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June 20, 2010

Leroy Brunkow
Mayor, City of Belvue
P.O. Box 27
Belvue, KS 66407

Dear Leroy;

This letter is in follow-up to my on-site visit with you on June 8 to review options for bringing your public water supply system into compliance with the Maximum Contaminant Level (MCL) for arsenic. Prior to my visit with you, I contacted Kelly Kelsey (785-296-6297) with KDHE to obtain a summary of the city's arsenic levels. Kelly stated that the violation is largely the result of the one sample from July 2009 when the level was 16 ppb. Since that sampling event, subsequent sample results were 8.7 ppb in October 2009; 7.4 ppb in January 2010; and 11 ppb in April, 2010. Compliance with the arsenic standard is based on a Running Annual Average (RAA) for four quarters and the 16 ppb from last July is the major cause of the current violation resulting in the city's public notification requirement. For compliance calculation purposes, the July, 2009, sample will be dropped off with your next quarterly sample. The result of the next sample may be such that the RAA for four quarters would drop below the MCL of 10 ppb allowing the system to return to compliance.

There is of course, always the chance that the next sample result will be high enough to again cause a violation requiring the city to continue with public notification. Also, should your system consistently fail to return compliance, KDHE will surely be in contact with the city to review options for achieving compliance. These options include: (1) obtain water from another source, either by drilling a well low in arsenic or connection to another source such as a rural water district; (2) constructing an ion-exchange treatment system; and (3) constructing a reverse osmosis (RO) treatment system. As you indicated, neither of these is very desirable for a small city from an economical standpoint. One other option would be to provide point-of-use treatment devices at each service connection. This option would probably be less costly than providing a centralized treatment plant but is generally not very popular as it requires the system to be responsible for operation and maintenance of each unit.

Finally, since you are currently operating an iron removal plant, with an oxidation tank followed by pressure filters, you may want to check into using this plant to remove or reduce the arsenic level. There have been studies to show that some arsenic As (III) can be oxidized along with the iron Fe (II) by adding a chemical oxidant. The resultant iron and arsenic precipitates are then removed in the filters. Since you already have an iron removal plant and since you need only to remove a small amount of arsenic to comply with the standard, it might be worth pursuing this option, at least check into whether chlorine or potassium permanganate can be added ahead of the oxidation tank without harming the filtration media.

Funding for the above assistance was provided through a contractual arrangement between the Kansas Department of Health and Environment (State Revolving Loan Program set-aside) and the Kansas Rural Water Association (KRWA). Please call the KRWA if we can be of further assistance. Also, visit the KRWA website www.krwa.net for news and information concerning water utilities, training opportunities, and other KRWA programs.

Sincerely,

Delbert C. Zerr
Consultant

C: Kelly Kelsey, KDHE, Topeka
Helen Holm, KDHE, Lawrence

P.S. Elmer apologizes for the delay in getting this letter to you.