NEVADA DIVISION OF
ENVIRONMENTAL
PROTECTION

STATE OF NEVADA
Department of Conservation & Natural Resources
Brian Sandoval, Governor
Bradley Crowell, Director
Greg Lovato, Administrator

August 23, 2018

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 for Operable Unit 2, Revision 0,

Dated: June 7, 2018

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 10/26/2018** 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 Weiq

Weiquan Dong, P.E.
Bureau of Industrial Site Cleanup
NDEP-Las Vegas City Office

WD:cp

EC:
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Carlton Parker, NDEP BISC Las Vegas
Allan Delorme, Ramboll Environ
Alison Fong, U.S. Environmental Protection Agency, Region 9
Andrew Barnes, Geosyntec
Andrew Steinberg, Nevada Environmental Response Trust
Anna Springsteen, Neptune & Company Inc.
Betty Kuo Brinton, MWDH2O
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Chinny Esakkiperumal, Olin Corporation
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Chuck Elmendorf, Stauffer Management Company, LLC
Dan Pastor, P.E. TetraTech
Dave Share, Olin
Dave Johnson, LVVWD
David Parker, Central Arizona Water Conservation District
Derek Amidon, Tetratech
Ebrahim Juma, Clean Water Team
Ed Modiano, de maximis, inc.
Eric Fordham, Geopentech
Gary Carter, Endeavour
George Crouse, Syngenta Crop Protection, Inc.
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Jay Steinberg, Nevada Environmental Response Trust
Jeff Gibson, Endeavour
Jill Teraoka, MWDH2O
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Lee Farris, BRC
Marcia Scully, Metropolitan Water District of Southern California
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Todd Tietjen, SNWA

Attachment A

Essential Corrections

Specific Comment #1 General Comment

The SLERA Work Plan needs to standardize the definition of surface soil across the document. Section 2.1.2 defines surface soil as the top 1 foot of soil, but not all the data proposed for use fall within the top 1 foot. Data from the NERT Offsite Study Area represent 0.5 to 2 ft and 1 to 2.5 feet below surface. Data from BEC Parcels A-B have a start depth of 0 ft, but the end depth of the samples is not defined.

Specific Comment #2 Section 2.1.3.2, Evaluation of Site Concentrations Relative to Background Conditions, Page 14.

The BRC/TIMET and other near-surface background (top 10 ft below ground surface (bgs)) data were analyzed statistically in different ways, the results of which reduce the need for this background study. For example, the 95 McCullough soil background samples collected as part of the BRC/TIMET background study were collected from 3 depth intervals (roughly 0-2 ft bgs, 4-6 ft bgs, and 9-11 ft bgs, recorded as surface, 5 ft bgs, and 10 ft bgs). Statistical analysis showed no significant difference across these depth intervals, in which case the data have been combined for use in comparison to data collected anywhere in the top 10 ft bgs.

The same can be said about the North River data (33 samples collected by BRC to the east of the site). For the South River data and the Mixed data, there are too few samples to be able to distinguish depth effects, however, all of these values (distributions) were considered close enough to the McCullough data that these were also combined. (Note that BRC used all 120 background samples (104 from BRC/TIET and 16 from Environ) in early risk assessments, then switched to the 104 BRC/TIMET ones, and then switched to the McCullough subset of the BRC/TIMET ones.) The main challenge is when and where the North River data should be used in lieu of the 120 background samples from BRC/TIMET and Environ. However, there is plenty of data that NDEP would consider sufficient without further data collection.

At the end of this section there is a discussion about radionuclides that seems incomplete, or at least clarification is needed. What are the issues with the radionuclide data that make statistical background comparisons unreliable? We are not aware of any such issues now. Years ago the labs were doing a poor job with radionuclide analysis, hence we introduced the "secular equilibrium" test. This all works. Nothing is unreliable statistically. Please clarify what is intended here with the statement about unreliable statistics. And, what does the first bullet even mean – "Conduct statistical background comparisons, without including or excluding radionuclides as COPECs based solely on the statistical results". What's the point of the statistical comparisons if they are not going to be used to identify COPECs at this stage? Please clarify.

Otherwise, if this background study is pursued, please clarify the soil depth of the proposed samples in the upcoming background study for OU-1. Ideally background samples should represent the same depth horizon as the site samples included in the analyses (although please note above that the BRC/TIMET data should be considered representative of the entire top 10 ft of the appropriate geologic (soil) units (McCullough, North River, South River, or Mixed). Please discuss how the new proposed background samples will be integrated in the background analysis with the existing BRC/TIMET and other sources of background data.

Specific Comment #3 Section 2.1.6, Identification of Generic Assessment and Measurement Endpoints, page 16.
NDEP ecological risk screening guidance for the BMI Complex (NDEP 2006) includes amphibians and reptiles as potential generic ecological assessment endpoints. The Work Plan should address these endpoints or discuss why these endpoints are not included in the SLERA.

Specific Comment #4 Section 2.1.6, Identification of Generic Assessment and Measurement Endpoints, page 17.
The third paragraph implies that only TRVs based on reproductive and mortality-based endpoints will be used because those two endpoints can be directly tied to population level effects. However, NDEP Ecological Risk Screening Guidance for the BMI Complex (NDEP 2006) specifically states that "morbid effects [defined as including impaired growth or development, impaired organ states, neurological impairment, and hematological effects and those that result in non-adaptive behaviors] may also have strong applicability to the development of TRVs and require professional judgment for their employment." Typical growth measurements such as reduced body weights can be associated with lower fitness and lower reproductive success, leading to population-level effects. This section should be revised so that growth endpoints are included in the selection of TRVs for the general assessment endpoints.

Specific Comment#5 Section 4.2 Screening Refinement of Risk Calculations: ESVs/Toxicity Values, page 21.
If the screening refinement section is retained in this work plan, a more detailed discussion should be provided regarding the chemicals without ESVs. If values cannot be found in published literature, please discuss what steps will be taken. If ESVs from a chemical surrogate will be used, please discuss how a proper surrogate will be identified.

Minor Corrections

Specific Comment #6 Section 1.4, Work Plan Organization, Page 6.

The organizational outline presented in this section does not match the section numbering of the document.

Specific Comment # 7 Section 2.2, Screening-Level Ecological Effects Evaluation, page 17.
The bullet point list includes LANL ECORISK Database as an ESV data source, however, LANL ESVs are not provided in Table 3-2. The data should be extracted from the updated 2017 database found here: https://www.lanl.gov/environment/protection/eco-risk-assessment.php and presented in Table 3-2. Additionally, the URL reference to the EPA ECO SSLs should be updated to the following: https://cfpub.epa.gov/ecotox/.

Specific Comment #8 Section 3.3, Evaluation of Uncertainties, page 19.
NDEP 2006 Section 5.0 states the uncertainty analysis should discuss chemical concentrations and distributions, discrepancies in background data, frequencies of detection, and TRV derivation and selection. The uncertainty analysis should also discuss the introduction of uncertainty factors in the calculation of TRV's and subsequent screening calculations. Section 3.3 of the SLERA Work Plan should include a more thorough discussion of what the evaluation of uncertainties will contain.

Specific Comment #9 Section 4.0. Screening Refinement, Page 21.
This section discusses screening refinement, which Section 1.3 specifically states is not included as part of this workplan. Please consider removing this section.

Specific Comment #10 References, pages 24-27.
The References section is missing the following citations mentioned in Section 2.2: USEPA Region 4 (2018): Regional Ecological Risk Assessment (ERA) Supplemental Guidance and Dutch ESVs (1999): Risk-based Assessment of Soil and Groundwater Quality in the Netherlands: Standards and Remediation Urgency.

Specific Comment #11 Table 2-5, Soil Sample Locations to be used in the NERT Off-Site Study Area.
This figure shows onsite sample locations plus 5 offsite locations. It's not clear that the title of the figure matches the intent.

Specific Comment #12 Table 3-2, Surface Soil Ecological Screening Values.
No ESVs are presented for radionuclides. Radium-226, Radium-228, Thorium-228, Thorium-230, Thorium-232, Uranium-233/234, Uranium-235/236, and Uranium-238 were all detected in site soils. ESVs for these radionuclides are available in the LANL ECORISK Database (LANL, 2017).

Specific Comment #13 Table 3-2, Surface Soil Ecological Screening Values.
No screening values are provided for perchlorate. Criterion for this chemical may be found in the updated LANL ECORISK Database (LANL, 2017) along with updated criteria for other chemicals.

Specific Comment #14 Table 3-2, Surface Soil Ecological Screening Values.
Under the notes section of the table, the abbreviations/acronyms are missing for the 2nd column of notes.

Specific Comment #15 Figure 2-9, Ecological Conceptual Site Model for OU-2.
The Conceptual Site Model (CSM) currently includes wind erosion only as an exposure pathway for air. Wind erosion may also be a transport pathway from OU1 surface soil to OU2 surface soil. The CSM should show transport from the "Historical Sources from the OU1 Site, contaminated surface soils and buildings" to the primary release mechanism "Wind erosion, Mechanical disturbance (particulates)" to "OU-2 surface soil". This should lead to potential exposure routes such as ingestion and direct contact.