

## Meeting Minutes

Project: All Companies – BMI Complex and Common Areas  
Location: SNWA – River Mountains Facility  
Time and Date: 10:00 AM, December 8, 2010  
Meeting Number: NA

In Attendance: See Attached List

Purpose of the meeting is to provide a clear picture of the groundwater programs within the BMI facility

1. See attached agenda for additional details.
2. Copies of all presentations will be provided by NDEP to the attendees, information presented within these presentations is not reiterated in these minutes.
3. Introduction and Welcome.
4. Tronox Bankruptcy Trustee
  - a. Jay Steinberg was introduced to the group.
  - b. Noted that relationship with trustee and neighbors is hoped to be cooperative and productive.
  - c. Effective Date for the trustee to take control of the site is not finalized but is expected perhaps by mid-January.
5. Background and Upgradient Groundwater
  - a. NDEP.
    - i. Regulatory framework was discussed as it relates to NAC 445A.22735.1.c and recent (2009) changes to the NAC.
    - ii. Sites can now be closed with contamination left in place.
    - iii. Discussed upgradient and background as it relates to this issue and discussed arsenic as an example. See NDEP's May 28, 2010 letter to BMI as an example.
    - iv. Draft Evaluation Factors
      1. Noted that these have not yet been formally promulgated and NDEP seeks input from the Companies.
      2. Factors as follows:
        - a. Site-Related Chemicals (SRCs)
        - b. Conceptual Site Model (CSM)
        - c. Is contamination solely related to off-site?
        - d. Did the site contribute to contamination?
        - e. Statistical analyses to evaluate upgradient versus downgradient.
    - v. Decisions to be made.
      1. Who is responsible for monitoring upgradient conditions? The Companies are at least until a RAS and ROD are completed.
      2. Access issues.
      3. Should upgradient conditions influence indicator parameters for downgradient monitoring?

- vi. NDEP noted that groundwater (GW) RAS decisions are hoped to be made in 2011.
- b. BMI
  - i. BRC discussed the process undertaken to date.
  - ii. Challenges
    - 1. Shallow water disappears in the Quaternary alluvium (Qal) to the east and south sides of the site.
    - 2. Statistical Analyses
      - a. BRC suggests looking at the data, completing exploratory data analysis (EDA), and to complete full blown statistical (stat) analysis on an as-needed basis.
- c. TIMET
  - i. Five rounds of data have been collected to date.
  - ii. Variable (by location) anthropogenic background issues have been noted for several compounds such as perchlorate, sulfate, chloroform, total dissolved solids (TDS) and perchlorate to the south. Additional compounds such as hexavalent chromium appear to impact the site from the west.
  - iii. On-site RAS and ROD are complete. Remedy construction is imminent.
- d. TRX
  - i. Series of wells installed along Lake Mead Parkway, however, most are dry in the Qal.
  - ii. TRX may utilize information from adjacent studies due to this issue.
- e. OSSM
  - i. Four Shallow Zone and one Middle Zone wells exist for upgradient purposes.
  - ii. These are monitored at least annually.
- 6. Plumes, investigation status and chemicals of concern (COCs)
  - a. BMI
    - i. Reviewed investigations to date.
    - ii. GW monitoring is required for CAMU permit.
    - iii. Frequency and type of analyses in discussion with NDEP.
    - iv. 72 regional plume maps developed to date.
    - v. Indicator Parameter (IP) selection process
      - 1. Following USEPA 1986/1988 guidance.
      - 2. In discussion with NDEP currently.
  - b. OSSM
    - i. GW Investigations on-going as follows:
      - 1. DNAPL
        - a. Extent of DNAPL is believed to be confirmed with latest round of investigation. Results pending.
      - 2. Eastern extent of plumes.
      - 3. Investigations near the groundwater treatment system (GWTS).
        - a. Middle Zone, Deep Shallow Zone and eastern extent.

- b. Aquifer tests have been completed in several wells.
        - c. Additional extraction wells have been added.
      - ii. Extent of Beta-BHC was noted as being far more prevalent than Lindane.
      - iii. Perchlorate appears to be primarily an off-site issue.
    - c. TRX
      - i. Discussed perchlorate concentration reductions in GW and surface water.
      - ii. Discussed Phase B GW assessment.
      - iii. Noted that IP selection process has not been submitted or approved by NDEP.
    - d. All Companies
      - i. Reviewed existing vertical well clusters and noted absence in the heart of the plume off-site.
      - ii. Plume chemistry discussed as it relates to pH, ORP and dissolved oxygen (DO).
        - 1. Discussed metals and radionuclide mobilization due to site conditions.
        - 2. Noted helpful nature of figures produced by OSSM.
      - iii. Discussed hydro-geologic zone methodology.
        - 1. Noted that the Shallow Zone may need to be looked at in two layers as BRC has done.
          - a. Layer 1 = Qal.
          - b. Layer 2 = transitional Muddy Creek formation (xMCf) and upper portion of MCf.
7. Modeling Efforts
  - a. BMI
    - i. Model complete and approved by NDEP.
  - b. TRX
    - i. Modeling in progress, not yet submitted to NDEP.
  - c. TIMET
    - i. Modeling completed to support RAS development.
    - ii. Discussed CMT well technology.
  - d. OSSM
    - i. KT3D modeling completed quarterly to support capture zone evaluation.
8. Response Action Objectives (RAOs)
  - a. OSSM
    - i. GW RAS outline fully developed and RAOs contained within.
    - ii. Focus on USEPA MCLs and Consent Order for now.
  - b. TIMET
    - i. RAOs defined in ROD.
9. Remediation
  - a. BMI
    - i. GW RAS – depends on IP memo, upgradient/downgradient memo; CSM.
  - b. TRX
    - i. Capture Zone Evaluation and GWTS optimization.
    - ii. Leaching evaluation, feasibility study and ISB pilot tests.

- c. TIMET
    - i. Remedy construction imminent.
  - d. OSSM
    - i. GWTS optimization and new well installation.
10. Data Sharing
- a. OSSM
    - i. Rolling out a web portal in 2011.
  - b. Remainder per agenda.
11. Other Issues
- a. Long-term considerations as they relate to NAC changes.
    - i. Fully delineate plumes.
    - ii. Show that plumes are shrinking or stable.
    - iii. Control future receptors via UECA.
  - b. Terminate system operation.
    - i. Reduce concentrations below action level; or
    - ii. Asymptotic; or
    - iii. Implement plan approved by NDEP.
  - c. Development of a regional base map for use in all Deliverables.
    - i. Companies expressed concern about incorporating data from others due to timing and resource issues.
    - ii. Suggested that NDEP map regional contaminants.
    - iii. Consider uniformity to scale of drawings in Deliverables.
    - iv. NDEP asked the Companies to consider and respond.
  - d. Eventual development of a regional groundwater model. Using TRX or BMI as the starting point. NDEP asked the Companies to consider and respond.
  - e. Blanket Access Agreement for sampling and investigation. Companies to consider.
12. Next meeting tentatively scheduled for January 2011 to discuss risk assessment and data usability.