

# New Hampshire wastewater surveillance



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CATEGORY: **Epidemiology and Laboratory Capacity (ELC)**

The State of New Hampshire Department of Health and Human Services (NH DHHS) developed and implemented wastewater surveillance for SARS-CoV-2 to help communities in their public health responses to the COVID-19 pandemic. NH DHHS plans to utilize the created wastewater surveillance infrastructure to compliment current and future infectious disease surveillance systems through wastewater monitoring.

## The “What”

New Hampshire DHHS and the public communities no longer have access to valuable COVID-19 laboratory data that was used to guide broad public health prevention activities or was a resource to the public. This was due to the increase of at home testing kits and because COVID-19 is no longer reportable in the State of New Hampshire. The New Hampshire Department of Health and Human Services (NH DHHS) responded by applying for National Wastewater Surveillance System (NWSS) funding to develop and implement wastewater surveillance for SARS-CoV-2. The Wastewater Surveillance Program performs weekly SARS-CoV-2 testing at the New Hampshire Public Health Laboratory (NPHL) on wastewater samples submitted from wastewater facilities across the state beginning October of 2022.



Implementation of wastewater testing at the NPHL required the use of Epidemiology and Laboratory Capacity for the Prevention and Control of Emerging Infectious Diseases (ELC) funds to purchase and validate needed instrumentation and supplies that were novel to the lab. A Waterborne Disease Epidemiologist provides weekly updates to stakeholders and the general public through the public facing dashboard. NH DHHS works with a number of local, state, and federal partners to make this program happen, including NPHL, wastewater operators, and NWSS. There are currently 14 wastewater treatment facilities sites across the state that have volunteered to participate.

Throughout the process, NH DHHS faced challenges regarding capacity for sampling, proper transportation of samples, and timing between sample result submissions and result reporting to NWSS and the NH DHHS public facing dashboard. NH DHHS has temporarily supplemented its wastewater workforce from other programs and sought different instrumentation to allow for an improved and efficient workflow. New instruments have shortened the processing workflow from three hours to one.

To reduce transportation times, the kit preparation team used knowledge learned from the COVID-19 pandemic to successfully implement a system involving a coordinated effort between a courier system and a dedicated NPHL staff member. Samples from the 14 collection sites are now able to reach the laboratory within hours of collection for proper testing within the necessary 24-hour post collection time frame. Through the modernization of the laboratory's equipment, the hiring of a full-time lab position, and the epidemiologist's coordination, the time lapse in reporting samples to



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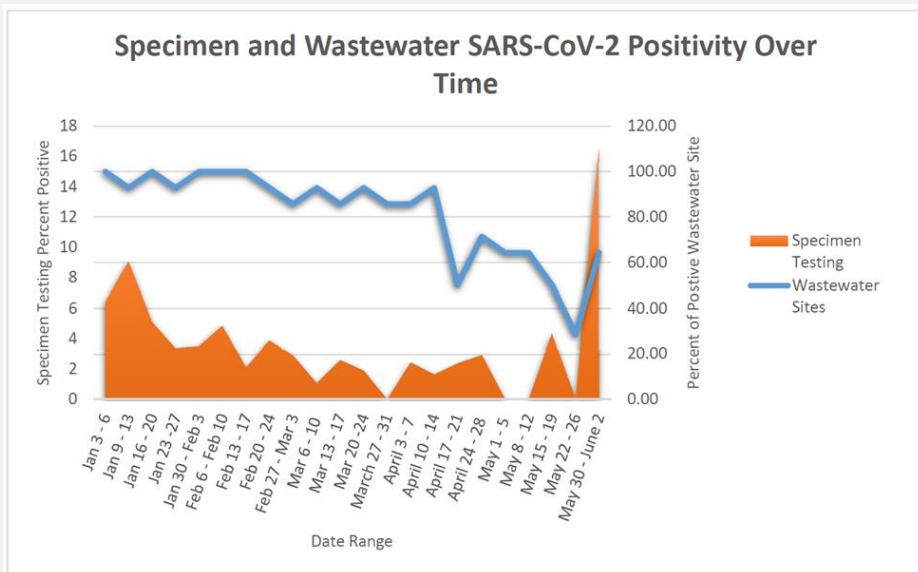


Figure 1. SARS-CoV-2 percent positivity in specimen and wastewater sites in New Hampshire, January 2023-June 2023.

NWSS and to the public facing dashboard has decreased from two weeks to one.

### The “So What”

Funding has allowed NH DHHS to establish a Wastewater Surveillance Program that provides an early warning for COVID-19 in participating communities. The program allows New Hampshire communities to be monitored for COVID-19 burden and trends, even when other forms of COVID-19 testing may not pick up remnants of SARS-CoV-2. As shown in Figure 1, there were multiple weeks where SARS-CoV-2 was not found in any specimens tested but was still detected in several wastewater facilities throughout the state.

### The “Now What”

The Wastewater Surveillance Program’s next goals are to sample twice weekly, add additional targets, and include additional wastewater treatment facilities to the 14 already participating.

The goal of twice weekly sampling will allow for trend analysis and provide more stability to the data. As there are various target options, the wastewater surveillance team has worked to determine next steps with the various target options and to prioritize what to onboard, and when. The program has been meeting with the Influenza Surveillance Program Manager and Enteric Disease Program Manager to ensure new analyses are aligned with diseases of most concern for New Hampshire. The first additional diseases of concern for wastewater surveillance are expected to be Influenza A and B, followed by Respiratory Syncytial Virus (RSV). Currently, Influenza is not a reportable illness aside from

pediatric related deaths and novel high path avian influenza. There are concerns for underreporting of outbreaks for respiratory illness throughout the state. Norovirus is not currently a reportable illness and the ability to collect supplemental data through wastewater has been discussed as highly valuable. Other disease of concern include *Campylobacter jejuni* and *Cyclospora cayentensis*.

With all these future possibilities, long-term surveillance will be an ongoing need that could benefit from additional full-time staff, laboratory supplies and reagents, courier services, and partial automation. While pressure to take on more samples has led to innovative ways to combat the issue of timing, the wastewater team would further benefit from at least an additional dedicated wastewater staff for efficient, accurate, and concise reporting of data. These data can lead to more timely responses for disease prevention activities.

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