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To: Brandi Lubliner, WDOE
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Subject: Narrative for 2st Quarter Lab Results for IAA No. 1500077
Project #: SIC: F92AA

The following narrative summarizes the data quality issues encountered with the analysis of the WQ samples collected March, April and May 2015. The QC reports are attached.

1. Sample Preservation, Storage and Holding Time Compliance
   All samples met the preservation, storage and holding time limits listed in Table 17 of the QAPP.

2. Method Blank Contamination:
   Method blanks were analyzed at the frequency listed in Table 19 and no parameter was detected above the KCEL method detection limit.

3. Matrix Spikes (MS), lab control samples (LCS), Spike Blanks and Surrogates
   Matrix spikes, lab control samples, spike blanks and surrogates were analyzed at the frequency listed in Table 19 of the QAPP. All recovery values for these QC types were within acceptance limits listed in Table 20 except for the following:
   - The recovery of 144% for OrthoPhosphate in the LCS was above the lab limit of 120% for Batch WG138408. Since all other QC (matrix spikes and check standards) were acceptable, this high recovery is not expected to have influenced the accuracy of the sample data.
   - The recovery of 52% for Fluorene for the matrix spike for sample L62461-2 was slightly below the lower lab limit of 54%. Since the duplicate matrix spike for that sample was within the acceptance limits, no corrective action was taken and the results can be used without qualification.

4. Lab Duplicates (LD) and Matrix Spike Duplicates (MSD)
   Lab duplicates were analyzed at a frequency of at least 5% for all Metals, Conventionals and Microbiological methods. Matrix spike duplicates were analyzed at a frequency of 5% for the Organics parameters. The relative percent difference (RPD) was not calculated for any set of lab duplicates where both results were less than the RDL (quantitation limit). The measured precision for these 2 QC types were within the

acceptance limits listed in Table 20 of the QAPP when sample results were above the quantitation limit, with this exception:

a. The RPD for Total Phosphorus for Sample L62748-2 (Station 0038-OUGA for May) and its lab duplicate was 30%. Since both values were near the quantitation limit and the absolute difference was less than the MDL value, no data was qualified.

5. Field Replicates

A total of 6 sets of field replicates were collected during the 2nd quarter sampling events. All RPD results were within the limits listed in the QAPP (Table 20) except for:

a. Station 0050-WUGA for March:
    i. TSS, Turbidity and Fecal Coliform results showed RPD values of 91%, 81% and 67%, respectively. Since all three parameters showed similar trends, it is expected that there is a significant difference in the amount of suspended material between the original and the field replicate.
    ii. Napthalene results gave an RPD value of 120% but since both values were near or below the quantitation limit, it is expected that the variability would be greater than the 40% acceptance limit.
b. Station 0039-OUGA for March:
    i. Dissolved Copper results gave an RPD value of 72% but since the measured values were near or below the quantitation limit, it is expected that the variability would be greater than the 20% acceptance limit.
    ii. TSS and Turbidity results showed RPD values of 79% and 36%, respectively, well above the acceptance limit of 25%. Since both parameters showed similar trends, it is expected that there is a significant difference in the amount of suspended material between the original and the field replicate.
    iii. Napthalene results gave an RPD value of 50% but since both values were near or below the method detection limit, it is expected that the variability would be greater than the 40% acceptance limit.
c. Station 0036-WUGA for March:
    i. Napthalene results gave an RPD value of 86% but since both values were near or below the quantitation limit, it is expected that the variability would be greater than the 40% acceptance limit.
d. Station 0008-OUGA in March:
    i. Napthalene results gave an RPD value of 87% but since both values were near or below the method detection limit, it is expected that the variability would be greater than the 40% acceptance limit.
    ii. Turbidity results gave an RPD value of 45%. It is possible that there is a significant difference between the turbidity levels in the 2 sample containers.
e. Station 0074-OUGA in April:
    i. Napthalene results gave an RPD value of 53% but since both values were near the method detection limit, it is expected that the variability would be greater than the 40% acceptance limit.

f. Station 0048-WUGA in May:
   i. Napthalene results gave an RPD value of 129% but since the measured values were near the quantitation limit, it is expected that the variability would be greater than the 40% acceptance limit.
   ii. Total Chromium, Copper, Lead and Zinc results gave RPD values of 71%, 27%, 92% and 64%, respectively. The levels of these metals were below or near the quantitation limit thus were likely influenced by the expected variability at those concentrations.
   iii. Total Phosphorus results gave an RPD of 28% and both values were well above the quantitation limit. It is likely there is a significant difference between the phosphorus levels in the 2 sample containers.

6. Other Issues
   a. The differences between the total and dissolved metals for all samples were evaluated. If the result for the dissolved metal was only slightly above the total metal value and both results were less than the quantitation limit, no corrective action was taken. Two samples showed higher values for dissolved metals compared to the total metals results, when at least one value was above the quantitation limit and the relative difference was greater than 20%:
      i. Sample L62459-4 (0009-WUGA) had a dissolved copper result of 2.01 ug/L while the total copper result was 1.02 ug/L. Both the dissolved and total portions of this sample were reanalyzed and these original results were confirmed.
      ii. Sample L62461-5 (0039-OUGA) had a dissolved copper result of 0.594 ug/L while the total copper was 0.32 ug/L. Both samples were reanalyzed and the original results were confirmed.

   Since the dissolved and total metals samples are collected as separate grab samples, it is suspected this difference is due to variability between the grab samples rather than a systematic error.

   b. To better determine the source of the Naphthalene detected in the transfer blank collected in January, a bottle blank using lab RO water and a 1-L amber glass container was prepared in the lab on March 30 (L62459-7). The sample was stored with the field samples and analyzed for PAHs on April 3. All PAH results were below the KCEL detection limit with the exception of Naphthalene which was measured at 0.017 ug/L. Since Naphthalene was consistently detected in both blanks, it is likely coming from the sample container or from lab contamination during sample storage. All blank results have been below the required reporting limit for Naphthalene for this project (0.1 ug/L). Note: Because of the consistent detection of Naphthalene in the equipment and transfer blanks and the highly variable responses observed in the field replicates, it is expected a variable source of contamination is influencing the measured values in the field samples.