Attachment C
Laboratory Data Validation Summary

Introduction

Thorough review of analytical data is performed to provide a mechanism for ongoing control and evaluation of data quality and provide measures of data quality in terms of accuracy, precision, representativeness, and comparability. The objectives for the analytical data are:

- To collect samples required for statistical assessment;
- To collect and analyze samples under controlled situations using standard methods; and
- To obtain usable and defensible analytical results.

With these objectives in mind, the analytical data generated during 2013 have been reviewed and validated by both lab and project personnel. The following sections summarize the data quality elements, and note any quality exceptions.

Sample Hold Times

Sample hold time for methods 1613b and MAS 8280 are listed as 1 year. All samples were tested within holding time.

Target Analyte List

Target analyte lists are provided for both methods in Table 4-2 of the QAPP, Attachment C, of the approved Work Plan (URS, approved May 3, 2013). All analytes were tested for in the respective methods.

Reporting Limits

The target reporting limits for both analytical methods are listed in Table 4-2 of the QAPP, Attachment C, of the approved Work Plan. Three hundred ninety-one (391) results were reported as below detected limit; however, the detection limits are greater than those listed in Table 4-2. Three hundred fifty-two (352) of these were associated with Method Blanks.

The remaining thirty-nine results were from the Method 8280 MAS results, as follows:

- One for 1,2,3,7,8-PeCDD
- One sample for 1,2,3,4,7,8-HCDD
- One sample for 1,2,3,4,7,8-HCDF

- Five samples for 1,2,3,7,8,9-HCDD
- Fifteen samples for 1,2,3,7,8-PCDD
- Fifteen samples for 2,3,4,7,8-PCDF
- One sample for 2,3,7,8-TCDF

All of the property samples with reporting limits greater than those listed in Table 4-2 had resulting estimated TEQ values less than 100 ppt. These elevated reporting levels did not impact remedial decisions.

Laboratory (Method) Blanks

Method blanks are discussed in Section 4.4.4 of the QAPP, Attachment C, of the approved Work Plan. Method blanks should be included in each analytical batch and result in concentrations less than the levels specified in Table 4-2 of the QAPP. There were twenty (20) exceptions where this did not occur, as listed below.

Method 8280 MAS

Three (3) results for OCDD had reported concentrations greater than the Target Method Reporting Limits provided in Table 4-2.

Method 1613b

There were seventeen (17) results for OCDD in method blank analyses with reported concentrations greater than the Target Method Reporting Limits:

Applying the appropriate toxic equivalency factor (TEFs) to the detected levels, each of these blanks has potential to result in less than 1 ppt TEQ. Based on these findings, there was very limited potential to have laboratory contamination, and remedial decisions were not affected.

Field Replicates

Field replicate specifications are provided in Section 4.4.2 of the QAPP, Attachment C, of the approved Work Plan. For 2013, the frequency of replicate analysis was 10%, with replicates equally representative of samples in both the North and East Areas. Overall, 822 DUs were tested, with 100 replicates run (overall 12.2% frequency). In the North Area, 766 decision units were tested overall, and replicates from nineteen (95) samples were tested (for a 12.4% frequency). In the East Area, 56 decision units were tested and replicates from seven (5) samples were tested (for an 8.9% frequency).

The acceptance criterion for the replicate results was a relative percent difference (RPD) of 30%. One sample exceeded the RPD acceptance criterion of 30%. This property had two replicates relatively close in concentration (177 and 200 ppt TEQ), and a third of 1,180 ppt TEQ. The resulting RPD was 110%, which is outside the range of acceptance. Due to the uncertainty associated with this property, a remedy was performed. The RPD of all replicates averaged 7 %, ranging from 0.3 % to 28 %, with one exception, described above. Based on these findings, field replicates were within the specified range for analysis frequency and repeatability, with a single exception and that property was remediated.

Ongoing Precision Recovery Samples

Each analytical batch should contain an ongoing precision recovery (OPR) sample, and the acceptance criteria are listed in Table 4 of Method 8280 MAS and Table 6 of Method 1613b. Recovered amounts are compared to the range specified in the appropriate method. Each analytical batch contained an OPR sample, and OPR samples were within the specified range for both methods.

Conclusion

Data generated as part of the 2013 implementation of the approved Work Plan are valid, and exceptions identified above do not significantly impact the quality or reliability of the data. All objectives for the data have been satisfied.