



P.O. Box 226 • Seneca, KS 66538 • 785/336-3760
FAX 785/336-2751 • <http://www.krwa.net>

March 8, 2008

Derek Parthemer
Pottawatomie RWD 4
6005 Camp Creek Rd.
Belvue, KS 66407

Dear Derek;

Lonnie Boller and I enjoyed meeting with you during our visit on Thursday, March 6, 2008. We discussed the reverse osmosis (RO) treatment process and the pre treatment filtering system. You noted the following:

- (1) The Hytrex cartridge filter elements need replacing on a weekly basis due to plugging;
- (2) These filter elements are quite expensive to replace at a cost of \$309.40 per week. Each filter element costs \$11.05 and there are 28 elements;
- (3) Your engineering firm is working on a design to install a pressure sand filter system ahead of the prefilter unit with funding dependent on a Rural Development Grant and Loan arrangement;
- (4) You were inquiring about the possibility of installing a less expensive filtering system ahead of the Hytrex prefilters to decrease costs in this area until pressure sand filters are installed;

Hopefully the sand filter project will become reality sooner rather than later as these units should reduce the overall operational costs considerably. During the interim period however, you are continuing with the weekly change out of the Hytrex prefilters and the associated cost. Regarding a less expensive filtering system ahead of the Hytrex prefilters, the bag filter proposal you suggested may be an option. Lonnie and I will explore this idea further and will be in contact with you.

Another area where some cost savings may be realized is at the RO plant. RO treatment systems are very effective in removing minerals and as indicated by your chemical analysis sheets, the plant is doing a very good job in removing hardness in your well water. As discussed, there is a cost in operating a RO plant. On a routine basis, there is the wasting of about 25% of the total water pumped. Also, eventually there will be the cost of replacement of the membranes. To review the issue of reducing costs of operating a RO plant, the wasting of water and replacement of membranes are both inevitable; however, some savings could be realized by slightly increasing the amount of water blended back into the system. This would increase the finished water hardness level but would decrease the quantity of water wasted. Of course, the membranes will still need to be replaced at some point in the future, but blending back more raw water may extend the life of the current membranes.

Of course, the users may have become accustomed to the current quality of water and some may notice any change in finished water quality. In that case, you may not want to make any changes. If you decide to pursue this, we recommend you make small incremental changes in the raw water bypass rate. You may find finished water hardness levels in the area of 200 mg/l to be acceptable.

Funding for the above assistance was provided through a contractual arrangement between the KDHE (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, please visit the KRWA website www.krwa.net for news and information regarding water and wastewater utilities training opportunities and other KRWA programs

Sincerely,

Delbert C. Zerr
KRWA Consultant

C: Tim Roggenkamp, Chairman
Helen Holm, NED-Lawrence Office
Lonnie Boller, KRWA