

# Small systems impacted by new drinking water regulations

Public drinking water supply systems face many challenges. While the routine "operation" of a water utility can hardly ever be considered anything as routine, it's the new regulations that seem to be impacting systems most. And the impact of these new regulations is hitting hardest on smaller systems and particularly on the small surface water treatment plants such as the one located in the city of Alma.

## New regs, new challenges

What are these new regulations? The challenge for Alma is to meet requirements of the current Stage 1 Disinfectant

By-Product Regulation: Total Trihalomethane and Haloacetic Acids. This regulation went into effect January 1, 2004. The city may also have difficulty meeting the lower turbidity standard of 0.3 NTU, needless to

which upgraded the plant to its present condition. The improvements completed at that time included a flash mixer, a chlorine contact basin, and a new clear well. In 1999, a new elevated storage tank was constructed, which increased the city's storage capacity by approximately 210,000 gallons. The city's plant,

of Alma in order to meet daily water demands. Alma currently projects a population increase of 2.0% per year for the next twenty years. The present water treatment facility in Alma does not have the capacity to meet that demand.

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Tech Assistant



mention, the city's need to meet production and supply demands. The city's present water usage is 130,000 gallons per day with a maximum daily demand of 230,000 gallons per day.

## Decision time

The city of Alma presently supplies water to 438-metered customers. These users are residents, businesses and industries within the city limits of Alma. Alma's present water treatment plant was constructed in 1965, with major capital improvements completed in 1988,



Lonnie Boller, left, Max Kraus, center, Alma city superintendent, and Alan Luttrell, President, EBH and Associates, review plans for the new Alma water plant during a meeting this last January.

as is today, is designed to produce 190 gallons per minute, but with new industry in town, such as Hormel Foods, the city has exceeded the design capacity of

There are two options available to the city of Alma to help it meet the new drinking water regulations. The first option is to expand its current water

treatment plant. However, the existing water treatment plant is not in a good location for expansion. Railroads and highways surround it. An expansion at that location would be costly to all parties involved. The second option would be to construct a new plant at a new location and to use the existing plant as a back-up water supply. The city of Alma has already decided to pursue the second option.

**Situation analysis**

The city of Alma’s water treatment plant is currently supplied by raw water from two reservoirs. The first reservoir, the Alma Lake, was built in 1965. The lake has an estimated storage capacity of 33 million gallons. In 1995, a new reservoir – the Mill Creek Reservoir – was constructed. Mill Creek Reservoir has an estimated storage capacity of 7 million gallons. Independent pipelines, flowing by gravity, run from each reservoir to supply water to the plant. These two lines would provide an adequate water supply for the new water treatment plant, which is being designed as a 520-gallon per minute plant. The proposed plant will contain rapid-mix, two solids contact basins and three dual mediate filters. The project consultant, EBH & Associates, has also designed a chlorine contact basin to adapt to seasonal changes. It will also be possible to add chlorine in the basin. This will allow minimization of free chlorine contact time, and also allow changes between summer and winter contact times.

The new plant design should help the city meet the new disinfectant by product rules. The existing plant presently does not meet these regulations. The new plant will also be able to better meet the intern enhanced water treatment surface rules.

The city is also installing a new activated carbon feeder to address the taste and odor problems that the city recently experienced. The city’s current activated carbon feeder consists of a 55-gallon drum with a pound

scoop and mixer that was placed to address critical taste and odor problems. The new plant design will also be able to meet the demands of the 2.0% increase in population.



*This picture of the present Alma water plant was taken from atop the railroad tracks that bound it on the east and south; it is adjacent to a residential area seen to the north at right; and the Hormel facility at the left of the picture bounds the plant on the west side.*

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### Paying the bill

The city is currently seeking a combination of funding from the Kansas Department of Health and Environment and a Community Development Block Grant from the Kansas Department of Commerce. The city is also reviewing water rates. Alma customers presently pay \$3 per thousand gallons with a monthly minimum of only \$6. The city is considering increasing the minimum charge plus increasing the charge for water to generate additional revenue to amortize the new debt.

### Building a team

Alma is like many other communities in Kansas that are working with design consultants and agencies to determine the appropriate long-term solutions to their water supply and production needs. Kansas Rural Water Association has provided assistance to Alma for many years. Working in partnership, with open communication and a

solid working knowledge and experience of Superintendent Max Kraus, Alma is positioning itself to sustain the community through improved infrastructure.

*I would also like to take this opportunity to invite you to attend*

*the 2005 Annual Conference. There are several sessions that will specifically address water treatment or new regulations and how systems can meet them. These sessions are included in the sidebar below.*

## KRWA Annual Conference & Exhibition March 29-31, Wichita, Kansas

### Tuesday, March 29

- *Enhanced Coagulation and Membrane Filtration Technologies*, 10 a.m., presented by Michael Kalis, Archer Engineers, and Leonard Whiting, Cass Co., Mo.

### Wednesday, March 30

- *Chlorine Dioxide Treatment For Potable Water Systems*, 10:45 a.m., presented by Jeff Downing, Pureline
- *The Use of Combined Chlorine In Water Treatment*, 1:30 p.m. presented by Pat McCool, Kansas Rural Water Association
- *Regulatory Update For Public Water Supply Systems*, 2:45 p.m. presented by Kelly Kelsey, Kansas Dept of Health & Education
- *Advances In Water Quality Disinfection Analysis*, 4:00 p.m. presented by Kevin Menning, Hach Company
- *U.S. EPA Drinking Water Program Update*, 4:00 p.m. presented by Ralph Flournoy, Environmental Protection Agency



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