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Amid leachate problems at Bethlehem landfill, Casella bid to change operating plan challenged



A photo taken by the Department of Environmental Services during a June 4 site visit shows the Bethlehem landfill. Screenshot from DES report—Courtesy

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[New Hampshire Bulletin](#)

Published: 09-19-2024 10:59 AM

In early June, officials from the Department of Environmental Services made an unannounced visit to the landfill in Bethlehem, a small, northern New Hampshire town near the Vermont border.

They came to review records related to leachate – the “trash juice” created when rain mixes with waste – stored at the landfill managed by the Vermont-based company Casella Waste Systems.

Jaime Colby, who supervises engineering and permitting for the department's Solid Waste Bureau, told Kevin Roy, a division manager for Casella, that they would take the data back to DES for further review, but that the department had concerns about storage of leachate on the liner system, according to a [report produced by DES](#) about the visit.

Colby and another DES official returned to the site days later for a construction meeting, with clouds hanging overhead. This time, Colby told company officials DES was "very concerned" by the data it had seen in the landfill's last several quarterly reports, according to the [site visit report](#).

Two days later, DES sent a [letter of deficiency](#) to the landfill that laid out how it had failed hundreds of times to keep leachate to its required levels and to file mandatory reports, data, and investigations with the state. The landfill – known as North Country Environmental Services, or NCES – was not the only one to receive such a letter this year; but, of the three letters sent to other landfills reviewed by the Bulletin, none matched the sheer quantity of NCES's violations.

High leachate levels can "lead to multiple serious operational and stability issues" in landfills, wrote Anirban De, a civil engineer with expertise in landfills, in a Sept. 9 [opinion letter](#) to DES completed on behalf of his client BCM Environmental & Land Law, the firm that represents the citizen-group North Country Alliance for Balance Change. The group is against Casella's proposed landfill in Dalton and advocates for solid waste reform.

In his letter, De laid out concerns related to high leachate levels, saying "numerous landfill slope failures have been attributed to elevated leachate levels and consequent increase in pore water pressure. Most of these failures have been catastrophic and some caused numerous fatalities." He also expressed concerns about part of NCES's recent [request to the state](#) to modify sections of its operating plan that deal with leachate.

These changes would delete a line about the rate at which the facility generates leachate, extend its hours for hauling leachate under certain circumstances, and change some of the places where that leachate is sent, adding in a wastewater treatment facility in New Jersey that is nearly a six-hour drive away from Bethlehem.

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“An investigation should be carried out to understand the underlying cause why the actual leachate generation rate is deviating from the value that was anticipated during design,” De wrote. “It is not appropriate to accept a deviation without investigating the reason and to not include any anticipated value in the permit.”

Amy Manzelli, an attorney from BCM Environmental & Land Law who represents NCABC, asked DES in a letter to reject NCES’s permit modification request, citing De’s opinion letter.

“An operating plan is part of the permit,” Manzelli explained. “So, you know, whether your permit says ... the landfill can only operate eight hours a day, or the operating plan says the landfill can only operate eight hours a day, no matter where the requirement is stated, those are both legally enforceable requirements.”

DES must decide by Sept. 24 whether NCES’s application to modify its permit is complete, said Colby, the DES official, in an email. If it’s incomplete, DES will request more information; if it’s complete, the department has 60 days to make a decision, Colby said.

In its letter, DES identified 450 occasions between July 2023 and June of this year when NCES failed to keep leachate levels on the liner to the required 1 foot or lower. Once, the leachate was more than 116 inches high, almost 10 times higher than the requirement.

Jeff Weld, Casella’s vice president of communications, said in July that the violations were “unacceptable” but contended that they posed “no potential harm” to people or the environment. “We have immediately implemented several operational improvements to diminish the

production of leachate at the site,” he told the Bulletin, “while also increasing the number of wastewater treatment and hauling contractors available to help manage the site’s wastewater.”

De, the engineer, said these high levels of leachate were unusual. He specializes in geoenvironmental engineering and is the interim dean of the School of Engineering at Manhattan University. He worked for six years at a company that designed landfills and does consulting work on geoenvironmental and landfill-related issues for private groups, industry groups, and others, like the firm that represents NCABC.

“It is not common for landfills to have this type of high numbers, unless there is something going wrong,” he said in an interview. “... When we say it should not exceed 12 (inches), that’s the worst case in a very large storm. ... For this case, it is not natural, not normal at all.”

DES noted in its letter of deficiency that landfills are supposed to keep leachate below those levels even “up to the 25-year, 24-hour storm events,” a descriptor used to describe the severity of a storm. The high leachate levels at NCES could not be explained away by the weather: “Precipitation data included in the (landfill’s) quarterly reports indicate that there were no storm events that exceeded the 25-year/24-hour storm,” DES wrote.

More leachate means more strain on the double-liner of the landfill.

“If you are raking leaves, a bag of dry leaves is pretty light,” De said. “But if that is left in a rainstorm and it becomes soaking wet, you know how much heavier that bag gets, right? So now imagine you have waste in the landfill. ... Things get much heavier when they are wet. So you now have a heavier mass of waste material inside the landfill that adds to the load that ... can cause the thing to slide or move.

“But also, we know that things become slippery when wet, right? So you have a heavier mass of waste sitting on a base that is now more slippery because ... it is now wet. ... Therefore it has a higher chance of instability, higher probability of instability” than if it had the maximum of 1 foot of leachate standing on it.

Outside of affecting the stability of the landfill, high leachate levels pose the risk of leaks, De said. Liners are designed to be leak-proof, he said, but small defects can be tested by large amounts of waste water.

“Pieces of plastic are welded together to make that liner, and it is possible that, in reality, they do have some minor holes or minor defects in them,” De said. “But if you have a small head of water, it’s not going to leak that much. But if you have a large amount of standing water, like 10 feet of water, it’s going to start leaking and leaking quite badly. So if you have more leachate standing inside the landfill, you have a higher probability of (a) leak that will go into the groundwater.”

As part of its proposed changes to its operating plan, NCES has crossed out the rate at which the landfill generates leachate: “Based on operating experience at the facility, the long-term average leachate generation during operation ranges from about 250 to 650 gallons per acre per day (g/a/d),” it currently reads. (NCES is 51 acres, according to [Casella’s website](#).) It doesn’t propose an updated range.

That deletion concerns De. For a landfill to manage leachate – storing it in the facility’s tanks, hauling it away – it has to know how much it generates, De said. “You cannot handle an unknown quantity of something, right?” he said. In his understanding, normal operating plans contain that provision, as does NCES’s current plan.

“I can’t think of a modern, well-run landfill where they have no idea how much leachate they are generating,” De said. “Something has to go wrong for them not to have any handle on the leachate generation.”

Asked why the leachate generation figure had been deleted rather than replaced, Weld, the Casella spokesman, said: “There’s any number of revisions made throughout these processes. Focusing on one instead of any number of the others is pretty typical of someone who may be trying to inflict their own bias on others. Leachate generation is highly variable, and this has been especially true over the more recent past due to more severe weather and more frequent high volume rain events, so it is likely that it was eliminated because it was not a requirement of the permit submission and it didn’t make sense to try and predict future weather events at this time.”

If the state approves the updated operating plan, NCES could also send leachate as far as a wastewater treatment center in Passaic Valley, New Jersey, a far trek from Bethlehem. Other facilities where leachate could be treated under the revised plan include three in state – in Concord, Franklin, and Allenstown – and two others across state lines in Anson/Madison, Maine, and Plattsburgh, New York. The Concord, Franklin, and the New York locations are in the existing operating plan; if the update is approved, the other locations would be added and four from Vermont would be axed.

“Extreme concerns ... arise out of trucking PFAS-laden, toxic leachate these very long distances,” said Manzelli, the attorney.

“If you just sort of think through the visual of solid waste coming from many of these places, trucked to New Hampshire, and then converted through rain partially into leachate ... and then hauled back to some of these places to their wastewater treatment plants,” Manzelli said. “It’s a very dangerous situation.”

Weld said there would typically be six to 10 truckloads of leachate – each carrying various volumes – sent from NCES to treatments facilities on a given day, though “leachate volumes do vary seasonally and are influenced by precipitation amounts, so there can be significant changes week to week.” On how often each treatment facility would be used, he said, “there is no set schedule,” citing variables like the capacity of treatment facilities and how much leachate is being produced.

He said trucks are loaded with leachate on a concrete pad that has a containment drain. “Any potential spills during loading operations would be collected by the drain and would flow by gravity back to the leachate tank vault,” he said. “All containment areas have redundant systems (pipe within a pipe, tank within a tank, etc.)” The driver remains with the truck “at all times during the loading operation,” he said.

The permit modification request, Weld said through email, “arose out of the intermittent reduction of the capacity of wastewater treatment facilities for acceptance of leachate for treatment and disposal over the past several months.” When these treatment facilities have to curtail the amount of leachate they accept, he said, landfill operators have to look for alternatives, during which leachate accumulates in the management system.

“Ordinarily, leachate is transported to the nearest (wastewater treatment facilities) that will accept it,” Weld said, “but when those (wastewater treatment facilities) suspend acceptance of leachate, the landfill operator has to look for more distant alternatives. The longer hauling distances increase the time the trucks spend on the road which means that fewer loads can be transported per day.” NCES is asking for the state to allow leachate hauling two hours earlier in the morning if the facility is nearing 1 foot of leachate on the liner or under other extenuating circumstances.

Weld pushed back hard against the criticism from NCABC and the group's call for DES to reject the permit modification request.

"Reflexively opposing the permit modification makes sense only in terms of political strategy. It is environmentally illiterate," Weld wrote. "Landfills are designed to ensure that leachate is removed from the liner as rapidly as is practicable. Objecting to changes that will increase the amount of leachate hauled from the site means that NCABC prefers the buildup of leachate on the liner system because anything that impedes leachate removal from the facility necessarily results in leachate accumulation."

He said the group is "simply seeking publicity to help further their cause of stopping the necessary development of the Granite State Landfill to serve those customers once NCES closes." It is scheduled to close by 2027.

Those [opposed to the proposed landfill](#) – not far from the existing landfill in Bethlehem and a half-mile from Forest Lake – dispute that it is necessary, saying the state has ample capacity for its own trash. Problems at the Bethlehem landfill have raised red flags for residents near the proposed site who worry about the impact of a new landfill on the environment and their way of life.

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