

Summer 2024

# SEBAGO IN DEPTH

Water, Land, Community

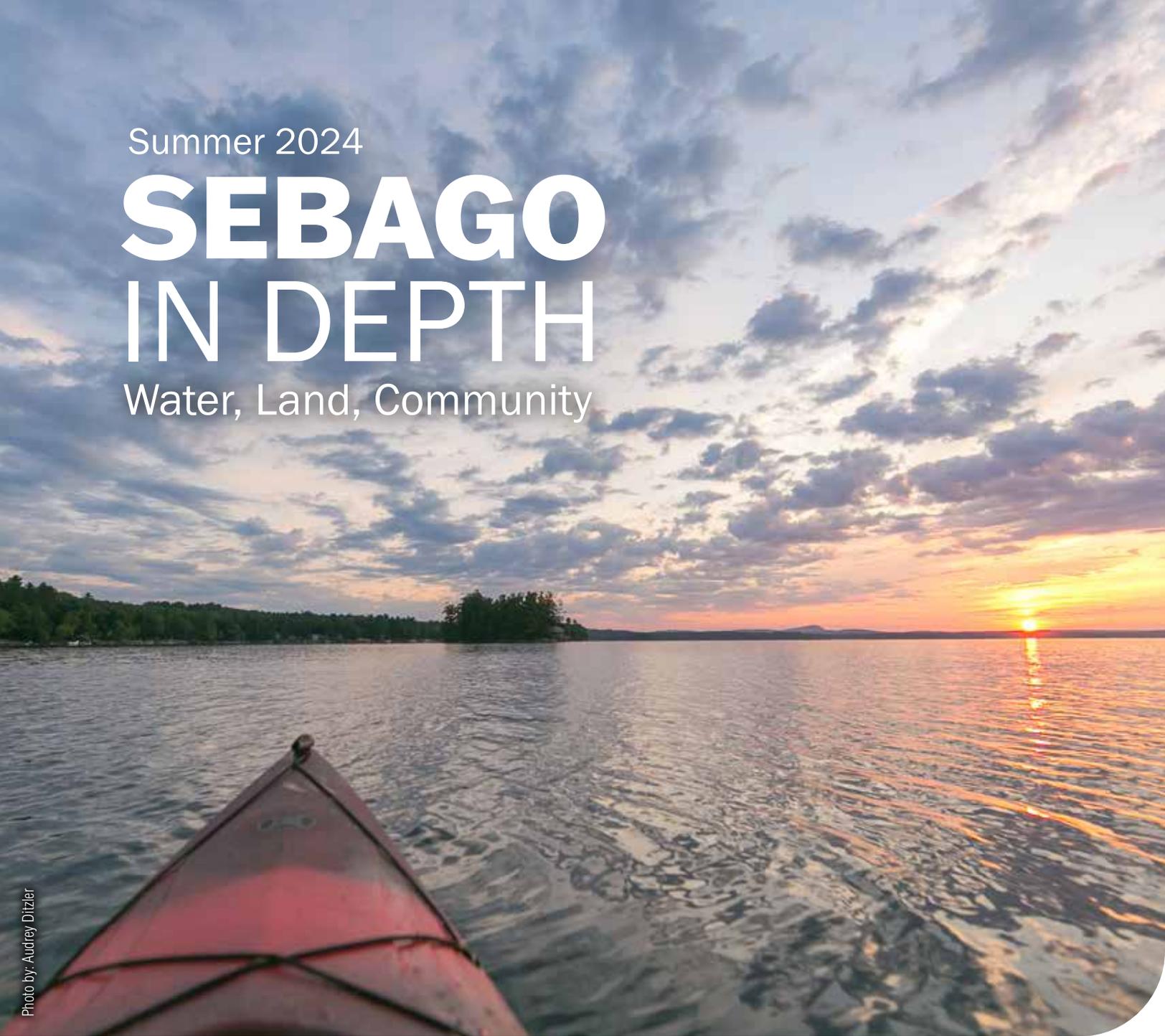


Photo by: Audrey Ditzler

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# LAKE WATER QUALITY TRENDS:

## Natural Cycles or the Effects of Climate Change?



**By Nate Whalen**  
*Water Resources Specialist Nate Whalen can be reached at [nwhalen@pwd.org](mailto:nwhalen@pwd.org)*

Some interesting trends have emerged from Sebago Lake data collected by the Portland Water District. Are these normal, natural cycles or are they the effects of climate change? This article

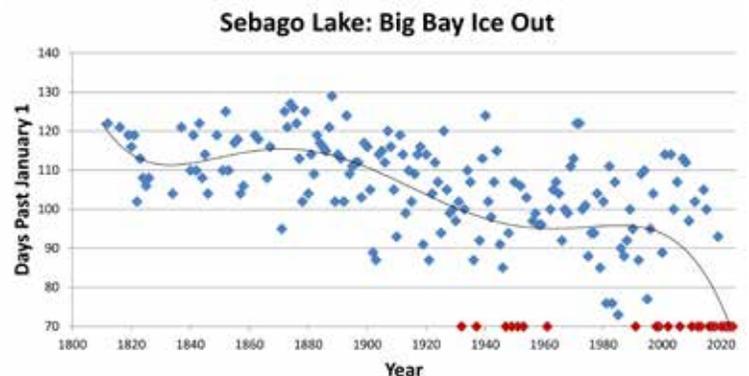
will explore some of the data we collect and highlight some patterns we've seen.

The biggest challenge of climate change science is that by the time the effects are known for certain, it's too late to do anything except try to keep changes from getting worse. As scientists, we use prediction and then testing to see if the results support the predictions. If the results are as expected, then we might say the prediction was valid. Trying to make predictions and test them in a system that is all around us, and possibly changing as we speak, is a challenge. Only the end result will reveal the conclusion.

### Ice cover on Big Bay

Lake ice cover does tend to exhibit cycles including periods of more ice and periods of less ice. However, humans are generally not good at accurately recalling the exact details of past cycles. Memories get hazy. Understanding if something is normal or not becomes extremely difficult if personal memory is all you have to go on. It may take dozens or even hundreds of years for trends related to climate to become

clear. The Portland Water District has been collecting ice-out data for Sebago Lake since the 1800s. The oldest records are spotty and may have some margin of error. However, if it's recorded in the dataset, it is the best available information we have for that particular year.



◆ Big Bay did not freeze

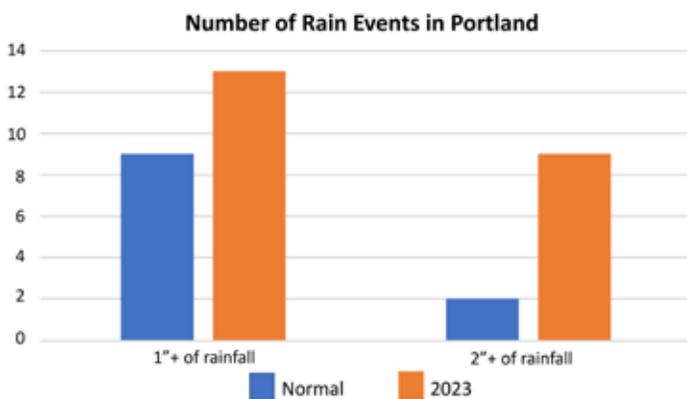
The ice-out chart shows ice-out as “Days Past January 1.” The longer the ice remained into the year, the higher the number. If the ice did not completely cover Big Bay in a given year, then for that year a red diamond is shown on the bottom axis of the chart. The black line is the trend of the data pattern.

One concerning observation is that this method of tracking ice is becoming obsolete. Big Bay completely freezing is not detailed enough information because it rarely freezes

completely now. Historically, Jordan Bay and Lower Bay have frozen over enough to allow some kind of recreational opportunity on the lake. Even if Big Bay didn't completely freeze over, people could still set up ice shacks for ice fishing and snowmobile from the Raymond boat launch to the Standish Station boat launch. However, in the last two winters, there hasn't been enough ice for any recreational opportunity in Lower or Jordan Bays, let alone Big Bay. There was no safe ice anywhere.

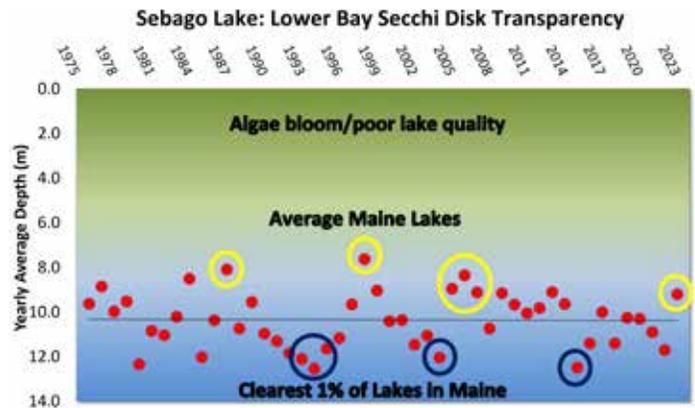
### Storm events and lake clarity

2023 will be remembered as having a wet summer. Rainfall measurements from the Portland Jetport show more intense rain events than normal. Historically, Portland averages nine storm events per year that produce one inch or more of rain. In 2023, there were 13 events that produced an inch or more of rain. Portland normally receives two storm events that produce two or more inches of rain. In 2023, there were nine events that produced two or more inches of rain.



Every time it rains, water flows across the land and washes soil and other pollutants into the lake. This runoff flows through ditches and culverts, into streams, and downhill to the lake. The more intense the rain, the more polluted the runoff becomes that flows into the lake. The pollution can be animal waste, garbage, oils, or chemicals, but typically the main pollutant of concern is eroded soil. Every time you see a stream or river running brown after a heavy rain, that water is polluted with soil. This polluted water makes the lake cloudy, makes the bottom mucky, provides nutrients for algae to bloom, and reduces oxygen for fish.

These effects show up in "Secchi disk transparency" measurements, a measure of how clear the water is. A black and white disk on a measuring tape is lowered into the water and the depth at which it disappears from sight is recorded. A shallower depth indicates cloudier water, whereas a deeper depth indicates clearer water. PWD has been measuring the lake transparency in Lower Bay since 1976.



Yellow circles are years of heavy rain. Blue circles are dry years. As you can see rainfall correlates with water clarity – in rainy years we have poorer water clarity, and in dryer years we have better clarity. While the trend line going through this data is very flat – meaning it shows no statistical change over this time – if we continue having more frequent, intense rainstorms, we would predict lower clarity.

### What you can do

Sebago Lake holds almost a trillion gallons of water. It takes a lot of change to impact this much water outside the normal, natural cycles. The trends we are seeing are noticeable. So, what can be done? The good news is we can each make a meaningful difference regarding climate change without adversely impacting our lives. Problems that seem overwhelming as a whole can feel less so just by taking action. The old adage, "Think globally, act locally" is true.

**Home Energy:** A good start is to use energy more wisely. Turn off lights and electronics when not in use. Replace traditional light bulbs with LEDs. Have an energy audit to improve the insulation and efficiency in your home. Consider switching to a renewable energy electricity supplier or installing solar panels on your roof. Renewable energy is now cost-competitive with fossil fuels.

**Landscaping:** There is a lot you can do to help us protect Sebago Lake. Keep rainwater to yourself. When rain falls on your property, try to keep it there. Install dry wells to capture the water from gutters. Build rain gardens to filter and absorb water, and direct runoff into the woods where it can be absorbed into the ground instead of flowing into the lake. If you lack "woods," consider replacing some areas of grass lawn with native trees, shrubs, and groundcovers which are great at slowing and absorbing water.



# PROFILE OF A SEBAGO PROTECTOR

**John Wiesemann**  
Code Enforcement Officer,  
Town of Casco

*Each municipality around Sebago Lake depends on its Code Enforcement Officer (CEO) to enforce state laws and local ordinances such as shoreland zoning, subsurface wastewater disposal (septic systems), and others. Local ordinances should reflect where and how a community wants to see development carried out with the intent to protect our important natural resources and maintain safe communities. PWD works in partnership with each town's CEO to ensure projects around the lake follow these rules because they protect Sebago Lake. John has been the Code Enforcement Officer in the Town of Casco for three years.*

## What is your background?

**John:** I went to school at the University of Maine at Fort Kent for forestry and worked in that field for a bit and then worked as a surveyor in Bridgton for 21 years. In surveying, I dealt a lot with land use ordinances and shoreland zoning. I had some prior building experience because my parents used to build and sell log homes. I thought I'd be a good fit for code enforcement. I was in Fryeburg for one year before coming to Casco.

## Do you have any special connection to Sebago Lake?

**John:** I used to guide on Sebago Lake full-time for 15 years, starting in 1994.

We did some NESN Charlie Moore fishing shows on Sebago Lake and the first-ever salmon fishing show. I have a lot of good fishing memories out there.

## How would you describe your role as a code enforcement officer?

**John:** I see my biggest role as educating the public. A lot of people don't know the ins and outs of these rules and laws. Educating people to develop in ways that protect our resources is key. I meet with everybody, the homeowner and general contractor, a few times prior to going over the proposed project. When the application is in hand, I'll go out and let them know the things they can and cannot do because things always change. I'm always out and about visiting projects until they're complete.

## What makes the partnership between PWD and the towns valuable?

**John:** The lakefront folks see PWD driving around so their presence is known. I refer PWD quite a bit to people looking to do projects because the technical assistance is free to them. It's a great resource because there's stuff that I don't know that PWD knows. It's good education, so it's definitely positive.

## Share any challenges you've encountered with shorefront development?

**John:** People want to push the envelope. It's human nature to get the best bang for your buck. Often times, people will do things and ask forgiveness after but a lot of times that doesn't work. They pay a lot of taxes and we understand that, but the rules are the rules.

## What is your biggest concern for the region's water resources?

**John:** I guess too much development upstream of everything. It's not protected. I listen to podcasts about other states where silt is killing rivers and of poor farming practices. We don't have as many issues in Maine with that, but some of our lakes are having water quality issues, like Sabattus Pond, for example, has had several algae blooms. It's horrible. I think protecting the watershed is important because it all connects to Sebago Lake.

# WHAT'S MAKING WAVES: Around Sebago Lake



## Traffic Pattern & Stormwater Improvements at Intersections of Route 35 and 114

The Town of Standish and the Portland Water District partnered on a project to improve the traffic and handling of stormwater at the intersection of Routes 35 and 114 in Standish's Lower Village. This fall, Standish will install a smart traffic signal and improvements are being made to the traffic pattern to reduce backups. PWD was responsible for the engineering and construction of new stormwater infrastructure that will redirect stormwater away from Standish Brook, a tributary to Sebago Lake. Instead of impacting the water quality of the brook and subsequently Sebago Lake, intersection stormwater now flows to a ditch adjacent to Northeast Road Extension and is treated by a vegetated drainageway on adjacent PWD land.



## Be a Citizen Scientist

We need your help to monitor the new shoreline stabilization project at Sebago Lake State Park's Songo Beach in Casco. With funding from a grant\* Portland Water District received, the Bureau of Parks and Lands installed three photo point monitoring stations along the project site. You can prop your phone on the station, photograph the structures with the lake in the background, and upload your photo to the photo monitoring website. Your photo and others will produce a time-lapse video of the beach, allowing us to observe the function of the structures over time.

*\*Funding is provided by the U.S. Environmental Protection Agency under Section 319 of the Clean Water Act. The funding is administered by the Maine DEP in partnership with EPA.*



## Submit your photos!

Please submit your photos for the 2025 Sebago Lake to Casco Bay calendar. Send us scenic photos of Sebago Lake, a tributary of Sebago Lake, the Presumpscot River, or Casco Bay. Visit [pwd.org/publications/sebago-lake-calendar](http://pwd.org/publications/sebago-lake-calendar) for more details about photo submission. Photo submission deadline: August 31, 2024

## MORE VISIBLE Delineation of Lower Bay's Protection Zones

If you're out on Lower Bay this boating season, you may notice some new additions to the lake. The Portland Water District received a grant from the Maine Drinking Water Program that helped build and install several floating signs along the 3000' No-Trespassing Zone buoy line. These easy-to-see signs will ensure boaters know about the restricted area of Lower Bay where PWD's water intakes are located.





# RESOURCES

## for Your Next Shorefront Project



**By Chad Thompson**

*Source Protection  
Coordinator  
Chad Thompson  
can be reached at  
cthompson@pwd.org*

To own property on the Sebago Lake shorefront means you take on the role of steward. A steward is one who “looks after the property of another,” and Sebago Lake belongs to everyone. Your property is the last line of defense from polluted runoff that moves over the land before flowing into Sebago Lake, but it could also be a source of pollution, through soil erosion. If you have a project planned, unique laws apply to you because of your shorefront location. It can get confusing, but luckily, numerous resources are available to help you navigate the rules and regulations that protect all Maine lakes.

### **PWD technical assistance**

Portland Water District can help. We have staff trained in best management practices for lake protection and the laws adopted to keep Sebago Lake clean for all of its uses. We offer free technical assistance, recommendations for addressing erosion and runoff, and even grant funding for making your property more lake friendly.

**Contact the Water Resources Specialist who covers your town by email or by phone (207)774-5961, extension provided:**



### **FRYE ISLAND, RAYMOND**

**Nate Whalen**  
nwhalen@pwd.org  
Ext. 3338



### **CASCO, WINDHAM**

**Carina Brown**  
cbrown@pwd.org  
Ext. 3320



### **NAPLES**

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Ext. 3305



### **SEBAGO, STANDISH**

**Amanda Pratt**  
apratt@pwd.org  
Ext. 3057

### **Town Code Enforcement Officers**

Your town Code Enforcement Officer (CEO) will assist you in the permitting process for any project you undertake within 250 feet of the normal high-water line of the lake, an area known as the “shoreland zone.” Building and expanding structures, cutting vegetation, and numerous other projects that disturb the land must comply with your town’s Shoreland Zoning rules. Always reach out to your town CEO early to reduce delays in your permitting process and your project’s success.

**CASCO** (207) 627-4515 Ext. 1203

**FRYE ISLAND** (207) 693-2150

**NAPLES** (207) 693-6364 Ext. 4

**SEBAGO** (207) 787-2457

**STANDISH** (207) 642-4571

**RAYMOND** (207) 655-4742 Ext. 161

**WINDHAM** (207) 894-5960 Ext. 1

### **Maine DEP**

Maine Department of Environmental Protection (MDEP) field services staff offer technical assistance and permits for projects in, on, or over Sebago Lake and those within 75 feet of the normal high-water line. Repairing and altering structures, creating water access, stabilizing the shoreline, maintenance dredging, and other projects must be done according to the rules of the Natural Resources Protection Act. Visit their website for more information: [maine.gov/dep/land/nrpa/](http://maine.gov/dep/land/nrpa/)

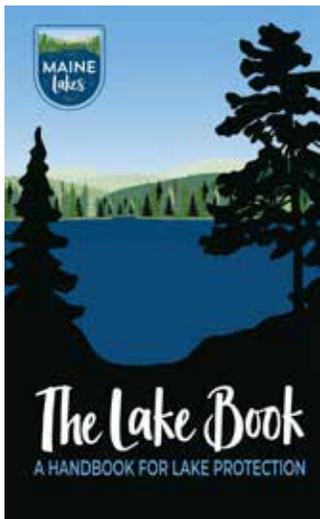
## Septic systems

If your project includes a new or replacement septic system, your town CEO will need to issue a permit for your septic system and inspect its installation to ensure it complies with Maine's Subsurface Wastewater Disposal Rules. A properly designed and installed system will protect the lake, and your well, from harmful bacteria and chemicals. Since Sebago Lake is a water supply, state law also requires that you have a permit from PWD before installing a new or replacement system within 200 ft of the lake, in addition to the town's regulation. Contact your town CEO and visit our website for more information on PWD permits and inspections: [pwd.org/pwd-septic-system-permits](http://pwd.org/pwd-septic-system-permits)

## Certified contractors

Many shorefront projects require a qualified contractor to do the work. Contractors need a Certification in Erosion and Sedimentation Control from the MDEP to do work in the shoreland zone. To be certified, a contractor must attend training to learn how to get the work done without impacting the lake. MDEP maintains a list of certified contractors at: [maine.gov/dep/land/training/ecp-certification.html](http://maine.gov/dep/land/training/ecp-certification.html)

## The Lake Book



Compliance with environmental laws is the minimum standard to protect water quality. But you can do more. By learning what lakes need to stay healthy and resilient, you'll see there are many actions you can take to contribute to a Sebago Lake that is clean and clear for future generations. Maine Lakes published the fourth edition of The Lake Book, and it's a must-read for Sebago Lake's shorefront

property owners. It includes information on lake science, lake wildlife, native plants, and a great list of actions you can take. You have access to a copy. Here are a few ways to get one:

- Check out a copy at your local library
- Browse a copy at your town office
- Be one of the first 20 people to request a free, mailed copy from Portland Water District by emailing [sebagolake@pwd.org](mailto:sebagolake@pwd.org) with the following information: Name, mailing address, physical address that identifies your Sebago Lake shorefront property

## IF YOUR PROJECT IS:

### ▶ WITHIN 250 feet of the normal high water line of the lake, known as the Shoreland Zone:

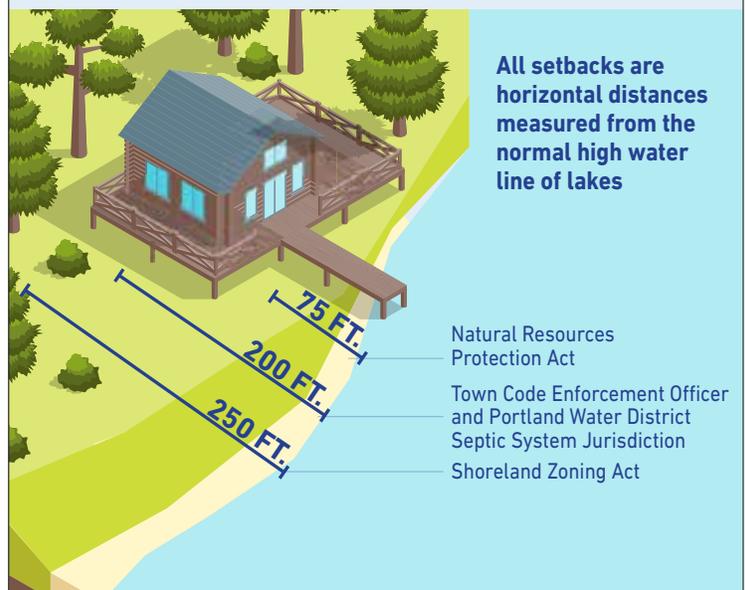
- Contact your town's Code Enforcement Officer regarding permitting

### ▶ Within 75 feet of the normal high water line of the lake:

- Apply for a permit from the Maine Department of Environmental Protection issued under the Natural Resources Protection Act
- Contact your town's Code Enforcement Officer because you are also working in the Shoreland Zone

### ▶ A new or replacement septic system on Sebago Lake:

- If you are installing a new or replacement septic system, contact the Portland Water District regarding a permit
- Contact your town's Code Enforcement Officer regarding permitting





# PWD STAFF PROFILE } PROF

## Laurel Jackson Right-of-Way Agent

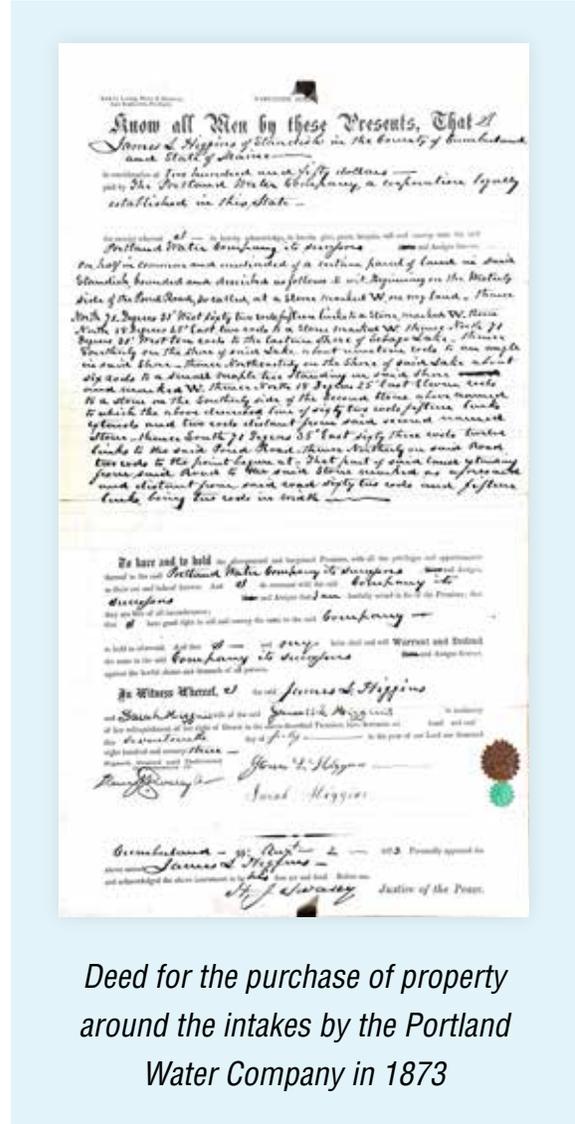
Laurel Jackson has been at Portland Water District for nearly 18 years. She began her career working four years in the laboratory at the East End Wastewater Treatment Facility before spending another 10 years as a Water Resources Specialist in the Sebago Lake Protection Office. Now, as the Right-of-Way Agent, she still supports lake protection.

So, what does a Right-of-Way Agent do? Laurel collaborates with lake protection staff on managing the uses of the 2,500 acres of PWD-owned land around Lower Bay to ensure its use doesn't impact water quality. Additionally, she works with willing landowners to negotiate PWD purchases of critical lands around Lower Bay and with land trusts seeking to conserve lands in the watershed. She maintains an archive of about 5,200 real estate deeds with many dating back to the turn of the 20th century. The lands around the lake are among the earliest acquisitions by PWD and often the deeds were hand-written in cursive. Good thing she knows how to read and write cursive! Often, these old documents are the only place to learn what may be allowed on a particular piece of land today. The resources available today to manage property information impress Laurel. Survey plans, deeds, highway right-of-way plans, tax maps, and more are all available online. This makes finding answers to questions a more efficient process compared to even ten years ago.

Because of her varied experience, Laurel has an appreciation for how many people and things are involved in what we call "Sebago Lake protection." She knows Sebago Lake is unique; it supports more uses than any other lake in Maine - from recreation to drinking water supply to aquatic habitat. All of these uses rely on having excellent water quality and that is why it's critical that everyone work together to protect it.

Laurel spent time around Sebago for many years. She has stories – like the time she almost drove off the side of the Frye Island Ferry – and also favorite places. She has an especially fond memory of an unseasonably warm September 2-mile beach visit. The horse flies had died off so she didn't get eaten alive on the mile-long trail through the woods. The afternoon sun was shining on the beach and Sebago Lake was still warm enough for a lovely swim.

We're all so fortunate that people have cared so well for this lake for hundreds of years. Water quality has been on the minds of the residents of the watershed for more than a century. Laurel has the old documents to prove it.



*Deed for the purchase of property around the intakes by the Portland Water Company in 1873*



## CONNECT WITH PWD'S SEBAGO PROTECTORS

www.pwd.org | 207-774-5961  
Follow us @MyPortlandWater



Prefer to receive this newsletter by e-mail? Let us know!  
sebagolake@pwd.org

Learn about events we and our partners host around the lake and throughout the watershed by joining our email list. Send an email to [sebagolake@pwd.org](mailto:sebagolake@pwd.org)