



NEVADA DIVISION OF
**ENVIRONMENTAL
PROTECTION**

STATE OF NEVADA
Department of Conservation & Natural Resources

Steve Sisolak, Governor
Bradley Crowell, Director
Greg Lovato, Administrator

February 16, 2022

Jay A. Steinberg
Nevada Environmental Response Trust
35 East Wacker Drive, Suite 690
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: *Groundwater And Surface
Water Monitoring Program Sampling And Analysis Plan, Revision 2*

Dated: December 9, 2021

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 **04/16/2022** 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 702-668-3929.

Sincerely,

Song Weiquan

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

WD:cp

EC:

Jeffrey Kinder, Deputy Administrator NDEP
Frederick Perdomo, Deputy Administrator NDEP
James Dotchin, NDEP BISC Las Vegas
Carlton Parker, NDEP BISC Las Vegas
Alan Pineda, NDEP BISC Las Vegas
Allan Delorme, Ramboll Environ
Andrew Barnes, Geosyntec
Andrew Steinberg, Nevada Environmental Response Trust
Anna Springsteen, Neptune & Company Inc.
Betty Kuo Brinton, Metropolitan Water District of Southern California

Brian Waggle, Hargis + Associates
Brian Loffman, Nevada Environmental Response Trust
Brian Rakvica, Syngenta
Carol Nagai, Metropolitan Water District of Southern California
Chris Ritchie, Ramboll Environ
Christine Klimek, City of Henderson
Chuck Elmendorf, Stauffer Management Company, LLC
Dan Pastor, P.E. TetraTech
Dane Grimshaw, Olin
Dave Share, Olin
Dave Johnson, LVVWD
Derek Amidon, TetraTech
Ebrahim Juma, Clean Water Team
Ed Modiano, de maximis, inc.
Eric Fordham, GeoPentech
Gary Carter, Endeavour
Greg Kodweis, SNWA
Jill Teraoka, Metropolitan Water District of Southern California
Joanne Otani, The Fehling Group
Joe Kelly, Montrose Chemical Corporation of CA
Joe Leedy, Clean Water Team
John Edgcomb, Edgcomb Law Group
John Pekala, Ramboll Environ
John Solvie, Clark County Water Quality
Kathrine Callaway, Cap-AZ
Kelly McIntosh, GEI Consultants
Kirk Stowers, Broadbent & Associates
Kirsten Lockhart, Neptune & Company Inc.
Kim Kuwabara, Ramboll Environ
Kurt Fehling, The Fehling Group
Lee Farris, BRC
Marcia Scully, Metropolitan Water District of Southern California
Maria Lopez, Metropolitan Water District of Southern California
Mark Duffy, U.S. Environmental Protection Agency, Region 9
Mark Paris, Landwell
Mauricio Santos, Metropolitan Water District of Southern California
Melanie Hanks, Olin
Michael J. Bogle, Womble Carlyle Sandridge & Rice, LLP
Michael Long, Hargis +
Mickey Chaudhuri, Metropolitan Water District of Southern California
Nicholas Pogoncheff, PES Environmental, Inc.
Nicole Moutoux, U.S. Environmental Protection Agency, Region 9
Orestes Morfin, CA
Paul Black, Neptune & Company
Peggy Roefer, CRC
Peter Jacobson, Syngenta

Ranajit Sahu, BRC
Rebecca Sugerman, U.S. Environmental Protection Agency, Region 9
Richard Pfarrer, TIMET
Rick Kellogg, BRC
R9LandSubmit@EPA.gov
Steve Clough, Nevada Environmental Response Trust
Steven Anderson, LVVWD
Steve Armann, U.S. Environmental Protection Agency, Region 9
Tanya O'Neill, Foley & Lardner L
Todd Tietjen, SNWA
William Frier, U.S. Environmental Protection Agency, Region 9

Attachment A

1. General Comments and Discussion. Chloroform data gaps between the OSSM property and the NERT Operable Unit 1 (OU-1) could be resolved with the addition of several monitoring wells planned for installation along the eastern edge of OU-1. Historically, chloroform analysis was included in site investigations on NERT property beginning in the late 1980s. However, at that time, the focus was limited to areas surrounding the existing facilities, not necessarily located along the property boundary, and there was no consideration for contamination migration from adjacent properties. Historical records for well logs were vague or missing depth information for data collected from the OSSM property limiting the ability to define depth of chloroform contamination and migration pathways.

Figures 5a-f identify the location of the planned monitoring wells. Table 2 identifies the planned analysis annually or five-year period. The new wells to be sampled annually include six wells planned for the 0-55 ft interval, six wells for the 55-90 ft interval, eight wells for the 90-130 ft interval. There are existing transducers that cover the 130-175 ft interval (2) and 175-300 ft interval (3). These wells have been located near the OU1 boundary adjacent to historically high concentrations of chloroform results from the OSSM property. Data from these planned monitoring wells should provide the additional detail to determine the depth of contamination and migration pathway if present. NERT may also consider new wells if these existing wells don't provide the data required to fully define the depth of contamination and migration pathways.

2. Maps & Figures:

- 1) Evaluation of the coverage for VOCs and other analytes is quite difficult with the current maps. Perhaps the maps could be updated to include which analytes are monitored at given wells. Additionally, in figures B-3 through B-10 it is hard to tell if the transducer density is relative between figures or not. It might be more meaningful to add values to the density legend rather than 'high' or 'low' and to discuss an intended density benchmark that was supported by the references.
- 2) Comparison to Chloroform Data Investigation and Current Well Coverage: NDEP previously performed a data investigation of chloroform on the entire BMI Complex and surrounding area in its "Chloroform Report Black Mountain Industrial Complex (BMI)" that was distributed as a draft on January 7, 2022. This draft report looked at historical accounts of chemical production and storage by different companies as well as the production of spatio-temporal chloroform groundwater plumes based on all data available in the BMI Regional Database. Based on this investigation, there were several suggested areas to target for additional sampling. Comparing those suggestions to this report regarding the NERT subareas specifically, there are some specific suggestions/notes:
 - A. OU-1: One deeper well to the south of the Units 4 and 5 buildings (re: Figure 5b). Additional wells in the Lower Shallow Water-Bearing Zone directly between the Unit 4 building and the barrier wall, at an annual sampling interval for the next five years (re: Figure 5b). There are few Lower Shallow wells on this side of OU-1 in general. NDEP suggests adding some existing shallow monitoring wells for this SAP.
 - B. Two or three wells in the Former Parcels C & D in both the Upper and Lower Shallow Water-Bearing Zone, if possible (re: Figure 5b). Some model results have shown a lobe of the chloroform plume through this area, but there are no wells here. The NDEP Chloroform draft report shows that potential areas of contamination at depth (below 55 ft., perhaps related to early results from well H-23) for early

years (ca. 1984) in the spatio-temporal chloroform plume model map. However, there is not much sampling that has been done at depth in this area since 1984.

- C. To help delineate the edges of the OSSM plume at depth, it may be helpful to sample wells M-243, M-246, M-5D, M-14D, and M-230 annually for the first five years.
- D. OU-2: There was a possibility, based on the modeled chloroform plume that the Alpha and Beta ditches could have helped transport chloroform through OU-2 in the NDEP Chloroform draft report. The ditches are not mapped on the figures showing the planned and existing sampling locations, but if a few of the wells on Figure 6a could be associated with the ditch, this would be interesting to identify them in the sampling plan. In Figure 6a, a suggestion is to move the new five-year monitoring interval wells east of Pabco Rd. in OU-2 to the annual interval for the first five years.
- E. OU-3: Adding a well to monitor annually below 55 ft. somewhere between wells DBMW-4 and DBMW-5 at the boundary of the OU-2 area would fill in a spatial gap at that depth (re: Figure 7b).

3. Essential Corrections

- 1) Specific Comment #1 Figures. There is a discrepancy in Figure 2b between the main map and the associated inset map. The figure should be internally consistent. The cluster of wells to the east side of the inset map appears to lack a monitoring well that is displayed within that area on the primary map. Please ensure that the inset map is accurate and shows all relevant well locations. The inset map should show more specificity than the larger/zoomed-out map, not less. Many of the proposed added locations are justified in Table 1b for the purpose of improving the known boundaries of trespassing groundwater plumes. Including a figure of the chloroform plume, and possibly others, would help visualize how the chosen additions would contribute to this goal. It might be helpful to have the chloroform plume on every relevant figure of well locations and/or a figure of wells by purpose. However, the request here is to include a figure showing the location of the trespassing plume, and to include the Alpha and Beta ditches on that map as well.
- 2) Specific Comment #2 Table 2. Cross-referencing the monitoring well locations shown in Figures 6a through 6e to Table 2 indicates that most (or perhaps all) of the wells east of the Pabco Road will not be monitored for volatile organic compounds (VOCs) as part of the monitoring program. Chloroform is included in the VOCs List provided in Table 8. Elevated chloroform levels have been measured at many of these wells east of Pabco Road including locations near the road (e.g., POU-3, DBMW-1, DBMW-3, DBMW-4, DBMW-5) and those farther to the northeast (e.g., DBMW-12). Including VOC measurements as part of the annual sampling plan would further the goal stated in Section 2.1.2 (“defining the extent of key monitored constituents; perchlorate, chlorate, chromium, and chloroform”). Please justify why monitoring for VOCs in these areas is not included in the monitoring plan.
- 3) Specific Comment #3 Table 2 and Figures 7a-7e. A cross reference between the monitoring wells in Figures 7a-7e to Table 2 shows most of the wells in the Tuscan residential village will not monitor for VOCs. Please justify why monitoring for VOCs in these areas is not included in the monitoring plan.
- 4) Specific Comment #4 Sections B3.2 & B3.3. The first bullet states: “a geospatial density analysis was performed to identify gaps in coverage. The geospatial analysis looked at how closely grouped transducer

locations were in relationship to other transducer locations. The output from this assessment was a set of “heat maps” that identify “hot spots” (areas of high transducer coverage) and “cold spots” (areas where transducer coverage could be improved) throughout OU-3 for a given WBZ.”

- Appendix B gives no quantitative or qualitative details about how the heat maps in the figures are produced other than saying that the analysis “looked at how closely grouped transducer locations were in relation to other transducer locations” (Section B3.2). A brief description of the calculation would improve the support for the heat maps and the decisions made based on them. Please provide details including the calculations and software used to develop the heat maps.
- 5) Specific Comment #5 Section 2.1.2. The last paragraph of Section 2.1.2 states: “Groundwater wells added for chemical analysis will only be sampled during the annual or five-year events. These monitoring frequencies will provide sufficient data to evaluate performance metrics in forthcoming annual performance reports. More frequent monitoring is not expected to substantively improve the effectiveness of the monitoring program.” This statement could be strengthened by adding some additional context for this expectation. For example, were temporal trends at monitoring locations evaluated for the contaminants of concern and found to not change significantly over the stated intervals? Additional information would help the reader understand, for example, why certain contaminants are measured monthly while others are measured annually, as shown in Table 2.
 - 6) Specific Comment #6 Section 2.1.3.1. Footnote 8: Please include a callout to Table 10 here, as this appears to be the only place in the document to find out which locations are yet to be installed; no distinction is made on the figures between existing locations and those yet to be installed.
 - 7) Specific Comment #7 Figure 6a. Several monitoring well location labels on the figure are inconsistent with those given in Table 10 in that the labels on the figure omit the dash (e.g., POD7, POD8, POU3) while the identifiers in Table 10 include the dash (e.g., POD-7). Searching the document for information about these locations would be easier if the identifiers were consistent. Please update the identifiers in the figures to be consistent with the tables or vice versa.
 - 8) Specific Comment #8 Figure B-9. Figure B-9 is missing the density layer in the figure legend. Please add this in so it matches the other figures in the series.