

LAKE MEAD WATER QUALITY FORUM
May 24, 2006
Meeting Summary

I. Introductions – Forum members introduced themselves.

II. Status Reports:

1. Perchlorate – Todd Croft (NDEP – Las Vegas)

Locally:

Northshore Rd.:

The perchlorate mass flux passing Northshore Road during the last three months ranged between 100 and 160 lbs./day. This loading is about an 80 to 85 percent reduction from pre-remediation values when the mass flux at Northshore Road was approximately 900 to 1,000 pounds per day.

Willow Beach:

The perchlorate concentrations measured at Willow Beach in the Colorado River system continue to remain low and were reported at: < 4 parts per billion (ppb) since June 2004. For 10 of the 12 months in 2005, Willow Beach concentrations were reported below 3 ppb. Willow Beach concentrations have ranged between 1.7 and 3.5 for January through April 2006.

Tronox LLC:

The Tronox LLC (Tronox) [formerly Kerr McGee] biological treatment system continues to operate. Perchlorate concentrations in the treated water discharge from the Fluidized Bed Reactor Perchlorate Treatment System are routinely < 18 ppb. Perchlorate removal rates for the Tronox remediation system are typically reported between 1,700 and 2,000 lbs. per day. Removal of perchlorate from the environment through April 2006: ~1,931 tons total; 361 tons from the seep area; 524 tons from Athens Road; and 1,045 tons from the on-site system.

Tronox acquired the last of several permits and approvals on May 2, 2006 and began construction of the 9th biological reactor and a sand filter. These modifications are designed to augment operation of the existing 8 FBR units and improve effluent clarity. The addition of the 9th FBR will increase the plant's chemical capacity by approximately 25% and allow for treatment of AP-5 solution. This modification will only increase the overall flow by between 1 and 2 gpm as the AP-5 solution is very concentrated. The second modification is focused at improving effluent clarity. A continuous backwash sand filter will be installed to remove system (DAFs). The resultant effluent should contain less than 5 NTUs and be more "clear" after filtering through the sand filter. The FBR modifications are scheduled for completion by September 2006.

Repair to one of two parallel DAFs was conducted between April 30 and May 8, 2006. The North DAF experienced wear to bearing. The South DAF was inspected after the North DAF repairs were completed. Operational changes made during the DAF repairs include diverting some of the FBR discharge to the on-site GW-11 pond as well as discharging effluent to the LV Wash with more solids than typical. Typical FBR system operation reportedly was restored by afternoon on May 8, 2006.

Tronox received NDEP concurrence on April 24, 2006 and initiated installation of a 9th extraction well within the Athens Road Well Field in early May 2006. ART-9 is situated in an area where alternating layers of caliche and sand stringers fill a low portion of the secondary paleo-channel. This well is designed to extend through the caliche/sand horizon. Operation of this new well in conjunction with a combination of existing wells is anticipated to improve capture of perchlorate mass.

AMPAC:

AMPAC is nearly finished with the installation of the first phase of their In-situ Biological (ISB) remediation system. Construction for this system commenced in July 2005. This remediation system will focus on impacted groundwater at the leading edge of the plume and will be activated in two phases. AMPAC is awaiting electrical connection at the Injection Well Field area by Nevada Power Company. Currently, this connection is scheduled for May 15, 2006. Electrical connections were completed at the Athens Road Extraction Well Field & Interim ISB System area on April 17, 2006.

The Underground Injection Control (IUC) permit has been issued. A modified UIC Permit also has been issued to allow for multiple tracer compounds to help track and evaluate ISB Remediation System performance.

Construction continues on the long-term, full-scale ISB plant and Athens Pen Extraction Well Field. The underground conduits, concrete slab, and adjacent water condition tanks were completed in April 2006 for the 9,000 square foot plant. Additionally, the majority of underground piping, electrical, and communication lines were installed in Athens Pen. Currently, electrical connection is scheduled for early July 2006.

The ISB system will be activated in two phases. The first phase is now expected to initiate start-up by the end of May 2006 pending electrical connection and costly repair of recent vandalism. This phase will involve start-up of the Athens Road Extraction Well Field, use of an Interim ISB system to control and meter the flow, and use of long-term conveyance piping and injection Well Field. The interim system is expected to operate at approximately 300 gpm and capture approximately 2/3rds of the perchlorate load present in this area of the plume.

The second phase is now expected to initiate start-up by the end of September 2006. This will involve the additional start-up of the Athens Pen Extraction Well Field; conversion to use of the full-scale, long-term automated ISB plant in place of the Interim system; and use of all conveyance piping and water conditioning systems. The full-scale system is expected to operate at greater than 400 gpm and destroy approximately 35 pounds per day or more perchlorate initially.

Nationally:

The California E.P.A.'s Office of Environmental Health Hazard Assessment (OEHHA) published a 6 ppb public health goal (PHG) for perchlorate in March 2004. A California based drinking water standard [Maximum Contaminant Level (MCL)] is anticipated for adoption in early 2006. The California MCL is to be set as close to the PHG as economically and technically feasible.

The National Academy of Sciences (NAS) National Research Council (NRC) released a report in January 2005 containing an evaluation of the U.S. EPA's 2002 Draft Toxicological and Risk Characterization of Perchlorate. The NAS concluded that an oral reference dose (RfD) of 0.0007 mg/kg/day would be health-protective for the population. The NAS relied upon a well-regarded 2002 clinical study involving healthy adult humans, rather than laboratory animals. The NAS did not calculate a safe level of perchlorate in drinking water. In February 2005 the U.S. E.P.A. used the results of the NAS report and established an official reference dose translates to a Drinking Water Equivalent Level (DWEL) of 24.5 ppb. The DWEL assumes all exposure to a contaminant comes from drinking water.

In January 2006, the U.S. E.P.A., Office of Solid Waste and Emergency Response (OSWER) released new guidance of States, EPA Regions and Stakeholders entitled *Assessment Guidance for Perchlorate*. The January 2006 guidance replaces earlier interim guidance issued by the U.S. E.P.A. in June 1999 and January 2003. The January 2006 guidance indicates the NAS NRC recommended RfD of 0.0007 mg/kg/day has been placed into the Integrated Risk Information System (IRIS). As such, the IRIS RfD is a value to be considered in accordance with the National Contingency Plan (NCP) and is the appropriate value for use by risk assessors and project managers. Using the RfD, an adult body weight of 70 kg, and a conservative tap water consumption of 2 L/day, E.P.A. calculates a DWEL of 24.5 ppb. Further, the 2006 guidance indicates the RfD for perchlorate is a conservative public health-protective value derived using an uncertainty factor to ensure protection of the most sensitive population. Additionally, as provided by the NPC, E.P.A. indicates the RfD and corresponding DWEL of 24.5 ppb are respectively the "to be considered" value and preliminary remediation goal (PRG).

The Nevada Division of Environmental Protection is evaluating this new guidance. We will continue to use the Provisional Action Level of 18 ppb for the foreseeable future. The 18 ppb Provisional Action Level is incorporated into both the Tronox NPDES permit and the AMPAC UIC permit.

The New Jersey Drinking Water Quality Institute submitted a report entitled "*Maximum Contaminant Level Recommendations for Perchlorate*" to the State of New Jersey (NJ) Department of Environmental Protection (DEP) on October 7, 2005. The report recommends adoption of a health-based State MCL of 5 ppb for perchlorate. The proposed 5 ppb MCL for perchlorate is based upon the 0.0007 mg/kg/day RfD recommended by the NRS in January 2005. Additionally, a 67 kg body weight of a pregnant adult and a default value of 0.2 (20%) for a Relative Source Contribution (RSC) factor was used to derive the proposed State of NJ MCL. The proposed health-based State MCL is anticipated to be protective for chronic exposure to perchlorate. The RfD is considered to be health protective because it is based on a No Observed Effective Level (NOEL) for an effect which is not adverse, with the application

of an appropriate uncertainty factor for intra-individual variation. The 67 kg body weight of a pregnant woman was used instead of the 70 kg default, as pregnant women may represent a sensitive subpopulation. The RSC is the amount of perchlorate ingested from drinking water. A 20% default value was used for the RSC as this is recommended by E.P.A. in the absence of specific information to account for exposure to perchlorate from other sources including food and air. A 5 ppb value was also obtained by the NJ Drinking Water Quality Institute when the exposure assumptions were varied to account for perchlorate exposure by infants from ingesting powdered or concentrated formula, tap water, or mother's milk. Infants are considered to be a sensitive subpopulation for perchlorate effects.

In March 2006, Massachusetts proposed a 2 ppb State drinking water standard for perchlorate. This followed action by the Massachusetts Department of Environmental Protection (DEP) wherein they rejected the NAS NRC recommendations to allow for the application of an additional uncertainty factor in their updated perchlorate health assessment.

Ms. Peggy Roefer briefly reported that the current perchlorate concentration levels for drinking water were at 3 micrograms per liter.

2. Selenium Subcommittee:

Discussion was deferred to the presentation by Mr. Doug Merkler on selenium.

3. Las Vegas Wash Coordination Committee (SNWA)

It was reported that the last meeting for the committee was held April 25, 2006. One of the documents produced from that meeting, the Year End Report for the Las Vegas Wash Coordination Committee, summarizes the 2005 activities conducted in and around the Las Vegas Wash. It was mentioned that there were hand-outs regarding various miscellaneous biology studies available on the sign-in table for interested parties to take and read. The ten erosion control structures being built along Las Vegas Wash will be completed by the end of 2006. The 60-acre re-vegetation project is still going on and will be very helpful in preventing storm water run-off and will promote erosion control. A summary report will be completed some time in the near future. The next LV Wash Coordination meeting will be July 25, 2006.

III. Presentations

- 1. "History of the TMDL and a Chl-a Standard and Effects of Phosphorus Removal During Winter" – Randy Hadland (City of Las Vegas)**
- 2. "Selenium and the Wash" – Doug Merkler – (NRCS)**
- 3. "The Difference Between Toxicology and Immunology and Implications to Water Quality" - Bob Hall**

These presentations are available on the NDEP website at ndep.nv.gov/forum

IV. Other Issues

Nothing discussed in this area

V. Next Forum Meeting

The next Lake Mead Water Quality Forum meeting was scheduled for September 21, 2006.

VI. Adjourn

The meeting was adjourned at 11:47 a.m.