

Medora Corporation

Clearwell Mixing & THM Removal

USOHPW-LOC1027.001

Topics: potable, THM reduction, TTHM, stratification/water age, chlorine



Two SN15 units deployed in clearwell.

Customer: Information is available upon request from Medora Corporation. 866-437-8076 info@medoraco.com

Overview: This site includes Clearwell # 1 and Clearwell # 2. Both clearwells are partially buried cylindrical concrete tanks, 58 ft. in diameter and 16.75 ft. in height, divided into four sections by baffles. Each tank has a capacity of 300,000 gallons, and an overflow outlet at 15 ft. elevation. Water flows in series through Clearwell # 1 to # 2, then on to distribution. The plant capacity is 1.6 MGD, and peak pump flow rate is 2 MGD. Disinfectant used in this system is chlorine.

Conditions / Objectives: The community conducted a distribution system evaluation for total trihalomethanes (TTHMs). Concentration at several locations exceeded the maximum contaminant level of 80 ppb as required by EPA Stage 2 DBPR. Evaluations of treatment options were undertaken, considering removal efficacy, capital need, operational and maintenance costs, and vendor service and reputation. The engineering firm of Jones and Henry, represented by Gary Williams, managed the evaluation and system selection. The evaluation showed that a floating spray nozzle and forced air ventilation system was the best option for their water system, producing the strongest results in the comparative evaluation. Medora Corporation

was chosen to provide this system based on efficacy, cost and service considerations, and Clearwell # 2 was chosen as the best location for treatment.

Solution: One (1) GridBee® GS12 (mixer) unit was installed in Clearwell # 1 to increase TTHM production and reduce formation potential before the water entered Clearwell # 2. Two (2) GridBee® SN15 Floating Spray Nozzle THM Removal Systems were installed in Clearwell #2. This system was sized to accommodate the peak pumping rate of 2 MGD. Deployment Date: 3/13/2013

Results: Initial results were less than anticipated. Inspection revealed a ceiling-level opening in a baffle in Clearwell # 2; forced air was short-circuiting to a vent rather than traversing to a treatment zone. The opening was blocked and the THM reduction improved by 57%. The community has conducted certified lab tests during the peak THM season and these results show consistent THM reduction of 60% or more. The chart on page 2 shows the certified lab test results. The community is pleased with the ongoing results in THM reduction, and is happy with Medora Corporation's service and support as well. They are more than willing to serve as a positive reference for the GridBee® SN15 installation.

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THM Summary

SAMPLE DATE	WATER TEMP (degC)	WTP Production (MG)	WTP PRODUCTION RATE (GPM)	UNTREATED WET WELL	TREATED WET WELL	DS202 (Dist. Sample)	% Removal In Clearwell #2	Regrowth in System	"Could've Been" TTHM Value
4/3/2013	7	0.411	600	29.6	18.4	31.8	38%	13.4	43
5/6/2013	15	0.554	600	47.2	20.4	43.4	57%	23	70
5/20/2013	18	0.657	700	56.2	24.8	64.7	56%	39.9	96
6/3/2013	20	0.412	700	49.5	30.1	58.8	39%	28.7	78
6/17/2013	22	0.520	700	62.7	21.2	62.3	66%	41.1	104
7/1/2013	24	0.535	700	63.2	30.7	64.7	51%	34	97
7/16/2013	26	0.531	700	72.9	29.5	72.5	60%	43	116
7/30/2013	24	0.450	700	60.6	21	60.3	65%	39.3	100
8/13/2013	23	0.435	700	53.3	20.3	52.1	62%	31.8	85

Chart: The city's certified 2013 lab results since installation of GridBee THM removal system. All THM values are shown in ppb