Water Quality Monitoring Report
2008 Monitoring Schedule

Quality and Reliability since 1882
Madison Water Utility MWU

Monthly Report for: **Aug-08**

Analyte Group	Sample Locations	Monitoring Requirements (# of Samples)		Monitoring Activity (# of samples)		Violations & Public Notices
		Monitoring Period	2008 Annual Requirement	Current Month	Year to Date 2008	Year to Date
Daily/Routine Samples						
Coliform Bacteria	Operating Wells and Distribution Sites	120	1500	469	2792	0
Free Chlorine Residual "Grab" Samples	Operating Wells and Distribution Sites	160 [1]	1900 [1]	774	4809	0
Fluoride	Operating Wells	450 [1]	5400 [1]	508	3144	0
Quarterly Samples						
Volatile Organic Compounds (41 analytes)	Wells	4 [1]	16 [1]	3	12	0
Coliform Bacteria (Raw Water)	Wells	21 [1]	84 [1]	19	61	0
Annual Samples						
Inorganic Contaminants [2] (28 analytes)	Wells	21	21	2	22	0
Volatile Organic Compounds [2] (41 analytes)	Wells	17	17	12	16	0
Disinfection Byproducts - Total Trihalomethanes & Haloacetic Acids	Distribution Sites	7	7	0	0	0
Specialty Samples						
Synthetic Organic Compounds (2 analytes)	Wells	1	1	0	0	0
Radionuclides (4 analytes)	Wells	21	21	1	21	0
Unregulated Contaminants (UCMR2 - 25 analytes)	Wells	22	22	0	0	0
	Distribution Sites	7	7	0	0	0
Iron & Manganese	Wells	na	na	24	93	na
	Residential Taps	na	na	1	2	na

(1) Sampling requirement will vary depending on the number of wells in operation during specific days or quarters
(2) Sampling is usually completed June to September in each calendar year, with results reported in the month following sampling.

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Calls Logged to the Water Quality Correspondence Database - 2008
Update: 8/6/08

Year	Month	All Calls	Color	Manganese	Pressure	Taste	Odor	No Water	Other
2008	January	69	41	1	1	7	5	1	17
2008	February	41	18	4	2	1	1	0	19
2008	March	84	54	2	7	4	5	0	18
2008	April	131	78	4	5	6	6	6	35
2008	May	126	68	3	5	7	10	10	40
2008	June	119	66	3	20	2	4	3	29
2008	July	125	68	1	7	3	12	6	32
2008	August								
2008	September								
2008	October								
2008	November								
2008	December								
2008	TOTAL	695	393	18	47	30	43	26	190

Year	Month	All Calls	Color	Manganese	Pressure	Taste	Odor	No Water	Other	Alder District
2008	July	1	0	0	0	0	1	0	0	01
2008	July	10	4	0	0	0	1	4	1	02
2008	July	5	2	0	1	1	1	0	1	03
2008	July	5	0	0	0	0	0	0	5	04
2008	July	11	6	0	1	0	1	0	3	05
2008	July	11	9	0	0	1	2	0	0	06
2008	July	3	0	0	0	0	0	2	1	07
2008	July	5	4	0	0	0	0	0	1	09
2008	July	2	1	0	0	0	1	0	0	10
2008	July	11	10	0	0	0	1	0	0	11
2008	July	7	2	0	2	0	0	0	3	12
2008	July	4	2	0	0	1	0	0	1	13
2008	July	3	3	0	0	0	0	0	0	14
2008	July	11	9	0	0	0	1	0	2	15
2008	July	4	2	0	1	0	1	0	0	16
2008	July	11	5	1	0	0	0	0	6	17
2008	July	1	0	0	0	0	0	0	1	18
2008	July	7	3	0	2	0	0	0	2	19
2008	July	3	0	0	0	0	1	0	2	20
2008	July	7	5	0	0	0	1	0	1	none
2008	July	3	1	0	0	0	0	0	2	unknown

Year	Month	All Calls	Color	Manganese	Pressure	Taste	Odor	No Water	Other	Alder District
2008	June	16	0	1	12	0	0	1	3	01
2008	June	3	2	0	0	0	0	1	0	02
2008	June	5	3	1	0	0	1	0	2	03
2008	June	4	1	0	1	1	1	0	1	04
2008	June	2	1	0	0	0	0	0	1	05
2008	June	17	10	0	0	1	1	1	5	06
2008	June	1	0	0	1	0	0	0	0	08
2008	June	5	3	0	0	0	0	0	2	09
2008	June	35	32	0	3	0	0	0	1	10
2008	June	7	5	1	0	0	0	0	2	13
2008	June	1	0	0	0	0	0	0	1	14
2008	June	6	4	0	1	0	1	0	0	15
2008	June	1	0	0	0	0	0	0	1	16
2008	June	6	3	0	2	0	0	0	2	17
2008	June	2	1	0	0	0	0	0	1	18
2008	June	2	0	0	0	0	0	0	2	19
2008	June	2	1	0	0	0	0	0	1	20
2008	June	4	0	0	0	0	0	0	4	none

Water Quality Technical Advisory Committee Meeting Minutes (DRAFT)

119 E Olin Ave, Main Conference Room
7/30/08, 10:00 am

Attending: Janet Battista (JB), Ken Bradbury (KB), Joe Demorett (JD), Joe Grande (JG), Jocelyn Hemming (JH), Amy Jones (AJ), Al Larson (AL), Sharon Long (SL), Larry Nelson (LN)

Agenda:
A. Update on Sentinel Well at UW 29 – Joe Demorett
B. Review of Data from Femrite Drive Test Well
C. Lab Results for Radionuclides and Annual Inorganics
D. Additional Items

Meeting began at 10:10 am. JG summarized the agenda.

Agenda Item A: Update on Sentinel Well at UW 29 – Joe Demorett
JD referred to a map of the Sycamore Landfill indicating the location of its monitoring wells. He pointed out the asterisk representing the proposed well site. The latest samples taken at the landfill in May 2008 showed that well 23A and 13A both contain VOC's. These are water table observation wells drilled to a depth of 70-80'. Groundwater levels were also much higher than usual—20' higher than in 1996. It was recommended to check our proposed location with a shallow well that was due to be drilled on 8/11/08. Testing is expected to show the presence of VOC's. Well 13B, which is drilled to depth of 150', was less contaminated than 13A and 23A, indicating that it is shallow groundwater contamination. At the previous meeting, it was agreed that there would be one monitoring well and not three. JD passed around handouts on the FLUTe system, which is already in use at Nine Springs. JD is working on a cost proposal with KB. This option may cost more than three monitoring wells but it will allow six monitoring points instead of three, if three monitoring wells had been installed.

LN asked how the FLUTe system works. JD explained that nitrogen gas is pumped in which displaces the water allowing for a sample to be withdrawn. KB had demonstrated it and suggested transducers at various locations. The well will be drilled down to 815' or bottom of bedrock. KB will bring in logger, then blank liner will be put into the full length of the drill hole so it is sealed until the FLUTe is custom built for this exact location. KB described the proposed location of the six ports – one at the water table surface, one in the Tunnel City formation (fractures), one in the Wonnewoc formation, one in the Eau Claire, and two in the Mount Simon. After the well is drilled to bedrock and logged by WGNHS, the hole will be backfilled to 425' to save money on the FLUTe. This measurement can be adjusted to go deeper if necessary. It will be possible to tell where most of the water is coming from based on geophysics and adjust from there. The utility will determine if the shallow test well is removed; the DNR will be contacted to see if they want it for future monitoring. The Health Dept. has agreed to collect the first few samples from the shallow well.

The FLUTe well may not be scheduled until Oct. or Nov. 2008. Two contracts are needed; one to drill the well and one to purchase the FLUTe. JD asked if we need Montgomery to look at the manganese, etc. AL said they still want to do profiling and look at the cuttings so Utility staff should at least meet with them to discuss it. The Utility is not currently under contract with them for this project. They had a proposal to do some pumping from specific zones, but it was expensive and some of the information could be gained from the FLUTe. AL added that the UW 29 filter is out for bid, with bids due 8/8/08 and opened on 8/15/08. It is expected to be under construction this winter and completed by June 2009, with a capacity of 1100 gpm.

Agenda Item B: Femrite Drive Well
JG began with some background information regarding the proposed well site located at Femrite Drive and the Interstate. This location is in Pressure Zone 4, a single-well zone currently served by UW 9. Pressure Zone 4 is not served by any other wells but has some interconnections to Zone 6 in case of problems with UW 9. Engineering staff has identified it as a high priority. $1 million has been set aside to begin the process in 2009 with an additional $3 million earmarked for the project in 2010. JG provided handouts that include the test well construction report from March 2004, the test well abandonment record, and the water quality data from samples collected following the pump test. AL explained that the test well was drilled to

bedrock, cased, and a packer was installed. When pumped, however, there was virtually no drawdown. This led to questions as to whether the packer was in the proper location, or if a shale layer was present. Committee members recommended that WGNHS analyze the cuttings. Test results potentially reflect water quality from entire column, not just from lower aquifer. Water quality improvement may be seen with a production well cased through shale layer (if present). It was discussed whether or not Eau Claire shale is present. GE Healthcare (formerly Ohmeda or Ohio Medical) is located nearby and is interested in installing a monitoring well on the property. Previously, they installed multilevel piezometers and found contamination running through the Tunnel City formation. It was suggested that we allow them to quickly install a well in the northeast corner, as it would provide additional water quality data and information about potential contamination. Toluene and TCE were previously identified at the test well. Regarding timeframe, it could be in place by August.

JB asked whether one or more VOC samples was planned for the test well. AL stated that the well would be pumped for 24 hours and one sample would be taken at the end of the pump test. JG asked her to clarify if she meant duplicate samples taken at the same time or at multiple times during the pump test. JB said we already use 3 bottles so that the lab can use a backup bottle if the first sample they test is too close to the LOD. She felt it would be useful to take another sample at another time during the test, especially if important decisions were to be made based on the results of the VOC sample, to make sure any positive lab result was really coming from the water. JG explained that we already take one VOC sample but it is tested for many analytes, and used the examples of the Larkin and Whitney Way sites, but added that it would be possible to take duplicate samples if necessary. JB reiterated that we ought to have confirmation samples, at least for VOC's. AL mentioned that with the test well already abandoned, we would have to drill again to resample. LN suggested that future protocol could be to test more than once. SL recommended testing again if there was a detection or a positive at the test well to confirm if the detected substance is present. LN asked if we could take more than one set at a time, but that would exceed the hold time of 14 days for the reserved set of samples. We would have to leave the test well for a couple of weeks. The pump test at Larkin/Glenway was 30 days. Taking duplicate samples and submitting them as duplicates was discussed, but examples were given of why that situation may cause false positives in all samples taken at the same time, i.e., sampler had contaminated all bottles with gasoline on hands by filling up truck before sampling. LN offered the idea of taking 21-day and 30-day samples during the same pump test, and if there were inconsistencies there would be time to take a third sample. Sample results usually turn around in two weeks, but can be rushed for an additional (usually 50% of regular charge) fee. It would be possible to receive the results of the 21-day sample by the time the 30-day sample was scheduled. [*JG developed a draft SOP for water quality sampling at test wells to address the issues raised.*]

LN asked if there were any concerns with the data seen so far, and there were none. KB requested a better construction log and recommended having geophysics done at future test wells.

Agenda Item C: Radionuclides and Annual Inorganics

KB began discussion by asking if we were concerned about the gross alpha numbers. AL said there was a concern with UW 29 and the test well but results from the production well were much lower. DNR may require more sampling when gross alpha is elevated. For example, in 2001-2002, any well sample in which gross alpha exceeded 5 pCi/L was required to test specifically for radium-226 and radium-228. JG handed out a radionuclide table, showing test results for grab samples collected from 5 wells in June and tested for radium-226 and radium-228. UW 27 is a potential concern. The combined radium result for UW 27 is 4.9 pCi/L, and the MCL for either type of radium and/or the combined result is 5 pCi/L. The radium numbers are higher than the 2001-2002 results. The gross alpha result at the test well (Femrite Drive) is 11 pCi/L; however, most of the current gross alpha results are the same as in previous tests or lower. Given that, it is unclear why the radium numbers have increased. The water samples were from the distribution entry point, so it had been chlorinated and stored in the reservoir.

UW 10 and UW 29 will be samples in September for radionuclide analysis. UW 10 will be run to waste for a couple of days for the express purpose of collecting a suite of samples. EPA regulations state that every well must be sampled unless abandonment is imminent. The operation of UW 10 will be announced to the public. Residents of Manitou Way will be sent letters because they can see water flowing down the street

when UW 10 is running to waste. Other people who have expressed interest in receiving information will also be notified. None of the water from UW 10 will go to distribution, and consequently no chlorine or fluoride will need to be added, according to Mark Nelson of the DNR. The other 16 wells will have 4-quarter composite sample analyzed for radionuclides.

JG then drew everyone's attention to the last page of the handout packet, which contained the 2008 Annual Inorganics table. All samples were collected during one week in June, with the exception of UW 26 and UW 29, which were sampled the first week of July. He pointed out that the main difference between 2007 and 2008 inorganics results are that in the 2008 samples, there were detects for aluminum, arsenic, lead, nickel, selenium and thallium, where in 2007 there were either no or very few detects. The reason for this change is that the Public Health lab now has new machines capable of detecting these substances at much lower levels than previous years. The lower LOD raises a possible problem with public perception, as all future correspondence will show that these contaminants were detected in the water. It was no surprise that they were found and can now be detected with better analytical methods. All the contaminants mentioned have an MCL except aluminum. This is a situation that has occurred before, when it became possible to detect lower levels of VOC's and emerging contaminants such as pharmaceuticals. JB suggested focusing on the MCL and the fact that all results are lower than the MCL for each. JH recommended doing away with "not detected" and report these instead as "less than LOD amount." All levels are significantly lower than the MCL.

JG stated that one item might be of some concern: when flushing waters were sampled in 2006, it was theorized that manganese scale could accumulate trace metals, although at the time they could not be detected in the source water. Now that we can detect the trace metals, it reinforces our recommendation not to drink discolored water and the need to flush mains to remove scale, as it is now known that arsenic, aluminum, lead and nickel will bind to manganese scale. AL commented that it also reinforces the need for filtration, because more information will continue to become available that these metals attach to iron and manganese scale. Regarding UW 29, iron and manganese levels appear to be lower because of the way that we are operating the well. Some settled out because the water was in the reservoir for a week. However, the raw water samples were consistent with the prior levels of iron and manganese found. While we are required to report on all primary contaminants, we exceed requirements by reporting on everything detected. SL suggested including a disclaimer in the annual report to educate consumers about improved detection, and that all results were below required limits. The annual report is issued the first week of May each year using the previous year's data, with the information being updated on our website at the same time. The Water Utility receives few inquiries about the data found in the annual report.

Agenda Item D: Additional Items

LN stated that we have inherited a well from the Town of Burke and something needs to be done about it. It is located at Packers Ave and County Rd CV. It is known to have a high iron content (Burke Utility added polyphosphates to sequester the iron) and to still contain a small pump. AL is going to look into possible use for its reservoir, but the Utility does not plan to use the well itself. He asked KB if he could use it as part of his grid. He will check into that, but said that that brings into question who would be responsible for abandoning it someday. The information about the well, known as BUD-1, can be found on the DNR register as an inactive well, located in the Town of Burke, under a Wheeler Rd address.

LN also mentioned an article in the paper last Sunday about the Prairie du Sac Water Utility's use of UV light for disinfection. UV and chlorine each have different applications; UV does not produce a residual but chlorine is not effective on all types of microorganisms. Chlorine is necessary in Madison, in part, to protect against potential contamination following water main breaks; Madison experienced 200 breaks last year mostly caused by the harsh winter climate. LN commented that the city pool is adding a UV system in tandem with its chlorination system because UV provides an additional defense against giardia. JG will present a draft of a report at the next meeting illustrating how the chlorine residuals in Madison water have changed over time so that the WQTAC can discuss it before the report is given to the Water Board this fall. The report will also look at whether levels of disinfection byproducts have changed. AL commented that the level of disinfection byproducts is dependent upon the amount of organic material in the water and not the amount of chlorine. This report will begin a discussion on disinfection. AL mentioned that chlorine residuals have changed three times over the last seven and a half years; the first time was in 2001 when it

was increased from 0.1-0.15 mg/L to 0.2 mg/L. The subsequent change only affected three wells, but the third and most recent change brought the residual to 0.3-0.45 mg/L at all wells. It was noted that the number of complaints received after the latest increase regarding the smell of chlorine dropped off rapidly after an initial spike related to media reports.

JG handed out copies of the Emerging Contaminants Fact Sheet that was recently uploaded to the Utility's website. He also informed the committee that the report by Dr. Shane Snyder of the AWWA is now available to AWWA members and will be released to the public in January.

The next WQTAC meeting is planned for sometime in October, although rescheduling it for sooner was discussed as an option if it would allow the members of the committee to meet the new Water Utility General Manager, Tom Heikkinen, who will be starting at the Utility the first week of August.

Meeting adjourned at 11:55 am.