Oakridge Water & Waste Water District
October 1, 2020

Recommended Water System Improvements from Delaware Engineering:

1. Complete proposed aeration system in water storage tank to further reduce THM concentrations in the entry point water	
Level: Critical – Short term	Delaware working with WCHD, then finish design and go to bid
2. Replace all outdated chemical feed pumps with new pumps, this is for pH, chlorine, KMnO4.	
Level: Critical – Short term	Some already replaced, in the works
3. Install automatic flushing valves at any dead ends within the distribution system.	
Level: Recommended	Phase 1 is manual valves. Phase 2 is automatic and may not be necessary.
4. Loop all dead ends, Laurel Ridge & Stonemeadow Dr; Fox Run & Bittersweet Ln.; Oakridge Commons; Maplewood Dr., Deerhill. This would leave Split Rock Rd. as the only un-looped sections. Project would include - approximately 450' of 2" High Density Polyethylene what pipe with a flushing hydrant from the dead end on Laurel Ridge to the dead end on Stone Meadow Drive. These two dead ends result in many dirty water complaints, by looping the main there will be continuous flow in the water main which will improve overall water quality on the 2 streets. Install 165' of 2" HDPE from dead end on Fox Run to watermain on Oakridge Dr. Install approximately 300' of HDPE pipe from dead end on Fox Run to the water main on Oakridge Dr.	
Level: Recommended	Will re-visit after flushing valves/hydrants
5. Install flushing valve in water closet of each building.	
Level: Recommended	May not be needed.
6. Perform water (sewer) rate analysis and make recommendation as to how rates should be established to be most equitable and insure water conservation by ALL customers. This would include the use of smart meters where data on use is available in real time.	
Level: Recommended	Not critical to operations will keep on radar
7. Install a redundant high-volume pump (2), presently there is only one high volume pump which has reached its useful life and is being replaced. This pump is also the backwash pump for the filters and has never had a backup.	
Level: Critical – Near term	
8. Re-pipe the pressure pump system with stainless steel pipe, add a second jockey pump to insure a redundant backup. This would make the design to have 2-jockey pumps which maintains pressure in the distribution system most of the time; there are 2 pressure pumps which pump high volumes for when the demand is greater than the jockey pump is capable of delivering. The high-volume pump delivers the	

required volume and pressure for the backwashing of the filters and for periodic flushing of the system; it also provides pressure and volume for the sprinkler system in the commercial property. The addition of a second jockey pump and a second-high volume pump will require additional electrical controls for the additional pumps.	
Level: Critical – Long term	Should be seriously considered in conjunction with #7. Design to be approved by WCDH.
9. Install hydropneumatics tanks to maintain pressure and augment pump operations.	
Level: Recommended	Allows for pumps to shut off and absorb the water hammer and eliminate turbidity. Should be done in conjunction 7 & 8.
10. Design & install new HVAC system for water facility to control excess humidity.	
Level: recommended	Consider an industrial de-humidifier or split AC system
11. Recoat all piping and tanks within water treatment facility.	
Level: Critical – near term	Filters need painting ASAP (Need dehumidifier)
12. Investigate the need for a mixing tank to ensure all chemicals and raw water is properly mixed for optimal chemical treatment. The addition of a mixing tank will increase the contact time and enhance the removal of Manganese from the raw water which has always been an issue due to lack of proper time for the primary oxidant (KMnO4) to be in contact with the raw water that is high in Manganese. This change could augment the treatment process and improve overall water quality and has never been considered an option due to cost and space issues.	
Level: Recommended	Consider when doing 7, 8, 9. Consider water quality project for Grant. Next grant application is in June 2021.
13. Provide feedback data from all wells to the SCADA that confirms each well is operating and pumping water, this could be accomplished with a smart water meter on each well in each pump house inputting data into the SCADA.	
Level: Recommended	
14. Replace wooden roof on storage tank with a metal roof.	
Level: Recommended	WCHD may require this be done sooner than later, maybe just epoxy coating
15. Install chemical storage and containment as requested by WCHD, this will require expanding the building footprint.	
Level: Recommended	Further research by Delaware who will provide recommendations
16. Building expansion is required to install Granular Activated Carbon (GAC) filters to treat 100% of all water entering the distribution system. GAC filters remove THM/HAA5's, Radon.	
Level: Recommended	May not be required. Aeration may be sufficient, run for 6 months.

17. Perform a feasibility analysis on identifying other sources of water such as the City of Norwalk, CT and establish funding necessary to bring new water sourcing to fruition.	
Level: Critical – Long Term	Aquarion discussion.