

Bristol Landfill

Case study: Dump fixes solved odor problems in another Virginia town

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BRISTOL, Va. — A landfill gas collection system and odor neutralizers — much like those being installed in Bristol, Virginia — are credited with resolving odor issues at another Virginia landfill.

Rustburg is a quiet, county seat community of 1,400 in the center of Campbell County just a few miles south of bustling Lynchburg — home to Liberty University and four other colleges and universities, an Amtrak station and more than 80,000 residents. Six years ago, the county's regional landfill — which accepts trash from Lynchburg and other areas — had a serious odor problem. Inundated with complaints, the Region 2000 Landfill Authority initiated a study and undertook a series of steps to try and address the problem with its 150-acre facility.

“We were receiving hundreds of complaints every month. We invested well over \$1 million in a gas collection, extraction and flare system. We also put a perimeter vaporizing system around the landfill that distributes this odor-eliminating vapor that reacts with the odors and eliminates the odors,” authority Director Clarke Gibson told the Bristol Herald Courier on Wednesday.

“Between those two mitigation measures and some operational changes with cover and scheduling different types of waste — specifically sludge — we feel we've been real successful with our odor mitigation efforts,” Gibson said. “For the past few years, we only get about three to five complaints a month.”

A similar situation is occurring in the Twin City, where residents on both sides of the state line continue voicing concern over powerful odors emanating from the Bristol, Virginia landfill on Shakesville Road. The city hired a contractor who is drilling a series of wells inside the landfill, and — once completed — they will be connected to collect the gas. Drilling is expected to be completed soon, and the entire system is expected to be operational by the end of this year, city officials have previously said.

At the time its complaints began in 2015, the Rustburg landfill was accepting about 200,000 tons of municipal solid waste annually, including about 21,000 tons of sludge from the city of Lynchburg's sewer treatment plant, according to a 2016 report by SCS Engineers. That same firm is one of two firms now working on the Bristol issue.

At that time, landfill gases were emitted through the surface of the Rustburg landfill, as there was not any type of gas collection system, according to the report.

The authority first installed a pilot collection system by connecting a blower system to eight leachate cleanout pipes around the perimeter of the landfill, and the gas was run through a carbon filter system then flared — or burned, according to the SCS report.

This generated about 150 cubic feet per minute of landfill gas, and a larger flare system was installed in January 2016.

The authority subsequently approved drilling between 30 and 40 wells and installing the collection system, which Gibson credits with their success.

“We were getting slammed for about a year or so when we were trying to get the approvals to install — especially the gas collection system,” Gibson said. “That made the biggest impact — that probably was 90% of the improvement. We have a flare system, so we just burn it. It's about 50% methane — which doesn't have an odor — and the rest is sulfur dioxide and carbon dioxide — which is where the odor comes from. It does a great job controlling our odors here.”

Clarke calls the gas extraction system the “real workhorse” as the landfill currently generates about 1,000 cubic feet of landfill gas per minute (cfm).

“It’s a tough problem. Most landfills do have to deal with it [odor complaints]. Either you’ve dealt with it or you’re going to deal with it,” Clarke said. “The best way to manage it is a really good, modern gas collection system that is working properly.”

The key is continuous monitoring to alert operators if there is a problem with the underground piping.

“The pipe is in the waste, and the waste settles and moves. Over time, those pipes can develop cracks or separate; all kinds of things can happen,” he said. “We’ve had to deal with that a couple of times, but we can pretty much tell if we have a drop in cfm or it starts to suck air, our methane concentration starts to go down, we know there is a problem somewhere.”

When officials dug into the Bristol landfill, they found that many pipes in the current gas collection system were damaged and leaking.

Clarke said the Rustburg landfill has a contract with Ingenco to extract and convert landfill gas to electricity. They expect to have that operational next year. Ingenco manages a similar operation at the Bristol landfill.

In Rustburg, the landfill authority also tried a couple of odor neutralizing delivery systems along its perimeter, including two cannons described as similar to snow-making devices for ski resorts, according to its website. One remains in operation today.

“We had it around phase III [of the landfill], which is closed now. We permanently capped that part because we reached capacity. At the time we were receiving the odor complaints, that was our active phase, and it was the closest phase to several neighborhoods and houses in the area,” Clarke said. “We put the system of 8-inch diameter PVC pipe around the whole phase III section. It’s pressurized and runs all the time. We keep it in place because it’s close to the neighborhood.”