Recommendation for a Long Term PCB Monitoring Plan for the Spokane River
Technical Track and Fish Work Groups
April 15, 2020

Summary

The Technical Track and Fish Work Groups developed recommendations regarding a long term plan to address the Spokane River Regional Toxics Task Force's objective of demonstrating progress toward achievement of the applicable water quality criteria for PCBs in the Spokane River. The plan consists of monitoring the PCB content of one year old rainbow trout, along with water column PCB concentrations measured using semipermeable membrane devices (SPMDs). Monitoring is recommended to occur every other year, with fish being collected once per sampling year and water column being sampled three times per sampling year. The budget is on the order of $189,000 to cover the first year of monitoring. The intent is to begin water quality sampling during the summer low flow period this year.

Background

One of the key missions of the Task Force is to make measurable progress toward meeting applicable water quality criteria for PCBs. Demonstrating that this progress is occurring requires a long-term monitoring program, and development of such a program was identified as a priority activity as an outcome of the May, 2019 Data Synthesis Workshop. The Technical Track and Fish Work Groups have been working since early 2020 to develop a plan for this monitoring program. This document presents the recommendations of those groups, and is divided into discussions of:

- Pre-Sampling Activities
- Sampling Methodologies
- Sampling Locations
- Sampling Frequency
- Cost

Pre-Sampling Activities

Pre-sampling activities will consist of preparation of a detailed study plan and budget for the water quality monitoring. It will also include preparation of a Quality Assurance Project Plan for the water quality monitoring suitable for approval by Ecology.

Sampling Methodologies

Sixteen sampling methodologies were evaluated covering a range of media (water column, sediments, and biota). Two of these methodologies are recommended for inclusion in the plan: 1) PCB in tissue of one year old rainbow trout, 2) Dissolved water column PCB concentration measured using SPMDs.

Tissue PCB of one year old rainbow trout was selected for the following reasons:

- Fish tissue PCB is one of the endpoints of regulatory concern
- Fish tissue PCB integrates the environmental exposure over the course of an entire year, reflecting the entire seasonal cycle of PCB concentrations
- Fish tissue bioconcentrates water column PCB concentrations, mitigating concerns that future PCB concentrations may be too low to be accurately distinguished from blank contamination.

Water column PCB concentration measured using SPMDs was selected for the following reasons:

- Water column PCB concentration is the other endpoint of regulatory concern
- Reductions in congeners that don't bioaccumulate (e.g. PCB11) will not be reflected in fish tissue PCB levels
- SPMDs bioconcentrate water column PCB concentrations, mitigating concerns that future PCB concentrations may be too low to be accurately distinguished from blank contamination.
- SPMDs integrate the environmental exposure over a month long period of deployment, smoothing out day to day variability in PCB concentration.

Sampling Locations

Sampling will encompass locations ranging from the WA/ID State Line to downstream of the majority of PCB loading sources from the Spokane area. Washington Department of Fish and Wildlife (WDFW) staff will conduct capture trout in six reaches:

1. WA/ID State Line to McMillan Road
2. Flora Road to Donkey Island
3. Upriver Dam to Crestline Street
4. Crestline Street to Division Street
5. Water Street to and T.J. Meenach Bridge; and
6. Riverside Water Reclamation Facility to approximately 650 m below the effluent pipe.

Gravity Consulting will deploy SPMD samplers at four locations:

1. WA/ID State Line
2. Upriver Dam
3. Upper Falls
4. Ninemile Dam

Sampling Frequency

Sampling frequency covers: 1) the number of events required to represent an entire year, and 2) the period of time between years to be sampled. Fish sampling will be conducted once per sampling year, as fish tissue PCB concentrations integrate environmental exposure over an entire year. SPMD samplers will be deployed one month at a time during the three major seasonal flow regimes in the Spokane River: high spring flow, low summer flow, and moderate winter flow. The current plan calls for sampling of both fish and water column to be conducted every other year. Should resources not be available to support this level of effort, water column sampling could be conducted every for years.

Cost

The total cost to the Task Force for the first year of sampling is roughly $189,000, with $67,000 for fish and $122,000 for water column. The tables below provide a breakdown of component costs, based on the assumption that: 1) Gravity Consulting is conducting the field work, 2) SGS AXYS is performing laboratory analyses, and 3) WDFW is conducting the fish sampling, and 4) LimnoTech is conducting other aspects of the work (SPMD work plan and QAPP, data validation, reporting).

Fish Sampling:

Task	**Cost**
Sampling	$19,000
Laboratory Analysis	$38,000
Data Validation/Assessment/Reporting	$10,000
Sub-Total	**$67,000**

Water Column Sampling:

Task	**Cost**
Work Plan Development	$9,000
QAPP	$7,000
Sampling effort	$57,000
Sampling devices	$14,000
Laboratory Analysis	$25,000
Data Validation/Assessment/Reporting	$10,000
Sub-Total	**$122,000**

Should the Task Force not have the resources available to devote nearly $200,000 to long term monitoring every other year, the option exists to conduct the fish monitoring every other year and the water quality monitoring every fourth year.