

RECORD OF TELEPHONE CONVERSATION

Date: February 2, 2015 From: Joe Duncan, PE

Time: 11:00 am To: Steve Schramm, Waupun Utilities

Phone No: 920-324-7920 Project No./Name: 14063 Hinesburg Wells 4 & 5

Re: City of Waupun, Wisconsin Water Treatment Plant

Items Discussed:

- Steve is the Treatment Facility Supervisor for Waupun Utilities in Waupun, WI
- Waupun WTP is a 2.7 mgd facility that treats groundwater for iron, manganese, and hardness
- WTP was placed into service in 2007
- Current average daily flow is 1 mgd
- WTP is for a groundwater well source
- Utilize greensand filters for iron and manganese removal ahead of low pressure RO system for hardness removal (membranes run at 130 psi)
- Raw water hardness is 315 to 350 mg/l
- Treat hardness to 70 to 75 mg/l using membranes and bypass for blending (flow proportioning approximately 80% thru membrane and 20% around bypass)
- Requires pH adjustment to provide acceptable Langeliers Saturation Index (LSI); maintain finished water pH of 8.4 SU
- Utilize 2 membrane trains manufactured by Koch Membrane Systems; alternate membranes but can run dual if needed as demands increase
- Uses 18" diameter MegaMagnum membrane elements; may need to convert to 8" diameter membrane elements since Koch is no longer making 18" elements
- Micron cartridge filter ahead of membrane which rarely sees any differential pressure drop due to low total dissolved solids but they change the cartridges every couple months just to be on the safe side
- Add chlorine for greensand filters and then sodium bisulfite to dechlorinate ahead of membranes since membranes degrade with chlorinated water; also dose anti-scalant ahead of membranes to minimize mineral scaling and extended periods of time between membrane cleanings
- Membrane permeate is dosed with chlorine, fluoride, and sodium hydroxide (pH adjustment) prior to discharge into the distribution system
- WTP requires little to no daily maintenance and it is run unmanned; operators visit plant daily for 1-3 hours to check the facility
- Recommend using as much monitoring as possible (differential pressure, conductivity, etc.) as they are useful in troubleshooting if there is an issue
- Use of anti-scalant is strongly recommended; they used to use King Lee but did not have good luck with it and would recommend not using their product; currently they use Avista Vitec 3000 and have very good luck with it
- Utilize citric acid for cleaning membranes and it works well
- Replaced membranes last year after 7 years; probably could have gone a little longer with them but that is what worked for them financially in their budget
- Membranes replaced lime softening system; selected membranes due to their ease of operation and the fact that they did not put another element (i.e. chloride, sodium, etc.) into the water; this was a major consideration for the public
- Concentrate is discharged to WWTF; didn't want ion exchange since they have chloride limits for their WWTF
- Very happy with the membrane system; good water quality with little maintenance