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Aging of Water Mains Is Becoming Hard to Ignore

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Stuart Isett for The New York Times

Lydia Parsons drinks from a water fountain in Chelan, Wash., where the water infrastructure still includes old wood water pipes used to deliver water to homes in the town.

By MICHAEL COOPER
Published: April 17, 2009

CHELAN, Wash. — It has been 2,000 years since the Romans built their aqueducts, and 200 years since Philadelphia began using cast-iron water mains. But the 6-inch-wide city pipe that still delivers drinking water to a block on Nixon Street here uses an even more primitive technology: wood.

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Kevin Moloney for The New York Times
Inside a wooden pipe, which is bound with a coil of metal.

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Its wooden planks are lashed together with a coil of metal as if each section of pipe were a long, narrow barrel. And while the small stretch beneath the ground here may seem more Swiss Family Robinson than 21st century, it is not unique to Chelan.

Water officials say they believe that a handful of wooden water mains are still in use in South Dakota, Alaska and Pennsylvania, among other places. The old wood pipes offer a vivid reminder of the age and fragility of the nation's drinking water systems, many of which rely heavily on old pipes that often remain out of sight and mind — until they burst.

And they are bursting with alarming frequency in many areas these days, particularly in systems coping with septuagenarian, octogenarian, and even century-old pipes. There are an estimated 240,000 water main breaks each year in the United States, according to the [Environmental](#)

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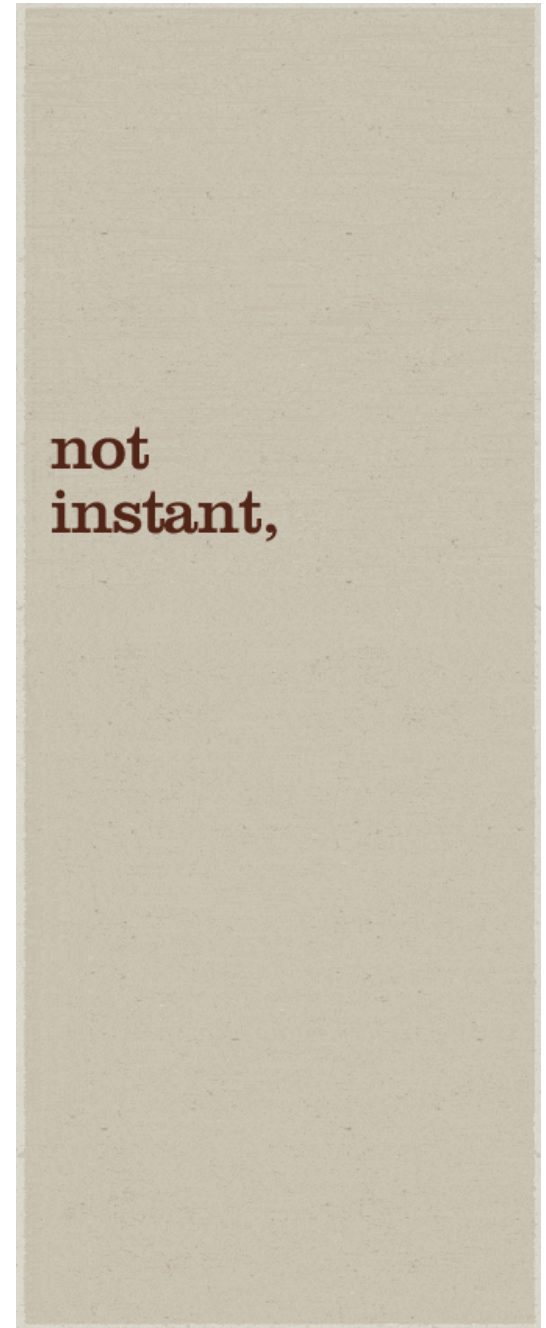
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Kevin Moloney for The New York Times
Dwane Van Epps, the director of public works for Chelan, Wash., which still has wooden pipes.

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Stuart Issett for The New York Times
An unused wood water pipe kept at the Public Works office in Chelan, Wash.

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[Protection Agency's Aging Water Infrastructure Research Program](#), and some water experts fear that the problem is getting worse.

"We believe that the number of breaks is increasing," said D. Wayne Klotz, the president of the [American Society of Civil Engineers](#). He warned that the breaks not only waste millions of gallons of clean, treated drinking water, but also can cause tremendous damage, pointing to a major break in Maryland just before Christmas that stranded motorists on a flooded road. "When most people think of a leak, they think of a drip in their sink," Mr. Klotz said. "These are not like that. They were rescuing people by helicopter!"

The new federal stimulus law provides \$6 billion for water projects, with \$2 billion of that directed to drinking water systems. But that money is only, well, a drop in the bucket: a report released last month by the E.P.A. estimated that the nation's drinking water systems require an investment of \$334.8 billion over the next two decades, with most of the money needed to improve transmission and distribution systems.

The dangers of the nation's aging plumbing are everywhere.

This year water main breaks have stranded drivers on washed-out roads around the nation, caused a mudslide in California and flooded school libraries in Minnesota and Texas. Last month, just after Gov. [David A. Paterson](#) attended the opening of a new subway station in Lower Manhattan, service to the subway line was suspended when a water main that was installed in 1870 burst, flooding the tracks. A break in Niagara Falls, N.Y., spewed some 11 million gallons of water.

Failing pipes plagued Warren, Mich., just outside of Detroit, this winter. After the city suffered 107 breaks in the course of one particularly cold month — three times the average — the mayor, Jim Fouts, declared a state of emergency so he could hire outside workers to help his overwhelmed city crews cope. A break outside a shopping center created a sinkhole that engulfed a van, and left the center without water for three days.

"Everybody's been looking the other way, and we have this ticking time bomb that's ready to go off," Mr. Fouts said, noting that many municipalities spend their scant resources on more visible needs, like street work, rather than on costly pipe repair and replacement. "Unfortunately, what lies beneath is as dangerous as what's above."

So there is plenty of competition for the federal drinking water money. When the state of Ohio asked for suggestions on spending its stimulus money, mayors and city managers put in some 1,400 requests for drinking water projects costing a total of \$3 billion, said Melissa Fazekas, a spokeswoman for the Ohio Environmental Protection Agency.
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Many of those requests sound like pleas. Village managers complained of losing a quarter, or even half of their drinking water to leaky pipes. One official said that his village's aging pipes had burst or sprung leaks 20 times since November. Others lamented that water main breaks regularly forced them to order their residents to boil their water in order to avoid any contamination.

Andrew Stone, the director of the street department in Athens, Ohio, put in a request to replace the aging water line beneath East Union Street — a street that has been closed to traffic since 2002, when a water main break swept away its historic red brick surface. Mr. Stone's department has saved all the red brick, and is eager to resurface the street once the water line is replaced. "It's a very unique street," he said.

With many systems showing their age, the American Water Works Association has termed this "the dawn of the replacement era." Many localities find themselves having to replace miles and miles of pipe for the first time — a burden that is especially acute in poorer, older industrial areas with shrinking populations, where such work would require higher-than-average water-rate increases on the residents who remain.

When it comes to pipes, newer is not necessarily better, the association has found. The oldest cast-iron pipes, dating to the late 1800s, have an average useful life of about 120 years. For cast-iron pipes installed in the 1920s, that drops to about 100 years. And pipes put in after World War II have an average life of only around 75 years. The upshot is that all three vintages of pipe will need replacement in a short stretch of time.

Still, some pipes last longer than anyone expected — like the remaining wooden pipes that are scattered around the country, relics from the days when many early American water systems used barrel-like pipes or bored-out logs to deliver water.

No one seems to know exactly how old the wooden pipe is here in [Chelan](#), a resort city on the banks of Lake Chelan. The rest of the city's wooden mains were replaced long ago, said Dwane Van Epps, the city's director of public works. Although the wood pipe has given him no trouble, Mr. Van Epps said he planned to replace the last 500-foot-section before it fails, because repairing wood pipe can be finicky work that combines carpentry with plumbing.

"It's kind of an art to work on wood pipe now," said Mr. Van Epps, who used to repair the wooden pipes in a neighboring town when he was a young contractor. "And I'm not sure that we have even the expertise to do a major repair on wood lines."

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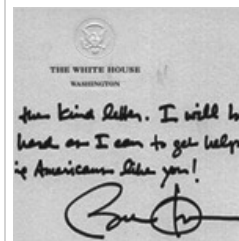


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