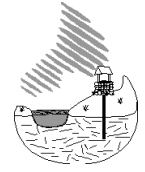


SUPPLY LINES WITH THE SOURCE



Newsletter of the NHDES Drinking Water & Groundwater Bureau
on the web at www.des.nh.gov

Fall 2022

Man's Water Operator's Best Friend

Leak detection is going to the dogs, but that's a good thing. One of the coolest additions to the leak detection toolbox is the use of trained dogs to locate water leaks. The practice started in Australia and the United Kingdom, and now is gaining momentum in the United States. Kelsey Vaughn, from DWGB's Water Conservation Program, met the country's first two water leak detection dogs, Vessel and Gauge, at the 2021 North American Water Loss Conference. Although the dogs locate water leaks, they are trained to smell chlorine—not water. At the conference, Vessel's handler had previously placed an object with a very small amount of treated water in an obscure area of a large ballroom, where hundreds of people were sitting at tables having lunch. Within 30 seconds of the handler telling Vessel to "find the leak," Vessel had tracked down the object and alerted the handler to its location. It was really impressive.

So, what makes an effective leak detection dog? For Vessel, she has a "high ball drive," which means that she will work incredibly hard and fast, because she knows that when she finds a leak, she will get to play with her ball. That work ethic is important because the water system

for which she works, Central Arkansas Water, has approximately 2,800 miles of pipe to manage. The system utilizes other traditional and non-traditional leak detection methods, such as ground microphones and satellite imagery analysis. Vessel is used to follow up on some of those initial analyses as well as in other situations, where she can use her unique traits for finding leaks. By having a heightened sense of smell, she can find leaks that are out of sight or sound, which is especially helpful for leaks involving non-metallic pipe. Also, she can efficiently cover ground in areas that are more challenging for traditional technologies, such as areas with high traffic noise, and for humans to access, such as wooded or hilly areas.



Vessel

While this is exciting and adorable, is it also effective? On her first 100 work orders, Vessel was 97% accurate. Because of this success rate, there is an upward trend in the number of dogs that have been trained to locate water leaks in the United States since Vessel started her work in the fall of 2019. At least three other dogs are working for water systems and leak detection companies, and more dogs are currently being trained.

To see Vessel in action, check her out on social media using the handle @CAWdetectedog. 💧



Supply Lines with The Source is Going Electronic!

This is the last paper issue! Starting January 2023, Supply Lines with The Source will only be available as an e-newsletter.

Sign up to receive it by email! Visit www.des.nh.gov, click Resource Center > Media Center > and scroll to Newsletters and Announcements.

Got Leaky Pipes? This Grant Can Help You Find Them

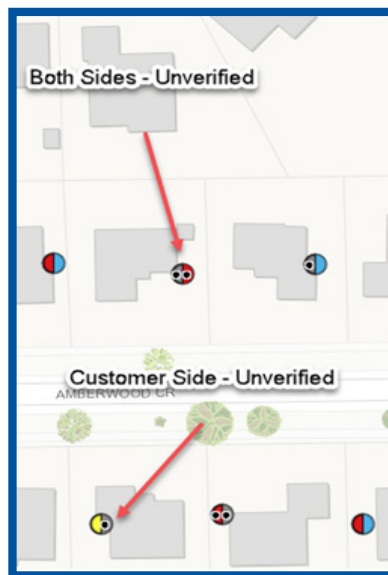
Eighty-two systems are participating in NHDES' Leak Detection Grant Program this year. Surveys are being conducted by American Leak Detection, Inc. and New England Water Distribution Services, LLC. A leak detection survey is conducted by using specialized acoustical equipment to listen for leaks. By listening on main line valves, curb stops, and fire hydrants, as well as on the ground above the water main, a consultant can identify and pinpoint the location of a leak. To date, the program has funded close to 400 surveys at systems of all sizes and approximately 700 leaks have been discovered. Many leaks discovered were not visible and ranged from less than one gallon per minute to 700 gallons per minute.

Conducting a leak detection survey is an excellent way to identify leaks before emergency repairs become necessary. The NHDES Leak Detection Grant Program application period is open yearly between June 15 and July 31. Applicants apply to receive a survey the following year. For more information about the grant and for a list of local acoustical leak detection survey consultants, see the [Water Conservation Program webpage](#). 💧

DWGB Grants for Lead Service Line Inventories, Sampling and Replacement Plans

DWGB is rolling out major financial assistance programs to assist public water systems (PWSs) to meet the recently adopted Lead and Copper Rule Revisions (LCRR). Community and Non-Transient, Non-Community (NTNC) systems are required to develop a lead service line inventory (LSLI) and a service line replacement plan by October 16, 2024. There are three initiatives underway to meet this goal:

- DWGB is finalizing a contract to develop a new LSLI Mapping and Data Collection Portal. The Portal will allow PWS owners and operators to upload their LSLI to a web-based map for customers to reference. The Portal is expected to be available in mid-2023, however, an Excel template will be available earlier. Final guidance from USEPA on LCRR LSLI requirements will be incorporated in the Portal.
- DWGB solicited for qualifications from consultants to assist small and medium water systems complete their service line materials inventories and develop new sampling and replacements plans. Consultants will collect, review, and assemble the data from each system and submit the information to NHDES. This assistance will be provided at no cost to the water systems.
- Grants will be available for large systems to complete their LSLI for new sampling and replacement plans. Details and application are available now. There is no deadline for this submittal; however, the deadline to complete inventories and replacement plans is October 16, 2024. This will be a 100% grant with no required matching funds.



ESRI ArcGIS Lead Service Line Inventory sample map

For more information, contact Jen Mates at jennifer.s.mates@des.nh.gov or (603) 559-0028. 💧

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DWGB Calendar of Events & Deadlines: November 2022 – April 2023

- November 1 Local Source Water Protection grant applications due; contact Melissa Macheras at melissa.e.macheras@des.nh.gov or (603) 271-2950.
- November 3 Asset Management conference: Demystifying Asset Management; contact Luis Adorno at luis.s.adorno@des.nh.gov or (603) 271-2472.
- November 6 Water Works Operator Certification exams: applications and fees due for December 6, 2022 exams; contact Jason Smith at jason.m.smith2@des.nh.gov or (603) 271-2410.
- December 6 Water Works Operator Certification exams; contact Jason Smith at jason.m.smith2@des.nh.gov or (603) 271-2410.
- Ongoing through December 31* Cybersecurity Implementation grant applications accepted; contact Stephanie Nistico at stephanie.nistico@des.nh.gov or (603) 271-0867. (*or until funds have been exhausted.)
- Anytime Lead Remediation grant for public and nonpublic schools to address detections of lead at or above 5 ppb; contact Lea Anne Atwell at lea.a.atwell@des.nh.gov or (603) 271-6147.
- Anytime Free lead in drinking water test kits for public schools and licensed child facilities; contact Lea Anne Atwell at lea.a.atwell@des.nh.gov or (603) 271-6147.
- Anytime Computer-based Water Works Operator Certification exams Grades I-IV are now available at various locations throughout the state; contact Jason Smith at dwgbcertop@des.nh.gov or (603) 271-2410.
- Anytime Small Water System Consolidation Study Assistance Program grant applications accepted; contact Paige Relf at paige.n.relf@des.nh.gov or (603) 271-1355.
- Anytime PFAS Treatment and Design Services Reimbursement applications accepted; contact Amy Rousseau at amy.rousseau@des.nh.gov or (603) 271-1372.
- Anytime PFAS Remediation Loan Fund applications accepted; contact Amy Rousseau at amy.rousseau@des.nh.gov or (603) 271-1372.
- Anytime Cyanobacteria Monitoring and Training grant applications accepted; contact Liz Pelonzi at ann.pelonzi@des.nh.gov or (603) 271-3906.

To see event calendars for additional opportunities, please visit:

[Granite State Rural Water Association](#)
[New Hampshire Water Works Association](#)
[New England Water Works Association](#)

Grant Funds for Cybersecurity

There is still time to apply for grant funding through the Cybersecurity Implementation Grant Program. The American Rescue Plan Act (ARPA) of 2021 allocated \$2M for cybersecurity improvement projects at drinking water and wastewater systems. Eligible projects include enabling of multi-factor authentication, upgrade of end-of-life or unsupported software and more. Completed applications will be accepted on an ongoing basis through December 31, 2022. Interested applicants are encouraged to visit the [NHDES Cybersecurity Improvements Assistance webpage](#) for more information, including eligibility requirements. Review past articles on water system cybersecurity in the [Fall 2021](#) and [Spring 2022](#) newsletters. For more information, please contact Stephanie Nistico at stephanie.nistico@des.nh.gov or (603) 271-0867.

What's More Expensive to Treat Than PFAS, VOCs and Metals Combined?

By James Emery, P.G., Emery & Garrett Groundwater Investigations, a Division of GZA

Merrimack Village Water District (MVD) relies on six high-yield wells located in stratified-drift deposits in and around Merrimack to supply nearly one billion gallons of water annually to over 9,300 service connections.

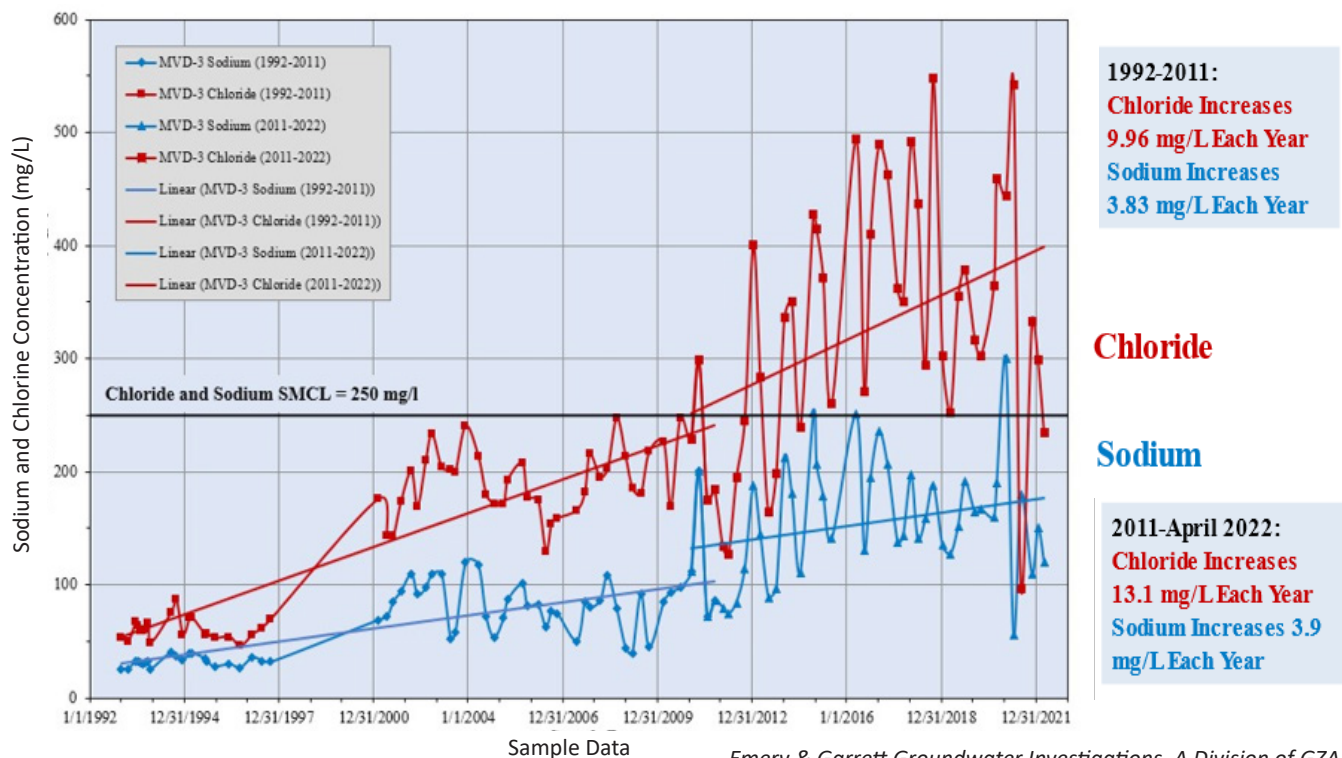
Over the past 30 years, sodium and chloride levels have substantially increased in all of MVD's production wells. As shown in the table and graph below, sodium in well MVD-3 has risen 1,154% to 300 ppm and chloride has risen 1,004% to 542 ppm since 1992. Consequently, this well is currently being used as an emergency source only. The cost of treatment for sodium and chloride is substantially higher than that of PFAS, VOCs and/or metals combined. Reducing salt use on roads and parking areas in the Wellhead Protection Areas (WHPAs) of the MVD production wells is no longer a choice in Merrimack, it simply must happen.

Sodium and chloride levels in Merrimack production wells, 1992-2021

Well ID	1992		2019		2021		Sodium % Increase	Chloride % Increase
	Sodium (mg/L)	Chloride (mg/L)	Sodium (mg/L)	Chloride (mg/L)	Sodium (mg/L)	Chloride (mg/L)		
MVD-2	14.0	25.0	45.4	126.0	52.0	76.9	371	308
MVD-3	26.0	54.0	191.0	379.0	300.0	542.0	1154	1004
MVD-5	39.0	79.0	91.3*	165*	130.0	216.0	333	273
MVD-7	28.2**	59.4**	48.9	99.2	75.0	133.0	266	224
MVD-8	31***	67***	42.8	90.4	46.0	99.0	148	147

* Value from 2016 **Value from 2001 *** Value from 1999

Sodium and Chloride Concentrations in Production Well MVD-3



Emery & Garrett Groundwater Investigations, A Division of GZA

(What's More Expensive, continued on pg 5)

(What's More Expensive, continued from pg 4)

To reduce salt use, MVD has initiated the following efforts focused on "changing the culture" in how we think about salt:

1. With a Local Source Water Protection Grant from NHDES, MVD hired Emery & Garrett Groundwater Investigations (EGGI) to evaluate salt loading practices in their WHPAs and develop a Salt Mitigation Plan.
2. Per the Plan, the Merrimack Planning Board placed more salt restrictions on new construction projects (e.g., Premium Outlet Mall) within the WHPAs. For grandfathered sites, letters were sent to each business that had salt use restrictions notifying them as to whether they were in compliance with their site plan and encouraging all others to reduce their salt use. Bulk mailings were sent to all residents within the WHPAs regarding the need to reduce the use of sodium and chloride on their driveways and walkways.
3. EGGI prepared a presentation on the use of anti-icing methods versus simply deicing, and the advantages of using less salt on roads and parking lots in WHPAs. This was presented to the Town Council, Planning Board, NHDES, local stakeholders, commercial parking lot owners, and the Public Works Department (DPW).
4. MVD formed a Salt Reduction Committee - comprising citizens, public agencies, landscape contractors, property managers, facilities managers, NHDES and EGGI - to work toward reduced salt use in all WHPAs.
5. MVD now works directly with some of the largest parking lot owners in WHPAs to change their winter maintenance practices.
6. MVD and EGGI provided a presentation on the salt load issues in Merrimack to a statewide audience.
7. MVD is working with the Merrimack DPW on salt use practices in WHPAs.
8. With another NHDES Local Source Water Protection Grant, MVD, in conjunction with the DPW, will install 60-70 signs notifying motorists that they are entering a WHPA, and that salt use may be reduced.

Time will tell whether these efforts result in reducing salt loads in WHPAs. A groundwater monitoring program is in place to measure the effectiveness of these efforts. Data will be presented to MVD and the Town on a semiannual basis. The alternative to reducing salt loading sufficiently would be spending tens of millions of dollars. 💧

Cyanobacteria Blooms Are a Growing Concern

Last May, a local resident reported a cyanobacteria bloom on Arlington Mill (Pond) Reservoir, one of two primary water supplies for the Town of Salem. The bloom was significant and microscopic examination conducted shortly after the bloom indicated that approximately 300,000 cells/ml were present in the bloom areas. This concentration was well above the 70,000 cells/ml threshold used by NHDES to issue advisories warning the public to avoid recreational contact.

Cyanobacteria occur naturally in fresh and salt water. Certain cyanobacteria have the potential to produce cyanotoxins including neurotoxins and hepatotoxins. Human exposure to these toxins can result in a range of acute illnesses including skin rash, respiratory and gastrointestinal distress, and in severe cases, liver and kidney damage. As the climate continues to warm, rising surface water temperatures and more intense precipitation events are creating more favorable conditions for cyanobacteria and a greater need for water suppliers to monitor for and respond to cyanobacteria blooms.

**According to the USEPA,
cyanobacteria "blooms are
a major environmental problem
in all 50 states."**

DWGB is aware of eight public water systems in the state whose sources have experienced cyanobacteria blooms. In the past eleven years, these systems have had a combined nineteen reported cyanobacteria blooms. Cyanobacteria blooms in New Hampshire's source waters can be severe, as characterized by very high cyanobacterial cell counts (density) or chlorophyll-a levels. However, to date none has created a water supply emergency. When a cyanobacteria bloom produces significant levels of toxins it is considered a harmful bloom, such as the one that shut down the City of Toledo's public water system for three days in 2014 and resulted in Ohio's governor declaring a state of emergency due to the resulting drinking water shortage.

(Cyanobacteria, continued on pg 6)

(Cyanobacteria, continued from pg 5)

Recognizing the growing statewide concern regarding cyanobacteria, the Legislature recently passed HB 1066 establishing the Cyanobacteria advisory committee and requiring NHDES to develop a plan to “prevent the increase of, and eventually control cyanobacterial blooms in New Hampshire’s lakes and other waters.” The Commission will complete an interim report of its findings by November 1, 2023.

NHDES continues to expand technical and financial support to public water systems and partners to increase monitoring, improve response and reduce nutrient loading through the development of watershed plans and installation of stormwater management treatment practices. For more information about available resources, please visit [Cyanobacteria in Drinking Water](#) or contact Liz Pelonzi at liz.pelonzi@des.nh.gov or (603) 271-3906 or Pierce Rigrod at pierce.a.laskey-rigrod@des.nh.gov or (603) 271-0688. ♦

Managed Aquifer Recharge in New Hampshire

Managed aquifer recharge (MAR) is the practice of diverting water into an aquifer for later use. NHDES has permitted three MAR sites in Durham and Dover. At these sites, river water is pumped during periods with higher flow rates into a nearby infiltration basin. The water percolates into the ground where it is stored in the sand and gravel aquifer until it is pumped out by a nearby municipal water supply well. These water systems effectively “top off” the aquifer in the spring with MAR, giving the aquifer more capacity during the summer period when water demand is higher. As water systems look to improve reliability and drought resiliency, MAR can be a significant benefit to both existing and potential new sources.

Infiltration through the ground improves the quality of the water that enters the aquifer. Testing is required to evaluate recharge rates and the effectiveness of the soil treatment to ensure the water quality of the underlying aquifer is not impacted. MAR will not work at all sites since it requires a transmissive sand and gravel aquifer and nearby surface water source. The fractured bedrock aquifer in New Hampshire is not suitable for MAR.

If you operate a high yielding gravel well but have limitations on pumping during the summer due to aquifer drawdown, a MAR project could supplement the natural recharge to the aquifer and increase the well’s capacity in the long run. NHDES works with water systems on pilot

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projects to determine the feasibility of MAR at a given site. Funding opportunities exist for MAR projects under the State Revolving Loan Fund. If you would like to learn more, contact the [Groundwater Discharge Program](#) at gwdischarge@des.nh.gov. ♦

PFAS Removal Rebate Program for Private Wells

The Per- and Polyfluoroalkyl Substances (PFAS) Removal Rebate Program for Private Wells is now accepting applications. The program provides rebates to private well users for up to \$5,000 for the installation of PFAS treatment or up to \$10,000 for a service connection to a public water system.

To be eligible, applicants must document an exceedance of a regulated PFAS compound(s) with no offer of alternate water from a third party. Applicants can be reimbursed for the installation of treatment or a service connection retroactively to September 30, 2019.

For more information on the program, including eligibility requirements and a link to the application, visit the [PFAS Removal Rebate Program for Private Wells webpage](#) or contact the PFAS Rebate Team at pfasrebateprogram@des.nh.gov or Amy Rousseau at (603) 271-8801. ♦

\$400 Million Dollars Requested for Drinking Water Infrastructure Projects

NHDES received 181 eligible pre-applications requesting approximately \$400M in funding for drinking water infrastructure projects using the 2022 [Drinking Water State Revolving Loan Funds](#). NHDES developed an Intended Use Plan (IUP) and submitted it to USEPA. In accordance with the IUP, NHDES then ranked the pre-applications and developed a [Project Priority List \(PPL\)](#). After facilitating a public hearing and associated written comment period, NHDES finalized the IUP and PPL. It is estimated that approximately \$50M-\$60M will be available to fund proposed projects. The PPL was finalized at the end of the summer with offer letters sent out in September. This year, the process of preparing funding offers required significantly more work due to the availability of additional funding sources from the PFAS Remediation Loan Fund and new SRF funding associated with the federal Bipartisan Infrastructure Law (BIL). ♦

New Resilience and Adaptation Manager – Ethan Widrick

Last August, I joined NHDES as the new Resilience and Adaptation Manager. I will be working to conduct industry and community outreach, contract management and program development for both wastewater and drinking water systems involving climate change resiliency and adaptation. I will also be providing support to the agency's asset management programs, energy programs and other sustainability initiatives at NHDES.



Ethan Widrick

Prior to joining NHDES, I was employed as a Principal Engineer with Colorado Springs Utilities (CSU) where I worked on the coordination, design and construction of new water and wastewater infrastructure for the city of Colorado Springs, Colorado. Before CSU, I was an Air Force Civil

Engineer Officer where I was fortunate to have gained a broad spectrum of experience as a project manager and program director for areas such as vertical and horizontal construction, public works and facilities maintenance, emergency management, federal project funding and asset management.

I completed my Bachelor's degree in Environmental Engineering from Rensselaer Polytechnic Institute and my Master's degree in Civil Engineering (Water Resources) from Colorado State University.

I feel very fortunate to now be able to help New Hampshire municipalities and utilities solve water and wastewater problems. It is incredibly exciting to be involved in improving public infrastructure systems in response to climate-related challenges so that these systems are more resilient in service to their communities. I believe water and wastewater infrastructure are the unsung heroes of day-to-day life, and I am proud to now be a member of the NHDES team where an emphasis is being placed on stewardship of infrastructure in New Hampshire. ♡

New Drinking Water and Groundwater Trust Fund Administrator

The Waste Management Division is pleased to announce that NHDES has hired Cheryl Bondi to be the new Drinking Water and Groundwater Trust Fund Administrator within the MtBE Remediation Bureau.

Cheryl has over 18 years of experience working in the environmental industry with government and academic institutions, and she has a Ph.D. from the State University of New York College of Environmental Science and Forestry. Cheryl comes to us from NHDES' Wetlands Bureau where she developed significant experience with administering grants for the Aquatic Resources Mitigation Fund as well as overseeing complex restoration projects, which include coordinating with multiple stakeholders – private, state, local and federal, including the Army Corp of Engineers. ♡



Cheryl Bondi

Staff News

Erik Carlson joined DWGB as a Small System Design Engineer in Summer 2022. Prior to joining NHDES, he served as an interdisciplinary engineer and project manager in the Design and Sustainment Branch of the Temporary Services Engineering Division at Portsmouth Naval Shipyard. Erik is a graduate of the University of New Hampshire with a B.S. in Civil Engineering and an M.S. in Mechanical Engineering. During college, Erik interned with NHDES in Hazardous Waste Compliance.



Erik Carlson



Neil Olson

Neil Olson joined DWGB's Information Management Section

(Staff, continued on pg 8)

(Staff, continued from pg 7)



Sean Kilburn

as the GIS Coordinator in June of 2022. Prior to joining DWGB, Neil worked in NHDES' Wetlands Bureau and the NH Geological Survey maintaining a variety of databases and spatial datasets. We are excited to get him involved in the numerous current and future GIS projects DWGB is involved in.

Sean Kilburn is a member of DWGB's Information Management Section in a newly created role. His primary responsibility is assisting with the conversion of all historical paper documents to electronic copies and uploading them to our digital document library. Sean's technical skills and experience as a graphic designer have made him a great asset for this important behind-the-scenes work in the Bureau.

David Gaylord came to DWGB from the New Hampshire Department of Transportation where he spent a little over three years as their Asset Management Performance and Strategies Business Systems Analyst. His new role in DWGB is Supervisor of our Information Management Subsection, where he will be supporting the development and improvement of our internal databases and applications, as well as the tracking and reporting of drinking water data to USEPA.



David Gaylord



Michelle Higman

Michelle Higman joins DWGB to manage the Lead, Copper and Disinfectant Byproduct Monitoring Program. Previously, Michelle worked as a laboratory assistant with the New Hampshire Public Health Laboratories Water Analysis lab, where she reviewed water samples and provided assistance to water system owners and operators. Michelle received her BA in Neuroscience from Colgate University, where she conducted research on the effects of selective serotonin reuptake inhibitors (SSRIs) (antidepressants) in wastewater on aquatic animals. Michelle enjoys scent work with her Corgi, Winry, and knitting and crocheting. 💧

