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From: Deni Chambers, CEG, CHG **Date:** May 14, 2010

To: Shannon Harbour
Nevada Division of Environmental Protection (NDEP)

RE: Responses to NDEP May 3, 2010 Comments on
Results of Bioaccessibility Study for Dioxin/Furans in Soil, dated: April 23, 2010

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1. *General comment, TRX should include the approved study protocol as an appendix.*

   Response: The protocol has been included as Appendix D

2. Section 2.2, page 3, 1st partial paragraph, TRX states that the extraction was scaled back to 90% to allow the use of 1L glass bottles. TRX should provide a revised table of the final weights and volumes used due to the 90% scaling in the appended study protocol. (Please see the above-comment.)

   Response: The protocol and associated tables (Appendix D) have been revised to reflect the final weights and volumes used due to the 90% scaling in the study

3. *Section 3.1, page 4, last paragraph, TRX states that MS/MSD results were sporadic due to high analyte concentrations. This should not have occurred as the analyte concentration should have been known and the appropriate spike amounts should have been calculated to allow for usable recovery results. In Section 2.1, TRX stated that target concentrations were obtained from the soil samples collected, thus this oversight should have been avoidable. Please provide a more robust description of how this occurred and why the data should be considered acceptable.*

   Response: Additional information has been added to Section 3.1 of the report that discussed the MS/MSD and addresses why the data should be considered acceptable.

4. *Section 6.0, page 10, last paragraph and a follow-up e-mail from S. Crowley of TRX to S. Harbour of NDEP dated April 30, 2010 (FW: Bioaccessibility Calculations). TRX stated that the use of 31% bioaccessibility resulted in a target soil concentration of 3,200 ppt and was derived by adjusting the BCL accordingly. NDEP has determined that simply applying the bioaccessibility result directly to the BCL is incorrect. The BCL is intended to be used as a screening value and if a value other than the BCL is to be proposed for a target soil concentration, then that proposed value should be derived using a traditional dose calculation and site-specific information.*

   The dioxin BCLs are derived from USEPA (1998) preliminary remediation goals (PRGs) as discussed in the BCL's User's Guide (NDEP, 2009). The USEPA dioxin PRGs have been used by convention and they are not supported by a dose calculation traditionally used to

derive PRGs or BCLs. These PRGs may be traced to the study of Times Beach Missouri superfund site and published by Kimbrough et al., 1984. A review of the Kimbrough et al. study reveals that a bioavailability of 30% was used (Paustenbach et al., 2006). Thus, application of the bioaccessibility to the BCL would be incorrect.

The basis of the dioxin BCLs while health protective, are at the upper end of the target risk range (10-4) and are used to be consistent with other national remedial efforts (USEPA, 1998). As the NDEP's target risk for this site is 10-6, then any remediation goal deviations from the BCLs must be supported by appropriate site-specific conceptual site model considerations and dose/risk calculations.

TRX should provide dose calculations similar to those presented in the "Dioxin Spreadsheet to NDEP" provided on January 19, 2010 via e-mail from S. Crowley of TRX to S. Harbour of NDEP.

Response: Additional information has been provided in a revised Section 6.1 and 6.2 of the report that provides the rational and calculations for a site-specific risk based concentration for dioxin at the Site. Dose/risk calculations are presented in Appendix E.