In Pittsburgh, a 2-by-4 is an essential part of the water workers’ tool kit because they risk electrocution each time they work on the city’s century-old pump stations.

The mains beneath Harrisburg are so corroded that storm water and human waste in some parts of the city come into contact with the soil.

Residents of Stockton No. 8, a coal-mining village outside Hazleton, found a deer carcass in the reservoir that fed them untreated drinking water. It wasn’t clear how long it floated there.

Budget cuts gutted the state Department of Environmental Protection, the agency responsible for ensuring safe drinking water for some 30 million residents. Private wells, which supply water to another 3.5 million, go unregulated.

That’s only half the story.

Many water systems themselves function under what one operator called a “fix as you fail” mentality—-in other words a perpetual “fail mentality” —in other words a perpetual failure to follow up on violations with adequate corrective measures. They can be found in 213 cities with systems and to replace pipes and water mains would need $16.8 billion in infrastructure upgrades.

Utility spokesman Andrew Bliss said “It’s an unacceptable risk” — leading to a 2016 warning from the U.S. Environmental Protection Agency, they can be found in 213 cities with systems and to replace pipes and water mains would need $16.8 billion in infrastructure upgrades.

Marc Edwards, the Virginia Tech engineering professor who helped blow the whistle on the water crisis in Flint, Michigan.

“Once you’ve got a hole that’s been created over a period of years,” he said, “with water flowing through, it tends to get bigger.”

A sewer with no bottom is a safety problem because it means that wastewater is leaching into the soil and will reach the water table, the same groundwater used as a source of drinking water. (Capital Region Water’s primary source is the DeHart Reservoir in northern Dauphin County, although it does use the Susquehanna as an emergency source.)

Repairing the Paxton Interceptor, which was completed in 1904, will cost $8.7 million and is expected to be completed this end of this year. The larger plan would roll out over the next two decades if approved by the EPA. The additional infrastructure costs represent more than 2 percent of residents’ current income.

In neighboring Steelton, the DEP found that the treatment plant failed to adequately treat for giardia, a parasite that can cause diarrhea and other ailments, as well as elevated levels of trichloroethylene, or TCE, a chemical treatment linked to increased cancer risk.

A former chief executive officer of the plant, Thomas Scheitrum, received a year of probation and a roughly $1.5 million fund balance.

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