

Climate Change May Muddy Better-Than Bottled New York Tap Water

By Jim Efstathiou Jr.

July 7 (Bloomberg) -- New York City's tap water, so pure residents swear it tastes better than bottled, may become a casualty of climate change as warmer temperatures threaten to spoil the mountain reservoirs supplying 9 million people.

Water from the largest unfiltered delivery system in the U.S. may become dirtier as weather patterns shift, bringing stronger storms to the region, the city's Department of Environmental Protection said in a May report. Heavy rains muddy reservoirs and wash in bacteria and parasites. That may force New York to spend \$10 billion on filtration, the DEP said.

``Intense storms affect the quality of our water," said DEP Commissioner Emily Lloyd in an interview last week. ``Our system is already experiencing very real effects of climate change."

The most populous U.S. city receives 1.3 billion gallons (4.9 billion liters) a day of water through a network of gravity-fed aqueducts from 19 reservoirs as far away as 125 miles (200 kilometers). Rains that mix silt and mud into the system pose the biggest threat to water quality, said Walter Mugdan, water division director for the U.S. Environmental Protection Agency.

``One of the effects of climate change is to have more frequent and more intense weather events," Mugdan said in a June 30 interview. ``That's a concern to all of us."

Last year, the Washington-based EPA said water from New York's Catskill and Delaware watersheds, about 90 percent of the city's supply, was still clear enough to avoid filtration. About 10 percent of the system will be filtered by 2012.

Forced to Filter

Drinking water from surface sources must meet federal standards. New York might be forced to filter all its water if it shows increased levels of pollutants, microbes, or excess turbidity, the cloudiness produced by tiny suspended particles, Mugdan said.

``The city has to think about and be prepared for filtration," said James Tripp, chairman of the New York City Water Board, which sets water rates. ``At the same time, it's quite properly doing everything it can to put that day off."

Boston, San Francisco, Seattle and Portland, Oregon, are also exempt from U.S. filtration requirements. New York Mayor Michael Bloomberg is the founder and majority owner of Bloomberg LP, the parent of Bloomberg News.

There are twice as many downpours of 2 inches or more now as 50 years ago, said Art DeGaetano, director of the Northeast Regional Climate Center at Cornell University in Ithaca, New York. Carbon dioxide, a by-product of burning coal and oil, causes the atmosphere to hold more water vapor, leading to heavier rains.

'Challenging Assumptions'

``Climate change is challenging all of our long-standing assumptions about how we should design and operate our facilities and where we should focus our

investments," DEP Commissioner Lloyd said. ``The best models based on what's happened in the last 100 years are no longer predictive."

New York treats drinking water with chlorine to control bacteria such as *Escherichia coli*, which can cause stomach illness. Aluminum sulfate, or alum, is used on occasion to keep water clear by drawing small particles together, causing them to settle out before water reaches homes and businesses.

Silt poses a dual threat to water quality. Along with clouding water, it blocks the ability of chlorine to attack pathogens, Mugdan said. Too much chlorine may lead to eye and nose irritation or stomach pain, the EPA said on its Web site.

``The water is always chlorinated," Mugdan said. ``The trick there is to chlorinate as little as possible."

Ultraviolet Light

The city is building an ultraviolet light plant in Westchester County to help disinfect water. New York finances such capital projects by borrowing and raising water rates, which increased about 40 percent in the last three years, Tripp said.

Controlling silt has challenged officials since the city began building the reservoir system in the 1800s, Mugdan said. A principal source of silt is clay from the steep slopes of the Eastern Catskills that washes into streams after storms.

The 123 billion-gallon Ashokan reservoir in Ulster County, filled in 1914, was built with a gate bisecting it. The barrier can be lowered to allow cleaner surface water to flow over the top and on toward New York City.

Protecting the watershed from development is the best way to ensure water quality, Lloyd said. In 2007, the agency budgeted \$300 million to buy land in around the reservoirs over the next 10 years. Since 1998, about \$2 billion has gone to sewage-plant upgrades and programs to help farmers keep animal waste out of streams. Those expenses are sure to rise, Lloyd said.

The alternative has a higher price. Development has pushed fertilizers and road salt into the Croton Reservoir in Westchester, forcing New York to build a \$2.8 billion filtration plant that is set to open by 2012. Croton supplies 10 percent of the city's water.

``Of course, we love the bragging rights," Lloyd said. ``We love it because most big cities are using river water that's been recycled several times. We're very eager if possible to keep the system unfiltered."

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