July 18, 2014

Mr. Weiquan Dong, PE
Bureau of Corrective Actions, Special Projects Branch
Nevada Division of Environmental Protection
2030 E. Flamingo Rd., Suite 230
Las Vegas, Nevada 89119

Re: Sampling and Analysis Plan (SAP), Revision 1; Nevada Environmental Response Trust Site, Henderson, Nevada (#H-000539)

Dear Mr. Dong,

Please find enclosed three reports which together comprise the Sampling and Analysis Plan (SAP), Revision 1, for the Nevada Environmental Response Trust (Trust) Site in Henderson, Nevada. The three reports include the Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), and the Health and Safety Plan (HASP). These report were prepared by ENVIRON International Corporation (ENVIRON) on behalf of the Trust. These reports were revised since the prior submittal on January 24, 2014 to address NDEP comments received on May 8, 2014 and May 20, 2014. Each of the documents is provided in their entirety in electronic format on CDs located in the back folder of each binder. Our response to comments on the FSP, QAPP, and HASP are provided with this submittal as Attachments A, B, and C, respectively.

Please contact John Pekala at (602) 734-7710 or Allan DeLorme at (510) 420-2565 if you have any comments or questions concerning this report.

Sincerely,

John M. Pekala, PG
Senior Manager
CEM #2347, expires 9/20/2016

Allan J. DeLorme, PE
Principal

Attachments

cc: BMI Compliance Coordinator, NDEP, BCA, Las Vegas
NDEP c/o Kirk Stowers, Broadbent and Associates, Inc.

ec: James Dotchin, NDEP
Greg Lovato, NDEP
Nevada Environmental Response Trust
Tanya O'Neill, Foley & Lardner LLP

Attachment A

Responses to NDEP Comments Dated May 20, 2014
Field Sampling Plan

NDEP Comment	Response
Essential Corrections	
1. General	
a. Hexachlorobenzene (HCB) is identified as a COPC in soils and is listed in all applicable tables as a target analyte using the organochlorine pesticides analyses (method 8081). However, in the QAPP, this compound is listed only as a target analyte for the SVOC 8270 analyses. It will be necessary to resolve this discrepancy between the FSP and QAPP to ensure that the samples are analyzed for HCB by the appropriate method. If method 8081 is selected, then the MQOs for 8081 analyses must be added to the QAPP.	Although HCB is considered an organochlorine pesticide (OCP), HCB will be analyzed as a semivolatile organic compound (SVOC) by EPA Method 8270C as specified in the Quality Assurance Project Plan (QAPP); it will not be analyzed with the other OCPs by EPA Method 8081. The FSP does not specify particular methods for the analysis of chemicals of potential concern (COPC), but for consistency with the QAPP, HCB is now listed in as an SVOC. Because soil samples will not be analyzed for OCPs without also being analyzed for SVOCs, the change in category has no impact on the sampling program.
b. Both the FSP and the QAPP discuss the potential of groundwater contamination based on leaching from contaminated soils. Table 1b of the FSP lists the chemicals of potential concern (COPCs) in soil based on leaching to groundwater. The QAPP discusses the synthetic precipitation leaching procedure (SPLP) and provides screening levels and MQOs in Table 4. However, the FSP does not mention the analysis of leachates for soil samples. There needs to be a clarification of which soils will be subjected to the SPLP procedure, and how they are to be collected/handled.	Table 4 of the QAPP identifies soil screening levels based on potential leaching to groundwater. The use of SPLP and TCLP is not planned as part of the Remedial Investigation (RI) and is not included in the revised Field Sampling Plan (FSP) or QAPP.
c. The FSP mentions only TO-15 and helium leak check for soil vapor analysis and states that samples will be collected in Summa canisters or Tedlar bags (Sec 4.9 Soil Gas Sampling). However, the Field Guidance Document (FGD 010) only mentions Summa canisters. Also, the QAPP notes several additional VOC analytes for soil vapor analysis by 8260. These are not mentioned in the FSP (even as a footnote that the compounds would be added to the TO-15 analyte list).	Tedlar bags will not be used for soil vapor sampling. Section 4.9 has been revised. The additional volatile organic compounds VOC analytes by EPA Method 8260 will not be analyzed and have been removed from the QAPP.

NDEP Comment	Response
d. Geotechnical parameter analyses are mentioned in the FSP, however two of the tests, Atterberg Limits and Grain Size are not mentioned in the QAPP.	Atterberg limits and grain size distribution testing will be conducted following industry-standard American Standard Testing Method (ASTM) methodologies. Physical properties testing methods have not been included in the QAPP because the performance standards are different from those of analytical chemistry methods; however, references to specific methods have been added to Section 3.5 of the FSP.
e. The text mentions "attenuation parameters" for groundwater analysis in Sec 3.2.5 and Sec 4.7, but this is not one of the analytical categories in Tables 4, 5, or 6. The tests associated with attenuation monitoring should be defined.	The text in Section 3.2.6 has been revised for clarification. The analytical category is “Geochemical Parameters” and is defined in a footnote within the applicable tables. Furthermore, all monitoring well sampling to be performed as part of the RI is expected to be done using low-flow sampling methodology. The text in Section 4.7 describing groundwater monitoring well sampling by “traditional” methods (i.e., purging at least three casing volumes and allowing parameters to stabilize) has been removed. In addition, FGD 005 (Traditional Groundwater Monitoring) has been removed.
2. Sec 3.1.7 Investigation of Soil Beneath Unit Buildings and Leach Plant – There is a discrepancy between the stated analyses for the soil borings (p. 10) and the analyses marked in Table 2 RIDSB-1 in area 8. The following tests specified in Table 2 are not mentioned in the text: rare metals, SVOC, OC Pest, OP Pest, PAH, PCB, Dioxins, Organic acids, and radionuclides.	The text is now consistent with the analytes listed for horizontal boring RIDSB-1 in Table 2. Rare metals, SVOCs, OCPs, organophosphorus pesticides (OPP), polyaromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), dioxins, organic acids, and radionuclides have been added to Section 3.1.7 describing the directional drilling beneath Unit 4.
3. Table 4 Groundwater Sampling at New Groundwater Monitoring Wells. Please add two columns of "Groundwater Table Elevation" and "Depth to Groundwater", respectively. The footnote is not consistent with the table content.	A column with the “Expected Depth to First Groundwater” has been added for each of the new on- and off-site wells based on information from nearby wells screened in the Shallow WBZ. The actual depth to groundwater and the static groundwater elevation in each well will be measured after well construction and development are completed.

NDEP Comment	Response
4. Table 5 Groundwater Sampling at Existing Groundwater Monitoring Wells. Please add two columns of "Groundwater Table Elevation" and "Depth to Groundwater", respectively. Please add existing wells of COH-2, COH-2A, HMW-8, HMW-9, HMW-23, MCF-K8, MCF-29B/A, MCF-30A/B, WMW5.58S WMW6.15S and WMW6.55S to the sampling plan if they are accessible.	Depth to groundwater and groundwater information has been added to Table 5 where available. The additional wells (COH-2, COH-2A, HMW-8, HMW-9, HMW-23, MW-K8, MCF-29A, MCF-29B MCF-30A, MCF-30B, WMW5.58S, WMW6.15S and WMW6.55S) have been added to Table 5. ENVIRON assumes that NDEP meant to specify well MW-K8 instead of well MCF-K8. ENVIRON does not have a record of a well named MCF-K8.
5. Table 6 Trust Monitoring Program Wells To Be Analyzed for VOCs And Other COPCs – Sec 3.3 states that the wells in this table will be analyzed for the COPCs listed in Table 1a; however, the COPCs cyanide, alpha-BHC, heptachlor epoxide, bis(2-ethylhexyl)phthalate, and 4-chlorobenzenesulfonic acid are not included in Table 6.	Please note that Section 3.3 is now Section 3.2.9 in the revised text. Section 3.2.9 has been clarified to indicate that an additional eleven wells listed on Table 5 will be resampled due to localized exceedences of screening levels by four COPCs. The focused testing program for these four COPCs (cyanide, alpha-BHC, heptachlor epoxide, bis[2-ethylhexyl]phthalate [BEHP], and 4-chlorobenzenesulfonic acid [4-CBSA]) is shown in Table 5. The testing program for the remaining COPCs listed in Table 1a is shown in Table 6. Several adjustments have been made to Table 5 in Revision 1 of the FSP. Wells M-127, M-17A, SA02, and M-89 were originally designated as wells to be sampled within the focused groundwater analytical program due to localized exceedences of COPCs. However, these wells have been plugged and abandoned. In order to assess these localized exceedences, the closest well located downgradient of the abandoned well was selected as a substitute for the specific COPC sampling as follows. Well M-126 will be sampled for 4-CBSA as a substitute for well M-127. Well M-38 will be sampled for BEHP as a substitute for well M-17A. Well M-66 will be sampled for BEHP as a substitute for well SA02. Well M-65 will be sampled for BEHP as a substitute for well M-89.

NDEP Comment	Response
6. Figure 8 Proposed Downgradient Plume Wells. Please move the Well of PC-156 to the location of the Well PC-157 and move the well PC-157 to the location close to the well COH2A. The NDEP suggests the boring depth of 70 feet and the screen interval from 15 to 60 feet for these three wells.	Based on discussions with NDEP, rather than relocating wells, ENVIRON has proposed installing a second, deeper alluvium groundwater monitoring well at each of the three well locations. Three pairs of cluster groundwater monitoring wells (PC-155A/PC-155B, PC-156A/PC-156B, and PC-157A/PC-157B) will be installed between the Seep Well Field (SWF) and Las Vegas Wash. At each well pair ("cluster"), the shallow well will be screened from approximately 10 to 30 feet depth and the deeper well will be screened from approximately 40 to 50 feet depth. The FSP text (Section 3.2.7), tables, and Figure 8 have been updated to reflect the change.
Minor Corrections	
1. Sec 3.1 Soil Data Gaps – All references to the analysis of soil physical properties as specified in Sec 3.4 should be changed to Sec 3.5. Sec 3.4 is Groundwater Level Measurements.	This issue has been addressed by grouping the "Additional Groundwater Sampling for COPCs in Groundwater" subsection (previously Section 3.3; now Section 3.2.9) with the other "Groundwater Data Gaps" in Section 3.2. "Soil Physical Properties Testing" is accurately listed as Section 3.4 in the revised text.
2. Sec 3.2 Groundwater Data Gaps	
a. It is stated that up to 68 off-Site groundwater monitoring wells will be sampled; however only 47 off-Site wells are listed in Tables 4 and 5.	The reference to 68 off-site wells was an error; up to 63 off-site wells will be sampled as part of the RI, including the addition of 13 wells requested by NDEP in Comment #4 (above) and the inclusion of 3 deeper wells in response to Comment #6 (above). The report text has been revised.
b. Table 6 should also be referenced for the Trust Monitoring Program Wells.	A reference to Table 6 has been added to the discussion of groundwater data gaps .
3. Sec 3.2.2 Background Determination – Several of the middle WBZ wells listed for slug testing are not included in Tables 4, 5, or 6: MC-MW-18, MC-MW-39, M-152, and M-156. If this is correct, it should be clarified that these wells will not be sampled for chemical analyses.	These four wells are intended for slug testing only and will not be sampled for chemical analysis. A footnote explaining this has been added to the FSP text in Section 3.2.3.

NDEP Comment	Response
4. Sec 4.0 Sampling Procedures and Equipment – Recommend adding soil vapor equipment to this section.	Descriptions of soil vapor sampling equipment have been added to Sections 4.0 and 4.9, as appropriate.
5. Sec 5.8 Field QA/QC Procedures – The last sentence of the first paragraph does not make sense. Suggest changing the verbiage to simply state that extra sample volume will have to be collected for samples designated for MS/MSD analysis. There should be a similar discussion for laboratory duplicates (although less extra volume is required).	The sentence in Section 5.8 has been corrected for clarity and laboratory control samples/laboratory control duplicates (LCS/LCSD) have been added to the paragraph. In addition, LC/LCSDs and related potential extra sample volume requirements have been added to Section 5.8.5.
6. Sec 5.8.5 Matrix Spike/Matrix Spike Duplicates – The first sentence does not make sense. Suggest rewording to state that although MS/MSD samples are not field QC samples, extra volume needs to be collected for samples designated for MS/MSD analysis.	See response to Comment #5.
7. References – The EPA DQO Guidance document, Guidance on Systematic Planning Using the Data Quality Objectives Process EPA QA/G-4 (February 2006) should be added to the reference list.	A reference to the EPA DQO Guidance on Systematic Planning Using the Data Quality Objectives Process EPA QA/G-4 from February 2006 has been added to the reference list.
8. Table 1b Preliminary Chemicals of Potential Concern in Soil Based on Leaching to Groundwater – the "*" definition footnote should be added to this table.	The asterisk indicates that no comparison screening criterion is available for a particular analyte. This definition has been added to Table 1b.
9. Table 1b – as a general comment, with the exception of PCB 209, all of the PCB congeners listed here have WHO TEF values, and can be converted to dioxin toxicity equivalents (TEQs). As one of the comments for the QAPP, the question was posed as to whether PCB congener TEQs should be discussed along with the dioxin TEQ discussions. Although this would not require any changes to the FSP, the comment is still valid.	Although no changes to the FSP have been made in response to this comment, the QAPP has been updated to address dioxin toxicity equivalents (TEQs). TEQs will be calculated for the 16 dioxin and furan congeners and 12 PCB congeners with toxicity equivalency factors (TEFs) defined by the World Health Organization and substituting half the EDL for the congeners not detected.
10. Table 2 Soil and Grab Groundwater Sampling in Borings and Exploratory Trenches – The 10' interval for Area 6 should be marked as "hold" according to Section 3.1.5.	The text in Section 3.1.5 has been revised to match Table 2. The 10 foot sample interval in Area 6 should not be marked as hold and will be analyzed as shown in Table 2.

NDEP Comment	Response
11. Table 3 Soil Sampling in Groundwater Monitoring Well Pilot Borings Field Sampling Plan – For the Area 8 soil boring intervals greater than 5 ', the General Soil Chemistry category should be marked as "hold" according to Section 3.2.7.	ENVIRON has assumed that Comment #11 refers to Section 3.2.8 (Investigation of Groundwater Impacts at Unit Buildings). The text in Section 3.2.8 has been revised to match Table 3. Soil borings in Area 8 that are greater than 5 feet should not be marked as hold and will be analyzed as shown on Table 3.

Attachment B

Responses to NDEP Comments Dated May 8, 2014
Quality Assurance Project Plan

NDEP Comment	Response
Essential Corrections	
1. Precision Section 1.6.2, pages 8-9, Measurement Performance Criteria – Precision contains conflicting information.	Comment acknowledged and addressed as described below.
a. Paragraph 2 mentions both duplicate control samples and laboratory control standard duplicates (LCSD). These are the same thing and are typically referred to as laboratory control sample duplicates (LCSD). The reference to duplicate control sample should be removed.	The reference to "duplicate control samples" has been removed.
b. Paragraph 2 discusses using percent relative standard deviation (%RSD) and relative percent difference (RPD) values to assess precision, but only discusses control limits for RPD values. For clarity, the section should note that %RSD values are calculated when there are more than two replicates, and the values are comparable to the RPD values	This section has been revised to clarify when percent relative standard deviation (%RSD) values are calculated.
c. Paragraph 2 gives objectives of 30% for waters and 50% for solids and airs; however, two paragraphs later, laboratory control limits are referenced. In Tables 2-5, laboratory precision limits are provided for LCS/LCSD and MS/MSD analyses as well as the 30%/50% limits in the "Duplicate" column. It should be clarified which limits (laboratory or QAPP) should be used to evaluate data. It appears that the 30%/50% limits are meant to apply to sample duplicates and field duplicates.	This section has been revised to note that the 30%/50% relative percent difference (RPD) limits are for field samples, and RPDs for laboratory control samples are listed in Tables 2 through 5.
d. At the end of paragraph 2, it is stated that the data may be "excluded from the data set" if the precision criteria are not met. This implies rejection of the data, but no guidelines are given as to what outliers would trigger rejection of the data. Most validation guidance documents do not recommend rejection of data based on precision outliers. Paragraph 4 only discusses qualifying data based on precision outliers.	This sentence has been revised to state that "samples outside the limits will be noted and reported with qualifiers."

NDEP Comment	Response
e. The laboratory QA manuals are referenced for QC sample frequency of analysis. The project requirement frequency is presented in Table 6, which should be referenced here.	The text has been revised to reference Table 6 for Quality Control (QC) sample frequency.
2. Completeness – Section 1.6.2, page 9, Measurement Performance Criteria – Completeness contains potential misleading information.	Comment acknowledged and addressed as described below.
a. It is stated that "…data failing to meet DQOs have been removed from the data set…" Most data that fail to meet DQOs are estimated, but are still usable. Only data that have been rejected should be removed from the data set.	The description of completeness has been revised to clarify that only rejected data will be removed from the data set.
b. Completeness for a project is not only based on collected data, but on the number of planned analyses. If planned samples could not be collected or if collected samples could not be analyzed for some reason, this would also impact overall completeness.	This section has been revised to clarify that completeness is based on planned samples and is not limited to collected data.
3. Section 4.0, pages 33-36, Data Validation and Usability - There are several places in the document where verification is confused with validation. Verification applies to the checking of the completeness and correctness of the laboratory deliverables (data packages and EDDS). Verification should be done by the laboratory prior to releasing data and may also be done by ENVIRON upon receipt of the laboratory deliverables. Validation applies to the evaluation of the data to determine if the laboratory followed the analytical methods and the laboratory SOPs, and to evaluate data usability based on the project specific DQOs in the QAPP. As mentioned in Section 1.3, validation will be performed by independent contractors.	Comment acknowledged and addressed as described below.
a. Section 4.1, p. 33, Data Review, Validation, and Verification Requirements – This section should state that the laboratory and ENVIRON will perform data verification. Validation will be performed by LDC and Neptune.	This section has been revised to distinguish between validation and verification.

NDEP Comment	Response
b. Section 4.2.2, p. 33, Procedures Used to Validate Laboratory Data – The laboratory will perform verification, not validation. Independent validation will be performed by LDC and Neptune.	This section has been revised to indicate that the laboratory will perform verification, while a third-party independent company will perform validation.
c. Not present: The levels of validation (90% EPA Stage 2B and 10% EPA Stage 3/4), the QC elements reviewed for the difference validation levels, and the guidance documents for validation (NDEP 2009b, NDEP 2009c, and EPA Functional Guidelines) should be included in the Data Validation and Usability section.	Section 4.2.2 has been expanded to include the different validation levels, the QC elements reviewed for each level, and relevant guidance documents.
d. Section 4.3.1, p. 34, Precision – For three or more replicates percent relative standard deviation (RSD) is used to evaluate precision, not just 'relative standard' as stated in this section. Since the RSD is multiplied by 100, the final value is the "%RSD." Immediately below the equation, the acronym definition should be changed to %RSD (from RPD).	Text and formulas in this section now state "percent relative standard deviation" and "%RSD," as appropriate.
e. Section 4.3.2, p. 34, Accuracy – The division line in the %R calculation is missing.	The division line has been added to the calculation of %R.
f. Section 4.3.2, p. 34, Accuracy – SRMs are discussed here, but not anywhere else in the QAPP. If there is a chance that the referenced materials will be analyzed, they should be discussed as appropriate in the rest of the QAPP.	Standard reference materials (SRM) will not be used and the related formula has been removed from the QAPP.
g. Section 4.3.3, p. 35, Completeness – In order to evaluate overall completeness, "T" should be defined as the number of planned measurements.	"T" is now defined as the total number of planned measurements.
Minor Corrections	
1. Section 1.6.2, p. 8, Measurement Performance Criteria, Accuracy – laboratory control sample and laboratory control standard (LCS) are mentioned. These are the same thing and are typically referred to as laboratory control samples (LCS).	References to "laboratory control standards" have been removed and replaced with "laboratory control samples," as necessary.

NDEP Comment	Response
2. Section 1.8.6, p 12, Verification of Electronic Data – This section contains a reference to validation levels which is not related to verification. This information should be moved to the validation section.	Discussion of the various validation levels has been moved to the Data Validation and Usability Section in Section 4.
3. Section 1.8.7, pages 12-14, Electronic Data Deliverables (EDD)	
a. Appendix C should be referenced for the EQuIS format requirements.	A reference to the EQuIS format specified in Appendix C has been added to Section 1.8.7.
b. It is also recommended that spike levels, percent recoveries, RPDs, and control limits for %R and RPD should be added to the list of requirements for alternate format EDDs.	References to spike levels, percent recovery, RPD, and control limits have been added to the list of electronic data deliverable (EDD) requirements in Section 1.8.7.
c. The percentage of results that must be verified during validation by comparison to the hardcopy should be specified.	The text has been revised to specify that 10% of EDD entries will be compared to hard copy results.
4. Section 1.8.8, pages 14-15, Laboratory Documentation	
a. The following items should be added to the bulleted list of requirements for a Level IV data package: detection limits, initial calibration summaries, calibration verification summaries, internal standard summaries, interference check standard summaries (metals only), serial dilution summaries (metals only), post digestion spike summaries (metals only), dilution factors, initial sample aliquots (weights or volumes), final sample volumes, sample preparation logs, sample run logs/injection logs, total solids.	The requested items have been added to the bulleted list of Level IV data package requirements.
b. In the 2nd paragraph on p. 15, the word “organic” should be removed from the last sentence. Except for surrogates, the QA/QC results listed apply to all analyses. The surrogate section already notes that surrogates only apply to organics.	The word “organic” has been deleted from the sentence.
c. The two “Precision and Accuracy” bullets should be changed to Matrix Spike/Matrix Spike Duplicates” and “Laboratory Control Sample/Laboratory Control Sample Duplicates.” Both sections should note that the spiked results, percent recovery values, RPD values, and the associated recovery and RPD control limits should be reported. For MS/MSD, the parent sample results should also be included on the summary form.	The bullet titles have been updated and include the requested information.

NDEP Comment	Response
d. A separate bullet item for “Laboratory Duplicates,” with required information of sample results, duplicate results, RPD values, and the RPD control limits is recommended.	A separate bullet item for “Laboratory Duplicates” has been prepared with the requested information.
5. Sec 2.5.2.1, p 25, Method Blanks	
a. DI water is not used as a method blank for all tests/matrices (for example soils for SVOC or air samples). A method blank is " ... a sample of a matrix similar to the batch of associated samples .... ". Or the verbiage from sec 2.5.2.2 could be used.	The text now states that “a method blank is a sample of a matrix similar to the batch of associated samples.”
b. In addition to the frequency requirement of 1 in 20 samples, the requirement of " ... or one per preparation batch, whichever is more frequent..." should be added.	The text has been updated to indicate that method blanks are performed at a frequency of 1 in 20 samples, or one per preparation batch, whichever is more frequent.
6. Section 2.5.2.2, p 26, Laboratory Control Samples – In addition to the frequency requirement of 1 in 20 samples, the requirement of “or one per preparation batch, whichever is more frequent…” should be added.	The statement “or one per preparation batch, whichever is more frequent” has been added to Section 2.5.2.2.
7. Sec 2.5.2.3, p 26, Matrix Spikes and Blank Spikes	
a. This section should be titled "Matrix Spikes" only. Blank spikes are the same as laboratory control samples and are discussed in the previous section.	“Blank Spikes” has been removed from the section title.
b. In addition, the same frequency verbiage regarding preparation batches as mentioned above should be added.	The text now states that “matrix spikes and matrix spike duplicates will be analyzed by the laboratory at a frequency of at least 1 per 20 primary field samples, or one per preparation batch, whichever is more frequent.”
8. Sec 2.5.2.4, p 26, Laboratory Duplicates	
a. There are more than two types of laboratory duplicates - sample duplicates should be added to laboratory control sample duplicates and matrix spike duplicates.	Sample duplicates have been added to the list of duplicate types.
b. In addition, the same frequency verbiage regarding preparation batches as mentioned above should be added.	The text now states that “duplicates will be collected and analyzed at a frequency of at least 1 per 20 primary field samples, one per preparation batch, whichever is more frequent for applicable analytical methods.”

NDEP Comment	Response
9. Sec 2.5.2.5, p 26, Surrogates - The identification of surrogates as "analyte isomers" should be changed to "chemically similar compounds" (such as bromofluorobenzene, or analytes containing deuterium such as toluene-d8, or 13C isotopes like 13C-2,3,7,8-TCDD). These are not isomers.	The text now states that "a surrogate is a chemically similar compound."
10. Table 1 - Analytical Methods and Laboratories	
a. The analytical method for Organic Acids should provide a reference to the Lab SOP and/or HPLC.	Please note: Alpha Analytical informed ENVIRON that they no longer perform individual organic acid analysis (as of June 2014). Organic acids (p-CBSA and phathalic acid) will now be analyzed in TestAmerica's Sacramento, California and Irvine, California laboratories as described in Table 1. Updated reporting limits, surrogates, and QC criteria are provided in Tables 2, 4, and 5.
b. Total Dissolved Solids (TDS) is not a soil test. If it is associated with SPLP, then the matrix should be soil leachate.	TDS has been removed as a soil test.
c. Total Suspended Solids (TSS) is not a soil test. If it is associated with SPLP, then the matrix should be soil leachate.	TSS has been removed as a soil test.
d. A matrix of TCLP is only associated with EPA method 1311. EPA method 1312 is for the SPLP method.	References to EPA Method 1311 and 1312 have been removed from the QAPP. Analytes listed on Table 4 will be compared to soil screening criteria that are based on leaching to groundwater, but it is not currently anticipated that samples will be analyzed using either toxicity characteristic leaching procedure (TCLP) or Synthetic Precipitation Leaching Procedure (SPLP).
e. The analytical method for mercury for a leachate would be 7470A, not 7471A.	According to the laboratory's standard operating procedure (SOP), EPA Method 7271A is approved for measuring total organic and inorganic mercury in soil wastes, soils, sediments and sludge materials. This use is consistent with soil sampling activities described within the Field Sampling Plan (FSP) and on Table 4 of the QAPP. Table 4 lists soil screening levels based on leaching to groundwater and does not refer to leachates.
f. Was the reference to EPA 600 series intentional for the water matrix SVOC and OP Tests? No other 600 series tests were specified, the SW846 methods are applicable to aqueous matrices and typically have more robust QC requirements, and the 600 series was not included in the references.	EPA 600 series methods have been removed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and organochlorine pesticides (OCPs) within Table 1. SVOCs will be analyzed by EPA Method 8270C, VOCs will be analyzed by EPA Method 8260B, OCPs will be analyzed by EPA Method 8081A.

NDEP Comment	Response
11. Table 2 - Soil Analytes and Analytical Quality Control Criteria	
a. It should be specified if the Duplicate RPD column applies only to sample duplicates and field duplicates. See the comments above on the precision section also.	The footnote for Quality Control Limits columns now states that Duplicate RPD applies to sample duplicates and field duplicates.
b. No surrogate is specified for the OP pesticides (Method 8141A).	Two surrogates for organophosphorus pesticides (OPP) (chlormefos and triphenylphosphate) and QC criteria have been added to Table 2, as well as to Tables 4 and 5.
c. It is recommended that the BZ# be added for the PCB congeners to avoid confusion when dealing with the IUPAC names.	BZ numbers have been added to the PCB congener names as requested.
d. The labeled compounds and recovery control limits for dioxins and PCB congeners should be added to the table.	Control limits for dioxins and PCB congeners have been added to Table 2.
e. No surrogate is specified for the organic acids.	2-fluorobipheny is now specified as a surrogate for phthalic acid.
f. Tests associated with SPLP analyses (TDS, TSS, etc.) should be removed from the soil table.	Total dissolved solids (TDS) and total suspended solids (TSS) have been removed from this table.
g. A method reference, such as Lab SOP by HPLC, should be added for Organic Acids.	The method reference for phthalic acid is listed as gas chromatography-mass spectrometry (GC/MS) based on EPA Method 8270.
h. In the field sampling plan (FSP), Section 3.1.5, under the paragraph for Area 6 there is a discussion of the analysis of hexachlorobenzene (HCB) analyzed as part of the organochlorine pesticides (OCP) group. This is confirmed by Table 2 in the FSP. However, in the QAPP Table 2, HCB only mentioned as part of the SVOC (8270) analytical suite. HCB needs to be added to the OCP analytical suite.	Although hexachlorobenzene (HCB) is considered an OCP, HCB will be analyzed as an SVOC by EPA Method 8270C as specified in the QAPP; it will be not analyzed with the other OCPs by EPA Method 8081. The FSP does not specify particular methods for the analysis of COPCs, but for consistency with the QAPP, HCB is now listed as an SVOC.
i. Footnote (4) states that dioxins are reported to the EDL. This is typically true for PCB congeners, also. The footnote should include a reference to PCB congeners.	The footnote has been revised to state that dioxins and PCBs will be reported to the estimated detection limit (EDL).
j. Footnote (4) also discusses the calculation of TEQ values for dioxins. Many users of PCB congener data also calculate TEQs for the 12 congeners specified by WHO. The end use of the PCB congener data should be considered, and if appropriate, PCB congeners should be added to the discussion in this footnote.	The footnote has been revised to state that dioxin toxicity equivalents (TEQs) will be calculated for the 16 dioxins and furan congeners and 12 PCB congeners with toxicity equivalent factors (TEFs) defined by the World Health Organization (WHO), substituting half of the EDL for the congeners not detected.

NDEP Comment	Response
12. Table 3 - Soil Gas Analytes and Analytical Quality Control Criteria:	
a. It should be stated that the Duplicate RPD criteria applies to sample duplicates and field duplicates.	The footnote for the Quality Control Limits columns now states that Duplicate RPD applies to sample duplicates and field duplicates.
b. The LCS/LCSD RPD criterion is "N/A, for several analytes. All other analytes have a criterion of 25%. This criterion should apply to all analytes.	The LCS/LCSD RPD is now 25% for all analytes.
c. The RPD criterion of 200,000 for the analytes referenced under method SW8260B does not make sense.	EPA Method SW8260B is not necessary to fulfill the scope of the RI Work Plan and has been deleted from Table 3.
d. Surrogates and control limits should be added for the SW8260B analysis.	EPA Method SW8260B is not necessary to fulfill the scope of the RI Work Plan and has been deleted from Table 3.
13. Table 4 - Soil Leaching Analytes and Analytical Quality Control Criteria	
a. It should be specified if the Duplicate RPD column applies only to sample duplicates and field duplicates.	The footnote for Quality Control Limits columns now states that Duplicate RPD applies to sample duplicates and field duplicates.
b. The SPLP soil leaching method (EPA 1312) should be noted to avoid confusion with TCLP (EPA 1311).	As noted in the response to Comment #10d, analytes listed on Table 4 will be compared to soil screening criteria that are based on leaching to groundwater, but it is not currently anticipated that samples will be analyzed using either TCLP or SPLP. The title for Table 4 has been changed to “Leaching-Based Soil Analytes and Analytical Quality Control Criteria” to clarify this point.
c. The labeled compounds and recovery control limits for dioxins and PCB congeners should be added to the table.	The labeled compounds and recovery control limits are included for each dioxin and PCB congener.
d. Surrogates and control limits should be added for methods 8141A, 8082, and Organic Acids.	Surrogates and control limits have been added for EPA Method 8141, EPA Method 8082, and the organic acids method.
e. A method reference, such as Lab SOP by HPLC, should be added for Organic Acids.	See response to Comment #11g.
f. It is recommended that the BZ# for PCB congeners also be included to agree with how these analytes are listed as COPCs in the RIFS Work Plan.	BZ numbers have been added to the PCB congener names as requested.
g. See comment 11I above regarding PCB congener EDL values.	See response to Comment #11i.
h. See comment 11J above regarding PCB Congener TEQ values.	See response to Comment #11j.

NDEP Comment	Response
14. Table 5 – Groundwater Analytes and Analytical Quality Control Criteria	
a. It should be specified if the Duplicate RPD column applies only to sample duplicates and field duplicates.	The footnote for Quality Control Limits columns now states that Duplicate RPD applies to sample duplicates and field duplicates.
b. See comment 10F above regarding the 600 series methods.	See response to Comment #10f.
c. Surrogates and control limits should be added for the SVOCs, OC pesticides, and Organic Acids.	Surrogates and control limits have been added for SVOCs, OCPs, and organic acids.
d. A method reference, such as Lab SOP by HPLC, should be added for Organic Acids.	Method references have been added for both 4-CBSA and phthalic acid.
15. Table 6 - Frequency of QA/QC Samples:	
a. Performance/Blind Check Samples are listed in the Accuracy Control Sample Section, however these are not mentioned anywhere else in QAPP or FSP. If Performance/Blind Check Samples are not going to be submitted, they should be removed from this table.	Performance/Blind Check Samples have been removed from the Accuracy Control Sample Section and will not be collected as part of the RI.
b. Field replicate frequency is not necessarily related to analytical batches. The frequency is based on sample collection.	This category has been changed to “Field Duplicate Sample” for consistency with the QAPP text. As stated in Table 6, field duplicates should be analyzed for each analytical method, with at least one field duplicate collected in every batch of samples (not to exceed 10 samples). The word “collected” has been added to the second sentence to clarify this category.
c. Matrix spikes and matrix spike duplicates should be analyzed in each batch, where applicable to the method.	This category has been clarified to state that matrix spikes and matrix spike duplicates will be analyzed in each batch, where applicable to the method (not to exceed 20 samples).
d. The first sentence for footnote (2) does not make sense. Also, soil gas analyses are not the only tests that do not have matrix spikes (radionuclides, TSS, TDS, etc.).	The first sentence of footnote (2) has been removed and the footnote has been revised to state that not all analytical methods or sample matrices have matrix spikes.
16. Table 7 – Sample Preservation, Containers, and Holding Times	
a. “Volatile Organic Acids" should be changed to "Organic Acids."	The phrase “Volatile Organic Acids” has been changed to “Organic Acids” for both soil and groundwater.
b. A method reference, such as Lab SOP by HPLC, should be added for Organic Acids.	See response to Comment #11g.
c. TAT should be defined in the footnotes.	Turnaround Time (TAT) is defined in the revised footnotes.

NDEP Comment	Response
d. As a general comment, "plastic" should be replaced (or footnoted) with "HDPE" (high density polyethylene) or similar.	The term “plastic” has been replaced with “HDPE” within Table 7.
e. Soil VOC and GRO preservation requirements appear to be based on EPA Method 5035. That method also specifies sodium bisulfate as a preservative in addition to DI water for low level analyses. Freezing is only required for highly alkaline or calcareous samples, which may react with the preservative and keep the pH >2.	Table 7 has been edited to list EPA Method 5035 as the basis for sample preservation. ENVIRON understands that EPA Method 5035 outlines a number of possible procedures for sample preservation and will select the appropriate method in the field based on expected sample concentrations, and where relevant, other field conditions.
f. It should be specified that the VOC and GRO DI preserved samples are for low level analyses and methanol preserved samples are only appropriate for high level analyses.	See response to Comment #16e.
g. EPA methods no longer have such restrictive holding times for PCBs and dioxin/furans. With proper storage, the sampling to extraction and extraction to analysis holding times can each be extended to one year. This should at least be added to the tables as a footnote.	While EPA has extended laboratory hold times for PCBs and dioxins/furans, the QAPP lists the hold times as outlined in the laboratory’s SOP for each method. A footnote regarding the less restrictive hold times has been added to Table 7.
h. TDS and TSS are not performed on soil matrices. As a general comment, it might make more sense to add "Leachate" as a matrix in this table where appropriate.	These analytes have been deleted for soil and will not be analyzed as leachates.
i. The sample matrix for TO-15 Tedlar bags should be Soil Gas.	Tedlar bags will not be used for collection of soil gas samples during the RI and have been removed from Table 7.
j. Footnote (4) states that sulfur is a rare earth metal. Should platinum be added?	The footnote includes niobium, palladium, sulfur, and uranium. Platinum is not a COPC and has not been included. Platinum has also been removed from Table 2.
k. The footnotes have a definition for TCLP, however SPLP (method 1312) is the leaching method specified.	TCLP has been removed from the footnotes. It is not anticipated that either the TCLP or SPLP methods will be used as part of the RI.
17. Table 9 - Analytical Laboratory Calibration Frequencies	
a. Two different sets of calibration requirements are presented for VOC by 8260B. Even if different labs are analyzing samples by this method, the calibration requirements are the same. The second entry should be removed.	The second set of calibration requirements for VOCs by EPA Method 8260B has been removed.

NDEP Comment	Response
b. Same comment about the 600 series methods. Note that here Method 608 is not cited – if the 600 series methods are retained, then 608 should be cited for the OC pesticides to match Tables 1 and 5.	See response to Comment #10f.
c. Method 7470A should be added for mercury. A separate entry is not needed as the calibration requirements are the same for both methods.	EPA Method 7470A has been added to Table 9.
18. References - it is recommended that the following documents be added:	
a. NDEP 2011 Guidance on Qualifying Data Due to Blank Contamination, July 18	This document has been added to the reference section.
b. NDEP 2012 Guidance on Qualifying Data Due to Blank Contamination, Rev 2, November 23	This document has been added to the reference section.
c. NDEP 2012 Guidance for Data Validation of Asbestos in Soils, July 24	This document has been added to the reference section.
d. EPA National Functional Guidelines for Superfund Organic Methods Data Review	This document has been added to the reference section.
e. EPA National Function Guidelines for Inorganic Superfund Data Review (January 2010)	This document has been added to the reference section.
f. EPA National Functional Guidelines for Chlorinated Dibenzo-p-dioxins (CDD) and Chlorinated Dibenzofurans (CDF) Data Review (September 2011)	This document has been added to the reference section.
19. Editorial Changes	
a. Table 2, p. 6 of 20 -EPN (Ethyl P-Nitorphenyl Benzenethiophosphate). Change to Nitro.	The spelling of Ethyl P-Nitrophenyl Benzenethiophosphate (EPN) has been corrected in Table 2.
b. Table 2, p. 11 of 20 – 3,4,4',5-TeCB6. Remove the "6."	The number "6" has been removed from the end of 3,4,4',5-TeCB in Table 2.
c. Table 4, p.5 of 8 – DeCB3. Remove the "3."	The number "3" has been removed from the end of DeCB in Table 4.

Attachment C

Responses to NDEP Comments Dated May 20, 2014
Health and Safety Plan

NDEP Comment	Response
Essential Corrections	
1. General Comment. Overall, the HASP follows the Federal Regulations. The main issues that need to be resolved including a site map with clearly defined work zones, designating an alternate site health and safety officer, indications of the limitations of the PPE being used, and indicating the periodic review of safety documents to ensure currency and relevancy.	These issues have been addressed in the revised HASP as described below in response to the specific comments.
2. Section 1.4, p 5, Specific Work Activities. A description of the tasks covered under this HASP is provided in Section 1.4. The expected duration of each task is not provided with the description of each task. 29 CFR 1901.120(c)(4)(iii), 29 CFR 1926.65(c)(4)(iii)	The expected duration of each task has been added to each task description.
3. Section 3, pages 11-14, Key Personnel/Project Organization and Responsibilities Procedures for conducting inspections to determine HASP effectiveness, correcting noted deficiencies, and taking corrective or disciplinary action are not included or referenced in the HASP. 29 CFR 1910.120(b)(4)(iv), 29 CFR 1926.65(b)	The responsibility for conducting inspections, correcting deficiencies, and taking corrective/disciplinary action has been assigned to the Project Health and Safety Coordinator as noted in the revised Section 2.2.3. In addition, Section 4.5 has been added to describe health and safety inspections and related procedures.
4. Section 2.2.4, p 12, and 2.2.5, p 13, Site Coordinator and HSO Personnel are designated as varying safety staff including corporate health and safety director, project health and safety coordinator, designated site coordinator, and site health and safety officer. Nita Shinn is identified as the site health and safety officer and designated site coordinator and is not with ENVIRON anymore, so new site coordinator should be identified. However, an alternate or back-up person is not indicated for the site coordinator. Personnel are identified for other safety staff positions, but the descriptions indicate those are not on-site positions. An alternate site health and safety officer needs to be designated. 29 CFR 1910.120(e)(2)(i)	The definitions of the Site Coordinator and Site Health and Safety Officer roles have been updated in Sections 2.2.4 and 2.2.5. The Site Coordinator and Site Health and Safety Officer will each be an experienced ENVIRON employee working at the site during the various RI field work tasks and treatability study tasks. The roles may be assigned to several different individuals in succession, with one individual handing each role over to the next individual before leaving the site, while field work is being conducted. The expected alternate Site Coordinator and Site Health and Safety Officer employees are identified in Sections 2.2.4 and 2.2.5. Table 1 has been updated with contact information for these individuals.

NDEP Comment	Response
5. Section 6.5, p 37, Health and Safety Records Section 6.5 in the HASP addresses medical recordkeeping. It is indicating in the CFR that employee medical records shall be preserved and maintained for at least the duration of employment plus thirty years with the exception of health insurance claims and first aid records, or medical records of employees who have worked for less than 1 year and who were given their medical records upon termination of employment. The thirty year requirement for recordkeeping should be included in the HASP in order to ensure compliance with this standard. 29 CFR 1910.120(d)(1)(i)(A)-(C)	Section 6.5 has been updated to include this information.
6. Section 7, pages 39-44, Personal Protective Equipment (PPE)	
a. Although the personal protective equipment is discussed, the limitations of the PPE are not included in the descriptions. It is understood that the two levels of PPE expected to be in use are modified level D and level D, both very minimal levels of protection indicating low exposure expectancy. However, this does not remove the requirement to include this information. 29 CFR 1910.120(g)(5)(ii), 29 CFR 1926.65(g)(5)(ii)	Section 7.2 has been revised to include a discussion of the limitations of each category of PPE.
b. Procedures for conducting inspections for determining the effectiveness of the PPE program and correcting noted deficiencies and taking corrective action are not included or referenced in the HASP. 29 CFR1910.120(g)(5)(ix), 29 CFR 1926.65(g)(5)(ix)	This comment is addressed by revisions made in response to Comment 3. The new Section 4.5.1 contains a description of typical inspection items and the list includes procedures for checking the effectiveness of the specific level(s) and types of PPE being used for a given field task.
7. Section 8.0, p 46, Exposure Monitoring The HASP indicates that air samples may be collected during the project but details indicating what event(s) would trigger air samples to be collected or the frequency of collection are not covered. 29 CFR 1910.120(h)(3), 29 CFR 1926.65(h)(3)	Section 8 has been revised to include a discussion of the types and frequency of air sampling to be conducted during the RI field work and treatability studies. In addition, a discussion of events that would trigger additional air monitoring to be performed has been added to the section.

NDEP Comment	Response
8. Section 11, p53, Decontamination	
a. Section 11 of the HASP discusses entry into the exclusion zone, however, the various zones at the site have not been clearly defined. Currently, the exclusion zone is defined simply as "the contaminated area" which can cover a number of discrete areas within the facility. 29 CFR 1910.120(d)(3), 29 CFR 1926.65(d)(3)	Additional descriptive language has been added to Section 4.1, Work Zones. In addition, Figure 5 has been added to show the typical work zone setup at intrusive sampling or excavation locations. Establishment of specific layouts of work zones is a field task since not all information is available at this time. The Site Coordinator will establish specific work zones in the field based on available sample results and field monitoring data available at the time with review and concurrence of the Project Health and Safety Coordinator.
b. Procedures for monitoring the effectiveness of the decontamination processes and correcting noted deficiencies are not included or referenced in the HASP. 29 CFR 1910.120(k)(2)(iv), 29 CFR 1926.65(k)(2)(iv)	This comment is addressed by revisions made in response to Comment 3. The new Section 4.5.1 contains a description of typical inspection items and the list includes procedures for checking the effectiveness of decontamination procedures being used for a given field task.
9. Sections 12.11 and 12.12, p 62, Emergency Response Plan	
a. Employees are directed to move to a safe distance if an underground electrical/telecom cable or pressurized gas pipeline is struck, but a safe distance is not specified. 29 CFR 1910.120(l)(2)(iv), 29 CFR 1926(l)(2)(iv)	The safe distance is dependent on the type of utility hit and the danger presented. There are no universal safe distance standards. All ENVIRON employees are trained to recognize and assess drilling hazards; therefore, ENVIRON staff will evacuate to a safe distance based on their judgment of the hazard and direct subcontractors and others in the vicinity to do so as well. In accordance with the Emergency Response Plan (ERP) in Section 12 of the HASP, staff will contact the Site Coordinator and Project Health and Safety Coordinator in the event of utility incidents. If determined by the designated Site Coordinator and/or Project Health and Safety Coordinator, the safe distance may be adjusted for each evacuation instance.
b. Procedures for periodically reviewing the ERP to keep it current with new or changing site conditions or information are not included or referenced. 29 CFR 1910.120(l)(3)(v), 29 CFR 1926.65(l)(3)(v)	Added text at the end of Section 12.14 to reflect changes in site conditions warranting updates to the ERP will also require updates to the HASP and will be performed on an as needed basis.

NDEP Comment	Response
10. General, no section or page number	
a. A site map that indicates potentially contaminated areas is not included as part of the HASP. 29 CFR 1910.120(d)(3), 29 CFR 1926.65(d)(3)	Section 1.6.1 refers the user to the Site Management Plan (SMP) which contains maps showing Excavation Control Areas (ECAs) where contamination has been confirmed or additional sampling data may be needed.
b. Work zones are discussed in Section 4.1 of the HASP, however, the exclusion zone, safe zone, and contaminant reduction zones are not clearly defined. 29 CFR 1910.120(d)(3), 29 CFR 1926.65(d)(3)	Figure 5 has been added showing the typical setup of work zones around an intrusive sampling or excavation area with known or suspected contamination. The unscaled figure is intended to show the work zones that will be established at each intrusive sampling or excavation area. As there are many work areas on- and off-site, and also many known or suspected contaminated areas at the site, it is more effective to show the typical work zone setup in the HASP than to provide a work zone map for each specific work area. As discussed in response to comment 8a above, establishment of specific layouts of work zones is a field task since not all information is available at this time. The Site Coordinator will establish specific work zones in the field based on available sample results and field monitoring data available at the time with review and concurrence of the Project Health and Safety Coordinator.
c. Use of the buddy system is not included as part of the HASP. 29 CFR 1910.120(d)(3), 29 CFR 1926.65(d)(3)	A description of buddy system requirements have been added to Section 4.2 General Site Safety.
d. Standard operating procedures are mentioned in the document but are not included or referenced in the document. An appendix containing the relevant SOPs or a listing of them would be effective in communicating the procedure itself or the location where an employee could obtain detailed instructions on a process or procedure. 29 CFR 1910.120(d)(3), 29 CFR 1926.65(d)(3)	Standard Operating Procedures (SOPs) are not specifically cited in the HASP, but are attached to and discussed in the Field Sampling Plan (FSP). Certain ENVIRON Standard Practice Instructions (SPIs) are referenced in the HASP including SPI 19 “Incident Reporting” cited in Section 12-1 and SPI 27 “Subsurface and Overhead Utility Clearing” cited in Section 4.5.1. Copies of these SPIs will be available to all field personnel during the RI field work and treatability studies.