

# Water Quality Technical Advisory Committee – Notes for WUB Report

Meeting Date – March 11, 2014

## A. Announcements & Updates

### Geothermal Well Drilling Regulations (NR 812):

Proposed regulatory language went before the Natural Resources Board in February. If the proposed language is approved, the total number of geothermal projects that would be reviewed by the State would be reduced by approximately 80%. Projects that would be reviewed would include projects with 10 or more boreholes, have a combined drilling depth greater than 4000 feet, and are located within 400 feet of a municipal well or within a wellhead protection area. Projects meeting these criteria would have to report GPS locations for each borehole while projects that do not meet the proposed requirements would only be required to report coordinates for one borehole. Although projects would be reviewed, the regulation essentially ensures that proposed projects meet minimum installation requirements. While allowing installations within wellhead protection districts, the regulation enables the municipality and the property owner/agent to determine the suitability of the geothermal project and other precautions needed to protect the groundwater resource.

### Water Research Foundation Chromium-6 Study:

MWU; San Jose, CA; Louisville, KY; Tulsa and Norman, OK are participating utilities in a study to evaluate the source, fate and treatment of Chromium-6 in the drinking water of their respective communities. The study is evaluating how chromium changes in the distribution system, the effect of treatment chemicals on chromium levels, and the various treatment options to reduce chromium levels in drinking water.

US EPA continues to gather Chromium-6 occurrence data, including via UCMR3 which continues through 2015, and review toxicological data. Changes to the chromium MCL, whether a reduction to the total chromium limit or a new regulation for chromium-6, are expected to follow the traditional regulatory process and are not likely to be implemented in the next three years. The State of California has proposed an MCL of 2 ppb for Chromium-6. A final MCL standard is expected later this spring. The highest level of Chromium-6 in Madison municipal wells is 2 ppb; several wells are below the detection level of detection. The utility plans to continue testing for Chromium-6 at all municipal wells twice per year.

### Dane County Hydrogeologic Model:

The steady state calibration of the updated model is complete and has been given to the County. The transient model is currently being calibrated by Randy Hunt, USGS. Ken has pumping data from Joe D. and will start running MWU simulations using the steady state model.

## B. Well 15 Pilot Study Update

VOCs continue to be successfully removed from Well 15 water; however, the treatment process has caused an increase in the pH of the water from the mid 7 to the low 8 range. The addition of a 40% sulfuric acid solution has been introduced to lower the pH back to 7.8.

The current condition involves pumping at 1,000 gpm with constant air flow of 4500 cfm. At this rate, the daily acid requirement is about 28 gallons to treat 1.44 MGD. Preliminary testing has achieved the desired pH range and no observable scale formation on the chlorinator. Future trials will involve lowering the water flow to 750 gpm and later 600 gpm. Finally, a pilot is planned for evaluating the VOC removal efficiency at various air flow rates.

### **C. Road Salt Reduction Initiative – WHPA 14**

Well 14 pumps an average of 2.3 MGD [800 million gallons per year]. Chloride is steadily increasing and fast approaching the Preventative Action Level (PAL) of 125 mg/L. In 2000, the chloride level was 58 mg/L; now it is around 115 mg/L. If the trend continues, the level of chloride could be in the range of 250 mg/L [the Enforcement Standard for groundwater] within 20 years.

The group reviewed a draft of the white paper “*Making a Case for Changing the De-Icing Strategy on University Avenue*”. The project aims to establish a pilot study area to evaluate the impact of a transition away from the seasonal use of sodium chloride to a non-chloride based de-icing agent on groundwater chloride concentrations at Well 14 and the nearby monitoring wells while balancing public safety and perception.

Committee suggestions included:

- Alternate treatment between road salt, beet juice, and calcium magnesium acetate (CMA)
- Request DOT to allow City of Madison to perform winter maintenance on portion of University Avenue
- Include City salt routes in the proposed pilot
- Add information about sodium due to health risks that are not associated with chloride. The current sodium level is 38 mg/L, nearly twice the US EPA guidance level.
- Involve the State Department of Public Health
- Invite Greg Fries, City Engineering – Storm Water, to a future meeting

### **D. Wellhead Protection Planning**

Twenty plans now complete; only the plans for Well 7 and Well 17 are incomplete

#### **Well 17**

The committee reviewed the draft wellhead protection plan for Well 17. There are about 25 locations identified on the Contaminant Source Inventory (CSI) located within the 5-year capture zone; some of these sites represent confirmed contamination and others represent potential sites. The active sites of greatest concern include two power plants, MGE and Capital Heating, as well as a dry cleaning facility with known groundwater contamination.

Suggestions were made to add water quality data including the radionuclide results and a comment regarding the use of contaminated fill material along the E. Washington Avenue corridor.

#### **Future Planning**

Systematic updates of all WHPPs will begin after the last two plans are completed. The goal is to update 4 plans per year with the cycle repeating every 5 years. The first step will involve updating the delineated capture zone, and wellhead protection districts, followed by an update of the CSI. The City will need to update the zoning code overlays for each wellhead districts as they are likely to change based on the new model. Implementation of the management strategies (Chapter 5) will commence concurrent with the updates.

The priority of wells to run with the updated model include those with the oldest contaminant source inventories – Wells 26, 28, 29, and 30 – and those with known groundwater contamination – Wells 9, 14, 15 and 18.