



environmental management, inc.

**From:** Deni Chambers  
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**Date:** August 20, 2010

**To:** Shannon Harbour, NDEP

**RE:** Response to NDEP's July 23, 2010 Comments on *Excavation Plan for Phase B Soil Remediation of RZ-B, Addendum to the Removal Action Work Plan* dated July 15, 2010

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1. *Comment: General comment, TRX states throughout this Deliverable that excavation will not be conducted in excess of 10 feet below ground surface (fbgs). NDEP does not believe that this statement meets the intention of the December 14, 2010 Order issued by NDEP to TRX. The Deliverable should be revised to address source control and leaching. Please note that the following comments do not address each instance this topic is mentioned in the Deliverable.*

**Response:**

Modifications to the text have been made throughout the document including additions in the Introduction section to address potential excavations below 10 feet below ground surface (bgs) and the leaching to groundwater pathway.

2. *Comment: General comment, NDEP has noted that the excavation areas/remediation polygons are named differently throughout the document (i.e. Table 1 lists RZ-B-1 while the text and Figures name the same area RZ-B-01). TRX should revise this Deliverable for consistency in the nomenclature of the remediation polygons.*

**Response:**

The excavation area numbers have been revised in Table 1 to match the numbers in the figures.

3. *Comment: General comment, TRX should label the proposed sampling locations and include the names for the sampling locations throughout the document, especially in Table 1, Figure 1, and Appendix A Tables.*

**Response:**

The sample location numbers have been added to Figure 1 and Table 1.

4. *Comment: Response-to-comments (RTC), NDEP provides the following comments:*
  - a. *RTC 1, TRX's revised language in Section 1.3 still does not adequately address the concept of data quality assessment (DQA); however, NDEP expects that this issue*

*can be discussed during the development of the health risk assessment.*

- b. RTC 11.e, TRX should provide explanations for the derivation of the shape of each of the excavation polygons.*
- c. RTC 11.g, no data or polygon is shown for location RSAQ4, please clarify.*

**Response:**

- a. Section 1.3 text has been revised to state that a data quality assessment will be conducted
  - b. A description of the polygon construction has been added to the text in Section 2.1.
  - c. The exceedances of the BCL for alpha BHC are currently being evaluated including the area of RSAQ4. The proposed action for this area and other areas impacted with alpha BHC are currently being formulated and will be submitted and discussed with NDEP before being finalized. An errata to the RZ-B Excavation Plan will be prepared, if appropriate, presenting the final action proposed for this area.
5. *Comment: Section 1.0, page 1, NDEP provides the following comments:*
- a. TRX states that contaminated soil “within 10 feet below ground surface (fbgs) at the Site” will be addressed by this plan. As NDEP has discussed with TRX, some excavation in excess of 10 fbgs may be needed.*
  - b. 2nd paragraph, TRX notes that this Deliverable does not address the soil-to-groundwater leaching pathway. As NDEP has noted to TRX previously, this represents a schedule concern for the NDEP.*
  - c. 3rd paragraph, NDEP does not agree with TRX’s definition of contaminated soil per the comments above. Please revise per NDEP’s comments.*

**Response:**

- a. Please see response to Comment #1.
  - b. Please see response to Comment #1.
  - c. The paragraph defining “contaminated soil” has been revised as requested.
6. *Comment: Section 1.3, page 5, 1st full paragraph, last sentence, there is a word(s) missing from this sentence that precludes understanding. Please revise.*

**Response:**

The sentence has been revised as requested.

7. *Comment: Section 1.4, page 5, all production processes that occurred in this Remediation Zone (RZ) should be discussed, including perchlorate production.*

**Response:**

The text has been modified to include a discussion of the production processes that occurred in the RZ-B area, including production of perchlorate.

8. *Comment: Section 2.0, page 7, it appears that TRX is proposing to conduct additional*



*sampling for only the chemicals that are driving remediation in a particular excavation polygon. TRX should also consider chemical drivers in adjacent excavation polygons and sample locations when determining the analytical list for each of the additional sampling locations. Please revise as necessary.*

**Response:**

Additional samples have been collected to help refine the excavation cut lines based on those chemicals driving the remediation in that polygon. As requested, Tronox also considered drivers in adjacent excavation polygons.

9. *Comment: Section 2.1.2, page 8, please clarify when the sampling inside the Unit Buildings will be conducted.*

**Response:**

Sampling inside the building is completed and results are presented in Figure 1 and the Appendix A tables, and discussed in Section 2.1.2.

10. *Comment: Section 2.1.4, TRX should clarify that excavation limits for polygons RZ-B-08, -09, and -10 will extend to the limits of the membrane-lined concrete containment basin of the two referenced tanks.*

**Response:**

The text has been changed to reflect that the excavation limits for polygons RZ-B-08, -09, and -10 will extend to the limits of the membrane-lined basin of the two referenced tanks.

11. *Comment: Section 2.1.5, TRX should determine the depth and operational status of all known utilities that may potentially affect the limits of excavation as soon as possible so that NDEP decisions about excavation limit restrictions can be made in a more timely and informed manner and, thereby, potentially reduce the number of quick-turn-around field decisions.*

**Response:**

The text has been modified to indicate this information.

12. *Comment: Section 3.3, pages 10-11, NDEP provides the following comments:*
- a. *TRX's statement that the cutlines presented represent the top of slope in cases where an impediment to excavation (property boundary, existing buildings, etc.) exists would mean that a contaminated wedge of soil will potentially be left in place. NDEP does not concur as this is not conservative. Please revise this SOP to remove all contaminated materials per the NDEP's December 14, 2009 Order.*
  - b. *Considering NDEP's comment above, please discuss and provide a figure to show how adjacent remediation zones with differing depths will be addressed. TRX should develop a protocol so that contaminated materials are not left in place.*
  - c. *TRX states that "The contractor may elect to stockpile soil in the excavation area..." Please clarify that only remediated or non-contaminated areas of the Site will be used for stockpiling purposes.*



- d. TRX states that “It is Northgate’s opinion that the historic pavement areas preceded the event(s) that resulted in asbestos contamination.” This opinion must be supported with sampling data and presented to NDEP for approval or removed from the document.

**Response:**

- a. The text has been revised to address this excavation issue.
- b. Figure 4 has been added to illustrate how adjacent excavations will be made to completely remove contaminated soil.
- c. The text has been revised to reflect that stockpiling requirement.
- d. The text has been revised to remove the discussion regarding pavement and likely asbestos contamination.
13. *Comment: Table 1, NDEP provides the following comments:*
- a. *TRX should add the following chemicals to the Chemicals Driving Remediation column for the following as noted: (Please note that the nomenclature used in Table 1 has been used for this comment)*
- i. *RZ-B-11: Asbestos*
- ii. *RZ-B-12: Asbestos*
- iii. *RZ-B-13: Arsenic, Dioxins/Furans, Hexachlorobenzene*
- iv. *RZ-B-14: Benzo(a)pyrene*
- v. *RZ-B-22: Dioxins/Furans, Hexachlorobenzene, Benzo(a)pyrene*
- b. *TRX should note which polygons have additional sampling proposed.*
- c. *TRX should not be constraining excavation areas with the roadways. NDEP has not concurred that these areas were controlled in such a way as to prevent these areas from becoming contaminated. Please revise this Table as necessary.*
- d. *Depth of Excavation column, TRX should indicate in this column when a depth for an excavation area is pending and, therefore, subject to change.*
- e. *RZ-B-15 and RZ-B-18, these excavation areas are within Unit Buildings 1 and 2, respectively. Section 2.1.2 states that additional sampling for the chemicals that are driving excavation will be conducted under the Unit Buildings. TRX should revise this Table to indicate that this sampling will include all Phase B Source Area Investigation analytical suites or provide conceptual site model (CSM) rationale for the elimination of analytical suites based on historical and current use.*

**Response:**

- a.
- i. The asbestos data for sample location RSAQ5 located within RZ-B-11 has been added to Figure 1. The fiber counts do not exceed the approved clean-up criteria.
- ii. The defining boring SSAQ5-01 was not tested for asbestos. Because some of the



bordering locations did exceed approved clean-up criteria, asbestos has been added as a chemical driving remediation for RZ-B-12.

- iii. The Appendix A table for RZ-B-13 incorrectly contained sample location RSAQ5. This sample had an exceedance of arsenic above the approved clean-up criteria. This sample has been removed as a defining boring for this area. Sample SA05 was missing from the table and has been inserted. The data for arsenic, dioxin/furans, and HCB has been added to Figure 1 for the defining borings SA05 and SA136.
- iv. The benzo(a)pyrene [B(a)P] TEQ data have been added to Figure 1 for the defining borings SA192 and RSAR3. The B(a)P TEQ concentrations are below the project criteria.
- v. The dioxin/furans, HCB and B(a)P TEQ data for sample location SA33 have been added to Figure 1. The concentrations of these chemicals are below the approved clean-up criteria. A sample from a depth of 20 to 21.5 had an arsenic concentration of 9.81 mg/kg. This has also been added to the Figure and is discussed in the text of the excavation plan.

- b. Table has been changed to note the proposed additional sampling.
- c. Tronox does not intend to constrain excavations by roadways unless confirmation samples support the constraint.
- d. This comment has been incorporated into the table.
- e. The proposed boring in the accessible location within Unit Building 3 has already been drilled and sampled (see response to Comment 9 and chemical results on Figure 1).

14. *Comment: Figure 1, NDEP provides the following comments:*

- a. *Please clarify the constraints on the excavation area limits associated with SSAR3-01.*
- b. *TRX should have a polygon associated with SSAQ4. Once the pending data have been received TRX can discuss any changes to the limits of excavation. Additionally, TRX should use confirmation sampling data from Parcels F and G as appropriate to constrain this excavation area.*
- c. *TRX should demark excavation areas that are pending data for final limit determination.*
- d. *NDEP provides the following comments and conditions for the noted excavation areas:*
  - i. *TRX should note that the excavation limits currently shown in Figure 1 should be considered final and ready for bid unless otherwise stated below. Any additional sampling results received that potentially modify these limits should be submitted to and discussed with NDEP. No reduction of these limits may occur without NDEP approval.*



- ii. *RZ-B-01: western excavation limit should continue to the property boundary unless additional sampling for chemical drivers indicate otherwise. TRX should note that dioxins/furans, hexachlorobenzene (HCB), arsenic, and benzo(a)pyrene [B(a)P] should be analyzed in any other proposed additional sampling for this excavation polygon.*
- iii. *RZ-B-04: northern excavation limit should continue to the property boundary unless additional sampling for chemical drivers indicate otherwise.*
- iv. *RZ-B-06: a pending depth of 10 fbgs should be used for bidding purposes until sampling confirms and NDEP approves an alternate final depth.*
- v. *RZ-B-09: the proposed 10 fbgs depth may be used for bidding purposes but should be labeled as pending. TRX should present leaching, shallow and deep (as appropriate) background, risk considerations, etc to NDEP for approval of leaving contamination greater than BCLs or background in place.*
- vi. *RZ-B-08: a pending depth of 10 fbgs should be used for bidding purposes until sampling confirms and NDEP approves an alternate final depth.*
- vii. *RZ-B-11: TRX should indicate that 10 fbgs is the pending depth for bidding purposes and that sampling will confirm a final depth.*
- viii. *RZ-B-14: western excavation limit should continue to the property boundary unless additional sampling for chemical drivers indicate otherwise.*
- ix. *RZ-B-18: TRX should revise the amphibole concentration shown on this Figure from 0 to 1 based on the concentration reported in data table included with the Deliverable. NDEP notes that this does not change the excavation limits.*
- x. *RZ-B-20 and RZ-B-21: the proposed 4 fbgs depth may be used for bidding purposes but should be labeled as pending. TRX should present justification and discussion on the status and location of the utilities including a discussion on the feasibility of shoring/supporting the utilities so that excavation to 7 fbgs and 9 fbgs, respectively, (as indicated by the pre-confirmation sampling data) may occur. TRX may also provide discussion on alternative remediation for NDEP's consideration as previously discussed.*
- xi. *RZ-B-23: please show the location of the referenced electrical substation.*
- xii. *Sampling location RSAQ4: TRX should develop an excavation polygon based on currently received data from this sampling location.*

**Response:**

- a. Boring SSAR3-01 is within the limits of Unit Building 1 in a breezeway. The proposed excavation is within the building.
- b. Tronox assumes that the comment meant RSAQ4. See comment 4c for response.
- c. These areas are noted in Figure 1 as areas having purple hexagons or yellow sampling locations. A note has been added to the figure reflecting this comment.





- d.
  - i. Comment noted.
  - ii. As requested, the excavation areas are shown extending to the property line in the center of 4<sup>th</sup> Street. The decision regarding whether these excavation areas will extend into the street will depend on the results of the additional sampling already performed in these areas.
  - iii. The current excavation areas already extend to the northern edge of G Street. Beyond the northern edge are two active railroad lines then a steep slope in excess of 10 feet in height. The northern extent will be set based on the pre-confirmation borings already drilled in this area.
  - iv. This depth has been changed to reflect this comment.
  - v. Comment noted.
  - vi. This depth has been changed to reflect this comment.
  - vii. Comment noted.
  - viii. As requested, the excavation areas are shown extending to the property line in the center of 4<sup>th</sup> Street. The decision regarding whether these excavation areas will extend into the street will depend on the results of the additional sampling already performed in these areas.
  - ix. A review of the data for the defining sample location SA191 does not appear to have a concentration of amphibole asbestos exceeding project criteria (or a review of the data for the defining sample location SA191 indicates that amphibole fibers were not detected at this location).
  - x. Justification and alternative remediation has been discussed in the text.
  - xi. The electrical substation has been shown on Figure 1.
  - xii. See comment 4c.

15. *Comment: Appendix A, NDEP provides the following comments:*

- a. *These Tables do not appear to include data deeper than 10 fbg. Please revise these Tables to include all sampled depths for RZ-B.*
- b. *TRX should provide justification, rationale, and/or discussion in the Table for the corresponding excavation polygon if TRX is proposing any of the following situations:*
  - i. *To leave contamination in place in a specific excavation area*
  - ii. *To modify the limits of excavation because of CSM or land use restrictions*
  - iii. *Not to backfill an excavation polygon*
- c. *TRX should note any monitoring wells in the corresponding excavation area Table within the limits of excavation and how the well(s) be handled (protected during excavation, abandoned, or abandoned and replaced after excavation).*



- d. *RZ-B-04, the HCB and B(a)P at Start Depth 10 should be highlighted green.*
- e. *RZ-B-05 and RZ-B-06, the arsenic concentrations in SA84 for Start Depths 6 through 8 should be highlighted orange.*
- f. *RZ-B-11 and RZ-B-22, TRX should indicate that additional sampling will be conducted for these areas to determine final excavation depth in their respective Tables.*
- g. *RZ-B-20, Table indicates that 5-6 fbgs sample data would be eliminated; however, Figure 1 and Table 1 indicate that excavation depth is 4 fbgs. Please revise as necessary.*

**Response:**

- a. The table has been revised to include the requested data.
- b. The text has been modified to provide further discussions of these issues. Specifically, the perchlorate concentrations associated with RZ-B-20, RZ-B-21 and sampling location SSAR4-04, along with the deep arsenic concentrations associated with RZ-B-09 are discussed in Sections 2.0 and 2.1.2.
- c. Tronox has prepared a memo addressing the proposed disposition of monitoring wells for NDEP review. The memo presents proposed actions for all of the RZs.
- d. Comment noted and reflected in Tables.
- e. Comment noted and reflected in Tables.
- f. Comment noted and reflected in Tables.
- g. The table has been revised to indicate an excavation depth of 4 feet bgs.

