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NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
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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 18, 2012

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:
Technical Memorandum on Long-Term Monitoring Optimization; Nevada Environmental Response Trust Site; Henderson, Nevada
Dated: November 30, 2011

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 November 19, 2012** 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 sharbour@ndep.nv.gov or 775-687-9332.

Sincerely,

Shannon Harbour, P.E.
Supervisor, Special Projects Branch
Bureau of Corrective Actions
NDEP-Carson City Office

SH:sh

EC: Greg Lovato, Bureau of Corrective Actions, NDEP
Carolyn Tanner, AG's Office
Cassandra Joseph, AG's Office
Brenda Pohlmann, City of Henderson
Stephen Tyahla, U.S. Environmental Protection Agency, Region 9
Charles K. Hauser, Esq., Southern Nevada Water Authority
Ron Zegers, Southern Nevada Water Authority
Peggy Roefer, Southern Nevada Water Authority
Marcia Scully, Metropolitan Water District of Southern California
Mickey Chaudhuri, Metropolitan Water District of Southern California

John R. McNeill, Central Arizona Water Conservation District
Andrew Steinberg, Nevada Environmental Response Trust
Tanya O'Neill, Foley & Lardner LLP
Allan Delorme, ENVIRON
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Craig Wilkinson, TIMET
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Victoria Tyson, Tyson Contracting
Brian Spiller, Stauffer Management Company, LLC
Chuck Elmendorf, Stauffer Management Company, LLC
Adam Baas, Edgcomb Law Group
George Crouse, Syngenta Crop Protection, Inc.
Ed Modiano, de maximis, inc.
Lynne Preslo, GeoEco
Andrew Barnes, Geosyntec
Nicholas Pogoncheff, PES Environmental, Inc.
Brian Waggle, Hargis + Associates
Michael Long, Hargis + Associates
Joe Kelly, Montrose Chemical Corporation of CA
Jeff Gibson, AMPAC
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Joe Leedy, Clean Water Team
Kathryn Hoffmann, Clean Water Team
Brian Rakvica, McGinley & Associates
Ashley Katri, McGinley & Associates
Kurt Fehling, The Fehling Group
Paul Black, Neptune and Company, Inc.
Paul Hackenberry, Hackenberry Associates, LLC
Joanne Otani
Teri Copeland

Attachment A

1. General comment, the Trust should note that the statistical analysis/kriging should be used as an initial screening to identify potential wells to be removed from the monitoring program or modified. The wells meeting this condition should then be evaluated on a well-specific basis using concentration versus time plots and groundwater elevation versus time plots to confirm that concentrations are stable or decreasing and that groundwater elevations are varying in a reasonably predictable manner. In summary, any wells proposed for removal/modification should: (1) have minimal impact to the plan-view plume maps, (2) show stable or decreasing concentrations, (3) have minimal impact to the groundwater flow direction maps, and (4) show stable or predictable variations in groundwater elevation.
2. Section 1.0, page 1, the Trust discusses the objectives of the Deliverable in terms of United States Environmental Protection Agency guidance and a "remedy". NDEP notes that a "remedy" has not been formally selected at the site and that the Trust should refer to the groundwater treatment system (GWTS) as an interim remedial measure (IRM).
3. Section 2.0, page 2, as long as the Seep surface water collection feature is still active, sampling should be proposed. Please revise as necessary.
4. Section 2.0, page 2, regarding the Trust's statements on capture, NDEP has noted previously a number of concerns regarding the capture zone evaluation, calculations, and conclusions. (e.g., at the Athens Road Wellfield (AWF), the concentration contours that the modeled capture efficiency do not demonstrate that capture is being attained.) Please note that whenever a previously submitted Deliverable is referenced, the Trust should note its approval status and caveat the conclusions of the Deliverable as necessitated by outstanding NDEP comments. This issue repeats throughout the Deliverable and this comment will not be repeated.
5. Section 3.2, page 5, the basis of the 1 mg/L perchlorate metric and 0.02 mg/L chromium metric is unclear. NDEP has not approved metrics for capture analysis. The Trust should provide rationale for the selection of any proposed metrics.
6. Section 4.0, page 7, the Trust references a calibrated groundwater flow model, NDEP is not aware of any such model being approved by the NDEP. Please reference and provide approval status for this model.
7. Section 4.1, page 8, please include the other parameters that are provided by the flow-through cell such as dissolved oxygen, ORP, etc.
8. Section 4.1.2, pages 8 and 9, based upon this Section and Figure 4, sufficient data does not appear to be collected to accurately evaluate capture zone effectiveness. Please discuss any modeling or calculations performed to determine that a sufficient number of wells have been proposed.
9. Section 4.2.1, page 10, NDEP would propose that the semi-annual reporting be deleted and that the annual report include the "substantial narrative" that was contained in the semi-annual report.

10. Section 4.2.2, page 10, NDEP guidance requires that 100% of samples be validated to Stage 2B with at least 10% validated to Level IV. Please revise this section per the existing NDEP guidance. NDEP disagrees with reducing the level of validation given the importance of the data in evaluating the effectiveness of the IRM.
11. Section 3.2, Summary of Long-Term Monitoring Results, page 5 and Figure 3, perchlorate contaminant trends were summarized in Section 3.2 and illustrated in Figure 3. Please provide a similar discussion and figure for hexavalent chromium.
12. Tables, please include another table formatted in a similar manner to Table 2 (Proposed GWETS Groundwater Monitoring Schedule) that summarizes the existing GWETS groundwater monitoring schedule. Additionally, this new table should highlight (e.g., with color-coding) the proposed changes that result in Table 2 and include columns for the following information:
    a. Screened interval for each listed well
    b. Associated water-bearing zone (WBZ) (e.g., Shallow, Middle, or Deep WBZ) for each listed well
    c. Rationale for the removal or additional of each listed well as applicable that includes the original rational for installation of the well and why it is no longer applicable.
13. Table 2, please add a columns listing the screened interval and associated WBZ for each listed well.
14. Plates/Figures,
    a. Please include all available monitoring wells in all plates illustrating the proposed monitoring plan.
    b. Please include groundwater elevation versus time graphs for the wells proposed for elimination to ensure that they have minimal impact to the groundwater flow direction maps and show stable or predictable variations in groundwater elevation. These graphs may be submitted in electronic format if desired.
    c. Please include concentration (perchlorate and hexavalent chromium) versus time graphs for the wells proposed for removal. The graphs should show the current regulatory limit for the analytes. These graphs may be submitted in electronic format is desired.
15. Figure 3, this Figure is illegible, please provide on an oversized Plate similar to Plates 1, 2, 5, and 6.
16. Plate 4, please add concentrations contours and present the information as insets on a larger concentration contour Plate.
17. Plate 5, NDEP provides the following comments:
    a. The 1 mg/l concentration contour does not appear to be completely constrained. For example, to the west of the area between monitoring points PC-31 and PC-132. This should be addressed by the addition of monitoring points.
    b. Please indicate through color coding or other means which wells are being removed from the monitoring plan.
18. Attachment 1, please either remove this attachment or provide rationale for inclusion.

19. Attachment 2, please provide a discussion as to why ordinary kriging was selected over other kriging methods (e.g., simple kriging, universal kriging, etc.) and why kriging was selected over other interpolation/contouring methods that preserve the reported ("actual") well data.
20. Attachment 2, provide a discussion and supporting figures demonstrating that the kriging parameters in Table 2-3 reasonably reproduce the hand-drawn plume maps from a few of the past monitoring events. Conversely, provide a discussion as to why these parameters would not be expected to reasonably reproduce these historical plume maps.
21. Attachment 2, Statistical Evaluation, page 1, 1st paragraph, perchlorate data appears to be the only contaminant statistically analyzed; however, Table 2-3 and Figure 2-2 suggest that chromium was also statistically analyzed – unless "statistically analyzed" refers to the evaluation of the three semivariogram models used to perform the kriging (last paragraph on page 1). Please provide a discussion as to how the chromium data were evaluated.
22. Attachment 2, Table 2-1, provide a discussion regarding the parameters listed in Table 2-1 (i.e., sill, nugget, anisotropy, range, minor range, direction, and lag size) as they relate to the site data and the sensitivity of the recommendations to variations in the values of these parameters. Additionally, please include units for the sill and nugget.
23. Attachment 2, Statistical Evaluation, page 2, 1st paragraph, provide a discussion regarding the prediction standard error (including units) and the manner in which the threshold value of 20 was selected.
24. Attachment 2, Qualitative Evaluation and Table 2-2, provide specific details regarding the "qualitative assessment" referred to in this section. Additionally, the second column of Table 2-2, along with the list of Tables on page 3, refers to a "Quantitative Evaluation"; this is believed to be a typographical error (i.e., "Quantitative" should be changed to "Qualitative" in both instances. Please revise or clarify as appropriate.
25. Attachment 2, the last paragraph of page 1 and Table 2-1 suggest that three semivariogram models were used to perform the kriging. The last paragraph of page 2 and Table 2-3 suggests that only the Gaussian semivariogram model was used to perform the kriging. Please revise for consistency and provide a discussion as to why the Gaussian model was chosen for the final comparison.
26. Attachment 2 states that only wells completed within the Shallow WBZ are evaluated; however, it is unclear whether wells from water-bearing zones other than the Shallow WBZ are proposed for removal/modification. Please clarify in the text.