

Many of Idaho's wastewater plants violated their permits, but the reasons are complicated

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Tony Harmon, superintendent of the Caldwell wastewater treatment plant, walks toward a pair of digester tanks during a tour of the facility Wednesday. The plant has not had any permit violations since a major upgrade in 2019.


Brian Myrick / Idaho Press

In most every city and town in the U.S., billions of microscopic critters swim in a slurry of liquid household waste.

As gross as it sounds, this is far from a nightmare. These bacteria and other organisms reside at sewage treatment plants, and they live for our waste, lovingly gobbling it up and breaking it down as part of the water cleaning process. Sewage treatment plants and the microscopic life that lives there are the tiny but mighty backstop preventing raw sewage from entering our rivers and waterways.

But a lot can go wrong.

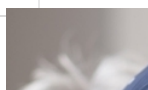
When the city of Caldwell was constructing a new filtration system as part of its sewage treatment plant, staff knew they would need to buy themselves some time to connect the new building with the other parts of the facility. They needed a way to continue to accept and store waste coming into the facility while some areas were temporarily out of commission. To do that, a well-meaning technician decided to empty a large basin that pumps air through wastewater so it could act as a temporary storage tank for incoming sewage.



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A basin like that should be drained slowly over the course of a day, said Brent Orton, the city of Caldwell's public works director. Instead, the basin was drained in just two hours, he said. In a separate instance, the basins were drained in such a way that too many of the microscopic organisms that aid in waste breakdown were flushed out.

Both instances led to violations of the city's wastewater discharge permit, which is issued to ensure the city complies with the Clean Water Act.

The city of Caldwell is far from alone. A report published in September by the Idaho Conservation League [graded wastewater treatment facilities in Idaho by whether or not they had wastewater discharge violations](#). The organization counted any instance of a violation as a failing grade, arguing that it endangers Idaho's water resources. A whopping 75% of facilities had one or more violations.

But like Caldwell's case, there are many reasons why a plant may have violations. The Idaho Press took a deep dive to learn how wastewater permit violations threaten water and human health, how the state regulates wastewater treatment plants, why violations occurred at Treasure Valley wastewater plants, and what cities are doing to prevent them from happening again.



Tony Harmon, superintendent of the Caldwell wastewater treatment plant, talks about the treatment process during a tour of the facility Wednesday.

[Brian Myrick / Idaho Press](#)

THE THREAT TO AQUATIC AND HUMAN LIFE

In Idaho, pollution from inadequately cleaned wastewater can affect rivers and lakes and the wildlife that lives there, said Will Tiedemann, conservation associate with the Idaho Conservation League. Excessive E. coli bacteria, found in human waste, can cause illness and even death if people are exposed to it in high enough quantities, he said.

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Too much nitrogen and ammonia can build up in waterways and cause excessive algae growth, including cyanobacteria, which can lead to waterway closures, Tiedemann said. And when algae die, the bacteria that decompose it may suck up so much oxygen that it leaves too little for fish and other aquatic life, Tiedemann said. Fish kills are common in stagnant water bodies, such as lakes, he said.

If a wastewater plant discharges too many "total suspended solids" — natural materials, such as minerals — waterways become cloudy and turbid, Tiedemann said. Just like a person with asthma may struggle to breathe on a day with poor air quality, murky conditions make it difficult for aquatic organisms to filter the oxygen they need from the water.

In waterways with a plant that discharges excess nitrates, it is possible fish could accumulate those and pass them on to people who eat them, Tiedemann said. Though often used to preserve meat, nitrate is considered a carcinogen, and people are encouraged to avoid it if possible, he said.

Tiedemann said pollution from wastewater is not an issue that gets a lot of attention because its impact may not be visible, or may be felt over time rather than right away.

"No one is immediately dying," he said.

More awareness on the issue may lead to people pushing leaders in their communities to make changes and upgrade to better wastewater cleaning systems, according to the organization's report, which offers suggestions as to how community members can ask for change.



Tony Harmon, superintendent of the Caldwell wastewater treatment plant, talks about the treatment process during a tour of the facility Wednesday.

[Brian Myrick / Idaho Press](#)

COMPLIANCE CHALLENGES

The Idaho Department of Environmental Quality took over the permitting of Idaho's wastewater facilities from the U.S. Environmental Protection Agency in 2018, much later than many other states, said Troy Smith, the state's director of the Pollutant Discharge Elimination System, which guides what quantity of

IPDES coverage from the an acronym stands for Idaho wastewater facility is allowed to put into the environment.
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Plants that had any discharge violations in the previous three years, between January 2019 and December 2021, got failing grades in the Idaho Conservation League's report. Ten treatment plants of the 112 looked at in the report comprised more than half of the violations, the report said.



But Smith says his department would interpret discharge violations differently from ICL.

"We would think there's really a gradation there," Smith said. "You've got facilities that have very few violations and those that have 100 or more violations. ... It really is important that we would consider being in good compliance versus those that are in significant noncompliance, that we're looking at the frequency, magnitude, and duration of those violations. So I don't think it's quite fair to characterize every facility that has a violation over three years as being in the failing category."

For example, there is a difference if a facility exceeds the amount of pollution it is allowed to produce by 1% or 100%, and if that happens regularly, versus over a confined period of time, Smith said.

But the ICL report argues that it does make sense to count any violation as failure because "the Clean Water Act contains no provision for a minor violation or forgiveness for barely or infrequently violating a permit. Exceeding a limit by 50%, 10%, or just 1% is treated the same ..."

There are a lot of reasons a city may struggle to comply with its permit, Smith said. Small communities may have fewer resources to update infrastructure, pay for personnel training, and hire treatment plant managers at competitive wages than larger communities, he said. Old and outdated infrastructure may lead to challenges in meeting current pollution limits, he said.

In general, Smith's department's philosophy is to "help communities understand and comply with permits, because, ultimately, that is what is protecting human health and the environment."



"When we can't get the results that we need and we can't help get those facilities into compliance when necessary, that's when we may escalate toward enforcement," he said.

Smith said he could not offer specific comments about potential or ongoing enforcement, but said the agency is "working with a number of facilities on compliance assistance throughout the valley and throughout the state."

HUMAN ERROR, ACTS OF GOD, AND THE UNKNOWN LED TO VIOLATIONS

In the case of Caldwell's plant, it was human error that led to the release of too much ammonia and total suspended solids into Indian Creek. But the construction activity in which the violations occurred produced a new filter building that would prevent similar violations from happening in the future, said Tony Harmon, wastewater treatment plant superintendent for the city of Caldwell.

Wastewater typically involves a series of physical processes, like filtration and skimming, and biological processes, like aeration, where our microscopic allies get a starring role. Caldwell's filter building provides another cleaning step, where water is filtered through anthracite (coal) and silica sand to help remove any remaining solids as well as filtering out phosphorus, Harmon said.

While it's unfortunate that the violations happened, Harmon said, the installation of the building, as well as additional ammonia sensors, represent added safeguards that drastically reduce the likelihood of similar violations that happened during the building's construction in 2019, he said.



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Treatment tanks sit mostly empty at the Caldwell wastewater treatment plant.
[Brian Myrick / Idaho Press](#)

The city of Boise has two treatment plants, which it refers to as water renewal facilities. Its Lander Street facility saw three violations while its West Boise facility saw four during the three-year period focused on in ICL's report. At both facilities, one or two incidents led to multiple violations, said Kate Harris, the city's water quality programs manager.



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At the Lander facility, a large piece of struvite — a chemical deposit that accumulates in the facility's lines — got lodged in one of the facility's digestors, backing up the system, starving the microscopic organisms, and preventing complete breakdown of waste for a short time, Harris said. Thankfully, the plant had stock available to replace the bugs and get the digester back online. Another time, a storm caused a power outage, and the plant's back-up generator was not working for three and a half hours, leading to E. coli violations, Harris said.

Similarly, at the West Boise facility, a power outage in March 2021 led to oxygen bubbling blowers not doing their job for 16 hours, Harris said.

Part of the problem is that some aspects of the treatment process at the West Boise facility have back-up power, but there is not back-up power for the entire plant because "it would require a small power plant," Harris said. Every violation leads to an investigation to better understand the issue and see if there are any places where improvements can be made, said Natalie Monro, a spokesperson for the city's public works department.

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Boise voters in recent years have passed bonds to upgrade the Lander facility, and the city has a variety of projects slated for the West Boise facility as well, Monro said. Those upgrades will ensure "that we are replacing things before they reach the point of failure," she said. One recent upgrade included an ultraviolet facility at the Lander facility, Harris said.



Tony Harmon, superintendent of the Caldwell wastewater treatment plant, talks about the process while standing in a UV treatment area Wednesday.

[Brian Myrick / Idaho Press](#)

Sometimes the reasons for violations are less apparent. Nampa's plant recorded three E. coli violations, though ICL's report says four, said Jeff Barnes, director of water resources for the city's public works department. City staff take samples every day of the week, and each violation represented an outlier from the norm, Barnes said.



City staff reviewed the entire sampling process and concluded it was likely caused by a contaminated sampling bottle, said Andy Zimmerman, superintendent of the city's wastewater division. That said, the facility has some open-air portions in its final processing steps, and sees a wide variety of birds fly over whose feces could affect water quality sampling, Zimmerman said. The city is looking at covering those parts of the facility in future upgrades, he said.



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Currently, the city has been working on a series of upgrades, including shifting the facility from a chemical disinfection process to an ultraviolet system, Zimmerman said. And a portion of the water will be processed further so that it can be recycled — released to the Phyllis Canal for irrigation customers, Barnes said.

"It's one of the biggest environmental reuse projects in the state," and is expected to be in use by the end of 2024, Barnes said.

Wilder's plant has seen significant improvements in the previous three years, said Chelsie Johnson, the city's director of public works. Wilder relies largely on a series of holding ponds to treat its wastewater, Johnson said. In 2019, prior to Johnson starting, the city saw 39 violations, she said. Those included violations for E. coli and solids, according to ICL's report. The facility saw seven violations in both 2020 and 2021, followed by just one so far in 2022, she said, adding that the report notes the facility's improvements.

Johnson attributed the E. coli violations to a bullfrog getting stuck against a pump in one of the ponds.



As for the other violations, Johnson said she was not sure that the people who managed the facility's ponds prior to 2019 had the training to manage them properly. But she says the improvements over the past few years are evidence of her determination to turn things around.

"I know my goal for the next three years is to not be on this list," she said.

Two Treasure Valley facilities received the distinction of not having any violations: Greenleaf and Star.

Erin Rusby



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