

# Massachusetts testing sewage for COVID-19 spread

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If you live in Boston or any of more than three dozen other eastern Massachusetts communities, you could be sending vital data to public health officials with each flush of your toilet.

Through the end of the year, the sewage arriving at the Deer Island Treatment Plant will be tested three times a week for signs of the coronavirus, meant to serve as an early warning system for spikes in COVID-19 activity in communities that account for more than 40 percent of the state's cases.

The Massachusetts Water Resources Authority board last week approved a six-month, \$200,000 contract with Biobot Analytics, a startup founded by MIT graduates and faculty, to collect and test samples of wastewater arriving at two different intakes at Deer Island and to conduct rapid analysis for signs of the virus that causes COVID-19.

"Analysis of wastewater for the genetic signal (viral RNA) of the SARS-CoV-2 virus that causes COVID-19 is proving to be a cost effective approach to providing population level screening for outbreaks of COVID-19," MWRA Executive Director Fred Laskey wrote to the board in a memo.

Biobot Analytics was the first company to demonstrate in the United States that it is possible to gauge levels of coronavirus activity by screening raw sewage. The company looked at samples provided by the MWRA and determined that signs of the virus "were significantly higher than expected based on clinically confirmed cases in Massachusetts as of March 25."

Laskey said Biobot eventually provided pro bono services to more than 400 treatment facilities in 43 states, and requested additional wastewater samples from MWRA. Those samples, he said, were used to establish a baseline for the communities that send wastewater to Deer Island from January through May.

“This data series tracks well with and precedes the reports of new clinically established cases by about seven days,” Laskey wrote.

In other words, signs that more people are becoming infected with COVID-19 and that the virus is spreading more show up in wastewater about a week before testing sites and hospitals start seeing increases in sick patients.

The partnership between MWRA and Biobot that began in early March has continued, and the authority said in a presentation to board members last week that raw data from Deer Island collected the week of June 15 “shows continued downward trend” in the prevalence of the coronavirus.

Authority officials noted that those samples were collected after Phase 2 of the state’s reopening began and after some of the large demonstrations that were held in Boston and other communities.

“This pilot program will take this approach a step further by continuing the regular analyses of the wastewater and trending of the signal from the MWRA service area for the remainder of calendar 2020,” Laskey wrote. “MWRA will likely use the lessons learned from this pilot program to establish a long-term program through a competitive bid process for 2021 and beyond for as long as COVID-19 continues to be a public health threat. We will also use the results to evaluate a longer term program that could inform additional public health initiatives or concerns.”