

QUALITY ASSURANCE PROJECT PLAN

Spokane River Toxics Reduction Strategy Study

Draft: Addendum 1

July 14, 2014

Introduction

The purpose of this QAPP addendum is to describe additional monitoring and studies that will be performed as part of the Spokane River Toxics Reduction Strategy Study. Confidence Interval Testing was performed by Ecology in May 2014 to help inform the planned sampling program described in the QAPP and SAP. The Confidence Interval Testing (LimnoTech, 2014b) was designed to generate information both on temporal variability of PCB concentrations, as well as estimates of measurement uncertainty for the low PCB concentrations occurring in the Spokane River. Five sampling events were conducted in May 2014 on the Spokane River at the State Park Parcel at River Mile 87, located between Mirabeau and Sullivan Parks (referred to as the Mirabeau Park site) and three sampling events at the Lake Coeur d'Alene outlet. Samples were collected for both discrete and composite analyses at Mirabeau Park, while discrete samples were collected at the Lake Coeur d' Alene outlet.

The results of the Confidence Interval Testing indicate that PCB concentrations were very low at both stations, with lab blank-corrected concentrations averaging 29 pg/l at the Lake Coeur d'Alene Outlet and 33 pg/l at Mirabeau Park (LimnoTech, 2014c). Concentrations observed in trip blanks were at similar levels to those observed in field samples, making it difficult to distinguish an environmental signal from the noise in laboratory measurement. Based on these results and the absence of suitable alternatives for meeting existing data quality objectives at the present time, the Synoptic Survey will be conducted as planned in August 2014 and the draft QAPP (5/1/14) data quality objectives have been revised as follows:

- a. The data shall be sufficient to support a semi-quantitative mass balance assessment, and be able to identify stream reaches where incremental loads lead to a significant increase in river concentrations.
- b. The data shall be sufficient to support an adaptive management approach, where grab sample results can be directly compared to results from other sampling methodologies to allow determination of an improved monitoring approach for future phases of this work.

Additional Studies

Alternative sampling methodologies (e.g. CLAM sampler, Gravity high volume sampler) were investigated to determine whether their use could satisfy existing data quality objectives. While each method showed promise to eventually satisfy project requirements, neither has been developed/demonstrated to the extent that they are currently a viable replacement to grab sampling. Therefore, additional studies have been planned to address these issues. These studies include:

1. High volume sampling on the Spokane River with Gravity High Volume Sampler.
2. CLAM sample comparison to grab sample results conducted by Axys.

GRAVITY HIGH VOLUME SAMPLER

During the Synoptic Survey to be conducted in August 2014 and described in the QAPP and SAP, additional samples will be collected using the Gravity High Volume Sampler at the following locations:

- Lake Coeur d'Alene outlet
- Spokane River below Ninemile Dam

Samples will be collected on two separate days during the course of the Synoptic Survey. Approximately 400 to 500 liters of water will be pumped through the high volume sampler. One field blank will be collected by pumping 40 liters of reagent water through the sampler and submitting the sample for PCB analysis. The samples will be analyzed for PCB (using EPA Method 1668C) at Axys Analytical as specified in the QAPP.

The results of this additional sampling will be compared to the data quality objectives and the grab sample results to determine data usability. The actual sampling protocols will be evaluated to determine feasibility for future sampling events.

CLAM EXPERIMENT

In 2013 GeoEngineers conducted a study at the Kaiser facility in Spokane to compare the results of samples collected with CLAMs and 24 hour composites (GeoEngineers, 2014). The CLAM was deployed for 24 hours at outfall 001. An automatic sampler was used to collect the 24 hour composite, collecting 500 ml every 15 minutes. The results of this study found that average PCB concentrations calculated from the CLAM sample results were higher than the 24 hour composite average concentrations. CLAM-derived PCB concentrations calculated using the actual volume of water that flowed through the sampling device ranged from 1.5 to 1.6 times greater than the correlative 24 hour composite sample results.

The Washington Department of Ecology also conducted a study comparing CLAM samples to surface water grab composites in 2012-2013 (Ecology, 2014). The purpose of the study was to test the efficacy of several different collection methods for PCBs in the Spokane River. CLAM samplers were deployed at the Upriver Dam and the Ninemile Dam in the fall of 2012. Surface water grab samples were collected at Stateline, Upriver Dam, Sandifer Bridge, Ninemile Dam and Chamokane. The results of the grab sample analyses showed that PCB congeners were not discernible from background noise when compared to the transfer blank and the lab method blank samples. The CLAM sample results showed a clear signal one to two orders of magnitude higher than the lab blank sample.

Axys Analytical is designing an experiment to determine the source of the variability in these sample results. In order to have water with high enough PCB concentrations to get above the noise, samples will be collected from the Kaiser outfall, similar to the study that was performed by GeoEngineers. Additional samples may be collected from another another river system with higher PCB concentrations than the Spokane River, if necessary. The samples will be analyzed for PCB (using EPA Method 1668C) at Axys Analytical as specified in the QAPP. The specific experiment details are being provided by Axys.

Analytical issues to be evaluated include:

- Potential for loss of PCBs in sampling containers and equipment (grab samples)
- Potential for leaching of PCBs from the CLAM disk
- Effect of solids on both types of sample results

References

Ecology, 2014. Technical Memorandum: Spokane River Toxics Sampling 2012-2013 – Surface Water, CLAM and Sediment Trap Results. EA Project Code: 12-027.

GeoEngineers, 2014. Evaluation of CLAM Sampling Technique TOF Inlet and Outfall 001, Kaiser Aluminum Trentwood Facility, Spokane, WA. May 15, 2014.

LimnoTech, 2014b. Sampling Recommendations for Spokane River PCB Confidence Testing Memorandum from Dave Dilks to the Spokane River Regional Toxics Task Force. April 7, 2014.

LimnoTech, 2014c. Confidence Testing Results from Spokane River PCB Sampling – Draft. Memorandum from Dave Dilks to the Spokane River Regional Toxics Task Force. July 15, 2014.