

# Memorandum

To	NDEP: Carlton Parker, J.D. Dotchin	Pages 6
CC	AECOM: Harry Van Den Berg, Sally Bilodeau	
Subject	Response to Comments – Appendix G, Data Validation Summary Report, of the Groundwater Sampling Technical Memorandum for the NERT Remedial Investigation Downgradient Study Area, Nevada Environmental Response Trust Site, Henderson, Nevada	
From	AECOM: Carmen Schnell, Chad Roper, Lily Bayati, Steve Cole	
Date	July 28, 2017	

This memorandum summarizes our responses to comments received from NDEP (via email on March 7, 2017) on the Groundwater Sampling Technical Memorandum for the NERT Remedial Investigation Downgradient Study Area, Nevada Environmental Response Trust Site, Henderson, Nevada, Appendix G (Data Validation Summary Report). For context the portions of the text that the comments pertain to are shown in *italics*, where applicable. Proposed technical memorandum text revisions are also presented in *italics*.

**Comments in Document:**

1. **Section 1.0, Introduction (Third Paragraph)** – *Consistent with the NDEP requirements, approximately 90 percent of the analytical data (58 out of 65 primary samples) were validated according to Stage 2B data validation procedures and 10 percent of the analytical data (7 out of 65 primary samples) were validated according to Stage 4 data validation procedures.*

**Comment NDEP1:** The field QC samples were not included in the total sample count but an equipment blank (DBMW-4-20160419-EB) was validated at Stage 4. Validating a sample at Stage 4 when that class of samples is not included in the total sample count is not reasonable. With the field QC samples included in the sample count, less than 10% of the samples were validated at Stage 4, and when the equipment blank validated at stage 4 is excluded, less than 10% of the samples were validated at Stage 4. Please choose one option or the other and either correct the text indicating that less than 10% of the samples were validated at Stage 4 or validate another sample in order to meet the criterion. Also, please make sure the total analyte count in Section 5.4, which currently includes field QC results, is updated if necessary.

**RTC 1:** The correct sample count is 64 primary samples and the report will be edited to correct this. Six primary samples were validated in accordance to EPA stage 4 for wet chemistry parameters and seven primary samples were validated in accordance to EPA stage 4 for chromium. The validation of an insufficient number of samples occurred because an equipment blank sample was validated at Stage 4 and counted as a primary sample as noted by NDEP in these comments. This

deviation has been investigated as a part of this response to comments. However, Stage 4 validation is no longer required and therefore no corrective action to insure a sufficient number of samples is validated to Stage 4 is necessary. The text will be corrected as follows:

*Approximately 90 percent of the analytical data (58 out of 64 primary samples = 90.6%) were validated according to Stage 2B data validation procedures and approximately 10 percent of the analytical data (six out 64 primary samples = 9.4% for wet chemistry analyses and seven out of 64 primary samples = 11% for chromium analyses) were validated according to Stage 4 data validation. Although the number of wet chemistry analyses validated to Stage 4 was slightly less than the target, no impact on data quality is expected.*

The total analyte count in section 5.4 was adjusted to reflect only those results from primary samples (64 metals results, 384 wet chemistry results for a total of 448 results 7x64) and the text in this section was revised accordingly.

## 2. Section 1.1, Precision and Accuracy of Environmental Data (Definition List)

**Comment NDEP2:** a. Text describing the “J” qualifier notes results are qualified as estimated when a blank exceedance is insufficient to cause result rejection. Current guidance on blank qualification only suggests the estimating data based on blank results (not rejection). Please correct this inconsistency or add additional information to the blank corrective actions in Section 2.2.2, to support rejection of sample results due to blank detects.

b. In the last sentence of the definition of the “R” qualifier, redundant data are noted to be rejected. How is this different from the “DNR” qualifier?

c. The last sentence of the “DNR” qualifier appears to define another qualifier: “None.” Listing “None” in the “table” of qualifiers, gives the impression “None” is used as a qualifier. Please consider removing “None” from the “table” so it does not appear to be a qualifier and, if its description is considered necessary, add the discussion it in a sentence underneath the “table.”

### **RTC 2:**

a. The definition for the “J” qualifier will be corrected as follows:  
*The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.*

This removes any reference to the possibility of data rejection due to blank contamination. In addition, no data has been rejected based on blank contamination.

b. The last sentence will be deleted, since redundant data will be qualified as “DNR” not “R”.

c. “None” is not a qualifier and will be removed from the list of qualifiers.

## 3. Section 1.1, Precision and Accuracy of Environmental Data (Definition List)

**Comment NDEP3:** The National Functional Guidelines does not recognize the use of bias with the “UJ” qualifier. Please edit the discussion of this qualifier to comply with the National Functional Guidelines (NFG).

**RTC 3:**

Definition for the “UJ” qualifier will be corrected as indicated in the NFG:

*“The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.”*

- 4. Section 1.1, Precision and Accuracy of Environmental Data (Seventh Paragraph) –** *Precision is a measure of the agreement or reproducibility of analytical results under a given set of conditions. It is a quantity that cannot be measured directly but is calculated from percent recovery data.*

**Comment NDEP4:** The equation for precision utilizes concentration but the text indicates percent recovery is used in the calculation of RPD. Please edit one or both for consistency.

**RTC 4:** The entire section for Precision will be changed to the following:

*Precision measures the reproducibility of repetitive measurements. It is defined as the degree of mutual agreement among independent measurements as the result of repeated application of the sample analytical process under similar conditions.*

*Components of precision include analytical precision and total precision. Analytical precision is a measurement of the variability associated with duplicate or replicate analyses of the same sample in the laboratory, and is determined by analysis of laboratory quality control samples, such as duplicate control samples (LCSD or DCS), matrix spike duplicates (MSD), or sample duplicates. If the recoveries of analytes in the specified control samples are comparable within established control limits, then precision is within limits.*

*Total precision is a measurement of the variability associated with the entire sampling and analytical process. It is determined by analysis of duplicate or replicate field samples, and measures variability introduced by both the laboratory and field operations. Field duplicate samples are analyzed to assess field and analytical precision.*

*Duplicate results are assessed using the relative percent difference (RPD) between duplicate measurements. If the RPD for laboratory quality control samples exceeds the laboratory’s statistically determined acceptance ranges, data will be qualified as described in the applicable validation procedure. If the RPD between primary and duplicate field samples exceeds 50 percent for groundwater, data will be qualified as described in the applicable validation procedure. The RPD will be calculated as follows:*

$$RPD = 200\% \times \frac{X_2 - X_1}{X_2 + X_1}$$

*where  $X_1$  is the smaller of the two observed values, and  $X_2$  is the larger of the two observed values.*

- 5. Section 1.1, Precision and Accuracy of Environmental Data (Seventeenth Paragraph) –** *Contaminants found in both the environmental sample and the blank sample are assumed to be laboratory artifacts if both values are less than the PQL or if a sample result and blank contaminant value were greater than the PQL and less than 10 times the blank contaminant value.*

**Comment NDEP5:**

a. Should the underlined words be added to the following sentence? If so, please also make this correction in Section 2.2.2.

“For inorganic analyses, contaminants found in both the environmental sample and the blank sample are assumed to be laboratory artifacts if both values are less than the PQL, or if a sample result and blank contaminant value were greater than the PQL and the sample result is less than 10 times the blank contaminant value.”

b. The text indicates that results analyzed beyond 2x the holding time will be rejected. Are detects to be rejected or just nondetects? Please clarify.

**RTC 5:**

a. Section 1.1 and Section 2.2.2 will be corrected per the suggestions above.

b. Detected results are not to be rejected for holding time exceedences. The text will be corrected.

6. **Section 2.1.3, MS/MSD Samples (First Paragraph)** – *MS/MSD %Rs were within acceptance criteria as stated in the QAPP therefore, no chromium results were qualified based on this criterion. The details are presented in Attachment A, Section VI.*

**Comment NDEP6:** The text states no qualifications were required; however, chromium in sample DBMW-22-20160422 was qualified “J” (no bias). If the qualification is correct, please correct the text in this section and consider adding bias to the qualifier in the EDD and Table 4. If it is not correct, please change the “m” reason code to the “sp” reason code in the EDD and Table 4.

**RTC 6:** The text is correct; “J” qualifier for sample DBMW-22-20160422 for chromium is a laboratory qualifier and not a validation qualifier. The table and EDD will be corrected.

7. **Section 2.2.2.2, EBs and FBs (First Paragraph)** – *Consequently, low-level chromium results for four samples were qualified as non-detect (“U”).*

**Comment NDEP7:** The text states 4 results were qualified as nondetected due to an equipment blank detect. NDEP guidance does not promulgate censoring results for potential blank contamination. Please correct the text, EDD and Table 4.

**RTC 7:** The text will be revised as shown. “Consequently, low-level chromium results were qualified as “U” due to equipment blank contamination in accordance with national functional guidelines.”

It is our understanding that the January 5, 2012 guidance from NDEP specifically allows the assignment of qualifiers in accordance with NFGs but does not allow the rejection of results due to blank contamination. It is our opinion that the U qualifier has been appropriately assigned in this case. Therefore, the text, EDD and Table 4 do not require revision.

8. **Section 2.1.6, FD Samples (First Paragraph)** – *The field duplicate samples were evaluated for acceptable precision with RPDs or difference in instances the results were less than five times the reporting limit for the compounds.*

**Comment NDEP8:** The first sentence of this section indicates that RPD is used for the metals field duplicate criterion only when results are less than 5x the PQL. The

second sentence appears to state that criterion is used only when the results are less than the PQL. Please clarify.

**RTC 8:** RPDs were evaluated for all results. When the sample or field duplicate concentration was <PQL, the PQL was used for calculation purposes. Text will be corrected.

- 9. Section 3.1.6, FD Samples (First Paragraph)** – *The field duplicate samples were evaluated for acceptable precision with RPDs. Results for hexavalent chromium and bromide were qualified in the following samples: PC-74-20160429 and PC-74-20160429-FD. The details regarding the qualification of results are presented in Attachment B, Section X.*

**Comment NDEP9:** Although inorganic analytes like the metals, the wet chemistry field duplicates appear to be held to different field duplicate criteria than the metals. Please confirm this. If RPDs are used only for results greater than 5x the PQL, the field duplicate results noted in this section will not require qualification.

**RTC 9:** The same criteria were applied for both metals and wet chemistry; RPDs were evaluated for all results. No revision to the document is proposed.

- 10. Section 5.1, Precision and Accuracy (Second Paragraph)** – *All calibrations were performed as required and met the acceptance criteria. All surrogate, MS/MSD, DUP, LCS, and field duplicate percent recoveries, RPDs, and difference met acceptance criteria with the exceptions noted in Sections 2.1.2, 3.1.3, and 3.1.6. All ICP interference check sample %Rs met acceptance criteria.*

**Comment NDEP10:** The text states that qualifications were applied in Section 2.1.2. This is the section discussing metals internal standards and no outliers were noted in this Section. Perhaps it should refer to the blank section, 2.2.2.2?

**RTC 10:** Text will be revised to reflect correct sections.

- 11. Section 5.3, Comparability (First Paragraph)** – *Sample integrity criteria were met. Sample preservation and holding times were within QC criteria with the exceptions noted in Section 3.2.1.*

**Comment NDEP11:** The text notes a sample preservation/holding time outlier requiring qualification in Section 3.2.1, however, no outlier was noted in this section. Please correct the text in Section 5.3 or 3.2.1 as necessary.

**RTC 11:** Section 5.3 will be revised.

## EDD Review

- 1. Table 5, Groundwater Elevations April 2016**

**Comment EDD1:** In the locations table, location\_id MCF-08A, MCF-08B-R, and UZO-17 appear to have the northing and easting reversed. Please correct these coordinates.

**RTC 1:** Northings and Eastings for the above referenced locations will be corrected

- 2. Section**

**Comment EDD2:** In the samples table, the litho and hydro fields are NULL and the sample\_top\_depth and sample\_bottom\_depths are 0 for RIT-6-20160422 and WMW5.58S-20160505 (not including blank samples). Please add this information or indicate if it is not available.

**RTC 2:** Data has been added for RIT-6-20120422. Data is not available for WMW5.58S-20160505.

**3. Table 4, Analytical Results of Groundwater Well Sampling April 2016**

**Comment EDD3:** In the results table, the result for PC-76-20160429 for bromide has a final\_validation\_qualifier of "J", but the validation\_reason\_codes field is NULL. Please provide a reason code for this record.

**RTC 3:** Reason code of "sp" has been added.

**4. Section (XX Paragraph) –**

**Comment EDD4:** The validation\_flag field contains entries of "Yes", but EDD guidance requires a T (true) or F (false). Please change the validation\_flag to the appropriate entry.

**RTC 4:** Validation\_flag field has been altered to contain a T (true) or F (false), no longer a "Yes"