

COMMISSIONER'S COLUMN

It just rained cats and dogs. Why is my well still low?

NHDES recently published an article in our Fall issue of *Supply Lines with the Source* that explains why NHDES continues to be concerned about the quality and quantity of well water even after we get rain, especially during the summer months. Given the fact that parts of northern New Hampshire, according to the U.S. Drought Monitor, are abnormally dry and are in some locations still experiencing moderate and even severe drought conditions, I felt that it would be a good opportunity to share the following article to help educate well owners on the well recharge process:

After a year of droughty conditions across the state, record high rainfall amounts in July finally brought some relief, particularly to southern and central New Hampshire. But many water suppliers were not so quick to roll back the message to conserve water for three reasons: most water systems rely on wells, groundwater levels generally lag behind in drought recovery, and drought conditions could return.



There are several reasons for a lag between significant precipitation and the replenishment of groundwater supplies.

- When it downpours, soils cannot absorb the rain as quickly as it falls. The result is more runoff into surface waters.
- During the summer growing season, most of the rain that does infiltrate is

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Rules changes for pools and spas

There are nearly 1,400 public pools and spas in the state. These public bathing facilities are located at hotels, motels, water parks, campgrounds, youth camps, municipal parks, condominium and apartment complexes, health facilities and the like. The NHDES Public Pool and Spa Program is charged with creating regulations to keep the swimming public safe. In 2019, the program underwent a significant change in statutory requirements, and after subsequent rulemaking, those requirements are now being rolled out to pool owners and operators. The goal of these changes is to ensure that all new and existing facilities are properly designed, constructed, operated and maintained, while providing support to facility owners, operators and the public who visit those facilities.

NHDES now has a new registration form that must be completed by all public bathing facilities. The mandatory registration collects up-to-date establishment and contact information as well as basic physical specifications and circulation system details for each facility. Registration is absolutely free, and the form is now available on our [PBF Registration Form webpage](#). This requirement is important for two important reasons: 1) it requires the pool owners to be aware of the specifics of their facility, and 2) it provides a baseline for NHDES to make sure that existing pools are treated fairly. NHDES is requesting that all year-round facilities complete the registration by January 1, 2022 and all seasonal facilities com-

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taken up by plants and transpires back into the air through photosynthesis. In winter the ground is frozen, reducing recharge. Significant groundwater recharge normally occurs in the early spring and in the fall.

- Local land use and development also play a large role. The more developed an area, the less groundwater recharge is possible. Roads, parking lots, driveways, roofs and compacted soil are all impervious surfaces. Water cannot seep through. Instead, water that falls on impervious surfaces contributes to stormwater runoff (the #1 water pollutant in New Hampshire), that quickly runs into surface water.
- It takes time for water to infiltrate into the unconsolidated materials that feed dug wells and even longer to fill the bedrock fractures beneath the unconsolidated materials that feed bedrock wells.

With all that in mind, it was difficult to predict how groundwater levels would respond to an unusually large amount of rain falling on droughty soils in the middle of the growing season.

Well recovery is dependent on localized conditions such as topography, geology, climate and local development. Over the summer, we saw this reflected in the state's groundwater level monitoring network. Sampling of these wells scattered across the state in mid-July and again at the end of July revealed that while wells were generally recovering, some had not.

Groundwater is dynamic and hard to gauge. The best thing a water system can do to manage supplies during a drought is to monitor the system's well and surface water levels and system demands. The data will help your water system to make decisions about timing of conservation messaging and drought restrictions. ■



Rising Tides photo contest

The New Hampshire Coastal Adaptation Workgroup (CAW) invites you to save the date for the 2021 Rising Tides Photo Contest: November 5-8. This annual contest strives to raise awareness about the local impacts of coastal flooding. We hope you will join us in this effort to document and share the impacts of rising seas and flooding on our coastal communities.

Formerly known as the "King Tide Photo Contest," CAW has decided to rename this initiative this year. Many of

our communities are experiencing regular impacts from flooding already, and not just during occasional "king tide" events. New Hampshire's coastal watershed communities will see even more frequent flooding in the future as sea levels continue to rise. [Contest rules and details.](#)



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29 Hazen Drive • Concord, NH 03301
(603) 271-3503 | www.des.nh.gov
editor@des.nh.gov
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plete it prior to operation next summer.

Also new this year is an updated permit application for new or renovated pools. Each year, NHDES discovers newly constructed or renovated pools that did not have prior approvals from the program. This can cause major problems if those facilities were not built to the program's requirements. For renovation or new construction of any public bathing facility, there must be prior approval from NHDES and part of that approval is the design review. The design review fee is \$100 for one pool of equal to or less than 400 square feet plus \$25 for every additional 100 square feet. [Learn more about permit approval.](#)

Finally, over the next year, two other components of the statute changes will be implemented. First, is a requirement that each facility be operated under the supervision of an individual that holds a current certification from an approved training program dedicated specifically to the operation of public bathing facilities. For year-round facilities this be-

comes effective January 1, 2022 and for seasonal facilities, prior to opening in the spring or summer of 2022.

Second, a new fee-based annual compliance self-certification is being implemented to include annual compliance documentation that focuses on the practical aspects of public pool and spa operation such as circulation; filter and disinfection system performance; daily water quality testing and recordkeeping; presence of critical life-safety equipment; and facility maintenance.

Standards of public pool and spa design and operation have been established in rule by NHDES, to make sure that proposed construction provides for safe and efficient operation, that water quality is regularly monitored and maintained, and that maintenance is regularly performed and documented by the operator, all providing a clean, healthy and safe environment for the public.

To learn more about the program please visit the NHDES [Public Bathing Facility Program webpage.](#) ■

Instream Flow Program pilots real-time stream gage on North Branch River

NHDES' Instream Flow Program's goals are to determine, through scientific investigation, the seasonal flows necessary to support habitat for fish and river-side vegetation as well as human uses in the state's designated rivers, and then maintain these protective flows during periods of low flow, such as during the recent drought. The Instream Flow Program currently compares real-time streamflow data provided by the US Geological Survey to each river's protected instream flow values in order to determine when management actions are necessary. To date, protected instream flow values have been established for the lower Lamprey River and the Souhegan River, and are nearing completion for the Cold River. The Program continues to research the remainder of the state's 19 designated rivers in order to determine their appropriate instream flows.

USGS gaging stations are not available at key locations along some of the state's highest-priority designated rivers, however. Without real-time streamflow data, the Program cannot monitor protected instream flow values for these rivers, making it impossible to manage them in this important program. To address this challenge, the Instream Flow Program has been partnering with the US Geological Survey to reactivate former gaging stations or create new ones in order to eliminate these data gaps. In June 2021, the Instream Flow Program deployed its first automated water level station, which provides real-time streamflow data for a previously-inactive US Geological Survey gaging station on the North Branch River, a branch of the Contoocook River in Antrim.



Instream Flow Program Coordinator Wayne Ives standing beside the pilot water level station on the North Branch River in Antrim, NH.

The pilot station has been accurately and reliably providing streamflow data via a wireless uplink for four months, and the data are now available to the public via an online dashboard. The Instream Flow Program webpage summarizes the data and also includes a link to it. These data will enable the Program to monitor future protected instream flow values for the North Branch River, which is a major tributary of the designated Contoocook River and a protected river in its own right. The Program's next real-time water level stations are planned to eliminate similar data gaps on the designated Piscataquog and Ammonoosuc rivers in 2022 and 2023, respectively. ■

Designing living shorelines at four Great Bay sites

Co-Authored:

Lynn Vaccaro, NHFG – Great Bay National Estuarine Research Reserve; Kirsten Howard, NHDES – Coastal Program

The Great Bay Living Shoreline Project has selected four locations where teams of professional engineers, landscape architects, and ecologists will be developing suggested living shoreline designs. The four sites were chosen to illustrate the potential for living shoreline approaches to be adapted for different site conditions and diverse landowner goals.

After conducting a site suitability assessment and interviewing potential landowner partners, the project team, led by Kirsten Howard, NHDES Coastal Program Resilience Coordinator, settled on four Great Bay Estuary locations for living shoreline design work. The team intentionally chose a diverse set of properties and landowners, each with different reasons for pursuing shoreline restoration, including managing coastal erosion, conserving marsh habitats and enhancing public access and shoreline aesthetics. The four sites also present unique design challenges because they include both public and private lands, highly urbanized shoreline and a marsh that is home to rare bird species.

Solving design challenges at four sites

The four living shoreline design sites are:

- **Schanda Park, Newmarket, NH** – A small, popular town park along the Lamprey River in downtown Newmarket. The park includes a boat ramp and aging riprap seawalls that the town hopes to make more resilient.

- **Moody Point, Newmarket, NH** – This site is owned by a homeowner's association and includes a diverse mix of habitats and shoreline uses. The saltmarsh and upland edge are eroding in several places and residents want to protect shoreline structures and water access points.
- **Chapman's Landing, Stratham, NH** – This large saltmarsh site is owned by NH Fish and Game and includes an important all tide boat launch on the Squamscott River. The state is interested in managing erosion along the saltmarsh edge while also protecting valuable nesting habitat for the saltmarsh sparrow.
- **Spur Road, Dover, NH** – This private home includes an eroding salt marsh shoreline along the Bellamy River. The landowner is interested in trying some nature-based techniques to stabilize the marsh edge.

Each of the landowners is interested in applying Living Shoreline techniques, which use plants, stone, sand fill and other organic material to stabilize shorelines and enhance coastal habitats. Nature-based techniques can help protect shorelines as seas rise and erosion pressure increases, but designs need to be customized for a particular site. The NHDES [Living Shorelines webpage](#) provides additional resources, including an opportunity to request a free property profile to help determine if your property is suitable for a living shoreline.

Leveraging diverse expertise

The Great Bay Living Shoreline project team has recruited a diverse group of 24 engineering, landscape and ecological design professionals to participate in a six-month program to learn about and apply nature-based solutions for shoreline erosion issues. The group has been organized into four multi-disciplinary Design Teams that will be developing suggested living shoreline designs for each of the selected properties around Great Bay.

Wetland ecologist David Burdick and civil engineer Tom Ballestero, both from University of New Hampshire, will be working alongside design teams during field work and workshops. They will be sharing lessons learned from regional projects and the recently completed living shoreline project at Wagon Hill Farm in Durham. (Watch this [virtual field trip](#) to learn more.)



The Town of Newmarket is eager to enhance the resilience and aesthetics of Schanda Park, which is an important part of their downtown waterfront.

Do you heat with wood?

With wood stove season rapidly approaching, it is time to make sure you have enough dry firewood or wood pellets ready to go for this winter.

Evaluating the moisture content of cord firewood can be tricky. Wood can be purchased when it is “green,” “seasoned,” “dried,” or “kiln dried,” but these are relative terms and wood is only ready to be burned when its moisture content is 20 percent or less. Wet wood is a waste. Instead of creating heat for your home, burning wet wood means that that less heat is produced because energy goes into boiling off residual water so that the wood can ignite, and in the process releases pollution into the air and creosote in your chimney, which can lead to a fire hazard. Burning dry wood produces more heat, saves you money, and improves air quality.

When talking with firewood suppliers, always be sure to ask how they define the terms they are using to describe their products. Here are a couple of general guidelines to keep in mind when talking to a firewood supplier:

- Green wood is fresh cut and should not be used for fuel until it has had time to dry properly. This is the least expensive to purchase and will require 6-12 months to dry properly depending on species and conditions.
- Dry wood refers to air-dried wood that should be an immediately burnable product at the time of delivery. Dry wood should never be stored uncovered as it will reabsorb rain and snow.
- Kiln dried wood has been dried through the introduction of heat in a deliberately controlled environment – a

process that drastically shortens the drying time. As with dry wood, kiln dried firewood should be an immediately burnable product at time of delivery. This has the highest cost to purchase, but is of a very high quality that many people prefer. Because it takes energy to dry the wood, it is slightly less climate-friendly than air-dried wood!

- Seasoned wood is the least well defined of any of the terms associated with firewood. “Seasoning” is synonymous with “drying” but the key to the wood’s actual moisture content is how long and under what conditions the wood has been “seasoned.” When purchasing “seasoned” wood, always be sure to ask your dealer how long the wood has been split, as opposed to just felled, and if it was stacked under cover to facilitate drying. You should assume that seasoned wood is not ready to burn without further drying.

If you are not planning to buy dry wood, the best strategy is to plan at least 6-12 months ahead and allow plenty of time for your wood to dry under cover and with ample airflow around it. Order wood during the winter or early spring for the following year, then stack and cover it to dry during the spring and summer for burning the following fall. This is the most reliable and economical way to ensure your supply of properly dried firewood.

If you are interested in burning less wood altogether, consider replacing your old wood burning stove with a newer, cleaner burning model. New stoves burn less wood to produce the same amount of heat. Wood pellet stoves are also very efficient, typically needing just about 40 pounds of pellets per day during a winter day.

Living Shorelines *continued from page 4*

Creating a pipeline of new projects

At the culmination of the project in May 2022, the four new living shoreline designs will be made available on the project’s website to serve as examples and inspiration for projects around Great Bay and beyond. Contact information for the 24 professionals involved in the design process will also be shared to improve access to, ensuring there is plenty of local expertise available to help landowners develop engineering plans, plant lists and permit applications for successful living shoreline projects.

The Great Bay Living Shorelines Project is supported by a grant from the National Fish and Wildlife Foundation with matching support from the Town of Durham. The project is led by the New Hampshire Department of Environmental

Services Coastal Program, the University of New Hampshire, the Great Bay National Estuarine Research Reserve, the Piscataqua Regional Estuary Partnership, the Great Bay Stewards, and the Strafford Regional Planning Commission. ■



Adjacent to the Chapman’s Landing boat ramp there is important salt marsh habitat with an eroding marsh edge.

Electric vehicles direct current fast charging infrastructure request for proposals released

Annual electric vehicle (EV) registrations have been increasing in New Hampshire. To enable EV travel by residents and visitors, the state needs more publicly accessible EV charging stations. This will not only encourage EV adoption by alleviating “range anxiety” for EV drivers, but will also reduce harmful emissions.

To provide more publicly accessible EV charging stations, NHDES has released a request for proposals (RFP) for a

Volkswagen Trust funding opportunity. The RFP, which was released on September 17, seeks proposals to install direct current fast charging (DCFC) and co-located Level 2 EV supply equipment (EVSE) on key travel corridors in the state. DCFC facilities, designed to provide for rapid charging along heavily traveled corridors, can provide 60 to 80 miles of range per 20 minutes of charging while Level 2 chargers provide 10 to 20 miles of range for each hour of charging.



The RFP seeks qualified applicant(s) to install DCFC and EVSE, and provide associated operations, maintenance and management services along specified corridors in New Hampshire. Funding for the RFP is provided through New Hampshire's Volkswagen Environmental Mitigation Trust and is consistent with the New Hampshire Beneficiary Mitigation Plan. All information regarding the RFP can be found on the [Volkswagen funding webpage of the NHDES website](#).

Responses to the RFP are due Friday, January 7, 2022 by 4 PM. For further information on the RFP or the New Hampshire VW Environmental Mitigation Trust, please email timothy.white@des.nh.gov. ■

Air pollution controls installed and operational at Saint-Gobain

Saint-Gobain Performance Plastics has successfully installed and is now operating a regenerative thermal oxidizer (RTO) designed to control air emissions of per- and polyfluoroalkyl substances (PFAS) from their fabric coating and film manufacturing operations in Merrimack, NH. Historical operations at the plant had resulted in emissions of perfluorooctanoic acid (PFOA), one of many PFAS compounds, which ultimately contaminated the Southern New Hampshire region's groundwater and impacted numerous private residential wells in the area. While reformulation of the raw materials used at the facility in 2006 reduced PFOA emissions by over 96%, NHDES investigation of PFAS in stack test samples, raw materials, char from the stacks and dust in the vicinity of

the plant indicated that even in 2018, the facility was still contributing to the exceedance of the ambient groundwater quality standard for PFOA and that further air emissions controls were necessary.

In 2019, the company applied to NHDES for a permit to construct and operate the RTO pursuant to a newly adopted state law. The permit was issued in February, 2020 and outlined operating parameters for the control equipment as well as stack testing, monitoring, recordkeeping and reporting requirements. When the facility was unable to meet the February 11, 2021 deadline to install the RTO, NHDES, through the Attorney General's Office, filed suit and subsequently entered into a Consent Decree with the company that required

installation of the RTO by July 30, 2021, operations at the facility to be limited in the interim, an analysis of the raw materials and further analysis of potential hydrogen fluoride emissions, more extensive stack testing, a rainwater study and civil penalties.

On July 14, 2021, Saint-Gobain notified NHDES that the RTO was fully operational. Comprehensive stack testing to confirm that the controls are operating in compliance with the air permit took place the week of September 7-10, 2021. NHDES personnel were on site during the entire stack test to confirm that production and stack testing methods conformed with the stack test plan.

Results of the test are due by the first week in November, 2021. ■

PSU Environmental Field Studies students get hands-on experience with NHDES staff

NHDES staff supported the studies of Plymouth State University (PSU) Environmental Science and Policy majors taking Dr. Lisa Doner's Environmental Field Studies class. On Saturday, September 18, Joe Schmidl and Wayne Ives of the Instream Flow Program, described stream flow measurement techniques and then took the students to the Baker River to practice near a USGS stream flow gage. On Sunday, Joshua Keeley, hydrogeologist at the New Hampshire Geological Survey (NHGS), introduced the established field methods for the collaborative project between NHGS and White Mountain National Forest (WMNF), then led the class into the woods along Tripoli Road in Waterville Valley to collect data.



Plymouth State University Environmental Science & Policy majors Ashley Jordan and Ivy Pratola measure stream flow near USGS Gage 01076000 with Instream Flow Environmentalist Joe Schmidl. Photo by PSU Prof. Lisa Doner.

On Saturday, the students met Joe and Wayne at a PSU lab to look at USGS stream gage data for the Baker River in Rumney and see how these data are determined from rating curves. Next, at the Baker river gage, NHDES staff helped the students pick suitable cross sections and measure stream flow parameters.

Returning to the PSU lab, the students turned their measurements into a stream flow value and compared their numbers to the USGS' reported flows. The PSU students then used stream flows and phosphorus concentration values to determine a seasonal phosphorus mass being carried by the stream.

The next day, the class verified LiDAR-derived flowlines (digital streams) with Josh along Tripoli Road. The students field-checked the flowlines to determine stream permanence. Aided by a GPS-enabled mobile geographic information system (GIS), the class inventoried culverts and applied geomorphic, hydrologic, and biologic indicators to categorize each stream as ephemeral, intermittent, or perennial. The project goal is to update the New Hampshire portion of the National Hydrography Dataset by aligning it to the statewide LiDAR dataset. The project will improve NHGS hydraulic modeling of culverts needed to mitigate flood hazards, and will improve land use planning in the WMNF.

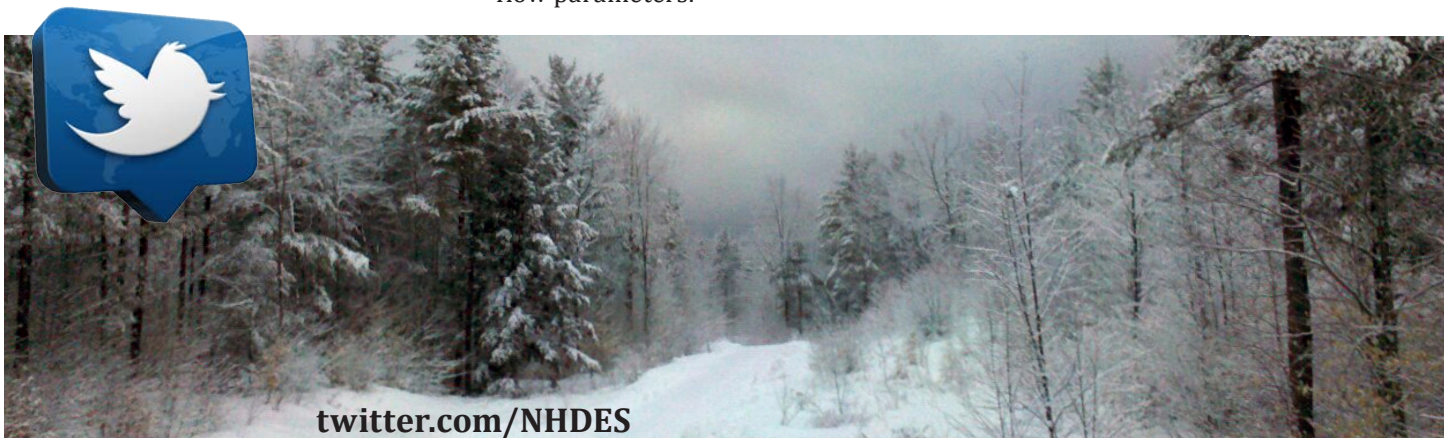
The PSU students conducted typical environmental field studies and in the process, learned how to use some key tools of the trade and practiced applying them in the field. They learned how to recognize critical study factors and adjust their work plans to address the field conditions. NHDES staff got to enjoy two days working in the field with enthusiastic, future colleagues. ■

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EPA Lifetime Achievement Award

In June 2021, Rick Skarinka retired from his job as manager of the Engineering and Survey Section of the Drinking Water and Groundwater Bureau in the New Hampshire Department of Environmental Services, where he worked for 31 years. In this job, Rick managed drinking water engineers, sanitary surveyors, the operator certification program and was responsible for overseeing 2,500 public water systems in New Hampshire. Rick also played a key role in developing and administering the Drinking Water State Revolving Loan program throughout his career. He often led efforts to respond to natural disasters impacting water systems, ranging from droughts and floods to widespread power outages associated with ice storms.

Rick was a regulator who understood that communication is key to ensuring safe and reliable drinking water. An analogy he shared is that regulation is a moving train and community leaders can choose any of three options: wave as it goes by, hop on board, or stand in front of it. He approaches difficult conversations with respect and a desire to understand where people are coming from. He believes that working hand-in-hand with communities leads to better outcomes.

A hallmark of his efforts with his colleagues at NHDES

and water systems is to always encourage long-term thinking to ensure decisions made now will improve the long-term sustainability and reliability of public water systems. Rick always put in the effort to mentor new staff and collaborate with other agencies and programs. He consistently worked with managers of water systems to ensure that local and state elected officials were educated on the challenges and needs of water systems in order to identify options and facilitate solutions.

Rick's lifetime achievements at NHDES have and will continue to improve and protect the health of New Hampshire citizens by ensuring an adequate quantity and quality of drinking water. ■

