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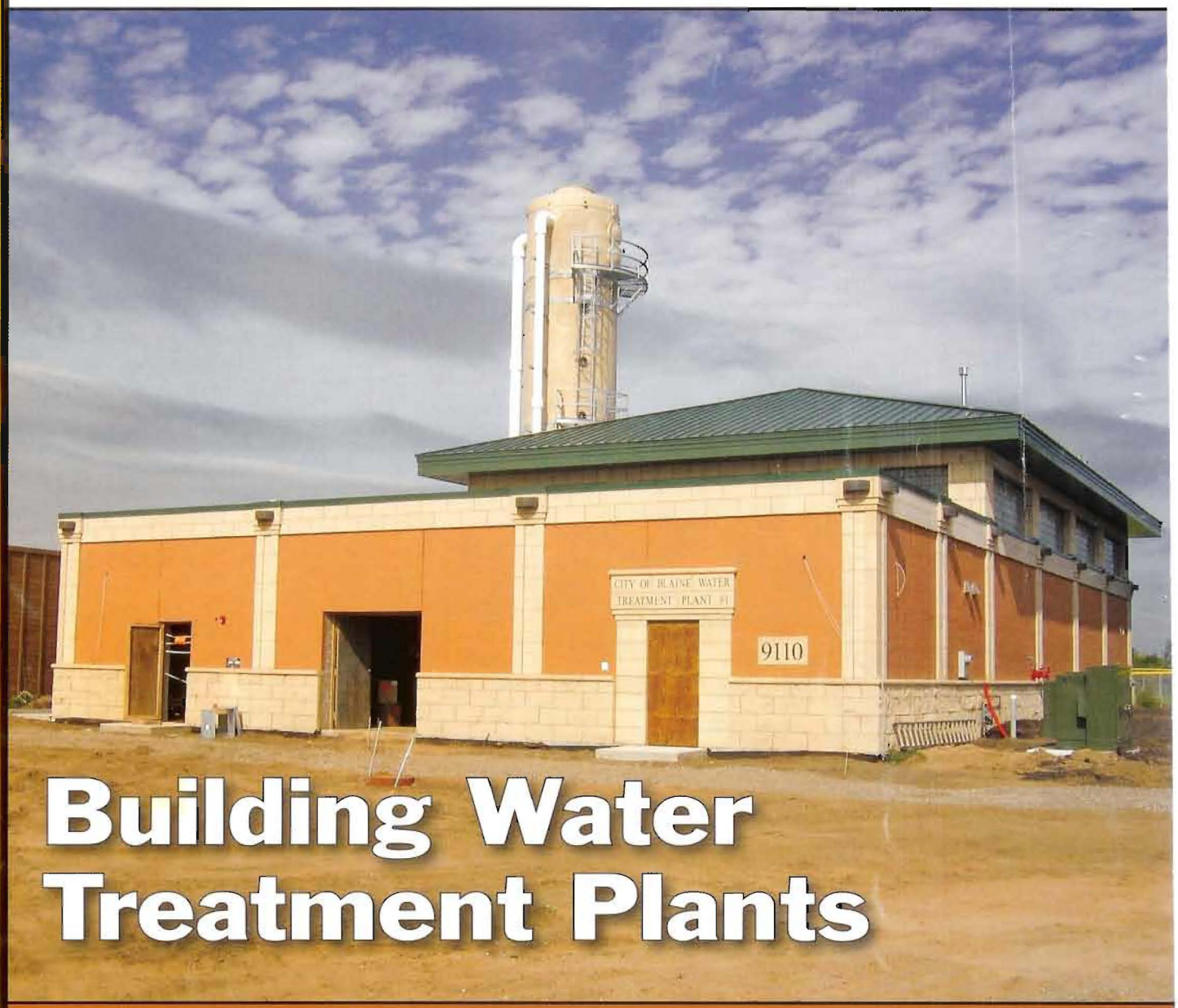

Building Water Treatment Plants

Water Treatment

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Materials, Services And Supplies Users' Guide

Treatment Plants *Improve* WATER QUALITY

Blaine, Minnesota, built more water treatment plants to serve a growing population with better quality water.

By Stew Thornley

The Minneapolis suburb of Blaine was a northern outpost more than 40 years ago when it established a public water system. Now with a population approaching 50,000 and less space to build, the city has also increased the number of wells to provide water to all residents.

Water treatment had been handled at individual wells by adding fluoride, chlorine and a polyphosphate to sequester manganese and iron in the water. However, customers didn't like the water appearance. In addition, 1,2- Dichloroethene was found in two wells and they were removed from the main line.

The area of these wells with volatile organic chemicals, VOC, became a Superfund site, and the federal government provided some money to design and build a plant to treat these and other wells. Work on the plant, known as Plant number 1, located near U.S. Highway 10 and Central Avenue N.E. in south Blaine, began in September 2005. A 60-foot-high air-stripping tower will remove the VOCs, and a filter will isolate the iron and manganese. This process allows the two wells that were taken out of service 12 years ago to go back online when the project is completed in late September 2006.

The need for more wells to keep up with the city's growth and customer complaints about discolored water because of the iron and manganese led Blaine to plan the construction of other treatment plants. After a series of public information meetings, Blaine's City Council approved a water rate increase.

A second plant was built south of Minnesota Highway 242 on Oak Park Boulevard beginning in January 2005 and went online one year later. Plant number 2, as it's called, serves two existing wells inside the plant and a new well that is a block east of the plant. As is the case with Plant number 1, this plant is designed to reduce iron and manganese but it does not have the air-stripping tower for VOCs.

Progressive Consulting Engineers, Inc., Brooklyn Center, Minnesota, designed the plants. Naeem Qureshi at

PCE said the plants use a process from Filtronics, Inc. of Anaheim, California, that involves pumping the well water into a chlorine contactor. High doses of chlorine are added to oxidize the iron and manganese, then sulfur dioxide is added as the water enters another contactor to neutralize any taste and odor before entering the filters.

Plant number 2 has four pressure filters and a capacity of 8 million gallons per day. Mike Ulrich, director of public works for Blaine, said Filtronics conducted a pilot study and found it could reduce iron and manganese to nondectectable levels with this system. "It's a compact filter system," Ulrich added. "It doesn't require a lot of space. A gravity plant would cost more to build, more to operate and more to maintain."

The city hired Municipal Builders Inc., Andover, Minnesota, as general contractor to build the treatment plants and to help place the air-stripping tower on Plant number 2. John Wegner said eight employees and 18 subcontractors built the project, inside and outside.

Bids for Plant number 3, which will be located in the southeast part of Blaine, are now in the letting stage. Qureshi says this plant will treat water from two existing wells and should be completed by September 2007. In addition to the wells with each plant, Blaine has several outlying wells that continue to receive chemical treatments at the wellhead. When the wells for Plant number 1 are put back online, Blaine will have 17 wells.

However, the city is not done yet. It recently purchased 10 acres in the area of Lexington Avenue and Anoka County Road J and in five to seven years, it plans to build a 12-million-gallon per day plant and a 2-million-gallon water tower on the site. Will this be enough? Ulrich isn't sure. Much depends on the growth of the city, he points out, including whether the Minnesota Vikings will build a new stadium in Blaine. While the stadium will not greatly affect water demand by itself, ensuing development around the stadium could have a big impact.

In the meantime, Ulrich and Blaine residents are finding relief in the water quality and quantity they receive because of the new plants. ■

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Far left & above: Municipal Builders Inc. helped hoist the air-stripping tower onto Blaine's Plant number 2, a water treatment plant that removes chemicals and reduces some minerals in water to provide better quality water.