DRAFT FINAL - 2015 Spokane River

Field Sampling Report

SPOKANE RIVER REGIONAL TOXICS TASK FORCE

WASHINGTON AND IDAHO

Prepared for
SRRTTF

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1. Introduction

This field sampling report provides a summary of the methods used and a summary of the information gathered during the August 2015 Spokane River sampling event for the Spokane River Regional Toxics Task Force (SRRTTF). This work was performed in support of the SRRTTF's development of a comprehensive plan to reduce toxic pollutants in the Spokane River (study area is depicted on Figure 1) and, specifically, to reduce polychlorinated biphenyls (PCBs). The 2015 sampling event was intended to supplement the synoptic sampling conducted in August 2014.

The Synoptic Survey conducted in 2014 was intended to identify potentially significant dry weather sources of PCBs to the Spokane River between Lake Coeur d'Alene and Nine Mile Dam and to provide data for a mass balance evaluation. The results of the 2014 data collection indicated the likelihood of a groundwater PCB source between Barker Road and the Trent Avenue Bridge, and the potential of an additional groundwater PCB source between the Trent Avenue Bridge and the Spokane USGS gage (LimnoTech, 2015a). The SRRTTF Technical Track Work Group recommended, and the Task Force as a whole approved, conducting a 2015 Dry Weather Synoptic Survey to confirm the findings of the 2014 Synoptic Survey that focuses on a narrower spatial area than occurred during 2014.

The Quality Assurance Project Plan (QAPP) Addendum (LimnoTech, 2015b) provided the 2015 sampling plan. Gravity Consulting, LLC (Gravity) conducted the sampling in accordance with the procedural and analytical requirements described in the QAPP Addendum. The August 2015 surface water sampling event was conducted on the Spokane River between the gage station at Greenacres, Washington and the gage at Spokane, Washington immediately upstream of the confluence with Latah (Hangman) Creek. Sampling was also conducted at discharge points from several major municipal and industrial facilities along this segment of the river. Sample locations are shown on Figure 2.

2. Field Sampling

Environmental specialists from Gravity led the sampling event and collected samples along with a representative from LimnoTech. Sample collection commenced on August 18 and finished on August 22 of 2015. Gravity's sampling equipment, vessels, meters, personal protective equipment (PPE), vehicles and field lab were used to support the field event.

Surface water samples were collected at five locations in the Spokane River on five consecutive days between August 18th and 22nd, 2016. Water discharge samples were collected at three municipal and industrial facilities on August 18, 20, and 22. Sample locations identifiers, descriptions, global positioning system (GPS) coordinates, and samples collected are provided in Table 1 and locations are depicted on Figure 2.

Unless otherwise noted within this report, the sample collection procedures described within this Field Report were conducted in accordance with the following planning documents referenced below:

- Sampling & Analysis Plan (SAP) (LimnoTech, 2014)
- Quality Assurance Project Plan (QAPP) Addendum (LimnoTech, 2015b)
- Health and Safety and Environmental Plan (Gravity, 2014)
- Field Implementation Plan (Gravity, 2015)

2.1. Surface Water Collection Methods

Gravity staff collected surface water grab samples at locations prescribed in the QAPP Addendum and using methods consistent with those described in the standard operating procedures (SOPs) described in Appendix C of the SAP. Field sample collection forms are provided in Appendix A. At most sample locations samples were collected by hand using “clean hands” and “dirty hands” methodology and direct immersion techniques. These methods reduce the likelihood of any cross-contamination from direct (e.g., handling dirty equipment) or indirect (e.g., dust or air transport) sources. Samples were collected using a dip sampler at a few of the facilities due to safety concerns. These sites are identified along with justification for not using direct immersion in Table 2. Appendix B provides some photographic documentation taken during the sampling event.

All sample compositing and filtering occurred, as necessary, at the laboratories after all samples were collected. Each sampling method used is further described below and additional details were provided in the SAP.

Direct Immersion Sampling using Modified Clean Methods – This was the preferred sampling method as it reduces the potential for confounding contamination. Clean sampling procedures, developed by the U.S. Environmental Protection Agency (USEPA) and described in EPA Document 1669 (USEPA, 1996), are designed to minimize inadvertent contamination during the collection and handling of the sample in the field as well as in the laboratory by preventing contact of the sample with other materials and minimizing exposure to the air. The modified clean method used for the Spokane River sampling is virtually identical to the clean sampling; however, not all of the personnel protective equipment was used (i.e., Tyvek was not worn due to concerns with heat and dust masks were not worn as they are intended to prevent mercury contamination). Generally, under this method, the gloved “dirty hands” sampler opens a Ziploc bag so the gloved “clean hands” sampler can reach in to grab the sample container. The “clean hands” sampler submerses the container under the water surface and then opens and closes it while submersed to avoid any potential atmospheric contamination. The sampler faces upstream during the sampling to avoid any disturbed substrate from getting in the container. The container is put back into the Ziploc by the “clean hands” sampler. Therefore, only one sampler (“clean hands”) touches the container and this sampler does not handle any other materials prior to sampling.

Dip Sampler using Modified Clean Methods – For a few effluent sample locations where safety concerns prevented direct immersion methods, then a long handled dip sampler was used. As described for direct immersion, the "clean" sampling procedures were also used for this method.

2.1.1. QA/QC Samples

In addition to normal grab samples, quality assurance/quality control (QA/QC) samples were collected daily. QA/QC samples included a daily blank using clean water provided by AXYS to determine whether sample procedures, equipment, or the atmosphere itself may confound the analytical results. Additionally, a blind replicate sample (i.e., duplicate) was collected daily at different locations throughout the sampling event. Daily blank and blind replicates (along with corresponding normal samples) are identified in Table 3.

2.1.2. Field Measurements

Field measurements of temperature, pH, specific conductance, turbidity, and dissolved oxygen were also collected for sample taken. Field measurement results are presented in Table 4 and Field Parameter Logs are provided in Appendix C.

2.1.3. Sample Handling, Transport and Custody

Sample handling, transport, and custody were performed as outlined in Section 5 of the SAP. After sample containers were filled, they were packed in coolers on ice. Samples were kept in a secure vehicle and repacked in ice, as necessary, until delivery or shipment to the appropriate laboratories. Coolers were transferred to laboratories using the following shipping and chain-of-custody procedures:

- Samples were packaged and shipped in accordance with U.S. Department of Transportation regulations as specified in 49 CFR 173.6 and 49 CFR 173.24;
- Individual sample containers were packed to prevent breakage;
- The coolers were clearly labeled with detailed sample collection information (name of project, time and date container was sealed, person sealing the cooler) to enable positive identification;
- Chain-of-custody forms were enclosed in a plastic bag and placed inside lid of the cooler; and
- Signed and dated chain-of-custody seals were placed on the outside of all coolers prior to shipping.

Samples analyzed for total suspended solids, total dissolved solids, total organic carbon, and dissolved organic carbon were hand delivered by Gravity staff to the Silver Valley Analytical Laboratory (SVL) in Coeur d'Alene, Idaho. Laboratory staff delivered samples on the same day to the SVL Analytical laboratory in Kellogg, Idaho. Copies of the chain-of-custody forms are provide in Appendix D.

All archived samples were also sent to SVL Analytical for storage at <4˚C. Samples to be analyzed for low level PCBs were delivered to FedEx in Spokane, Washington for shipment to the AXYS Analytical Services (AXYS) in Sidney, British Columbia.

2.1.4. Deviations from the SAP

No deviations from the sampling plan and schedule occurred.

3. Surface Water Analytical Testing

Surface water sampling analysis was conducted in accordance with QAPP Addendum and as summarized in Section 2 of this Field Report. Guidance included specification of methods, method report limits, and applicable QA/QC measures. The samples were analyzed for the parameters listed in Table 5. Results from the laboratory analyses were directly sent to the SRRTTF for input into a database and summarized in a report by LimnoTech.

4. Stream Flow

For locations without active stream gages, flow measurements were obtained in the field using a Sontek M-9 River Surveyor. In-field flow measurements were collected at the following locations:

- SR9 - Barker Road
- SR8a - Mirabeau Park
- SR7 - Trent Bridge Gage

The procedures followed for the flow measurements were as described in Appendix A of the QAPP Addendum. The results of the in-field stream flow data are presented in Table 5.

5. Summary

The goal of the 2015 sampling event was to collect supplemental information necessary to provide additional data in a focused segment of the Spokane River where PCBs in groundwater are suspected to be migrating to the river. Surface water samples from the Spokane River and discharge samples from municipal and industrial effluents were collected between the gage station at Greenacres, Washington and gage at Spokane, Washington immediately upstream of the confluence with Latah (Hangman) Creek Samples were sent by Gravity staff to AXYS for low level PCB analysis and to SVL for TSS, TDS, TOC, and DOC analyses. In-field stream flow data were also obtained to update the previous mass balance assessment.

The data obtained during the August 2015 sampling event will be used to update a mass balance assessment and to support the identification of potential PCB sources to the Spokane River ecosystem.

Additionally, the data collected will provide important information to be used to make informed planning decisions for potential future field events.

6. References

Gravity Consulting, LLC. 2014. *Health and Safety and Environmental Plan*. Submitted to the Spokane River Regional Toxics Task Force (SRRTTF) on August 11, 2014.

Gravity Consulting, LLC. 2015. *Field Implementation Plan*. Submitted to the Spokane River Regional Toxics Task Force (SRRTTF) on August 17, 2015.

LimnoTech. 2014. *Sampling & Analysis Plan – Spokane River Toxics Reduction Strategy Study*. Submitted to the Spokane River Regional Toxics Task Force (SRRTTF) on July 31, 2014.

LimnoTech, 2015a. 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. DRAFT July 22, 2015

LimnoTech. 2015b. *Quality Assurance Project Plan – Addendum 1, Spokane River Toxics Reduction Strategy Study*. Submitted to the Spokane River Regional Toxics Task Force (SRRTTF) on August 3, 2015.

U.S. Environmental Protection Agency (USEPA). 1996. *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Levels*. July.

APPENDIX A – FIELD SAMPLE COLLECTION LOGS

APPENDIX B – FIELD PHOTOGRAPHS

APPENDIX C – FIELD PARAMETER LOGS

APPENDIX D – CHAIN-OF-CUSTODY FORMS