

OFFICE OF THE NEVADA ENVIRONMENTAL RESPONSE TRUST TRUSTEE

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June 23, 2016

Mr. Weiquan Dong, Ph.D.
Bureau of Industrial Site Cleanup
Nevada Division of Environmental Protection
2030 E. Flamingo Rd, Suite 230
Las Vegas NV 89119

Ms. Alison Fong
United States Environmental Protection Agency
RCRA Branch
75 Hawthorne Street
San Francisco, California 94105

RE: Response to NDEP and EPA Comments – Unit 4 and 5 Buildings Investigation, First Mobilization
Nevada Environmental Response Trust
Henderson, Nevada

Dear Mr. Dong and Ms. Fong:

The Nevada Environmental Response Trust (NERT) is pleased to present this Response to Comments associated with comments received from Nevada Division of Environmental Protection (NDEP) and the United State Environmental Protection Agency (US EPA) regarding the Unit 4 and 5 Buildings Investigation Technical Memorandum. NERT received written comments from NDEP on May 19, 2016 and email comments from US EPA on June 20, 2016. NERT's responses to each of the comments is provide below.

NDEP Comments

In the May 19, 2016 NDEP letter, there were three general comments provided. Each of NDEPs comments is repeated below in italics followed by the Trust's response.

1. *One of the major purposes for Unit 4 and 5 Buildings Investigation is to determine the mass of contaminants (e.g. perchlorate and chromium) in vadose zone and saturated zone. Figure 8 (Perchlorate Discrete-Depth Groundwater Results) of this report shows the highest perchlorate concentration at the deepest of the four wells, which doesn't tell vertical extent of the perchlorate contaminated groundwater. Although the proposed three boreholes are 25 feet deeper, it is still possible that these three new boreholes are not deep enough to define the vertical extent of the contaminated groundwater. Therefore, NDEP suggests that NERT design the three proposed boreholes to meet the following goals:*
 - a. *Determine vertical extent of the contaminated groundwater by perchlorate and chromium;*
 - b. *Determine if the contaminants found in shallow water bearing zone reach the groundwater in second coarse grain of Upper Muddy Creek Formation (UMCf-cg2);*
 - c. *Prevent potential vertical migration of the contaminants caused by the proposed boreholes;*

Trust's Response:

NERT concurs that advancing the three boreholes deeper would provide additional vertical characterization data to evaluate the concentration profile of perchlorate and chromium. However, advancing these three boreholes deeper increases the potential for vertical migration of Site-related chemicals of potential concern (COPCs) into the Upper Muddy Creek Formation (UMCf-cg2) during drilling. It is therefore proposed to advance the three deep boreholes to a total depth of 150 feet below ground surface (bgs) into the Middle Water Bearing Zone (WBZ).

The Middle WBZ extends from approximately 90 to 300 feet bgs and consists of the Upper Muddy Creek formation (UMCf). At the NERT Site, the UMCf is composed primarily of fine-grained sediments of silt and clay (the UMCf-fg1). The vertical extent of Site-related COPCs in the UMCf-fg1 unit was discussed in the Remedial Investigation Data Evaluation Report, submitted to NDEP on May 2, 2016. Based on data presented in the report, perchlorate concentrations above 1 milligram per liter (mg/L) extend to depths of approximately 130 feet bgs in the area located downgradient of Unit 4 and 5 Buildings. In this area, perchlorate concentrations decrease to levels only slightly above the groundwater Baseline Comparison Level (BCL) of 0.018 mg/L and the federal Preliminary Remediation Goals (PRGs) of 0.015 mg/L at depths of 150 to 170 feet bgs in the UMCf-fg1. These downgradient results do not indicate a significant release into the deeper portion of the Middle WBZ from the historic operations at the Unit 4 and Unit 5 Buildings.

The relatively coarser-grained UMCf-cg2 occurs below the UMCf-fg1 unit near the base of the Middle WBZ. Seven wells at the NERT Site are screened in the UMCf-cg2 unit. The top of the UMCf-cg2 varies in depth depending on location. In the southern portion of the NERT Site, it has been encountered at approximate depths of 210 to 220 feet bgs. The UMCf-cg2 unit is confined, as indicated by artesian groundwater elevations consistently measured in these seven deep wells. Groundwater monitoring results indicate that the UMCf-cg2 unit at the base of the Middle WBZ has not been impacted by the primary Site-related COPCs found in the upper portion of the overlying UMCf-fg1 unit.

To address the potential concern of vertical migration of Site-related COPCs from the Shallow WBZ into the Middle WBZ, the three proposed deep boreholes that will be advanced between 90 and 150 feet bgs will be drilled using a telescoping casing approach. Further, following the completion of sampling, one of the three deep boreholes will be converted to a permanent groundwater monitoring well to determine if any detected contaminants are a temporary artifact from drilling or actually reside at similar concentrations within that depth interval. Below is a description of the proposed approach:

The locations of the three proposed deep boreholes are shown on Figure 3 of the First Mobilization Technical Memorandum, dated May 6, 2016.

- Advance borehole using 12-inch diameter roto-sonic drill casing to a depth of 90 feet bgs (rather than 6-inch diameter casing used for boreholes advanced to a total depth of 90 feet bgs)
 - Collect and analyze soil samples as described in the First Mobilization Technical Memorandum
 - Collect discrete-depth groundwater samples at approximately 50 feet, 70 feet, and 90 feet bgs
 - Remove temporary well casing and drill out borehole to two feet beyond the depth of the 90 foot groundwater sample (approximate depth of 92 feet bgs)
 - Install approximately two feet of bentonite chips and allow to hydrate (minimum 30 minutes)
 - Set 12-inch diameter casing approximately one foot into bentonite chips
 - To the extent feasible, remove formation water from within the 12-inch diameter casing before advancing below the Shallow WBZ

- Advance 10-inch diameter casing through the inside of the 12-inch diameter casing and advance borehole to the next groundwater sampling interval (approximately 110 feet bgs)
 - Construct temporary well and collect groundwater sample
 - Remove temporary well casing and drill out two feet beyond the depth of the groundwater sample (approximate depth of 112 feet bgs)
 - Install approximately two feet of bentonite chips and allow to hydrate
 - Set 10-inch diameter casing one foot into bentonite chips
- Advance 8-inch diameter casing through the inside of the 10-inch diameter casing and follow the same procedures described above to collect the next groundwater sample (approximately 130 foot bgs)
- Advance 6-inch diameter casing through the inside of the 8-inch diameter casing and follow the same procedures described above to collect the final groundwater sample (approximately 150 foot bgs)
- Following the completion of groundwater sampling from temporary wells, one of the three deep boreholes will be converted to a groundwater monitoring well
 - The borehole will be reamed to a depth of 150 feet bgs with 10-inch diameter casing
 - 4-inch diameter groundwater monitoring well will be constructed
 - The well will be constructed with a screen length and depth to mimic the screen depth and length of the temporary well casing to evaluate the long-term trends compared to the result obtained from the temporary well
 - Following well construction, develop and sample well during the second field mobilization
 - Following the initial sampling, this monitoring well will be sampled in accordance with Site sampling and analysis plan

The need for further investigation of groundwater quality in the confined UMCf-cg2 unit in the immediate vicinity of the Unit 4 and 5 Buildings will be evaluated based on the results of the second mobilization investigation borings, including the three deep boreholes that will be advanced to a depth of 150 feet bgs, as discussed above. If significant perchlorate concentrations are found in the deep groundwater samples, plans for additional investigation of deeper zones, including the UMCf-cg2, will be developed using drilling methods (e.g., grouted conductor casing) to minimize the potential for vertical cross contamination.

2. *Provide a map showing the boring logs/wells that a utility is encountered in the first 12 feet and a well is moved from the planned location to avoid utilities.*

Trust's Response:

A map will be prepared illustrating any changes in the planned borehole location due to encountered utilities or pipelines in the upper 12 feet bgs. This map will be provided in the Second Mobilization Technical Memorandum.

3. *All data generated from the Unit 4 and 5 Buildings Investigation will have a data validation summary report (DVSR) and electronic data deliverable (EDD) after completing all phases of the Unit 4 and 5 Buildings Investigation.*

Trust's Response:

A data validation summary report and electronic data deliverable will be provided in the Comprehensive Report prepared following the completion of the three field mobilizations.

EPA Comments

In the June 20, 2016 EPA email, there were two comments provided. Each of EPA's comments is repeated below in italics followed by the Trust's response.

- 1. The location of various utility lines (discussed in Section 2.2.1 and 2.2.3) should be documented for potential future follow-up investigations into potential anthropogenic contaminant pathways. For example, in section 2.2.3, the report discusses inactive clay pipelines discovered during hydro-vacuum clearance. Those historical clay pipelines may have been conduits for contaminant migration that may warrant follow-up investigation. Likewise, historical sanitary/storm sewers and other potential conduits should be considered for evaluation.*

Trust's Response:

A map will be prepared illustrating any changes in the planned borehole location due to encountered utilities or pipelines in the upper 12 feet bgs. Additionally, a borehole field form will be prepared for each borehole to document the following information to the extent feasible:

- If a subsurface utility or pipeline was encountered within the upper 12 feet bgs;
- Orientation of the pipeline/utility;
- Depth of the pipeline/utility;
- Material of the pipeline/utility;
- In what direction the borehole location was moved and what distance from the initial planned location; and
- Any other pertinent information.

During preparation of the 2nd mobilization technical memorandum NERT will review the existing infrastructure map and recommend additional sampling necessary to assess these potential migration pathways.

- 2. The borings for the depth-discrete groundwater samples (discussed in Section 2.2.5) extended to 90 feet bgs and did not find the base of contamination. The next phase of investigation in this area should consider going deeper to define the vertical extent of contamination. The plan discusses going as deep as 115' bgs in the next mobilization, but that might not be deep enough, given the high contaminant concentrations at 90' bgs.*

Trust's Response:

EPA's Comment 2 is similar to NDEP's Comment 1 above. As indicated in NERT's response to NDEP Comment 1 above three soil borings will be advanced to 150 feet below grade.

NERT is prepared to implement the second mobilization sampling effort following NDEP and US EPA concurrence with the response to comments provided above. As such, NERT is seeking written concurrence from both NDEP and USEPA that the proposed actions described herein address your concerns as these actions represent a departure from the approved work plan. The elaborate drilling technique proposed to advance the three borings to 150 feet below grade will increase project costs but Tetra Tech believes that they can cover this increase within the contingency budget established for the project.

Office of the Nevada Environmental Response Trust Trustee
June 23, 2016

If you have any questions or concerns regarding this matter, feel to contact me at (702) 960-4309 or at steve.clough@nert-trust.com.

Office of the Nevada Environmental Response Trust



Stephen R. Clough, P.G., CEM
Remediation Director
CEM Certification Number: 2399, exp. 3/24/17

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