

Water: 'We have aging infrastructure across the nation'

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The city pays to pump and treat water, so money is lost when some of that water leaves the system, doesn't reach a paying customer or isn't accurately metered.

"If you have an old meter, it can be as much as 20 percent off," Dunn said, "so the customers would be billed 20 percent less, basically."

Infiltration and inflow

On the wastewater end, cracks in pipes pull groundwater into the sewage system — a process called "infiltration" — before reaching a pump station or the wastewater treatment plant.

Added to this is the water "inflow" from cross-connected pipes, like residential downspouts, that should be connected to the city's separate stormwater system rather than the sewage system.

During wet weather, as much as 50 percent of the water that enters the wastewater treatment plant should not be in there.

Infiltration and inflow (I/I) reduces capacity at the plant, and the greater flow is more



Erick Bengel/The Daily Astorian

This sequencing batch reactor is part of Warrenton's wastewater treatment plant, which — in addition to the water flowing in — will also treat a lot of groundwater that leaked into the sewage pipes during periods of wet weather.

energy intensive — and more expensive — to treat.

"We can only handle so much water through the (wastewater) treatment plant," Dunn said, adding that "if we

go over that amount, then we would violate our permit."

Capacity and growth

Water leakage and I/I are not unique to Warrenton.

"We have aging infrastructure across the nation," Dunn said. "These pipes don't last forever."

Though the city has long discussed the costly cracks, Pacific Coast Seafood's plans

to rebuild in Warrenton got the city thinking more deeply about the issue. The company's former Warrenton location burned down in 2013.

Pacific Coast Seafood is "such a big user of water, which is really good because that makes money for the city," Community Development Director Skip Urling said. "But all that water has to go into the sanitary sewage treatment system."

The promise of more industry and more residents moving into town is prompting the city to assess the capacity at the wastewater treatment plant — how much flow it can handle — so Warrenton's discharge doesn't overwhelm the sewage system.

As Warrenton grows, the city will need to expand the treatment plant, an expensive project that will become necessary much sooner if a 50-percent infiltration and inflow continues to eat up capacity.

"You're saving future costs by eliminating I/I," Dunn said.

In progress

A crew recently repaired the leaking transmission main from the Lewis and Clark

River to the water treatment plant. And the city is currently fixing the defective meters and installing new meters in unmetereated areas, like at the Warrenton Mooring Basin.

For this fiscal year, the City Commission raised the city's water rates 7 percent and sewer rates 6 percent to compensate for years of postponing rate hikes that support Warrenton's infrastructure.

The rates, which will be revisited on an annual basis, will help plug the holes and mend the cracks.

"That's really going to help us improve the system over time," Dunn told the commission.

Dunn and his team are in the preplanning phase of capital improvement projects to address water leakage. Meanwhile, the commission has approved a water system master plan, due to the state by 2018, and an infiltration and inflow study.

"You're always going to have some leaks in your system. Every system has some water leaks, it has some sewer infiltration," Dunn said. "But, generally speaking, you want to keep it as low as possible."

ODOT: Poor compaction, low density is department's 'biggest problem'

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"Quality control was not taken seriously," says Bret Alford, a longtime Department of Transportation quality-control specialist who left the agency in 2012. Oregon's contractor-driven oversight system, he adds, "Seems like the fox guarding the hens to me."

ODOT's oversight system creates a "huge risk of fraud," former department internal auditor Mary Hull Caballero, who investigated the state agency's construction practices extensively, told Secretary of State auditors in 2013, according to a summary of the auditors' interview. Hull Caballero, who is now the city of Portland's elected auditor, declined to comment for this story.

While there are plenty of good contractors out there, "it is so easy for a contractor to falsify documentation," says Carol Putnam, a former ODOT quality assurance specialist who left the department in 2013. "We don't know what goes on behind closed doors."

In 2014, the Federal Highway Administration communicated the results of a top-to-bottom review of Oregon's quality control for road construction conducted the previous year. Its recommendations largely echoed a report it issued in 2005.

Rudimentary quality checks

Since 2005, federal highway officials have urged Oregon to pursue electronic data collection of quality test results and to use statistical comparisons to look for anomalies and bogus reporting.

Oregon, instead, does not systematically track quality results or use the statistical tests that are common in other states, according to the federal review. Instead of tracking numerous results statistically, a technician will simply compare the state's result to the contractor's finding during the spot-check conducted on 10 percent of tests.

"This method of verification is very weak and will only detect severe problems with contractor test results," according to a 2013 Federal Highway Administration report.

Much as it did when the highway administration made the same recommendation in 2005, ODOT has promised to launch a study of the issue. In July, work began on a \$300,000 study by a Texas A&M Transportation Institute researcher who formerly worked for the pavement industry.

Not only is Oregon's rudimentary spot-check method weak and vulnerable to fraud, the state doesn't do enough spot-checking to determine if it has a problem, according to the feds.

In a November 2014 memo requesting funding to study potential quality improvements, ODOT's top quality assurance engineer, Greg Stellmach, wrote that data gathered that year suggested that contractors are not

following state transportation rules on random quality testing. That, in turn, can have a "huge impact" on the department's spending on asphalt, he wrote.

Faulty asphalt test

Oregon's roads use asphalt generated by privately owned asphalt plants. Oregon, however, continues to test the asphalt at the plant itself, using a system that allows the plant operator to know generally when the contractor's self-test sample is supposed to be taken. That allows the operator to temporarily "optimize" the asphalt mix to meet quality standards, according to the 2014 memo by Stellmach, the ODOT quality expert. Not only that, but the plant operator has plenty of time to switch to a different mix when it sees a state quality technician drive up to double-check the contractor's self-test, according to the federal audit.

Fraud by asphalt plants is not an abstract concern. Documents show that in 2008, an Department of Transportation pavement engineer resigned in protest and warned the Federal Highway Administration of an "unethical" failure by ODOT management to investigate what he concluded was contractor fraud by an asphalt supplier.

Similarly, Alford, the former ODOT quality specialist, says he heard from a friend who worked for an asphalt contractor that there literally was a switch the operator could flip to

meet quality standards when the ODOT inspector showed up.

Oregon is the only state west of the Rockies to still test at the plant. Most western states test closer to the paving machine as it lays asphalt on the roadbed.

ODOT Construction and Materials Engineer Joe Squire says testing the asphalt behind the paver would endanger the employee doing the testing. However, a 2007 University of Illinois survey of state departments of transportation found that "sampling behind the paver is being conducted by many states without much difficulty."

A recipe for potholes

Another major issue for ODOT is compaction, meaning the use of those giant yellow rollers to get the asphalt to meet the required minimum density. Density tests after compaction are used to determine bonus payments to contractors.

A Portland-area ODOT project manager, Ron Larson, explained the issue to state audi-

tors in 2013. "The higher the compaction, the longer (the roadway) lasts," he said, according to notes of his interview. "Problems in this area are what eventually form potholes."

Poor compaction and low density, he said, is ODOT's "biggest problem" on projects that go bad.

And yet contractors can use rollers to game the density tests, as ODOT officials have acknowledged. The contractors whose rollers are compacting the asphalt often know in advance the locations where the density of their product is going to be tested, allowing them to manipulate the system, according to ODOT's top quality expert.

"Frequently the locations that the density shots should be taken at are marked along the pavement at the tonnage where the test needs to be taken," Stellmach wrote in the 2014 ODOT document discussing weaknesses in Oregon's system. "This allows the roller opera-

tors to be aware of test locations and potentially influences the pattern that they make in rolling the asphalt. The (contractors') density technician may also ask the roller operator to do additional compaction in a location that has not met compaction requirements."

Stellmach, in a telephone interview in which his boss, Joe Squire, and two public relations specialists were listening in, said that he has no evidence that gaming the system is a problem. Squire, for his part, said "the vast majority of pavements within the Oregon highway system is rated fair to good or better, which is very high among states."

Contractor technicians who cheat on tests face potential criminal charges and fines. Squire and Stellmach noted the state has suspended several technicians in recent years, one of whom was suspected of fraudulent misrepresentation.

Alford, for his part, says he saw a dynamic at ODOT that was focused on getting things done on time as well as excessive coziness between contractors and his coworkers, including project managers. Once, he protested that he would sign only truthful quality reports. A manager responded that Alford would sign whatever report he was told, "or I would be out of a job," Alford recalls.

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