


Internal Monitoring Report

Policy # O-2E Sustainability

Date: December 18, 2012

Frequency: Twice a year

I certify that the following information is true.

Signed , General Manager

Policy Language:

Madison residents will benefit from a sustainably managed ground water supply to ensure that water is available to protect public health, and to maintain and improve the economy and environment in Madison, now and in the future.

Accordingly,

1. Aquifers and wells will be monitored and the data evaluated to identify trends in water levels and potential contaminants.
2. Appropriate city, county, state and federal agencies will be called upon to enforce all pollution control and prevention measures within their authority, in order to protect water quality in the well head protection area of each unit well.
3. The adopted Conservation Plan shall be monitored and evaluated regarding progress to fulfill the goal of a reduction per capita residential use of water by 20% by 2020, which is 58 gallons/capita/day. (Residential is defined as single family and duplex dwellings.)
4. The water supply system shall be expanded so that the pumpage from individual unit wells shall not exceed 50% of the annual rated capacity of the unit well.
5. Water rates will complement economic growth in Madison (as stated in 0-2D).

General Manager's interpretation and its justification:

This policy prescribes certain activities intended to ensure the long term environmental, public health, and economic sustainability of Madison's water supply. Our actions relating to these objectives are detailed below.

Data directly addressing the General Manager's interpretation:

1. Aquifers and wells will be monitored and the data evaluated to identify trends in water levels and potential contaminants.

Water Levels

Water levels in the aquifers beneath Madison continue to vary on a seasonal basis. Levels at a long term monitoring well located in the basement of the State Capitol indicate that overall levels appear to be holding relatively steady with a slight increase over the last 10 years. The water levels over the last 30 years are displayed in an attached graph.

The static and pumping water levels in many of MWU's wells varied significantly this year. Many of the wells experienced very low water levels during the summer months, a result of the extreme hot and dry conditions. A review of the water level data indicates that, with the exception of several wells, most of the water levels have recovered to 2011 levels. Water levels in the wells continue to fluctuate seasonally and are greatly influenced by precipitation events. Average water levels at each well for 2011 and 2012 are depicted in the attached tables.

University Crossing/UW #14

A set of three shallow monitoring wells were installed at the University Crossing Development to observe groundwater quality during site re-development. The wells were installed in March of 2012 with the Utility paying 50% of the installation costs. The wells are being sampled and analyzed on a quarterly basis for a period of two years. All sampling costs are paid 100% by MWU. There have been four samplings to date, the most recent in December of this year. No Volatile Organic Compounds have been detected in any of the three monitoring wells. Elevated levels of several inorganic compounds exist in the wells (chloride, sodium, and nitrates). These levels, however, do not appear to be increasing as the development progresses.

Madison Kipp Corporation/UW #8 Sentinel Well

Groundwater monitoring at the Madison Kipp Corporation (MKC) facility shows the presence of a plume of tetrachloroethylene (PCE)-contaminated groundwater. Neither PCE nor its immediate breakdown product trichloroethylene (TCE) has been detected at Well 8, which is located less than 2000 feet to the southeast.

MKC is in the process of installing a series of five deep groundwater monitoring wells in the area to determine the vertical and horizontal extent of the contamination. The WDNR has asked MWU to delay the installation of its sentinel well, proposed to be installed adjacent to Elmside Circle Park, until the five monitoring wells are installed and sampled. It is hoped that the wells will be complete and sampled early next year. The contractor selected for the sentinel well is currently on hold.

UW #29 Sentinel Well

Semi-annual monitoring of both inorganic and volatile organic compounds is conducted at the sentinel well near Well 29. Sampling is conducted on a semi-annual basis with seven samplings conducted to date. There have been some minor detects, but most can be attributed to the coating on the well liner. Benzene has been detected in the shallow ports at levels ranging between 0.12 - 0.32 ppb (MCL = 5). Trichlorofluoromethane has also been detected in the shallow ports at levels ranging from 0.13 - 1.6 ppb (no MCL). Toluene has been detected at concentrations between 0.13 - 2.8 ppb (MCL = 1000) in all of the ports. Sampling indicates that the migration of contaminants from the Sycamore landfill is not a significant threat to water quality at Unit Well 29 at this time.

Zone 4 Test Wells

GE Healthcare continues to sample, on a semi-annual basis, the monitoring well located on Water Utility property at 5802 Femrite Drive. Trichloroethylene (TCE) is consistently found at the 10 ug/L level – twice the enforcement standard for groundwater quality. None of these volatile or synthetic organic compounds have been detected at either the Tradewinds Parkway or Dairy Drive test wells in the samples collected to date. The Tradewinds test well is located about a mile southwest of the Femrite monitoring well and over 6000 feet from the source of the TCE contamination. The Dairy Drive test well is located to the northwest of the Femrite well. It is slightly closer to both the Femrite well and the TCE contaminant source. This test well was abandoned in November of this year.

2. Appropriate city, county, state and federal agencies will be called upon to enforce all pollution control and prevention measures within their authority...

MWU continues to work with the Mayor's office and the WDNR in monitoring the subsurface investigation and remediation of the PCE contamination at the Madison Kipp site.

The Unit Well #15 PCE Source and Casing Assessment study is complete. AECOM has completed the 4 different elements of the project which included:

1. List/Map of potential PCE area users
2. Soil vapor Investigation
3. Groundwater investigation
4. Casing extension assessment Sites for Element 2 are being determined and the probes should be going in shortly.

PCE vapors were determined to exist in the soil at four different locations but no sources of the groundwater contamination were identified. The WDNR was notified of the results.

3. The adopted Conservation Plan shall be monitored and evaluated regarding progress to fulfill the goal of a reduction per capita residential use of water by 20% by 2020...

Residential consumption in gallons per capita by year:

2002-2007	73.0
2008	69.8
2009	67.8
2010	65.0
2011	65.2
Goal: 2020	58.0

4. The water supply system shall be expanded so that the pumpage from individual unit wells shall not exceed 50% of the annual rated capacity of the unit well.

Our service level for capacity planning is 50% utilization, and system expansion is being planned to accomplish this level. Overall, 2012 Utilization rates were slightly higher than those experienced in 2011. This is due to a combination of summer drought conditions and Well 26 and 29 being out of service for unplanned maintenance for over four months each. Actual utilization for January – November 2012 and June – July 2012 are shown in the attached tables.

5. Water rates will complement economic growth in Madison (as stated in O-2D).

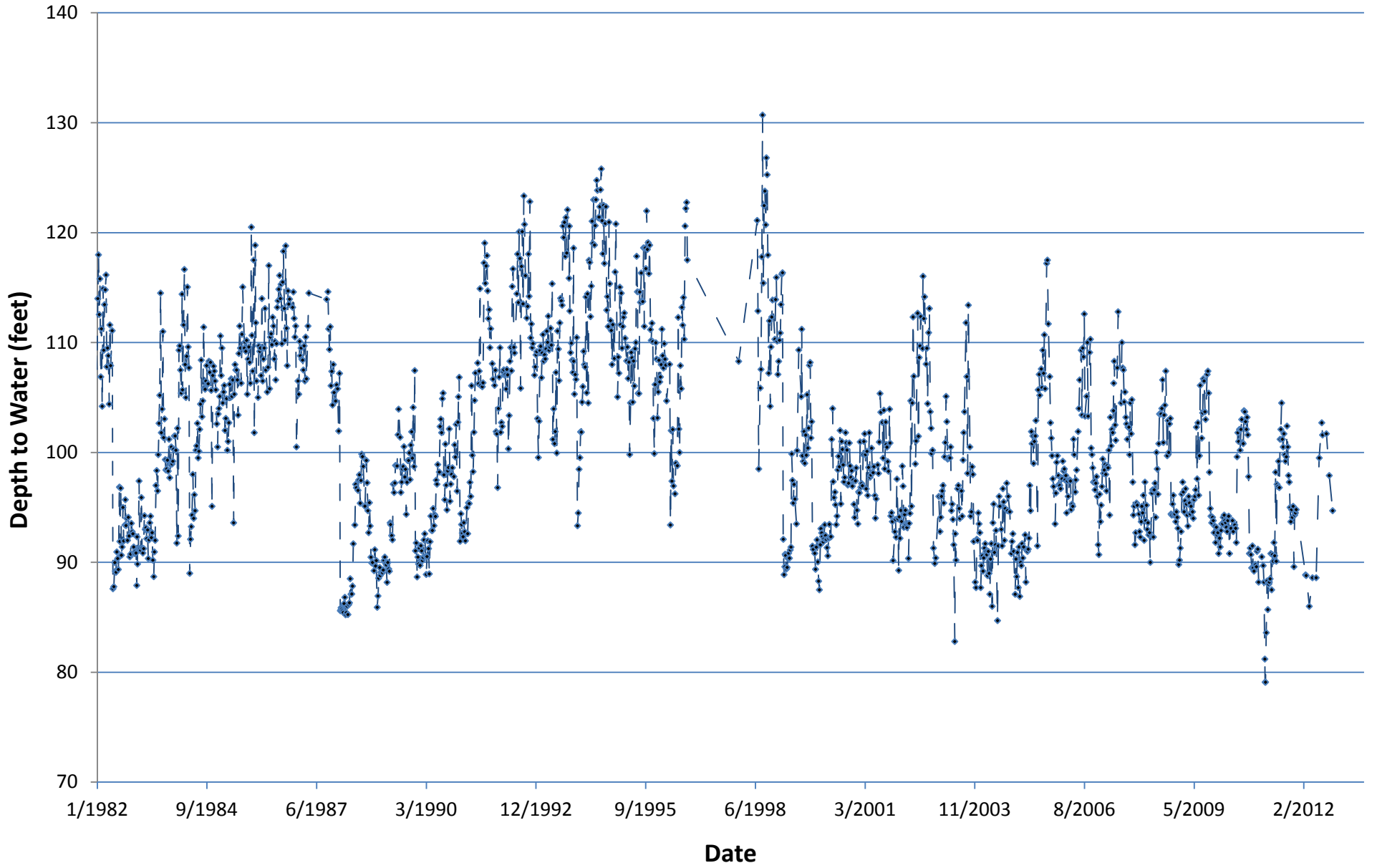
Please refer to the Monitoring report for the Affordability Outcomes Policy (O2-D).

I report compliance.

Attachments:

- A. Water Levels- State Capitol Well
- B. Average Water Levels - Wells
- C. Unit Well Capacity - January 1 to November 30, 2012
- D. Unit Well Capacity - June 1 to July 31, 2012

Water Levels - State Capitol Well



Madison Water Utility Unit Well Capacity

Start Date: January 1, 2012

End Date: November 30, 2012

Unit Well	Deep Well Capacity GPM	Total Daily Capacity MGD	Total Capacity To Date MG	Actual Pumpage To Date MG	% DW Utilization		Deep Well Run Hours To Date	Deep Well Rest Hours To Date	% Deep Well At Rest To Date	% Deep Well Running To Date	Months in Service
6	2,700	3.9	1,298.7	573.4	44.2%		3,625.9	4,390.1	54.8%	45.2%	8
7	2,000	2.9	962.1	261.1	27.1%		2,634.5	5,381.5	67.1%	32.9%	11
8	1,960	2.8	942.7	10.3	1.1%		178.2	7,837.8	97.8%	2.2%	2
9	1,744	2.5	838.8	464.0	55.3%		4,454.2	3,561.8	44.4%	55.6%	11
11	2,029	2.9	975.9	519.2	53.2%		4,276.2	3,739.8	46.7%	53.3%	11
12	2,319	3.3	1,115.2	542.0	48.6%		3,914.2	4,101.8	51.2%	48.8%	11
13	2,710	3.9	1,303.4	694.0	53.2%		4,394.7	3,621.3	45.2%	54.8%	11
14	2,379	3.4	1,144.3	721.0	63.0%		5,046.9	2,969.1	37.0%	63.0%	11
15	2,202	3.2	1,059.1	651.4	61.5%		4,975.9	3,040.1	37.9%	62.1%	10
16	2,495	3.6	1,200.2	475.2	39.6%		3,182.9	4,833.1	60.3%	39.7%	11
17	2,324	3.3	1,117.7	361.8	32.4%		2,588.6	5,427.4	67.7%	32.3%	6
18	1,810	2.6	870.7	414.6	47.6%		3,822.7	4,193.3	52.3%	47.7%	11
19	2,284	3.3	1,098.7	722.0	65.7%		5,286.6	2,729.4	34.0%	66.0%	11
20	2,054	3.0	987.7	617.1	62.5%		5,026.7	2,989.3	37.3%	62.7%	11
23	1,120	1.6	538.6	152.2	28.3%		2,293.5	5,722.5	71.4%	28.6%	8
24	1,577	2.3	758.6	352.0	46.4%		3,748.1	4,267.9	53.2%	46.8%	9
25	1,519	2.2	730.6	454.5	62.2%		4,961.4	3,054.6	38.1%	61.9%	11
26	2,026	2.9	974.4	499.6	51.3%		4,120.3	3,895.7	48.6%	51.4%	7
27	1,959	2.8	942.3	193.2	20.5%		1,655.7	6,360.3	79.3%	20.7%	6
28	2,249	3.2	1,081.5	329.5	30.5%		2,456.5	5,559.5	69.4%	30.6%	10
29	1,148	1.7	552.2	331.1	60.0%		4,822.8	3,193.2	39.8%	60.2%	7
30	2,407	3.5	1,157.8	660.7	57.1%		4,586.9	3,429.1	42.8%	57.2%	11

Madison Water Utility Unit Well Capacity

Start Date: June 1, 2012

End Date: July 31 2012

Unit Well	Deep Well Capacity GPM	Total Daily Capacity MGD	Total Capacity To Date MG	Actual Pumpage To Date MG	% DW Utilization		Deep Well Run Hours To Date	Deep Well Rest Hours To Date	% Deep Well At Rest To Date	% Deep Well Running To Date	Months in Service
6	2,656	3.8	229.5	160.2	69.8%		1,073.1	366.9	25.5%	74.5%	2
7	2,390	3.4	206.5	72.0	34.9%		507.9	932.1	64.7%	35.3%	2
8	2,040	2.9	176.2	1.2	0.7%		97.3	1,342.7	93.2%	6.8%	1
9	1,694	2.4	146.4	110.5	75.5%		1,091.3	348.7	24.2%	75.8%	2
11	2,008	2.9	173.5	108.5	62.6%		907.5	532.5	37.0%	63.0%	2
12	2,304	3.3	199.0	144.1	72.4%		1,047.7	392.3	27.2%	72.8%	2
13	2,709	3.9	234.0	144.0	61.5%		887.0	553.0	38.4%	61.6%	2
14	2,350	3.4	203.0	148.1	73.0%		1,051.5	388.5	27.0%	73.0%	2
15	2,144	3.1	185.3	141.7	76.5%		1,108.7	331.3	23.0%	77.0%	2
16	2,443	3.5	211.1	116.5	55.2%		801.5	638.5	44.3%	55.7%	2
17	2,237	3.2	193.3	101.1	52.3%		746.0	694.0	48.2%	51.8%	2
18	1,783	2.6	154.0	70.9	46.0%		666.2	773.8	53.7%	46.3%	2
19	2,255	3.2	194.8	118.3	60.7%		880.4	559.6	38.9%	61.1%	2
20	1,996	2.9	172.5	145.9	84.6%		1,219.7	220.3	15.3%	84.7%	2
23	1,098	1.6	94.8	41.5	43.8%		640.4	799.6	55.5%	44.5%	2
24	1,461	2.1	126.2	61.0	48.3%		697.2	742.8	51.6%	48.4%	2
25	1,549	2.2	133.8	101.6	75.9%		1,093.5	346.5	24.1%	75.9%	2
26	1,988	2.9	171.7	161.1	93.8%		1,352.7	87.3	6.1%	93.9%	2
27	1,932	2.8	166.9	87.6	52.5%		760.4	679.6	47.2%	52.8%	2
28	2,169	3.1	187.4	72.6	38.7%		561.5	878.5	61.0%	39.0%	2
29	1,149	1.7	99.3	97.6	98.3%		1,416.1	23.9	1.7%	98.3%	2
30	2,349	3.4	203.0	129.2	63.6%		918.9	521.1	36.2%	63.8%	2