

NDEP Comment	Response to Comment
<p><i>1. Monitoring well M-241 sampling results show significant difference of the chemical compositions from the chemical compositions of the shallow groundwater at upper gradient areas of Intercept Well Field (IWF), which indicates the disconnection between the groundwater of Well M-241 and the shallow groundwater. NDEP requires a resampling of groundwater of Well M-241 and other proposed wells in the third mobilization to verify these results from the second mobilization.</i></p>	<p>Monitoring well M-241 will be resampled during the third mobilization field event in conjunction with groundwater samples collected from new wells installed during the third mobilization. The groundwater sampling results will be provided in the Remedial Investigation (RI) Report.</p>
<p><i>2. The report states that the distribution of perchlorate and chromium in the soil and groundwater is similar. NDEP wants to see more quantified and spatial correlations about the similarity.</i></p>	<p>A more quantified discussion of the spatial distribution of perchlorate and chromium in soil and groundwater will be provided in the RI Report.</p>
<p><i>3. The report presented different distribution of chloroform in soil and groundwater from the distribution of perchlorate and chromium. NDEP expects to see more information about the sources and the migration pathways for the chloroform found in the second mobilization.</i></p>	<p>A discussion regarding the sources and migration pathways of chloroform will be provided in the RI Report.</p>
<p><i>4. The 30 minutes from the proposed low-flow pumping tests are likely too short to distress aquifer enough. The hydraulic properties derived from the proposed pumping tests may not produce representative hydraulic property values for the aquifer. NDEP requires that all hydraulic property values from the third mobilization are representative of the targeted aquifer.</i></p>	<p>The Trust agrees that characterization of the hydraulic properties of the aquifer is critical. We intend to complete slug tests, as proposed in the technical memorandum, to estimate the hydraulic conductivity of the aquifer in the immediate vicinity of the wells being tested. In addition to slug tests, specific capacity tests will be performed at flow rates and durations that will sufficiently stress the aquifer (measurable and sustained drawdown) to make an estimate of the hydraulic properties of the aquifer near the well. All of this information will be provided in the RI Report.</p>
<p><i>5. The proposed cluster monitoring wells should be designed and installed to furnish a function for determination of horizontal hydraulic gradient and potential exchange between the shallow and deeper water bearing zones besides the proposed purposes in third mobilization.</i></p>	<p>The proposed nested/clustered monitoring well design and associated locations are intended to provide on-going reproducible water quality data, as well as enable the collection of potentiometric data to determine both horizontal and vertical gradients in the Investigation Area.</p>

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<p><i>6. The final report from third mobilization should have comprehensive analysis about horizontal and vertical extension and mass of perchlorate, chlorate, chromium, hexavalent chromium, TDS, nitrate, and chloroform, correlations between these chemicals and sources and migration pathways of these chemicals. The mass calculation should include more details how the mass is calculated and the uncertainty associated with the calculated mass.</i></p>	<p>A comprehensive analysis of the horizontal and vertical extent and mass of perchlorate, chlorate, chromium, hexavalent chromium, TDS, nitrate, and chloroform will be provided in the RI Report.</p>
<p><i>7. The potential for vapor intrusion and/or outdoor air exposure should be evaluated for chloroform given its widespread presence in soil and groundwater and its carcinogenicity via the inhalation exposure route. It is noted that bromoform and bromodichloromethane are also carcinogens via the inhalation exposure route. Any other detected VOCs (including the other THMs) should also be included in the evaluation. It is recommended that soil gas samples be collected as part of future investigations.</i></p>	<p>NERT will evaluate the Phase 2 RI data in concert with the Unit 4 and 5 data and develop a work plan modification to further evaluate the vapor intrusion/outdoor air exposure pathways. The work plan will be submitted as a Phase 2 RI modification request.</p>
<p><i>8. Please comment on the potential for VOC concentrations in soil in the upper 12 to 15 feet to be biased low due to the use of the hydro-vacuum to clear utilities, especially given the prevalence of sandy soils in this depth interval.</i></p>	<p>Relatively undisturbed soil samples obtained within the upper 12 feet were collected by driving a split spoon sampler below the hydro-vacuum/soil interface. Every effort in the field was taken to collect representative, undisturbed soil samples, however, there is a potential for VOC concentrations in soil in the upper 12 feet to be biased low due to the use of the hydro-vacuum to clear utilities. This statement will be incorporated into the forthcoming RI Report.</p>

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<p>9. Please provide a discussion on the potential for VOC concentrations in groundwater to be biased low given the use of a bailer to retrieve samples from the temporary wells.</p>	<p>Groundwater samples collected from the temporary wells during the second mobilization were collected in accordance with the Field Sampling Plan approved by NDEP (specifically Section 4.4 of Field Guidance Document No. 004), which states that “Samples obtained for volatile organic compound (VOC) analysis will be collected to minimize the potential for volatilization (e.g., slowly and carefully lowering the bailer into the temporary well and carefully transferring the water into VOC vials).” In addition, the sampling procedure utilized was described in the Unit 4 and 5 Building Investigation Work Plan dated March 20, 2015 and First Mobilization Technical Memorandum May 6, 2016, both of which were approved by NDEP and EPA. Based on the procedures implemented, NERT does not believe that the sampling method jeopardized the integrity of the samples or biased the results. NERT will include this justification in the RI Report.</p>
<p>10. Additional data gaps include porosity, effective porosity, and total (or fraction) organic carbon should be included in the final report.</p>	<p>Comment noted. Soil samples will be collected and analyzed for porosity, effective porosity, and total organic carbon during the third mobilization. Soil samples will be collected from four monitoring well boreholes (west of Unit 4, east of Unit 4, basement of Unit 4, and northeast of Unit 4). Soil samples will be collected from the saturated zone at 10 foot intervals from 50 feet bgs to the total proposed depth of 150 feet bgs (i.e. 11 samples per borehole). A discussion of the findings and results of these additional analyses will be presented in the RI Report.</p>
<p>11. Please add an arrow to Figure 3 (Borehole Transect Locations) that shows the groundwater flow direction.</p>	<p>Comment noted. A map illustrating the borehole transect locations and the direction of groundwater flow will be provided in the RI Report.</p>
<p>12. Please include cross-sections and consider adding soil type boundaries (in addition to the water table and formation boundaries) on the graphics in Appendix E.</p>	<p>A representation of geologic and/or soil type boundaries throughout the Site will be provided in the RI Report.</p>

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<p><i>13. The Appendix E figures show that the distribution in soil and groundwater of the two constituents considered (i.e., perchlorate, hexavalent chromium) are similar suggesting a common source/carrier. It is noted that the four common trihalomethanes (“THMs”) – chloroform, bromoform, bromodichloromethane, and dibromochloromethane – were detected in both soil and groundwater. What are the potential on- and/or off-site source features/operations of the chloroform in soil and groundwater? Comment on the potential for the chloroform to be present: 1) now or in the past as a non-aqueous phase liquid and 2) as the result of intentional or unintentional chlorination of wastewater.</i></p>	<p>Discussion of potential on- and/or off-site sources and migration pathways of chloroform will be provided in the RI Report.</p>