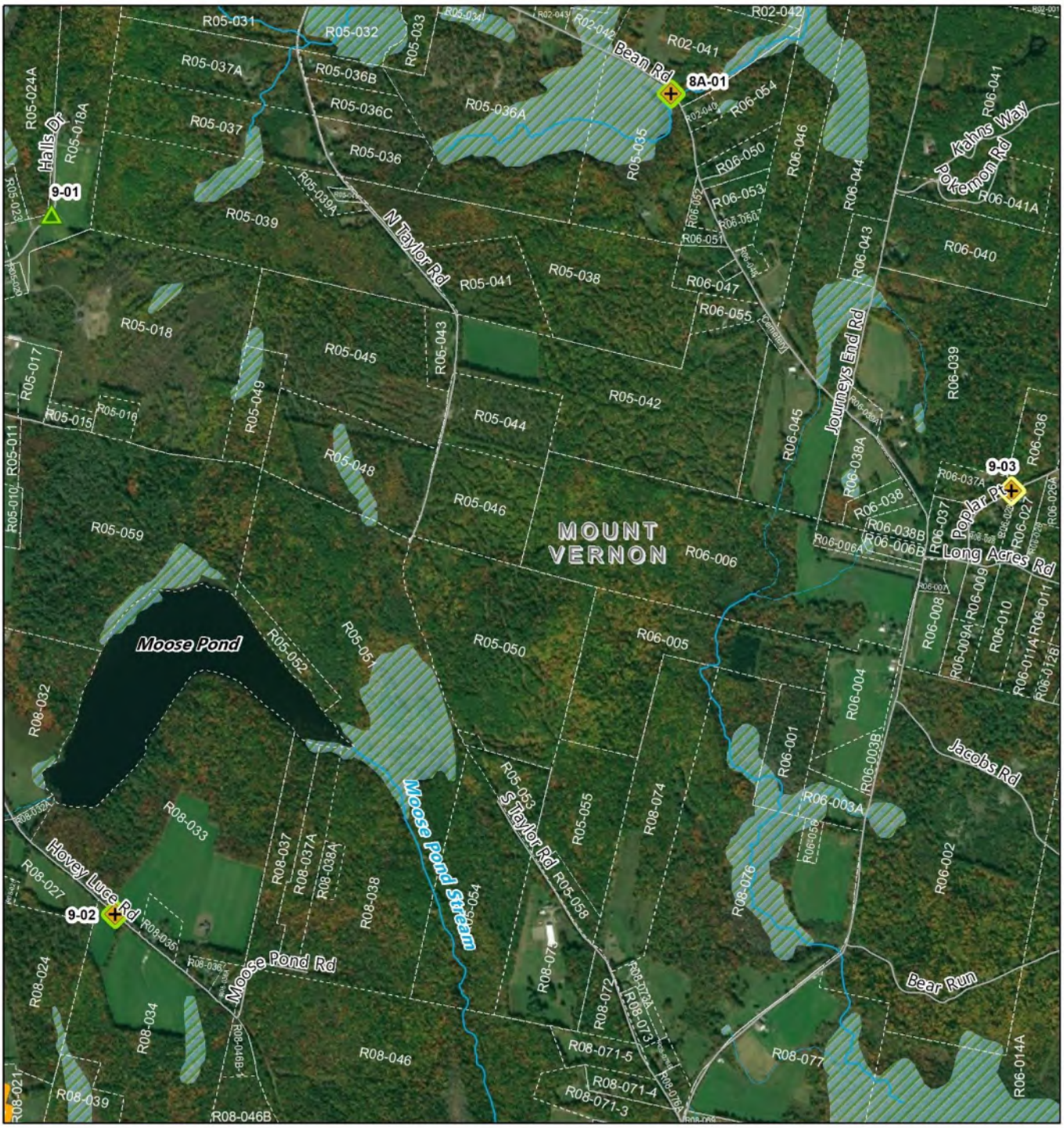
Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 250 500 1,000 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2020 LONG POND WATERSHED SURVEY- SECTOR 9

Long Pond Watershed | Municipal Boundary | Roads | Parcels

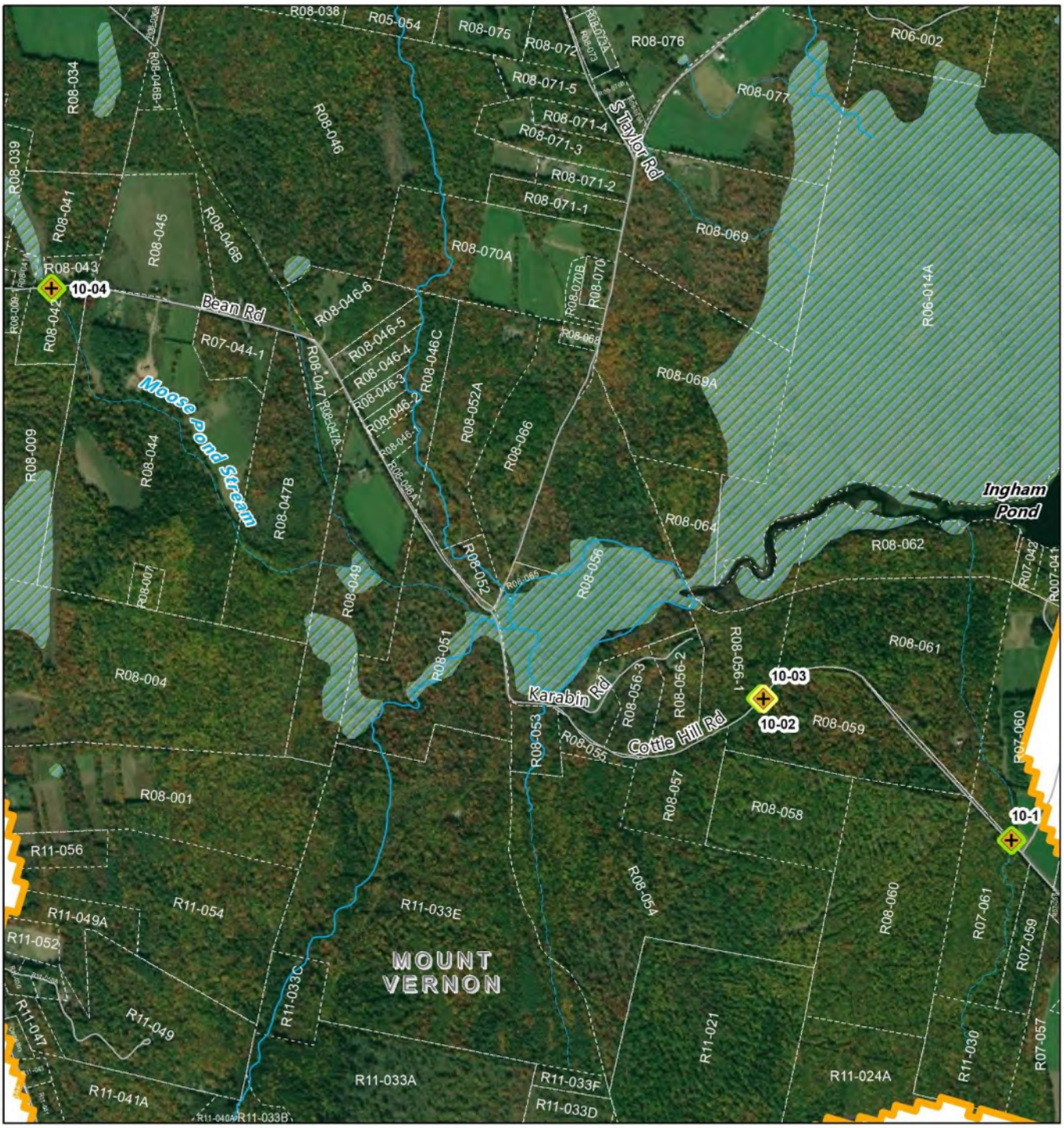
Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 500 1,000 2,000 feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2020 LONG POND WATERSHED SURVEY- SECTOR 10

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 500 1,000 2,000 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 11

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 150 300 600 feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 12

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 75 150 300 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 13A

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 200 400 800 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 13B (North)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 125 250 500 Feet

N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2020 LONG POND WATERSHED SURVEY- SECTOR 13B (South)

Long Pond Watershed | Municipal Boundary | Roads | Parcels

Intermittent Streams | Perennial Streams | Wetlands

Site icons represent the type of NPS problem and level of impact identified at each site. Red = High Impact, Yellow = Medium Impact, and Green = Low Impact. Please refer to the legend at the beginning of this map packet for a full list of icons.

ecological instincts

0 175 350 700 Feet N

Data Source: ME Geolibrary, USGS (NHD, NHDPlus), ME DEP, EI(NPS Site Locations)
Projection: NAD 1983 UTM Zone 19N / Map Created by: W. Baker, Ecological Instincts, March '21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
1-01	Homestead Drive	Directly into lake	Commercial	Surface Erosion - Sheet; Soil - Bare; Shoreline - Lack of Shoreline Vegetation	60x3	Ditch- Armor with Stone; Vegetation- Add to Buffer, Reseed bare soil & thinning grass; Other- Clean catch basins on Rt 27 - between Dry Point Drive and Homestead Drive	Medium	Medium	Medium
1-02	196 Augusta Rd	Minimal Vegetation	State Road	Surface Erosion - Rill; Culvert - Unstable inlet/outlet	40` of exposed soil	Culvert- Install Plunge Pool, Armor Inlet/Outlet; Other- The culvert is perched, a plunge pool is there but not large enough to prevent downstream erosion	Medium	Medium	Medium
1-03	Mountain Drive entrance	Ditch	Private Road	Surface Erosion - Sheet; Soil - Winter Sand	12'x200yards	Roads- Install Runoff Diverters-Waterbar, Reshape (Crown); Construction Site- Mulch; Other- Turn outs may be all it needs	Medium	High	Medium
1-04	Between 164 Augusta rd. and 154 Augusta Rd culvert	Minimal Vegetation	State Road	Surface Erosion - Rill; Culvert - Unstable inlet/outlet; Road Shoulder Erosion - Rill; Soil - Bare	2x1000' from culvert to lake	Culvert- Install Plunge Pool; Other- Perched culvert and existing plunge pool is filled with sediment - needs to be enlarged	Medium	High	Medium
1-05	19 Colonel Bogert Dr	Directly into lake	Private Road	Surface Erosion - Gully, Surface Erosion - Rill; Ditch - Gully Erosion, Ditch - Bank Failure, Ditch - Undersized	4x300	Ditch- Armor with Stone, Install Turnouts, Install Ditch, Reshape Ditch	High	High	High
1-06	19 Colonel Bogert Dr mailbox is 142 Augusta Rd	Directly into lake	Private Road	Surface Erosion - Rill	8x100 lower section of road	Ditch- Install Ditch, Armor with Stone, Reshape Ditch, Install Turnouts; Roads- Reshape (Crown), Install Runoff Diverters-Waterbar; Other- Install ditch on left side driveway (looking up the road) and armor widen right side ditch	Medium	High	High

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
1-07	82 Augusta Rd	Directly into lake	Residential	Surface Erosion - Sheet, Surface Erosion - Rill	3x33 and 3x45	Roof Runoff- Infiltration Trench @ roof dripline	Low	Medium	Low
1-08	Between 206 and 232 Augusta Rd	Ditch	State Road	Shoreline - Undercut	10x3	Culvert- Install Plunge Pool, Replace; Ditch- Install Check Dams, Armor with Stone, Install Sediment Pools	Medium	Medium	Medium
1-09	272 Augusta Rd	Directly into lake	Residential	Surface Erosion - Sheet, Surface Erosion - Rill	1x30	Trails & Paths- Stabilize Foot Path, Erosion Control Mulch	Medium	Low	Low
1-10	336 Augusta Rd	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	40x15 gathering area 6x20 path	Trails & Paths- Stabilize Foot Path, Erosion Control Mulch; Vegetation- No Raking; Other- Remove geotextile under path to promote growth	Low	Low	Low
1A-01	71 Peninsula Dr	Directly into lake	Residential	Surface Erosion - Sheet; Shoreline - Lack of Shoreline Vegetation	15 by 50 ft	Trails & Paths- Define Foot Path, Erosion Control Mulch, Stabilize Foot Path; Vegetation- Add to Buffer	Low	Low	Low
1A-02	131 Peninsula Dr	Minimal Vegetation	Residential	Surface Erosion - Sheet; Soil - Bare	4 by 10 ft	Trails & Paths- Stabilize Foot Path, Erosion Control Mulch	Low	Low	Low
1A-03	179 Peninsula Dr	Minimal Vegetation	Residential	Surface Erosion - Sheet; Shoreline - Inadequate Shoreline Vegetation	2 by 15	Trails & Paths- Define Foot Path, Stabilize Foot Path, Erosion Control Mulch; Roof Runoff- Infiltration Trench @ roof dripline; Vegetation- Add to Buffer; Other- Mulch/Erosion Control Mix, Mulch upper area of yard by house and define and stabilize footpaths	Low	Low	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
1A-04	House at end of Peninsula Rd (@ tip of peninsula)	Directly into lake	Residential	Surface Erosion - Sheet; Shoreline - Unstable Access	15 by 15 ft	Trails & Paths- Stabilize Foot Path; Other- Mulch/Erosion Control Mix, Landowner wants to put in stone steps on the path and maintain area as kayak launch. Mulching the launch area would cover bare soil.	Low	Low	Low
1-11	Rt 27 between Tracy Cove and Lane peninsula	Ditch	State Road	Soil - Delta in Stream/Lake	1/2 acre into Tracy cove	Follow-up needed to develop recommendations	High	High	High
1-12	56 Tracy Cove Rd	Directly into lake	Residential	Surface Erosion - Sheet; Shoreline - Lack of Shoreline Vegetation, Shoreline - Erosion	20x3 and 10x20	Trails & Paths- Stabilize Foot Path, Define Foot Path, Erosion Control Mulch; Vegetation- Add to Buffer, Reseed bare soil & thinning grass	Low	Low	Low
1-13	34 Tracy Cove Rd	Ditch	Driveway	Surface Erosion - Gully; Culvert - Unstable inlet/outlet; Ditch - Gully Erosion; Soil - Bare	6x2x300	Culvert- Armor Inlet/Outlet; Ditch- Vegetate; Roads- Build Up, Reshape (Crown), Add gravel, Install Runoff Diverters- Waterbar; Trails & Paths- Stabilize Foot Path, Define Foot Path; Other- If not in use - fill and vegetate. If used, then create a real path. ATV trail along SE edge of property needs stabilization and armoring.	High	Medium	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
1-14	150 Augusta Drive	Minimal Vegetation	Residential	Surface Erosion - Gully	2x1x20	Other- Rain Garden, Infiltration Trench, Septic Inspection	Medium	Low	Medium
1-15	Snowmobile trail 60 ft south of intersection of Rt. 225 and Drury Lane	Ditch	Trail or Path	Surface Erosion - Rill; Culvert - Unstable inlet/outlet; Soil Bare; Erosion around culvert and trail itself	10 x 10	Culvert- Armor Inlet/Outlet; Trails & Paths- Erosion Control Mulch; Other- Stabilize trail with ECM, vegetate or gravel	Low	Low	Low
2-01	8 Rome Rd	Ditch	Construction Site	Surface Erosion - Sheet; Soil - Bare	100 ft by 100 ft	Construction Site- Silt Fence/EC Berms, Seed/Hay, Mulch; Other- No sediment erosion control measures in place.	Low	Low	Medium
2-02	Country Acres Lane	Ditch	Private Road	Road Shoulder Erosion - Sheet, Road Shoulder Erosion - Rill, Road Shoulder Erosion - Gully; Roadside Plow/Grader Berm	20 ft by 500 ft	Roads- Remove Grader/Plow Berms, Build Up, Add gravel, Reshape (Crown); Other- Road drains straight to 225 does not reach drainage ditch	Medium	Medium	High

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
2-03	23 Rome Rd rental	Ditch	Driveway	Surface Erosion - Rill; Culvert - Clogged, Culvert - Unstable inlet/outlet	Ditch for driveway	Culvert- Armor Inlet/Outlet; Other- Driveway needs crown. Culvert needs armor.	Low	Medium	Medium
2-04	Culvert under 225 near telephone pole 54	Ditch	State Road	Culvert - Unstable inlet/outlet, Culvert - Clogged; Ditch - Bank Failure	Culvert clogged at downstream	Culvert- Armor Inlet/Outlet	Low	Low	Medium
2-05	Road shoulder on Rt 27 south of Denny Phillips driveway	Ditch	State Road	Surface Erosion - Gully; Road Shoulder Erosion - Gully	300 by 1 feet	Roads- Vegetate Shoulder, Remove Grader/Plow Berms; Other- Vegetate shoulder where pavement ends	Medium	Medium	Medium
2-06	1017 Augusta Rd driveway	Ditch	Driveway	Surface Erosion - Gully	150 ft by 20 ft	Roads- Add gravel; Other- Needs lots of rock	Medium	Medium	Medium
2-07	1139 Augusta Rd (old Cousineau site)	Ditch	Commercial	Surface Erosion - Gully, Surface Erosion - Rill	40 by 200 ft area bush hogged,	Construction Site- Mulch, Seed/Hay, Silt Fence/EC Berms; Other- Vegetate slope ditch drains to stream	Medium	Low	Low
2-08	840 Augusta Rd	Stream	Residential	Soil - Bare	20 by 30 ft	Other- Mulch/Erosion Control Mix, Recently paved driveway and garage roof will erode soil quickly if it rains. Needs to be stabilized.	Medium	Low	Low
3-1	Watson pond road crossing over Watson Pond outlet stream	Minimal Vegetation	Town Road	Road Shoulder Erosion - Gully	4 sq ft	Other- Sink hole in road is eroding. Could cause collapse of bridge if not repaired.	Medium	High	High

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
3-2	Culvert under Rasar driveway	Ditch	Town Road	Culvert - Unstable inlet/outlet, Culvert - Clogged	NA	Culvert- Remove Clog, Armor Inlet/Outlet	Medium	Low	Low
3-3	Wonderview Est	Ditch	Driveway	Surface Erosion - Rill, Surface Erosion - Gully, Surface Erosion - Sheet	20 x 40	Culvert- Enlarge, Remove Clog; Other- Driveway needs new gravel. Culvert shows evidence of clogging and flowing across driveway.	Medium	Medium	Medium
3-4	Epstein Camp Rd	Minimal Vegetation	Driveway	Surface Erosion - Gully, Surface Erosion - Rill, Surface Erosion - Sheet	2 x 12	Other- Drainage ditch on east side of driveway is draining across drive in two places. Should have culvert installed.	Medium	Low	Medium
3-5	Bouchard camp	Directly into lake	Residential	Surface Erosion - Sheet, Surface Erosion - Rill	40 x 50 ft	Trails & Paths- Stabilize Foot Path, Define Foot Path; Other- Mulch/Erosion Control Mix, Infiltration Trench, Install gravel along walkway between stairs. Install infiltration trench under roof eaves, divert flow to woods.	High	Medium	Medium
3-6	Bouchard camp	Directly into lake	Residential	Surface Erosion - Gully, Surface Erosion - Sheet, Surface Erosion - Rill; Soil - Bare, Soil - Delta in Stream/Lake; Shoreline - Inadequate Shoreline Vegetation, Shoreline - Erosion	50 x 50 ft	Trails & Paths- Stabilize Foot Path, Erosion Control Mulch; Other- Shoreline area needs ECM with gravel driveway should be armored.	High	Medium	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
3-7	87 Echo Valley Estates	Minimal Vegetation	Residential	Surface Erosion - Gully, Surface Erosion - Sheet	10 x 40	Other- Stabilized gravel shoulder of driveway is eroding. Shoulder needs stabilization. Driveway should be regraded to divert runoff into woods before getting to house. Maybe box culverts?	Medium	High	Medium
4-01	Vienna Mtn Rd	Stream	Private Road	Surface Erosion - Gully, Surface Erosion - Rill; Culvert - Unstable inlet/outlet, Culvert - Crushed Broken; Ditch - Gully Erosion, Ditch - Rill Erosion; Road Shoulder Erosion - Rill, Road Shoulder Erosion - Gully; Roadside Plow/Grader Berm; Roof Runoff Erosion	2000'x12'	Culvert- Install Plunge Pool, Armor Inlet/Outlet, Replace; Ditch- Reshape Ditch, Install Sediment Pools, Install Turnouts; Roads- Build Up, Remove Grader/Plow Berms, Reshape (Crown), Add gravel	Medium	High	Medium
5-01	Watson Pond Road OLD STREAM BED at lakeshore	Directly into lake	Other	Evidence of sediment deposits in stream bed	20 x 40	Follow-up site visit for recommendations	High	Medium	Medium
5-02	60 Blackberry Estates	Directly into lake	Trail or Path	Surface Erosion - Rill	4 x 50	Other- Mulch/Erosion Control Mix, Install Runoff Diverter (waterbar)	High	Medium	Low
5-03	58 Blackberry Estates	Directly into lake	Trail or Path	Surface Erosion - Rill, Surface Erosion - Sheet	5 x 30 and 4 x 60	Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix, Infiltration Trench	Medium	Medium	Low
5-04	51 Blackberry Estates path to shore to dock	Directly into lake	Trail or Path	Surface Erosion - Sheet, Surface Erosion - Rill	5 x 25	Other- Mulch/Erosion Control Mix, Install Runoff Diverter (waterbar)	Low	Low	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
5-05	42 Blackberry Estates path to shore and dock	Directly into lake	Trail or Path	Surface Erosion - Rill, Surface Erosion - Gully; Soil - Bare	5 x 80	Other- Mulch/Erosion Control Mix, Install Runoff Diverter (waterbar),	Medium	Medium	Low
5-06	Beaver Brook Est - land front of camp and path to dock	Directly into lake	Trail or Path	Surface Erosion - Rill; Soil - Bare; Shoreline - Erosion	20 x 40 and 10 x 30	Trails & Paths- Install Runoff Diverter (waterbar), Infiltration Steps, Erosion Control Mulch; Other- Mulch/Erosion Control Mix	High	Medium	Low
5-07	228 Beaver Brook Estates	Stream	Other	Stream at edge of property flows directly under deck to lake	1 x 1	Follow-up site visit for recommendations	Low	Low	Medium
6-01	Wildwood Estates common beach	Ditch	Beach Access	Surface Erosion - Rill; Soil - Bare	40 by 40 feet	Other- Stabilize beach parking lot with bluestone etc.	Low	Low	Low
6-02	170 Hidden Cove Cottage	Directly into lake	Trail or Path	Surface Erosion - Sheet; Soil - Bare	60 feet by 3 feet	Trails & Paths- Erosion Control Mulch, Stabilize Foot Path	Low	Low	Low
6-03	Spruce Estates Road	Ditch	Private Road	Surface Erosion - Gully; Roadside Plow/Grader Berm; Roof Runoff Erosion	1000 yards	Ditch- Install Turnouts; Roads- Remove Grader/Plow Berms, Reshape (Crown), Add gravel	Medium	High	Low
6-04	Wildwood Estates Road	Ditch	Private Road	Surface Erosion - Rill; Ditch - Undersized; Roof Runoff Erosion	80 yard run of road	Culvert- Remove Clog; Ditch- Install Ditch, Install Check Dams, Reshape Ditch, Remove debris/sediment; Roads- Build Up; Other- Remove grader berm	Medium	Medium	Low
6-05	Poplar Estates Road	Ditch	Private Road	Surface Erosion - Sheet; Road Shoulder Erosion - Sheet; Soil - Bare	150 yard run or road	Roads- Add gravel, Reshape (Crown), Install Runoff Diverters- Broad-based Dip; Other- Needs well compacted road surface	Low	Medium	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
6-06	Wildwood Estates main access road	Ditch	Private Road	Surface Erosion - Sheet; Ditch - Undersized; Road Shoulder Erosion - Sheet; Roadside Plow/Grader Berm; Roof Runoff Erosion	100 yard run of road	Ditch- Install Turnouts, Remove debris/sediment, Reshape Ditch, Install Sediment Pools; Roads- Remove Grader/Plow Berms	Low	Medium	Low
6-07	Basswood Drive	Ditch	Private Road	Culvert - Unstable inlet/outlet	100 square feet	Culvert- Armor Inlet/Outlet; Ditch- Vegetate	Low	Low	Low
6-08	Lakewood Estates	Directly into lake	Driveway	Surface Erosion - Sheet	35 feet by 10 feet	Other- Stabilize driveway surface	Low	Low	Low
6-09	Castle Island boat launch	Directly into lake	Boat Access	Surface Erosion - Sheet	45 feet by 100 feet	Other- Install Runoff Diverter (waterbar), Extend pavement	Medium	High	Medium
6-10	Castle Island hand carry boat launch	Directly into lake	Beach Access	Surface Erosion - Sheet; Road Shoulder Erosion	60 feet by 30 feet	Trails & Paths- Stabilize Foot Path, Infiltration Steps, Install Runoff Diverter (waterbar), Erosion Control Mulch	Medium	Medium	Low
7-01	31 Pinewood Pt	Directly into lake	Residential	Shoreline - Undercut	10'x2'	Other- Rip Rap,	Low	High	Medium
7-02	37 Pinewood Pt	Directly into lake	Residential	Surface Erosion - Sheet; Shoreline - Undercut	40'x50'	Trails & Paths- Infiltration Steps; Vegetation- Establish Buffer, Add to Buffer; Other- Mulch/Erosion Control Mix, Rip Rap, Terrace, diversion swale	Medium	Medium	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
7-03	27 Maine Chance Lane	Directly into lake	Residential	Surface Erosion - Gully; Ditch - Undersized; Road Shoulder Erosion - Sheet; Soil - Bare; Roof Runoff Erosion	30'x5'	Ditch- Install Turnouts, Install Sediment Pools, Install Ditch; Roads- Install Catch Basin, Install Runoff Diverters-Waterbar; Construction Site- Mulch, Silt Fence/EC Berms; Trails & Paths- Define Foot Path, Install Runoff Diverter (waterbar); Roof Runoff- Infiltration Trench @ roof dripline; Vegetation- Establish Buffer; Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix	Medium	High	Medium
7-04	2 Maine Chance Lane	Directly into lake	Driveway	Surface Erosion - Rill; Road Shoulder Erosion - Rill	100'x12'	Ditch- Install Ditch, Install Turnouts; Roads- Install Detention Basin, Reshape (Crown), Add gravel, Install Runoff Diverters-Waterbar	Medium	Medium	Medium
7-05	49 Pinewood Pt Rd	Directly into lake	Residential	Shoreline - Undercut, Shoreline - Erosion	40'x3'	Other- Rip Rap	High	Medium	Medium
7-06	9 Arden Cove Ln	Ditch	Residential	Surface Erosion - Gully; Soil - Bare; Roof Runoff Erosion	40'x3'	Ditch- Armor with Stone, Install Ditch; Roads- Add gravel; Roof Runoff- Drywell @ gutter downspout; Other- Bluestone gravel for driveway.	Low	Medium	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
7-07	LaPosa Drive common lot shorefront and parking area	Ditch	Beach Access	Surface Erosion - Sheet; Culvert - Crushed Broken, Culvert - Unstable inlet/outlet; Ditch - Gully Erosion; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation	50ft x 4ft	Culvert- Armor Inlet/Outlet, Replace, Install Plunge Pool; Ditch- Reshape Ditch; Roads- Add gravel; Trails & Paths- Erosion Control Mulch; Vegetation- Add to Buffer; Other- Mulch/Erosion Control Mix, Common parking area needs additional bluestone gravel. Culvert is 100 ft long and runs under parking area. Exposed dirt at beachfront.	Medium	High	Medium
7-08	60 LaPosa Drive	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	60ft x 20ft	Trails & Paths- Define Foot Path, Install Runoff Diverter (waterbar); Vegetation- Establish Buffer, Add to Buffer, Reseed bare soil & thinning grass; Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix	Low	Low	Medium
7-09	56 LaPosa Drive	Directly into lake	Driveway	Surface Erosion - Rill	20ft x 2ft	Roads- Reshape (Crown), Build Up; Other- Stabilize road shoulders	Low	Medium	Medium
7-10	50 LaPosa Drive	Directly into lake	Residential	Surface Erosion - Gully, Surface Erosion - Sheet; Soil - Bare	50ft x 3ft driveway	Ditch- Install Ditch; Roads- Remove Grader/Plow Berms, Install Runoff Diverters- Waterbar; Trails & Paths- Define Foot Path; Vegetation- Establish Buffer, Add to Buffer; Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix,	Medium	Medium	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
7-11	LaPosa Drive	Ditch	Private Road	Surface Erosion - Rill; Culvert - Unstable inlet/outlet, Culvert - Crushed Broken, Culvert - Clogged, Culvert - Undersized; Ditch - Undersized, Ditch - Bank Failure, Ditch - Rill Erosion; Road Shoulder Erosion - Rill; Roadside Plow/Grader Berm	1500ft x 3ft	Culvert- Armor Inlet/Outlet, Replace, Install Culvert, Lengthen, Remove Clog, Install Plunge Pool, Enlarge; Ditch- Reshape Ditch, Remove debris/sediment, Install Turnouts, Armor with Stone, Install Ditch; Roads- Remove Grader/Plow Berms, Reshape (Crown), Add gravel, Vegetate Shoulder	High	High	Medium
7-12	LaPosa Drive entrance to Castle Island Road	Ditch	State Road	Culvert - Unstable inlet/outlet; Ditch - Bank Failure; Road Shoulder Erosion - Rill	10ft x 4ft	Culvert- Armor Inlet/Outlet, Lengthen, Replace	Low	Medium	Medium
7D-01	Old Rome Rd, utility pole 012	Stream	Town Road	Surface Erosion - Rill; Road Shoulder Erosion - Rill	140' road	Ditch- Install Ditch, Install Turnouts; Roads- Reshape (Crown); Other- Reshape road and install ditch with turnout	Medium	High	Medium
7D-02	Old Rome Rd, last culvert headed north, after green metal roof	Stream	Town Road	Surface Erosion - Rill; Road Shoulder Erosion - Rill	10' x 10'	Roads- Reshape (Crown), Add gravel, Build Up; Construction Site- Mulch; Other- Mulch/Erosion Control Mix, Reshape road surface, stabilize eroding bank	Medium	Medium	Medium
7D-03	Belgrade Rd, between utility poles 45 & 44	Stream	State Road	Culvert - Unstable inlet/outlet; Ditch - Bank Failure, Ditch - Gully Erosion	15' x15'	Culvert- Armor Inlet/Outlet, Lengthen, Install Plunge Pool	Medium	High	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
7D-04	Belgrade Road, above culvert crossing starting at utility pole 53S	Stream	State Road	Surface Erosion - Rill; Ditch - Rill Erosion; Road Shoulder Erosion - Rill	70' x10'	Ditch- Install Ditch, Reshape Ditch, Install Turnouts	Medium	Medium	Medium
7D-05	Belgrade Road, culvert near mailbox 497	Minimal Vegetation	State Road	Surface Erosion - Gully; Culvert - Unstable inlet/outlet; Road Shoulder Erosion - Gully	10' x10'	Culvert- Armor Inlet/Outlet; Ditch- Armor with Stone; Other- Road shoulder bank nears armoring	Medium	Medium	Medium
7D-06	Ditch in front of 1015 Watson Pond Road	Minimal Vegetation	Town Road	Surface Erosion - Gully; Ditch - Gully Erosion	60' x 6'	Ditch- Armor with Stone, Reshape Ditch	Medium	Medium	Medium
8-01	153 Lake Ridge Road	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Lack of Shoreline Vegetation, Shoreline - Erosion, Shoreline - Unstable Access	10 x 5	Trails & Paths- Erosion Control Mulch, Stabilize Foot Path; vegetation- Add to Buffer, No Raking; Other- Reset lower water bar	Low	Low	Low
8-02	Between pole 66 and 2545 Lake Ridge Road	Stream	Private Road	Surface Erosion - Gully; Culvert - Unstable inlet/outlet; Ditch - Gully Erosion	Ephemeral stream with attached	Culvert- Lengthen, Install Plunge Pool, Enlarge, Armor Inlet/Outlet; Ditch- Install Check Dams, Reshape Ditch	Medium	High	Medium
8-03	201 Porcupine Ridge Road	Minimal Vegetation	Beach Access	Surface Erosion - Sheet; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation; Roof Runoff Erosion	20x20	Trails & Paths- Define Foot Path, Infiltration Steps, Erosion Control Mulch, Install Runoff Diverter (waterbar); Roof Runoff- Infiltration Trench @ roof dripline; Vegetation- No Raking, Add to Buffer, Establish Buffer; Other- Install Runoff Diverter (waterbar)	Medium	Medium	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
8-04	187 Porcupine Ridge Road	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation	15x20	Vegetation- Add to Buffer, No Raking; Other- Mulch/Erosion Control Mix	Low	Low	Low
8-05	147 Porcupine Ridge Road	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Lack of Shoreline Vegetation, Shoreline - Inadequate Shoreline Vegetation, Shoreline - Unstable Access	50x20	Trails & Paths- Erosion Control Mulch, Install Runoff Diverter (waterbar), Define Foot Path; Vegetation- Add to Buffer, No Raking, Establish Buffer; Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix, Driveway runoff pooling near common area and could use diverter. No driveway site entered.	Medium	Medium	Medium
8-06	44 Bonzos Hollow	Minimal Vegetation	Driveway	Surface Erosion - Sheet; Soil - Bare	25x15	Roads- Reshape (Crown), Install Runoff Diverters-Rubber Razor, Install Runoff Diverters-Waterbar, Add gravel	Low	Low	Medium
8-07	44 Bonzos Hollow	Directly into lake	Residential	Surface Erosion - Rill; Soil - Bare; Shoreline - Lack of Shoreline Vegetation, Shoreline - Erosion, Shoreline - Unstable Access; Roof Runoff Erosion	30x50	Trails & Paths- Define Foot Path, Erosion Control Mulch, Infiltration Steps; Roof Runoff- Infiltration Trench @ roof dripline; Vegetation- Establish Buffer, Add to Buffer, No Raking, Reseed bare soil & thinning grass; Other- Mulch/Erosion Control Mix, Seed and hay for winter or first thing in spring.	High	Medium	Medium
8A-01	Culvert at wetland on Bean Rd at utility pole 2	Stream	Town Road	Surface Erosion - Sheet; Culvert - Unstable inlet/outlet, Culvert - Clogged	3 by 6 ft	Culvert- Remove Clog, Armor Inlet/Outlet, Enlarge	Low	High	High

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
8A-02	Bean Road near Belgrade Rd intersection	Ditch	Town Road	Surface Erosion - Rill; Ditch - Undersized	50 by 3 feet	Culvert- Armor Inlet/Outlet; Ditch- Vegetate, Install Ditch, Install Sediment Pools	Low	Medium	Medium
9-01	Cogswell Rd? Halos Rd- phone pole 373	Stream	Construction Site	Surface Erosion - Gully; Road Shoulder Erosion - Sheet; Soil - Uncovered Pile, Soil - Bare	50 x 75	Construction Site- Silt Fence/EC Berms, Seed/Hay, Mulch; Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix, Farm pond under construction needs erosion control	Low	Low	Low
9-02	Hovey Luce Rd	Ditch	Town Road	Ditch - Bank Failure; Road Shoulder Erosion - Gully; Soil - Bare	12x 50	Ditch- Vegetate, Install Check Dams, Install Sediment Pools; Roads- Vegetate Shoulder; Other- Rip Rap, Undercut road edge, needs stabilization	Low	Medium	Medium
9-03	38 Poplar Point Rd	Ditch	Private Road	Ditch - Undersized; Road Shoulder Erosion - Gully	150 x 4	Ditch- Vegetate, Reshape Ditch	Medium	Medium	Medium
10-1	On Cottle Hill Rd just W of Ingham Pond Rd	Stream	Town Road	Surface Erosion - Sheet; Culvert - Unstable inlet/outlet	55 ft2	Culvert- Armor Inlet/Outlet, Install Plunge Pool; Ditch- Install Sediment Pools	Low	Medium	Medium
10-02	On Cottle Hill Rd near utility pole marked CST66	Stream	Town Road	Surface Erosion - Sheet; Culvert - Unstable inlet/outlet, Culvert - Undersized	35x10 ft	Culvert- Armor Inlet/Outlet, Enlarge	Low	Medium	Medium
10-03	Cottle Hill Rd approaching culvert (utility pole cst66)	Stream	Town Road	Surface Erosion - Sheet; Road Shoulder Erosion - Sheet; Roadside Plow/Grader Berm	250ft by 12ft (3000 ft2)	Ditch- Vegetate, Armor with Stone; Roads- Remove Grader/Plow Berms, Build Up, Reshape (Crown)	Medium	Medium	Medium
10-04	Culvert across from wetlands next to 1139 Bean Rd	Stream	Town Road	Culvert - Unstable inlet/outlet	3 x 4 ft	Culvert- Armor Inlet/Outlet; Ditch- Reshape Ditch	Low	Low	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
11-1	172 Sandy Cove Road	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	10x50	Vegetation- Reseed bare soil & thinning grass; Other- Mulch/Erosion Control Mix, Install Runoff Diverter (waterbar)	Low	Low	Low
11-2	South of pole #24	Stream	Private Road	Culvert - Unstable inlet/outlet; Ditch - Rill Erosion	4x50	Culvert- Armor Inlet/Outlet, Install Plunge Pool; Ditch- Remove debris/sediment, Vegetate, Armor with Stone; Other- Ditch erosion flows into cross culvert and into lake. Plunge pool at outlet is unstable and full of sediment. Temp driveway crosses through channel downstream of plunge pool	Medium	Medium	Medium
11-3	200 Sandy Cove Rd	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	40x25	Other- Mulch/Erosion Control Mix,	Low	Low	Low
11-4	202 Sandy Cove Rd	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	8x75	Trails & Paths- Stabilize Foot Path; Other- Mulch/Erosion Control Mix	Low	Low	Low
11-5	South of utility pole #25/43	Minimal Vegetation	Town Road	Surface Erosion - Sheet; Ditch - Rill Erosion; Soil - Bare, Soil - Winter Sand	4x80	Culvert- Armor Inlet/Outlet; Ditch- Armor with Stone; Roads- Vegetate Shoulder; Other- Looks like ditch and plunge pool were recently cleaned out /excavated, but not stabilized. Exposed soil sediment delta into buffer but channel through woods that flows to lake. May need much larger plunge pool/ sed basin. Current size not adequate.	High	High	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
11-6	Adjacent to 7 South Sandy Cove Rd driveway	Directly into lake	Private Road	Culvert - Unstable inlet/outlet; Ditch - Rill Erosion; Road Shoulder Erosion - Rill; Soil - Bare, Soil - Winter Sand	85x8	Culvert- Armor Inlet/Outlet, Install Plunge Pool; Ditch- Vegetate, Armor with Stone, Install Check Dams; Other- Ditch to cross culvert with channel that flows to lake. Needs larger and armored plunge pool. Sed accumulating in channel through buffer area.	Medium	Medium	Medium
11-7	17 South Sandy Cove Rd	Directly into lake	Residential	Surface Erosion - Rill	150x20	Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix, Road and driveway runoff down steep driveway toward lake. LakeSmart property that just had construction completed on parking area. Needs to reinstall existing rubber razor and add 1-2 more. Request for YCC project to address driveway erosion.	Medium	Medium	Low
11-8	35 South Sandy Cove Rd	Directly into lake	Driveway	Surface Erosion - Rill, Surface Erosion - Sheet; Culvert - Crushed Broken; Soil - Bare	175’	Culvert- Replace; Roads- Install Runoff Diverters-Waterbar, Install Runoff Diverters-Rubber Razor, Install Runoff Diverters-Broad-based Dip, Reshape (Crown), Add gravel, Pave, Add recycled asphalt	Medium	High	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
11-9	Cross culvert at end of South Sandy Cove Rd, next to #69 driveway	Directly into lake	Private Road	Ditch - Rill Erosion, Ditch - Bank Failure; Road Shoulder Erosion - Sheet; Soil - Bare, Soil - Winter Sand	50x6	Ditch- Armor with Stone, Install Sediment Pools, Vegetate, Reshape Ditch, Remove debris/sediment; Roads- Vegetate Shoulder; Other- Stream/drainage channel from slope above crosses road via culvert, very unstable on upstream side. Needs sed pool.	Medium	Medium	Medium
12-01	304 Timber Point Rd	Ditch	Residential	Surface Erosion - Sheet; Soil - Bare; Roof Runoff Erosion	20'x20'	Roof Runoff- Drywell @ gutter downspout; Other- Mulch/Erosion Control Mix	Low	Low	Low
12-02	326 Timber Point Rd	Minimal Vegetation	Residential	Surface Erosion - Sheet; Shoreline - Inadequate Shoreline Vegetation	50'x 50'	Trails & Paths- Define Foot Path, Erosion Control Mulch; Vegetation- Add to Buffer; Other- Mulch/Erosion Control Mix	Low	Low	Low
12-03	348 Timber Point Rd	Directly into lake	Residential	Surface Erosion - Rill; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation	30' x 20'	Trails & Paths- Define Foot Path, Erosion Control Mulch; Other- Mulch/Erosion Control Mix	Medium	Low	Low
13A-01	441 Castle Island Rd	Directly into lake	Commercial	Surface Erosion - Sheet; Road Shoulder Erosion - Sheet; Soil - Bare	20x3	Trails & Paths- Erosion Control Mulch, Stabilize Foot Path	Low	Low	Low
13A-02	389 Castle Island Rd	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	10 x 3	Trails & Paths- Stabilize Foot Path, Install Runoff Diverter (waterbar), Erosion Control Mulch, Infiltration Steps	Medium	Low	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
13A-03	Castle Island Rd culvert	Stream	State Road	Surface Erosion - Gully; Culvert - Unstable inlet/outlet; Road Shoulder Erosion - Gully; Soil - Bare; Shoreline - Erosion	10 x 10	Culvert- Armor Inlet/Outlet; Ditch- Armor with Stone	High	Medium	Medium
13A-04	112 Castle View Lane Rome	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Unstable Access	20 x 6	Trails & Paths- Define Foot Path, Install Runoff Diverter (waterbar), Erosion Control Mulch, Stabilize Foot Path	Medium	Low	Low
13A-05	100 Castle View Lane	Directly into lake	Residential	Surface Erosion - Sheet; Shoreline - Undercut, Shoreline - Erosion	3 x 5. & 12x12	Vegetation- Reseed bare soil & thinning grass, No Raking; Other- Rip Rap, Mulch/Erosion Control Mix, Shoreline has undercut lawn area; no lawn; bare soil needs mulch.	Low	Low	Medium
13A-06	82 Castle View Lane Belgrade	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	10 x 4	Trails & Paths- Define Foot Path, Erosion Control Mulch; Vegetation- No Raking	Low	Low	Low
13A-07	76 Castle View Lane	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	20 x 10	Trails & Paths- Define Foot Path, Erosion Control Mulch; Vegetation- Add to Buffer; Other- Multiple areas with bare soil roots exposed needs ECM	Medium	Low	Low
13A-08	74 Castle View Lane	Directly into lake	Residential	Surface Erosion - Sheet; Shoreline - Unstable Access, Shoreline - Inadequate Shoreline Vegetation	6 x 4	Trails & Paths- Define Foot Path, Erosion Control Mulch, Infiltration Steps; Vegetation- Add to Buffer	Low	Low	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
13A-09	64 Castle View Lane	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Unstable Access; Other; roadway circling camp in front lakeside of camp.	6 x 4	Trails & Paths- Define Foot Path, Erosion Control Mulch; Vegetation- Add to Buffer, Establish Buffer, Reseed bare soil & thinning grass	Low	Low	Low
13A-10	54 Castle View Lane	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	4x8	Vegetation- Add to Buffer; Other- Mulch/Erosion Control Mix	Low	Low	Low
13A-11	54 Castle View Rd	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare	8x4	Trails & Paths- Define Foot Path; Vegetation- Add to Buffer; Other- Mulch/Erosion Control Mix	Low	Low	Low
13A-12	28 Castle Island Rd	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation	12 x 20	Vegetation- Add to Buffer; Other- Rain Garden, Mulch/Erosion Control Mix,	Low	Low	Low
13A-13	42 Castle View Lane	Minimal Vegetation	Residential	Surface Erosion - Sheet	4x30	Trails & Paths- Define Foot Path, Erosion Control Mulch; Other- Mulch/Erosion Control Mix,	Low	Low	Low
13A-14	Across from 31 Castle View Lane	Directly into lake	Beach Access	Surface Erosion - Sheet; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation, Shoreline - Erosion	3x4 spaces in multiple places	Trails & Paths- Define Foot Path, Erosion Control Mulch; Vegetation- Add to Buffer, Establish Buffer; Other- Mulch/Erosion Control Mix, Water Retention Swales, Rain Garden,	Low	Low	Low
13A-15	No house	Minimal Vegetation	Beach Access	Surface Erosion - Sheet; Shoreline - Inadequate Shoreline	10 x20	Vegetation- Add to Buffer; Other- Mulch/Erosion Control Mix	Low	Low	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
				Vegetation, Shoreline - Erosion					
13A-16	Stream culvert north end	Stream	State Road	Culvert - Clogged	6x6	Culvert- Remove Clog	Low	Low	Medium
13A-17	180 Birch Lane Rome	Directly into lake	Residential	Surface Erosion - Rill; Soil - Bare	15 x20	Trails & Paths- Infiltration Steps, Erosion Control Mulch, Install Runoff Diverter (waterbar); Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix	High	Low	Medium
13A-18	211 Lynch Cove Rd	Directly into lake	Residential	Surface Erosion - Gully; Soil - Bare, Soil - Winter Sand; Shoreline - Lack of Shoreline Vegetation, Shoreline - Unstable Access, Shoreline - Erosion; Roof Runoff Erosion	50 x30	Trails & Paths- Define Foot Path, Install Runoff Diverter (waterbar), Erosion Control Mulch; Roof Runoff- Drywell @ gutter downspout, Infiltration Trench @ roof dripline; Vegetation- Establish Buffer; Other- Mulch/Erosion Control Mix, Install Runoff Diverter (waterbar), Water Retention Swales, Lakeside yard is all sand not sure what is needed	High	Low	Medium
13A-19	205 Lynch Cove Rd	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Lack of Shoreline Vegetation	6 x 15	Trails & Paths- Define Foot Path, Erosion Control Mulch, Install Runoff Diverter (waterbar); Vegetation- Establish Buffer; Other- Mulch/Erosion Control Mix, Rain Garden	Low	Low	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
13A-20	195 Lynch Cove Rd	Directly into lake	Residential	Surface Erosion - Rill; Shoreline - Inadequate Shoreline Vegetation, Shoreline - Erosion, Shoreline - Unstable Access	6 x20	Trails & Paths- Define Foot Path, Erosion Control Mulch; Vegetation- Establish Buffer; Other- Rain Garden, Mulch under picnic benches and over sand.	Medium	Low	Low
13A-21	77 Lynch Cove Rd	Directly into lake	Residential	Surface Erosion - Rill; Shoreline - Erosion, Shoreline - Lack of Shoreline Vegetation	5 x15	Trails & Paths- Define Foot Path, Erosion Control Mulch; Vegetation- Add to Buffer; Other- Continue with contained mulch to define area to dock.	Medium	Low	Low
13B-01	Centennial Park	Directly into lake	Municipal / Public	Surface Erosion - Sheet; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation	50x10	Trails & Paths- Install Runoff Diverter (waterbar), Erosion Control Mulch; Vegetation- Add to Buffer; Other- Replenish crushed stone. Water bar below driveway	Low	Low	Low
13B-02	17 Long Pond Dr	Directly into lake	Residential	Surface Erosion - Rill; Culvert - Unstable inlet/outlet; Soil - Bare; Shoreline - Lack of Shoreline Vegetation	10x2	Culvert- Armor Inlet/Outlet; Vegetation- Establish Buffer; Other- Culvert bottom rusted out-still functioning?	Low	Low	Low
13B-03	23 Long Pond Dr	Minimal Vegetation	Residential	Surface Erosion - Sheet; Soil - Bare; Roof Runoff Erosion	50x20	Trails & Paths- Erosion Control Mulch; Roof Runoff- Infiltration Trench @ roof dripline; Vegetation- Add to Buffer, Reseed bare soil & thinning grass	Low	Low	Low
13B-04	Long Pond Dr	Minimal Vegetation	Private Road	Surface Erosion - Rill	100x5	Roads- Build Up, Reshape (Crown), Install Runoff Diverters- Waterbar; Vegetation- Add to Buffer; Other- Currently treated	Low	Medium	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
						by buffer but potential to overwhelm			
13B-05	Main St	Minimal Vegetation	Commercial	Surface Erosion - Sheet; Culvert - Clogged	125x10	Culvert- Install Plunge Pool, Remove Clog; Roads- Add gravel, Install Runoff Diverters-Rubber Razor, Install Runoff Diverters-Waterbar; Vegetation- Add to Buffer	Low	Medium	Low
13B-06	68 Main St	Directly into lake	Residential	Surface Erosion - Rill; Ditch - Undersized; Soil - Bare	500x4 and 50x10	Ditch- Install Check Dams, Reshape Ditch, Vegetate; Vegetation- Add to Buffer; Other- Water Retention Swales, Runoff from Sunset Grill and Main St exceeds ditch capacity. Blows out beach. Install new swale to break up flow. Redesign driveway to allow water to cross under (rock sandwich). Consider enlarging detention pond behind Sunset Grill.	Medium	High	High
13B-07	32 Lake Shore Dr	Ditch	Residential	Soil - Bare, Soil - Uncovered Pile; Other; Construction site. No ESC	50x100	Construction Site- Mulch, Seed/Hay, Silt Fence/EC Berms	Medium	Low	Low
13B-08	Lake Shore Dr - uphill from Long Pond Beach access	Ditch	Town Road	Surface Erosion - Rill; Culvert - Unstable inlet/outlet; Ditch - Rill Erosion; Road Shoulder Erosion - Rill	100x10	Culvert- Lengthen, Enlarge, Install Plunge Pool, Armor Inlet/Outlet; Ditch- Install Check Dams, Vegetate; Other- Stabilize road shoulder with hard packing material. Stabilize ditch backslope.	Medium	Medium	Medium

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
13B-09	35 Lake Shore Dr	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Lack of Shoreline Vegetation	30x30	Trails & Paths- Stabilize Foot Path, Erosion Control Mulch, Define Foot Path, Install Runoff Diverter (waterbar) Vegetation- Establish Buffer; Other- Enlarge culvert outlet plunge pool next to beach access	Medium	Medium	Medium
13B-10	Long Pond Beach	Directly into lake	Municipal / Public	Surface Erosion - Gully, Surface Erosion - Sheet; Soil - Bare	150x25	Roads- Install Runoff Diverters- Rubber Razor; Trails & Paths- Erosion Control Mulch; Vegetation- Add to Buffer; Other- Mulch/Erosion Control Mix, Install Runoff Diverter (waterbar), Clean out and enlarge basin at top of access	High	Medium	Medium
13B-11	49 Lakeshore Dr	Directly into lake	Residential	Surface Erosion - Rill; Soil - Bare; Shoreline - Lack of Shoreline Vegetation, Shoreline - Erosion; Roof Runoff Erosion	20x10	Trails & Paths- Install Runoff Diverter (waterbar); Roof Runoff- Infiltration Trench @ roof dripline; Vegetation- Establish Buffer; Other- Runoff diverter for driveway runoff into buffer	Low	Low	Low
13B-12	Drainage next to 57 Lakeshore Dr	Minimal Vegetation	Town Road	Surface Erosion - Rill; Culvert - Clogged, Culvert - Unstable inlet/outlet; Road Shoulder Erosion - Gully	25x50	Culvert- Armor Inlet/Outlet, Install Plunge Pool, Replace; Other- Stabilize road shoulder. Clean out plunge pool at culvert outlet.	Medium	Medium	Medium
13B-13	89 Lakeshore Drive	Minimal Vegetation	Residential	Surface Erosion - Sheet; Shoreline - Inadequate Shoreline Vegetation	50 x 8	Roof Runoff- Infiltration Trench @ roof dripline; Other- Install Runoff Diverter (waterbar), Mulch/Erosion Control Mix	Low	Low	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
13B-14	117 Lakeshore Drive	Directly into lake	Residential	Surface Erosion - Sheet; Ditch - Sheet Erosion; Soil - Bare	40 x 12	Trails & Paths- Erosion Control Mulch	Low	Low	Low
13B-15	127 Lakeshore Drive	Ditch	Driveway	Surface Erosion - Rill	50 x 15	Roads- Install Runoff Diverters-Open Top Culvert, Add gravel, Install Runoff Diverters-Broad-based Dip, Install Runoff Diverters-Waterbar	Low	Medium	Medium
13B-16	133 Lakeshore Drive	Directly into lake	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation	40 x 20	Trails & Paths- Erosion Control Mulch; Vegetation- Add to Buffer	Low	Low	Low
13B-17	139 Lakeshore Drive	Directly into lake	Residential	Surface Erosion - Sheet	20 x 5	Other- Mulch/Erosion Control Mix, Area has been well landscaped, just needs a little mulch maintenance	Low	Low	Low
13B-18	143 Lakeshore Drive	Directly into lake	Residential	Surface Erosion - Sheet; Shoreline - Inadequate Shoreline Vegetation	15 x 3	Trails & Paths- Erosion Control Mulch	Low	Low	Low
13B-19	124 Lakeshore Drive	Ditch	Driveway	Culvert - Clogged		Culvert- Remove Clog	Low	Low	Low
13B-20	96 Lakeshore Dr	Ditch	Driveway	Surface Erosion - Rill; Ditch - Rill Erosion	50 x15	Roads- Install Runoff Diverters-Waterbar, Add recycled asphalt, Install Runoff Diverters-Rubber Razor	Medium	Medium	Medium
13B-21	1193 West Rd	Ditch	Town Road	Culvert - Clogged; Ditch - Sheet Erosion; Road Shoulder Erosion - Sheet	50 x 8	Culvert- Remove Clog	Low	Low	Low

APPENDIX C: LIST OF LONG POND NPS SITES

Site	Location	Flow into lake via	Land Use	Problems	Size of Area Exposed or Eroded	Recommendations	Impact Rating	Cost to Fix	Technical Level to Install
13B-22	1178 West Rd	Ditch	Driveway	Surface Erosion - Rill; Culvert - Clogged	50 x 15	Culvert- Remove Clog; Roads- Add gravel, Reshape (Crown), Pave	Medium	Medium	Medium
13B-23	16 Lakeshore Drive	Ditch	Residential	Surface Erosion - Sheet; Other; Black pipe discharging to ditch on occasion, on property line		Other- Investigate source of discharge pipe	Low	Low	Low
13B-24	141 Castle Island Road	Stream	State Road	Surface Erosion - Rill; Culvert - Clogged	75 x 6	Culvert- Remove Clog	Medium	Low	Medium
13B-25	5 Parlin Drive	Stream	Driveway	Surface Erosion - Rill	50 x 15	Roads- Reshape (Crown), Pave, Add gravel	Medium	Medium	Medium
13B-26	37 Caret Lane	Minimal Vegetation	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation	50 x 40	Trails & Paths- Erosion Control Mulch; Vegetation- Add to Buffer, Reseed bare soil & thinning grass	Low	Low	Low
13B-27	42 Caret Lane	Directly into lake	Residential	Surface Erosion - Sheet; Shoreline - Inadequate Shoreline Vegetation	75 x30	Vegetation- Establish Buffer	Low	Low	Low
13B-28	19 Caret Lane	Directly into lake	Residential	Surface Erosion - Sheet	40 x 40	Vegetation- Establish Buffer	Low	Low	Low
13B-29	Long Pond Cottages	Minimal Vegetation	Residential	Surface Erosion - Sheet; Soil - Bare; Shoreline - Inadequate Shoreline Vegetation	Multiple	Trails & Paths- Erosion Control Mulch; Other- Multiple access paths to water with bare soil - photo is representative	Low	Low	Low