

Memorandum

From: Dave Dilks

Date: September 2, 2015

Project: SRRTTF3

To: SRRTTF

SUBJECT: 2014 Spokane River Synoptic Survey Field Audit

Introduction

The goal of the Spokane River Regional Toxics Task Force (SRRTTF) is to develop a comprehensive plan to reduce PCB inputs to the Spokane River and to bring the river into compliance with applicable water quality standards for PCBs. A review of existing data indicated that sources of PCBs are very diffuse throughout the watershed, such that more data will be needed to support development of a management plan with targeted control actions (LimnoTech, 2013). To accomplish its goal, the SRRTTF had determined that it needed to develop a clearer understanding of in-stream loadings and source contribution to the Spokane River between its headwaters at the outlet of Lake Coeur d'Alene and the Nine Mile Dam. A dry weather synoptic survey was conducted in August 2014 to begin to address this need.

This document contains the results of a field audit conducted to verify that the field activities conducted were consistent with the requirements of the Quality Assurance Project Plan developed for the field monitoring (LimnoTech, 2014).

Audit Findings

The Quality Assurance Project Plan (QAPP) identified numerous requirements related to field activities. These include:

- Field Staff Training
- Field Sampling Quality Control
- Field Measurements Quality Control
- Field Completeness
- Field Data and Information Management

Audit findings are provided below for each of these categories, along with a summary of deviations from the QAPP.

Field Staff Training

Consistent with the QAPP, training sessions were conducted by LimnoTech Field Manager Chris Behnke for all field staff on proper sampling technique, sample handling and submission and general field procedures prior to conducting the first sampling event. Field staff also received a safety briefing prior to the first sampling event.

Gravity Environmental provided training to field crews regarding the operation, maintenance and calibration of field equipment including multi-parameter probes and all other on-site equipment

used throughout the field program. Standard Operating Procedures (SOPs) for program elements included in the QAPP were distributed to staff and available at all times.

Field Sampling Quality Control

Field sampling QC consisted of collecting field QC samples to help evaluate conditions resulting from field activities. Field QC samples consisted of trip blanks, transfer blanks and replicate samples. Trip blanks (controlled water samples produced by the laboratory) were used to evaluate whether contaminants had been introduced into the samples due to exposure to ambient conditions or from the sample containers themselves. The trip blanks accompanied the sampling equipment into the field and were stored with the analytical samples. Transfer blanks were taken on days where wastewater effluents were sampled, requiring exposure of open sample bottles to the atmosphere. Transfer blanks were obtained by pouring deionized water into the sample container in the field. Trip/transfer blanks were collected at the required frequency of 10% or one blank per sampling round.

Field replicate samples were collected to evaluate the precision of sample collection through analysis. Field replicates were collected at designated sample locations by filling two distinct sample containers for each analysis. Field replicate samples were preserved, packaged, and sealed in the same manner described for the surface water samples. The samples were submitted as “blind” samples to the laboratory for analysis. Field replicates were collected for each analytical parameter at a frequency of 10% or one field replicate per sampling round, whichever was less.

Field Measurements Quality Control

Field instruments were calibrated according to the manufacturer’s requirements and were calibrated daily.

Field Completeness

Field completeness was determined by the number of measurements collected versus the number of measurements planned for collection. Due to a variety of circumstances, sometimes not all samples scheduled to be collected can be collected (e.g. a creek is dry, equipment malfunctions). The completeness criterion for all measurements and sample collection was 95 percent. 100 percent of the planned samples were obtained during the synoptic survey, so the field completeness requirement was satisfied.

Field Data and Information Management

Field data reporting was conducted principally through the transmission of field log sheets containing tabulated results of all measurements taken in the field, and documentation of all field calibration activities. Field log sheets served as a daily record of events, observations, and measurements during field activities. A full compilation of all field log sheets is provided in Gravity (2015), as well as Appendix B of the SRRTTF Phase 2 Technical Activities Report (LimnoTech, 2015)

Field System Audits

Field system audits were conducted by LimnoTech Field Manager Chris Behnke to ensure that the actual field procedures conformed to those documented in the QAPP and associated SOPs. The audit included a check of all field records and a review of all activities to document if procedures



were conducted in compliance with the specified documentation. Field notes related to these audits are included as an Appendix to this memorandum.

Deviations from the QAPP

As noted in Gravity (2015), a few minor deviations from the QAPP occurred during the field activities. They are listed below, along with a description of any corrective actions (CA) applied (when feasible):

- The Hayden Area Regional Sewer Board WWTP (SR-13) did not discharge to the Spokane River during the low flow season, such that that sampling SR-13 during August would not provide useful information for the mass loading model. Therefore, LimnoTech approved a deviation from the SAP to not sample at SR-13 during the August 2014 synoptic sampling event.
- Sample at SR-4 was not collected on August 12, 2014 due to storm with strong winds and lightning; CA: sample was collected the following day on August 13, 2014.
- Samples shipped to AXYS Analytical Services on 8/18/14 were held up overnight in Memphis, Tennessee by FedEx due to a FedEx system-wide computer shutdown. These samples arrived to the lab a day later than planned and were slightly above the recommended temperature. CA: none warranted.
- Flow at SR-9 was not measured on August 12, 2014 and on August 22, 2014 due to an equipment malfunction resulting from water exposure; CA: none warranted
- AXYS notified Gravity that two samples arrived broken; the samples included one blind duplicate (Replicate #6) and the SR9 sample collected on 8/20/14 locations; CA: the SR9 archive sample was picked up from SVL later to AXYS for PCB analysis.
- Sample collected at SR-15 a day (August 23, 2014) before planned due to overnight rainfall event: CA: none warranted.

Conclusions

All aspects of the field sampling effort were conducted in accordance with the QAPP. For the few minor deviations from the original QAPP that occurred, corrective actions were taken to ensure that the data generated was consistent with the data quality objectives of the study.

References

- Gravity Consulting, L.L.C., 2015. 2014 Spokane River Field Sampling Report. Prepared for Spokane River Regional Toxics Task Force, Spokane WA. January, 2015
- LimnoTech, 2015. Spokane River Regional Toxics Task Force Phase 2 Technical Activities Report: Identification of Potential Unmonitored Dry Weather Sources of PCBs to the Spokane River. Prepared for Spokane River Regional Toxics Task Force, Spokane WA. August, 2015.
- LimnoTech, 2014. Quality Assurance Project Plan: Spokane River Toxics Reduction Strategy Study. Prepared for Spokane River Regional Toxics Task Force, Spokane WA. July, 2014.



LimnoTech, 2013. Identification of Data Gaps-Final. Memorandum from Dave Dilks, Tim Towey and Kat Ridolfi to Spokane River Regional Toxics Task Force. November 14, 2013.



Appendix: Field Manager Field Notes

