

## Meeting Minutes

**Project:** Tronox (TRX)  
**Location:** Greystone Conference Room, Las Vegas, NV  
**Time and Date:** 9:15 AM, Thursday, November 29, 2007  
**In Attendance:** NDEP – Brian Rakvica, Shannon Harbour  
Teri Copeland (for NDEP)  
Hackenberry Assoc. – Paul Hackenberry (for NDEP)  
Neptune – Paul Black (For NDEP)  
Tronox – Susan Crowley  
Env. Answers (for TRX) – Keith Bailey  
ENSR (for TRX) – Dave Gerry, Lisa Bradley, Brian Ho, Carmen Schnell

CC: Jim Najima

1. The meeting was held to discuss a variety of topics including the Phase A Report and Phase B Work Plan. The purpose of the meeting was to review Evaluation Area (EA) 08 and EA09 in detail as they pertain to the Phase B Work Plan.
2. TRX provided a draft LOU table for LOU20 and an aerial map of EA08 illustrating the locations of borings, wells, soil gas sampling, and LOUs for discussion purposes.
3. NDEP provided a sample of a source area worksheet for discussion purposes, which included a local map of the area being described, data for this area, descriptions and pertinent information for the area, data usability information, and risk assessment information.
4. NDEP requested specifics on the various manufacturing processes that are or have been used at TRX. TRX will provide general chemistry groups associated with the various manufacturing process associated with each LOU.
5. TRX will revise the LOU table and map for draft submittal to the NDEP for comment on content and format. **ACTION ITEM.**
6. NDEP stated that if TRX samples the area of the “worst case scenario” for an LOU, then no more samples would need to be collected for that LOU. NDEP also stated that the defining a sample location as the “worst case scenario” would have to be well documented and/or discussed.
7. NDEP stated that if a source area was relocated or had more than one contiguous area, a sample collected in each area would be preferred over a sample collected from between the two areas.
8. TRX stated that EA08 and EA09 are the two EAs that currently have active production.
9. NDEP stated that WAPA has conducted characterization of their site located in part to the south of the unit buildings. WAPA discovered TCE in groundwater to the south of SG44. TRX stated that TCE has been present in the groundwater to the north of this location on their property. NDEP indicated that the WAPA report was available on the State ftp site.
10. At NDEP’s request, TRX described the electrolytic process for manganese dioxide (MnO<sub>2</sub>) production. TRX stated that there is no organics formation in this process. The only organic material used is paraffin wax to prevent evaporation during operations.
11. General LOU Table format,
  - a. TRX will consider using bullets in the description column.

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- b. TRX will consider using more LOU-specific language in description. For example, LOU 20 could have additional statements like “pond contents and liner removed” and “some soil removal occurred during liner removal”.
  - c. TRX may list un-validated historical data as indicator data for an LOU.
  - d. TRX will consider adding pertinent dates in description (dates of operation, closure, etc.)
  - e. TRX will consider changing the heading on the column for Chemicals Identified to Chemicals Potentially Released
  - f. TRX will place text pertaining to possible releases in the Physical Characteristics Affecting Release column.
  - g. TRX will add a column for the Goal of Closure for an LOU such as “current use” or “unrestricted commercial/industrial use”.
12. TRX will consider adding notation on the EA maps indicating the approximate location of piping associated with LOUs as appropriate.
13. EA08
- a. LOU20
    - i. TRX will add text indicating that the piping for the steam plant has been removed.
    - ii. TRX will add text describing that the pond contents, liner, and some soils were removed during decommissioning.
    - iii. TRX stated that the conveyance piping originating from the steam plant was located from the west to the south of the LOU and the piping originating from Unit Buildings 4 and 5 was located in 6th street. Both waste streams were discharged from the SEC of the pond.
    - iv. SA71 located to characterize possible spillover events from LOU20.
    - v. SA62 is located in the topographical low of LOU20.
    - vi. SA61 located in area where conveyance piping emptied into LOU20 and is also representative of down gradient conditions from LOU21.
    - vii. TRX will consider sampling on the SWC of LOU20.
  - b. LOU21
    - i. TRX stated that the aboveground conveyance piping originated from Units 4 and 5 and was located under 11th street and discharged from the SEC of the pond.
    - ii. TRX stated that this LOU is an active, lined pond (clay and synthetic liners) and had the same waste streams as LOU20.
    - iii. TRX stated that there is no evidence of a release or overflow from this pond. TRX stated that the NPDES permit requires two feet of freeboard on the pond and a SWPP permit regulates overflow.
  - c. Manganese (Mn) tailings storage area
    - i. Mn tailings sample reported by TRX in the Phase A report was a composite sample of 3 sampling depths from 9 borings (i.e. 27 discrete samples).
    - ii. TRX stated that the Mn ore used by the facility has always come from one source because of process sensitivity to different impurities.
    - iii. TRX stated that current tailings are being transported to US Ecology for disposal.
    - iv. LOU24
      - 1) LOU24 is the Mn tailings pile. TRX will expand this LOU on future maps to include the current boundaries of the Mn tailings pile.
      - 2) TRX stated that the Mn tailings pile is covered with a layer of soil.

- 3) TRX indicated that the approximate volume of tailings is 213,000 cubic yards. TRX will base any decision to move the Mn tailings based on risk indicators.
  - 4) TRX stated that the arsenic (As) concentrations were relatively high at 90 ppm in the tailings as well as Mn concentrations. TRX also stated that 4-5 other constituents were elevated above comparison levels but were less than the industrial PRGs.
  - 5) TRX is considering using the tailings concentrations as a worst case scenario for soil under this LOU. NDEP agreed with this approach but that soil samples collected from under the tailings could be used as a line of evidence for leachability soil comparisons.
  - 6) TRX agreed to move SA108 north to be closer to groundwater well CLD4R. NDEP stated that this boring could be used for characterization of the piping for LOU21.
- v. LOU 46
- 1) TRX stated that this LOU is actually located to the south and east of the currently illustrated location and is currently covered by Mn tailings. The concrete pad for this LOU was discovered during recent characterization activities (volume estimate) by TRX and is approximately 1,300 ft by 30 ft.
  - 2) TRX expects that overflow from this LOU would be to the west. The overflow would leave the LOU and flow to a depression to the west, which empties into the Beta Ditch. TRX proposes to move SA107 to this depression.
  - 3) TRX proposed to move SA52 to the west end (worst case scenario) of the actual location of LOU46. NDEP and TRX agreed that any surface sample collected from SA52 may be impacted by leaching of the Mn ore. NDEP suggested that if SA52 was located near the west end of LOU46 but not under the ore tailings, characterization of both LOU46 and the aerial deposition of the Mn tailings may be realized.
  - 4) NDEP stated that TRX could acknowledge that other samples located downwind could additionally characterize “drift” from the Mn tailings piles.
- vi. LOU47 (Active Area)
- 1) TRX stated that this LOU (Mn Ore Piles) is located in several areas of the Mn leach plant area based on the operational process. TRX proposed to illustrate this by placing a block around the leach plant area that would indicate that the Mn ore piles are within that area.
  - 2) TRX stated that the southeast LOU47 area indicated on current maps is the current location of analyte tanks.
  - 3) After discussions, the NDEP and TRX agreed to move SA37 to the south of the leach plant to be located down gradient to address the topographic difference between the leach plant and Unit Building 6. TRX will look into the feasibility of moving this boring to the west so that it is located within the possible former US Vanadium footprint.
  - 4) TRX agreed to move SA38 to the east so that it is located within the possible former US Vanadium footprint.
- vii. LOU34 (Active Area)

- 1) TRX stated that this LOU is currently the location of three natural gas roasters.
  - 2) TRX indicated that a boring could not be advanced in this LOU because of utilities and the roasters.
  - 3) TRX stated that this area was currently paved.
- viii. LOU43 & LOU61 (Unit 5 Building only) and LOU44
- 1) TRX stated that there are tanks located on the east and west sides of Unit 5 that prohibit boring advancement.
  - 2) TRX stated that they will
    - a) Locate SA34 as close to Unit 5 as possible.
    - b) Move SA33 to the south on the other side of the road because of utility clearance issues.
    - c) Use SA35 to additionally investigate the uranium discrepancy in this area.
    - d) Relocate borings SA132 and SA139 because of utility clearance issues; otherwise, TRX may search for patched concrete and collect surface soil samples from under the slab then wait for the decommissioning of the building to investigate further. Currently, there are no plans for decommissioning of this building.
14. EA09
- a. TRX stated that the purple outline on current maps illustrate the boundaries of the boron operations.
  - b. LOU43 & LOU61 (Unit 4 Building only), TRX stated that Unit 4 is no longer active; therefore, a boring will be advanced through the basement. TRX believes that this could be a major source of perchlorate, chlorate, and possibly hexavalent chromium. SA43 will be moved within the footprint of Unit 4. TRX stated that all cells located in Unit 4 were the same so boring location shouldn't be an issue.
  - c. LOU11
    - i. TRX may have to move SA124 because of utility clearance issues.
    - ii. TRX stated that borings associated with this LOU are not proposed to be analyzed for OCPs, TPH, PAHs, or asbestos. This was a typo on Table 1-1.
    - iii. TRX will move SA30 because it is currently located on a concrete pad that is underlain with a liner that TRX does not want breached.
  - d. LOU12
    - i. TRX will move SA126 to the north (in street) because of utility clearance issues.
    - ii. TRX stated that the boron production facility was constructed after the LOU designations.
  - e. LOU28
    - i. TRX stated that the concrete pad and approximately 4 ft of soil were removed for the installation of the current ASTs.
    - ii. TRX stated that SA04 will be located as close to LOU28 as possible because of ASTs.
  - f. LOU4, sample is located in the middle of the LOU4.
  - g. LOU27, TRX indicated that LOU27 is located inside Unit 2 and was a staging area for drummed PCB wastes. TRX stated that since the wastes were containerized they are proposing SA24 to be located outside of Unit 2.

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- h. LOU26 (2 areas), TRX indicated that LOU26 was a staging area for drummed PPE used in the chlorate and perchlorate operations. This LOU was paved during use but has since deteriorated. TRX has proposed borings (SA121 and SA122) in both areas.
  - i. LOU41, TRX indicated that this LOU was assigned for equipment staining and illustrated historic sample locations. TRX has proposed one boring (SA103) for this area.
  - j. LOU65 (two of five areas located in EA09), TRX stated that one of these two areas was on office and the other was remediated along with LOU41.
  - k. LOU42, TRX stated that this was a scrap metal operation and that they are proposing one boring (SA111).
  - l. LOU36, TRX indicated that this may be a potential VOC source area. TRX is proposing one deep boring (SA133) in this area.
15. TRX stated that soil gas samples were placed around buildings and to bracket VOC detections.
16. TRX stated that they are investigating deeper groundwater issues with the implementation of the Groundwater Capture Evaluation Work Plan. TRX will address the issue of possible groundwater migration of contaminants into deeper zones after the completion of the the Groundwater Capture Evaluation Work Plan.
17. TRX stated that the airborne dust pathway will be addressed in the Risk Assessment.
18. NDEP cautioned TRX that the “cleaner” parcel areas (Parcels A through I) seem to be getting sampled at a higher density than the other portions of the facility, which may be a perception issue later.
19. TRX stated that they will not determine exposure areas for risk assessment until after reviewing the Phase B results.
20. TRX will move forward with the submittal of a Revised Phase B Work Plan. TRX will submit draft tables, etc. for review for each EA as completed. **ACTION ITEM.**
21. NDEP will respond to the Phase A Report by acknowledging that a Revised Phase B Work Plan will be submitted and that the Phase A data will be included in the Phase B Report. **ACTION ITEM.**