



An Old Town landfill shows how tough Maine's 'forever chemical' problem is to solve

by **Sawyer Loftus**
6 hours ago



Trash and waste sit, waiting to be compacted on the hills of the Juniper Ridge Landfill on Wednesday, Jan. 19, 2022.

Twin Rivers Paper Company in Madawaska is licensed to release 15 million gallons a day of treated papermaking-related waste into the St. John River, including the liquid runoff from the mill's state-licensed, special waste landfill.

In November, testing revealed that the mill's landfill runoff had a higher concentration of "forever chemicals" than the runoff from any other Maine landfill that had done testing under a state law passed last year.



A compacter crushes trash at Juniper Ridge Landfill, Wednesday, Jan. 19, 2022. Credit: Linda Coan O’Kresik / BDN

But the mill isn’t alone. Every landfill that has produced results so far from the first of five rounds of state-required testing of landfill runoff shows some concentration of the so-called forever chemicals, also known as PFAS, that manufacturers have used for decades in products such as grease-resistant food packaging, waterproof clothing and non-stick cookware, according to Maine Department of Environmental Protection data.

Most samples had several times more PFAS than safe drinking water. Twin Rivers’ sample, for instance, had 22,662 parts per trillion parts water, more than a thousand times Maine’s PFAS standard for safe drinking water of 20 parts per trillion. The company said in a statement Friday that it has pivoted to the development of PFAS-free food packaging — one of its main products — and is committed to being a responsible “environmental steward.”

Forever chemicals in Maine landfills' runoff

Maine's landfills are testing their runoff for six types of PFAS

Facility name and type	Town	PFAS concentration (parts per trillion)	Sample date	Sample collection location	Notes
LEWISTON, CITY OF	LEWISTON	25.9	11/3/2021	MH-6U	Secure Landfill
LEWISTON, CITY OF	LEWISTON	299	11/3/2021	MH-6L	Secure Landfill
LEWISTON, CITY OF	LEWISTON	680	11/3/2021	MH-14	Combined
MIDCOAST SOLID WASTE CORPORATION (DEMO)	ROCKPORT	1001	11/4/2021	LT	
ND PAPER LLC (SPECIAL WASTE)	MEXICO				No response
PINE TREE LANDFILL (SPECIAL WASTE)	HAMPDEN	2110	12/7/2021	Leachate tank	
PIXELLE ANDROSCOGGIN LLC (SPECIAL WASTE)	JAY				Sampled, waiting for results
ROCKLAND, CITY OF (DEMO)	ROCKLAND	301	11/2/2021	Q2S	
ROCKLAND, CITY OF (DEMO)	ROCKLAND	1360	11/2/2021	Q2NB	
SANFORD SEWERAGE					

Source: Maine Department of Environmental Protection

Test results are current as of Feb. 10 | Maine's safe drinking water threshold for PFAS is 20 parts per trillion

 A Flourish data visualization

The first round of testing at Maine landfills shows how closely the state's PFAS contamination problem is linked to its papermaking history. So

many of Maine's state-licensed landfills exist because of the nearby paper mills that used them. Many of those mills closed years ago, but the PFAS contamination in their landfills persists.

But the landfill testing also shows how hard Maine's PFAS contamination problem will be to solve. The landfills are likely the final resting place for the chemicals that pose long-term health and environmental risks. But landfills can't contain all of the PFAS that end up there. Their runoff contains the chemicals, and the wastewater facilities that treat it then discharge the substance into rivers. Any PFAS they manage to remove ends up back in a landfill as sludge, and the cycle starts again.

In the Bangor area, millions of gallons of the runoff, called leachate, each year end up in the Penobscot River from the state-owned Juniper Ridge Landfill on the Old Town-Alton line, after it's treated at the nearby ND Paper mill in Old Town. The mill's wastewater treatment facility isn't required to remove PFAS.

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"The issues with landfills are big because they're really the only way to deal with PFAS contamination once it happens," said Jean MacRae, an associate professor of civil and environmental engineering at the

University of Maine. “Water can be treated to get PFAS out of the water by passing it through an activated carbon charcoal filter. And if you do that, you’ll stick the PFAS to the charcoal, but then you have contaminated charcoal.

“So where does that go? It goes to Juniper Ridge,” she said.

70 million gallons of runoff

The sprawling and expanding Juniper Ridge Landfill accepts dozens of deliveries daily that contain sludge from wastewater treatment plants, industrial waste, household trash and more.

Much of it contains forever chemicals, whether in industrial waste from manufacturers, consumer products in household trash or sewage sludge that contains the chemicals because they wash off into wastewater from non-stick pans, waterproof clothes and other products.

Juniper Ridge’s runoff had 410 parts PFAS per trillion parts water during an early December test, more than 20 times the safe drinking water threshold. Millions of gallons of it end up in the Penobscot River annually.

The leachate collects as rain and snowmelt percolate through the mountains of trash inside the gates of Juniper Ridge into a series of pipes and drains that end up in a special collection pond, said Shelby Wright, a spokesperson for Casella Waste Systems, which runs the landfill.



A compactor traverses the mountains of waste at Juniper Ridge Landfill, on Wednesday, Jan. 19, 2022. Credit: Linda Coan O’Kresik / BDN

From there, tanker trucks haul the liquid waste down the road to ND Paper’s pulp mill five to six times a day, and ND Paper sends the runoff through its wastewater treatment facility, according to an agreement between Casella and ND Paper.

ND Paper isn’t required to test for or filter out PFAS, ND spokesperson Brennan Burks said. After treatment, the company is licensed to release the wastewater into the Penobscot River.

Casella sends about 70 millions gallons of leachate annually to the mill’s treatment facility, Wright said.

“Unfortunately, the technology just does not exist at this point in time to effectively remove PFAS from the discharge, from leachate or from wastewater treatment that is discharged,” she said. “Casella is willing to spend money when the technology is proven and when it will ultimately enhance the operation and the management of landfill.”

A contamination cycle

It's difficult to know how much PFAS is making its way into the Penobscot River from Juniper Ridge's leachate, MacRae said.

There's no measurement because ND Paper isn't required to test or treat the wastewater it accepts for PFAS. Plus, the large waterbody would dilute any sample, making it challenging to know how much has made it into the river.



Birds sit and fly above the trash of the Juniper Ridge Landfill, Wednesday, Jan. 19, 2022. Credit: Linda Coan O'Kresik / BDN

But the treatment process likely removes some of the contamination, MacRae said.

"The ND plant will remove a significant portion of the long-chain PFAS even if they don't mean to because they stick to solids," MacRae said. But that may not get the PFAS level down to what would be considered a safe threshold.

Even if a treatment plant removes PFAS, the sludge that's left has to go to a landfill, especially since the state suspended the practice of applying

sludge to farmland in 2019. That means the chemicals will once again seep into the landfill runoff, which will then require treatment.

"It's difficult to get the [PFAS], but once you have it out it's just going to go back to the landfill," MacRae said.



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