# Water Quality Technical Advisory Committee - DRAFT

119 E Olin Ave
June 8, 2010 - 1:00 p.m.

**Attending**: Ken Bradbury (KB), Janet Battista (JB), Joseph Grande (JG), Jocelyn Hemming (JH), Al Larson (AL), Sharon Long (SL)

**Absent:** Joe DeMorett (JD), Tom Heikkinen (TH)

**Agenda:**

- **Review of May 11, 2010 Notes**
- **Virus Study Update (KB)**
- **Isotopes (KB)**
- **Lead and Copper Monitoring (JG)**
- **UW 18 Wellhead Protection Plan (JG)**
- **TAC Schedule and Format Feedback**

**1. Review of May 11, 2010 Minutes (JG)**

- Comment on page 3 regarding Order of Magnitude (SL).

**2. Virus Study Update (KB)**

Chris Gellasch, a UW graduate student, is investigating a potential pathway for viruses to UW7 (Sherman Ave). The focus of his study is to determine if the sewers are the source for viruses; the hypothesis being that viruses from leaky sewers move into groundwater through fractures in the rock. Virus sampling of the sewer and two monitoring wells installed at UW 7, one deep and one shallow, is being conducted every other week. The first results for chemistry are back; the next sampling is planned for June 9th.

**3. Isotopes (KB)**

*Summary:* Oxygen-18 and deuterium are stable isotopes that exist within water molecules which do not undergo decay. They are used in groundwater investigations to identify and trace waters with different relative isotopic concentrations. The ratio between the isotopes may identify groundwater source areas or climatic conditions. Groundwater that is recharged by infiltration from a lake may be heavier relative to groundwater recharged by precipitation that falls on the ground surface. (Madeline Gotkowitz, 5/10/2010 email)

Ken explained how tritium, present from both natural and anthropogenic sources, can be useful for dating recently recharged water and for differentiating the between groundwater and surface water. As a reference point, lakes have tritium orders of 8 or 9.

Table 1, Page 6: Summary of several Madison wells and their respective water age (9/2007 data)

UW7 (1613 N. Sherman Ave) – 4.65 TUs; fairly new water
UW30 (1133 Moorland Rd) - <0.8 TUs; older water, deeper well
UW19 (2526 Lake Mendota Dr) – 4.42 TUs; fairly new water

UW12 (801 S. Whitney Way) - <0.8 TUs; older water
UW11 (102 Dempsey Rd) – 6.26 TUs; fairly new water
UW13 (1201 Wheeler Rd) – 2.47 TUs; fairly new water

Plots 1 & 2, Page 5: Meteoric Water Line (MWL). Worldwide, the relationship between deuterium and oxygen-18 in precipitation falls along a diagonal line called the meteoric water line. In the Midwest, it is common to use deviations from the MWL to indicate a surface water source for groundwater. Local lakes plot off the MWL while most Madison wells cluster near the MWL. UW 17 plotted off the line which indicates that the well is drawing water from the lake. UW 8 did not show significant lake water influence. It was suggested that the utility test for isotopes at future test wells. Cost is believed to be about $40.

**4. Lead and Copper Monitoring (JG)**

*Background:* Corrosion studies in Madison began following the 1992 exceedance of the action level for lead ($90^{th}$ percentile greater than 15 ug/L). These studies prompted action by the utility and Common Council to require the removal of all lead services in the MWU service area. The utility is responsible for the removal of the utility-owned portion of the service while the property owner must replace their portion from the curb to the meter. Nearly all lead services – both utility and privately owned sections - have been replaced. The remaining lead services are expected to be replaced in 2011, in order to comply with the consent order approved by DNR.

*Lead and Copper Rule Compliance Sampling Report*, (Abigail Cantor, May 2010), documents the studies that have been conducted as well as the actions taken to reduce lead in drinking water. In particular, the report details how lead levels are reduced following the replacement of a lead service although it might take several years for lead to fall below 5 ppb. Test results support this finding but indicate that manganese scale on pipes can adsorb lead that may slough off for 3 - 5 years following the replacement of lead pipes. Figure 2, page 8 shows that concentrations of lead drop off after 4 years. Figure 3, page 9 shows that manganese scale is the issue. For Madison, the two methods to control for lead include removal of the lead service and water main flushing to reduce manganese that holds onto the lead. The report will be posted on the website.

Of the one hundred locations that were sampled in 1992, forty-five locations had lead services which have now been replaced. The utility is re-sampling as many of these locations as possible this summer (1) to document improvements following the replacement of a lead service and (2) to prepare for compliance monitoring currently scheduled for 2011. The report identifies the pool of homes from which 100 sample locations will be chosen for the 2011 monitoring. Each of these properties will be sampled twice in 2011. Samples will be collected by the customer.

Copper component of the study indicates that copper was not and is not likely to be an issue. The chemistry of the Madison water supply shows that the water is not corrosive and an adequate level of chlorine is maintained.

**5. UW 18 Wellhead Protection Plan (JG)**

Due to time, this topic will be deferred to the September meeting. In addition to the Wellhead Protection Plan, pumpage data for the past ten years and the volatile organics data were distributed.

It was noted that the two times there were notable decreases in pumpage were in 2006 when UW30 (1133 Moorland Road) went on line and in late 2008 for scheduled maintenance of UW18.

It was further noted that there is no discussion in the plan regarding the pump test that was done. Questions if there is a relationship between Quam Park and the landfill. During the pump test at

UW18, there was a drawdown at all of the landfill wells. The landfill is outside of the zone of capture but does have detections of VOCs. Comment was made that drawdown does not mean capture. Interdepartmental communication between MWU and City Engineering during pump tests would be beneficial.

As the Wellhead Protection Plans are updated, it would be useful to look at water quality data and proactive steps that could be taken. The wellhead protection plans are supposed to be updated every 5 years.

BT2 is under contract to help look for a well in southeast Madison. A suggestion made to have BT2 discuss potential well locations with the TAC. Input from the TAC regarding water quality relative to well sites would be useful information as the site selection progresses. Current time frame is October – November for potential well sites.

**6. TAC Schedule and Format Feedback**

After looking at the wellhead protection plans for UW14 (University Ave.) and UW 11 (Dempsey Rd.), water quality concerns, especially VOCs, significantly drop off. The contaminant source inventory will vary from well to well but overall data looks pretty good. Suggestions include:

- If no issues, meetings could skip months.
- Regularly go back and look at wells that had concerns. Especially those wells that the group did not make any decisions on.
- Look at the abandonment of private wells.

Future meeting dates:

- September 7, 2010
- October 12, 2010
- November 9, 2010
- January 11, 2011
- March 8, 2011

**Next meeting: Tuesday, September 7, 2010 at 1PM.**