APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES®

NOVEMBER 2026

The State of Wastewater Surveillance

Select Findings from the 2025 Wastewater Surveillance Survey

Introduction

For an in-depth look at all the data:

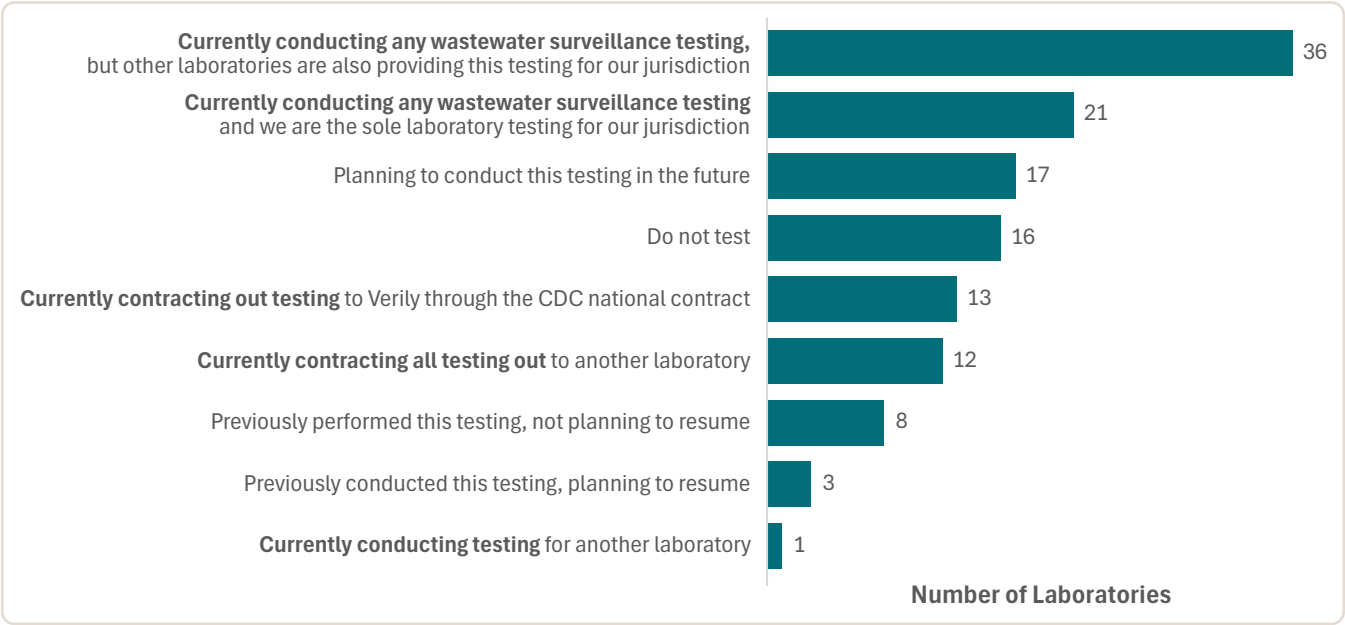
Check out the 2025 Wastewater Surveillance Survey Dashboard!

Between June–September 2025, the Association of Public Health Laboratories (APHL) conducted a national survey to characterize laboratory capability and capacity for wastewater surveillance. The survey results outlined in this report provide a metric for laboratories to measure against as they continue to grow and hone their methods. This report can also be used by the National Wastewater Surveillance System (NWSS) and APHL's NWSS Laboratory Community of Practice to understand the overall wastewater surveillance landscape and to identify successes, challenges and resource needs.

During this survey, laboratories were asked to self-identify as a: state public health (49%, 51/104), local public health (40%, 43/104), university laboratory that does not also function as a state public health laboratory (5%, 5/104), territorial public health (3%, 3/104) or wastewater utility laboratory (3%, 3/104).

Of the 104 responding laboratories, 70% (73/104 [43 states, 17 locals, 7 universities, 3 territories, 3 utilities]) are currently performing wastewater surveillance in some manner (**Figure 1**).

Figure 1: **Laboratory Wastewater Surveillance Testing Status (N=104, select all that apply)**



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Key Findings

Testing Targets

Laboratories are currently testing for over **25** unique pathogen targets.

The top five were:



SARS-CoV-2
90% (57/63)



Influenza A
78% (49/63)



Influenza B
76% (48/63)



RSV
76% (48/63)



Measles
27% (17/63)

Testing Workflows

While wastewater testing workflows vary across laboratories, the majority of respondents report using the same (non-specific) workflow for any target they test for:



Non-specific Workflow
83% (54/63)



Target-specific Workflow
17% (11/63)

The most common workflow components are outlined below.

Pathogen Targets

Combined, laboratory respondents are currently testing wastewater for over 25 targets, but SARS-CoV-2 (90%, 57/63 [37 states, 12 locals, 6 universities, 1 territory, 1 utility]), Influenza A (78%, 49/63 [32 states, 10 locals, 5 universities, 1 territory, 1 utility]) and B (76%, 48/63 [31 states, 10 locals, 5 universities, 1 territory, 1 utility]), Respiratory Syncytial Virus (RSV; 76%, 48/63 [32 states, 9 locals, 5 universities, 1 territory, 1 utility]) and measles (27%, 17/63 [9 states, 3 locals, 5 universities]) were the most common. For a more extensive list of current testing targets, explore Question 3 on the survey dashboard.

Process Overview

The majority of laboratories use the same workflow, regardless of the target, while less than a quarter have pathogen-specific workflows. The following is a breakdown of the most common responses for each step in a wastewater surveillance workflow:

Detection

- **Sampling:** The most common sample type reported by laboratory respondents was flow- or time-weighted composite samples collected from wastewater influent (Flow: 82%, 49/60 [35 states, 7 locals, 7 universities]; Time: 87%, 54/62 [35 states, 9 locals, 7 universities, 1 territory, 2 utilities]). Samples were most often collected twice per week (56%, 35/62 [36 states, 8 locals, 5 universities]).
- **Concentration:** Ceres' Nano beads are the most commonly used sample concentration method, with 42% of laboratories using the 10 mL format (26/62 [36 states, 8 locals, 5 universities]) and 27% using the 35 mL format (17/62 [36 states, 8 locals, 5 universities]).

- **Extraction:** The three most common extraction kits are ThermoFisher MagMax Wastewater kit (27%, 15/55 [11 states, 4 locals]), the MagMax Viral Pathogen Nucleic Acis Isolation Kit (25%, 14/55 [11 states, 3 locals]) and the QIAGEN Powerviral kit (22%, 12/55 [7 states, 4 locals, 1 utility]). Laboratories that have automated the concentration and extraction steps most commonly use the KingFisher Flex (36%, 21/59 [19 states, 2 locals]) or the KingFisher Apex (36%, 21/59 [14 states, 5 locals, 1 university, 1 utility]).
- **Analysis platform:** Three quarters of responding laboratories (74%, 43/58 [33 states, 8 locals, 2 universities]) use the QIAGEN digital PCR platform for analysis.
- **Recovery controls:** BCoV is the most used recovery control, used by 60% of laboratory respondents (36/60 [29 states, 5 locals, 1 university, 1 utility]). Notably, 13% of laboratories (8/60 [2 states, 5 locals, 1 university]) do not use a recovery control.
- **Fecal markers:** PMMoV is the most used fecal marker, with 60% (39/59 [31 states, 7 locals, 1 university]) of responding laboratories using it for quantification purposes.
- **Inhibition:** Over half of responding laboratories (58%, 35/60 [22 states, 11 locals, 2 universities]) do not assess inhibition. Among the 47% that do (28/60 [20 states, 3 locals, 4 universities, 1 utility]), the most common approaches are BCoV, BRSV, MHV, dilution and the GT Molecular method.
- **Sensitivity:** Most responding laboratories (77%, 44/57 [30 states, 9 locals, 4 universities, 1 utility]) assess a limit of detection (LOD). Among those that do, the most common LOD sources are the instrument or PCR platform (31%, 12/42 [6 states, 5 locals, 2 universities]) and the assay (29%, 12/42 [10 states, 1 local, 1 utility]). For results below the LOD, laboratories most often report the instrument-generated value to CDC (45%, 25/56 [16 states, 5 locals, 1 university, 1 utility]).

Sequencing

Just over half the respondents do not perform sequencing (51%, 30/59 [18 states, 8 locals, 3 universities, 1 utility]). The 29 laboratories that do all use short-read next generation sequencing (100%, 29/29 [24 states, 4 locals, 1 university]). Tiled amplicon is the most used protocol (62%, 23/37 [20 states, 3 locals]), most often with the ARTIC primer set (61%, 14/23 [13 states, 1 local]).

Responding laboratories apply a variety of bioinformatic pipelines to their sequencing data, including Illumina, Google Cloud platform, Aqua Scope, Tera, Cecret, BLAST sanger sequencing, Bactopia and custom, in-house workflows.

Reporting Data for Public Health Impact

Responding laboratories report data to CDC through the 1 CDP platform (66%, 39/59 [30 states, 6 locals, 2 universities, 1 utility]), state health departments (59%, 35/59 [21 states, 8 locals, 5 universities, 1 utility]), local health departments (42%, 25/59 [11 states, 11 locals, 3 universities]) and utility partners (46%, 27/59 [22 states, 3 locals, 2 universities]). Some laboratories also share data with long-term care facilities, hospitals, schools and academic partners.

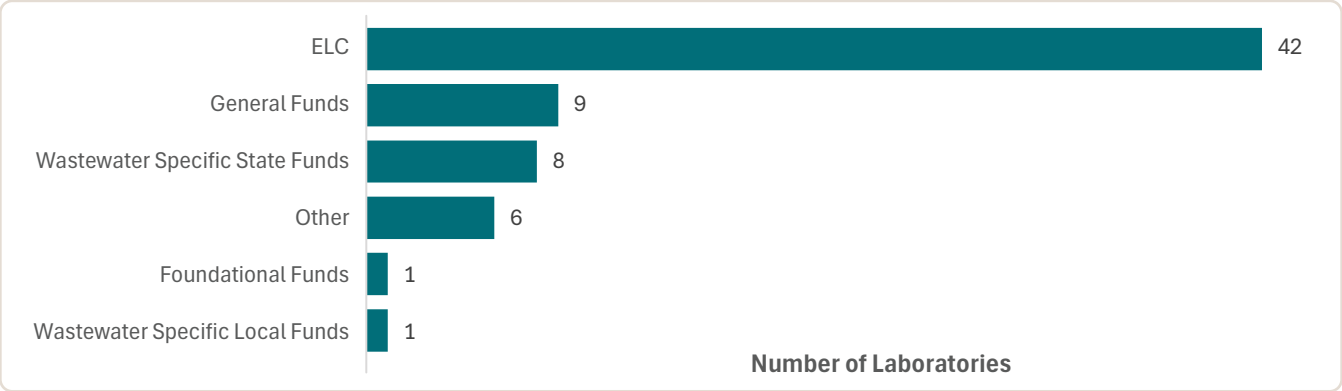
Data are used to inform the public through dashboards (72%, 43/61 [29 states, 10 locals, 3 universities]) and public messaging (43%, 26/61 [16 states, 8 locals, 1 university, 1 territory]). They also support clinical partners by complementing clinical data (56%, 34/61 [21 states, 9 locals, 3 universities, 1 territory]) and guide resource allocation (28%, 17/61 [14 states, 1 local, 2 universities]), including targeted testing (13%, 8/61 [7 states, 1 local]) and vaccination efforts (11%, 7/61 [4 states, 1 local, 2 universities]).

Barriers and Resource Needs

The most reported barriers and resource needs among responding laboratories relate to funding. The vast majority of respondents (83%, 50/60 [31 states, 13 locals, 5 universities, 1 territory]) identified funding as essential to meeting current and future wastewater surveillance goals. Staffing was the next most common barrier (48%, 29/60 [20 states, 9 locals]) and is closely tied to funding constraints. Laboratories reported needing support for higher-level positions and additional staff to manage growing workloads, including new methods, targets and sequencing, as well as disruptions from hiring freezes due to funding uncertainty. Other funding-related challenges include covering operational costs (e.g., utilities and couriers) and uncertainty around "right-sizing," as laboratories are expected to expand testing targets while also reducing workload without corresponding increases in funding.

Seventy percent of responding laboratories (42/60 [37 states, 3 locals, 1 university, 1 territory]) rely on CDC's Epidemiology and Laboratory Capacity (ELC) grant to sustain their wastewater surveillance programs. Without this funding, programs may be lost—leaving data gaps in national surveillance of public health targets.

Figure 3. Funding source



Conclusion

Public Health laboratories have built wastewater surveillance programs from the ground up, transitioned testing in-house from private laboratories, implemented routine surveillance, expanded testing targets and created effective data sharing pathways to inform public health partners and promote a healthier world through high-quality laboratory results.

While wastewater surveillance programs continue to succeed and offer invaluable public health insight, funding uncertainties at the federal level threaten the future of these programs and the impact they have made on public health surveillance.

Association of Public Health Laboratories

The Association of Public Health Laboratories (APHL) works to strengthen laboratory systems serving the public's health in the US and globally. APHL's member laboratories protect the public's health by monitoring and detecting infectious and foodborne diseases, environmental contaminants, biological and chemical agents, genetic disorders in newborns and other health threats.

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