Watershed-based Planning and Protection of New Hampshire Surface Waters

The CWA 303(d) and s319 Protection Learning Exchange

July 11 - 14, 2022

Presented by:
Stephen C Landry, Coordinator
NH Nonpoint Source Management Program
NHDES - 29 Hazen Drive, Concord, NH 03302

OR...

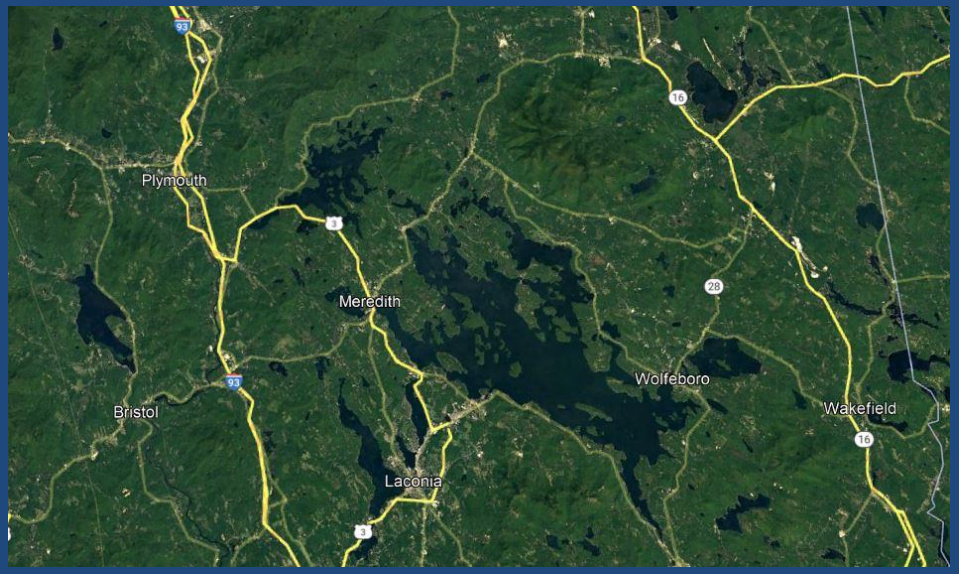
NHDES

Don’t get caught with your plans down!

Watershed-based Planning and Protection in New Hampshire

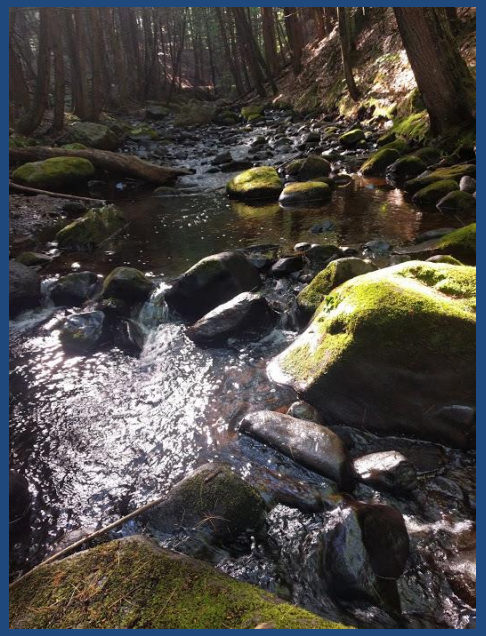
The New Hampshire Picture

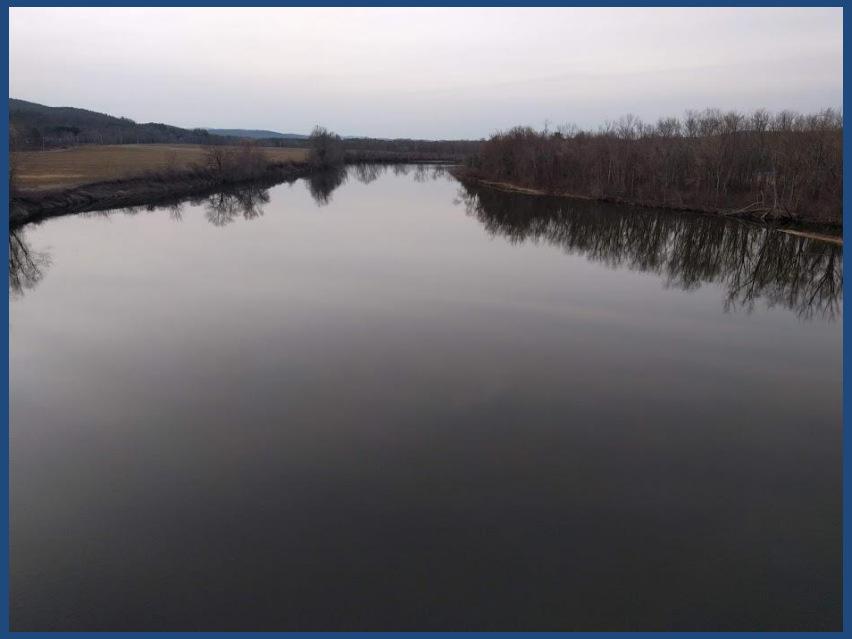
- Over 800 lakes & ponds
- Great Bay estuary
- 18 miles of Atlantic coastline

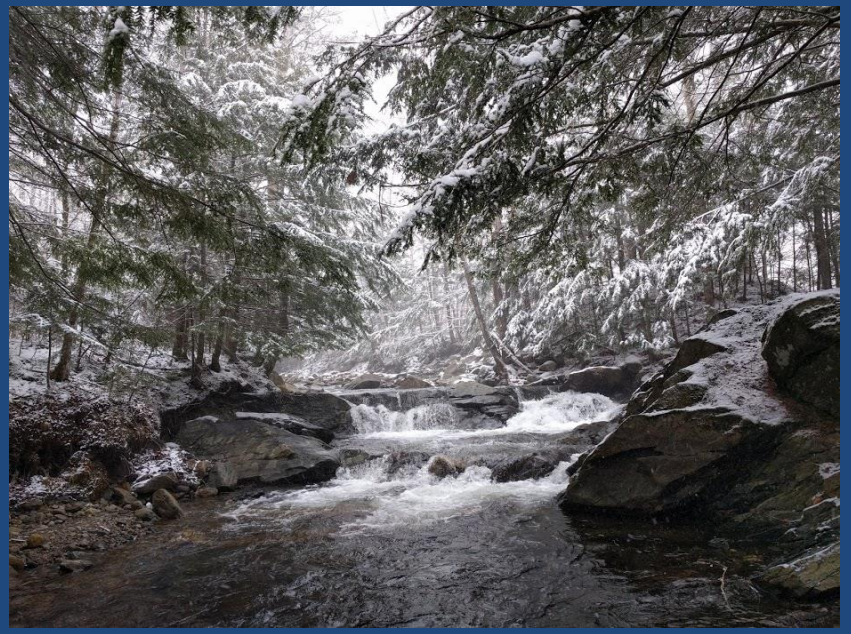


The New Hampshire Picture

- 17,000 river & stream miles
- Over 5,000 dams
- 8,828 Assessment Units







How's the water?

- The NH 2020/2022 Section 305(b) Surface Water Quality Report:
  - 1 million grab samples and several million datalogger results
- 21,000 parameter/designated use/waterbody combinations (5,074) were fully assessed in the 2020/2022 cycle
- 2,357 were found to be meeting state water quality standards
- 2,717 were found to be impaired or threatened and require a TMDL

Table 1: General Overview of New Hampshire's Surface Waters

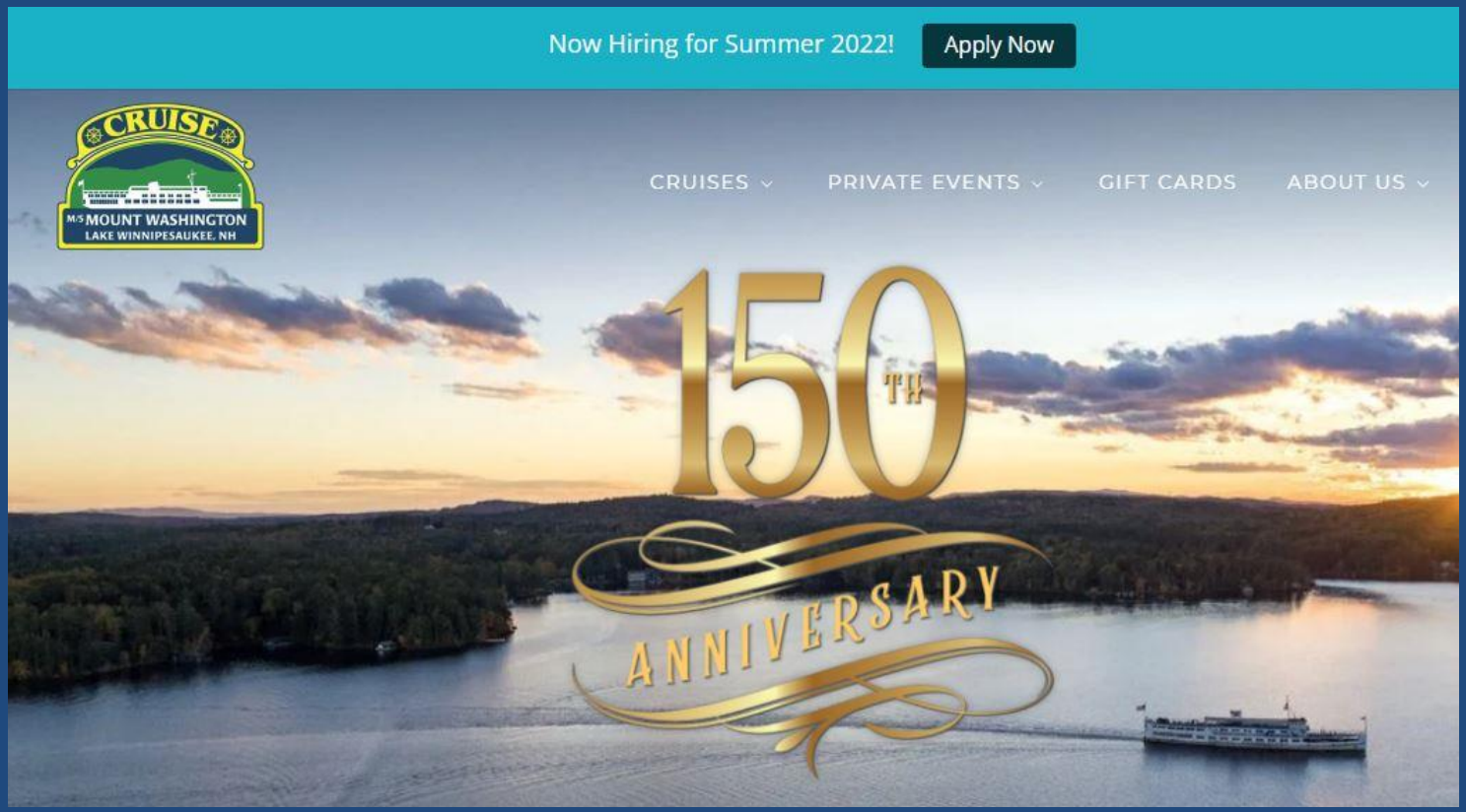
Waterbody Type	Amount		Number of Assessment Units
Rivers & Streams	16,982.5	Miles	5,929
	14	Beaches	14
Lakes	162,314.2	Acres	1,237
	326	Beaches	326
Impoundments	22,333.3	Acres	1,200
	24	Beaches	24
Estuaries	18.0	Square Miles	69
	2	Beaches	2
Ocean	81.0	Square Miles	12
	15	Beaches	15
		Total =	**8,828**

Watersheds range from worn out to others that have recovered to nearly pristine condition

Your impaired waters are SO not my fault.
Like…maybe 3% my fault.
But, that's it!

All New Hampshire lakes are doomed…

- **Lake Winnipesaukee is worth more than $17 billion to the NH economy**
  - **$16 billion in real estate**
  - **$216 million in property taxes to towns**
  - **$294 million from tourism**
- **NH surface waters provide 11,000 to 18,000 jobs**



About NHDES

Helping to sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire.

The mission of the New Hampshire Department of Environmental Services is to help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire. The protection and wise management of the state's environment are the main goals of the agency.

Formed in January 1987 by state statute RSA 21-O, NHDES consolidat previously Agency, th Water Supply and Pollution Control Commission, and the Wa groups is now represented within the department's three div Management and Water. **NHDES leadership** is composed of commissioner, chief financial officer and directors of the thre


Who's going to pay for all this watershed protection?!?!?

"State NPS programs are perfectly suited to tackle the hard work of protecting waters from degradation – we know the issues, players, and funding avenues and can apply lessons learned from restoration projects to protection efforts."

- Sally Soule, Watershed Coordinator

NEW HAMPSHIRE
NONPOINT SOURCE MANAGEMENT PROGRAM PLAN 2020-2024

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

June 10, 2022

NOTICE FOR 2022 WATER QUALITY PLANNING 604(b) FUNDING
Request for Letters of Intent

The New Hampshire Department of Environmental Services (NHDES) is requesting Letters of Intent (LOI) for 2022 Section 604(b) Water Quality Planning projects. The LOI will be used to select projects warranting further development and consideration for funding. Selected applicants will then be invited to submit a full proposal to compete for funding.

A Pre-proposal Consultation is *REQUIRED*
Call or e-mail us to discuss your Pre-proposal by September 2, 2022.
The Pre-proposal submittal deadline is 4:00pm on September 16, 2022.

- Coastal Watershed: Sally Soule (603) 559-0032 or sally.a.soule@des.nh.gov
- All other watersheds: Jeff Marcoux (603) 271-8862 or jeffrey.d.marcoux@des.nh.gov
- River Corridor Plans: Nisa Marks (603) 271-8811 or nisa.m.marks@des.nh.gov

Preference will be given to projects that address water quality concerns in high priority restoration recovery watersheds or high quality waters in priority protection potential watersheds as identified in the 2020-2024 New Hampshire Nonpoint Source Management Program Plan Appendices B through E. Appendix F presents Restoration Recovery Potential Maps for each Regional Planning Commission and Appendix H presents the ranking for priority protection potential watersheds.

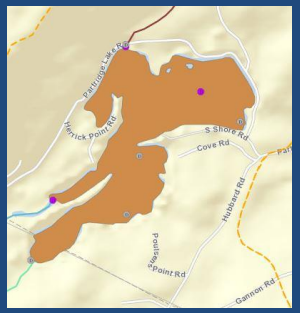
Clean Water State Revolving Fund

Low-cost financial assistance for planning, design and construction projects to protect public health and improve and protect water quality.

The **Clean Water State Revolving Fund** (CWSRF) provides low-cost financial assistance for planning, design, and construction projects to communities, nonprofits, and other local government entities for both wastewater infrastructure projects (collection systems, pumping stations, and wastewater treatment) and other water pollution control projects (nonpoint source, watershed protection or restoration, and estuary management).

Five reasons to consider a CWSRF loan:

- Below-market loan rates with no closing costs or origination fees, and no prepayment penalties.
- Additional subsidy in the form of loan forgiveness may be available to make projects more affordable and sustainable for New Hampshire communities.
- Disbursement requests can be made as project costs are incurred, and interest on disbursements is 1% until the project reaches substantial completion.
- Loan repayments begin up to one year after substantial completion at the lowest available loan rate. Loan recipients receive the lower of either the rate at the time of loan origination or the rate at the time of loan closure.
- CWSRF staff assistance is available through every step of your project. This includes project planning and administration, design review, environmental review, and construction and compliance oversight.



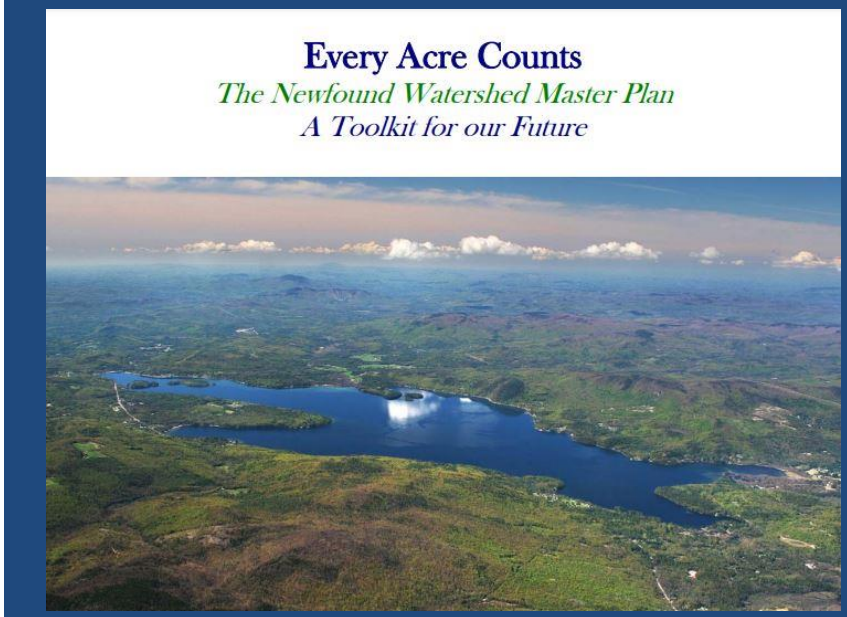
Watershed Assistance Section 319 Grants

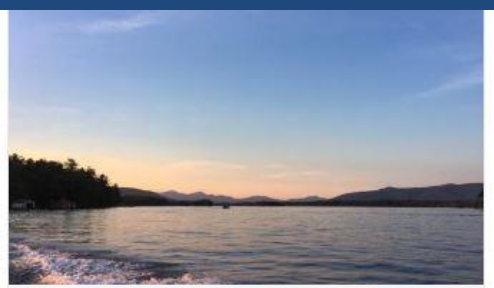
Solicitation for projects to address nonpoint source (NPS) pollution through the implementation of watershed-based plans.

Each year NHDES solicits projects to address nonpoint source (NPS) pollution through the implementation of watershed-based plans in priority watersheds. Projects must comprehensively address NPS problems, and must have a quantitative way to assess progress and determine success. The watershed-based plan must have a clear water quality goal and include the nine, minimum elements (a) through (i) required by the United States Environmental Protection Agency (EPA). Funded projects must make reasonable progress toward achieving the water quality goal established in the watershed-based plan.

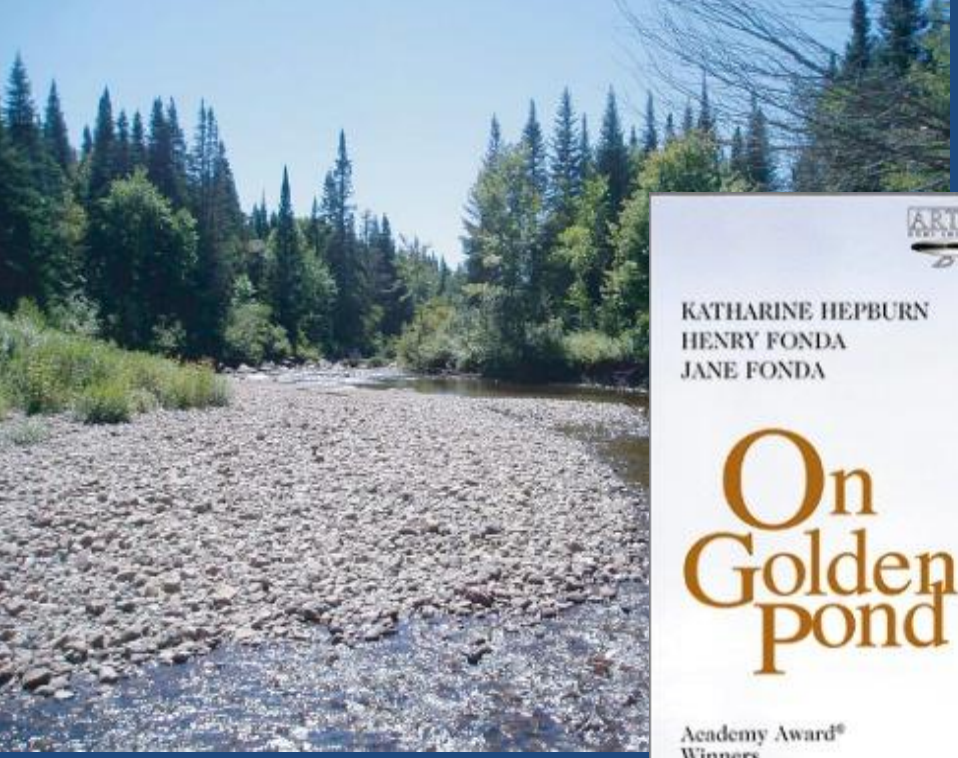
NHDES' Watershed Assistance Section has released the 2023 Watershed Assistance Grants' Pre-proposal request for proposals (RFP) to support local initiatives to restore impaired waters or protect high quality waters. Pre-proposals are due by 4 PM, September 16, 2022.

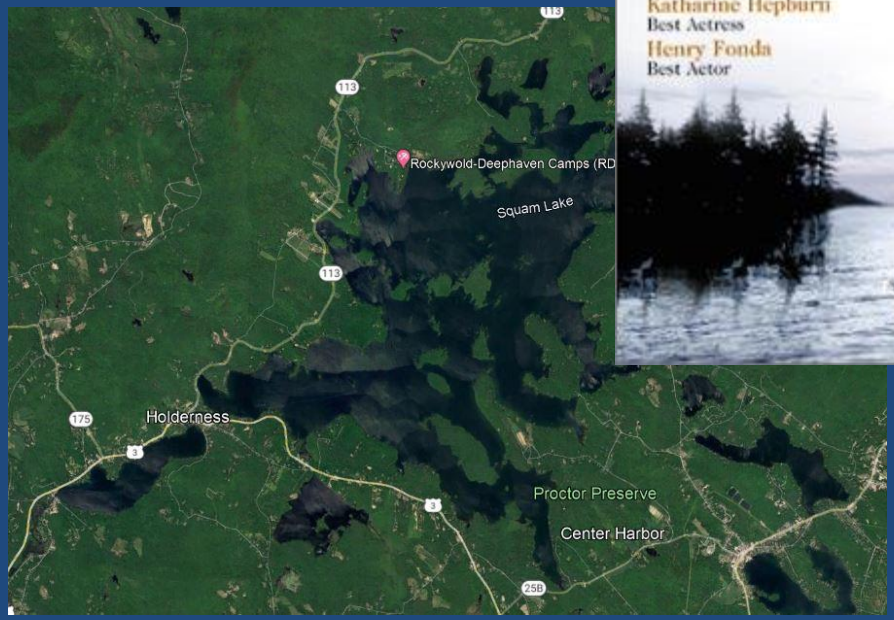
- 2023 Watershed Assistance Grants Part 1: Information Packet
- 2023 Watershed Assistance Grants Part 2: Pre-proposal Application Form





Resources for Watershed Assistance Grants and Loans >





Appendix H: Ranking for Priority Protection Potential Watersheds (HUC 12)

Watershed ID (HUC 12)	Watershed Name	Priority Potential Indicator Score	Priority Potential Indicator Rank	2020 - 2024 Protection Potential
		66.23	1	High
		65.72	2	High
		64.87	3	High
		63.97	4	High
		63.91	5	High
		62.47	6	High
	hegan River to Upper Ammonoosuc River	62.45	7	High
		62.26	8	High
		61.63	9	High
		61.17	10	High
		61.14	11	High
		61.06	12	High
		61.04	13	High
		61.01	14	High
		60.97	15	High
		60.87	16	High

P	Stressor Metrics	R	P	Social Metrics	R	P
	Watershed aquatic barriers	X	X	Watershed size	X	
X	Corridor road crossing density	X	X	Approved TMDL existence	X	
	Number of 303(d) listed causes	X	X	Watershed-based plan	X	X
	Watershed %			(a) through (i) Watershed-based Plan	X	**X**
	Impervious area	X	X	Jurisdictional complexity	X	X
	Agriculture	X		Watershed population	X	
X	Pasture	X		Number of drinking water intakes	**X**	**X**
X	Developed	X	X	Assessment unit class	X	
X	**Active River Area %**			Local River Advisory Committee	X	X
X	Impervious area	X	X	**Watershed %**		
	Agriculture	X		Protected land	X	
X	Pasture	X		Stream miles assessed	X	
Forest	X	X	Developed	X	X	Lake acres assessed		X
Wetlands	X	X				Agriculture		X
						Pasture		X

* Strahler Stream Order ≤ 3 was not included in the ecological metrics for the lakes restoration priority assessment.

"R" – designates metrics used for recovery potential analysis

"P" – designates metrics used for protection potential analysis

"**X**" – designates metric was weighted in analysis

"We respond to needs expressed by NH residents, and we treat the concerns about healthy watersheds with equal consideration as those interested in restoring waters. We're also aware of the high cost, time, and effort required to restore impaired waters. We understand the value in protecting high quality waters from becoming impaired. "

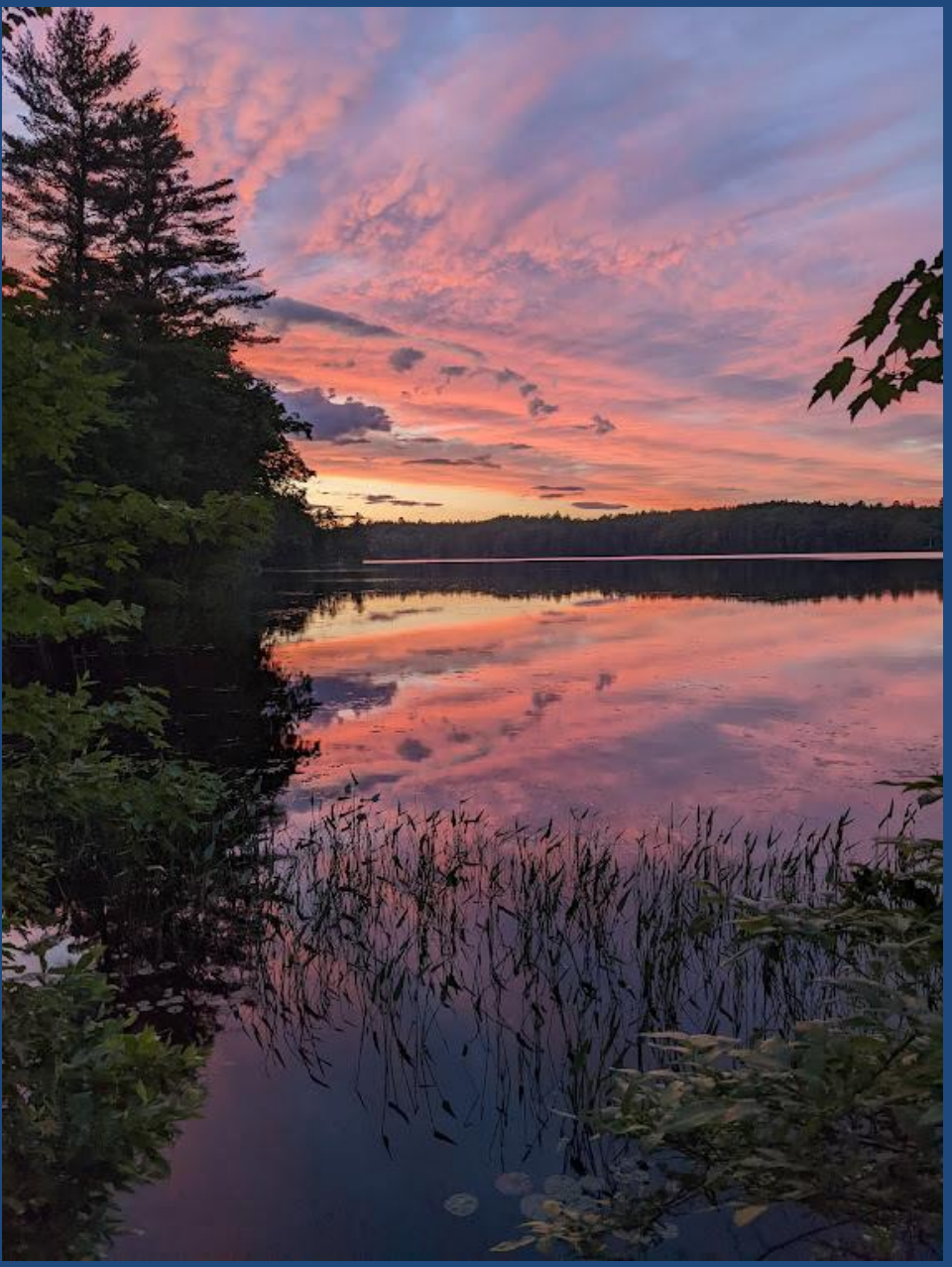
- Jeff Marcoux, Watershed Coordinator


Holy sheet!!!

Are there barriers to protection work at the watershed scale in New Hampshire?

"Funding is a barrier to protection work. Always. There is never enough. Especially for big ticket items like land conservation in a region where available real estate is limited and so expensive"

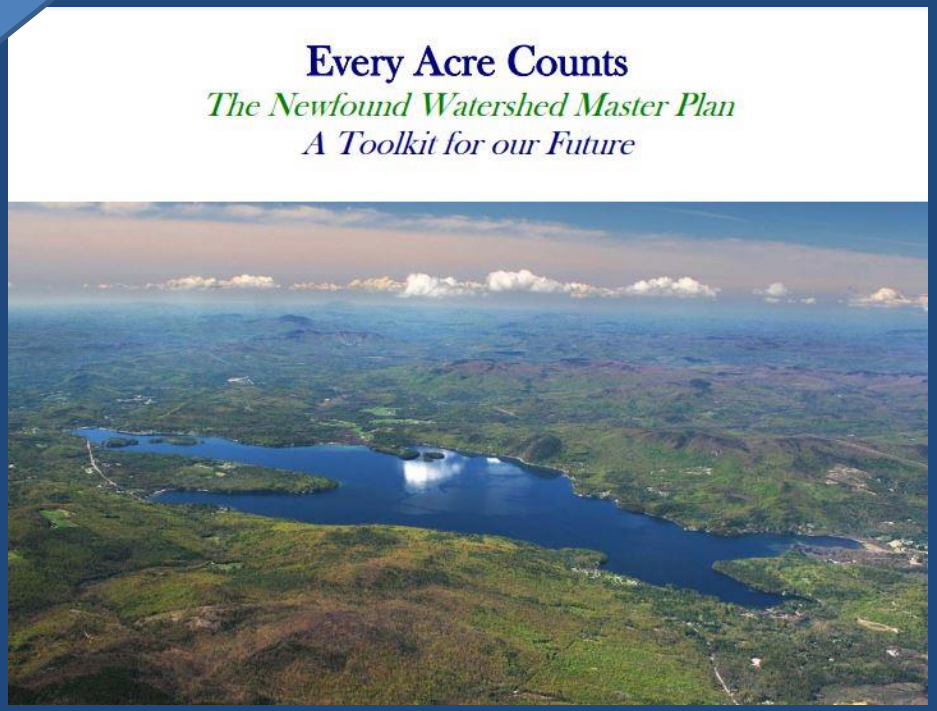
- Sally Soule, Watershed Coordinator



Does watershed-based protection work?

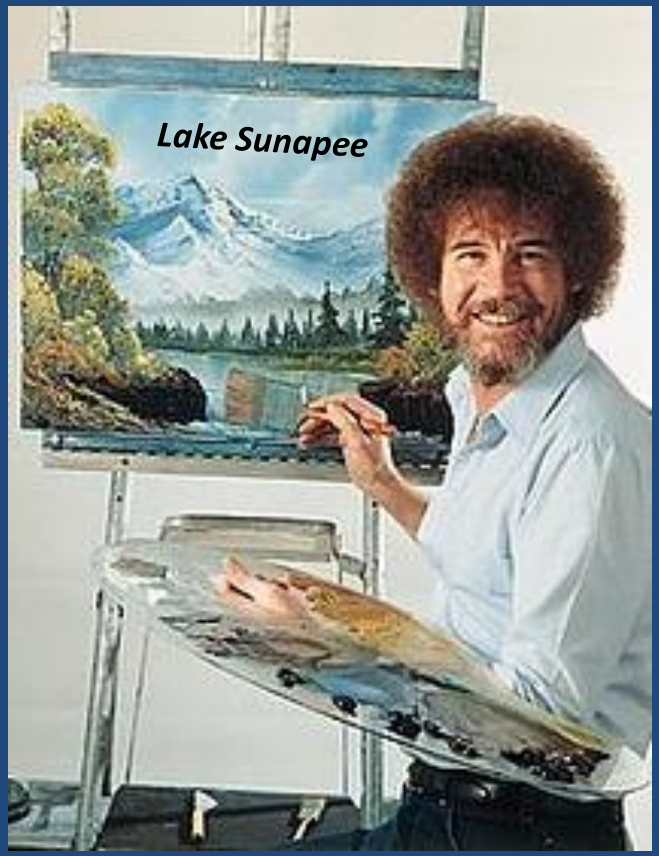
"Absolutely! Newfound Lake is considered the cleanest lake in NH. With s319 NPS funding assistance, the NLRA completed a watershed protection plan and multiple implementation phases identified within it."

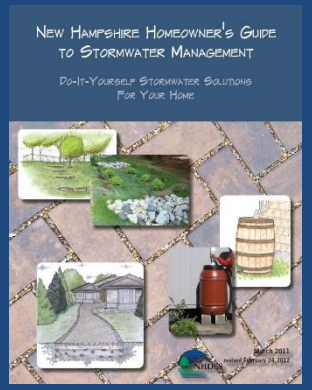
- Jeff Marcoux, Watershed Coordinator



New Hampshire NPS Program Protection Palette

"Happy, little, trees…"



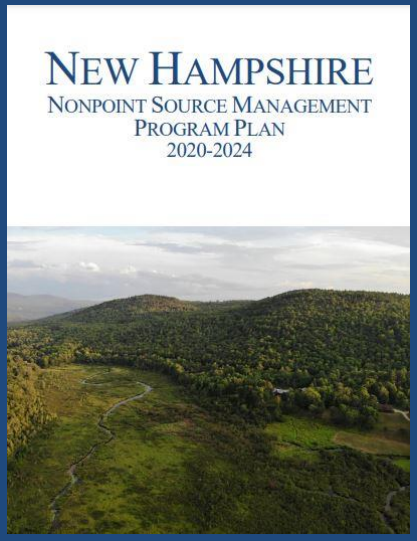


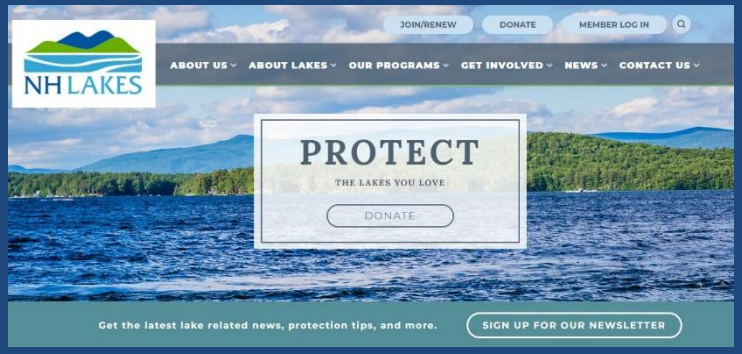
Volunteer Assessment Programs

Empowering citizen scientists to monitor lake water quality and engage in watershed management.

Have you ever wondered how a state with over 800 public lakes and ponds can evaluate the quality of so much water? It would be an impossible task without the help of many dedicated volunteers located throughout the state of New Hampshire who volunteer their time to the Volunteer Lake Assessment Program (VLAP).

VLAP was launched in 1985 to establish a citizen-based lake sampling program to assist NHDES in evaluating lake quality throughout the state, and to empower citizens with information about the health of the state's lakes and ponds. This cooperative effort allows state biologists and lake associations to make educated decisions regarding the future of New Hampshire's lakes and ponds.

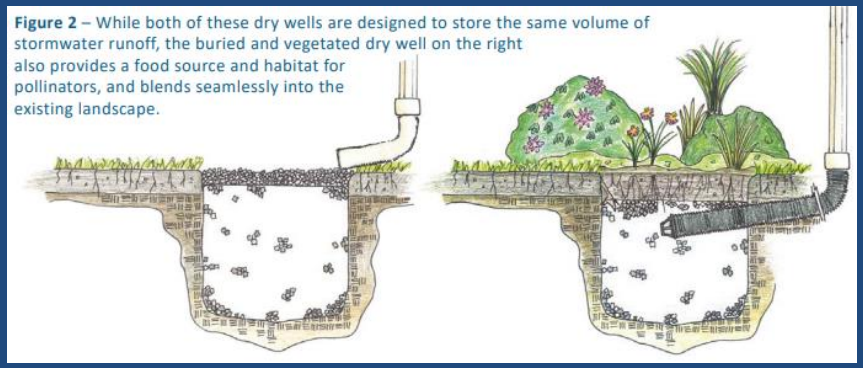




New Hampshire Homeowner's Guide to Stormwater Management

Do-It-Yourself Stormwater Solutions For Your Home

Figure 2 – While both of these dry wells are designed to store the same volume of stormwater runoff, the buried and vegetated dry well on the right also provides a food source and habitat for pollinators, and blends seamlessly into the existing landscape.



RAIN GARDEN

A sunken, flat-bottomed garden that uses soil and plants to capture, absorb and treat stormwater. It helps to reduce stormwater runoff and recharge groundwater.

STEP 2 – **Soil type**. The size of the rain garden is dependent on the soil type. Estimate your soil type by performing a ribbon test using the following steps:

a. Grab a handful of moist soil and roll it into a ball in your hand.

b. Place the ball of soil between your thumb and the side of your forefinger and gently push the soil forward with your thumb, squeezing it upwards to form a ribbon about $^1/_4$-inch thick.

Figure 1 – Soil ribbon test.

c. Try to keep the ribbon uniform in thickness and width. Repeat the motion to lengthen the ribbon until it breaks under its own weight. Measure the ribbon and compare it to Table 1.

STEP 3 – **Slope**. Find the slope of the land where the rain garden will be located. Slopes should be less than 12%. Follow the steps below to determine slope.

a. Place one stake at the uphill end of the rain garden area and another at the downhill end as illustrated in Figure 2.

b. Tie a string to the uphill stake at ground level. Using a string level, level the string between the two stakes, tying it off to the downhill stake.

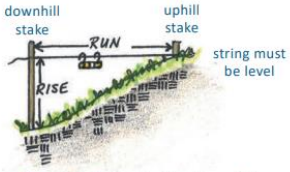


Figure 2 – Determine the slope of the landscape before digging.

Soak up the Rain
New Hampshire

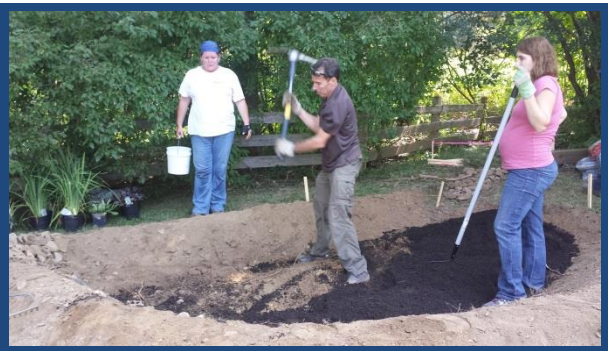
Your Land, Your Water, Your Solution

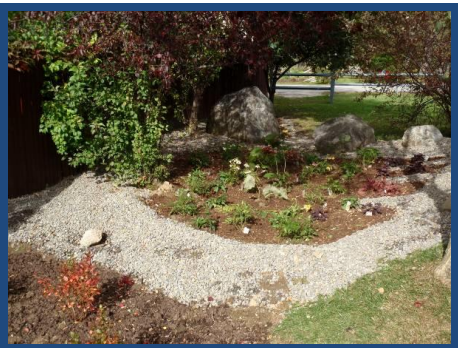
Join us in SOAKing up the Rain

Throughout New Hampshire, neighbors are planting rain gardens, using rain barrels, planting trees, and finding other ways to Soak Up the Rain to protect and restore clean water in their local lakes, streams, and estuaries. Explore this site to learn how you can Soak Up the Rain too.

Start a DIY Project

Become a SOAK Partner





Green SnowPro Training and Certification

New Hampshire Green SnowPro

The UNH T² Center offers half day Green SnowPro Training courses focused on efficient and environmentally friendly winter maintenance practices. The course covers the basics of salt reduction including:

- Equipment Calibration
- Anti-Icing
- Brine Making
- Pre-wetting with Brine and Other Liquids
- Effecient Application Rate Changes with Pavement Temperature
- Effective Plowing
- Emerging Technologies
- Salt Accounting
- Environmental Impacts

The course is approximately 4 hours of classroom instruction and 1 hour of field demonstration of calibration and brine making techniques. Following demonstration and classroom time students take a 30 minute exam to qualify for certification. Currently, there are 457 Individuals have successfully completed the Green Snow Pro training.

NH Certified Green SnowPro

455 followers • 415 following

Message Following Search

Road Salt Reduction

Certifying winter maintenance professionals in salt reduction practices that improve water quality while protecting public safety.

Dramatic and rising concentrations of chloride from salt applications have been identified in New Hampshire waters and mirror a trend that is being seen in colder regions of the United States and Canada due to the application of de-icing chemicals. In 2008, New Hampshire listed 19 chloride-impaired water bodies on the 303(d) list under the Clean Water Act.

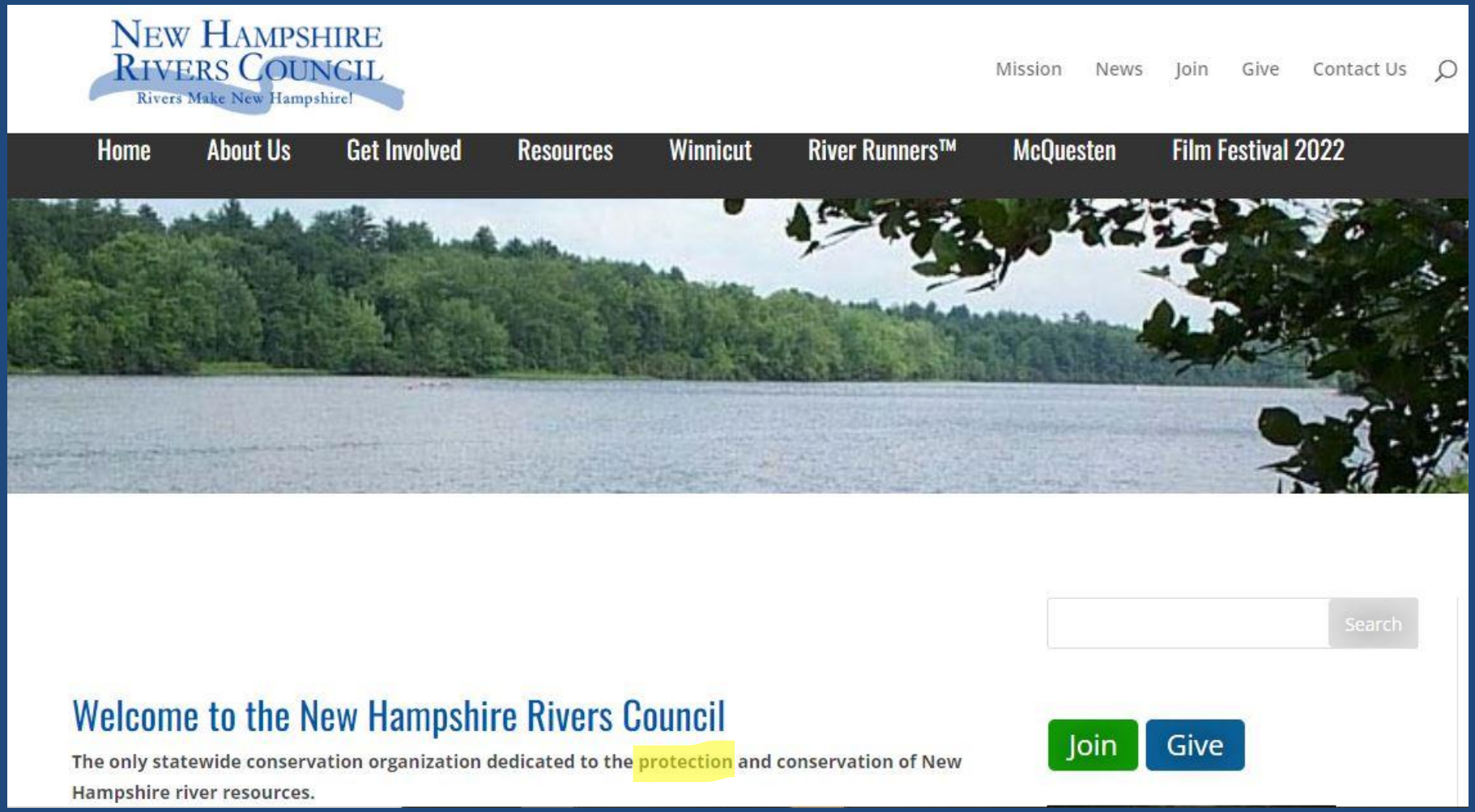
In 2020, that number increased to 50. At concentrations exceeding 230 mg/l, chloride can be toxic to some aquatic species and can impart a salty taste in drinking water supplies.

At this time, the only way to prevent chloride from reaching surface waters and groundwater is to reduce the amount applied to our roadways, parking lots and sidewalks without compromising safety. When road salt dissolves in water, the chloride molecule is not retained by the soil and easily moves with water flow.

Chloride is not significantly removed by chemical reactions, evaporation or vegetation. Therefore, nearly all of the chloride applied to the land surface as road salt will eventually end up in the nearby surface waters or groundwater.

To protect New Hampshire waters from increased chloride concentrations, the NHDES Green SnowPro Program offers snow and ice management professionals training and certification in state of the art salt reduction practices that prioritize public safety while mitigating salt usage.

New Hampshire NPS Program Protection Partners



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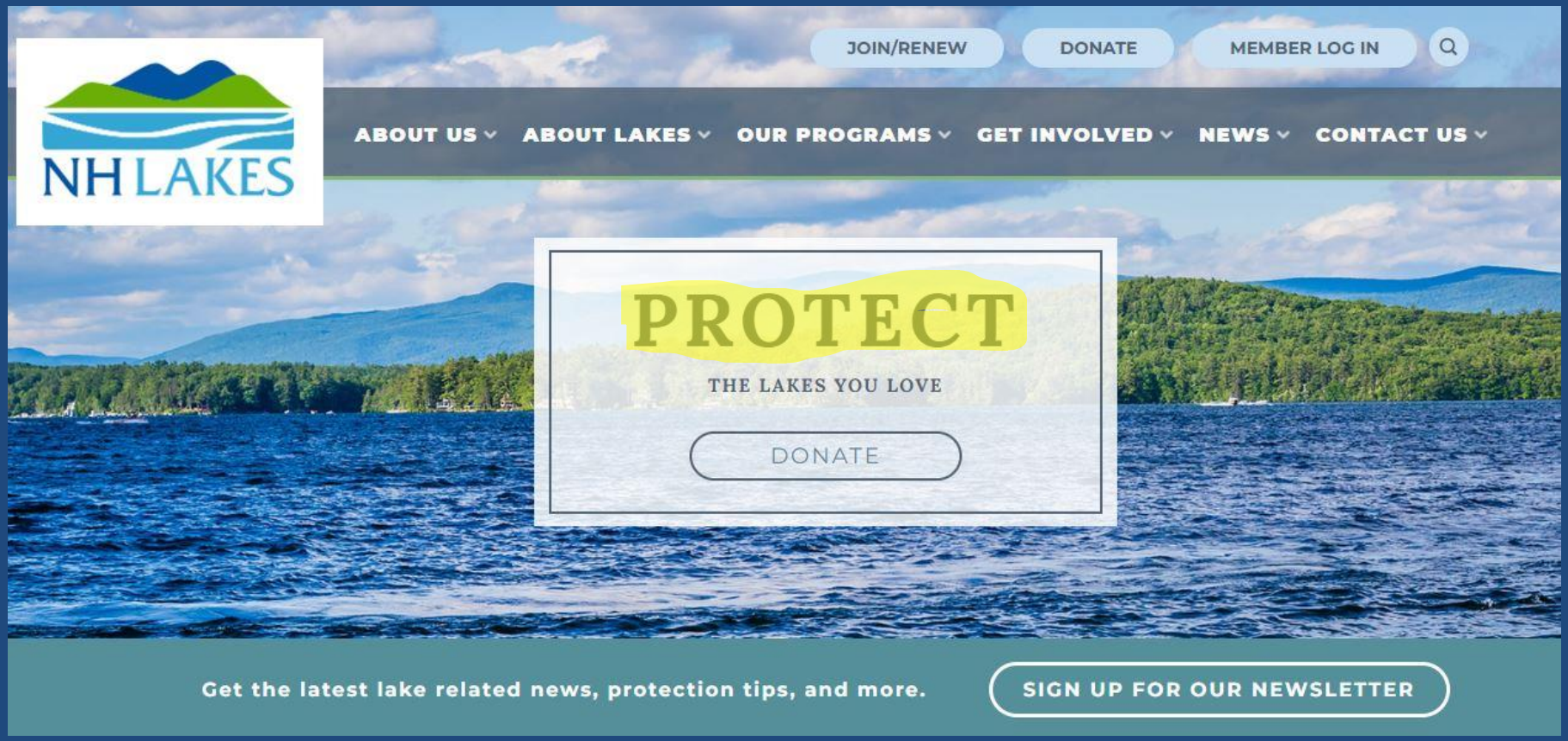

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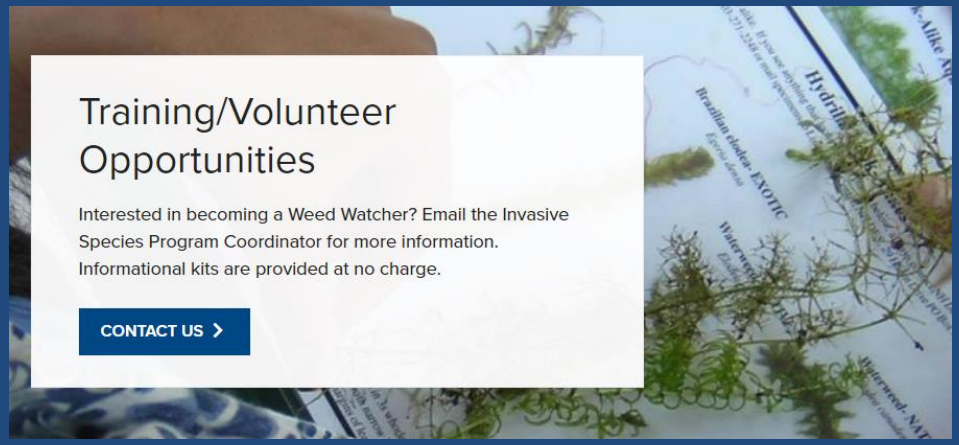
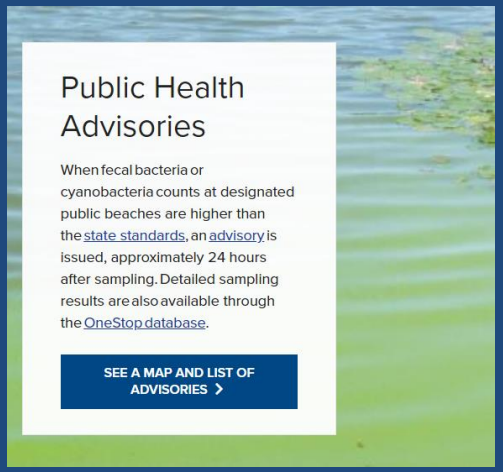
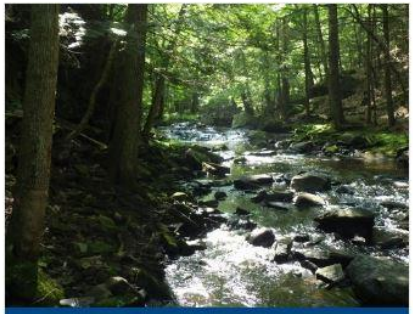


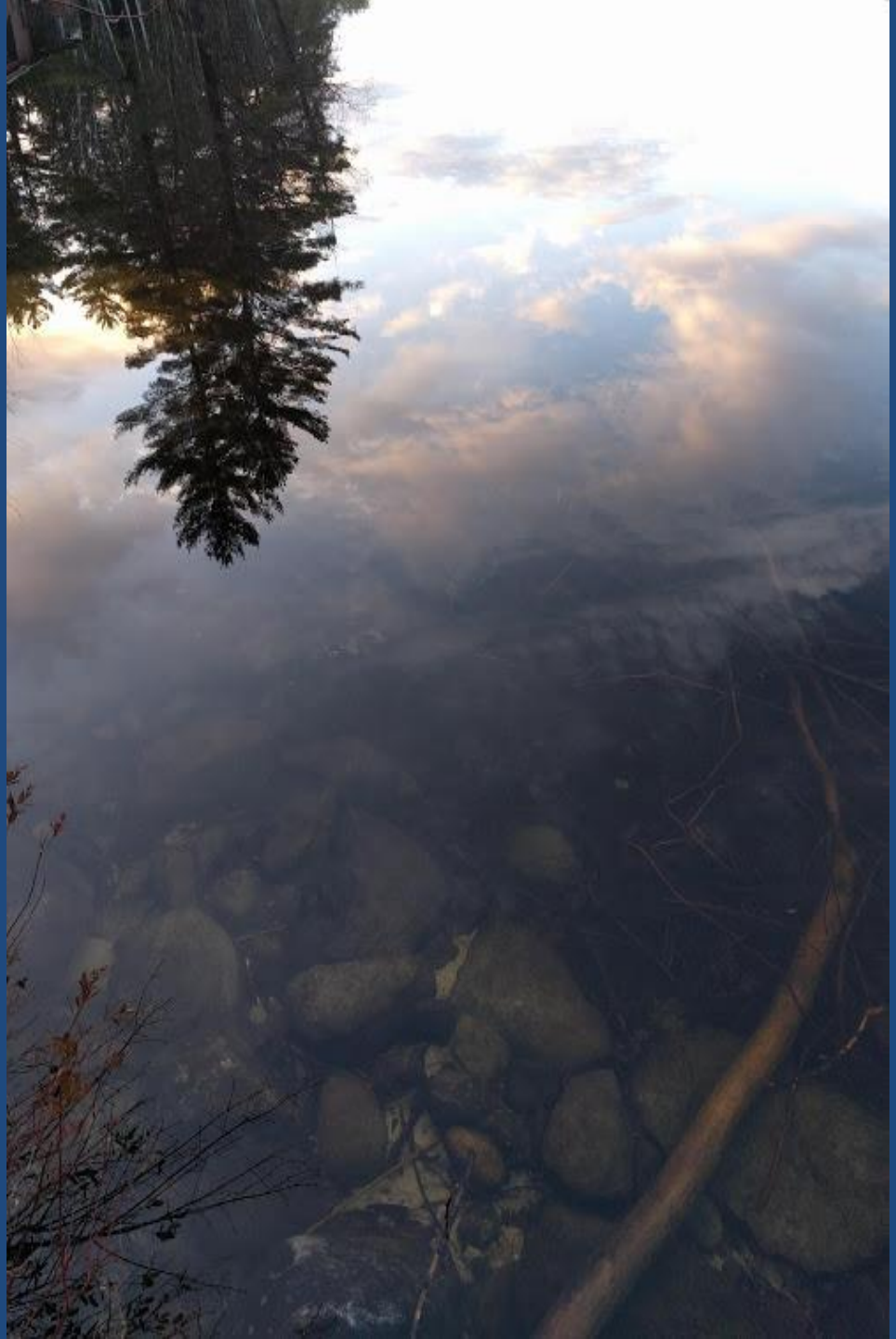


Volunteer River Assessment Program (VRAP)

The focus of NHDES Volunteer River Assessment Program (VRAP) is to promote awareness and education of maintaining water quality in New Hampshire's rivers and streams. VRAP coordinates a regular volunteer-driven water quality sampling program to assist NHDES in evaluating river water quality throughout the state.

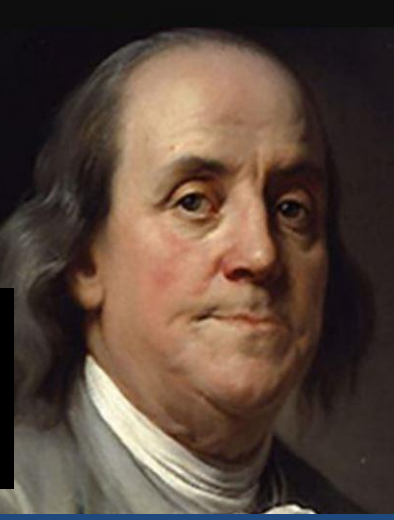


Check Out Our Interactive Maps:



AN OUNCE OF PREVENTION IS WORTH

35,000 gallons of alum ($130K)



PARTRIDGE LAKE
WATERSHED RESTORATION PLAN

Prepared for:

Partridge Lake Property Owners Association


Thank you!
WARNING
RIVER PROTECTION PROJECT AHEAD
CREWS AND HEAVY EQUIPMENT IN RIVER
PLEASE PROCEED WITH CAUTION
A SHORT PORTAGE MAY BE NECESSARY