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SUSTAINABLE SOLUTIONS FOR WATER INFRASTRUCTURE WITHOUT SOAKING TAXPAYERS

By Bruce Hollands

Last week marked the nineteenth annual International World Water Day, established by the United Nations Conference on Environment and Development (UNCED) to highlight water scarcity around the world and the importance of using water wisely. This landmark event is also an opportune time to look head-on at the state of our water infrastructure here at home, which is in abysmal condition.

True, almost all of our infrastructure including bridges, highways or dams, are receiving failing grades and need upgrading. But there's a real sense of sticker shock when you realize what is happening beneath our very feet and the massive waste of the earth's most precious natural resource: water.

The water and wastewater problem is one of monumental scope. Each year, more than 300,000 water main breaks occur throughout North America – or some 850 every day – mainly as a result of the continued use of corrosion-prone iron piping in the nation's water systems. Moreover, according to a congressional study, corrosion costs U.S. drinking water and wastewater systems over \$50.7 billion annually, or more than \$1 trillion dollars over the next twenty years.

Thankfully, in recent months lawmakers have begun asking questions and are searching for ways to address the daunting problem. Doing nothing could be a choice, but it is the most expensive option.

In 2007, the EPA estimated the gap at \$200.8 billion just for drinking water (given that the economic downturn has resulted in deferred maintenance and delayed capital projects, this number should top \$250 billion). If the amount were mostly financed through long-term 30-year debt to achieve intergenerational equity among ratepayers, the figure would increase to \$500 billion over the next 20 years. The funding of wastewater systems and combined sewer systems and overflows could double the

estimate. The infrastructure-funding gap continues to grow as reported in 2010 by the U.S. Conference of Mayors Water Council and in 2011 by the American Water Works Association. We therefore need to focus our best efforts on where the majority (60 percent) of the replacement costs are: with the water transmission and distribution pipes.

Evidence of this imminent issue is the epidemic of water main breaks, sink holes and boiling water notices in our communities. But throwing good money after suboptimal solutions isn't the right choice for lawmakers. Why replace iron with iron, when our civilization has progressed to corrosion resistant materials? Yet, many local officials unwittingly choose a simple band-aid approach of repairing or replacing our water mains with the same outdated corrosion-prone iron pipes that currently make up much of our underground water systems.

This material hasn't stood up to the test of time and has contributed to the degrading of our water quality, so it makes no sense to waste taxpayer dollars by installing more of it. It is astounding that ratepayers are being asked to conserve water, install low flow toilets and showerheads on one hand, while on the other they are paying for trillions of gallons of lost water supply before any reaches their homes. Water loss and premature failure of pipes due to corrosion increases the cost of water for all users. These practices are not environmentally or economically sustainable.

Corrosion-proof technologies exist. PVC pipe is a totally recyclable and extremely durable alternative to traditional corrosion-prone piping materials. A review by Engineering News Record in 1999 found PVC pipe to be one of the top twenty engineering advancements in more than a century. An American Water Works Association Research Foundation study confirms the life expectancy of PVC pipe to be in excess of 110 years, and a European report deter-

mined its longevity at 170 years.

PVC pipe manufacturing is extremely efficient; with virtually 100 percent of the PVC compound being used. It takes four times less energy to make than concrete pipe, and half that used for iron pipe. PVC's pipe's ultra-smooth surface reduces pumping costs and its leak-free joints eliminate water loss. But PVC pipe's greatest environmental attribute is perhaps its exceptional durability and corrosion-resistance – leading to better water conservation and lower replacement, maintenance and repair costs.

So why isn't PVC more widely used? Too often, modern engineering solutions face barriers to bidding from city and local governments that have outdated, closed procurement practices. Until we address these problems and give both taxpayers and investors the best bang for the buck, the government's financial resources will be wasted. More to the point, open competition, which is an American value, must be the operating principle upon which all government procurement takes place, especially in the water and wastewater sector.

So even as the President demands Congress to fund construction projects "to do some nation-building right here at home," he and America's legislators should ensure that blanks check aren't written for bad choices and taxpayers don't get soaked with higher than necessary water bills. It is time to realize this is not the Iron Age and begin to make more sustainable and affordable decisions affecting our water resources with new technology, materials and open procurement practices.

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