

Kensico Water District

Potential Measures to Reduce Disinfection By-Products Timeline

23-Sep-19

No.	Measure Description	Tasks & Dates	Status	Notes
1	Establish a profile within the treatment process and distribution system of identifying when haloacetic acids are formed or sustained.	Second Profile run on 10/30/19 with Indicators. Profile will note any benefit from removing pre-chlorination	Underway	Indicators were tested along with DBP's: Total Organic Carbon (TOC), Dissolved Organic Carbon (DOC), UV254 & Alkalinity. Will submit final analysis after results return on 2nd Tank Cleaning - Expected 10/15/19
		Set-up Profile & Analyze Results - Draft Completed 5/30/19.	Completed	
		Sample Results Received 5/13/19	Completed	
		4/10/19 - 15 samples were collected and sent into lab for analysis of disinfection byproducts	Completed	Met with WCDoh on 4/4/19 to discuss current problem and a profile was supported to be created. This profile will be used as baseline to compare
2	Reduce or remove pre-chlorine loading at the Commerce Street Pump Station and apply chlorine at the tanks prior to releasing into the distribution system. This reduces the time the organics are exposed to chlorine thereby reducing the potential for by-product creation.	Resample profile to review distribution system changes minimum of 6 weeks after Second Tank (East) is cleaned to test for disinfection by-products	Not Started	Sample to be scheduled on Establish tank cleaning benefits.
		Resample profile (scheduled 8/30/19) to review distribution system changes 3 weeks after Second (East) Tank is cleaned to test for disinfection by-products	Completed	Results were returned on Sept 12, 2019. Overall initial HAA's results shown to be reduced by an average of 16% at routine sampling sites. Additional samples are to be completed.
		6/26/19 - Resampled profile with marker analysis after chlorination was changes and prior to tank cleaning is completed.	Underway	Prior to final phase of chlorine reduction, resample profile points for disinfection by products
		6/4/19 - Terminated pre-chlorination at the pump station. Chlorine now only added at the tank.	Completed	Restarted the chlorine treatment changes and resample profile points for disinfection by products
		5/22/19 - Pressure Reducer Valve Manufacturer to perform maintenance on tank valves thereby allowing chlorine adjustment process to begin again.	Completed	This work was complete along with additional repairs on tank distribution measures.

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		4/29/19 - Reduce chlorine levels at Pump Station but increase at the entrance into Tank	Pending	Chlorine treatment application changes to system was started but on temporary hold as equipment modifications and tank pressure system valves requires maintenance for chlorine system adjustment to operate properly.
		4/22/19 - Set Schedule to implement plan to alter application point and strength of chlorine prior to entrance into the distribution system.	Completed	Changes to water treatment system processes. Analyze the levels of disinfection by-product from raw water to entry into the distribution system through sampling points. After hour monitoring of the system will be required to some degree until new telemetry is in place. Measure involves three phase process to monitor changes to the system.
3	Cleaning of the interior walls and removal of sediment build up throughout the tank. Would reduce the organics within the tanks thereby reducing the amount of byproduct creation when mixing with chlorine disinfection. Install mixer system in the tanks to disperse the chlorine concentrations more rapidly which reduces chlorine contact time required to remove pathogens.	Second set of samples of profile plan scheduled around September 15th.	TBD	Sampling to determine immediate benefits of reduce HAA's within the tank. Check on chlorine levels
		First samples of profile plan scheduled by August 30, 2019.	Scheduled	Sampling to determine immediate benefits of reduce HAA's within the tank. Check on chlorine levels
		Cleaning of Tank 2	Completed	Second Tank was cleaned on August 6, 2018
		Sample profile plan to review any impacts to disinfection byproduct levels at 7 days after cleaning of West Tank	Completed	Sampling was completed on 7/11/19 and results returned on 7/9/19 for effects of disinfection by-products after first tank cleaning.
		Start date on Cleaning of Tank 1	6/26/2019	West Tank Cleaned & Inspected 6/26 to 6/27. Reschedule East Tank Cleaning due to level of sediment and operational logistics
		Scheduling Contractor to Complete Tank Cleaning	6/14/2019	Scheduled for cleaning on 6/26 to 6/28
		5/31/19 - Received approval of the work plan to clean the tanks from West. County Health Dept.	Completed	WCDoH approved Work Plan to clean tanks.
		5/20/2019 - Commenced electrical work for the new mixers for both tanks.	Underway	Estimate to be completed by 6/20/19
		5/17/19 - Received Tank Mixer and related items for installation by tank cleaning company	NA	

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		4/26/19 - Submit work plan to WCDoH for their approval and signoff.	Completed	Submitted on 5/3/19. Awaiting approval.
		4/22/19 - Finalize the work plan for submission to WCDoH for their approval and signoff.	Completed	
4	Installation of Fiber Optic Communication Cable to assist with telemetry between Commerce Street Pump Station and the Water Tank Treatment System. Safe guard monitoring and assure proper operations of the system.	Complete FIOS & Exist. Fiber Infrastructure Project	Underway	Town Board approved work at the 9/10/19 TB meeting. Reached out to contractors for date to commence installation. Equipment to be ordered 1st week in October with installation to commence two weeks after.
		Review with Sullivan Data & Uptime Consultants using FIOS & existing Fiber Cable	Completed	8/14/19 - Infrastructure and installations were inspected by consultants. Use of this system to establish telemetry was found to be viable. Consultants to prepare quote for work to be competed. Quotes received Aug 26th.
		Complete Design and Construction Bid Package for Project	On Hold	Design at 90% but on hold due to FIOS availability
		Review funding sources and select how to proceed to complete the work	Completed	Completed 6/15/19, Work Estimated at \$1.2M
5	Changing the delivery orientation of the tanks from both dual supply water to the system simultaneously to having the tanks supply water in series like a de-facto baffling system. Applying chlorine into downstream tank to reduce interaction time with the organics in the water thereby reducing the disinfection by-product levels.	TBD - Will assess by Consultant and after implementation of other measures results	TBD	May commence after sample analysis of prior measure impacts to reducing levels of Haloacetic Acids. Will require modification to 24in piping systems at the tank.

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6	Consider reducing the level of chlorine concentrations of the water supply at the entry point and installing chlorine booster systems throughout the distribution system to increase chlorine levels as needed. This measure will reduce the time organics are exposed to higher chlorine concentration levels thereby reducing the potential for the creation of disinfection by-products.	TBD - Will assess by Consultant and after implementation of other measures results	TBD	Review of the number of potential booster pump stations that may be required is to be analyzed. The station types and sites for installation are also to be investigated. Extensive monitoring with system adjustments also required if implemented.