



## King County

Department of Natural Resources and Parks  
Water and Land Resources Division

### Environmental Laboratory

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To: Brandi Lubliner, WDOE  
From: Colin Elliott  
Subject: Narrative for 1<sup>st</sup> 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 January and February, 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.
  - Note: The KCEL acceptance limits listed in the attached Lab QC reports may not always match the limits listed in the QAPP (Table 20). The recovery results were also compared to the limits in the QAPP and no exceedances were present.
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 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. The relative percent difference (RPD) for any set of lab duplicates where both results were less than the RDL (quantitation limit) was not calculated and therefore was not compared to the acceptance limits. Values measured at concentrations below the quantitation limit are not expected to meet method precision limits.

5. Field Replicates

Two sets of field replicates were collected during the January sampling event for stations 0038-OUGA (L62026-2, -6) and 0002-WUGA (L62027-1, -6). No field replicates were collected during the February events. All RPD results were within the limits listed in the QAPP (Table 20) except for:

a. Station 0038-OUGA:

- i. Dissolved Zinc results showed an RPD of 200 % since the original value was <MDL and the duplicate was measured at the MDL (1 ug/L). It is not expected that the precision measured at that level will be within the 20% acceptance limit.
- ii. Fecal coliform results showed an RPD of 67% since the sample and field replicate showed counts of 1 and 2 CFU/100mL, respectively. Counts that close to the reporting limit of 1 CFU/100 mL typically show significant variability.
- iii. Total Phosphorus was measured in the sample at 0.0055 mg/L and <0.005 mg/L in the field replicate. Both values are below the quantitation limit thus would not be expected to meet an RPD limit of 20%.
- iv. Benzo(b,f,k) fluoranthene was measured in the sample at 0.012 ug/L and <0.0094 ug/L in the field replicate. Both values are below the quantitation limit (0.047 ug/L) thus would not be expected to meet an RPD limit of 40%.

b. Station 0002-WUGA:

- i. Napthalene was measured in the sample at 0.0085 ug/L and <0.0047 ug/L in the field replicate. Both values are below the quantitation limit (0.0236 ug/L) thus would not be expected to meet an RPD limit of 40%.

6. Other Issues

- a. The field filtration for dissolved metals samples L62190-1 and -2 were potentially compromised by backflow at the start of filtration when the vacuum pump was incorrectly attached to the filtration unit. This would have potentially compromised the filter and allowed suspended material into the filtrate. All dissolved metals in these 2 samples, except arsenic in sample L62190-1, were below the detection limit. The dissolved arsenic value was equal to the total arsenic which was also below the quantitation limit. Even though it is not likely this impacted the data, all dissolved metals results for these 2 samples have been qualified with a J flag.

- b. Two samples showed higher values for dissolved metals compared to the total metals results:

- i. Sample L62189-1 had a dissolved copper result of 0.98 ug/L while the total copper result was 0.629 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.
- ii. Sample L62189-4 had a dissolved chromium result of 0.629 ug/L while the total chromium was 0.549 ug/L. Both samples were reanalyzed and the original results were confirmed. The percent difference in these 2 values is 14% which is within the expected precision of the method.