

In the February 15, 2008 issue of the Water Quality Update :

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Well Status Report

Except for Unit Well 28 all seasonal wells (6, 8, 10, 17, 27 & 29) recurrently shut down for the winter. Seasonal wells typically go offline from April to October when demand for water is high due to outdoor water uses. In a previous Water Quality Update it has been reported that Well 28 would operate through the winter while maintenance on a Well 26 was complete and Well 28 was briefly taken out of service in January following a pipe at Well 26. However, due to low flow at Well 26, the system is still bringing Well 28 back into service in this month. Well 28 will remain in service through the end of the winter to help maintain reservoir water levels on the south west side of Madison and to ensure adequate quality in the area of the reservoir limits of the distribution system.

Water Quality Test Results - December 2007 & January 2008

MICROBIOLOGY - In December and January, the Water Utility conducted 10 water samples from Water Utility facilities and representative sampling locations in the water distribution system. The samples were tested for coliform bacteria indicators of potential water contamination. No samples tested coliform-positive at 70 samples collected in December and January were found to have coliform bacteria present.

VOLATILE ORGANIC COMPOUNDS - The utility also conducted samples from five wellhead and the water for the presence of volatile organic compounds and semi-volatile organic compounds that may be present in water. The water utility currently tests four wells (9, 15, 18 & 28) during each three-month period for 4 volatile organic compounds including tetrahydroethene and carbon tetrachloride. Samples were also collected from three reservoirs (11, 12, 1, & 22) in an effort to better understand the distribution system water quality. The data show the concentrations that were recorded, maximum concentration found during this testing period EPA maximum contaminant level (MCL), and the concentration reduction efficiency. In December the concentration was also tested.

VOLATILE ORGANIC COMPOUNDS	MAXIMUM	UNITS	MCL	9	15	18	28	30	115	215	229
Bromodichloromethane*	1.0	ppb	--	0.40	ND	ND	ND	ND	0.57	0.57	1.0
Bromoform*	0.90	ppb	--	0.43	0.23	ND	ND	ND	0.90	0.84	0.72
Chloroform*	0.42	ppb	--	ND	ND	ND	ND	ND	ND	0.21	0.42
Dibromochloromethane*	1.4	ppb	--	0.73	0.25	[0.31] ¹	ND	ND	1.2	1.2	1.4
Total Trihalomethanes (TTHM)	3.5	ppb	80	1.56	0.48	0.31	ND	ND	2.7	2.8	3.5
Tetrachloroethylene	3.1	ppb	5	2.3	3.1	1.3	ND	ND	1.7	1.6	ND
Trichloroethylene	0.33	ppb	5	ND	0.33	[0.19] ¹	ND	ND	0.21	ND	ND

* Disinfection By-Products (DBP)

¹ Bracketed numbers indicate that the contaminant was detected but measured below the Limit Of Quantitation (LOQ)

As the above table lists, Well 1 has the highest level of tetrachloroethylene of all Madison municipal wells. Low levels of the man-made compound at this well have been detected since the early 1990s, and quarterly samples have been collected since 1999. Wells 9a and 18a also sampled during the three-month period because of the level of tetrachloroethylene that has been found. Additional information on tetrachloroethylene can be found at <http://www.gov.pa.gov/aetr/ntaminats/dwntacrs/etraic.html>

Bromodichloromethane, bromoform, chloroform, and dibromochloromethane are disinfection by-product compounds that form when chlorine reacts with the impurities in groundwater. Because groundwater has very little bromine, low levels of chloroform are needed to liberate and react with it. Thus, the concentrations of disinfection by-product are generally low.

We intend to re-locate the Well 1 Pump Test Upland

In November the analytical results of a groundwater monitoring test at Well 29. The purpose of the test was to determine the groundwater movement and flow in the area. The maximum pumping rate at the well. The consultants, Montgomery Associates and RMT, Inc., present their findings and recommendations to the Water Utility Board February 2.

Groundwater levels were monitored by measuring the drawdown after the pump test six monitoring wells located in the vicinity of Sycamore Landfill. Groundwater modeling based on the results of the pump test shows that maximum pumping rate is 23 GPM (gallons per minute) in the pump may cause groundwater from the vicinity of Sycamore Landfill with a period of 15 years. A tentative flow rate of pumping we maintain at a rate of 11 GPM, it would probably not cause groundwater from the vicinity of the landfill. The consultants and three other hydrogeologists agree that the modeling results are very conservative.

The consultant's recommendations include (1) pump the well at a rate of 11 GPM or a maximum allowed with a well of 55 ft. (17 ft. drawdown) from the landfill, and (2) install a piezometer into the overlying aquifer at a location between Well 29 and Sycamore Landfill. It is important to note that in a spill migration pathway from the landfill to the well. Monitoring the piezometer would provide additional information about potential future water quality impacts. Well 29 should also be re-sampled and also be re-sampled before the construction might reach the drinking water level. The table included in the technical memo that was prepared for the Water Utility.

(U W2 5 Summary Memo Feb. 5 2008 e Attachment)

In response to the results, the Water Utility Board over a recommendation from Water Utility staff to reduce the potential capacity of the filter a Well 2 from 2.2 GPM to 1.1 GPM.

Water quality samples were collected for the first time on the well at the conclusion of the pump tests. Sample were analyzed for over 30 potential organic contaminants. None of the contaminants were detected in the samples. The following lists all organic contaminants that were tested at the detection limit of each.

(VOC List - See Attachment)

Organic/Inorganic - U W7, U W1 2U, W1 3U, W1 6U, W1 9&, U W3 O

Research from the Marshfield Clinic (Marshfield, WI), Wisconsin Geological and Natural History Survey (WGNIS) and the Mendota Geological Survey (USGS) conducted an ongoing investigation into the exposure of human virus in the lower sandstone aquifer from which Marshfield draws drinking water. The research is ongoing. It has even been published for the presence of a chovirus, enterovirus, hepatitis A, norovirus (Grogan & H), and a rotavirus. The results show that in six wells tested positive for a chovirus and one was positive for enterovirus. In October four wells showed evidence of a chovirus and one was positive for enterovirus only.

Samples that are positive at a concentration of less than 1 virus particle level were below the infectious level for the pathogen. The research for the project, as is still in progress, is a health risk. Chlorine disinfection is effective and sufficient to deactivate the viruses if they are inactivated. All samples were collected from the ground water level prior to installation. Marshfield Water Utility utilizes chlorine to kill viruses and bacteria that may be present in ground water. A top of the tank waterborne illness. Top of the tank is a ring of safety and also means to be drawn ground water, the Water Board over a increase in the chlorine level. All Marshfield wells since June 1992, 007.

At the present time the ability of the virus is unknown. Molecular biology research in relation (PCR analysis), which tests for the presence of viral genes, were used to determine the presence of viruses in the water. The research is a top priority. The research is a top priority. The research is a top priority. The research is a top priority.

Following the initial results, the research plans to conduct a daily one-month sample from a subset of six wells for continuous monitoring that is expected last about a year. Three wells (UW 7, U W1 9U, W3 Oa) rise into the overlying aquifer while the other three wells (UW 1 2U, W 1 3U, W1 6a) rise through the Eau Claire layer and a reef of a multi-aquifer wells. The Eau Claire layer is a layer of sedimentary rock that is part of the upper part of the lower aquifer. The overlying aquifer is a layer of sedimentary rock that is part of the lower aquifer. When present, the Eau Claire layer is a layer of sedimentary rock that is part of the lower aquifer. The overlying aquifer is a layer of sedimentary rock that is part of the lower aquifer.

Below are the results for the six wells currently under investigation. A negative result means that none of the six types of viruses was detected. The distribution of testing procedures in December and January, show virus were detected in two of the confined facilities and one of the multi-aquifer wells

	Confined Aquifer Wells			Multi-Aquifer Wells		
	UW7	UW19	UW30	UW12	UW13	UW16
2007						
September	A	A	Negative	A	A, E	A
October	A, E	Negative	Negative	A, E	Negative	Negative
November	ns	A, E	Negative	A	Negative	Negative
December	ns	ns	ns	ns	ns	Negative
2008						
January	E	A	Negative	A	Negative	ns
February						
March						
May						
June						
July						
August						

A = adenovirus, E = enterovirus, H = hepatitis A, N- = norovirus genotype 1, N1 = norovirus genotype 1, IR, r = rotavirus
 ns - no sample was tested

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<http://avos.wiscnet.net/mailman/listinfo/drinkingwaterquality>

Sincerely,
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