

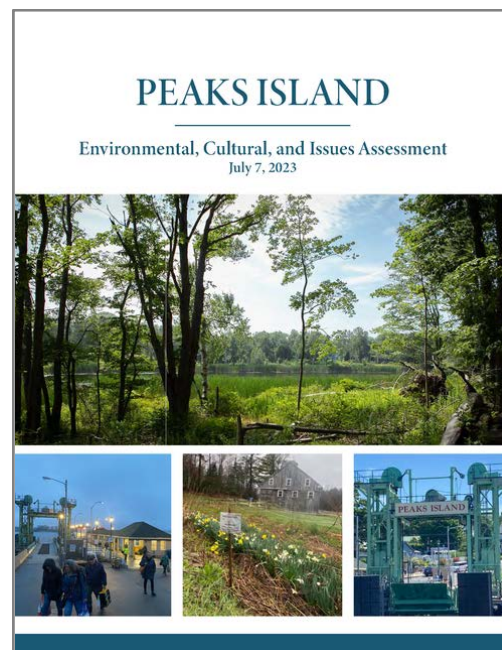


November 2023

### FEATURED PROJECT

## PEAKS ISLAND *environmental, cultural, and issues assessment*

FBE worked with Mohr & Seredin Landscape Architects to assess the existing conditions of natural resources, land use, and public facilities, services, and infrastructure on Peaks Island. As part of the Island-wide assessment effort, FBE completed a climate vulnerability assessment for the impacts of sea level rise, storm surge, and flooding on the infrastructure, natural resources, and recreational resources of the Island. The Peaks Island Assessment also outlined broad recommendations to ensure that planning and development on Peaks Island are executed strategically to ensure sustainability of its vibrant character and community. This work was completed concurrently with an in-depth assessment of land parcels on the Island owned or managed by the Peaks Island Land Preserve. Field assessments at these properties identified specific parcel-scale natural resources, such as plant and natural community types, wetland and water resources, non-native invasive plant species, notable wildlife encounters and habitat, and resulted in a management plan including recommendations for each conserved property. This work can be used by the Peaks Island Council, Peaks Island Land Trust, and the City of Portland to inform policy strategies for the Island in the coming decades. See the full report [here](#).



Left: FBE staff exploring a forested natural community during a natural resources inventory. Right: An emergent wetland on Peaks Island. Photos by FBE.

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## FEATURED PROJECT

### **SACO-SWIFT RIVER** *corridor management plan*



*Swift River. Photo by U.S. Forest Service.*

In October 2023, FBE completed the Saco-Swift River Corridor Management Plan, a multi-year project in collaboration with the Saco Swift Rivers Local Advisory Committee and the NH Department of Environmental Services. The Saco and Swift rivers' headwaters both start in the White Mountains of New Hampshire, draining clear, cold mountainous streams as they flow to their confluence in the Town of Conway. The Saco River continues towards the Maine border on its 136-mile journey from source to sea through forested landscapes, agricultural areas, village centers, and urban areas until eventually emptying into the Atlantic Ocean. These river systems support diverse aquatic ecosystems and offer the White Mountain region a wealth of recreational, economic, and ecological resources.

During plan development, FBE completed a comprehensive assessment of natural, managed, cultural, and recreational resources in the corridor, a land use analysis, and an ordinance review for bordering municipalities. Through these assessments, as well as feedback from local citizens through an online survey and input from the Local Advisory Committee, FBE identified key threats to the corridor as flooding, development, riverbank erosion, water quality degradation, and recreational overuse. In recent decades, forested land, forested wetlands, and row crops have been steadily cleared and replaced by open fields and residential development. Though these land use changes are slight, they indicate the larger trend of low-density urban sprawl and increased development in the region. Furthermore, impacts of climate change will continue to cause more frequent severe storms resulting in flooding along the Saco-Swift Corridor. The Corridor Management Plan is intended to guide management of both rivers to minimize these threats, guide protection of natural habitats, water quality, and in-stream flow, and build climate resiliency. The plan was funded by the NH Clean Water State Revolving Fund and can be viewed [here](#).



*Albany covered bridge over the Swift River. Photo by U.S. Forest Service.*





## STRATHAM, NH OPEN SPACE & CONNECTIVITY

In collaboration with the Town of Stratham, New Hampshire, FBE is developing an Open Space & Connectivity Plan that will allow for the creation of an open space network to balance the protection of significant natural resources, the creation of opportunities for public access and recreation, and the enhancement of community character and desirability. FBE gathered community input from Stratham residents and recreators to understand their priorities and forge a plan that enhances their recreational and community experience while providing protection of significant natural resources.

## WHAT'S GOING ON WITH WOTUS?

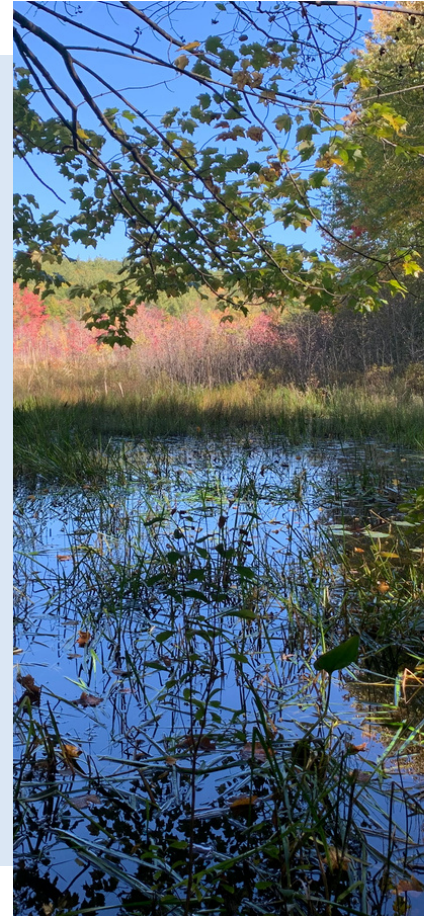
*"waters of the United States"* ←

If you've been hearing the term WOTUS thrown around a lot lately, or, well, in the past several years, it's because there was a Supreme Court Case, *Sackett v. EPA*, reviewing an appeal regarding what resources were under the federal agencies' jurisdiction, or power to regulate. In August, the U.S. Environmental Protection Agency and the U.S. Army Corp of Engineers [announced](#) a final rule amending the 2023 definition of WOTUS, to conform with the Supreme Court decision in *Sackett v. EPA*.

The change in the definition weakens the federal protection on wetlands and water resources to only wetlands and waterbodies that are directly connected to surface waters and no longer implements the "significant nexus" rule - which pulls in adjacent wetlands, intermittent and ephemeral streams, etc. that are nearby. This change was made to align with the ruling in *Sackett v. EPA*.

For New England, we are lucky that our states have jurisdictional authority that protect all wetlands and watercourses. But other states aren't as lucky, and more often than not more vulnerable states and communities are affected by these types of changes.

What has *not* changed is how, nor the science behind how, wetlands and watercourses are identified and delineated!



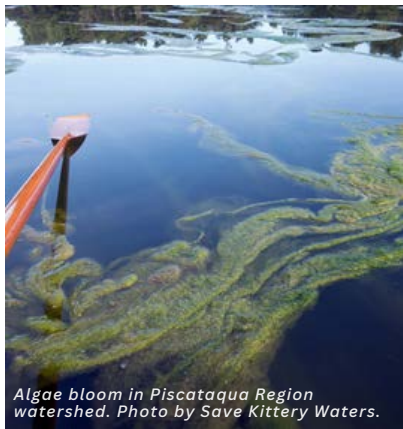
## PARTNER HIGHLIGHT

### PISCATAQUA REGION ESTUARIES PARTNERSHIP

FBE completed two projects in 2023 in partnership with the Piscataqua Region Estuaries Partnership (PREP). We have thoroughly enjoyed working with this great organization and hope to continue collaborating on projects with them in the future. Read on to learn about each project!



#### ➤ Expert Panel Process for Advanced Septic System Technologies



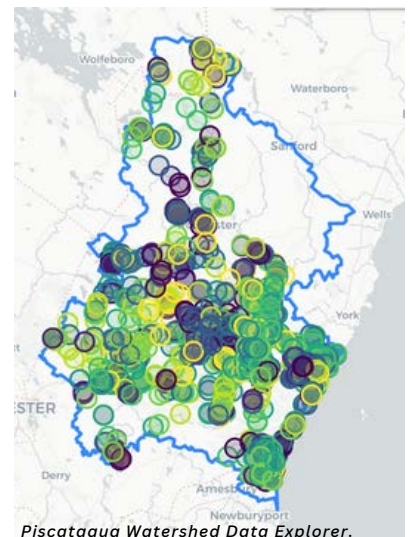
Nutrient pollution from septic systems is a major concern throughout New England. Conventional septic systems are designed for sanitation by removing or inactivating pathogens and have not considered nutrients (nitrogen and phosphorus) as a source of pollutants to lakes and estuaries until recently. Great Bay (NH) is facing a long-term need to reduce nitrogen pollution to protect the estuary's ecosystem, and the increasing trend of cyanobacteria blooms in NH lakes indicates phosphorus reductions are needed. Septic systems can be major sources of both pollutants, but that pollution can be greatly reduced through advanced technology and sound policy.

FBE worked with PREP and NHDES to convene an Expert Panel to make recommendations to NHDES on how to best apply advanced septic system technologies to treat nitrogen and phosphorus. Participants brought lifetimes worth of experience from soil science, advanced treatment research, and state and municipal policy and management fields, and some were from coastal areas that have been heavily impacted by this issue. The panel was supported by an Advisory Committee of NH state and local stakeholders. The panel's recommendations included mapping nutrient sensitive areas in NH, several septic system rule changes, a technology approval process, pilot projects, funding ideas, a professional training program, and more. Check out all their recommendations in the final report.

#### ➤ Piscataqua Watershed Data Explorer

Over the years, PREP has compiled a comprehensive water quality database for the Piscataqua Region that includes data from various sources including the University of New Hampshire, NHDES, and PREP. Up until recently, access to and use of the water quality database was largely only internal to PREP.

FBE and Walker Environmental Research collaborated with PREP to make this data public through the Piscataqua Watershed Data Explorer, an interactive online web application that allows users to filter, visualize, and download water quality data from the PREP database, filtering by time period, station, parameter, measurement counts, and map features. Data can be compared between stations and parameters and downloaded. Now that it is fully operational, PREP hopes that the Data Explorer will be used to facilitate data transfer for various stakeholders so that they can make better informed management decisions that improve water quality in the Piscataqua Region.







To combat the ever-increasing prevalence of cyanobacteria blooms in our local waters, scientists look to a variety of nutrient reduction options in the lake management toolbox. Most management approaches first require nutrient reduction from land sources in the watershed. There are cases where management approaches must also include nutrient reduction from legacy sources in the lake, otherwise known as internal phosphorus loading. Based on known characteristics of lakes with high internal loading, scientists evaluate numerous available technologies for removing legacy phosphorus, one of which includes an alum treatment. Alum, an aluminum compound, is injected into a lake where it binds to dissolved phosphorus floating in the water column, creating a heavier solid called a “floc” – a fluffy, harmless substance made of aluminum hydroxide (the active ingredient in some over-the-counter antacids). This floc then drops down to the lake bottom and “locks” phosphorus so that it stays in the sediment even under low oxygen conditions. These treatments can have effective lifespans of 10 to 30 years or more. FBE completed an alum treatment in Long Pond in Parsonsfield, ME, and we are currently planning an alum treatment in Lake Kanasatka, Moultonborough, NH and Partridge Lake, Littleton, NH. Laura Diemer, CLM, is our talented scientist who leads this work. Check out more info [here](#), and contact us if your lake is experiencing cyanobacteria blooms!

## staff updates



FBE Planner II, Lauren Caffé, snapped some group photos during a staff headshot photoshoot.

Left to right: Lauren, Julia, Bina, Magdalyn, Evan, Sarah, Christine.



FBE's Project Scientist and GIS Specialist, Christine Bunyon, completed her master's degree in June on monitoring cyanobacteria blooms in New Hampshire using drones. This new innovative approach to detecting harmful algal blooms has a bright future! Check out her thesis [here](#) and a summary news article [here](#).



Maggie Mills has been enjoying some well-deserved time at home with her 3-year-old, Ezra, and newborn, Rowan.





## 2023 field season recap



...and don't forget the selfies!

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