STATE OF NEVADA
Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

NEVADA DIVISION OF
ENVIRONMENTAL PROTECTION

protecting the future for generations

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December 5, 2014

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: *Screening-Level
        Ecological Risk Assessment Work Plan Revision 0, Nevada Environmental Response
        Trust Site, Henderson, Nevada*

        Dated: July 23, 2014

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 **01/15/2015** 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,

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

WD:jd

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1. General Comment, Deliverable Description. The document is called a SLERA, however, in the introduction the approach is referred to as a refined SLERA, because it processes Steps 1, 2, and 3a of the USEPA ERA process. There are inconsistencies in the text in this regard. For example, Section 5.0 refers to a SLERA report. It needs to be made clear and consistent throughout that the intent is a refined SLERA, and hence a Refined SLERA report, etc. The term SLERA should be used when referring to Steps 1 and 2 only of the USEPA ERA process.

2. General Comment, Lack of a Conceptual Site Model. The Deliverable suffers from a lack of an ecological conceptual site model (CSM) and is incomplete without one. It is noted that the elements of a CSM are included but a complete one needs to be provided so that a full understanding of potential media and transport mechanisms can be made. Specifically, the work plan should present the preliminary ecological CSM showing initial fate and transport pathways and ecological exposure pathways. This CSM should be used to determine exposure areas for specific assessment endpoints in the SLERA and Screening Refinement (Step 3a).

3. General Comment, Data Quality Objectives. The SLERA Work Plan should include the Data Quality Objectives (DQOs) framework that specifies how data will be used for decision making in the SLERA. If the SLERA is being conducted with existing data (i.e. data that has already been collected as part of previous investigations), then the criteria for assessing the adequacy of those data for making risk-based decisions should be discussed in the work plan.

The following is taken from the NDEP Guidance on Ecological Risk Assessment – Screening Level Ecological Risk Assessment Guidelines (https://ndep.nv.gov/bmi/docs/060928 slera-bm-final.pdf):

Data adequacy for the SLERA can be addressed with the following checklist:
   a. *All inputs to the SLERA decision have been identified including representative receptors, species of special concern, and contaminants of potential concern (COPC).*
   b. *Spatial coverage of data representing the site is complete, and all statistical criteria (sample size, location, and distributional criteria) for site characterization have been identified.*
   c. *Temporal coverage is evaluated and addressed as needed, including the potential for off-site transport of contaminants and contaminated media.*
   d. *Sample coverage is complete for all media accessible to site biota and appropriate detection limits have been developed and subsequently attained. Quantitation of each COPC in each medium is consistent and comparable in terms of reported units, and units are consistent with those requires for risk-based calculations.*
   e. *Methods for eliminating COPCs based on detection frequency or background comparisons have been detailed in the DQO documentation.*
   f. *At minimum, data are adequate to provide a reasonable maximum concentration of each COPC for the screening evaluation in each medium. If other statistics are used, for instance the 95% upper confidence limit of the mean, then the calculational*

methodology, including the methods for handling non-detect values, must be specified in the DQO documentation. One may refer to EPA (2002b) for additional guidance on statistical methods for calculating representative concentrations for use in risk assessments.

4. General Comment, Lack of Detail. The Deliverable suffers from a lack of detail and should identify representative receptors, potential species of special concern, or a list of chemicals being evaluated. In many instances, specifics are warranted. For example, it is stated that Ecological Screening Values (ESVs) will be selected after data collection. ESVs, or at least proposed ESVs, should be provided in the Deliverable so that it can be determined if the proposed values are appropriate for use. An additional example is that the Deliverable states in Section 4.4.1, page 17, second paragraph that "The species that will be selected for food web modeling...". The proposed species should be identified in this Deliverable based on a site habitat survey.

   While detailed discussion of temporal and spatial coverage of the data can wait until the SLERA report, the work plan should specifically identify the existing data sets that are being considered for inclusion in the SLERA, whether any data quality issues exist that would affect the use of data for risk-based decision making, or whether potential data comparability issues exist between various datasets, including data planned for collection in the RI.

5. General Comment, Scope of the SLERA. The site is described in Section 1.1 as 346 acres, which excludes Parcels A and B. In which case the site seems to consist of the remainder of the property without Parcels C, D, F, G, and H. It is not clear why Parcels C, D, F, G, and H were removed. Unless a compelling reason can be cited, it is not clear why it is reasonable to remove these areas from an ecological risk assessment, when, presumably, the range of any affected species is unlikely to be constrained similarly by the omission of these Parcels. Also, please explain the role of Parcel E in this assessment. Presumably it is included, but why is Parcel E included and Parcels A and B are not? Some clarification on why this specific area is subject to this refined SLERA would be helpful.

6. General Comment, Lack of a Sampling Plan. The Deliverable suffers from lack of a sampling plan. Where, how and how many samples are to be collected is vitally important to the success of the final ecological assessment. Section 2.2.3 discusses sampling locations from ECAs but it is not clear if this represents the entirety of the data set to be used. Therefore, a sampling plan must be either included in the revised deliverable or reference to a stand-alone sampling plan should be made.

7. Specific Comment, Section 2.1.1 Environmental Setting, pp 5-6. The bulleted list of topics presented as part of the Ecological Checklist should be discussed as part of this work plan. If possible, the Ecological Checklist should be completed with this work plan. Knowledge about issues such as land use, habitats/vegetation, surface water, wildlife communities, and ecologically sensitive areas are an important part of planning for data analysis to ensure that numbers, types, and locations of samples are adequate to answer risk questions associated with these topics.

8. Specific Comment, Section 2.1.2 Ecological Exposure Media at the Site, p. 7. The first sentence of this paragraph should include a supporting reference(s).

9. Specific Comment, Section 2.1.5 Identification of Potentially Complete, Exposure Pathways, page 8. The second sentence of this section states that before potentially complete exposure pathways can be identified, the investigation must confirm a source of contaminants, a release of contaminants, and a receptor that can be affected. However, the second paragraph of this section states that NDEP has previously identified 69 source areas, and that historical releases have been documented or inferred from field investigations that have identified impacted soils and other media. This information should be used to develop a preliminary CSM that shows potentially complete exposure pathways. Screening-level receptors that are potentially present at the site can be identified at a regional level based on habitat and existing knowledge of current site conditions. These preliminary potentially complete exposure pathways can be updated based on the results of the screening-level assessment, but the preliminary pathways need to be presented in the work plan as part of the initial CSM.

10. Specific Comment, Section 2.1.7. Screening-Level Ecological Effects Evaluation, p. 9. ESVs should be presented in the work plan to ensure that both existing data and data planned for collection in the RI are adequate for ecological screening objectives. Selecting ESVs after analytical data are assembled and evaluated is not a standard approach, and does not conform to the Data Quality Objectives process.

11. Specific Comment, Section 2.1.8. Additional Considerations, p. 9. The ECORISK Database developed by Los Alamos National Laboratory should be considered as another source of ESVs. The ECORISK Database has a particular focus on arid ecosystems such as those at the NERT Site and is also continually updated based on new toxicity information, unlike the Region 4 and Region 5 criteria, which have not been updated in over a decade. This Database can be downloaded at the following link:
http://www.lanl.gov/community-environment/environmental-stewardship/protection/eco-risk-assessment.php

12. Specific Comment, Section 2.2. Risk Assessment Data Set and Data Evaluation, p. 10. It is not clear why background comparisons would not be performed/discussed at this stage of the SLERA process. Background comparisons have already been performed for this site, and should be referenced in this document. These comparison have been performed in the context of the previously defined Remediation Zones (RZs A through D), for which RZ-A has been assumed to represent local background for the NERT site. Although adjustments might be needed to support the SLERA (e.g. in terms of comparison with concentrations in specific ecological relevant sub-areas), information about the background comparisons already performed, potentially including further comparison with the BRC/TIMET background data, should be included in this work plan.

Also see Section 4.2 – it is not clear why background comparisons should wait for Step 3a, especially considering the availability of completed background comparisons.

13. Specific Comment, Section 2.2.3. Data Locations, p. 10. It might be reasonable to treat field duplicates as independent samples. However, NDEP guidance requires some evaluation of the data to confirm that this is reasonable. This is considered reasonable if the variation between field duplicates and their primary samples does not appear very different than the variation between samples. It is noted in this section that field duplicates will be compared to the primary sample during data validation, but this is not sufficient by itself to ensure that it is reasonable to treat field duplicates as independent samples.

14. Specific Comment, Section 3.1. Identification of Screening-Level Exposure Estimates, p. 12. The last sentence of this section states that "...more realistic screening may be conducted during the BERA (Step 3a), using more realistic exposure estimates." Step 3a is the informal screening refinement step, not the BERA. Please revise to read "...may be conducted during screening refinement (Step 3a),...."

15. Specific Comment, Section 4.0, Step 3a: BERA Problem Formulation, p. 14. The section heading identifies Step 3a as the BERA Problem Formulation. Step 3a includes only the refinement of the Steps 1 and 2 screening assessment assumptions. The bulk of the BERA Problem Formulation (updated CSM, identification of baseline assessment and measurement endpoints) occurs in Step 3b. Please clarify by changing this heading to "Step 3a: Screening Refinement" or something similar.

16. Specific Comment, Section 4.2 Refinement of PCOPECs, p. 14, second paragraph. The Deliverable states that frequency of detection may be used to refine the PCOPECs and goes on to include three additional items that may be used in conjunction with this screen. In general, NDEP does not allow the elimination of chemicals from an assessment based upon detection frequency. The bullets in this section state that spatial and temporal patterns of detected values and comparison of sample quantitation limits to toxicity criteria will be taken into account in the application of the 5% detect criteria. The bullets in this section should be revised to specifically state that the 5% frequency of detection criteria will be used to eliminate PCOPECs only IF 1) magnitude of detected values and the spatial and temporal patterns of distribution are not indicative of potential hotspots; and 2) sample quantitation limits for non-detects are less than ESVs. Also, it should be made clear in this Work Plan that the detection limits that will be used will be Sample-specific Quantitation Limits (rather than Practical Quantitation Limits), and that all radionuclide data will be used "as is", without censoring.

17. Specific Comment, Section 4.2 Refinement of PCOPECs, p. 15, second full paragraph. The second paragraph after the bullets describes comparison of site data to background data. This paragraph should include a discussion of what sources of background data will be used, or whether additional background data are planned for collection for the site.

The discussion of background comparisons mentions two statistical tests that may be employed, specifically the Student's t-test and the Wilcoxon Rank Sum (WRS) test. Note that the Gehan ranking scheme is needed for the WRS test when there are non-detects. Statistical tests should include tests that look at shifts in central tendency of the distributions, such as those mentioned above, as well as tests that look at shifts in the upper tails of the distributions,

such as the quantile test and slippage test. These four tests comprise what is referred to as the Gilbert Toolbox of background tests, and generally a finding of significant difference in any one of the four tests is interpreted as the site data being significantly different than background.

Note that NDEP has provided guidance for adjusting the target significance level when multiple background comparison tests are run on the same data. Note also that NDEP has provided guidance on background comparisons for radionuclides, including testing for secular equilibrium. More information on these tests can also be found in the NDEP Guidance on Ecological Risk Assessment – Screening Level Ecological Risk Assessment Guidelines.

18. Specific Comment, Section 4.2 Refinement of PCOPECs, p. 15, last paragraph. This paragraph states that several metrics may be used as the exposure point concentration including central tendencies. Contrary to this, Section 4.4.3 states in the second paragraph that the maximum or 95% UCL will be used. In general, it is NDEP's policy to use the 95% UCL or maximum when the 95% UCL exceeds the maximum, for exposure point concentrations.

19. Specific Comment #13 Section 4.3 Refinement of Risk Calculations: Direct Contact ESVs, p. 16, first paragraph, last sentence. The intent of this sentence is unclear. Please expand the discussion on how and why ATVs may be used.

20. Specific Comment, Section 4.4.1 Wildlife Receptors and Exposure Parameters, page 17. The species for food web modeling should be identified in the SLERA.

21. Specific Comment, Section 4.4.1. Wildlife Receptors and Exposure Parameters, p. 18. This section states that selection of wildlife receptors and associated exposure parameters is dependent upon the habitat and media in which bioaccumulative PCOPECs are identified. The NERT Site that is part of this investigation encompasses 265-acres, with a limited number of habitat types. The potential wildlife receptors and their associated exposure parameters should be presented as part of this work plan. Failure to include proposed receptors in this work plan will result in the need for an additional document to present those receptors and exposure parameters for stakeholder and regulatory agreement.

22. Specific Comment, Section 4.4.2 Bioaccumulation and Bioconcentration Factors, p. 18, last paragraph. Please expand the discussion on how carbon normalization will be used in the final assessment. Generally, carbon normalization is only used for aquatic organisms and only for organic compounds.

23. Specific Comment, Section 4.4.3 Food Web Ingestion Modeling, p. 18, equation definitions. It is not clear why both a site foraging frequency (SFF) and an exposure frequency (EF) are required for this equation. Please justify the inclusion of each. Further, each parameter should be discussed and the source of the information used for each should be cited.

24. Specific Comment, Section 4.4.4 Ecotoxicity Benchmarks and Extrapolation Approach, p. 19, second paragraph, last sentence. It is not clear as to the intent of this sentence. Does this

indicate that if ESV is based upon a LOAEL, that NERT will apply an additional uncertainty factor? Please expand the discussion.

In addition, the LANL ECORISK Database should be considered as a source of RTVs, as it includes a larger selection of chemicals and is more up-to-date than the Sample et al. sources mentioned in this section. See http://www.lanl.gov/community-environment/environmental-stewardship/protection/eco-risk-assessment.php for more information and to obtain the ECORISK Database in Microsoft Access.

25. Specific Comment, Acronyms and Abbreviations. "Preliminary Chemicals of Potential Ecological Concern". The combined use of "preliminary" and "Potential" seems redundant. COPECs seems to be justified. Further, as no CPECs are defined, the use of PCOPECs seems unnecessary.