Water Quality Technical Advisory Committee

119 E Olin Ave
Engineering Conference Room
March 11, 2010 - 1:00 p.m.

Attending: Janet Battista (JB), Ken Bradbury (KB), Joe DeMorett (JD), Joseph Grande (JG), Tom Heikkinen (TH), Al Larson (AL), Sharon Long (SL)

Absent: Jocelyn Hemming (JH)

Agenda:

- **Virus Study Update**
- **Monthly Meetings**
- **Wellhead Protection Plan – Unit Well 15**

1. Virus Study Update (KB)

Informal discussion regarding the next phase of study preceded the meeting.

2. Monthly meetings (JG)

New meeting format incorporates meeting 8 times per year, generally on the 2nd Tuesday of the month from 1 - 2:30 PM. The proposed meeting schedule is:

- April 13
- May 11
- June 8
- September 14
- October 12
- November 9

The committee will evaluate the new format in June to see how it is working.

At the January meeting, the committee discussed potential topics for future discussion. Topics that were mentioned included:

- Trend analysis for VOC detections at Wells 9, 15, and 18.
- Rising sodium and chloride levels at Wells 23 and 14.
- Looking in greater detail at 1 or 2 wells at each meeting. This would facilitate increased knowledge base of each well over the next 2 years.

3. Wellhead Protection Plan for Unit Well 15 (3900 E. Washington Avenue) (JG)

Handouts:

- Annual & Monthly Pumpage – 10 years of data
    - Monthly average over past 10 years was about 80 million gal/month; more recently, the average has been around 75 million gal/month.
    - In 2009, pumpage was reduced to see if it would reduce the PCE level. (Level of PCE dropped by about 10% but was not sustained.) During the summer months, however, the well usually pumps at near full capacity.

- Volatile Organic Compounds – Detection History

    - PCE has been detected since the early 1990's; level has been increasing. The Preventive Action Limit (PAL), codified in the Groundwater Quality Law, NR 140, is 0.5 ug/L.
    - TCE has also been detected since the early 1990's; level is low and trend is flat
    - MTBE has periodic detections, just above detection limit; two detections in 2009
    - Disinfection By-Products (DBP) – relatively low levels compared to regulations.
    - Recently, a few petroleum-based compounds have been detected at low levels (Dichloromethane and Trimethylbenzene species)

- Inorganic Compounds – Detection History

    - Tested annually to comply with monitoring requirements for nitrate
    - Similar to other wells, sodium and chloride show increasing trend; no other inorganics approaching level of concern;
    - Trace metals are being detected due to lower method detection limits
    - Higher copper concentration in 2009 likely due to well maintenance and the well not running for a period of time; still well below regulatory limit (40 vs. 1300)

- Well Protection Plan for UW 15 and Appendices

General comments regarding UW15 area and contaminants:

- Detections of PCE looks more like a spill situation rather than landfill or underground tank situation. If it were a landfill, one would expect a variety of different compounds detected. Conductivity would also be higher. To identify potential source, it might be good to target dry cleaners and BRRTS sites within the 5 year capture zone. (JB)
- Looking at Figure 4.2 – Contaminant Source Inventory (CSI)
    - Sites #12 – only up one gradient (AL)
    - Sites #1,2,15, and 16 – down gradient but still in capture zone (KB)
- MTBE and trimethylbenzene likely from nearby groundwater remediation site
- PCE generally from dry cleaners, computer manufacturing and print shops
- Underground storage tanks - Fire Department - likely for heating oil or diesel
- Referring to the UW 3 investigation into the origins of carbon tetrachloride, there still was uncertainty about the source; no action taken against potential polluters. (AL)
- Contingency plans or proposed action if PCE exceeds the MCL of 5 ug/L?
    - If a VOC tests above 1/10 the MCL (0.5 ug/L) then quarterly testing required until either there is an MCL exceedance or the level drops below the 1/10 threshold.
    - MCL violation is based on an annual average of four quarterly samples. What would be impact of more frequent monitoring? Need confirmation from DNR staff, but it is thought that multiple samples collected during a monitoring period (quarter) would be averaged to determine the value for that quarter. [*DNR staff confirmed that if multiple samples are collected during the monitoring period that the highest value observed is the official result for the period.*] DNR staff has not endorsed more frequent monitoring; however, WU staff and committee members recommend more frequent sampling if PCE exceeds 4 ug/L.
    - WU staff continues to monitor the impact of well operations on concentrations.
    - UW 9 previously had similar increasing trend for PCE but the trend is decreasing now; it is possible that the plume has now passed. If there is a nearby plume, good to pump regularly so PCE does not follow the borehole into lower aquifer. There is a downward gradient at UW 15. For example, would not recommend shutting down the well for winter. Currently the well pumps for 15-17 hours/day.

    - What impact of extending the well casing? Madeline has suggested installing a FLUTe at UW15. Could also install shallow monitoring well or wells to check if shallow groundwater is contaminated. Might lead to higher radium-228 levels.
    - Trend suggests will exceed MCL by 2014; conservative estimate shows could reach MCL as early as 2012. There also appears to be higher increases in the summer associated with heavier seasonal pumping. Since late 2007, the rate of increase appears to be increasing.
    - Abandon well versus treat well? More efficient to treat PCEs at higher levels. However, Well 15 remains an important water supply well for Pressure Zone 6
- Cluster of business at 2400' NW of well; possible that the shape of the 5-year capture zone was more to the east when Oscar Mayer was pumping. Good to check with Bureau of Redevelopment and Remediation regarding previous businesses in area. May help make informed decisions regarding future of the well – whether to abandon or treat.
- Highest level of PCE seen? 2% in groundwater right near the source. Solution was put into storm sewer and was leaching into soil. Not sure of highest level for deep wells.
- Madeline was logging UW 15 when the well was off line.
- UW 15 is a two-aquifer well. Casing does not extend into deeper aquifer. At time of installation (1965), the emphasis was on production (quantity) not quality.

Summary:

- More frequent monitoring seems reasonable.
- Investigate potential sources (CSI) where PCE was observed on site.
- Potential treatment/monitoring options:
    - FLUTe
    - Shallow monitoring wells (upper aquifer). Good idea for any new well.
    - Nest of monitoring wells at key intervals – provide depth profile data.
    - Case the well to a greater depth
    - Periodically update capture zone based on model updates
    - Aquastream (PVC well screen): Draw water from selected spots in the aquifer. $25,000 to install, cheaper than casing. Some problems due to vibration.
    - If radium is an issue, extending the casing may not be the solution.
    - Look at geophysical log from WGNHS
    - Compare Madeline's new log with test hole log
    - Ion exchange/filter (HMO); takes out radium, iron and manganese. Similar to UW29 but different chemical feed.

Next meeting: Tuesday, April 13 at 1PM.