NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
protecting the future for generations

STATE OF NEVADA
Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor
Leo M. Drozdoff, P.E., Director
Colleen Cripps, Ph.D., Administrator

October 7, 2013

Jay A. Steinberg
Nevada Environmental Response Trust
35 East Wacker Drive, Suite 1550
Chicago, IL 60601

Re: **Tronox LLC (TRX) Facility**
Nevada Environmental Response Trust (Trust) Property
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection (NDEP) Response to: *Soil Gas Investigation Report and Health Risk Assessment for Parcels C, D, F, G, and H, Revision 0, Nevada Environmental Response Trust Site, Henderson, Nevada*

Dated: July 25, 2013

Dear Mr. Steinberg,

The NDEP has received and reviewed the Trust's above-identified Deliverable and provides comments in Attachment A. A revised Deliverable should be submitted **by 11/07/2013** based on the comments found in Attachment A. The Trust should additionally provide an annotated response-to-comments letter as part of the revised Deliverable.

Please contact the undersigned with any questions at wdong@ndep.nv.gov or 702-486-2850 x252.

Sincerely,

Dong Wa

Weiquan Dong, P.E.
Special Projects Branch
Bureau of Corrective Actions
NDEP-Las Vegas City Office

WD:jd

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Attachment A

1. Section 1.3 Climate, Page 4. The Deliverable states that, "The mean annual evaporation rate from lake and reservoir surfaces ranges from 60 to 82 inches per year (summarized from Kleinfelder [1993])." This is a secondary source, the primary source would be: Shevenell, L., 1996, *Statewide Potential Evapotranspiration Maps for Nevada*, Nevada Bureau of Mines and Geology, Report 48, pp. 32.
2. Section 1.4 Geologic and Hydrogeological Setting, page 5, 2nd paragraph on page. The reference to Figure 4 should be changed to Figure 5.
3. Section 3.1 Sampling Locations, page 12, 1st paragraph of the section. The Deliverable states that, "Although NDEP had suggested collecting four additional samples if the parcels were to be evaluated individually (NDEP 2013d), these additional samples were not collected given that the original nine sample locations were intentionally biased and had been placed in areas of higher predicted chloroform concentrations in shallow groundwater." The four locations were intended to cover areas where there were spatial soil gas data gaps. NERT's response herein assumes that the sole source of VOCs is groundwater sourced. Changes to the sampling plan should be approved by the NDEP in advance of changes in the field.
4. Section 3.1 Sampling Locations, page 12, 3rd paragraph of the section. The Deliverable states that, "The purpose of locating soil gas samples near groundwater monitoring wells was to investigate the correlation between soil gas and underlying groundwater concentrations, as recommended by NDEP (NDEP 2012c, 2013b)." Point of clarification, the correlation was originally suggested by Northgate in their 2010 Site-Wide SVI HRA evaluation.
5. Section 3.2 Sampling Methodology, page 13, 2nd paragraph, 5th line. Helium gas was detected in two soil gas probes (E-SG-1 and E-SG-3). Both of these samples collected this year are used to assess risks in Parcel C. Therefore, two of the three 2013 soil gas samples to fill in data gaps experienced sampling deficiencies. Please add the discussion presented about the effect of the helium gas detections and its effects on the results in the uncertainty analysis section. See also comment #6.
6. Section 4.1.6.3 Representativeness, page 21, 4th paragraph, last sentence. The text states that seven locations in the 2013 soil gas investigation (shown in Table B-3 in Appendix B) were potentially impacted by surface air contamination/dilution. There were only nine soil gas sampling locations included in this field investigation. Therefore, 78% (7/9) of the soil gas samples may have been compromised. Further, sample E-SG-1 is used to represent both Parcels C and E but has been compromised by breakthrough. As such, the maximum detected concentrations reported in the 2013 soil gas investigation may be underestimated (or overestimated). NDEP should have been alerted to this discovery prior to the preparation of the soil gas HRA in order to determine whether the effect of the surface air contamination or dilution would compromise risk management decisions for the site. In addition, this should also be discussed in the uncertainty analysis section.
7. Section 4.1.4 Criterion IV – Analytical Methods and Detection Limits. Please identify the source of the "RBCs". NDEP reserves the right to additional comments pending the source identification.

8. Section 4.1.6.3 Representativeness, page 22, 1st complete paragraph, 7th line from the bottom of the paragraph. Fourteen soil gas results were qualified due to detections in the trip and equipment blanks. Please include in the main body of the text the identification of the soil gas results that were qualified (e.g., table format). Although these did not include chloroform, 1,2-DCA or TCE, the discussion in this section of the report should be included in the uncertainty section to provide a discuss of the impact on the risk results for the COPCs detected in the blanks.
9. Section 4.1.6.4 Precision, page 22, 2nd paragraph, 6th line from the bottom of the paragraph. Three of the four primary risk drivers (i.e., chloroform, carbon tetrachloride, and TCE) either showed RPD values below the established objective of less than or equal to 50% or differences within the acceptance criteria. In addition, 1,2-DCA had differences outside the acceptance criteria. The samples affected should be identified in the main body of the text (e.g., table format) and a discussion of the impact of this should be presented in the uncertainty section.
10. Section 4.2.2 Cross Plots for Co-located Soil Gas and Groundwater Samples, page 25, last paragraph of section. Data on Figure 9 when plotted in log space appears to fit the CSM, except for the sample location E-SG-9/M-23 which appears to be an outlier. Please clarify that the data fit the CSM tenet the groundwater is the source for soil gas.
11. Section 4.2.2 Cross Plots for Co-located Soil Gas and Groundwater Samples, page 25, last paragraph of section. Data on Figure 10 when plotted in linear and log space does not appear to fit the CSM as the R^2 is 0.6206. The collocated samples SG-33/M-124 and SG-47/TR-10 contain the same soil gas concentration, but the groundwater values vary by two orders of magnitude. Please clarify that the data fit the CSM tenet that groundwater is the source for soil gas.
12. Section 4.2.2, page 25, last sentence of the section. The data in Figures 9 and 10 do not appear to support the conclusion drawn, please refer to the two previous comments.
13. Section 4.2.3 Spatial Analysis of VOCs in Soil Gas, page 25, last paragraph on page. To-date none of the BMI RPs have presented data to support the conclusion of reductive dechlorination.
14. Section 4.2.4 Temporal Comparison of VOCs in Groundwater, page 26, footnote 11. The shallow zone is not defined by depth; but rather by the first occurrence of groundwater in either the Quaternary Alluvium (Qal); Transitional Muddy Creek formation (xMCf) or the Upper Muddy Creek formation (UMCf) where the xMCf is missing (NDEP, 2006).
15. Section 5.4.4 Cancer Risk Comparisons, page 35, last paragraph. The Deliverable states that, "Parcel H risks in 2008 were far below significance. As a result, and because of its distance from the chloroform plume, it was not sampled in 2013." However, the NDEP requested a sample in the northeast section of Parcel H. As noted in comments #8, #9, and #10 the cross plot correlations were not conclusive in ruling out non-groundwater sources for soil gas.
16. Executive Summary, Cumulative Cancer Risk for Soil and VOC Inhalation Pathways, page ES-2. Please include a summary of the asbestos risks (see Section 5.4.3).
17. Executive Summary, Cumulative Cancer Risk for Soil and VOC Inhalation Pathways, page ES-2. This section incorrectly states that "cumulative cancer risks are at or below the lower end of the acceptable cancer risk range of 1 × 10-6 to 1 × 10-4 for both indoor and outdoor commercial/industrial workers." The cumulative risks are greater than 1 x

10-6 and thus should be correctly referred to as being "within" the risk range of 1 × 10-6 to 1 × 10-4.

18.

References

Interstate Technology and Regulatory Council, 2007. Technical and Regulatory Guidance Vapor Intrusion Pathway: A Practical Guide. Prepared by The Interstate Technology & Regulatory Council Vapor Intrusion Team. January.

Nevada Division Environmental Protection, 2006. BMI Plant Sites and Common Areas Projects, Henderson, Nevada Hydrogeologic and Lithologic Nomenclature Unification. January 2006.

Shevenell, L., 1996, Statewide Potential Evapotranspiration Maps for Nevada, Nevada Bureau of Mines and Geology, Report 48, pp. 32.