



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

April 5, 2011

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:
Capture Zone Evaluation Report, Tronox LLC, Henderson, Nevada
Dated: December 10, 2010

Dear Mr. Steinberg,

The NDEP has received and reviewed the above-identified TRX Deliverable and provides comments in Attachment A. The Trust should contact the undersigned **by April 8, 2011** to schedule a conference call to discuss these comments. The need for a revised Deliverable will also be discussed during this conference call.

An annotated response to comments letter should be submitted in response to the comments found in Attachment A and be based on the discussions at the requested conference call. A submittal date for the response to comments letter will be established at the requested conference call. Additionally, NDEP will decide on whether this

Please contact the undersigned with any questions at sharbour@ndep.nv.gov or 775-687-9332.

Sincerely,

Shannon Harbour, P.E.
Staff Engineer III
Bureau of Corrective Actions
Special Projects Branch
NDEP-Carson City Office
Fax: 775-687-8335

SH:sh

EC: Jim Najima, Bureau of Corrective Actions, NDEP
Greg Lovato, Bureau of Corrective Actions, NDEP
William Knight, Bureau of Corrective Actions, NDEP



Carolyn Tanner, AG's Office
Brenda Pohlmann, City of Henderson
Stephen Tyahla, U.S. Environmental Protection Agency, Region 9
Andrew Steinberg, Nevada Environmental Response Trust
Allan Delorme, ENVIRON
Mark Travers, ENVIRON
Mike Skromyda, Tronox LLC
Matt Paque, Tronox LLC
Deni Chambers, Northgate Environmental
Brian Rakvica, McGinley and Associates
Joe McGinley, McGinley & Associates
Barry Conaty, Holland & Hart LLP
Ranajit Sahu, BRC
Rick Kellogg, BRC
Lee Farris, BRC
Mark Paris, Landwell
Craig Wilkinson, TIMET
Kirk Stowers, Broadbent & Associates
Victoria Tyson, Tyson Contracting
George Crouse, Syngenta Crop Protection, Inc.
Nick Pogoncheff, PES Environmental
Lee Erickson, Stauffer Management Company
Michael Bellotti, Olin Corporation
Curt Richards, Olin Corporation
Paul Sundberg, Montrose Chemical Corporation
Joe Kelly, Montrose Chemical Corporation of CA
Jeff Gibson, AMPAC
Larry Cummings, AMPAC
Ebrahim Juma , Clean Water Team
Joe Leedy, Clean Water Team
Kathryn Hoffmann, Clean Water Team
Brian Giroux, McGinley and Associates
Charles K. Hauser, Esq., Southern Nevada Water Authority
Peggy Reoffer, 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

CC: Lee Farris, BRC, 875 W. Warm Springs Road, Henderson, NV 89011
Lee Erickson, Stauffer Management Company

Attachment A

1. General comment, please discuss how this Deliverable is proposed to be used in connection with future Site work including groundwater remedy evaluation and selection. Please include specific description of related milestones, schedule items, and other Deliverables that would be affected by this Deliverable.
2. General comment, if based on the requested meeting discussions, a revised Deliverable is deemed necessary, then please include the following global word change from “County of Henderson” to “City of Henderson”. If no revised Deliverable is deemed necessary, then this global word change is then noted for the record.
3. Section 3.3.2, page 14, please note that the reference to a percentage of the number of wells lacks context. NDEP would prefer that this statement be placed in the context of a number of wells versus the total number of wells.
4. Section 3.4.1, page 15, TRX utilized a geometric mean of the UMCf vertical hydraulic conductivity. Based upon a review of the data, the data appear to vary by as much as six orders of magnitude, please clarify why a geometric mean is an appropriate representation of this data.
5. Section 3.4.3, page 16, please provide a reference for the range of storage coefficients presented in the last paragraph.
6. Section 3.5.3.2, page 19, TRX stated that there are no residential or agricultural water supply wells in the study area. Please note that Basic Remediation Company identified over a dozen potential private wells in the study area.
7. Section 3.5.3.3, page 20, TRX referenced a TRX report for the weather data that is presented. Primary references should be utilized for this type of information.
8. Section 3.5.3.4, page 21, TRX stated that “advective transport of contaminants within the underlying UMCf will account for a significantly lower mass flux ... when compared to max flux within the overlying Qal”. Please clarify if this statement accounts for vertical flux across the boundary. NDEP believes that substantial flux occurs when considering the areal extent of this contact, and generally upward vertical gradients.
9. Section 3.7, page 23, regarding the distribution of contaminants in a vertical fashion, NDEP notes that future Deliverables would be aided by the presentation of this data on a figure as NDEP is not clear that sufficient data exists to support these statements.
10. Section 4.2, page 28, TRX stated that some of the recent data was determined to be not representative and hence not used. Each of these data points should be specifically discussed and their exclusion justified.
11. Section 4.3, page 29, it appears that use of 1 versus 0.018 mg/L perchlorate for the lowest contour value may over estimate the ultimate calculation of mass capture by approximately 1%. Please clarify.
12. Section 4.3, page 29, TRX stated that there is “inherent variability” in perchlorate measurements below 1 mg/l. Please provide the basis for this statement as it is NDEP’s understanding that perchlorate can routinely be measured to 2 µg/l or less.
13. Section 5, page 31, please consider that horizontal and vertical water level data may also be shown on cross-section so that the actual flow vectors can be projected instead of simple upwards/downwards analysis.
14. Section 5.2, pages 32 and 33, NDEP provides the following comments:

- a. Please clarify why KT3D_H2O itself was not used for particle tracking instead of or in addition to MODPATH. Please note that NDEP believes that in order for this exercise to remain objective KT3D_H2O particle tracking should be included
 - b. The hand adjustment of KT3D_H2O contours appears to have rendered the results subjective rather than objective. Also, the hand drawn path lines do not appear to be maintained perpendicular to contours (Figures 5-2 and 5-3). Please discuss.
 - c. Please explain how the “estimated zone of capture” compares to the 3D plume model for target capture zone.
15. Section 6.2.3, page 37, NDEP noted the use of no flow boundaries; please clarify whether these boundaries were tested for induced boundary effects.
 16. Section 6.2.4, page 38, NDEP noted the use of harmonic and arithmetic means to set bounds for hydraulic conductivity during model calibration. While the use of the harmonic mean appears to allow for the effects of lower conductivities, the use of the arithmetic mean would appear to preclude the effects of higher conductivities. Please discuss whether this method of calibration would skew model results towards that of lower hydraulic conductivity.
 17. Section 6.2.6, page 40, TRX mentioned “strong vertical gradients that previously existed”. This condition is not presented in the SCM; please provide and discuss any evidence for historical downward gradients on which this statement was based.
 18. Section 6.2.8, page 42, NDEP provides the following comments:
 - a. TRX stated that the model significantly underestimates captured mass fluxes, compared to observed removal rates. Please clarify whether the model also underestimates mass entering the Wash (14 lbs) in the same manner.
 - b. Please discuss whether the underestimation of fluxes could be related to the neglect of higher-than-mean hydraulic conductivities used during model calibration.
 19. Section 7, page 44, please indicate contaminant action levels on charts. Please include what time frame concentrations are expected to decline to the action levels for key monitoring wells.
 20. Section 7.1, page 45, TRX states that wells M-86 and M-87 have been steady in recent years. This statement does not appear to be correct for well M-86, please review and clarify.
 21. Section 7.2, page 47, TRX referenced Figure 7-4 and indicated that there has been a “small uptick” in perchlorate concentration results in well ARP-1. NDEP notes that the concentrations appear to have increased by ten fold since 2008. Please review and clarify.
 22. Section 9, please indicate the approval status of documents that were submitted to NDEP and are now being used as references.
 23. Table 3-3, TRX listed as number of well data points as “not used”. Please explain why each data point was not used.
 24. Figure 4-1, based upon the cross-section of the Interceptor Well Field, it appears that deeper groundwater should be targeted for extraction to shorten the timeframe for clean up. Please discuss.
 25. Figure 4-2, based upon the cross-section of the plume axis, it appears that deeper groundwater should be targeted for extraction down gradient of the Interceptor Well Field to shorten the timeframe for clean up. Please discuss.
 26. Figures 7-1 through 7-7, general comment, some of these figures would benefit from a “low range” and “high range” presentation so as not to obfuscate the more recent data and changes in trends.

27. Appendix A, response-to-comment 6.b.iii., please provide the schedule for activating these wells.
28. Appendix E, Section 3.7.1, page 12, please note that AMPAC have been testing and will be operating (approximately February 2012) new extraction wells south of Warm Springs Road. These wells should be included in any future predictive modeling.