

SWAG Meeting

September 10, 2024 | 6:00-8:00pm

Bellamy Reservoir Tour

Hybrid Meeting: Madbury Water Treatment Facility and via Zoom

Agenda

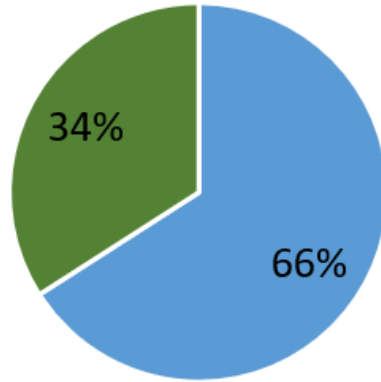
1. Visit to the Bellamy Reservoir
2. Introduction & Approval of minutes
3. Reservoir Watershed Overview
4. Cyanobacteria Overview
5. Water Supply & Master Plan Update
6. Lead Inventory and Sampling Update
7. PFAS Update
8. Q&A
9. Public comment

Bellamy Reservoir & Watershed



PORTSMOUTH WATER SUPPLY

**Portsmouth Water Supply
Source Contribution**

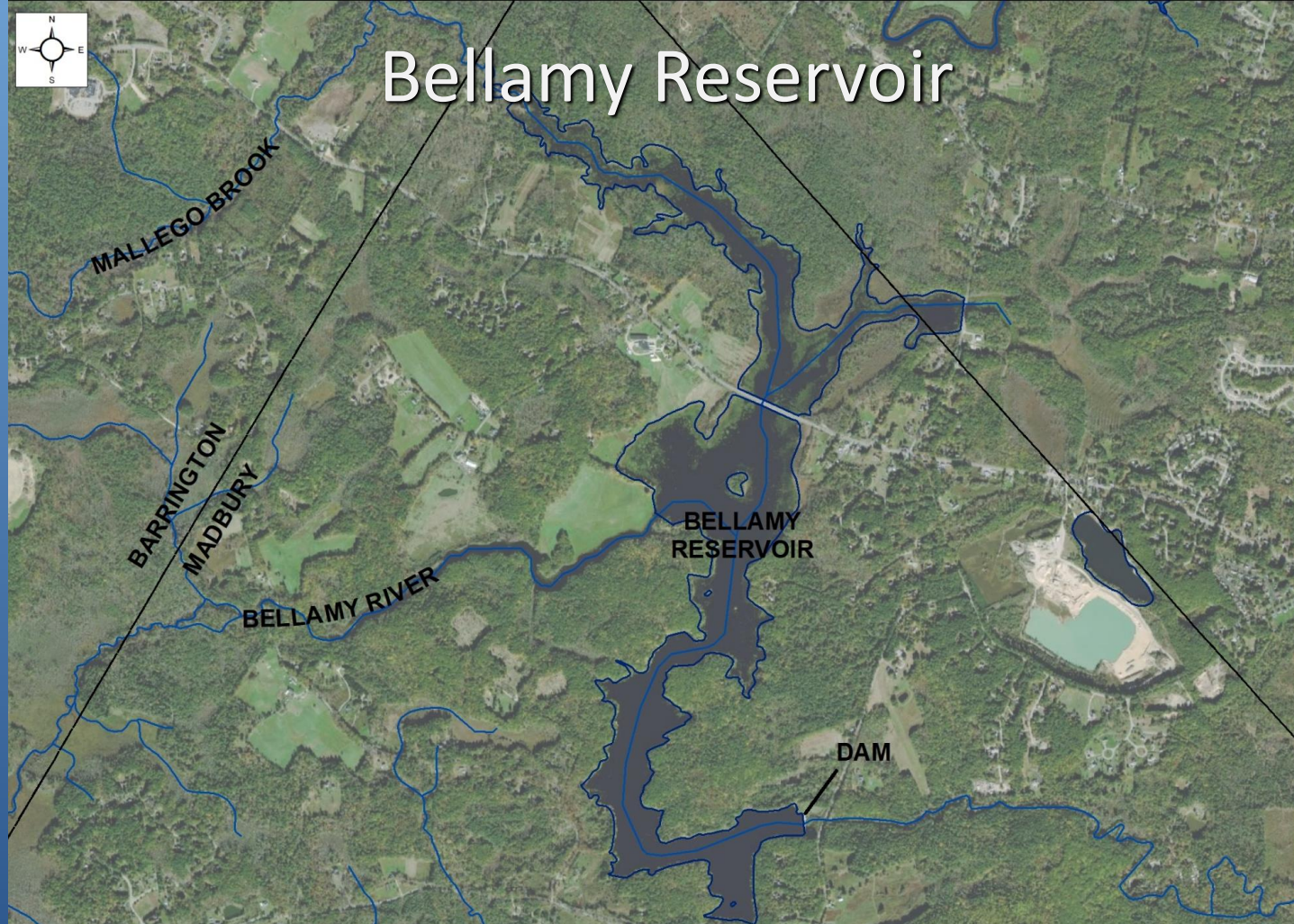


■ Surface Water ■ Groundwater





Bellamy Reservoir



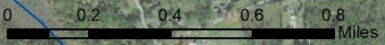
MALLEGO BROOK

BARRINGTON
MADBURY

BELLAMY RIVER

BELLAMY
RESERVOIR

DAM



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

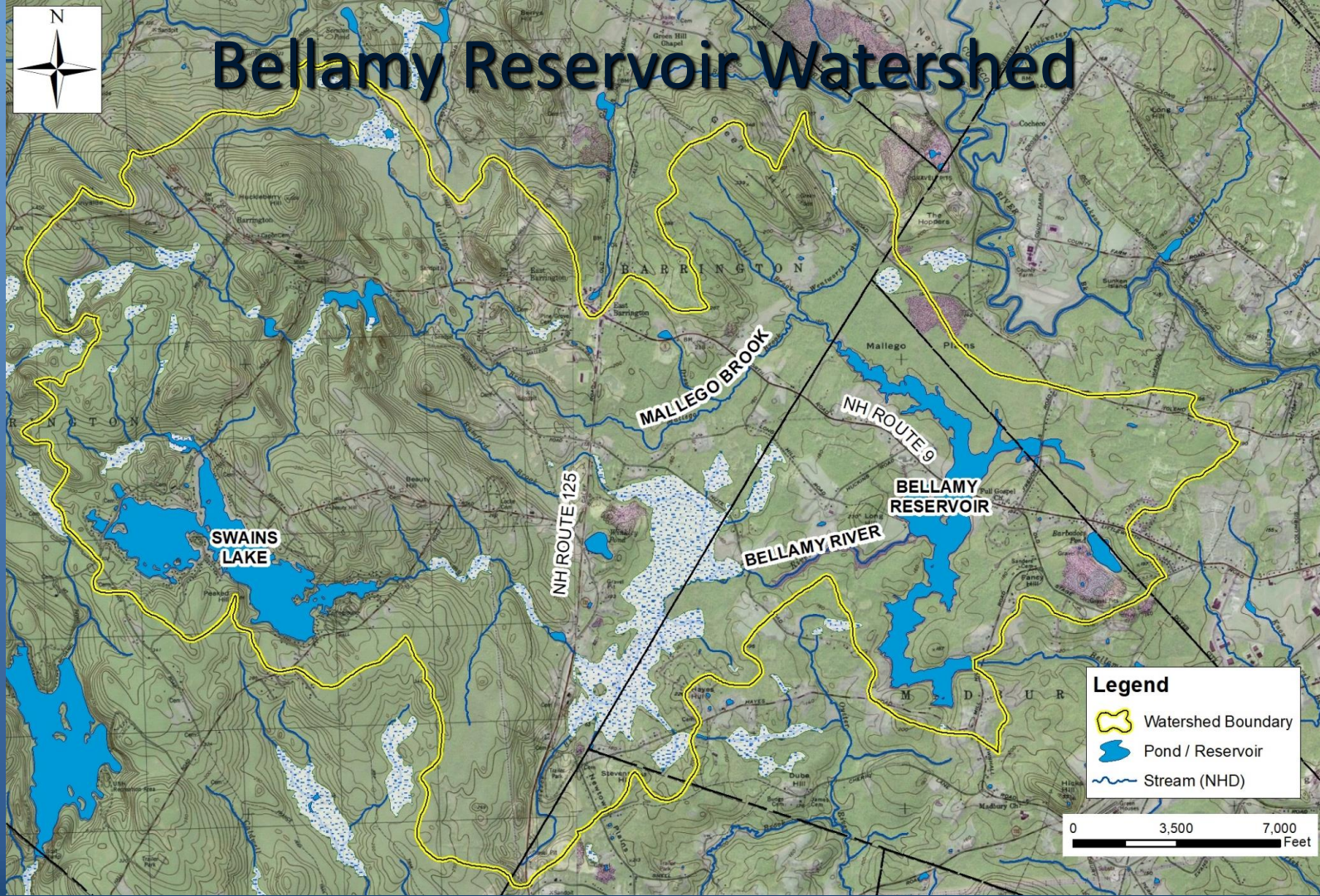
Bellamy Reservoir

- Constructed 1957-1960
by the US Army Corps of Engineers
- Reservoir Area: ~400 acres
- Maximum Depth: 28 feet
- Full Volume: 730 MG
- Average Flushing Rate: 9x/year
- Watershed Area: 22 sq. miles





Bellamy Reservoir Watershed

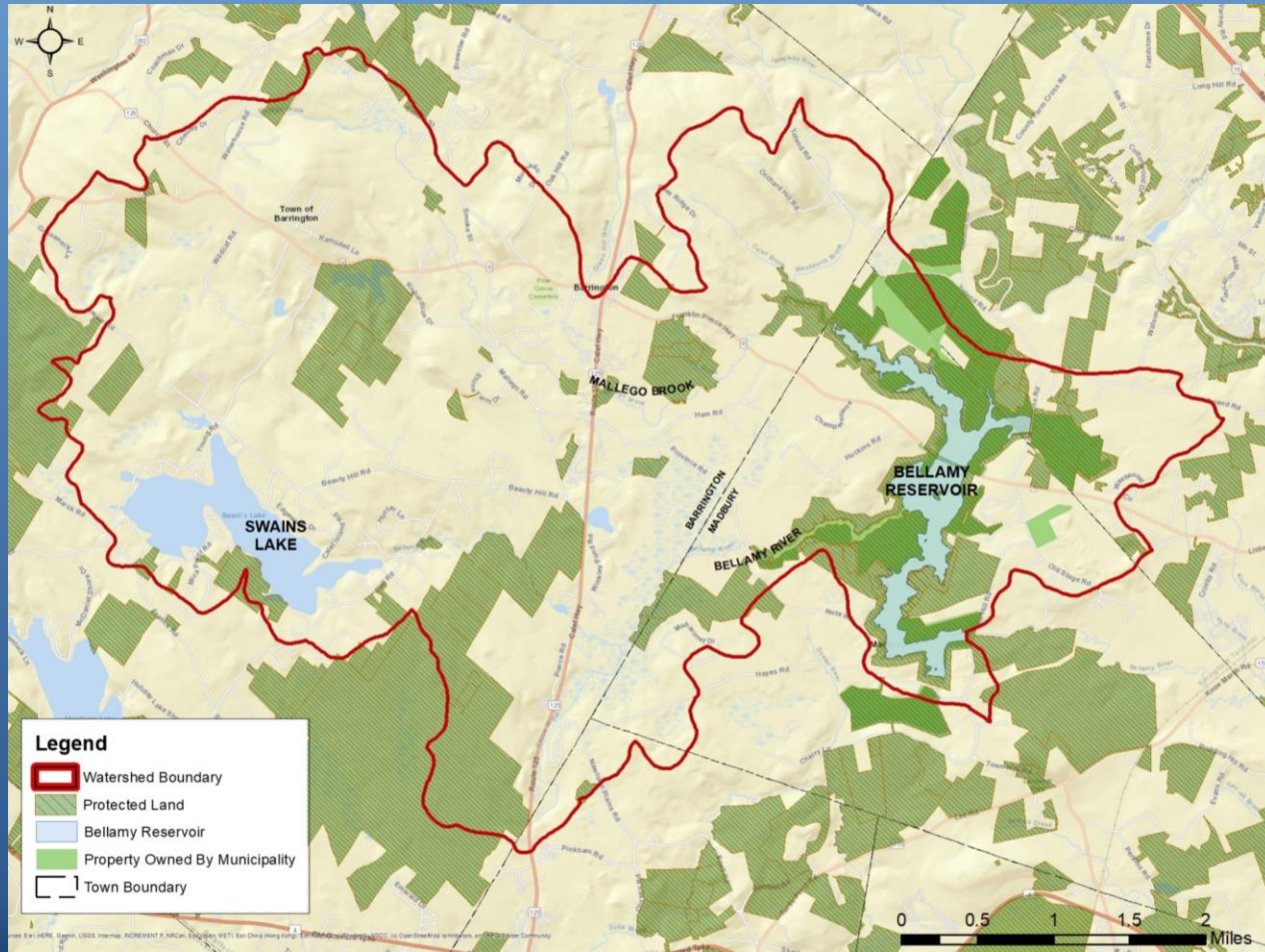


Legend

- Watershed Boundary
- Pond / Reservoir
- Stream (NHD)



Bellamy Reservoir Watershed – Protected Land




Bellamy Reservoir Source Management

- Public Outreach (Use Restrictions)
- Shoreline Surveys
- Shoreline Maintenance
- Land Protection
- Easement Monitoring
- Water Quality Monitoring
- Aeration System / Water Quality Management

Bellamy Reservoir Source Protection


- Public Outreach (Use Restrictions)
 - Signs
 - Mailers



Bellamy Reservoir Dam
on Mill Hill Road

Bellamy Reservoir Drinking Water Source Protection


Portsmouth Water Division
City of Portsmouth




Madbury Water Treatment Facility
on Freshet Road

The City of Portsmouth's Water Division either owns or has easements around the entire Bellamy Reservoir. This provides a protective water quality buffer for the surface water that is piped to and treated at the Madbury Water Treatment Facility. The map on the opposite page of this flyer shows the approximate boundaries of both the land ownership and easements. These protective buffers have been in place since October 11, 1962 when the United States Air Force deeded the reservoir and facilities to the City of Portsmouth.


In addition to these buffers, the Portsmouth Water Division, in cooperation with the Town of Madbury and the New Hampshire Department of Environmental Services, has historically restricted activities on the reservoir and in these buffers. The following activities are not permitted:



No Swimming



NO MOTOR BOATS



NO CAMPFIRES

Portsmouth Water Division staff performed a shoreline survey this summer and observed some of these activities taking place.

Kayaks, canoes and other non-motorized boats are permitted on the reservoir. Access to the water is limited to the boat launch on Route 9. No boats are allowed inside the drinking water intake area (shown on map). Fishing is permitted with a valid State of New Hampshire fishing license. Snowmobiling is allowed in designated areas.

The Portsmouth Water Division is the Regional provider of public drinking water to the communities of Portsmouth, Newington, New Castle, Greenland, and portions of Madbury, Durham, Dover and Rye. Our sources of supply are derived from the Bellamy Reservoir and eight wells. The Reservoir's surface water is piped to the Madbury Water Treatment Facility. This LEED certified facility was built in 2011 to replace the original treatment facility constructed in 1957. It treats the surface water utilizing high-rate dissolved air floatation and filtration. This facility is state-of-the-art, however, it is still very dependent on the source water quality derived from the reservoir. Therefore, our water system operators are diligent in identifying potential sources of contamination that might impact water quality.

This flyer is being sent to residents in Madbury as an outreach effort to clarify the water system's protection requirements and jurisdiction for enforcement. Targeted information will be provided to areas of concern in the near future. Those with questions can direct them to our source of supply department in Madbury at: 516-8360

The Portsmouth Water Division would like to thank the Madbury Board of Selectmen for their assistance with this mailer.

Portsmouth Water Division
City of Portsmouth Department of Public Works

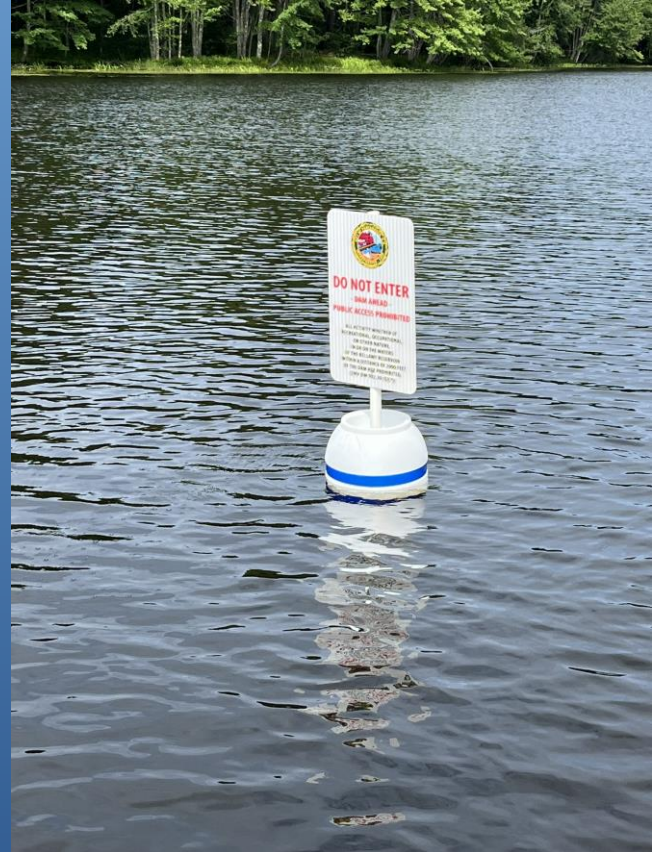


Bellamy Reservoir Source Protection



**DO NOT ENTER
DAM AHEAD
PUBLIC ACCESS PROHIBITED**

ALL ACTIVITY WHETHER OF RECREATIONAL, OCCUPATIONAL, OR OTHER NATURE, IN OR ON THE WATERS OF THE BELLAMY RESERVOIR WITHIN A DISTANCE OF 2,000 FEET OF THE DAM ARE PROHIBITED. (ENV-DW 902.30 (G)(7))



Bellamy Source Protection

RESERVOIR USE RESTRICTIONS

- NO FUEL OR FUEL POWERED MOTOR BOATS
- NO CUTTING/CLEARING ALONG SHORELINE OR ON CITY PROPERTY
- NO STRUCTURES WITHIN BUFFER ZONE
- NO DISPOSAL SYSTEMS WITHIN BUFFER ZONE
- NO SEAPLANES OR MOTORIZED VEHICLE EXCEPT FOR SNOW MOBILES
- NO BATHING OR SWIMMING
- NO DEPOSITION OF DEAD ANIMALS OR FISH
- NO DEPOSITION OF DECAYABLE MATERIAL, MANURE OR HUMAN WASTES
- NO CAMPFIRES ON CITY PROPERTY
- NO CAMPING ON CITY PROPERTY

Bellamy Reservoir Prohibitions (Enw-Dw 902):

(1) A person shall not build, continue, or maintain any building or structure of any kind in which animals or fowls are kept within 75 feet of the high water elevation of Bellamy Reservoir, as defined by the existing spillway elevation of 136.0 feet, or within 75 feet of any inlet thereof or tributary thereto;

(2) A person shall not discharge any sewage or other waste, as defined in RSA 485-A:2, X, treated or otherwise, into said reservoir or any inlet thereof or tributary thereto;

(3) A person shall not throw or deposit any dead animal or fish or parts thereof, perishable or decayable material, manure, or human wastes into said reservoir or any inlet thereof or tributary thereto, or leave or allow any such materials to remain on the surface of the ground within 75 feet of said reservoir or any inlet thereof or tributary thereto;

(4) A person shall not bathe or swim in said reservoir or any inlet thereof or tributary thereto;

(5) A person shall not operate any boats propelled by means of inboard or outboard motors other than electric motors on the waters of said reservoir or any inlet thereof;

(6) A person shall not enter upon or conduct any activity on the ice of said reservoir within 100 feet of the Route 9 bridge, said bridge not being construed to include the causeway;

(7) All activity whether of recreational, occupational, or other nature, in or on the waters of said reservoir within a distance of 2,000 feet of the water supply intake structure, the farthest extent of said area to be marked by signs or buoys, is hereby prohibited;

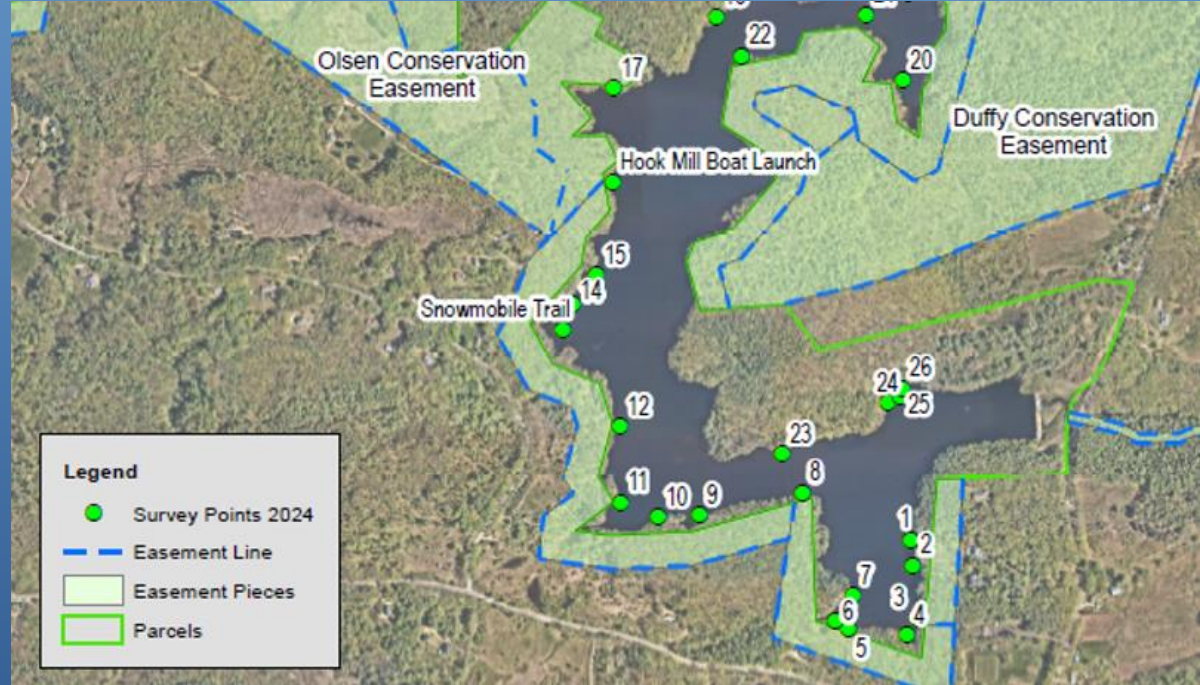
(8) A person shall not throw, deposit, or allow to remain upon the ice of the waters of said reservoir or upon the ice of any inlet thereof or tributary thereto, any sewage or other waste as defined in RSA 485-A:2; and

(9) A person shall not operate any seaplane or any motor vehicle as defined in RSA 259:60, other than an all-terrain vehicle as defined in RSA 215-A:1, 1-b or a snowmobile as defined in RSA 215-A:1, XIII, on any portion of said reservoir.

Effective Date: 5/20/2014

Bellamy Reservoir Source Protection

- Shoreline Surveys



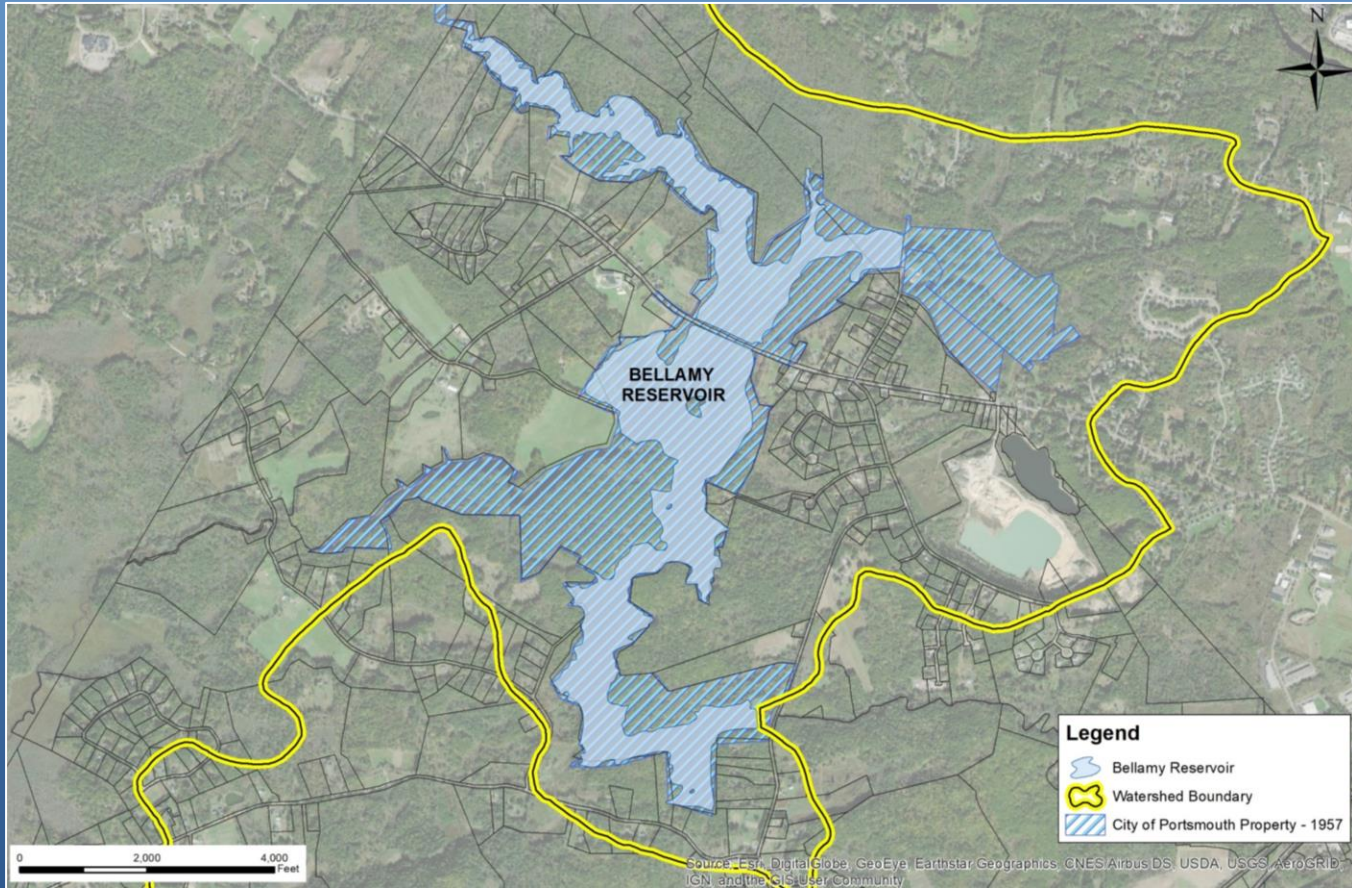
Bellamy Reservoir Source Protection

- Launch Site / Roadside Inspections and Cleanup

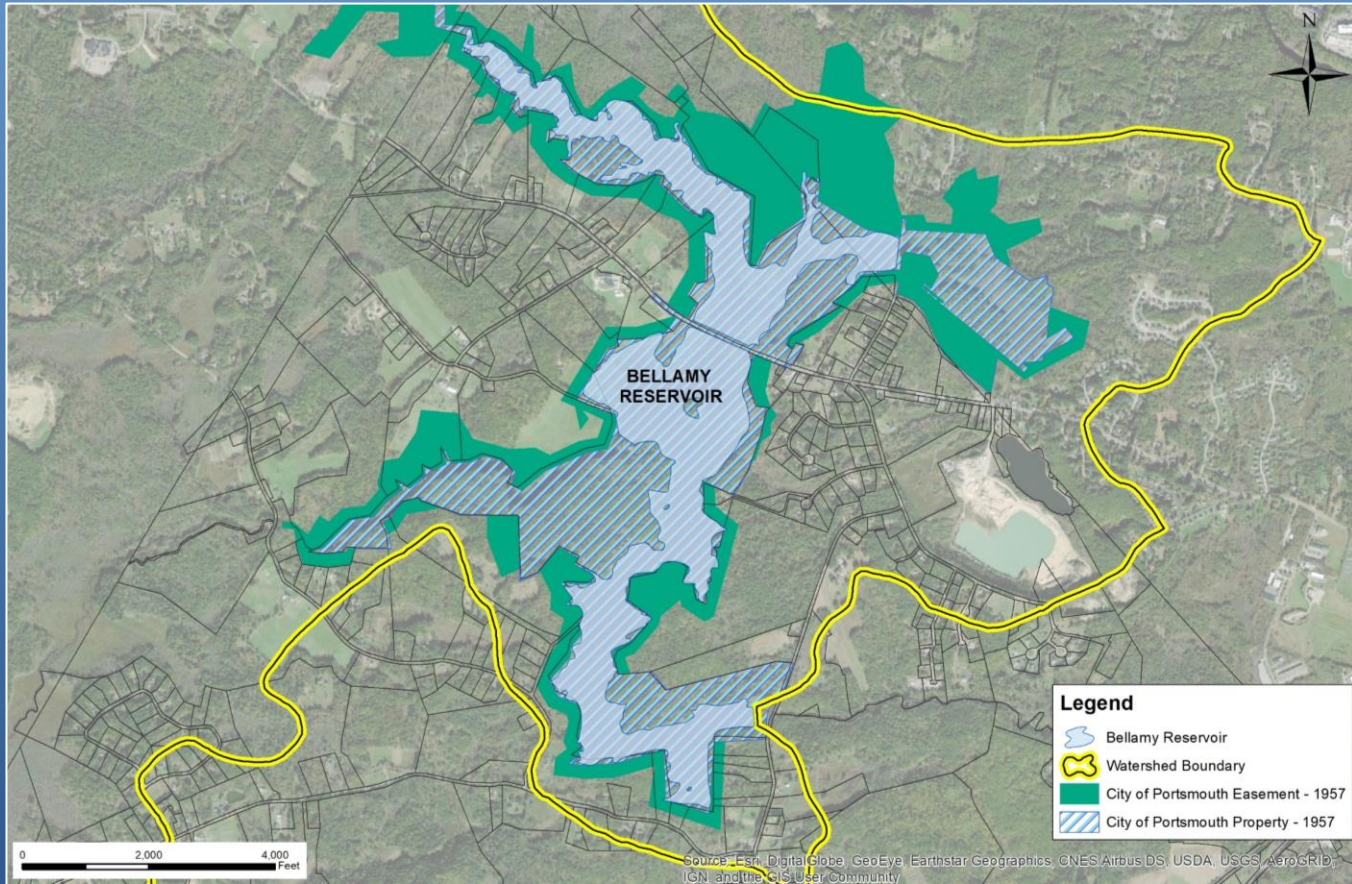


Bellamy Reservoir Land Protection

Portsmouth Owned Property

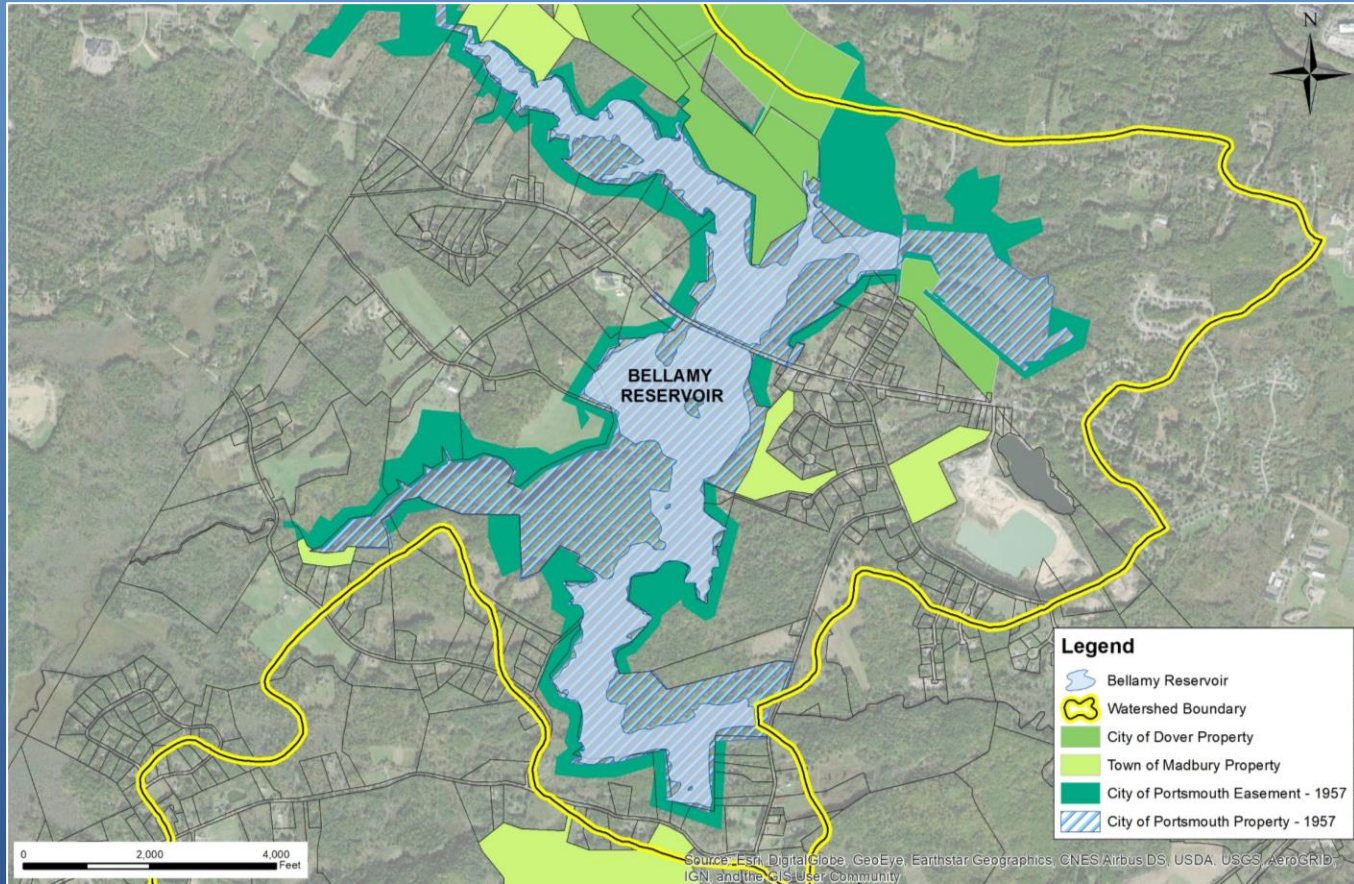


Bellamy Reservoir Land Protection Portsmouth Easements (1960)

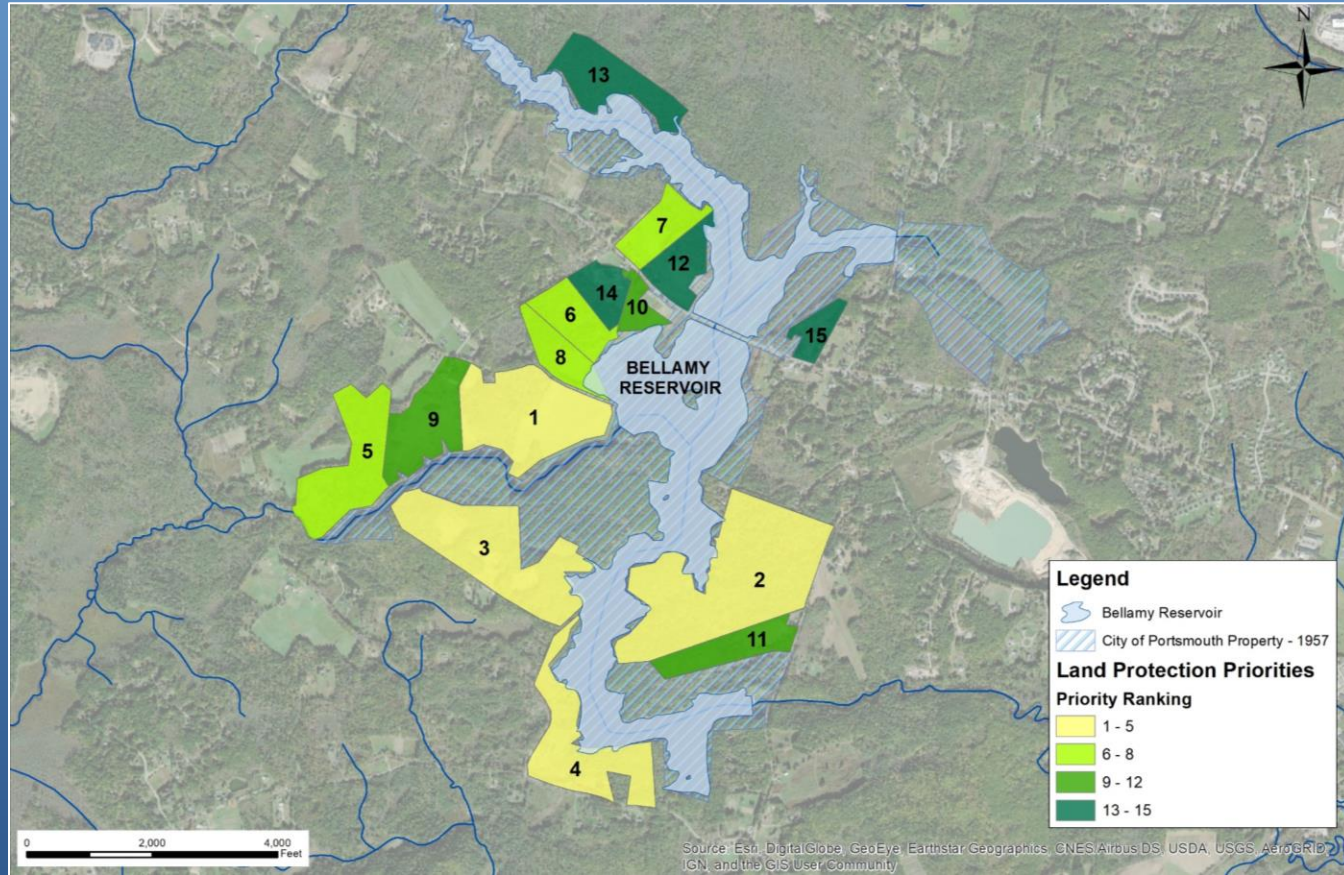


Bellamy Reservoir Land Protection

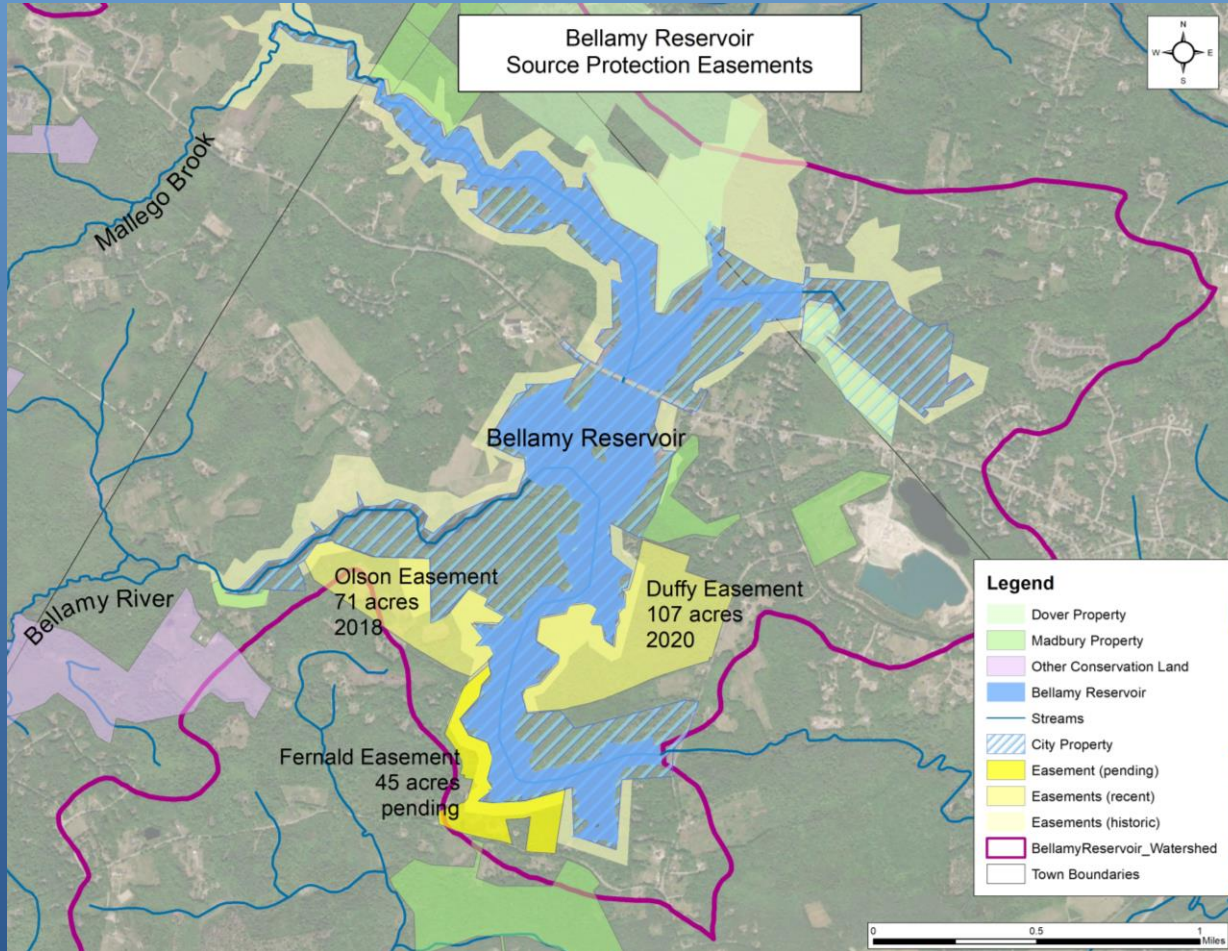
City and Town Control



Bellamy Reservoir Land Protection Priority Properties – Final Ranking



Bellamy Reservoir Land Protection



Bellamy Reservoir Easement Monitoring



CONSERVATION EASEMENT MONITORING REPORT

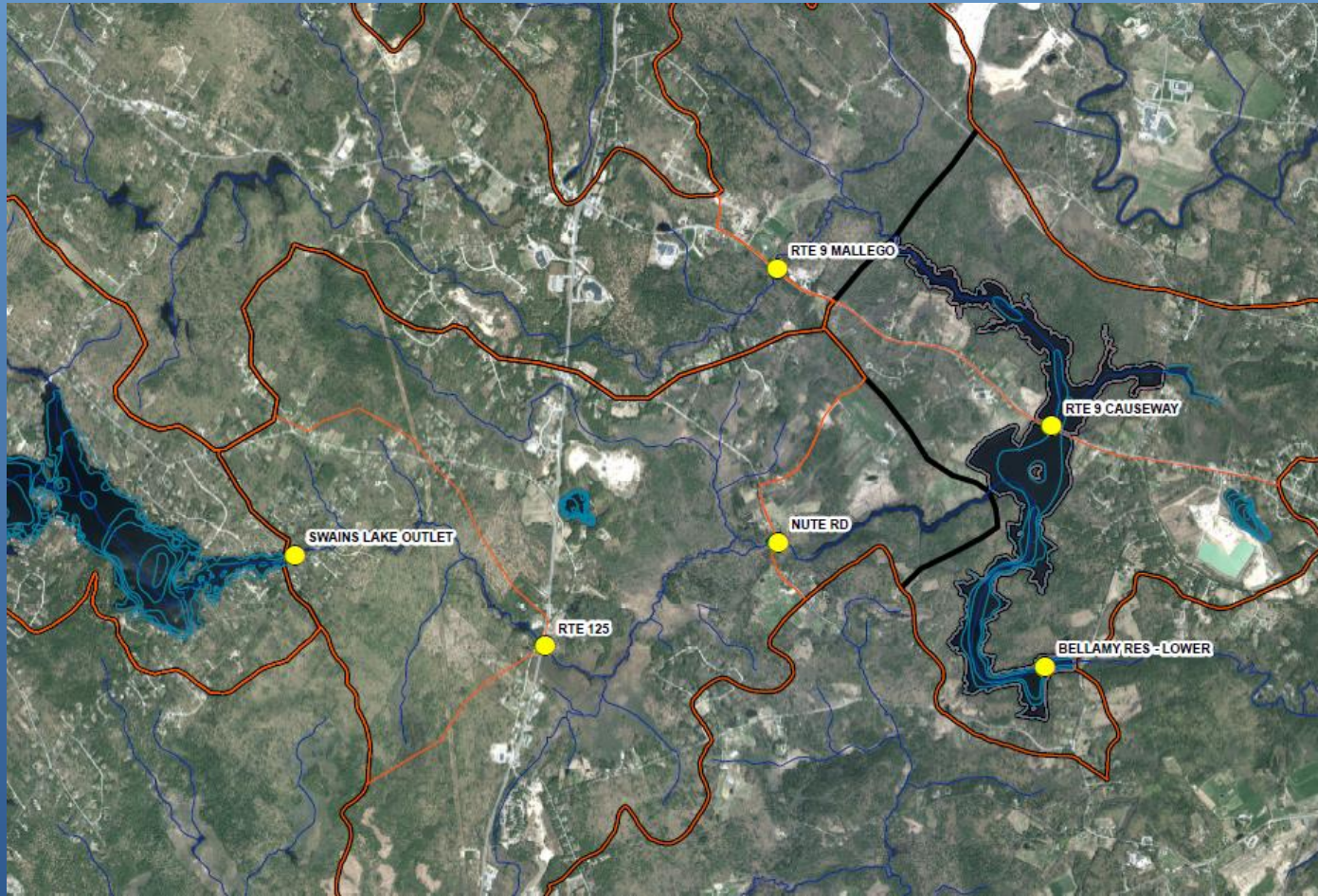
CITY OF PORTSMOUTH NEW HAMPSHIRE
WATER DIVISION

Photo Point #5



Figure 5. Ladder sitting in swampy area that connects part of the Bellamy River to the reservoir.
Note: Located across the river in an inaccessible location on the property due to water level.

Bellamy Reservoir Water Quality Monitoring



Bellamy Reservoir Water Quality Monitoring

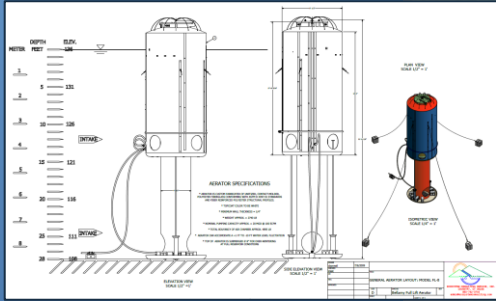
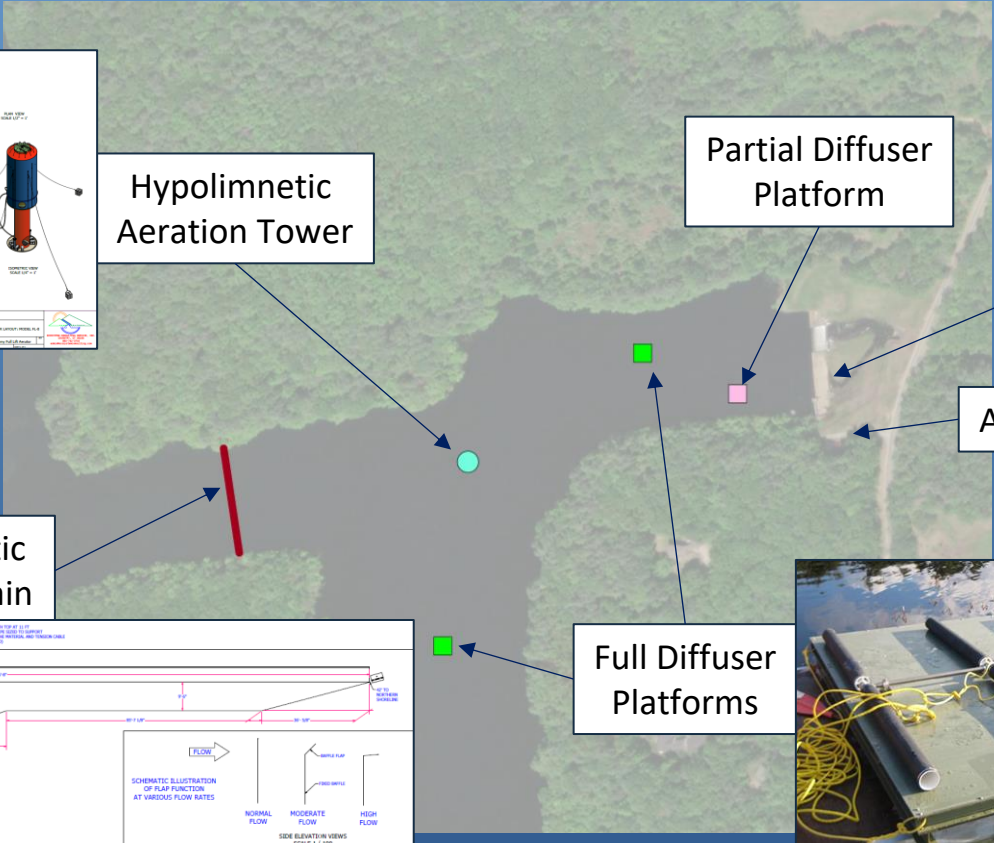
Reservoir & Watershed

- pH
- Conductivity
- Dissolved Oxygen
- Temperature
- Iron
- Manganese
- UV 254 Absorbance
- Color
- Turbidity
- Total Phosphorus
- Phycocyanin
- PFAS

Raw Water At Treatment Plant

- pH
- Conductivity
- Dissolved Oxygen
- Temperature
- Alkalinity
- Color
- Turbidity
- UV 254 Absorbance
- Iron
- Manganese
- Phycocyanin
- PFAS
- Total Organic Carbon

Bellamy Reservoir Aeration System



Hypolimnetic Aeration Tower

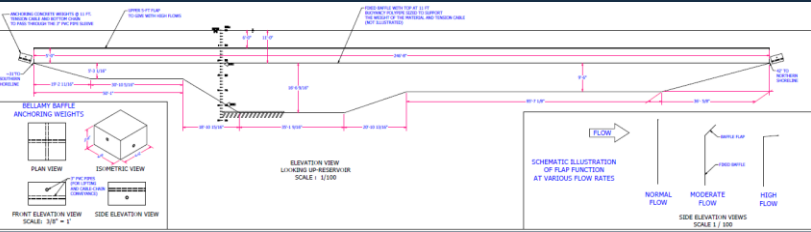
Partial Diffuser Platform

Dam

Air Compressors

Hypolimnetic Baffle Curtain

Full Diffuser Platforms



Cyanobacteria Presentation

Mariah Habershaw
Water Quality Specialist

Cyanobacteria in the Bellamy Reservoir

The City of Portsmouth's Journey with Cyanobacteria



What IS Cyanobacteria?



- Commonly referred to as *blue-green algae*
- Have likely been around for over 3 billion years!
- One of the most numerous taxon to have ever existed on Earth and the first organisms to have produced oxygen
- Unicellular organisms that relate to bacteria due to their cells lacking a nucleus but are more similar to algae because they undergo photosynthesis.
- Unharmful and natural until blooms form, which could lead to the production of *cyanotoxins*



Conditions that enhance Cyanobacteria bloom growth:

- Extended periods of direct sunlight
- Excess nutrient availability, specifically *nitrogen* and *phosphorus*, from runoff of pesticides, fertilizers, and failing septic systems
- Calm or stagnant water, moving with the wind
- Increased precipitation and changes in climate are linked to an increase in cyanobacteria blooms in recent years



IDENTIFYING A HARMFUL ALGAL BLOOM (HAB)

This quick guide provides a visual comparison of appearance and color and odor that can be helpful in distinguishing non-toxic green algae and aquatic plants from potentially toxic cyanobacteria blooms or harmful algal blooms (HABs).

Non-toxic Algae & Plants

Cyanobacteria/HAB

APPEARANCE



Rooted Plants



Floating Plants



Plant-like Algae



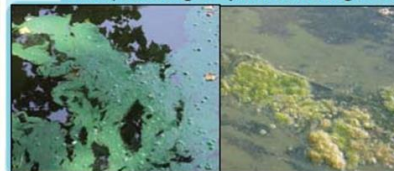
Filamentous Algae



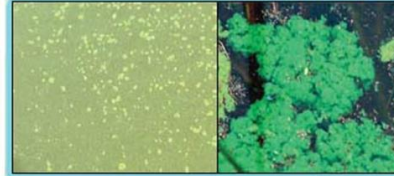
Paint or Soup



Scum, Bubbling or Spit-like Floating Foam



Lettuce or Chopped Grass



Spires



Mats



Blobs



Non-toxic Algae & Plants

Cyanobacteria/HAB

COLOR



Algae and aquatic plants are usually green but can appear yellow or brown as they die down.



Cyanobacteria get their name from their blue-green pigment but blooms can often look green, blue-green, green-brown, or red.



ODOR



Algae and aquatic plants are usually neutral or leafy in scent, but when dying or dead smell musty/rotting.



Cyanobacteria blooms can have a distinctive smell, sometimes described as gasoline, septic or fishy.

Effects of cyanotoxins

- EPA Drinking Water Health Advisory Limits:
 - Cylindrospermopsin:
 - Infants and pre-school= 0.7 µg/L
 - School-age children and adults= 3.0 µg/L
 - Microcystins:
 - Infants and pre-school= 0.3 µg/L
 - School-age children and adults= 1.6 µg/L
- Cyanotoxins can be harmful to pets, livestock, wildlife, and people.
- Harmful algal blooms can create taste and odor problems

Cyanotoxin	Number of Variants	Primary Organ Affected	Health Effects ¹	Most Common Cyanobacteria Producing Toxin ²
Microcystins	>100	Liver	Abdominal pain Vomiting and diarrhea Liver inflammation and hemorrhage	<i>Microcystis</i> , <i>Dolichospermum</i> (previously <i>Anabaena</i>), <i>Nodularia</i> , <i>Planktothrix</i> , <i>Fischerella</i> , <i>Nostoc</i> , <i>Oscillatoria</i> , and <i>Gloeotrichia</i>
Cylindrospermopsin	3	Liver	Acute pneumonia Acute dermatitis Kidney damage Potential tumor growth promotion	<i>Raphidiopsis</i> (previously <i>Cylindrospermopsis</i>) <i>raciborskii</i> , <i>Aphanizomenon flos-aquae</i> , <i>Aphanizomenon gracile</i> , <i>Aphanizomenon ovalisporum</i> , <i>Umezakia natans</i> , <i>Dolichospermum bergii</i> , <i>Dolichospermum lapponica</i> , <i>Dolichospermum planctonica</i> , <i>Lyngbya wollei</i> , <i>Raphidiopsis curvata</i> , and <i>Raphidiopsis mediterranea</i>
Anatoxin-a group ³	2-6	Nervous System	Tingling, burning, numbness, drowsiness, incoherent speech, salivation, respiratory paralysis leading to death (symptoms observed in animals)	<i>Chrysochlorum</i> (<i>Aphanizomenon</i>) <i>ovalisporum</i> , <i>Cuspidothrix</i> , <i>Raphidiopsis</i> , <i>Cylindrospermum</i> , <i>Dolichospermum</i> , <i>Microcystis</i> , <i>Oscillatoria</i> , <i>Planktothrix</i> , <i>Phormidium</i> , <i>Dolichospermum flos-aquae</i> , <i>A. lemmermannii</i> , <i>Raphidiopsis mediterranea</i> (strain of <i>Raphidiopsis raciborskii</i>), <i>Tychonema</i> and <i>Woronichinia</i>
Saxitoxin	>50	Nervous System	Tingling, numbness, headaches, dizziness, nausea, vomiting and diarrhoea, temporary blindness, paralysis and death	<i>Aphanizomenon flos-aquae</i> , <i>Dolichospermum circinalis</i> , <i>Lyngbya wollei</i> , <i>Planktothrix spp.</i> and a Brazilian isolate of <i>Raphidiopsis raciborskii</i> .

¹ Sources: Health Effects Support Documents (HESD) for microcystins, cylindrospermopsin and anatoxin-a (US EPA c,d,e) and Testai et al., 2016

² Not all species of the listed genera produce toxin; in addition, listed genera are not equally as important in producing cyanotoxins.

³ The anatoxin-a group does not include the organophosphate toxin anatoxin-a(S) as it is a separate group. In the US, the most common member is thought to be anatoxin-a, and thus this toxin is listed specifically.

What Have We Seen? What
Are We Doing About It?



Our Experience with Cyanobacteria at the Bellamy Reservoir

• 2023:

- Small bloom accumulated near dam
- Notified NHDES and collected samples for enumeration and cyanotoxin testing on *the day of sighting*
- Identified species as *Dolichiospermum* (formerly *Anabaena*)
- Results:
 - 22,000 cells/mL of cyanobacteria in raw water (>70,000cells/mL is the recreational advisory limit)
 - Cyanotoxins= **non-detect** in raw water

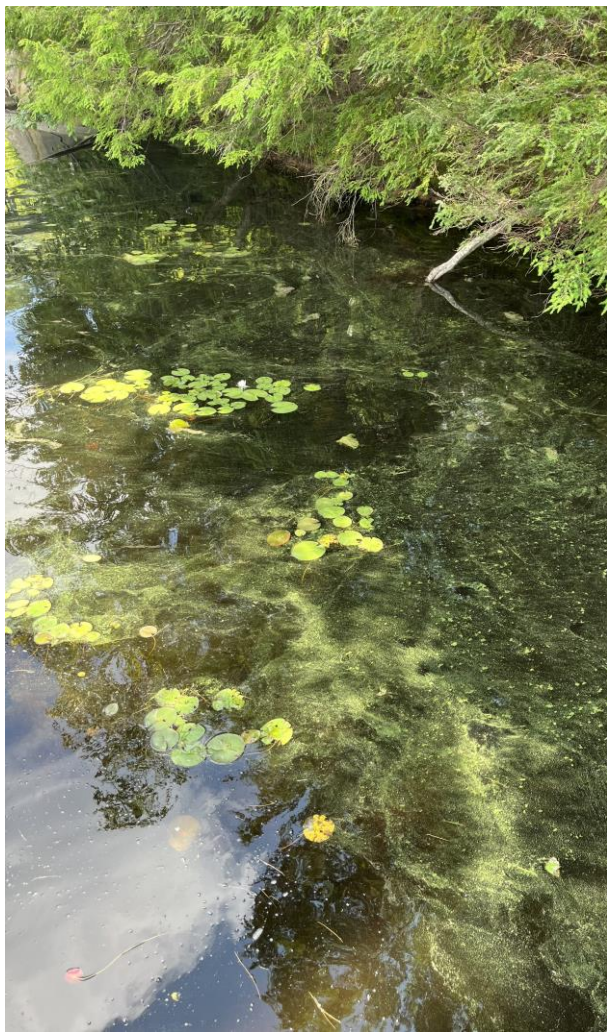
• 2024:

- Started seeing “pea-soup” in the reservoir
- Began to accumulate near the intake but never directly in front of it
- Identified species again as *Dolichiospermum* (*Anabaena*)
- Collected from intake at 6ft. Depth, Raw water intake at plant, and finish water for cyanotoxin testing (*overnight*) at accredited lab
- Results: Cyanotoxins= **non-detect**

Dolichiospermum (Anabaena)



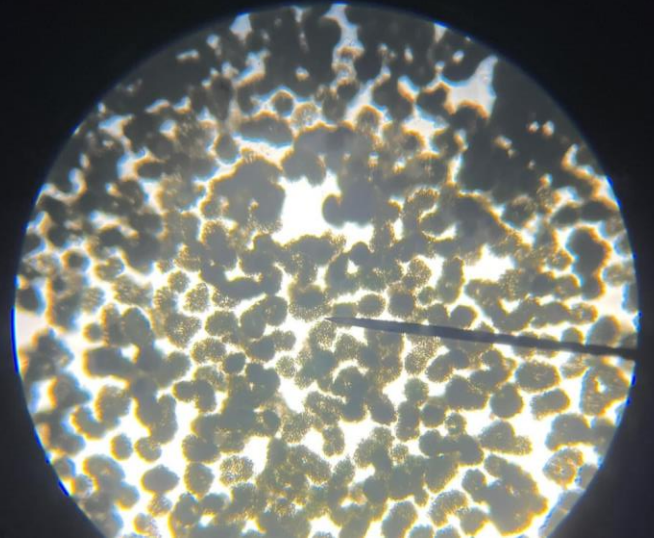
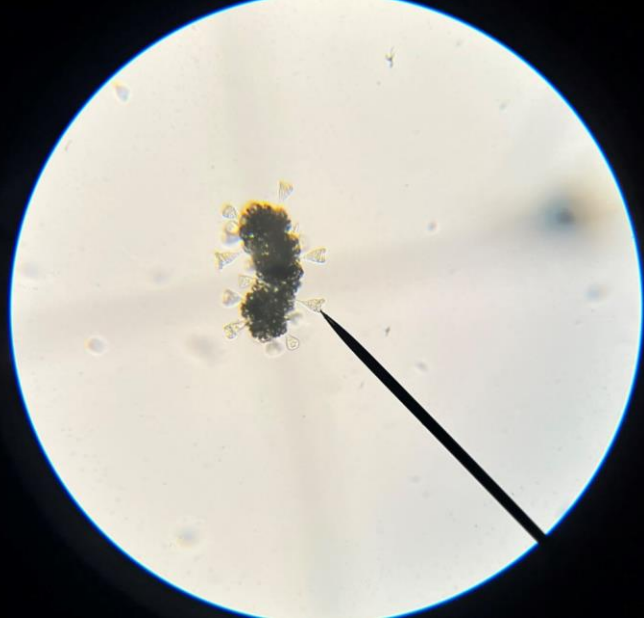








Looking closer...



Even Closer...



Monitoring Program

- Daily visual observations
- Reservoir monitoring including:
 - Measuring levels of **phycocyanin**, a blue-green color pigment found mostly in freshwater cyanobacteria, and **chlorophyll** (Both provide an estimation of algal abundance)
 - Weekly: in reservoir
 - Daily: Raw water (DAF and Filter in case of > 0 ug/L fluorometer reading in RAW water)
 - Microscope identification and enumeration
 - Biweekly monitoring with GZA
- Bi-weekly Tributary Monitoring

GZA Reservoir Monitoring



Proactive by Design



QUALITY ASSURANCE PROJECT PLAN FOR CYANOBACTERIA MONITORING

Bellamy Reservoir
Portsmouth
Rockingham County, New Hampshire

June 21, 2024
File No. 05.0047274.00

PREPARED FOR:
New Hampshire Department of Environmental Services
On Behalf of: City of Portsmouth NH
Department of Public Works – Water Division

GZA GeoEnvironmental, Inc.
135 Sheldon Rd, Box 1 Unit 1 | Manchester, CT 06042
860-544-9048

31 Offices Nationwide
www.gza.com

Copyright© 2024 GZA GeoEnvironmental, Inc.

- NHDES/EPA Grant: \$86,903
 - Selected by NHDES and EPA as a case study to address cyanobacteria in drinking water and to develop future monitoring and response plan
 - Monitoring and response plan to be completed by **March 2025**
- Biweekly Monitoring from July-October:
 - Nutrient testing: Ammonia, Nitrate/Nitrite, and Total Phosphorus
 - Plankton count, ID, and Pigment
 - Cyanotoxin testing *in the event of a bloom*
 - Collections from intake at 6ft. Depth, Raw water at plant, and finished water

Benefit of Dissolved Air Flootation (DAF) System

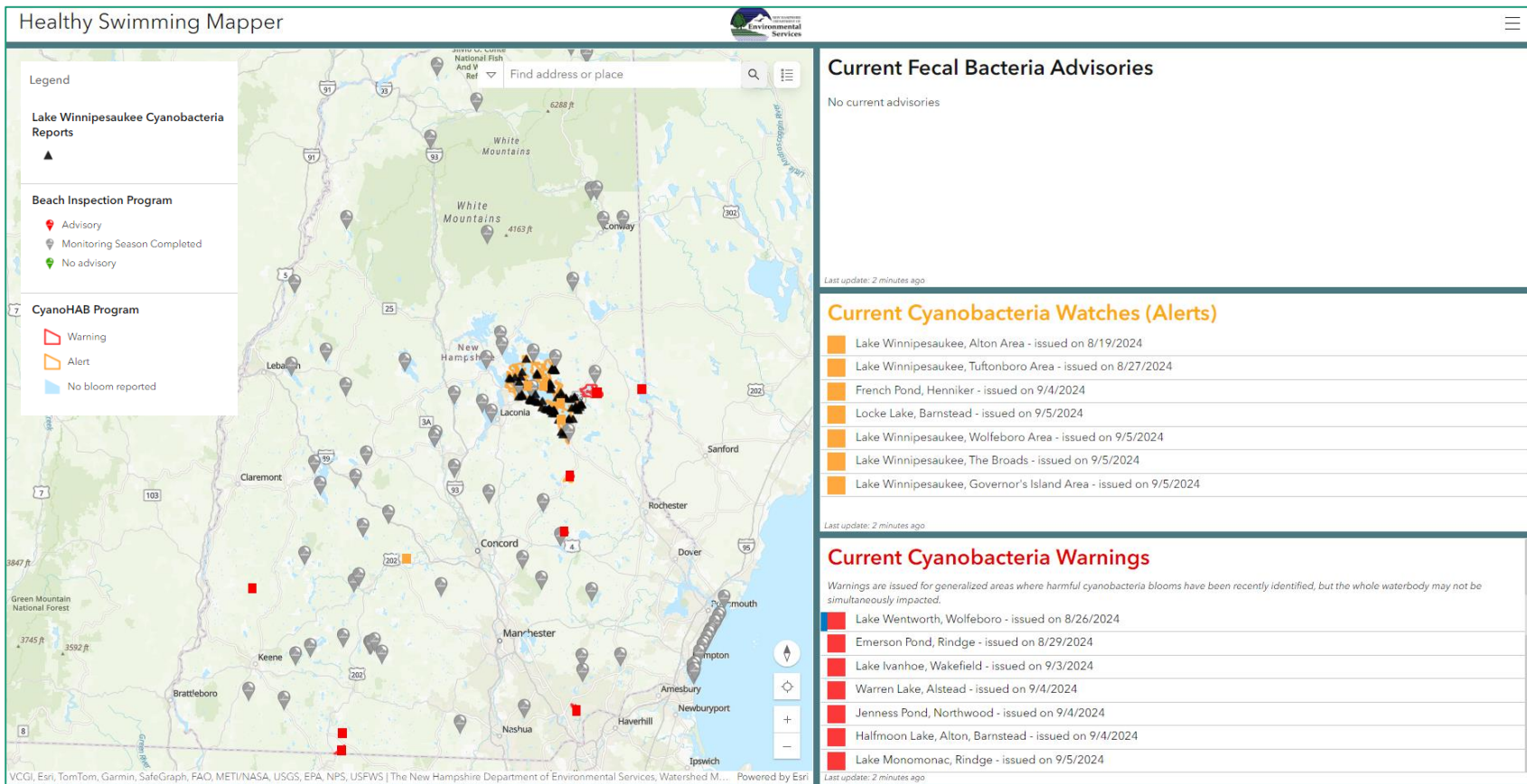
- Most toxin-forming cyanobacteria tend to float to the surface; therefore, a DAF system is more effective for removal of these blooms than conventional systems
- Coagulation, and flocculation also play a role in cyanobacteria removal: binding cyanobacteria cells to the floc
- Cyanobacteria is skimmed off the surface, allowing for the removal of cyanobacteria cells without causing cell damage

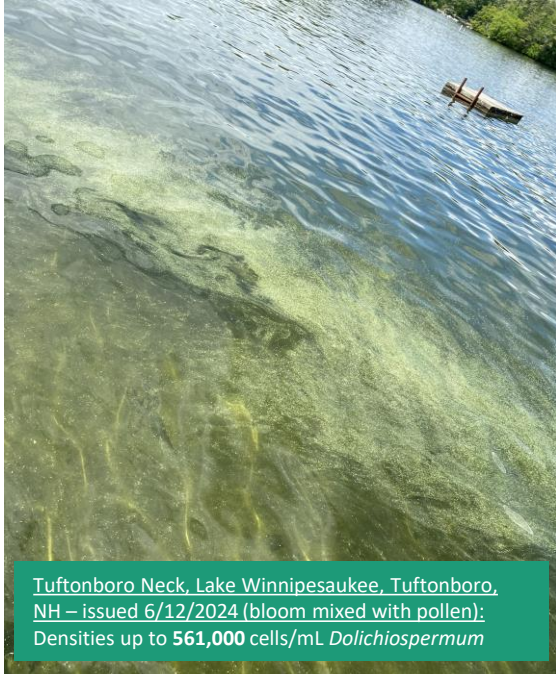


Operational Response to Cyanobacteria Blooms

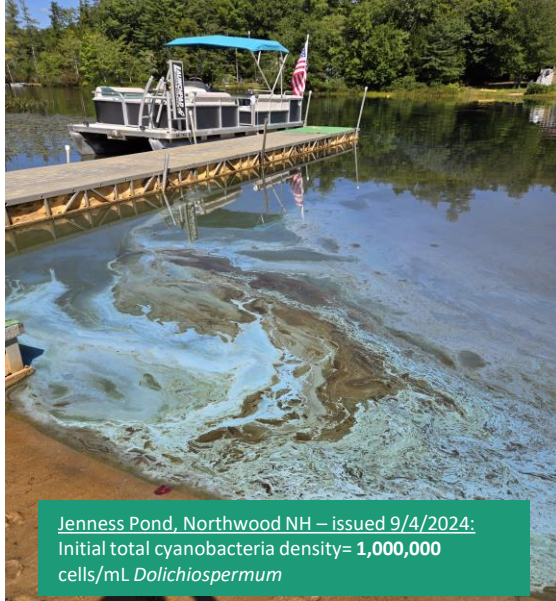
1. Activate diffuser in front of intake to disperse bloom
2. Reduce plant flow and blend with well water
3. Turn on/Introduce Powdered Activated Carbon (PAC)
4. Increase backwash frequency
5. Continue to test for phycocyanin at Raw, DAF, and Filtered water taps

Current Cyanobacteria Watches and Warnings for NH

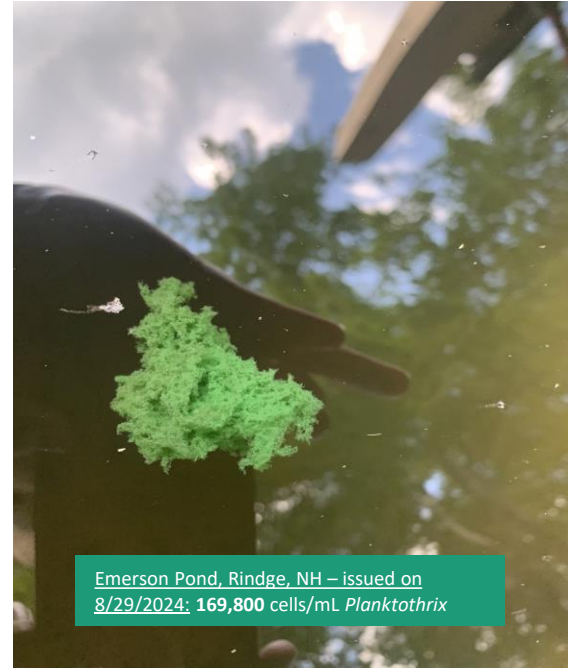




Tuftonboro Neck, Lake Winnepesaukee, Tuftonboro, NH – issued 6/12/2024 (bloom mixed with pollen):
Densities up to **561,000 cells/mL *Dolichospermum***

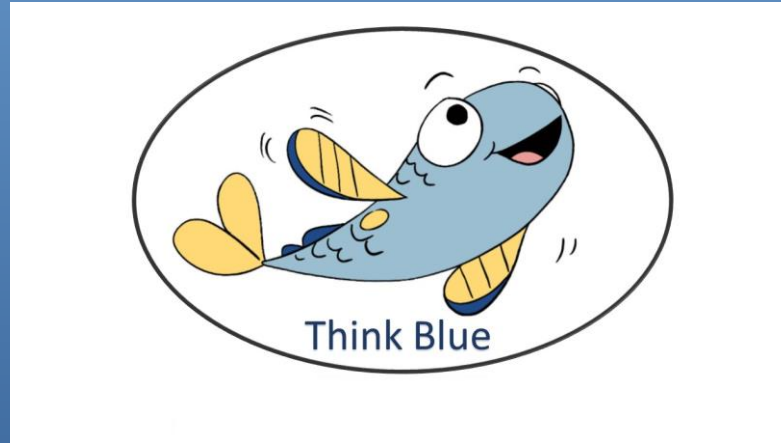


Jenness Pond, Northwood NH – issued 9/4/2024:
Initial total cyanobacteria density= **1,000,000 cells/mL *Dolichospermum***



Emerson Pond, Rindge, NH – issued on 8/29/2024: **169,800 cells/mL *Planktothrix***

Portsmouth and Pease Water Supply Update



Safe Water Advisory Group
September 10, 2024

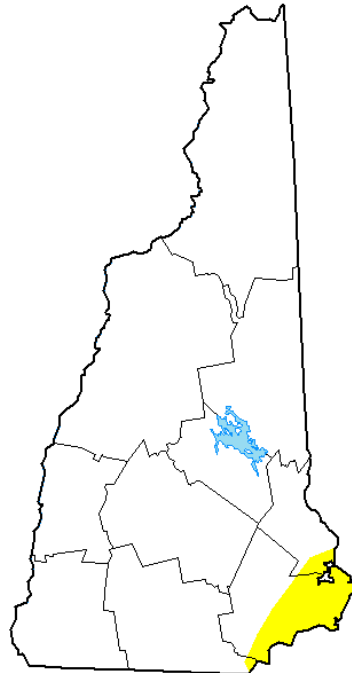
Drought Monitor

U.S. Drought Monitor New Hampshire







September 3, 2024

(Released Thursday, Sep. 5, 2024)

Valid 8 a.m. EDT



Intensity:

-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

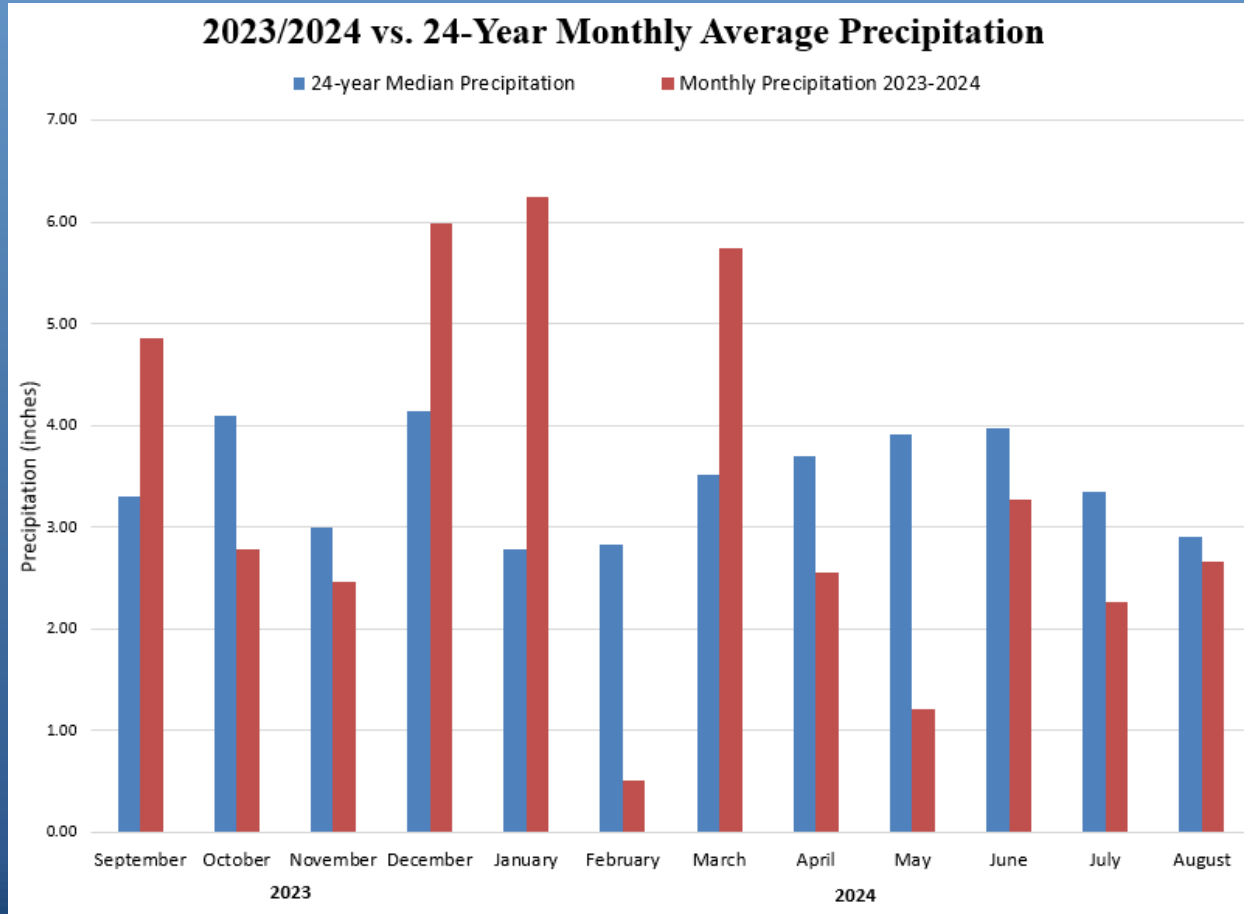
Author:

Lindsay Johnson
National Drought Mitigation Center

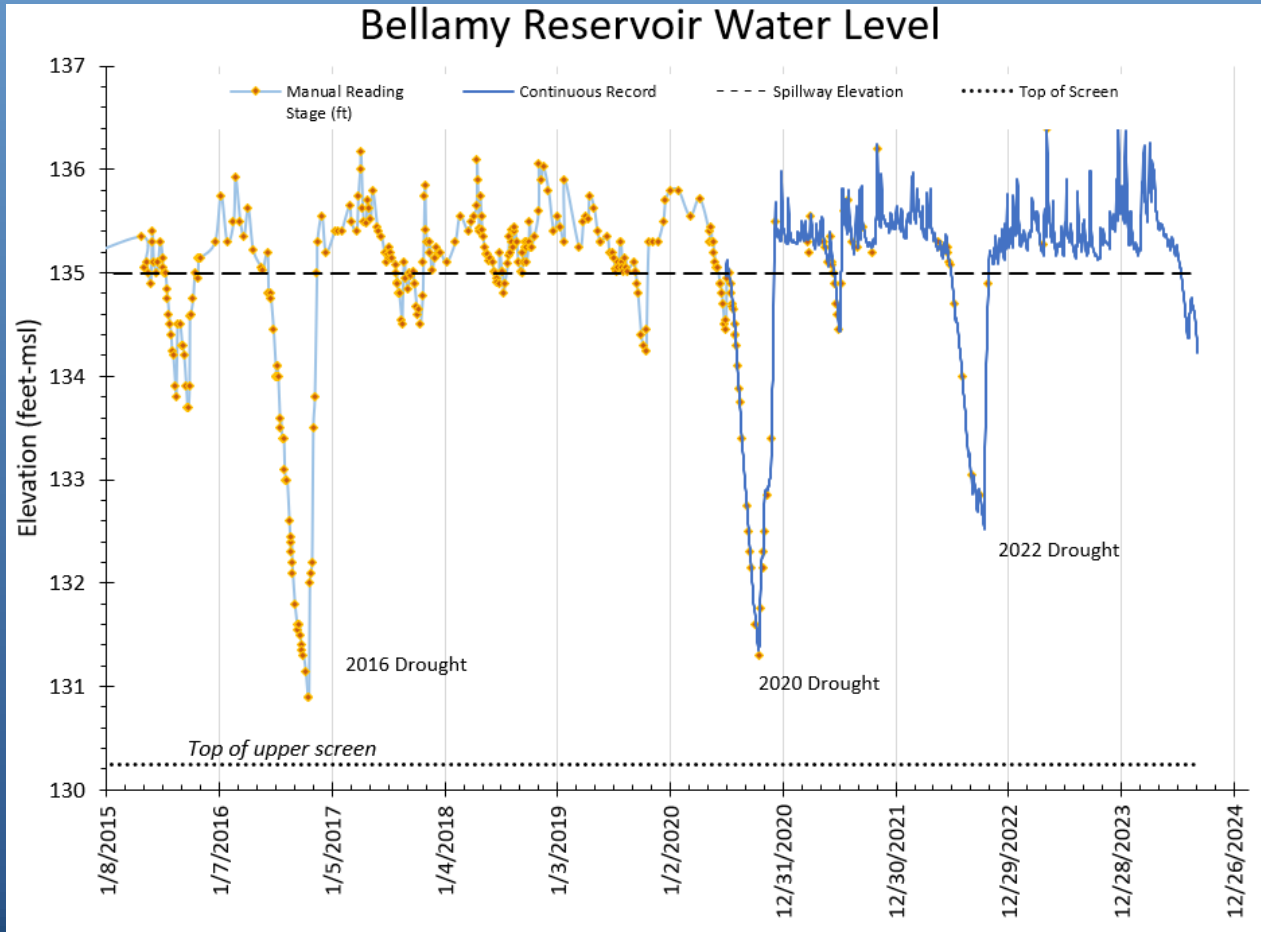


droughtmonitor.unl.edu

Precipitation – 89% of Annual Average

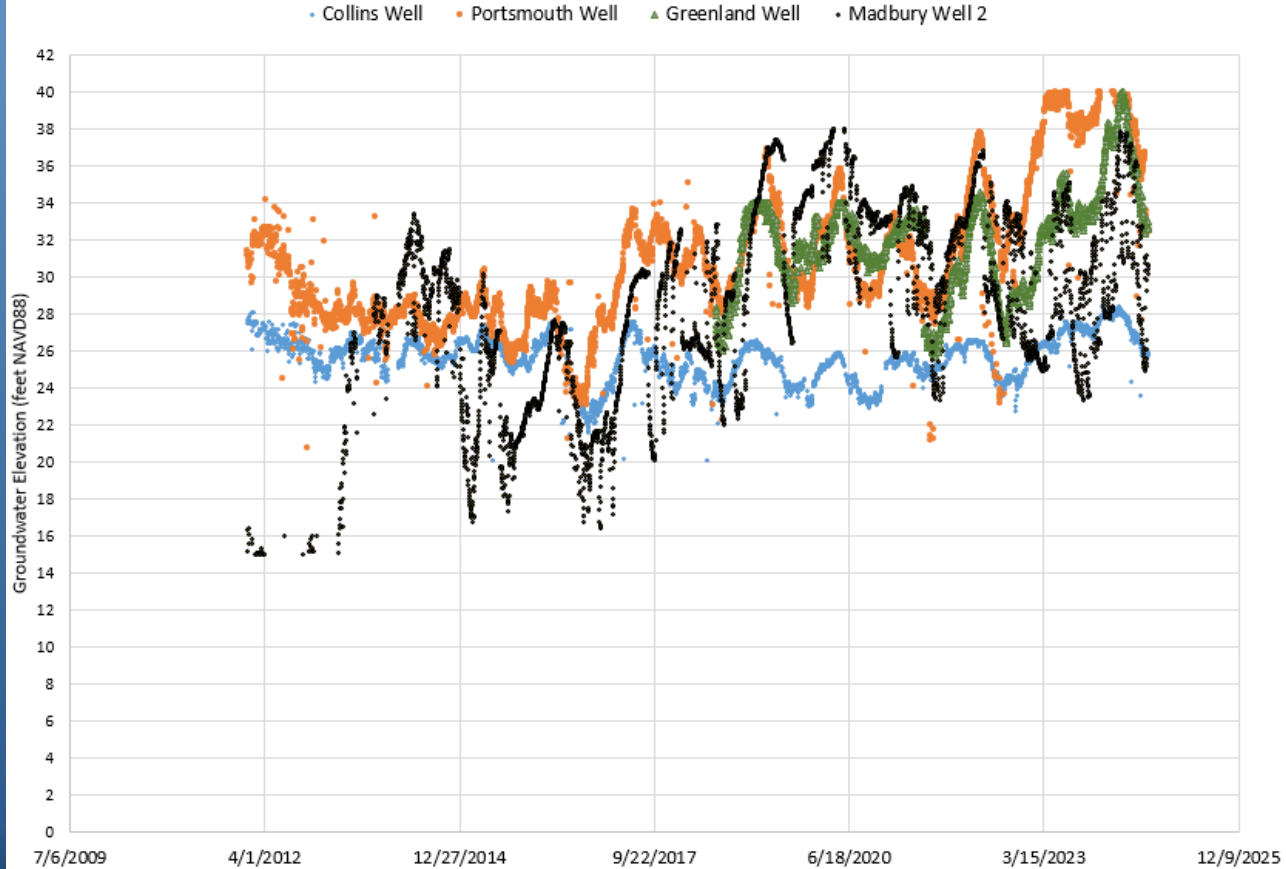


Surface Water Conditions

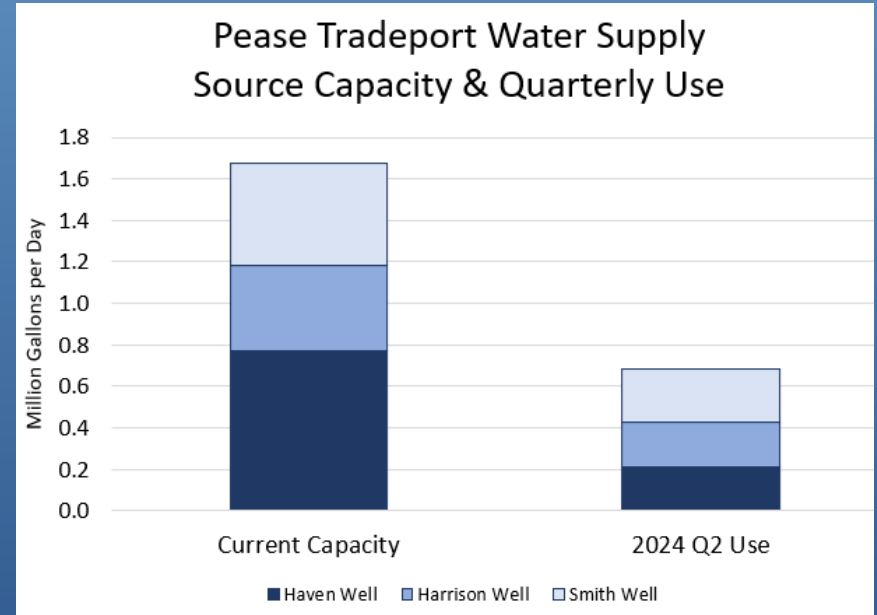
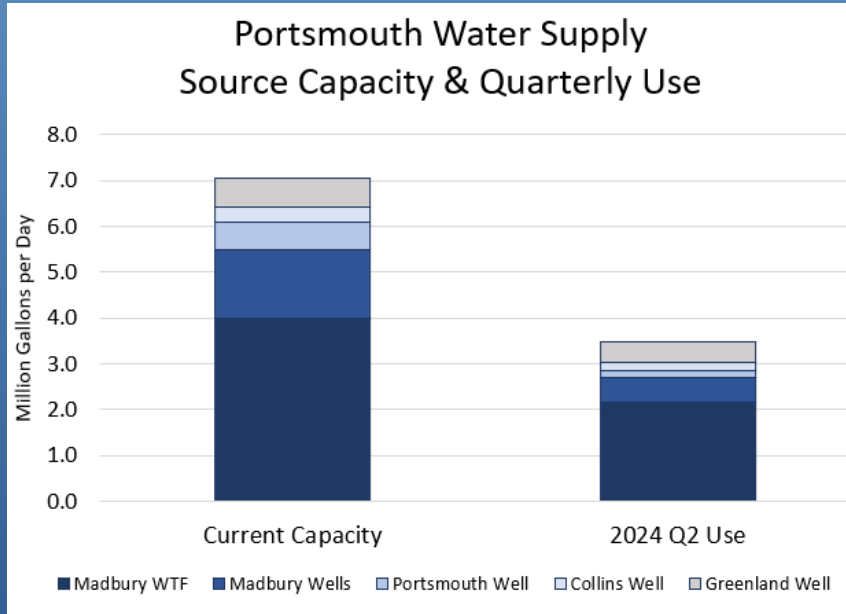


Groundwater Levels

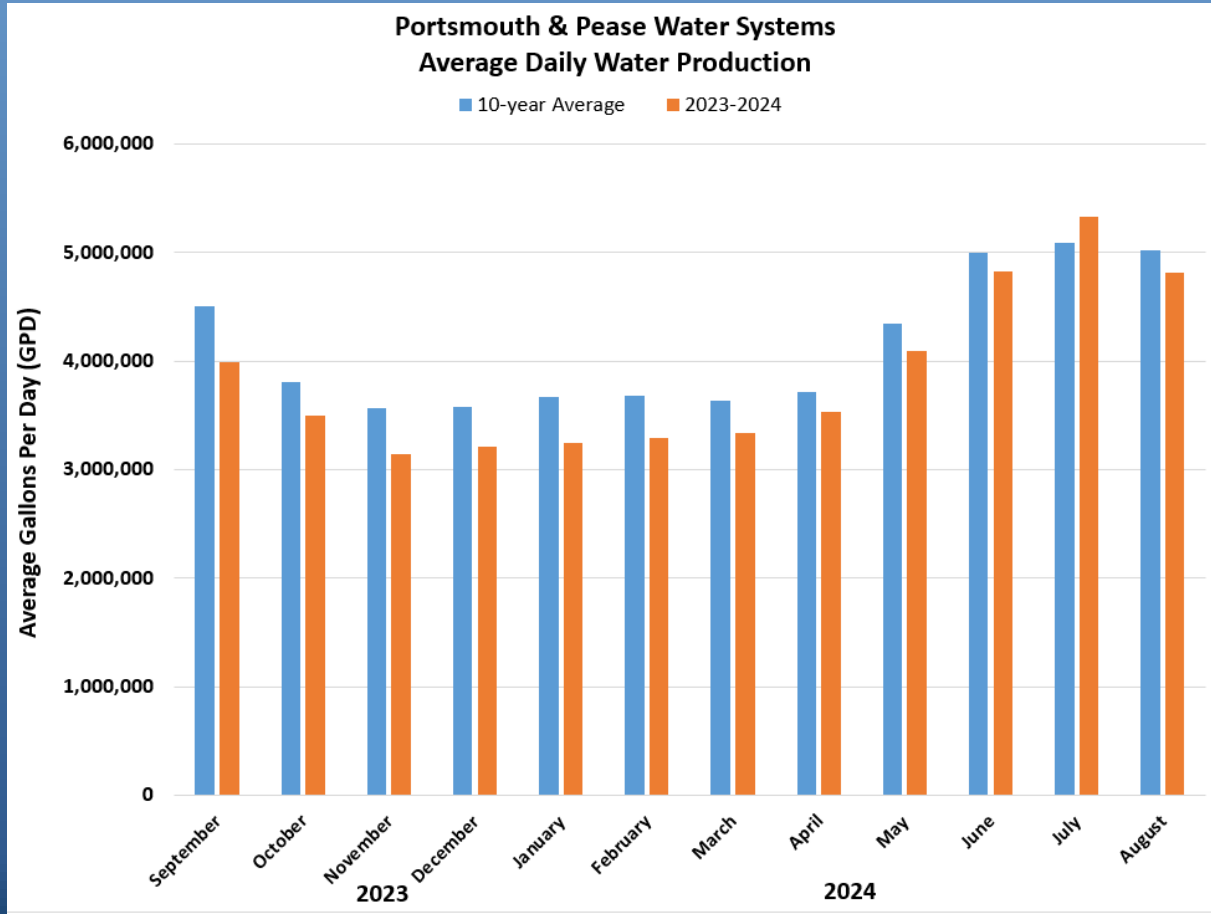
Supply Well Water Elevations



Supply Versus Demand and Source Utilization

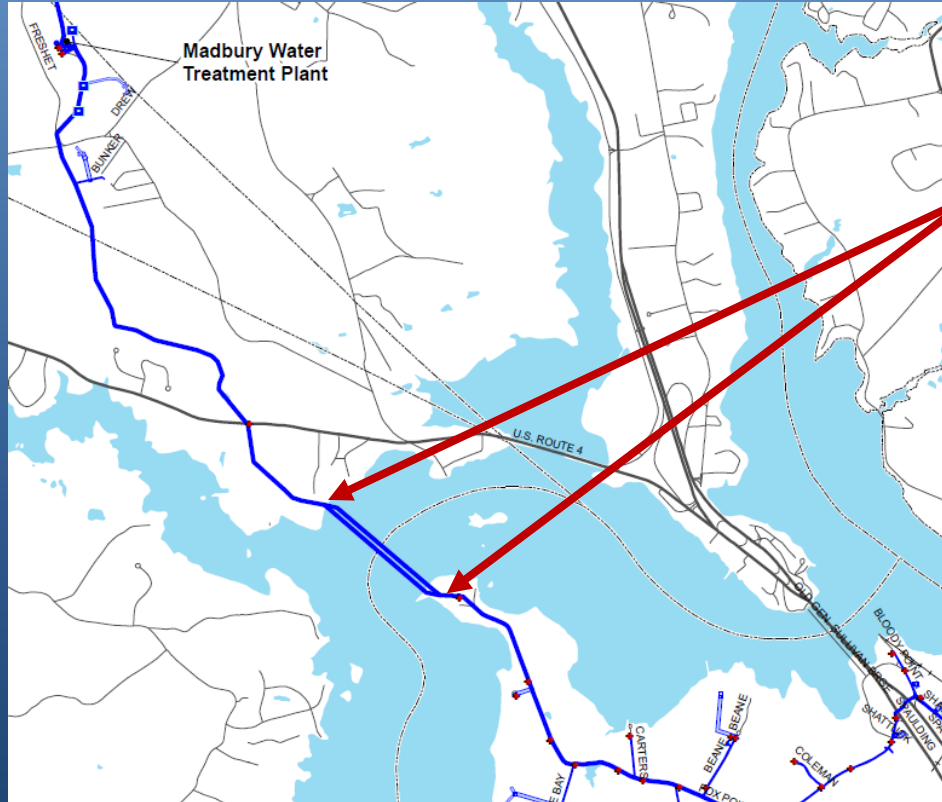


Supply Production



Projects Update

Little Bay Water Transmission Main Resilience Project



■ Phase 1 – Valve Project

- Construction is Complete
- Two new valves installed on the lines that run under Little Bay
- Two 20" taps and valves installed in the PCCP for third main preparation

■ Next Steps

- Permitting
- Re-Bid
- Evaluate Funding

Transmission Main Air Relief Valves and Easement Clearing

- Air Relief Valves are failing. One in Madbury was replaced in August 2024. Need to assess replacement of the other 26 valves
- Easement maintenance/clearing along the main from reservoir to Newington



Water Storage Tanks Restoration/Maintenance Planning

- Tank Inspections and Cleaning
- Prioritization of Storage Tank Painting and Restoration
- Near-Term and Long-Term Planning
- Hydraulic Assessment of Southern Portion of System and Greenland Area Pressure

AQUEOUS

INFRASTRUCTURE MANAGEMENT

Phone: 877.821.6138 | office@aqueousco.com

Report Da

Account Overview

Portsmouth NH Water System
Lafayette 7.5 MG Tank
Finished Water
96'H x 114'D
7500000
95 Constitution Ave, Portsmouth, NH 03801, USA
43.035506
-70.787505
Clean (Sediment Removal)|Inspection

e:



Report Review & Approval

David Cornish, President



PFAS Treatment Design

- Greenland Well
 - Preliminary design near completion
 - Granular Activated Carbon
 - New building needed
 - Road and power upgrades required
 - Proceeding with final design



PFAS Treatment Design

- Portsmouth & Collins Wells
 - Preliminary design near completion
 - Water from wells be combined for treatment at one facility
 - Granular Activated Carbon
 - Provisions for additional treatment incorporated in design
 - Submit Preliminary Design and cost estimate to Air Force

Other On-Going Projects

- Little Bay Road Water Main Replacement
- Hydraulic Model Update
- Smith Well Maintenance
- Collins Well 2 Permitting
- Service Line Inventory
- Service Line Replacement Plan
- Seacoast Reliability Project
- Portsmouth/Dover Emergency Interconnect
- Bellamy Dam Intake Modifications
- Water System Energy Audit
- Master Plan Update



PORTSMOUTH WATER SYSTEM'S FREE LEAD TESTING & SERVICE LINE INVENTORY UPDATES



BY MASON CACERES

ASSISTANT WATER RESOURCE MANAGER



TALKING POINTS

- FREE LEAD TESTING OPPORTUNITY UPDATES
 - DETECTED VS. NON-DETECTED CONCENTRATIONS
 - AT-HOME SAMPLE LOCATIONS
 - OUTREACH ANALYSIS
- LEAD AND COPPER RULE (LCR)
 - SERVICE LINE INVENTORY UPDATES
 - PROGRESS REPORTS BY ZONE & ACROSS SYSTEM
 - NEXT STEPS FOR LCRR/LCRI
 - LATEST LEAD & COPPER RESULTS (Q3 COMPLIANCE TESTING)



FREE LEAD TESTING OPPORTUNITY

- Forms of outreach:
 - Portsmouth Herald
 - City Newsletters
 - Post cards distributed during Lead Poisoning Prevention Week
 - Extras remain at public facilities
 - Resident notification through service line inventory process
- 55 participants provided with “ThinkBlue” retrieval code.
- 27 have submitted their samples and received results.
- Two rounds of reminder emails sent

FREE WATER TESTING FOR QUALIFIED WATER CUSTOMERS



The City of Portsmouth Water Division monitors for lead in drinking water in the Portsmouth and Pease Tradeport Water Systems to make sure there is no detectable lead in the City's supply. However, buildings with old plumbing systems could have lead components that may leach lead into tap water. Lead is particularly harmful for children under 6 years old.

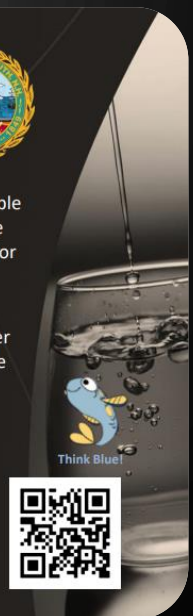
PORTSMOUTH WATER CUSTOMERS MAY QUALIFY FOR FREE TESTING

The City is contracting with an accredited laboratory to provide one sample kit (per residential customer) to test for lead in drinking water for customers served by the Portsmouth and Pease Tradeport Water Systems.

HOW CAN I TAKE ADVANTAGE OF THIS OPPORTUNITY?

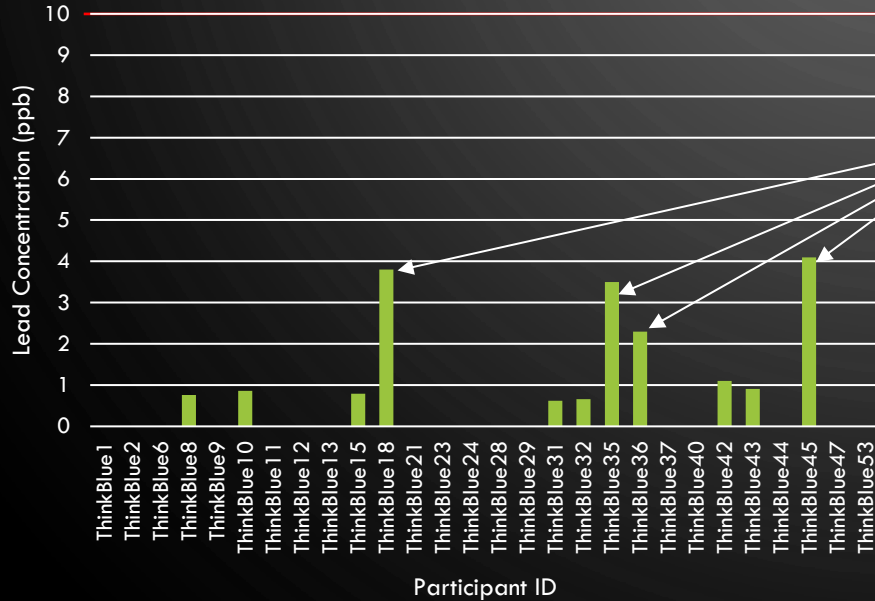
Contact Mason Caceres, Water Quality Specialist II, at (603) 312-3804 or mecaceres@cityofportsmouth.com for a one-time code that will allow you to obtain a sample kit. Detailed instructions will be provided.

* The city has budgeted \$2,500 for this program. Kits will be distributed while supplies last.

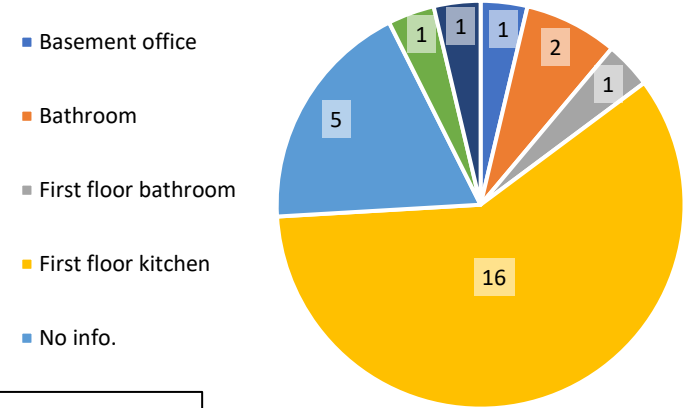


RESULTS SINCE ROLLOUT (OCTOBER 2023)

Free Lead Testing Opportunity - Results per Participant

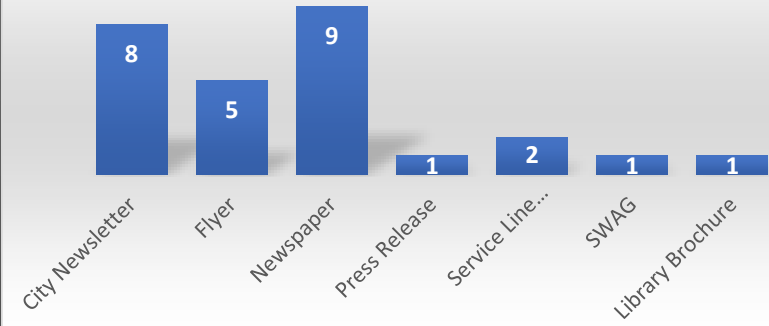


Participant Sample Tap Locations

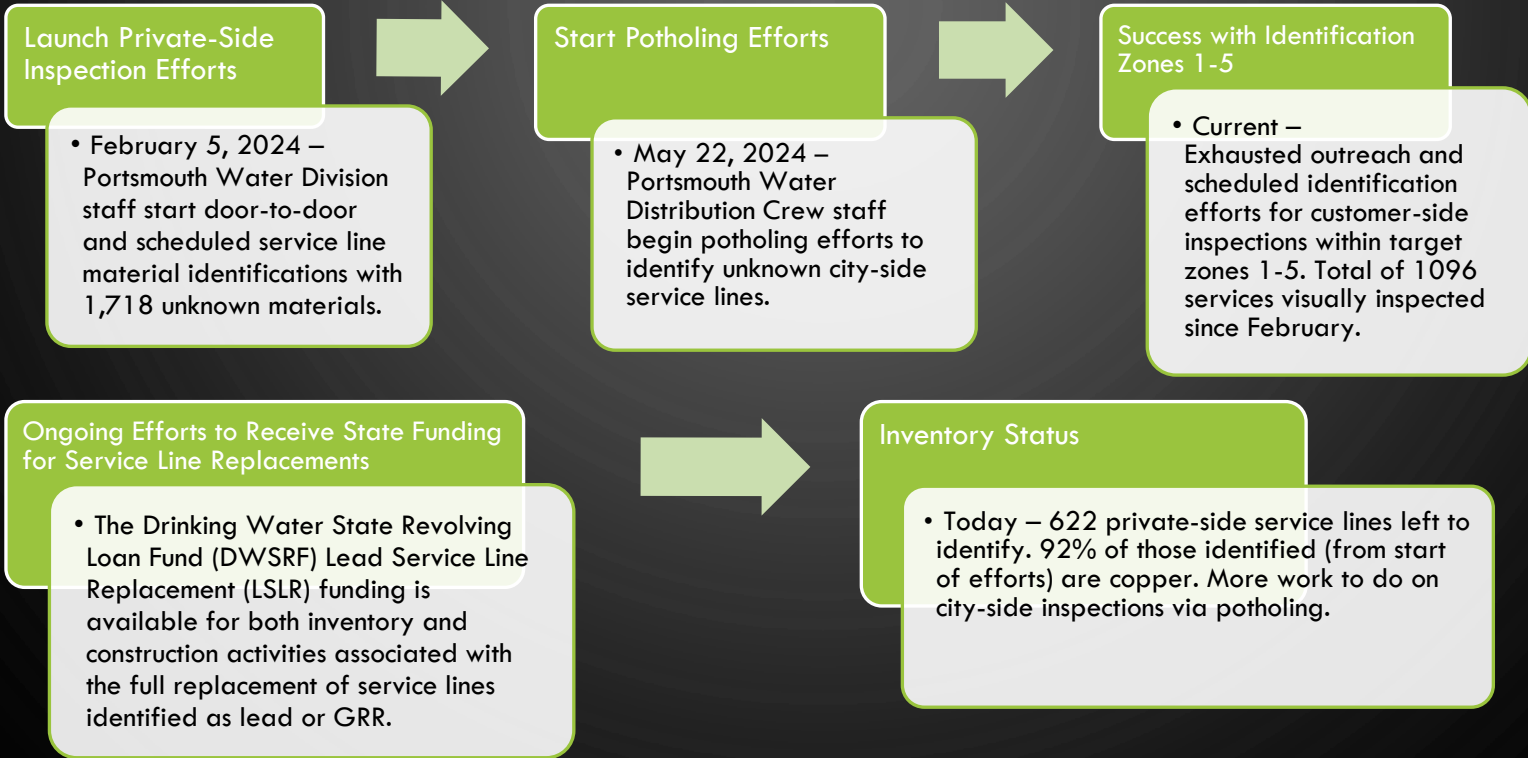


Bathroom taps

Effective Forms of Outreach

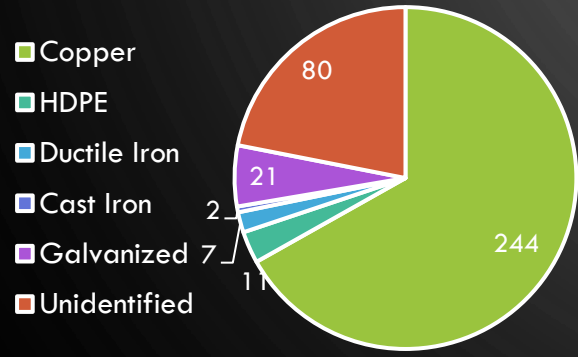


LEAD SERVICE LINE INVENTORY – TIMELINE UPDATE

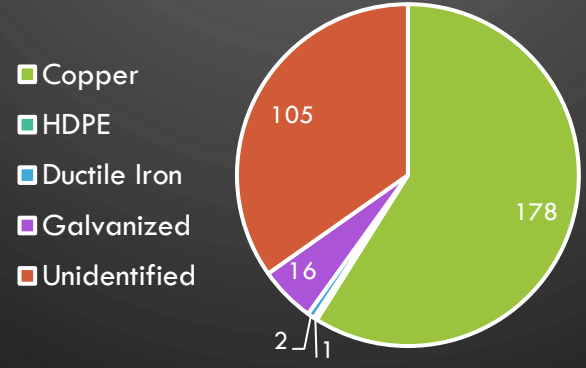


INVENTORY UPDATES BY ZONE

Zone 1 Customer-Owned Service Line Materials



Zone 2 Customer-Owned Service Line Materials



Total service connections within Zone 1 = 365

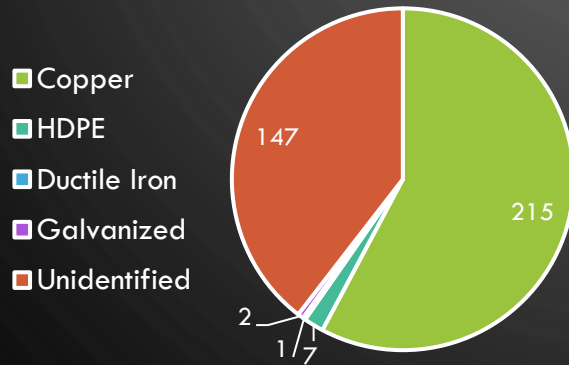
Total service connections within Zone 2 = 305

2024 Portsmouth Water Service Verification Zones

The City of Portsmouth has been divided into 4 Zones based upon population density. This allows the municipal staff to effectively manage the process of verifying materials at an estimated one zone per month. Note - this map does not contain areas of other towns to which we serve.

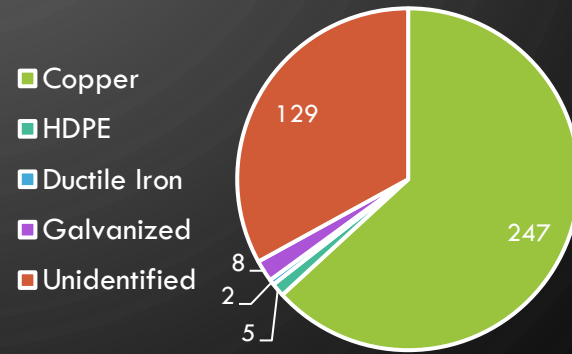
INVENTORY UPDATES BY ZONE - CONTINUED

Zone 3 Customer-Owned Service Line Materials



Total service connections within Zone 3 = 372

Zone 4 Customer-Owned Service Line Materials



Total service connections within Zone 4 = 392

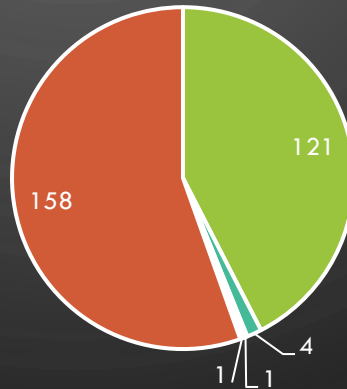
INVENTORY UPDATES BY ZONE - CONTINUED

Zone 5 Customer-Owned Service Line Materials (ongoing)

Zone 5 - Town's Served:

- Greenland
- Rye
- Newington
- New Castle

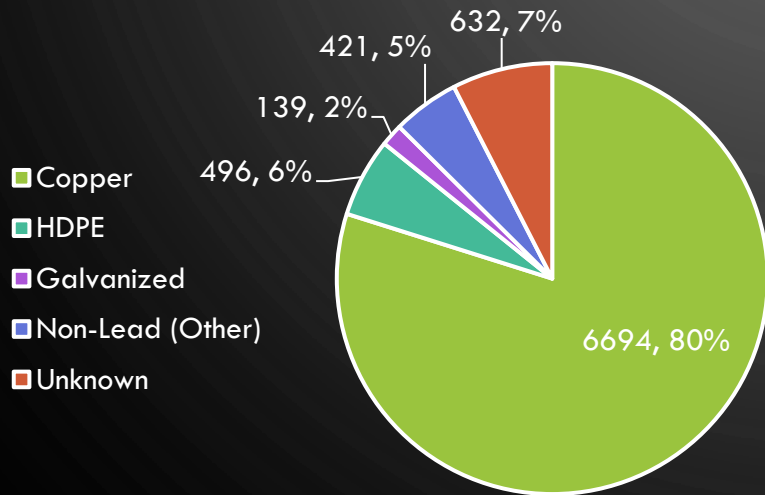
- Copper
- HDPE
- Ductile Iron
- Galvanized
- Unidentified



Total service connections within Zone 5 = 285

SERVICE LINE INVENTORY STATUS REPORT - TOTAL

Portsmouth's Customer-Owned Service Lines



- Total service connections throughout Portsmouth's distribution system: 8,382
- Pipe materials identified on customer side: 7,750
 - 632 remaining
- City-side identifications in progress
- **No sign of lead service lines (on either side)!**
- 139 galvanized services found so far
 - Will require notification to property owners by Nov. 17 and eventual replacement under LCRR.

NEXT STEPS

- Baseline inventory will be submitted to NHDES on October 16, 2024.
 - NHDES does not expect a completed inventory, but the more information, the easier it will be for PWSs long-term.
- Begin Public Notices to all LSL, GRR and unknown services.
- New sample sites due by January 31, 2025 following new site selection structure (see Fig. 1).
- Lowering of lead action limit from 15 ppb to 10 ppb starting 2027.
- Must verify/identify 100% of unknown service line materials by 2037
- Must replace 100% of LSLs and GRRs by 2037.
- Quarter 3 Lead and Copper Rule compliance sampling completed



Lead service line

Tier 1

Single-family homes with LSLs

Use only these sites unless insufficient sites are present.

Tier 2

Other buildings with LSLs

Tier 3

Single-family homes with galvanized service lines downstream of a current or former LSL

Tier 4

Single-family homes with copper and leaded solder

Tier 5

Representative sites

Fig. 1



LEAD & COPPER COMPLIANCE TESTING RESULTS

PORTSMOUTH WATER SYSTEM LEAD AND COPPER COMPLIANCE HISTORY

<u>Date</u>	<u>Sampling Frequency</u>	<u># Samples Collected & Analyzed</u>	<u>Lead 90th percentile (ppb)</u>	<u>Copper 90th percentile (ppm)</u>
July 2024	Annual	30	1	0.115
July 2023	Semi-Annual	60	1	0.167
January 2023	Semi-Annual	61	1	0.244
2022	Annual	30	1	0.141
2021	Annual	31	2	0.238
2020	Annual	31	1	0.117
2019	Annual	32	0	0.205
July 2018	Semi-Annual	61	1	0.187
January 2018	Semi-Annual	62	1	0.162
2016	Triennial (once every 3 yrs.)	34	7	0.135
2013	Triennial (once every 3 yrs.)	30	1	0.110
2010	Triennial (once every 3 yrs.)	30	1	0.130
2007	Annual	30	5	0.185
2006	Annual	30	5	0.194
2005	Annual	30	13	0.239
July 2004	Semi-Annual	61	5	0.261
January 2004	Semi-Annual	61	13	0.291
July 2003	Semi-Annual	61	16	0.296
January 2003	Semi-Annual	60	12	0.252

QUESTIONS?

EPA
CONCERNED ABOUT LEAD IN YOUR DRINKING WATER?

Sources of **LEAD** in Drinking Water

Copper Pipe with Lead Solder: Solder made or installed before 1986 contained high lead levels.

Galvanized Pipe: Lead particles can attach to the surface of galvanized pipes. Over time, the particles can enter your drinking water, causing elevated lead levels.

Lead Service Line: The service line is the pipe that runs from the water main to the home's internal plumbing. Lead service lines can be a major source of lead contamination in water.

Lead Goose Necks: Goose necks and pigtail are shorter pipes that connect the lead service line to the main.

Faucets: Fixtures inside your home may contain lead.

WATER METER
MAIN WATER LINE



Mason Caceres – Assistant Water Resource Manager
email: mecaceres@cityofportsmouth.com
phone: 603-312-3804

<https://portsnh.co/servicelineinventory>



PFAS Average – 12 Month Rolling New Hampshire Regulated Compounds - All Sources In Compliance (Oct 2023 - Sept 2024)

		EPA MCL (2024)	NH MCL	RA Wt**	MADBURY WTP FINISHED	MADBURY WELL 2	MADBURY WELL 3	MADBURY WELL 4	MADBURY WELL 5	PORTSMOUTH WELL	COLLINS WELL	GREENLAND WELL
12-MONTH ROLLING AVERAGE 2024 Q3												
Perfluorohexanesulfonic acid(PFHxS)	ng/L	10	18	0.0	0.0	0.0	0.0	0.0	0.0	5.6	1.9	0.0
Perfluorooctanesulfonic acid (PFOS)	ng/L	4	15	0.0	0.0	0.0	0.0	0.0	0.0	5.0	4.2	2.9
Perfluorooctanoic acid (PFOA)	ng/L	4	12	2.6	2.6	2.7	2.9	1.1	3.0	7.5	3.4	4.6
Perfluorononanoic acid (PFNA)	ng/L	10	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	10		0.0	0.0	0.0	0.0	0.0	0.7	1.0	2.4	0.6
Perfluorobutanesulfonic acid (PFBS)	ng/L			0.0	0.0	0.0	0.0	0.0	3.2	4.9	9.1	2.3
Hazard Index*		1		0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.4	0.1

* Hazard Index MCL = (HFPO-DA/10)+(PFBS/2000)+(PFNA/10)+(PFHxS/10)

Public Comment