UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
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WATER
DIVISION

Public Comments Received on the Spokane and Little Spokane Rivers PCBs TMDL from

May 15 through July 15, 2024

September 2024

The EPA has compiled the public comments received on the draft Spokane and Little Spokane Rivers TMDL for polychorinated biphenyls (PCBs) from May 15 through July 15, 2024. The EPA received comments from 13 entities, listed below.

Avista
Hayden Area Regional Sewer Board
Idaho Department of Environmental Quality
Inland Empire Paper Company
Kaiser Aluminum
Liberty Lake Sewer District
National Council for Air and Stream Improvement, Inc
Northwest Pulp and Paper
City of Post Falls Public Works Department
City of Spokane Public Works
Spokane County Public Works
Spokane Riverkeeper
Washington Department of Ecology

You can also find public comments that the EPA received on the draft Spokane and Little Spokane Rivers PCBs TMDL from May 15 through July 15, 2024 at [insert website].

If you experience a problem reading this document with assistive technology, please contact us at (R10_Web_Team@epa.gov).

SENT VIA EMAIL TO: SpokaneRiverTMDL@epa.gov

July 15, 2024

Gunnar Johnson
U.S. Environmental Protection Agency

RE: **Avista comments on EPA's Draft "Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads"**

Dear Mr. Johnson:

Avista appreciates the opportunity to provide comments on the draft *Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads (TMDL)*. Our comments are provided below.

Section 3.1 - Overview of PCB Sources - The second sentence of the second paragraph of the draft TMDL indicates a large volume of PCB-containing transformers were present in the watershed. As currently drafted, Section 3.1 states:

> "*For decades, electric utilities such as Avista Utilities, Inland Power and Light, and others deployed tens of thousands of transformers collectively containing hundreds of thousands of gallons of insulating oils with high concentrations of PCBs throughout the Spokane River basin.*"

As a utility we aren't aware that large a quantity of transformers ever existed in the watershed and question whether EPA's source of information is accurate. In 2015, the Washington Department of Ecology (Ecology) surveyed Avista and other electric utilities and created an inventory and current state of PCBs in electrical equipment. This information was consolidated into Ecology and the Washington State Department of Health's 2015 Chemical Action Plan (Publication No. 15-07-002) which provides on page 51,

> *"It is not appropriate to use national estimates or estimates from other regions for Washington State. Compared to other regions of the country, public utilities in Washington State have been the most progressive in testing equipment for PCBs and disposing of equipment with PCBs (Mark Pennell, personal communication)."*

In addition, the second paragraph describing potential electrical utility sources of PCBs should also be revised to align with the 2016 *Magnitude of Source Areas and Pathways of PCBs in the Spokane River Watershed* (LimnoTech) and the 2016 *Comprehensive Plan to Reduce Polychlorinated Biphenyls (PCBs) in the Spokane River* (LimnoTech), both prepared for the Spokane River Regional Toxics Task Force (SRRTTF). For example, the draft TMDL report should reflect language from both these documents (page 7 and 19,

respectively) which clarifies that by the end of 2016, Avista will have no detectable levels of PCBs in their overhead transformers.

Also, the draft TMDL states:

> *"The sheer number of transformers resulted in a large number of small spills that, at the time, were often treated no more seriously than any other small oil spill. Larger spills, such as when transformers failed catastrophically or during their decommissioning and removal, were also not uncommon …"*

Again, Avista questions the accuracy of this statement. What is its source?

Avista implements an aggressive spill policy for discovering, reporting, mitigating, and removing oil spills. The spill response policy requires employees to respond and notify environmental staff immediately upon discovery, 24 hours a day, 7 days a week via a spill phone number. The purpose of this policy is to mitigate the potential of PCB-containing oil spill (or any petroleum product release) from damaging human health and the environment according to 40 CFR 761 (Toxic Substances Control Act, Subpart G "PCB Spill Cleanup Policy") and Ecology's Model Toxics Control Act (MTCA [Chapter 173-340 WAC]) spill response and reporting guidance. In addition, utility groups such as the Northwest Public Power Association have been collaborating with member electric utilities for over 30 years regarding the best practices for spill response, PCB/hazardous waste management and emerging environmental concerns. These steps have been beneficial in coordinating with state and federal agencies to improve various utilities best management practices to address spill and reporting requirements.

- **Section 3.1.2 – PCB Contaminated Industrial Sites and Section 3.1.6 – PCB-Contaminated River Sediments**. Text in both these sections should be revised to more correctly describe responsibility for the Spokane River Upriver Dam and Donkey Island Site (Site). For example, in 2001 the Ecology named four potentially liable parties (PLPs) for the Site. One declared bankruptcy in 2002 and the other two chose not to participate in the cleanup. Avista Development was the only PLP who signed the Consent Decree. It successfully completed remedial construction in 2006, followed by post-construction monitoring in 2008 and 2010. Ecology monitored the Site in 2020 and in its most recent (2022) 5-Year Review determined that the cleanup remedy continues to be protective of human health and the environment. The next Site monitoring is currently scheduled for 2025. The Site will also be monitored when flows in the Spokane River reach a 50-year or higher flood event.

  In addition, the text in Section 3.1.2 should be revised to clarify Avista's connection to the PCB contamination at the Site. As currently drafted, Section 3.1.2 states "*Avista operations are associated with PCB pollution upstream of the Upriver Dam (RM=80.2) and Donkey Island*." This statement may suggest to some that PCB releases to the Site resulted from Avista's utility operations. This is not accurate. Avista Development was identified as potentially liable for the Upriver Dam and Donkey Island Site because PCBs were found in samples collected in the mid-1990s from effluent and sediment in an

oxidation ditch at the Spokane Industrial Park (SIP). The U.S. government built the SIP as the Naval Supply Depot during World War II and owned the SIP property until 1960. The Naval Supply Depot handled a variety of materials that likely contained PCBs. The Depot also discharged wastewater to the Spokane River.

The mid-1990s sampling point was downstream from the junction of the SIP's discharge and that of a neighboring facility, so whether the PCBs came from one of the tenants at the SIP or from the neighboring facility was never determined. When the samples were collected, wastewater from the SIP was sent to the City of Spokane wastewater treatment system. It was not discharged to the Spokane River.

A company called Pentzer Development Corporation (Pentzer) owned the SIP at the time the samples were collected. Pentzer sold its interest in the SIP in 1996. In 1998, Pentzer merged with Avista Development. As a result of the merger, Avista Development assumed the liabilities of Pentzer.

No Avista utility operations ever occurred at the SIP. There is no evidence that Avista's operations contributed in any way to PCB contamination at the Upriver Dam and Donkey Island Site. For these reasons, we suggest that the sentence in Section 3.1.2 quoted above be revised to read as follows:

> "*Avista Development, Inc. was identified as potentially liable for PCB pollution upstream of the Upriver Dam (RM=80.2) and Donkey Island after it merged with another company that had owned the Spokane Industrial Park (SIP) when PCBs were detected in effluent and sediment from the SIP. The source of these PCBs is unknown*."

In addition, the sentence immediately preceding the one discussed above should be revised to read as follows:

> "*These include sites presently or previously owned or occupied by Avista Development, Inc., General Electric Co., Spokane Transformer Co., and Kaiser Aluminum that have been shown to be contaminated with legacy PCB pollution*."

- **Section 3.1.6 – PCB-Contaminated River Sediments.** The last paragraph of this section currently includes the following sentence: "*However, reductions of water column PCB concentrations to below applicable water quality criteria (WQC) is expected to be a methodical and incremental process even in the most ideal case and will likely unfold over years if not decades of sustained effort.*" This sentence should be revised to clarify that "*decades to centuries of sustained effort"* would be required to achieve these WQC. For example, as summarized in Table 20 of the draft TMDL, a 99.4% reduction in surface water PCB concentrations at the Spokane Tribe reservation would be necessary to achieve the WQC of 1.3 picograms per liter. Monitoring data compiled by the SRRTTF

and summarized in the draft TMDL indicate that little or no measurable reduction of surface water PCB concentrations has occurred in the Spokane River over the past decade. In other areas of the Pacific Northwest such as Commencement Bay where sustained, aggressive PCB source control efforts have been underway for decades, PCB concentrations in receiving waters have been reduced approximately 30 to 50 percent per decade (https://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/SMARMs/). If similarly aggressive source control efforts are to be implemented throughout the Spokane River watershed, WQC at the Spokane Tribe reservation will need 80 to 160 years to be achieved, and likely at a massive cost to local and regional communities.

Finally, the reference to "*Avista Corporation*" at the top of page 31 (Section 3.1.6) is incorrect. As explained above, the Avista entity that conducted the cleanup at the Upriver Dam and Donkey Island Site was Avista Development, Inc., not Avista Corporation.

Thank you for the opportunity to comment. Please feel free to contact me at (509) 495-8362 or marcie.clement@avistacorp.com, if you have any questions or wish to discuss these comments further.

Sincerely,

Marcie Clement

Marcie Clement
Water Quality Specialist | Environmental Affairs

Protecting the Aquifer Since '88

HAYDEN AREA REGIONIAL SEWER BOARD

10789 N. Atlas Road • Hayden, Idaho 83835 • (208) 772-3863

Ken Windram
Administrator

July 15, 2024

Gunnar Johnson
300 Desmond Drive SE, Suite 102
Lacey, WA 98503
johnson.gunnar@epa.gov

Subject: HARSB COMMENTS ON DRAFT EPA SPOKANE RIVER PCB TMDL

Mr. Johnson,

Please find below the public comments of the Hayden Area Regional Sewer Board for the EPA's proposed Spokane River Polychlorinated Biphenyls Total Maximum Daily Loads.

FACTUAL BACKGROUND

The Hayden Area Regional Sewer Board (sometimes hereafter referred to as "HARSB") is an Idaho Joint Powers Board comprised of three separate public entities: City of Hayden, Hayden Lake Sewer District and the Kootenai County Airport. HARSB owns and operates a publicly owned treatment works (POTW) which provides wastewater treatment services for each of its member entities. The POTW currently discharges to the Spokane River through Outfall 001 pursuant to existing Idaho IPDES Permit *ID0026590*. The existing Permit became effective on June 1, 2024.

GENERAL INFORMATION

The Hayden Area Regional Sewer Board is committed to the fundamental goals of the Clean Water Act and improving water quality as a means of protecting public health and supporting a high quality of life for our communities and our region. The HARSB takes seriously our role as a steward of water quality within the Spokane River watershed as demonstrated by completion of regular compliance sampling and reporting, development of various management plans, infrastructure investments to meet current discharge limits, and voluntary participation with the Spokane River Stewardship Partnership and Spokane River Regional Toxics Task Force (SRRTTF).

The Hayden Area Regional Sewer Board intends to continue this stewardship by operating the Hayden Area Regional Sewer Board Water Reclamation Facility utilizing all necessary staff, equipment, power, best management practices (BMPs) and chemicals to meet applicable water quality discharge limits while employing a sustainable, cost-efficient, and effective treatment methodology.

The HARSB spent time and resources reviewing the Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads Public Comment Draft (Draft TMDL). As a result, HARSB would like to provide the following comments related to the draft document.

Comment #1: The EPA needs to implement PCB source control under TSCA by reducing PCB level from 50.0 mg/l to less than 0.005 mg/l.

The EPA actions in pollutant source control, particularly in Pretreatment Programs, have been very successful in reducing pollutants from the wastewater.

It is extremely disappointing that the EPA has rejected Ecology's 2024 PCB Toxic Substances Control Act (TSCA) Petition, which specifically asked the EPA to take action to reduce the inadvertent generation of PCBs in consumer products. EPA allows concentrations of PCBs in inks and dyes up to 50 parts per million (ppm), a value over 38 billion times higher than the aspirational WQS of 1.3 pg/L See the table below. EPA has repeatedly stated that there is no evidence that PCBs at the allowed levels in inks and dyes pose a threat to human health. It is nonsensical under the Clean Water Act or environmental justice for EPA to chase unmeasurable levels of PCBs in the Spokane River when it allows concentrations of PCBs of 50 ppm in toothpaste, soap, shampoo, dish soap, laundry detergent, clothing, paint, caulking, and a myriad of other everyday products. EPA should not be allowing PCB to be added to the environment through manufactured goods at high concentration and then expect public water treatment facilities to remove them. Even if the draft TMDL is implemented, there can be no reasonable assurance of achieving water quality until EPA acts to remove PCBs from the stream of commerce..

The Board requests that the EPA reconsider its position with regard to Ecology's TSCA Petition and that the EPA take action to lower the acceptable PCB concentrations in consumer products to levels commensurate with the water quality standard imposed by this TMDL. A new TSCA PCB level of less than 5 parts per billion for all PCB's materials would reduce the introduction of PCB's into environmental.

Relationship Between the Federal Allowance for PCBs in Products and various Water Quality Standards

Reference	PCB Concentration (parts per quadrillian)
Federal TSCA PCB Allowance	50,000,000,000.0
HARSB Average Effluent	70.0
EPA Water Standard	9.0
Spokane Tribe Water Standard	1.3

In response to these comments, please respond to the following questions:

1. **Does the EPA contend that it is possible to achieve the PCB water quality criteria without TSCA reform? If so, please explain in detail how that is possible or reasonable.**

2. **Why is the EPA refusing to reform the TSCA PCB Federal material allowance as a pollutant source control action?**

Comment No. 2: EPA cannot rely on an unapproved test methods to apply numeric water quality criteria.

The EPA-approved test method in 40 C.F.R. Part 136 for measuring PCBs is Method 608.3. 40 C.F.R. § 136.3 Table 1C, Part 136, Appx. A, Meth. 608.3. In 2023, the EPA issued a proposed rule for its newest methods update, again designating the most recent version of Method 608 as its only 40 CFR Part 136 approved method for measuring PCBs.[1]. Under the EPA approved water quality standards for the state of Washington, Ch. 173-201A WAC, only EPA approved test methods may be used to apply water quality standards. WAC 173-201A-260(3). With respect to test methods, the standards state: The analytical testing methods for these numeric criteria must be in accordance with the "*Guidelines Establishing Test Procedures for the Analysis of Pollutants*" (40 C.F.R. Part 136) or superseding methods published. WAC 173-201A-260(3)(h).

The EPA approved water quality standards for Washington further require that in applying numeric criteria for water quality, Ecology, in this case EPA, "will give consideration to the precision and accuracy of the sampling and analytical methods used." WAC 173-201A-260(3)(g) It is undisputed that Method 1668C is an inherently unreliable water quality test method. EPA has repeatedly declined to approve Method 1668C as a 40 C.F.R. Part 136 method for this very reason. One of the primary concerns with Method 1668C was the "ubiquitous problem of background contamination." After considering this data and the comments, the EPA declined to approve Method 1668C.

As pointed out by the Washington Supreme Court, Ecology has made representations regarding the unreliability and inaccuracy of Method 1668C: "[a]s Ecology points out, Method 1668C is unreliable because that test does not allow Ecology to determine whether any of the PCBs detected come from the discharger, the test container itself, or the ambient air."

The EPA has relied on Method 1668C data from surface water sampling that was conducted at the direction of the Spokane River Regional Toxics Task Force (SRRTTF) for the purposes of developing a semi-quantitative assessment for PCB sources to the Spokane River. The data was not collected for regulatory use in NPDES permits or a TMDL. SRRTTF Quality Assurance Project Plans have made clear that its data collection efforts were "not intended to satisfy the requirements of data collection needs for regulatory undertakings such as evaluating compliance with applicable water quality standards for PCB or developing information for Load or Waste load Allocations."[2]

Method 1668C is prone to interference and is particularly unreliable at low PCB concentrations. This is supported by the Ecology PWM, which states:

- "When PCB concentrations are very low, background contamination in lab or field blanks may interfere with the calculation of total PCB." *Id., at* __ [PWM, ay 255].

[1] 88 Fed. Reg. 10724, 10761-62 (Feb. 21, 2023)
[2]LimnoTech, Quality Assurance Project Plan, Spokane River Toxics Reduction Strategy Study, at 220 (July 23, 2014)

- "[T]here are known problems in regard to repeatability and accuracy of the [1668C] method in additional to the expense of the analysis." *Id.,* at _ [PWM, at 256].

It is well documented that PCBs are ubiquitous in the environment and as a result 1668C has issues at low level detection because PCBs contaminated laboratories, blank samples, and samples from other sources.[3] The 1668C test method is simply not accurate at low levels because PCBs are "everywhere in the environment" and laboratories are unable to separate the "general presence of PCBs everywhere in the environment from what's in the specific sample that's being tested by the laboratory."[4] There is scientific consensus that it is extraordinarily difficult to accurately measure the concentration of PCBs at low levels.[5] This data may be suitable for a semi-quantitative analysis of mass PCB loading but it is not sufficient or appropriate for regulatory purposes.

In response to these comments, please respond to the following questions:

1. **Please identify the specific statutory and regulatory authority to use an unapproved test method for a TMDL.**

2. **Does the EPA contend that it is authorized to use an unapproved test method for the TMDL under the terms of 40 C.F.R. Part 136? If so, please state the specific section and language on which the EPA relies for this authorization.**

3. **Does EPA admit or deny that it is bound by the EPA approved terms of WAC 173-201A-260(3) that the analytical methods for water quality criteria in Washington must be approved by the EPA? If you admit, please explain your interpretation of the language that allows the EPA to use an unapproved test method for a TMDL.**

4. **Why did the EPA disregard the fact that SRRTTF 1668C data was collected for a semi-quantitative purpose and was not intended to be used for any regulatory purposes? Please explain why the EPA ignored the terms of QAPPs approved by the SRRTTF and Ecology in this regard.**

5. **Why did the EPA rely on data collected by the SRRTTF in the critical low flow periods in August? Does EPA consider this data representative of PCB concentrations in the Spokane River?**

6. **What quality assurance project plan did the EPA develop for the qualification of flagged data? Did EPA exclude any flagged data from its analysis?**

7. **Why is the EPA relying on PCB test 1668C data that is orders of magnitude below a threshold level used in other watersheds nationwide and in the State of Washington?**

[3] Testimony of Linda Cook ("Cook Testimony"), at 344:16-22.
[4] Testimony of Dr. Tom McHugh ("McHugh Testimony"), at 241:2-15.
[5] Testimony of Dr. Susan Paulsen ("Paulsen Testimony"), at 395:1-7.

Comment No. 3: The EPA has not established, nor can it establish that the Spokane River below Long Lake Dam is failing to meet water quality standards.

The EPA does not appear to have quantitative data that PCBs are present in the water column of the Spokane River below Long Lake Dam. Ecology has published a report on PCB sampling in the Spokane River near the boundary of the Spokane Tribe of Indians waters.[6] In that report, Ecology determined that it could not confirm the presence of PCBs in the river due to the presence of PCBs in sample, travel, and lab blanks.[7]

It is readily apparent, despite the use of a high-volume collection technique, that the blank concentrations of PCBs were in some cases as high, or higher than the sample concentration. This is why Ecology made clear in their report that the data would be "considered to be semi-quantitative and will not be used for formal assessment of water quality criteria attainment."[8]

In response to these comments, please answer the following question:

1. **What data and what source data, collected below Long Lake Dam, did the EPA rely on to determine that the Spokane River is not meeting the Tribal PCB criterion in Tribal waters?**

Comment No. 4: The EPA does not have reasonable assurances that the TMDL will result in the attainment of applicable water quality standards.

The EPA states in the PCB TMDL that they must have reasonable assurances that the PCB TMDL will result in the attainment of the subject water quality standards. The EPA should concede that wastewater treatment plants in Idaho and Washington will not yield additional reductions in PCB loading from discharges subject to individual NPDES permits. The Spokane River wastewater treatment plants have installed the most advanced state-of-the-art tertiary membrane treatment systems that effectively remove in excess of 99% of the PCBs. Ecology has determined that the membrane wastewater treatment technologies meet the definition of all known, available and reasonable methods of prevention, control and treatment (AKART) for the reduction of PCBs.[9]

In response to these comments, please answer the following questions:

1. **Does the EPA contend that exposure to PCBs at levels above 1.3 ppq pose a threat to human health? If so, please explain why the EPA does not believe that there is information that justifies reconsideration of PCB concentrations**

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[6] Ecology, Spokane River PCBs and Other Toxics at the Spokane Tribal Boundary, Pub. No. 17-03-019 (December 2017);
[7] *Id.*, at 25.
[8] *Id.,* at 38.
[9] Fact Sheet for NPDES Permit WA0000825 Inland Empire Paper Company. Effective 08/01/2022. Section III.B. Surface Water Quality-Based Effluent Limits, Mixing Zones, page 22: *"Ecology has determined that the treatment provided at IEP meets the requirements of AKART (see "Technology-based Limits")."*

allowed under TSCA of up to 50 ppm, over 38 billion times higher than the Spokane Tribal WQS used as the basis for the PCB TMDL.

2. **When does the EPA contend that the Spokane River will be in compliance with the 1.3 pg/L water quality standard?**

3. **Does the EPA admit that its reasonable assurance determination is not based on any timeline or deadline to achieve the water quality standard?**

Comment #4: All stormwater loads must be included in the TMDL model.

There was no effort on the part of the EPA to quantify loading from stormwater nonpoint sources beyond the City of Spokane's permitted stormwater discharges. Load allocations should be assigned to all nonpoint sources in the watershed so that the appropriate lead agencies have compliance targets. Stormwater load allocations can be calculated by estimating stormwater flows from ground surface area, land use, and soil types in the watershed. Load allocations should be assigned to other existing industrial, construction, and general stormwater permits in the TMDL study area.

In response to these comments, please answer the following questions:

1. **Will the EPA add the permitted stormwater dischargers to the Spokane River TMDL waste load allocations?**

2. **Will the EPA include requirements for non-point stormwater sources to be included in the Spokane River PCB TMDL?**

The Hayden Area Regional Sewer Board appreciates your time and consideration of the comments submitted and is hopeful that such comments will ultimately result in the EPA's reconsideration of the proposed Spokane River PCB TMDL. If these comments prompt any further questions, the Hayden Area Regional Sewer Board respectfully invites the EPA to contact our entity directly.

Sincerely,

Ken Windram

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Brad Little, Governor
Jess Byrne, Director

07/15/2024

Gunnar Johnson, Washington State TMDL Coordinator, Watersheds Section
Standards, Assessment & Watershed Management Branch, R 10, EPA
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Lacey, WA 98503
Johnson.gunnar@epa.gov

Subject: Idaho Department of Environmental Quality comments on EPA proposed Spokane and Little Spokane Rivers PCB TMDLs

Dear Mr. Johnson:

Thank you for the opportunity to comment on EPA's proposed Spokane and Little Spokane Rivers PCBs TMDLs. These comments have been compiled from concerns raised by our Coeur d'Alene Regional Office and our State Office Water Quality Program, with legal review by the Idaho Office of the Attorney General. It is important to first note that the natural background of PCB will be above the TMDL limits for the foreseeable future and federal law allows for continued PCB pollution. Since municipalities do not manufacture or use PCBs, the TMDL ironically has the effect of punishing the victims of the pollutant of concern with unrealistic targets.

Idaho Department of Environmental Quality's (IDEQ) major concerns of the Spokane River and Little Spokane Rivers PCBs TMDLs are categorized into the following three concerns.

First, IDEQ believes the allocations set in the Draft TMDL are not achievable. The currently EPA approved method for PCB detection will not detect at the ultra-trace levels being prescribed in this TMDL. The suggested method uses a blank correction method to approximate low level concentration. These low-level approximations lack statistical rigor and are not appropriate to be used for CWA regulatory decisions. The draft TMDL states it will require, "increased permitted wastewater discharge treatment, possibly using novel methods specially designed to address chemically persistent toxics." Importantly, there is no available technology that currently exists to remove PCBs from wastewater to the levels required in this TMDL.

Second, a simple spreadsheet calculation for inventorying and allocating PCBs in the Spokane River is not appropriate as the river is dynamic with intricate groundwater interactions and several impoundments. When the results have serious regulatory and financial implications for multiple states, municipalities, and industry, relying on a simplistic model is especially problematic. The proposed TMDL's PCB allocations and boundary conditions are based on concentrations that are unmeasurable with today's technologies. The blank correction process used in the proposed TMDLs causes

uncontrolled errors in accuracy and precision. The PCB concentrations and resulting values are not of sufficient quality to make regulatory decisions or to be used for permits or compliance assurance.

Lastly, the low target concentration of 1.3 pg/L is problematic for implementation and ultimately not achievable. The targets specified in this TMDL do not reflect the realities of implementation for the removal of persistent toxic chemicals in a riverine setting. Contrary to statements in the proposed TMDLs, load reductions cannot be reasonably attained because there are no commercially available technologies to remove PCBs from wastewater to the levels required.

Please refer to the enclosed comments for further detail on these concerns regarding the draft TMDL. Again, IDEQ appreciates the opportunity to comment on the proposed PCB TMDLs and requests you consider the issues we have brought up before finalizing the proposed PCB TMDLs.

Sincerely,

Mary Anne Nelson, PhD
Administrator, Surface and Wastewater Division

Attachment(s)

c: Jess Byrne, Director, IDEQ
Jamie Neill, Policy Director, Idaho Governor's Office
Dan McCracken, Administrator, Couer d'Alene Regional Office IDEQ
Brent King, Deputy Attorney General, Idaho Attorney General's Office

EDMS number

Technical Attachment

Idaho Departments of Environmental Quality's comments on EPA proposed Spokane and Little Spokane Rivers Polychlorinated Biphenyls TMDLs

Table of Contents

Introduction

This document has been prepared by Idaho Department of Environmental Quality (IDEQ) in response to the Draft TMDL "Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads" prepared by the Environmental Protection Agency (EPA). The intention behind this document is to provide EPA with a more detailed description of concerns voiced in the preceding cover letter. This Technical Attachment is an addendum to IDEQ's cover letter.

During the development of the PCB TMDLs, IDEQ frequently brought up concerns regarding the use of a downstream water quality standard which is 63.8 miles downstream from the Idaho/Washington border. Further, IDEQ expressed concerns regarding the use of a simplistic and unscientific conservative constituent mass balance modeling approach to develop allocation targets for PCBs based on a model that does not factor ground water/hyporheic

exchange, attenuation, volatilization, sorption, or any other factor that studies have shown remove PCBs from water ecosystems like the Spokane River.

IDEQ's major concerns with the Spokane River and Little Spokane Rivers PCBs TMDLs are categorized into the following: 1) The TMDLs are not achievable, 2) The TMDL model is flawed with PCB pollutant modeling and lacking in scientific rigor, and 3) Implementation is not workable or enforceable. The precedent-setting application of distant water quality standards to upstream states that were not a party to TMDL litigation and implementation of standards through use of vague terms not found in the Clean Water Act (CWA) creates uncertainty about whether the Draft TMDL can be successfully implemented.

The TMDLs are not achievable

IDEQ believes the allocations set in the Draft TMDL are not achievable for three main reasons: unreliability of method detection, lack of technology for treatment, and pollution sources are diverse and inadequately controlled. IDEQ asserts that the method recommended in the TMDL cannot be reliably implemented because the approximation of ultra-trace concentrations is inconsistent due to the use of blank correction. These ultra-trace approximations lack statistical rigor and are not appropriate for CWA regulatory decisions. The Spokane River Regional Task Force (SRRTTF) attempted to measure PCBs in the Spokane River using EPA Method 1668 (the method used in attaining data for the TMDL). SRRTTF found that the concentrations of total PCBs in the water samples from the Spokane River averaged 171 pg/L before blank correction but averaged 88 pg/L in the blanks (Rodenburg et al., 2020). In this study, field blanks averaged 130 pg/L (range of 30 to 1064 pg/L) while method blanks (ultrapure water not exposed to the field) averaged 56 pg/L (range 23 to 768 pg/L). The fact that blank results were almost a magnitude of order higher than the allocations assigned in this TMDL demonstrates the pervasiveness of PCBS and the difficulty of measuring, with confidence of the source of PCBs, at these ultra-trace levels. According to the SRRTTF, many samples collected in the river show zero concentration, yet we know that the fish PCB levels still exceed the fish tissue equivalent concentration (FTEC) set by the State of Washington during this period.

The draft TMDL states it will require, "increased permitted wastewater discharge treatment, possibly using novel methods specially designed to address chemically persistent toxics." Importantly, there is no available technology that currently exists to remove PCBs from wastewater to the levels required in this TMDL. All wastewater treatment plants in Idaho that discharge into the Spokane River have successfully upgraded their processes to use membrane filtration as a tertiary treatment process. This is an extremely aggressive form of treatment that reduces PCB levels as low as possible (Rodenburg et al., 2022). In other words, there is no treatment process available that can reduce PCBs further. Should these allocations be incorporated into individual permits, then even facilities using advanced treatment technology

such as membrane filtration would be unable to comply with the terms of their permits. This results in potential harm to wastewater treatment plants when they are held to an unachievable load allocation under the TMDL.

The proposed TMDL is unachievable because federal law allows for continued PCB pollution many times above the proposed limit. The Toxic Substances Control Act (TSCA) allows for PCBs in domestic or imported goods up to 50 ppm or 50 mg/L (40 CFR part 761.1(3)). With this allowable PCB source limit in ubiquitous consumer goods, there is no possible mechanism to remove PCBs in the environment down to a level that meets TMDL targets. This allowance of PCB pollution from imported goods and manufacturing places the burden of removing PCBs on municipalities instead of preventing PCB pollution from the source along with the potential for punishment when they fail this impossible task.

Background sources alone, including atmospheric deposition, are large enough to exceed the TMDL. Rodenburg (2022) calculated in a report for the SRRTTF that atmospheric deposition alone leads to concentrations of total PCBs in the Spokane River, near the City of Spokane and the Spokane Valley of between 5 and 27 pg/L. This exceeds the Spokane Tribe of Indians 1.3 pg/L standard and may potentially exceed the State of Washington 7 pg/L standard. Atmospheric deposition of particles typically delivers relatively high molecular weight PCBs to water bodies (Rodenburg et al., 2019), and these are the congeners that are most likely to bioaccumulate in fish (Arnot and Gobas, 2003; Arnot and Gobas, 2006; Gobas and Arnot, 2010). In short, the natural background of PCB will always be above the TMDL limits and federal law allows for continued PCB pollution. Since municipalities do not manufacture or use PCBs, the TMDL ironically has the effect of punishing the victims of the pollutant of concern.

Flaws in the TMDL model

Many of the assumptions and methods used to develop this TMDL are inherently flawed. IDEQ acknowledges that EPA had a constricted timeline to finalize this TMDL, but proper scientific analysis should not be negated to reach the finish line with a rushed product that is not accurate, achievable, or implementable. A simple spreadsheet calculation for inventorying and allocating PCBs in the Spokane River is not appropriate as the river is dynamic with intricate groundwater interactions and several impoundments. When the results have serious regulatory and financial implications for multiple states, municipalities, and industry, relying on a simplistic model is especially problematic.

The flaws in the TMDL model being used in the draft TMDL include the following:

a. The TMDL model treats PCBs as a conservative tracer. It does not consider loss processes including volatilization and groundwater losses. All other water quality models for PCBs that rely on the WASP architecture, including the models of the Delaware River

(Delaware River Basin Commission (DRBC), 2006), the upper Hudson River (EPA, 1999; Connolly et al., 2000), the New York-New Jersey Harbor (HydroQual, 2007) and the Fox River (Steuer et al., 1995), all consider volatilization as an important loss process. In other words, why would all other models consider PCB loss in the environment, but the Draft TMDL would ignore it? Importantly, the water quality model for the New York-New Jersey Harbor (HydroQual, 2007) found that volatilization might have been underestimated for low molecular weight PCBs, for example those containing one or two chlorines. Rodenburg et al. (2022) examined the loads of PCBs from the wastewater treatment plants on the Spokane River and found that the adoption of membrane filtration preferentially removes the high molecular weight PCBs, leaving a lower molecular weight PCB signal in the river, i.e. the PCBs most likely to undergo volatilization. This is why it is important to consider both volatilization and atmospheric deposition. Atmospheric deposition of particles is likely to introduce high molecular weight PCBs to the river, whereas volatilization removes the low molecular weight congeners. In summary the failure to parameterize volatilization in the TMDL model for the Spokane River may underestimate current loss processes, leading to a lower TMDL, and this underestimation is likely to get worse in the future as the mix of PCBs entering the Spokane River becomes lower in molecular weight. Rodenburg (2022) calculated mass transfer coefficients for volatilization of PCBs in the Spokane River utilizing the same approach used in the water quality model of the NY/NJ Harbor and found that they were roughly equal to the rate of water transport downstream. This means that adding volatilization to the TMDL model would cause the calculated TMDL to increase by about a factor of two. Volatilization has the most impact on sources further upstream since they have more time to volatilize as the river flows downstream. Therefore, the failure to consider volatilization has the most impact on the load at the state line and unfairly impacts the State of Idaho.

b. Groundwater losses are also important but are currently ignored in the TMDL model. The EPA framework for the TMDL indicates that the Spokane River is a losing reach on the Idaho side of the border (and downstream), with about 400-500 cfs lost in that segment which is approximately 25% of the modeled harmonic mean flow. The model assumes that the PCBs lost via infiltration of groundwater re-enter the river when the groundwater re-enters the river. That assumption is not supported by any scientific evaluation. The aquifer solids have low organic carbon content, but this does not mean that no sorption takes place. At the very least, the growth of biofilms on the surfaces of submerged rocks and sediments would provide organic material for sorption (Era-Miller and Wong, 2022), and these are likely to penetrate the riverbank until oxygen is depleted. PCBs would sorb to this biofilm and other aquifer materials, being removed from the system and not reentering at some later point. This treatment of groundwater

in the model is in direct conflict with the draft TMDL's own recommendation that stormwater infiltration basins can reduce PCB loads. Why would interaction with the soils remove PCBs from stormwater but not from river water? A more reasonable approach would be to assume that PCBs that exit the river via infiltration into groundwater sorb to aquifer solids and are lost from the system. If 25% of the water is lost from the system, then 25% of the PCBs in the water column are also lost from the system via this process. Properly accounting for this process would therefore cause a corresponding increase in the calculated TMDL.

c. In section 3.1.3 of the draft TMDL, EPA specifies that contaminated groundwater is a source of PCB contamination in the gaining reaches of the river. This admission means that the losing reaches of the river between Coeur d Alene Lake and the Spokane Valley needed to be evaluated to determine if PCBs are lost to the groundwater along with other factors that may attenuate PCBs. The assumption that PCBs are only gained from ground water and not lost in a mass balance approach is inherently flawed and biased.
d. In addition to omitting various loss processes, the model ignores various loads. It does not include an internal load from resuspension of sediment especially above the Post Falls dam or any of the other dams in the river. It also does not include atmospheric deposition loads of PCBs within the TMDL boundary, which, as noted earlier in this comment, may be high enough to make the TMDL unachievable
e. The draft TMDL assigns a lower boundary condition to the Spokane River at the Idaho/Washington state line, which is not supported by the science. Figure 14 of the draft TMDL shows that PCBs entering the river at the state line are diluted by more than a factor of two before they reach the tribal lands where the WQS decreases to 1.3 pg/L, even under the assumptions of the draft TMDL model that there are no losses to groundwater or volatilization. If these losses were included, it is likely that the boundary condition at the state line could be set to the Washington standard of 7 pg/L without exceeding the tribal standard downstream.
f. The TMDL is designed to achieve a concentration in the fish tissue that is safe for human consumption. Idaho IDEQ is concerned that as the implementation of membrane filtration removes high molecular weight PCBs from effluents (Rodenburg et al., 2022), the concentrations of total PCBs in the water column might continue to exceed the WQS due to the low molecular weight PCBs that continue to be emitted, but the levels in fish may decline to acceptable levels because low molecular weight PCBs do not bioaccumulate very effectively (Arnot and Gobas, 2003; Arnot and Gobas, 2006; Gobas and Arnot, 2010). Currently the model includes no linkage between the water column PCB concentrations and the fish concentrations. The only way to accurately model the fish concentrations is to construct a water quality model that treats each PCB homolog separately, and then link the water quality model with a bioaccumulation model. This

approach is commonly used elsewhere (Connolly et al., 2000; HydroQual, 2007). The model as it stands is currently too simplistic to accurately account for differences in bioaccumulation potential of different PCB homologs.

g. Atmospheric deposition of PCBs within the State of Washington is not accounted for in section 3.1.5 of the draft TMDL. EPA correctly states that "bulk atmospheric deposition is ubiquitous and occurs at any location, even far-flung areas away from any urban or industrialized land uses". However, EPA goes on to claim that the bulk of the atmospheric deposition in the Spokane River is primarily from the large surface area of Coeur d'Alene Lake (49.8 Square miles/51.2% of the surface water area of the basin) and not from direct deposition in the Spokane River system within the borders of Washington because the River has a "low free water (e.g. lakes, ponds, rivers) with a surface area of only 1.6%". EPA had no surface water area numbers other than Coeur d'Alene lake or maps to support the 1.6% number, and DEQ believes the 1.6% surface water area calculation of the Spokane River in Washington is an underestimation based on the assumption of a free flowing (low residence time) river system from Post Falls to the Spokane Tribal boundary. EPA omitted the large surface area of the slow moving (high residence time) impounded portions of the river for ease of calculation in the conservative constituent mass balance model. There are 6 impoundments along the 122 miles of river between Coeur d'Alene Lake and the Tribal boundary with 59.6 miles of slow-moving reservoir (Figure 1.) with a total surface area of 20.8 square miles; 18.2 square miles of that impounded surface water is in Washington (Figure 2.). On page 30, EPA claims the atmospheric deposition in Washington is primarily from storm water, surface run off and shallow groundwater connectivity while ignoring downstream impounded surface water areas. This omission places a burden on Idaho to reduce atmospheric deposition of PCBs as part of the boundary condition while at the same time ignores atmospheric deposition on downstream impounded waters with a surface area more than one third the size of Coeur d'Alene Lake's surface area.

h. In section 3.1.6, EPA addresses PCB sorption to river sediments. EPA states that PCBs readily sorb to fine sediments but they again state the Spokane River is dominated by "free flowing" water with large cobble and gravels typically associated with natural flowing river waters and they assume the water and sediments are in "equilibrium for PCBs". EPA immediately contradicts this statement by detailing Washington Ecology efforts to remove PCB contaminated fine sediments impounded by the numerous dams along course of the river. This contradiction highlights the inherent errors in the conservative constituent mass balance approach to inventorying PCBs without considering attenuation, volatilization or sorption from interactions with sediments. (See paragraph "a", above.)

TMDL Implementation

The low target concentration of 1.3 pg/L is problematic for implementation and ultimately not achievable. The targets specified in this TMDL do not reflect the realities of implementation for the removal of persistent toxic chemicals in a riverine setting. This is supported by the following:

a) In other states where PCB TMDLs have been promulgated, regulators have been allowed to use non-numeric criteria in writing discharge permits to comply with WLAs (Basin, 2007; Tetra Tech, 2009; Tech, 2018). The State of Idaho requests that this be allowed for permits of facilities on the Spokane River. This is necessary because, as noted above, the wastewater treatment plants discharging to the Spokane River have already upgraded to tertiary treatment in the form of membrane filtration, and there is no commercially available technology to enhance their removal of PCBs beyond this. By clarifying that states can use non-numeric criteria in writing permits, the EPA would allow these wastewater treatment plants to continue operating in compliance with their permits. As stated elsewhere in this comment, it will be impossible for these facilities to meet the draft TMDL limits due to federal law allowing continuing pollution and natural background conditions. It is illogical to subject facilities using the best pollution control technology to potential civil or criminal penalties. Narrative criteria would include initiatives such as PCB source identification and implementation of Best Management Practices (BMPs). Notably, other river systems where PCB TMDLs are in force have not required their wastewater treatment plants to upgrade to membrane filtration, or indeed any form of tertiary treatment. If narrative criteria are good enough for those other river systems, then certainly they are good enough for facilities using tertiary treatment.

b) Section 4.2.1 details the applicable water quality standards for the Spokane Tribe (1.3 pg/L) and the State of Washington (7 pg/L). In Appendix A: Applicable PCB Water Quality Standards, EPA references 40 CFR 131.10(b) as justification for choosing the Tribal criteria of 1.3 pg/L, and IDEQ acknowledges that the Clean Water Act requires states to meet downstream state water quality standards but just how far upstream are downstream water quality criteria thresholds applicable according to federal rules, regulations and precedent? 40CFR 131.10(b) is cited by EPA in the TMDL, but 40 CFR 131.10(b) indicates that a state must consider downstream standards. It does not say that a state must consider and abide by all downstream standards regardless of distance. As written by EPA, interstate boundaries are meaningless and essentially all headwaters of the Spokane River system in Idaho are subject to the Spokane Tribal standard. If so, this would result in an impairment of the South Fork of the Coeur d'Alene River within the boundary of the Bunker Hill Superfund site and PCBs should be considered at 1.3 pg/L during the next Record of Decision (ROD) Amendment. It seems incredible that

such a limit from so far downstream can be imposed without state consent. Under this rationale, Louisiana could set a zero pollution limit on the Mississippi River enforceable in St. Louis at the confluence with the Missouri River. Is it EPA's position that such a limit would be enforceable all the way up the headwaters of the Missouri River in Montana, even without Montana's consent?

c) Section 5.4.4 states that EPA is not considering allocations for other sources including atmospheric deposition or legacy contaminated sediments. If these sources are not reduced there is no possible way the 1.3 pg/L target can be met. This is yet another way that the TMDL model is simplistic and flawed. See DEQ Comment section "Flaws in the TMDL Model" for other facts which the draft TMDL model fails to take into account. age 59 (Room for Growth) states that any new point source will not increase PCB loading as long as it meets the 1.3 pg/L concentration. This is flawed as sources are cumulative and addition of PCBs increases the mass of PCBs despite the concentration of said discharge, loads are calculated by concentration times volume (lake) or discharge (river) not just concentration. With a target concentration of 1.3 pg/L for all sources in the Spokane and Little Spokane Rivers there is no room for growth. This implies that there will be no future discharge permits until viable treatment methods are developed that can remove 100 percent of all PCB congeners.

d) In section 5.8 (Reasonable Assurance) of the draft TMDL, EPA states that Idaho is expected to meet the boundary condition of 1.3 pg/L at the Idaho/Washington border and Washington is expected to meet their PCB reduction targets. This is unrealistic and far from "reasonable" for several reasons:

EPA does not elaborate on a specific implementation plan to address reduction in PCBs. Instead, EPA places the burden on the Washington State Department of Ecology to develop the implementation plan that will meet the aggressive TMDL targets. EPA does suggest some strategies to meet the TMDL targets, but the practical suggestions are already in place. For example, EPA suggests increased permitted wastewater treatment will help reach the targets. Idaho and Washington permitted discharges along the Spokane River are already at or in construction to be at the tertiary treatment level so discharges on the Spokane River are already at the highest level of treatment possible other than reverse osmosis and that option is not economically, environmentally, or mechanically viable.

EPA calls for possible "novel methods specially designed to address chemically persistent toxics" to remove PCBs from both point and nonpoint sources. Again, this is not "reasonable" and essentially categorizes this TMDL as aspirational with the hopes that someday a new "novel" treatment technology will be effective at eliminating 100 percent of all PCB congeners for both point and nonpoint sources.

Specifying a target concentration at any compliance point in the river below the detection limits of any established and approved analytical methods for PCBs is also not "reasonable". Under current analytical methods any sample analyzed may return as less than the Minimum Detection Limit (MDL) or Reporting Limit (RL) even though those samples were likely above the 1.3 pg/L target but show as a non-detection for PCBs. Essentially this means there is no way to know if the target concentrations are being met at the state line or at any other location in the Spokane River.

As outlined in IDEQ's comments, the proposed Spokane River PCB TMDLs numeric criterion is unachievable, Idaho's contributions are classified as "background", and Idaho dischargers are already advanced tertiary treatment facilities. IDEQ suggests that EPA state in the implementation section that Idaho's compliance with the PCB TMDLs will be satisfied when IDEQ develops and implements a Spokane River PCB implementation plan which is based on opportunistic reduction of PCBs and meeting narrative criteria. Strategies like the development on Best Management Plans, Watershed Implementation Plans, and Pollutant Minimization Plans are crucial for effectively managing and mitigating the risks associated with PCB contamination in the environment and can complement numeric standards by offering additional context and guidance. In addition, the inclusion of narrative criteria can help identify and address PCB contamination in situations where specific numerical limits may not be appropriate or applicable.

The incorporation of non-numeric criteria in the implementation plan would:

1. Enhance Flexibility: Narrative criteria allow for adaptive management approaches that can be tailored to the unique circumstances of PCB contamination sites.
2. Ensure Comprehensive Risk Management: By focusing on the overall health of ecosystems and human health, narrative criteria support a holistic approach to PCB remediation.
3. Protect Public Health: Providing transparent and understandable goals that can be communicated effectively to stakeholders, enhancing public awareness and participation.
4. Support Regulatory Clarity: Narrative criteria can clarify expectations for compliance and help ensure consistent enforcement of PCB regulations.

IDEQ requesting an implementation plan based on narrative criteria for reducing PCB pollution is a standard approach across the nation. For example, the State of New Jersey Department of Environmental Protection uses a Watershed Improvement Plan Project Selection Tool for PCBs. The City of Philadelphia's NPDES Permit (PA0054712) includes a Pollutant Minimization Plan for PCBs. California Regional Water Quality Control Board uses a BMP conceptual model for San Francisco Bay.

Legal Concerns

The State of Idaho is uncertain over EPA's jurisdiction and ability to set a "boundary condition" for Idaho or how Idaho is supposed to implement a "boundary condition."

The statutory language of section 303(d) explicitly gives EPA a fairly limited role in the TMDL process. EPA has authority to approve or disapprove a state's 303(d) list and/or TMDL submittal. In this case EPA had authority to develop the TMDL for the State of Washington as the Washington Department of Ecology listed the Spokane and Little Spokane Rivers as impaired for PCB pollution in its approved 303(d) list. The draft TMDL limits itself to establishing pollution budgets, "from the Washington-Idaho border downstream to the confluence with the Columbia River, and in the Little Spokane River from the Washington-Idaho border to its confluence with the Spokane River." In short, EPA's authority and the plain language of draft TMDL is limited to the State of Washington.

In contrast, Idaho has not submitted any 303(d) list which includes PCB impaired waters, because Lake Coeur d'Alene and the Spokane River meet Idaho's approved water quality standards for PCBs. Draft TMDL, 1.3.4., Figure 5. Both the EPA and Idaho are precluded from developing a PCB TMDL for Idaho's waters as EPA has no 303(d) list to approve or disapprove nor submission of a state-developed TMDL. Likewise, the State of Idaho does not have an impaired water on its 303(d) list to act upon, nor data or analysis in a subbasin assessment to demonstrate that a pollutant is contributing to a violation of water quality standard. 39-3611, Idaho Code.

Despite the lack of TMDL jurisdiction, EPA has promulgated and assigned to Idaho a "boundary condition" for PCBs of 1.3 pg/L within the Draft TMDL. The term "boundary condition" is not found anywhere in the Clean Water Act. EPA has refused to define what boundary condition means leaving the State of Idaho to guess at what it is or how to implement it. The PCB boundary condition of 1.3 pg/L is so small that it is undetectable and cannot even be measured. In other words, it is effectively zero. Since it is the equivalent of zero, the draft TMDL claims that any concentration over this undetectably small amount will cause PCB violations throughout the whole 7,946 cubic feet per second (on average), sixty-three (63) mile stretch of the Spokane River. Draft TMDL, 4.2.3, Figure 14. As stated elsewhere in these comments, there are no commercial means to remove PCBs down to nearly zero.

Given the unit of measurement used, Idaho's best guess is that "boundary condition" is a synonym for "load allocation." A load allocation is "the portion of a receiving water's loading capacity that is attributed either to one (1) of its existing or future *nonpoint sources of pollution*

or to natural background sources." IDAPA 58.01.02.010.55 (emphasis added.) If a boundary condition is a load allocation, then this will be the first time that EPA will be unilaterally assigning a state to clean up a whole river to close to zero pollutant from all non-point sources including atmospheric deposition. To ensure a boundary condition of nearly zero, Idaho would need to evaluate nearly 3,701 square miles of land drainage, the entirety of Lake Coeur d'Alene, and a shallow aquifer of groundwater for non-point sources of PCB pollution. Draft TMDL 1.3. The amount of harm to Idaho and its citizens to carry out such an assessment, both financially and resource-wise, as well as harm to the State's ability to effectively manage its own land, water, and pollution within its own borders would be, to put it mildly, staggering.

Whether EPA has the authority to mandate such a cleanup remains to be seen. As stated above, both EPA and Idaho are precluded by law from developing a TMDL or a load allocation for the Idaho stretch of the Spokane River. Unilaterally placing a load allocation on a state without a 303(d) listing or state-developed TMDL listing would be precedent-setting and without legal authority. Such an act would, among other things, violate the cooperative federalism design found within the Clean Water Act, be without apparent authority, impinge a state authority to manage water and pollution within its borders, and subject a state and its citizens to harm caused by increased costs and risk of civil or criminal penalties. While it is true that Idaho needs to assure compliance with downstream uses, there has never been a situation where an almost zero water quality standard was enforced so far upstream. Whether the Clean Water Act contemplates such extreme actions is doubtful, especially given the technical deficiencies described in these comments which make the facts uncertain.

Given these ambiguities, IDEQ believes that the boundary condition should be removed from the TMDL. IDEQ will work with EPA and downstream users and cooperate in ensuring downstream beneficial uses through all reasonable means at its disposal, including the use of narrative standards as described elsewhere in these comments.

Other Concerns

- Pg 36 – EPA says a wide variety of tools were used. Only a basic spreadsheet tool was used.
- Compounded Margins of Safety
- Idaho's "Fully supporting" status for PCBs is glossed over in the appendix
- Section 4.2.4 highlights PCB exceedances of the Spokane Tribal and Washington criteria at the Idaho/Washington border. EPA does omit that Idaho criteria and that the Spokane River in Idaho does not exceed Idaho criteria for PCB.

- Charts are designed to make Idaho appear as the main source of PCB pollution instead of the Spokane Valley

Figures

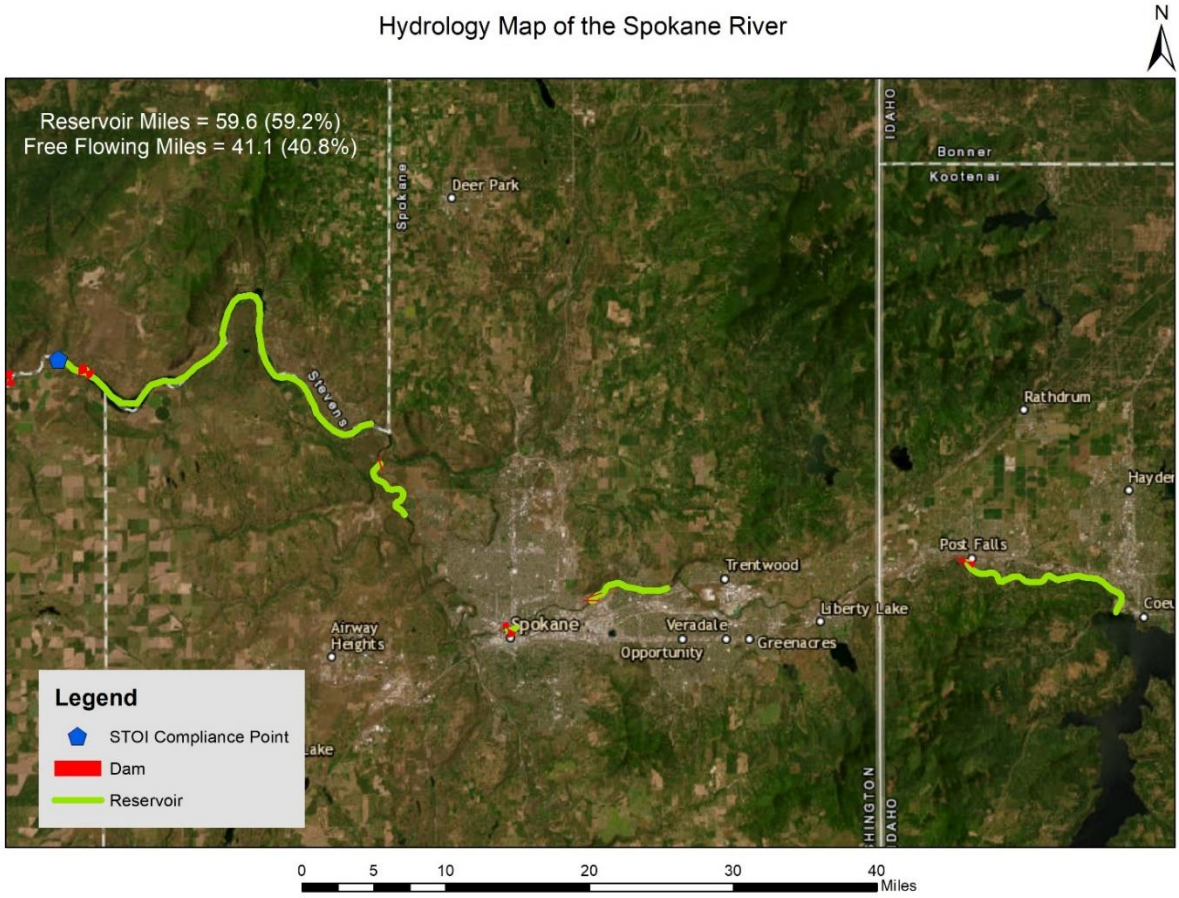

Figure 1: Hydrology Map of the Spokane River

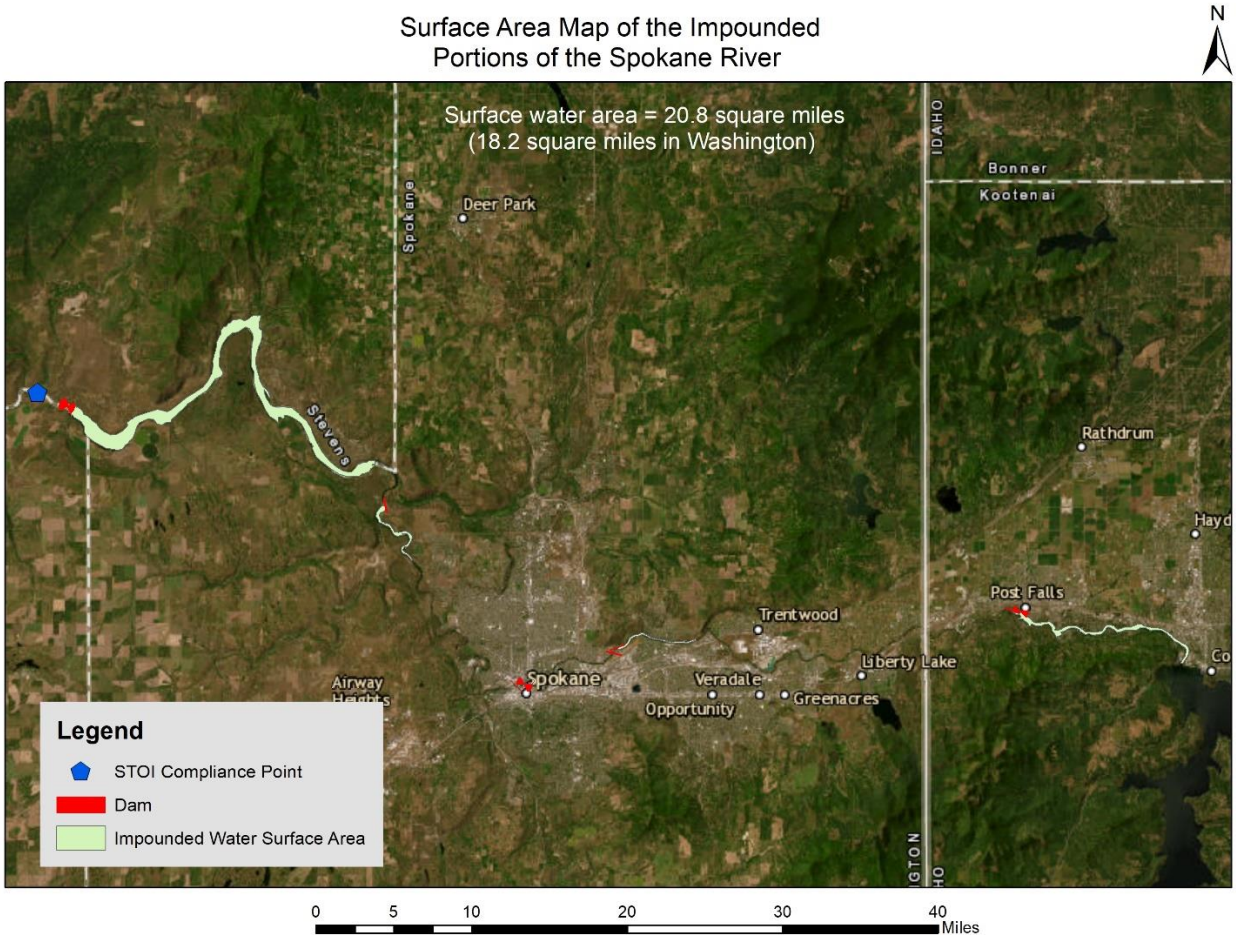

Figure 2: Surface water area map of the Spokane River

Chronology of Past Comments Made to EPA

This section outlines the Idaho Department of Environmental Quality's (IDEQ) concerns and chronology regarding the proposed TMDLs. Long-Standing Comments are intended to represent comments IDEQ has maintained and expressed to EPA since the beginning of the court order. The Webinar Comments represent thoughts and concerns IDEQ has compiled in response to content presented by EPA in public webinars.

Long-Standing Comments

1. The Idaho Department of Environmental Quality (IDEQ) requests bi-monthly meetings (as promised by the Environmental Protection Agency (EPA) with stakeholder representatives to update and solicit feedback during the Total Maximum Daily Load (TMDL) development process.

    a. On a December 15, 2021, Spokane River Regional Toxics Task Force (SRRTTF) meeting, the EPA stated they will develop a stakeholder's group in early 2022. They stated stakeholder

group will be distinct and separate from the Toxics Task Force but there will likely be some crossover between them.

b. During a January 27, 2022, meeting with EPA and IDEQ, a stakeholder meeting was promised for July or August 2022 – the EPA's projected time for when the technical approach would be complete.

c. Regardless of whether the TMDL reaches into Idaho, we believe this should be transparent to stakeholder groups, as required by Idaho Statue §39-3615 which requires that WAG membership reflect a balanced representation of citizen/industry interests in the watershed during TMDL development.

d. Point source stakeholders from Idaho (ID) with interest in this TMDL and who should be invited to the stakeholder meetings include but are not limited to:

i. City of Coeur d'Alene Advanced Wastewater Treatment Plant (IPDES Permit No. ID0022853)

ii. Hayden Area Regional Sewer Board Publicly Owned Treatment Works (IPDES Permit No. ID0026590)

iii. City of Post Falls Publicly Owned Treatment Works (IPDES Permit No. ID0025852)

iv. City of Coeur d'Alene MS4 (IPDES Permit No. IDS028215),

v. City of Post Falls MS4 (IPDES permit IDS028231),

vi. Idaho Transportation Department District #1 MS4 (IPDES Permit No. IDS028223),

vii. Post Falls Highway District MS4 (IPDES Permit No. IDS028207).

e. Concerns listed above were expressed to EPA on January 27, 2022; December 1, 2022.

2. IDEQ requests one load allocation at the state line and no waste load allocations for Idaho Dischargers.

a. Contaminants should be controlled at the product and process source rather than making this the full responsibility of facilities at the downstream end of the product life cycle (i.e. wastewater treatment plants).

b. Concerns listed above were expressed to EPA on January 27, 2022; December 1, 2022.

3. IDEQ requests that boundary load conditions set in the TMDL assume Washington criteria for PCBs will be met at the Idaho (ID)/Washington (WA) state line. Unless lack of attenuation is proven by credible PCB modeling, Spokane Tribe criteria of 1.3 pg/L should not be considered when setting boundary load conditions at the ID/WA state line.

a. IDEQ is concerned about the target concentration selected in this TMDL because IDEQ cannot issue variances for point-source dischargers for waters not 303(d) listed for the impairment and for criteria from a non-Idaho governmental entity.

b. Concerns listed above were expressed to EPA on January 27, 2022; December 1, 2022; February 27, 2023; August 31, 2023; January 11, 2024.

4. IDEQ requests that EPA explores PCB attenuation in the Spokane River through a credible PCB fate and transport model or an appropriate alternative given the hydrophobic/lipophilic tendencies of PCBs and surface water-groundwater interactions of the Spokane River.

a. IDEQ understands that assuming no attenuation takes place and treating PCBs as a conservative constituent is a conservative assumption; however, this assumption is likely unrealistic.

b. PCB bioaccumulation in fish tissue provides evidence that PCBs do not stay in the water column.

c. Concerns listed above were expressed to EPA on January 27, 2022; December 1, 2022; August 31, 2023; January 11, 2024.

5. IDEQ requests data collected for non-regulatory purposes NOT be used for regulatory purposes such as TMDLs. IDEQ recognizes the importance of quality in data, processes, products and services used to support agency environmental decisions. There is concern about data quality with existing PCB data collected in Idaho, and IDEQ requests this data be excluded from the TMDL analysis for the following reasons:

a. Data collected under the SRRTTF efforts were intended only for source identification. They were not intended for regulatory purposes such as TMDL development or permit compliance under the Clean Water Act. For example:

i. Samples collected by SRRTTF contractors loosely followed EPA's Method 1669 (clean hands dirty hands) while taking PCB water quality samples. EPA Method 1669 is appropriate for trace levels at parts per trillion (PPT) but does not produce reliable results in the parts per quadrillion (PPQ) range. During the development of these analytic methods, the EPA found that one of the greatest difficulties in obtaining reliable, accurate data for metals at such low concentration was not necessarily due to any technical limitations of the methods. Rather due to contamination occurring from improper collection, handling and transporting of the samples.

ii. Additionally, the blank correct method used by wastewater treatment collected samples was not uniformly described or applied.

iii. Surface water data collected with Semi-Permeable Membrane Devices (SPMDs) contains numerous errors. Data collected under test EPA Method 1668 were used in

analysis of SPMD samples which is not an approved test method for use under the Clean Water Act. See 40 CFR Part 136.

b. Significant contamination in Quality Assurance blanks in surface water monitoring occurred due to very low concentrations of PCBs in the water column. There is a peer-reviewed blank correction study issued to the SRRTTF which addresses dealing with the contamination in blanks. The study determined there is excess PCB in the water column in WA despite corrections for blank contamination. (LimnoTech 2018).

c. Monthly water quality sampling indicated river PCB concentrations are less than 40 pg/L during all months at the outlet of Lake Coeur d'Alene (LimnoTech 2019). 40 pg/L is lower than blanks for this study. This is well below the ID and previous WA criterion for PCBs of 170 pg/L.

d. Concerns listed above were expressed to EPA on January 27, 2022; December 1, 2022; February 27, 2023.

6. IDEQ requests PCB sources be considered appropriately in the TMDL (including using investigations of the SRRTTF). A TMDL for total PCBs may put undue hardship on cleanup efforts. IDEQ suggests the following be considered as part of PCB cleanup:

a. Legacy PCBs and PCBs still allowed under TSCA (Toxic Substances Control Act) should be nonpoint source only.

i. According to SRRTTF over 90% of PCBs in Spokane River are legacy PCBs.

b. IDEQ requests PCBs coming out of Idaho should be background, as stated by the SRRTTF

i. Investigations by the SRRTTF have identified that PCBs in water column are low coming out of Idaho (they have consistently said PCB concentrations at the ID/WA state line are "background concentrations".

c. IDEQ requests the TMDL integrate the investigations of the SRRTTF specifically where they have identified specific locations of contamination and specific sources

d. IDEQ requests consideration of atmospheric deposition as a PCB source.

e. IDEQ requests quantification of PCB contributions from stocked fish.

f. Concerns listed above were expressed to EPA on January 27, 2022; December 1, 2022; January 11, 2024.

7. IDEQ suggests that a reporting unit (ML, RL, PQL) be evaluated where there is statistical significance to the quantity being reported. Existing data are being reported at detection limits where the presence or absence of an analyte has 95% certainty is statistically significant but there is no confidence that the concentration is correct.

a. IDEQ is concerned that there are currently no EPA approved methods that can be used for point-source discharger compliance with total PCBs at such low detection and reporting limits. EPA Method 608.3 is the only approved method to measure PCBs; however, this method is limited to aroclors and does not report low enough concentrations to be relevant to this TMDL (DL = 0.065 ug/L, QL = 0.095 ug/L). EPA Methods 1628 and 1668 are appropriate for specific PCB congeners and report low concentrations (particularly EPA Method 1668) but neither of these methods have been approved by EPA. IDEQ cannot write permits to unapproved analytical methods.

b. Concerns listed above were expressed to EPA on December 1, 2022; March 30, 2023; January 11, 2024.

8. IDEQ requests an explanation as to why EPA litigants are unhappy with the SRRTTF approach to PCB source identification and cleanup.

a. It was stated by EPA in the Oct 26, 2022, SRRTTF meeting that EPA will distance themselves from the technical approach by SRRTTF due to the dissatisfaction of the litigants with this approach.

b. Concerns listed above were expressed to EPA on December 1, 2022.

Webinar Comments

January 2024 Webinar

1. Slide 3 stated that “EPA recognizes addressing Spokane PCB issues will take tremendous dedication and that there are no simple solutions”.

a. Despite the need for tremendous dedication, the TMDL product must be correct and scientifically sound.

b. In this case, EPA may be laying out a simple framework for a situation with “no simple solutions”.

2. The map on Slide 4.

a. We would like EPA to draw specific attention to the fact that PCB concentration is in full support for the Idaho portion of the Spokane River.

b. The Little Spokane River is listed as impaired so it should be considered a source and must therefore receive an allocation.

3. Mass balance model content on Slide 6.

a. IDEQ needs further clarification on the bullet point “good agreement with synoptic study boosts confidence that system hydrology and PCB dynamics are well described by the model”.

b. Is the harmonic mean the appropriate averaging approach for river flow in this case?

4. General model structure content on Slide 7.

a. The diagram indicates that the Spokane River is a losing reach on the Idaho side of the border (and downstream). It appears 400-500 cfs are lost in that segment which is approximately 25% of the modeled harmonic mean flow.

b. The harmonic mean flow that represents Spokane River flow near Post Falls of ~2000 cfs is a highly unrepresentative value. Generally, flows are much higher. Out of 6,210 days (January 1, 2000 through December 31, 2016), the Spokane River was between 1,900 and 2,100 cfs for 213 days during the same time period. The Harmonic mean flow only applies to the flows for 3.3% of the time. As noted in the EPA webinar there is an inverse relationship between discharge and PCB concentrations so the estimated PCB concentrations may be high graded by the lower skewing harmonic mean average.

c. Are each of the hydrologic inputs documented on this diagram having their PCB contributions quantified (i.e., Latah Creek, Little Spokane River, other creeks)? If they contribute discharge, we can expect some sort of load and that they would receive an allocation.

5. Content presented on Slide 8.

a. What is EPA suggesting are reasonable assurances for nonpoint sources of pollution? How will nonpoint load allocations be achieved without TSCA assurances?

b. If point sources are given end of pipe limits and then allowed to have a variance, will that impact the "simplicity" of EPA's reasonable assurance requirements?

6. Current PCB conditions content presented on Slide 10.

a. "Generally, Spokane and Little Spokane River total PCB concentrations are inversely related to river discharge". If river flow and PCB concentrations are inversely related, is there a chance that the TMDL could high-grade PCB concentrations by using harmonic mean flow values (generally lower values) in existing load calculations?

b. "Despite recent signs of improvement, the rivers are still significantly 'overloaded' with PCBs". IDEQ isn't sure that the ID stretch of the Spokane River is "significantly overloaded" if we believe in our own rules. This assumption would also depend on concentrations in/around the state line compared to Long Lake.

c. No useful data visualizations were presented to accompany any statements on this slide.

7. PCB sample concentration content on Slide 11.

a. The bullet point that states ">45% of samples are above ID total PCB WQS (190 pg/L)" is very misleading. It is not appropriate to compare samples outside of Idaho to Idaho WQS. EPA

must clarify if 45% of the total samples or only the samples collected in Idaho exceed Idaho WQS.

8. Content presented on Slides 12-16.

   a. These tables indicate that the total PCB WQS being used for this TMDL's loading capacity calculation is 7 pg/L for Washington State river miles and 1.3 pg/L for Spokane Tribe river miles. Using this logic, load capacity calculations for water upstream of the WA/ID border should use 190 pg/L (Idaho WQS).

   b. It is unclear which scenario from Slide 9 is being used to generate these load capacity values.

9. Total allocated loading content on Slide 19.

   a. This table indicates that the upstream boundary will receive an allocation of 5.97 mg/day. IDEQ back calculated this load value and discovered that an allocation of 5.97mg/day would indicate meeting a target of 1.3 pg/L, not 7 pg/L. Using a target of 7 pg/L, the upstream boundary load would be 34 mg/day.

10. Wasteload allocation content on Slide 20.

    a. Why do the wasteload allocations use annual average effluent flow rather than flow at design capacity conditions or harmonic mean flow?

References

The following references have been cited in this Technical Attachment.

Arnot, J.A., Gobas, F., 2006. A review of bioconcentration factor (BCF) and bioaccumulation factor (BAF) assessments for organic chemicals in aquatic organisms. Environmental Reviews 14, 257-297.

Arnot, J.A., Gobas, F.A.P.C., 2003. A generic QSAR for assessing the bioaccumulation potential of organic chemicals in aquatic food webs. Quant. Struct.-Act. Relat. 22, 1-9.

Basin, I.C.o.t.P.R., 2007. Total Maximum Daily Loads of Polychlorinated Biphenyls (PCBs) for Tidal Portions of the Potomac and Anacostia Rivers in the District of Columbia, Maryland, and Virginia. Maryland.

Connolly, J.P., Zahakos, H.A., Benaman, J., Ziegler, C.K., Rhea, J.R., Russell, K., 2000. A model of PCB fate in the upper Hudson River. Environ. Sci. Technol. 34, 4076-4087.

Delaware River Basin Commission (DRBC), 2006. Total Maximum Daily Load (TMDL) for Polychlorinated Biphenyls (PCBs) for Zone 6 of the Delaware River. Delaware River Basin Commission, West Trenton, New Jersey.

EPA, U.S., 1999. Hudson River PCBs Superfund Site: Baseline Modeling Report.

Era-Miller, B., Wong, S., 2022. Spokane River PCBs in Biofilm, Sediment, and Invertebrates, 2018 and 2019: Screening Study Results. Environmental Assessment Program, Washington State Department of Ecology, Olympia, WA, p. 83 pp.

Gobas, F.A.P.C., Arnot, J.A., 2010. Food Web Bioaccumulation Model For Polychlorinated Biphenyls In San Francisco Bay, California, USA. Environmental Toxicology and Chemistry 29, 1385-1395.

HydroQual, 2007. A Model for the Evaluation and Management of Contaminants of Concern in Water, Sediment, and Biota in the NY/NJ Harbor Estuary. Contaminant Fate, Transport, and Bioaccumulation Sub-models.

LimnoTech, 2019. Spokane River Regional Toxics Task Force Technical Activities Report: Continued Identification of Potential Unmonitored Dry Weather Sources of PCBs to the Spokane River. Prepared for: Spokane River Regional Toxics Task Force, March 27, 2019.

LimnoTech, 2019. Spokane River Regional Toxics Task Force Technical Activities Report: Continued Identification of Potential Unmonitored Dry Weather Sources of PCBs to the Spokane River. Prepared for: Spokane River Regional Toxics Task Force, March 27, 2019.

National Archives, 2024. Code of Federal Regulations, Part 761- POLYCHLORINATED BIPHENYLS (PCBs) MANUFACTURING, PROCESSING, DISTRIBUTION IN COMMERCE, AND USE PROHIBITIONs. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-R/part-761

Raymond A. Soltero & Donald G. Nichols (1984) THE IMPROVED WATER QUALITY OF LONG LAKE FOLLOWING ADVANCED WASTEWATER TREATMENT BY THE CITY OF SPOKANE, WASHINGTON, Lake and Reservoir Management, 1:1, 395-404, DOI: 10.1080/07438148409354545

Rodenburg, L.A., 2022. What have we learned about PCB sources to the Spokane River from Positive Matrix Factorization analysis? Spokane River Regional Toxics Task Force,, Spokane, WA, p. 26.

Rodenburg, L.A., Hermanson, M.R., Sumner, A.L., 2020. Sources of polychlorinated biphenyl blank contamination and their impact on fingerprinting. Environmental Forensics 21, 99-112.

Rodenburg, L.A., Hermanson, M.R., Sumner, A.L., 2022. Effect of membrane filtration on the fate of polychlorinated biphenyls in wastewater treatment. Chemosphere 287, 132335.

Rodenburg, L.A., Winstanley, I., Wallin, J.M., 2019. Source Apportionment of Polychlorinated Biphenyls in Atmospheric Deposition in the Seattle, WA, USA Area Measured with Method 1668. Archives of Environmental Contamination and Toxicology 77, 188-196.

Steuer, J., Jaeger, S., Patterson, D., 1995. A Deterministic PCB Transport Model for the Lower Fox River between Lake Winnebago and DePere, Wisconsin. Wisconsin Department of Natural Resources.

Tech, V., 2018. PCB Total Maximum Daily Load Development for Reed Creek, the Upper New River, Peak Creek, Walker Creek, Stony Creek, and the Lower New River. Virginia Tech, Viriginia.

Tetra Tech, I., 2009. Roanoke River PCB TMDL Development (Virginia). Virginia.

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July 15, 2024

*Via Messenger and E-mail (*SpokaneRiverTMDL@epa.gov.*)*

Mr. Gunnar Johnson
Washington TMDL Manager
U.S. E.P.A., Region 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101

Re: Draft Spokane and Little Spokane Rivers PCBs Total Maximum Daily Loads

Dear Mr. Johnson:

Please accept this comment letter and referenced documents on behalf of Inland Empire Paper Company (IEP). IEP appreciates the opportunity to comment on the proposed Spokane River PCB TMDL.

Introduction

IEP urges EPA to withdraw the Draft Spokane and Little Spokane Rivers PCBs Total Maximum Daily Loads (TMDL). EPA lacks the authority to issue a PCB TMDL where the state of Washington has not submitted to EPA either an expressed or constructive submission that it will not develop a TMDL for PCBs. EPA has relied on an unapproved test method and data collected to support semi-quantitative loading analyses that were not intended to be used for regulatory purposes. Finally, EPA makes a cynical and unlawful determination of reasonable assurance that the rivers can achieve the TMDL wasteload allocations and load allocations based on a non-existent effort by the state of Washington to develop an implementation plan.

Because of the uncertainty of Method 1668C and application of non-standard and non-scientific blank censoring, it is impossible to say whether IEP has any PCBs in its effluent. IEP water quality treatment performance (as well as the performance by other Spokane River dischargers) using state-of-the-art technology is to the point where it is not possible to determine if PCBs are present in the resulting effluent and surface water.

The reasonable assurance determination does not meet the legal standard for approval of a TMDL under the Clean Water Act, as it is unlikely to achieve any further reductions in PCB loading until EPA undertakes to remove allowable PCB concentrations from the stream of commerce under the Toxics Control Substance Act (TSCA). If PCBs are present in IEP effluent, it is solely due to the inks and dyes in recycled paper used in its paper making process. EPA allows concentrations of PCBs in these inks and dyes up to 50 parts per million (ppm), a value over 38 billion times higher than the Spokane Tribe of Indians PCB criterion of 1.3 pg/L. EPA has repeatedly stated that there is no evidence that PCBs at the allowed levels in inks and dyes pose a threat to human health. It is nonsensical under the Clean Water Act or environmental

justice for EPA to pursue unmeasurable levels of PCBs in the Spokane River when it allows concentrations of PCBs up to 50 ppm in toothpaste, soap, shampoo, dish soap, laundry detergent, clothing, paint, caulking, and a myriad of other everyday products.[1] Even if EPA has authority to issue a PCB TMDL for the Spokane River, there is no basis for reasonable assurance of achieving the applicable water quality standards until EPA acts to remove PCBs from the stream of commerce.

IEP joins and incorporates by reference the separately filed comments on the draft TMDL by the National Council for Air and Stream Improvement (NCASI).

Comment No. 1: EPA lacks authority to issue the Spokane Rivers PCBs TMDL

Under the Clean Water Act ("CWA"), states have the primary responsibility for identifying impaired waters and developing TMDLs to address impairments. The use of "[e]ach State shall" in the subsection addressing TMDL programs demonstrates the exclusive authority in the first instance for states to develop TMDLS. *See* 33 U.S.C. § 1313(d). A foundational principle of the CWA is "that States remain at the front line in combating pollution." *City of Arcadia v. EPA*, 411 F.3d 1103, 1106-07 (9th Cir. 2005) (holding constructive submission does not preclude a state from submitting a TMDL after EPA established one on the same subject). Under this cooperative federalism model, states must develop TMDLs for pollutants causing impairments in waterbodies identified in a state's §303(d) list. 33 U.S.C. § 1313(d)(1)(C). The EPA, in turn, has an obligation to review the state submitted TMDL and either approve or disapprove. *Id.* § 1313(d)(2). If the EPA disapproves of a proposed TMDL, it has a nondiscretionary duty to issue its own TMDL for the impaired water body. *Id.* EPA may otherwise only act on its own initiative to impose a TMDL on a state when the state has expressly or constructively submitted to EPA a determination that the state will not be developing a TMDL.

The state of Washington has neither expressly nor constructively stated it will not develop a PCB TMDL for the Spokane River. Indeed, EPA determined in April 2013 that a constructive submission regarding a PCB TMDL had not been submitted by the Department of Ecology ("Ecology").[2] That determination was upheld in *Sierra Club v. McLerran*, 2015 WL 11088522 Memorandum Order, at 17 (W.D. Wash. Mar 16, 2015) ("Therefore, Ecology's failure to submit the PCB TMDL did not clearly and unambiguously indicate its intent to abandon the PCB TMDL."). Since 2015, Ecology has adhered to the deadlines in the 2015 "EPA's Plan for Addressing PCBs in the Spokane River." Indeed, by conclusions in the TMDL document, the state is ahead of schedule for meeting the then applicable PCB water quality criterion for PCBs. EPA is also aware, consistent with the plan that Ecology has continued to find that measurable progress is being made to reduce PCB loadings to the Spokane River. This is documented in the 2022 Measurable Progress Report issued by Ecology in June 2023, wherein Ecology states: "[f]or this evaluation, Ecology concluded that, during the assessment period of

[1] Draft TMDL, Section 3.1, "while concentrations of inadvertent PCBs are regulated by TSCA, the wide range of products that contain them continue to contaminate many waste streams (Xiaoyu et al. 2022)."
[2] *Sierra Club v. McLerran*, Case No. 2:11-cv-01759-BJR, Doc. No. 129-1 EPA's Plan for Addressing PCBs in the Spokane River, at 2 (W.D. Wash. July 14, 2015).

January 1, 2015, through December 31, 2021, the SRRTTF made measurable progress toward meeting applicable water quality standards."[3]

EPA does not have the authority to adopt a PCB TMDL absent an express or constructive submission from the state of Washington that the state does not intend to develop a PCB TMDL. That has not occurred, and EPA will be acting unlawfully to adopt a final PCB TMDL at this time.

In response to this comment, please answer the following questions:

1. **Please identify each and every communication from Ecology where it has expressly informed EPA that the state of Washington does not intend to develop a PCB TMDL for the Spokane and Little Spokane Rivers. In this identification, please identify the person or persons at Ecology who made a communication, how the communication was made, e.g., by letter, email, or personal communication. The failure of EPA to respond to this question with specific details will be taken to be admission that the state of Washington has never made such a communication to EPA and this admission will be relied on in any judicial review of a final TMDL.**

2. **Does EPA maintain that the state of Washington has made a constructive submission that it does not intend to develop a PCB TMDL for the Spokane and Little Spokane Rivers? If so, please identify each and every fact EPA relies on for this determination. The failure of EPA to respond to this question with specific details will be taken to be admission that the state of Washington has not made a constructive submission on development of a PCB TMDL and this admission will be relied on in any judicial review of a final TMDL.**

Comment No. 2: EPA cannot rely on an unapproved test method to apply numeric water quality criteria.

The EPA-approved test method in 40 C.F.R. Part 136 for measuring PCBs is Method 608.3. 40 C.F.R. § 136.3 Table 1C, Part 136, Appx. A, Meth. 608.3. In 2023 EPA issued a proposed rule for its newest methods update, again designating the most recent version of Method 608 as its only 40 CFR Part 136 approved method for measuring PCBs.[4].

Under the EPA approved water quality standards for the state of Washington, ch. 173-201A WAC, only EPA approved test methods may be used to apply water quality standards. WAC 173-201A-260(3). With respect to test methods, the standards state:

> The analytical testing methods for these numeric criteria must be in accordance with the "*Guidelines Establishing Test Procedures for the Analysis of Pollutants*" (40 C.F.R. Part 136) or superseding methods published. WAC 173-201A-260(3)(h).

The EPA approved water quality standards for Washington further require that in applying numeric criteria for water quality, Ecology, in this case EPA, "will give consideration to the precision and accuracy of the sampling and analytical methods used. . .." WAC 173-201A-260(3)(g) It is undisputed that Method 1668C is an inherently unreliable water quality test

[3] Ecology, Evaluation of Measurable Progress Spokane River Regional Toxics Task Force, Pub. No. 23-10-004, at 10 (June 2023)
[4] 88 Fed. Reg. 10724, 10761-62 (Feb. 21, 2023)

method. EPA has repeatedly declined to approve Method 1668C as a 40 C.F.R. Part 136 method for this very reason. In 2010, EPA proposed adding Method 1668C to the list of 40 C.F.R. Part 13 approved methods for testing PCBs.[5] Comments on the proposed rule were submitted by thirty-five federal, state, and municipal entities, individuals, and industry organizations.[6] Only five of the thirty-five comments supported approval of the test method. *Id.* According to EPA, "commenters opposing the method provided a detailed critique of the method, the interlaboratory study, the peer reviews and the other supporting documentation." *Id.* One of the primary concerns with Method 1668C was the "ubiquitous problem of background contamination." *Id.* After considering this data and the comments, EPA declined to approve Method 1668C. *Id.*

As pointed out by the Washington Supreme Court, Ecology has made representations regarding the unreliability and inaccuracy of Method 1668C: "[a]s Ecology points out, Method 1668C is unreliable because that test does not allow Ecology to determine whether any of the PCBs detected come from the discharger, the test container itself, or the ambient air." *Seattle Iron & Metals*, 191 Wn.2d at 642. The Ecology Water Quality Program Permit Writer's Manual (PWM) instructs permit writers that "there are known problems in regard to (sic) the repeatability and accuracy of [Method 1668C] in addition to the expense of the analysis."[7]

EPA has relied on Method 1668C data from surface water sampling that was conducted at the direction of the Spokane River Regional Toxics Task Force (SRRTTF) for the purposes of developing a semi-quantitative assessment of PCB sources to the Spokane River. The data was not collected for regulatory use in NPDES permits or a TMDL. SRRTTF Quality Assurance Project Plans (QAPP) have made clear that its data collection efforts were "not intended to satisfy the requirements of data collection needs for regulatory undertakings such as evaluating compliance with applicable water quality standards for PCBs or developing information for Load or Wasteload Allocations."[8]

The PWM makes clear that the use of Method 1668C should be conducted under the terms of an approved QAPP.[9] EPA does not have an approved QAPP for its regulatory use of Method 1668C data from the SRRTTF. Sampling using Method 1668C is typically conducted with at least a laboratory "blank" to determine whether the PCBs detected are present in the sample or the laboratory conducting the test. In some cases, sampling is also conducted with sampling and travel blanks. The PWM identifies and discusses the "known problems in regards [sic] to the repeatability and accuracy of the method." *Id.*, at 8 [PWM, at 226]. This is why the PWM follows EPA documentation for the unapproved test method and recommends a blank censoring value of 10x. *Id*. at 7 [PWM, at 225] (emphasis added). The PWM also cautions that "blank censoring at 3x or 5x is used for identification of sources and can be a semi-quantitative analysis that may yield false positives which prevents it from being useful for the purpose of determining reasonable potential." *Id*. at 8 [PWM, at 226]. This is an important distinction. If a laboratory blank detects PCBs, the sample PCBs must be at a level more than 10x the concentration of the PCBs in the laboratory blank to confirm the environmental presence of PCBs in the sample. Here, the EPA data analysis is based on test method 1668C data that was developed using a blank censoring factor of only 5x.

[5] 75 Fed. Reg. 58020, 58023 (Sept. 23, 2010)
[6] 77 Fed. Reg. 29758, 29763 (May 18, 2012).
[7] Ex. 225, Ecology Water Quality Program Permit Writer's Manual, at 8, [PWM, at 226]
[8]LimnoTech, Quality Assurance Project Plan, Spokane River Toxics Reduction Strategy Study, at 220 (July 23, 2014)
[9] Department of Ecology Water Quality Program Permit Writers Manual ("PWM"), at 227.

Method 1668C is prone to interference and is particularly unreliable at low PCB concentrations. This is supported by the Ecology PWM, which states:

- "When PCB concentrations are very low, background contamination in lab or field blanks may interfere with the calculation of total PCB." *Id., at* __ [PWM, ay 255].
- "[T]here are known problems in regards to repeatability and accuracy of the [1668C] method in additional to the expense of the analysis." *Id.,* at _ [PWM, at 256].

It is well documented that PCBs are ubiquitous in the environment and as a result 1668C has issues at low level detection, because PCBs contaminate laboratories, blank samples and samples from other sources.[10] The test method is simply not accurate at low levels because PCBs are "everywhere in the environment" and laboratories are unable to separate the "general presence of PCBs everywhere in the environment from what's in the specific sample that's being tested by the laboratory."[11] There is scientific consensus that it is extraordinarily difficult to accurately measure the concentrations of PCBs at low levels.[12]

It is also well accepted in other watersheds that Method 1668C is not reliable in evaluating data that is less than 1 nanogram per liter (ng/L), or1000 picograms per liter (pg/L). In environmental testing a threshold of one 1 ng/L is used to eliminate lower, unreliable concentration data from an analysis.[13] This is also true for Puget Sound where long-term toxics monitoring for PCBs excludes any 1668 data less than 1 ng/L as being irrelevant using a sensitive test method susceptible to background noise.[14]

Method 1668C data is also questionable given the limitations of environmental laboratories and the availability and condition of laboratory equipment. All of the SRRTTF PCB data was processed by an AXYS/SGS laboratory in British Columbia. A representative of that laboratory has represented in a recent public meeting that it is holding its high-resolution mass spectrometer together with "duct tape."[15] Consistent with this representation, AXYS/SGS has announced that after December 31, 2024, it will no longer be processing Method 1668C.[16]

EPA should have developed its own QAPP for the use of data for the PCB TMDL. The Ecology PWM specifically requires that method 1668C testing of PCBs be conducted under the terms of an approved QAPP.[17]. Furthermore, the PWM states that the QAPP will "document a consistent manner with respect to procedures… specific to the level of certainty required in decision making." *Id.* It further provides that a QAPP must include the censoring technique and censoring factor that will be used. *Id.,* at 256. In describing the PWM QAPP requirement, the State of Washington Court of Appeals noted:

> A [QAPP] is required when using Method 1668C for any purpose. . .. These plans "ensure that the collected environmental data can be used for making decisions." *Id*. They detail the processes necessary for "data collection, management[,] and subsequent analysis," and they develop standard operating procedures "to evaluate and control data accuracy." Procedures such as measuring

[10] *Kaiser Aluminum Washington LLC v. Ecology,* PCHB No. 22-045, Testimony of Linda Cook ("Cook Testimony"), at 344:16-22.
[11] *Kaiser,* Testimony of Dr. Tom McHugh ("McHugh Testimony"), at 241:2-15.
[12] *Kaiser,* Testimony of Dr. Susan Paulsen ("Paulsen Testimony"), at 395:1-7.
[13] Cook Testimony, at 348:14-349:3. McHugh Testimony, at 252:20-25.
[14] J. West, et al, Zeroing in on PCB Sources in Puget Sound's Pelagic Food Web; update of 2021-22 pelagic food web study, PSEMP Toxics Work Group Presentation (Dec. 7, 2023).
[15] Cook Testimony, at 344:23-345:7; 345:21-346:2; 347:6-20.
[16] Email from AXYS/SGS to IEPCO (March 26, 2024).
[17] PWM, at 227, 255

> the PCBs present in distilled water (blanks) for comparison "increase result precision" and "ensure no contamination occurs at any point during the analytical procedure."

Northwest Pulp & Paper Ass'n v. Dep't of Ecology, 20 Wn. App. 2d 533, 542-43, 500 P.2d 231 (2021) (citations omitted).

SRRTTF collected the data under a QAPP designed to support a semi-quantitative analysis of mass loading of PCBs in the Spokane River. The SRRTTF QAPP states, "[i]n this Study, PCB concentrations are being used solely to support semi-quantitative loading assessments. Results will not be compared to regulatory criteria or standards."[18] The data collected by the SRRTTF is also biased, because it was collected predominantly in low flow periods. Twenty one of the twenty six SRRTTFF sampling events were in the month of August, which has the lowest or nearly lowest flow rates of the year.[19] The monthly flows in August "constitute roughly 1 to 2 percent of the total amount of flow in the river over the course of a year." *Id.*, at 392:19-21. The SRRTTF intentionally targeted dry weather conditions and collected samples in August during low flow conditions to have data that could be used in its loading analyses.[20] This data may be suitable for a semi-quantitative analysis of mass PCB loading but it is not sufficient or appropriate for regulatory purposes.

In response to this comment, please respond to the following questions:

1. **Please identify the specific statutory and regulatory authority to use an unapproved test method for the development of a TMDL.**

2. **Does EPA contend that it is authorized to use an unapproved test method for the development of a TMDL under the terms of 40 C.F.R. Part 136? If so, please state the specific section and language on which EPA relies for this authorization.**

3. **Does EPA admit or deny that it is bound by the EPA approved terms of WAC 173-201A-260(3) that the analytical methods for water quality criteria in Washington must be approved by EPA? If you admit, please explain your interpretation of the language that allows EPA to use an unapproved test method for a TMDL.**

4. **Why did EPA disregard the fact the SRRTTF 1668C data was collected for a semi-quantitative purpose and was not intended to be used for any regulatory purposes? Please explain why EPA ignored the terms of QAPPs approved the SRRTTF and Ecology in this regard.**

5. **Why did EPA rely on data collected by the SRRTTF in the critical low flow periods in August? Does EPA consider this data representative of PCB concentrations in the Spokane River?**

6. **What quality assurance project plan did EPA develop for the qualification of flagged data? Did EPA exclude any flagged data from its analysis?**

[18] LimnoTech, QAPP for SRRTTF (August 17, 2022), at 12.
[19] Paulsen Testimony, at 392:12-19.
[20] Cook Testimony, at 351:23-352:11

7. **What did EPA do to verify the capacity of the AXYS/SGS laboratory to process method 1688C?**

8. **Why is EPA relying on 1668C data that is orders of magnitude below a threshold of 1 ng/L used in other watershed nationwide and in the state of Washington?**

Comment No. 3: EPA cannot establish that the Spokane River below Long Lake Dam is failing to meet water quality standards.

EPA does not appear to have quantitative data that PCBs are present in the water column of the Spokane River below Long Lake Dam. Ecology has published a report on PCB sampling in the Spokane River near the boundary of the Spokane Tribe of Indians waters.[21] In that report Ecology determined that it could not confirm the presence of PCBs in the river due to the presence of PCBs in sample, travel, and lab blanks.[22] This conclusions is illustrated in Figure 6 in the report:[23]

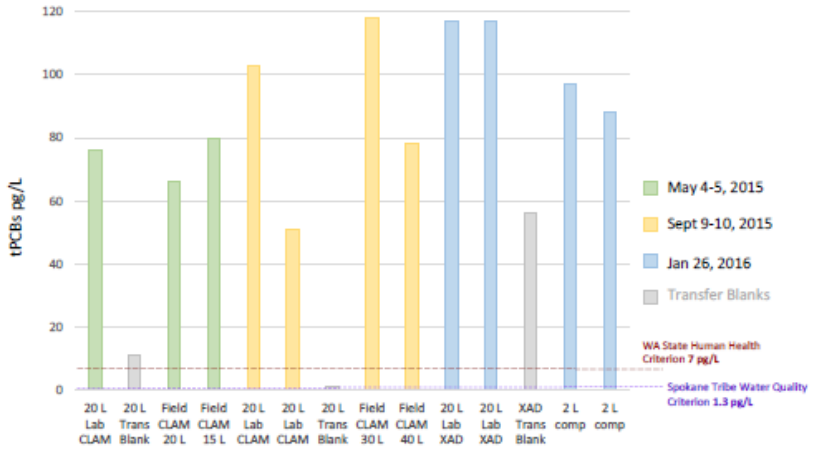

Figure 6. Total PCB Results (pg/L) for Surface Water Sampling.

[21] Ecology, Spokane River PCBs and Other Toxics at the Spokane Tribal Boundary, Pub. No. 17-03-019 (December 2017);
[22] *Id.*, at 25.
[23] *Id.*, at 25.

It is readily apparent that, despite the use of a high-volume collection technique, the blank concentrations of PCBs were in some cases as high, or higher than sample concentrations. This is why Ecology made clear in the report that the data would be "considered to be semi-quantitative and will not be used for formal assessment of water quality criteria attainment."[24]

EPA has also failed to explain the biological process that would allow the PCBs remaining in IEP effluent to bioaccumulate in fish tissue. IEP's advanced water quality treatment system removes over 99% of the PCBs in its influent. The remaining PCBs are entirely lower weight congeners that pass through tertiary membrane filters.[25] EPA needs to explain how these PCBs can pass through advance filtration system but will not pass through the gills of fish. EPA also needs to acknowledge that the existing fish tissue on the Spokane River, including fish tissue sample below Long Lake Dam, are predominated by higher weight PCB congeners that are not present in IEP's effluent. EPA also needs to acknowledge that lower weight PCB congeners can degrade, volatilize, and breakdown in the environment. EPA cannot assume that lower weight congeners present in IEP's effluent are not lost in the environment before the Spokane Tribe of Indians waters.

In response to this comment, please answer the follow questions:

1. **What data, and what was the source of that data, collected below Long Lake Dam did EPA use to determine that the Spokane River is not meeting the Tribal PCB criterion in Tribal waters?**

2. **What data does EPA have that lower weight congeners in treated effluent are bioaccumulating in fish tissue?**

3. **What science does EPA have that lower weight congeners in highly-treated effluent are bioaccumulating in fish tissue?**

4. **What science does EPA have that PCBs do not degrade, volatilize, and breakdown in the environment?**

Comment No. 4: EPA does not have reasonable assurance that the TMDL will result in the attainment of applicable water quality standards.

EPA states in the TMDL that it must have reasonable assurance that the TMDL will result in attainment of the subject water quality standards. The narrative of the basis for reasonable assurance is a collection of disconnected references to NPDES permits, the newly formed Ecology Spokane River Toxics Advisory Committee, and the SRRTTF.

EPA should concede that NPDES permits in Idaho and Washington will not yield additional reductions in PCB loading from discharges subject to individual NPDES permits. IEP has installed the most advanced wastewater treatment system for a pulp and paper mill in North America, including the first state-of-the-art tertiary membrane treatment system that effectively removes more than 99% of the PCBs. Ecology has determined that the IEP advanced wastewater treatment technologies meet the definition of all known, available and reasonable methods of

[24] *Id.*, at 38.
[25] 2019 IEPCO Water Quality Variance Application, at 14; Paulsen Testimony, at 6.

prevention, control and treatment (AKART) for reduction of PCBs.[26] Additionally, IEP also removes and eliminates these PCBs from reentering the environment through thermal destruction.

The unprecedented level of treatment that IEP has achieved represents the limit of technology. IEP documented this fact in its 2019 application for a water quality variance.[27] The variance application thoroughly documents that the treatment systems installed and maintained result in the "highest attainable conditions" for PCBs in IEP's effluent.

EPA cannot rely on a *yet-to-be-developed* implementation plan by Ecology through its Spokane River Toxics Advisory Committee to establish reasonable assurance that the PCB TMDL obligations will be met. The committee has met only sporadically over the past year and has yet to address matters related to a PCB TMDL implementation plan. EPA must recognize that there is no path forward for an implementation plan to achieve 1.3 pg/L using an unapproved test method with existing technology. This *kick-the-can-down-the-road* approach does not provide a defined path forward to achieve the Tribal water quality standard through treatment or source control.

EPA appears to rely on the work of the SRRTTF for reasonable assurance. This reliance is absurd considering that the unilateral decision by EPA to issue a PCB TMDL resulted in the dissolution of the SRRTTF in June 2023. EPA is thus responsible for the loss of what was a national and effective model for a community-based approach to reduce toxic loading. With that loss, there is no longer on-going monitoring, loading analyses, or further implementation of the SRRTTF Comprehensive Plan.

IEP is particularly offended that the PCB TMDL reasonable assurance includes efforts to find alternative low-PCB products and reform of the EPA TSCA exemption for PCB concentrations in manufactured products. These initiatives were being pursued by the now defunct SRRTTF. These efforts included correspondence with EPA regarding TSCA reform,[28] joint efforts with tribes and environmental groups,[29] and legislation to compel Ecology to file a petition for rulemaking to amend TSCA.[30]

All these efforts have been unsuccessful. In the denial of the state petition for rulemaking, EPA states that there is no information that PCB allowances in TSCA pose a threat to human health. EPA needs to acknowledge that the remaining PCBs in the Spokane River are first and foremost the result of TSCA PCB allowances. Only EPA can resolve this ongoing source of PCBs to the watershed and there is no reasonable assurance that the TMDL will achieve PCB concentrations of 1.3 pg/L unless EPA takes action under TSCA.

At a recent hearing on the TMDL, Mr. Gunnar Johnson suggested that IEP needs to keep pressuring EPA on this issue. With all due respect, IEP has done more than it should be required to get EPA to act on this issue. If EPA needs additional pressure, that pressure should come from within EPA itself. Without action on TSCA reform, EPA cannot make a good faith

[26] Fact Sheet for NPDES Permit WA0000825 Inland Empire Paper Company. Effective 08/01/2022. Section III.B. Surface Water Quality-Based Effluent Limits, Mixing Zones, page 22: *"Ecology has determined that the treatment provided at IEP meets the requirements of AKART (see "Technology-based Limits")."*

[27] 2019 Variance Application, at 10.
[28] EPA letter to SRRTTF (February 2, 2015)
[29] 2019 Variance Application, Exhibits K-N.
[30] Senate Bill 5369, 2023 Laws of Washington, ch. 399 (July 23, 2023).

representation that it has reasonable assurance that the TMDL will achieve water quality standards.

In response to this comment, please answer the following questions:

1. **Does EPA contend that exposure to PCBs at levels above 1.3 ppq pose a threat to human health? If so, please explain why EPA does not believe that there is information that justifies reconsideration of PCB concentrations allowed under TSCA of up to 50 ppm, over 38 billion times higher than the Spokane Tribal WQS used as the basis for the PCB TMDL.**

2. **Does EPA contend that it is possible to achieve the PCB water quality criteria without TSCA reform? If so, please explain in detail how that is possible or reasonable.**

3. **When does EPA contend that the river will be incompliance with the 1.3 pg/L water quality standard? If EPA does not have an answer to this question, does EPA admit that its reasonable assurance determination is not based on any timeline or deadline to achieve the water quality standard?**

4. **Does EPA contend that IEP will have to take action to comply with its WLA if monitoring using an approved test method does not detect PCBs? If so, what will be the basis for determining when additional actions are necessary?**

5. **Without the SRRTTF and IEP leading the cause on TSCA reform, how and by whom does EPA expect that work to be performed?**

6. **Considering EPA's reliance on TSCA reform and pursuit of low-PCB consumer products to determine reasonable assurance, will EPA guarantee that these initiatives will continue in the absence of the SRRTTF? Considering that EPA intentionally dissolved the SRRTTF to adopt this TMDL, will EPA commit itself to funding these initiatives? If not, how will EPA reasonably assure the public that improvements to PCB loads will occur at all?**

I appreciate your time in considering these comments and invite EPA staff to contact me for further information and clarification.

Sincerely,

Douglas P. Krapas
Environmental Manager

KAISER ALUMINUM

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Flat Rolled Products

Trentwood Works

July 15, 2024

Gunnar Johnson, Ph.D
Washington State TMDL Coordinator
Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101

VIA EMAIL johnson.gunnar@epa.gov and SpokaneRiverTMDL@epa.gov

Re: Kaiser Aluminum's comments on EPA's Draft Spokane River PCB TMDL

Dear Dr. Johnson,

Kaiser Aluminum Washington, LLC ("Kaiser") appreciates the opportunity to comment on the draft total maximum daily load ("TMDL") for PCBs in segments of the Spokane River and Little Spokane River. Kaiser has consistently worked toward water quality improvements in the Spokane River by significantly reducing its permitted discharge, actively participating in the Spokane River Regional Toxics Task Force and other stakeholder groups, continuously identifying and addressing legacy sources of PCBs, and proactively piloting and implementing innovative technology to destroy PCBs. Kaiser looks forward to continuing its collaboration with EPA, the Washington Department of Ecology ("Ecology"), and regional stakeholders to continue water quality improvements.

I. Kaiser is committed to taking effective actions to improve Spokane River water quality.

Kaiser's Trentwood Works facility ("Trentwood") was constructed by the U.S. Government Defense Plant Corporation in 1942 to produce aluminum for World War II aircraft. Kaiser has operated the Trentwood facility since the 1940s and produces high-quality aluminum for the aerospace and general engineering markets. Like facilities throughout the Spokane River watershed and throughout the state, the Trentwood facility historically used PCBs for their safety-related properties in electrical and hydraulic systems until PCBs were banned in 1978. Kaiser does not produce or use

PCBs in any current manufacturing processes, but low-level residual PCBs remain at the Trentwood facility, in the groundwater underneath the facility, and in groundwater upgradient of the facility from non-Kaiser sources.

Kaiser values being a good steward of the environment and has made—and continues to make—significant efforts to reduce and eliminate sources of legacy PCBs at the Trentwood facility. Trentwood's on-site treatment system treats wastewater, stormwater, cooling water, and sanitary wastewater, discharging the treated water into the Spokane River as authorized by its NPDES Permit. Kaiser operates a walnut shell filtration system to remove approximately 82% of PCBs from its permitted effluent, and Kaiser's permit requires additional monitoring and control activities to address legacy sources of PCBs.

To reduce legacy PCBs in its permitted effluent, Kaiser has cleaned or replaced wastewater pipes impacted by historical contamination and removed contaminated sediment from a wastewater lagoon as part of treatment system maintenance. Kaiser has also reduced its water usage and discharge, even as Trentwood's production has increased, thereby reducing the volume of PCBs in its permitted effluent to the Spokane River. Kaiser discharges approximately 5 million gallons per day to the river, significantly less than its permit allowance of 11 million gallons per day.

Kaiser proactively seeks environmental solutions and, in coordination with Ecology, tested innovative technologies for prevention and control of PCBs in Trentwood's permitted discharge. After Kaiser's application to Ecology for a variance was put on hold, Kaiser nonetheless reached out to negotiate an agreed order to move forward with the actions described in the variance application. Pursuant to the agreed order and overseen by Ecology, Kaiser evaluated all known, available and reasonable methods of prevention, control and treatment of PCBs. Pilot testing demonstrated that an ultraviolet/advanced oxidation process ("UV/AOP") can destroy PCBs and remove them from the environment,[1] and Kaiser has proceeded to build out a UV/AOP system capable of destroying up to 98% of PCBs in contaminated groundwater and is evaluating the technology's application to Trentwood's permitted discharge. Kaiser's UV/AOP system is the only known effort in the Spokane River watershed to destroy PCBs, including PCBs from upgradient of the Trentwood facility.

Finally, Kaiser implements and continuously updates a PCB pollutant minimization plan ("PMP") to identify and complete legacy PCB reduction activities. First required under the agreed order Kaiser proactively sought with Ecology and now an enforceable NPDES permit requirement, the PMP is a clear and measurable roadmap for water

[1] Ecology, "Cleaning up: Promising pilot test destroying groundwater contamination in Spokane Valley," https://ecology.wa.gov/blog/december-2020/cleaning-up-promising-pilot-test-destroying-ground.

quality improvements that Kaiser updates regularly and submits to Ecology. Pursuant to the PMP, Kaiser has completed treatment system performance improvements, operational modifications, and material substitutions. These actions have reduced PCB inputs to the walnut shell filtration system that treats the facility's permitted effluent.

As demonstrated by reductions to its permitted discharge, pilot testing and evaluation of the UV/AOP system, PMP activities, and active participation in regional water quality collaborations such as the Spokane River Regional Toxics Task Force and the Spokane River Toxics Advisory Committee, Kaiser is committed to improving water quality in the region and to addressing legacy PCB contamination.

II. The draft TMDL disregards PCB reductions overseen and regulated by Ecology.

Despite Kaiser's history of proactively addressing legacy sources and working with regional stakeholders, the draft TMDL inaccurately emphasizes Trentwood as a significant source of PCBs to the Spokane River. For example, the draft TMDL describes a legacy groundwater plume under Kaiser's property, without explaining that the site is regulated by Washington's Model Toxics Control Act and actively overseen by Ecology. Moreover, without citation, the draft TMDL assigns a significant volume (20.1 cfs) to Kaiser sources of water to the river and inaccurately implies that Kaiser is the source of any PCBs entering the river in the reach along its property. In fact, Kaiser pursued, in coordination with Ecology, pilot tests of innovative technologies to remove PCBs from groundwater, including PCBs from upgradient of Kaiser's property. These tests demonstrated that the UV/AOP system can destroy up to 98% of PCBs in groundwater, and Kaiser moved forward to construct and operate a full-scale system, overseen by Ecology.

Finally, by adopting a single equation for all permitted discharges to the Spokane River, the draft TMDL is oversimplified. Kaiser discharges a significantly smaller volume of water—and accordingly, PCBs—to the river than the largest permitted discharger.[2] As explained above, Kaiser has significantly reduced its permitted discharge volume and will achieve further volume reductions as Kaiser implements actions described in the PMP and overseen by Ecology. Kaiser recognizes that any PCBs in the Spokane River are a concern. However, by overemphasizing Trentwood's contribution of PCBs and failing to explain that Kaiser's ongoing reduction activities are enforceable, measurable,

[2] Kaiser discharges approximately 5 million gallons per day to the river while the City of Spokane's treatment system has a permitted maximum monthly design flow of 68.1 million gallons per day and a maximum one-day design flow of 94.6 million gallons per day. *See* NPDES Permit No. WA0024473, at Table 15.

and effective, the draft TMDL does not present an accurate assessment of current sources and actions that are positively impacting water quality.

III. The draft TMDL will not drive water quality improvements.

A TMDL is an "informational tool[]" that presents a plan to achieve water quality standards. *Pronsolino v. Nastri*, 291 F.3d 1123, 1129 (9th Cir. 2002). Calculating a TMDL requires a "complex scientific analysis" to inform stakeholders and regulators. *See Maryland Dep't of Env't v. Assateague Coastal Tr.*, 484 Md. 399, 415, 299 A.3d 619, 627 (Md. 2023). Kaiser appreciates EPA's efforts to develop the draft TMDL to meet a schedule required by a consent decree. Unfortunately, the draft TMDL will not drive water quality improvements, contrary to the intent of the Clean Water Act and the TMDL program.

The draft TMDL employs a very simple model that overlooks sources of PCBs in the Spokane River watershed, relies on outdated and incomplete data, and aims for infeasible and unmeasurable discharge concentrations at the expense of achievable, action-driven water quality improvements. These deficiencies, explained in detail in the attached comments from Kennedy Jenks, result in a draft TMDL that does not present a realistic plan for achieving water quality improvements.

a. By ignoring significant sources of PCBs, the draft TMDL cannot achieve its goals.

A practical, implementable TMDL considers all known and significant sources throughout a watershed. The PCB TMDL for the Spokane River should follow this approach and require all relevant jurisdictions—including Washington, Idaho, and the Spokane Tribe—to coordinate water quality improvement efforts. EPA's PCB TMDL guidance describes many multijurisdictional TMDLs that could serve as the model for developing a comprehensive plan to achieve water quality improvements in the Spokane River that assesses all significant sources of PCBs and reduces contamination inputs throughout the watershed. *PCB TMDL Handbook*, EPA 2011; *see also Anacostia Riverkeeper, Inc. v. Jackson*, 798 F.Supp.2d 210, 218-219 (D.C. Cir. 2021) ("Recognizing that the Anacostia is a *multistate water body* and that *efforts to reduce pollution on the river necessarily require coordination between multiple jurisdictions*, EPA brought the District and Maryland together to collaborate on a new, system-wide sediment/TSS TMDL for the river.") (emphasis added).

Instead, and contrary to EPA's stated intent, the draft TMDL does not address all "known PCB pollution inputs"[3] throughout the 6,583-square mile river basin. The draft TMDL disregards known and significant sources in the watershed, across multiple

[3] Draft TMDL, at 11.

jurisdictions. Without addressing these sources, the draft TMDL does not lay out a realistic path to achieving water quality standards.

First, the draft TMDL describes "boundary conditions" at the Idaho border as a catch-all that includes regulated and unregulated upstream sources. EPA stated at the public meeting on May 29, 2024, that it will take a "hard look" at NPDES permits issued by the Idaho Department of Environmental Quality (IDEQ) to determine if permitted discharges will impact downstream standards and the final TMDL. Even if this "hard look" approach incorporates the goals of the draft TMDL into IDEQ permits, there is no such regulatory process in place to take a "hard look" at non-point source inputs in Idaho or their transfer to the Spokane River and eventual flow into impaired segments in Washington.

In particular, the draft TMDL's treatment of Coeur d'Alene Lake is a significant deficiency. EPA acknowledges the "relatively large surface area" of the lake as "an important interception interface for bulk atmospheric deposition."[4] In other words, the lake is large, and atmospherically deposited PCBs flow "readily" from the lake into the Spokane River. Despite the acknowledged significance of atmospheric deposition to Coeur d'Alene Lake, EPA does not assign a load allocation to this source and, instead, lumps it into the "boundary conditions" at the Idaho border.[5]

Second, the draft TMDL ignores background levels of PCBs in groundwater throughout the watershed, focusing on a limited number of legacy sources without explaining how EPA derived volume inputs for those targeted sources or what data set EPA used to evaluate groundwater inputs throughout the watershed. Groundwater with elevated background levels of PCBs infiltrates the river throughout the watershed, but EPA does not acknowledge this potentially significant source of PCBs to impaired segments.

Finally, the draft TMDL ignores stormwater and sediment as sources of PCBs to the river, despite evidence that these sources contribute PCBs and are not currently controlled by any active regulatory program.

By ignoring these significant sources of PCBs to the Spokane River, the draft TMDL does not present a realistic or useful roadmap to achieve water quality improvements. The draft TMDL employs an overly simplistic model that fails to capture the complexity of the watershed and known PCB sources. Without a more comprehensive assessment, the draft TMDL cannot provide a useful "informational tool" to stakeholders responsible for implementing water quality improvements.

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[4] Draft TMDL, at 28.

[5] The draft TMDL also assigns a "boundary condition" at the Washington/Spokane Tribe border to address sources "that flow directly into the Spokane River from their point of exit from the Spokane Tribe reservation." (Draft TMDL, at 48.) The draft TMDL, however, does not assign any load allocations to these sources of PCBs or indicate whether EPA will take a "hard look" at permits or other efforts to control those sources.

b. The draft TMDL assigns concentrations that cannot be measured.

The draft TMDL is not self-implementing. Ecology will be responsible for achieving water quality standards by implementing the TMDL and using other regulatory tools to reduce contamination. The draft TMDL does not provide meaningful information to Ecology or other stakeholders because it calculates allocations by assigning concentrations that cannot be measured.

There is no test method that can reliably detect PCBs at a concentration of 1.3 pg/L. By assigning load allocations and waste load allocations based on an unmeasurable concentration, the draft TMDL does not provide useful or actionable information to Ecology or other stakeholders working for water quality improvements.

IV. The draft TMDL should follow the model of successful TMDLs that have achieved water quality improvements.

There are examples of successful TMDLs that have established a roadmap to achieve water quality improvements. The TMDL for PCBs in the Spokane River should adopt the approach from these TMDLs and provide a realistic roadmap to stakeholders.

EPA guidance recommends that a multijurisdictional TMDL include calculations to achieve water quality standards in each jurisdiction. The draft TMDL's assignment of "boundary conditions" that are not based on data or modeling that account for significant known sources does not follow this recommendation. Instead, the draft TMDL disregards significant inputs regulated by Idaho and the Spokane Tribe, as well as upgradient and background levels of PCBs within Washington. In contrast, multijurisdictional TMDLs that follow the guidance recommendations include modeling from each affected jurisdiction and throughout the subject watershed. The Delaware River PCB TMDL and the Ohio River PCB TMDL each assess and model inputs from sources across three states (and two EPA regions). The Delaware River TMDL assessed sources throughout the watershed to calculate inputs and load allocations in multiple zones. The draft PCB TMDL for the Spokane River should similarly take a comprehensive view of sources throughout the watershed, including background and upgradient groundwater concentrations and aerial deposition.

EPA should also follow the example of the Spokane River TMDL for dissolved oxygen, which assessed natural conditions across impacted jurisdictions to model TMDL scenarios and assign allocations to point sources, groundwater, and tributaries. The draft PCB TMDL for the Spokane River should similarly comprehensively address background and sources throughout the watershed to provide a realistic roadmap for water quality improvements.

***

Although the draft TMDL paints an incomplete picture of the inputs of PCBs to the Spokane River and leaves many gaps regarding the actions necessary to achieve water quality improvements, Kaiser welcomes the opportunity to work with EPA, Ecology, IDEQ, the Spokane Tribe, and other stakeholders to continue to gather data, address legacy PCB sources, and reduce PCBs inputs from throughout the watershed.

Attached to this letter are technical comments and recommendations for the final TMDL from Kennedy Jenks. Kaiser looks forward to continuing its work to implement measurable water quality improvements in the Spokane River region.

Sincerely,

Kevin Barron
Vice President – Trentwood Manufacturing

Attachment

Kennedy Jenks

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Technical Comments to Draft Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads

8 July 2024

Prepared for

Kaiser Aluminum Trentwood
15000 East Euclid Avenue
Spokane Valley, Washington 99216

KJ Project No. 2465039
Kaiser Project PCB TMDL Support

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REV	DATE	ISSUED FOR	BY	CK	CK	PM
A	6/27/2024	Client Draft Review	JC	JS	TM	CH
B	7/5/2024	Revised Draft	TM	JC	JS	CH

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List of Acronyms and Abbreviations

AKART ..... All Known, Available, and Reasonable Technologies
AU ..... Assessment Unit
BMPs ..... best management practices
CdA ..... Coeur d'Alene
CFS ..... cubic feet per second
CFR ..... Code of Federal Regulations
cm ..... centimeter
CWA ..... Clean Water Act
EAP ..... Environmental Assessment Program
EIM ..... Environmental Information Management website
EPA ..... U.S. Environmental Protection Agency
FTEC ..... Fish Tissue Equivalent Concentrations
GC ..... Gas Chromatography
HHC ..... Human Health Criteria
µg/L ..... micrograms per liter
LA ..... Load Allocation
MDL ..... Minimum Detection Limit
MOS ..... Margin of Safety
MS ..... Mass Spectrometry
MTCA ..... Model Toxins Control Act
ng/g ..... nanograms per gram

PCB ..... Polychlorinated biphenyl
pg/L ..... picograms per liter
POTWs ..... Publicly Owned Treatment Works
TEC ..... Tissue Exposure Concentrations
TMDL ..... Total Maximum Daily Load
TPCBs ..... Total PCBs
USGS ..... United States Geological Survey
UV ..... Ultraviolet
UV-AOP ..... Ultraviolet Advanced Oxidation Process
WAC ..... Washington Administrative Code
WLA ..... Waste Load Allocation
WQ ..... Water Quality
WQC ..... Water Quality Criteria
WQS ..... Water Quality Standard
WSFS ..... Walnut Shell Filtration System

Section 1: Introduction

Kennedy Jenks has been contracted by Kaiser Aluminum Trentwood (Kaiser) to provide technical comments in response to the U.S. Environmental Protection Agency (EPA) 15 May 2024 Public Comment Draft document entitled *Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads* (Draft TMDL). EPA released the Draft TMDL to fulfill obligations in a consent decree that resolved litigation with Sierra Club and Center for Environmental Law and Policy. The Draft TMDL responds to observed conditions in 12 assessment units (AUs) in the Spokane and Little Spokane Rivers that the State of Washington identified on its 2014-2018 Clean Water Act (CWA) 303(d) list as impaired. The listing is based on polychlorinated biphenyl (PCB) presence in fish tissue samples at concentrations greater than the fish equivalent tissue concentration which equates to the state of Washington's water quality criteria (WQC) for human health[1] of 7 picograms per liter (pg/L). The listed AUs for PCB impairments occur upriver of the Spokane Reservation (above River Mile 32), with exception of one AU at river miles 12.7 to 11. A map showing impaired AUs in the study area is included as Figure 1.

The boundaries for the Draft TMDL extend along the length of the Spokane and Little Spokane Rivers in Washington, from the state border with Idaho to the mouth of the Columbia River. Total Maximum Daily Load (TMDL) limits established in the Draft TMDL are proposed to achieve the Spokane Tribe WQC for human health of 1.3 pg/L for PCBs in the water column.

These comments on the Draft TMDL include technical comments and considerations for the implementation of the PCB TMDL as presented including:

- The published Draft PCB TMDL report employs a simplified model which does not account for PCB fate and transport in the river water column.
- Proposed waste allocations for point sources have been developed to achieve a 1.3 pg/L PCB concentration at all points in the river. This concentration is below background river concentrations and the limits of detection for all current analytical methods.
- Load allocations for non-point sources have been developed to achieve the 1.3 pg/L WQC, despite current stormwater and groundwater concentrations being orders of magnitude higher.
- There are currently no known treatment technologies capable of reducing PCB loading to these limits.

[1] Figure 5 of the draft TMDL provides a map identifying the 12 AUs in the Spokane River identified by the State on its 2014-2018 CWS 303(d) list. The State identified these AUs based on fish tissue samples collected between 1993 to 2012 (as reported in the Washington State Department of Ecology Environmental Information Management website [EIM] http://www.ecy.wa.gov/eim/index.htm) indicating PCB concentrations greater than Tissue Exposure Concentrations (TEC) or water column concentrations greater than fish tissue equivalent concentrations (FTEC).

- The proposed waste load allocations are not currently feasible and would necessitate water quality variances for PCB point sources within the study area[2].

Technical comments on the Draft PCB TMDL are organized in this white paper as follows:

- Section 2 provides a brief review of the Draft TMDL and presents technical comments.
- Section 3 discusses the implementability of the Draft TMDL.
- Section 4 includes conclusions and recommendations.
- Section 5 includes a list of references.

[2] In 2019, five National Pollutant Discharge Elimination System (NPDES) dischargers to the Spokane River filed variance applications related to PCB Water Quality Standard (WQS) in place at that time. Ecology reviewed the applications and determined that they meet the variance submittal requirements in the State Surface WQSs, WAC 173-201A-420(3). Variance rulemaking remains on hold.

Section 2: Draft TMDL Report Review

The Draft TMDL is inconsistent with EPA's technical guidance for the development of PCB TMDLs. EPA follows the technical guidance *PCB TMDL Handbook* for development of PCB TMDLs (EPA, 2011). EPA's Technical Guidance includes various levels for development of TMDLs, including the Level One Model Approach used as the basis to develop the Draft TMDL. The following is a definition of a Level One Model approach: Level one approaches for PCB TMDLs include non-modelling approaches, such as assuming a proportional one-to-one relationship between PCB loadings and fish tissue and using a bioconcentration factor to calculate a water column value. A level one approach may also involve back-calculating from the sediment targets and sediment data to determine the loading capacity. However, the Draft TMDL model is a simplified mass balance, relying on historical analytical data collected 10 years ago and simplified transport assumptions instead of relying on fish tissue concentrations, bioconcentration factors, and/or sediment interactions. Therefore, the Draft TMDL is inconsistent with EPA's technical guidance.

The Draft TMDL model was used to determine the maximum allowable PCB loadings from all sources within the watershed with the goal of attaining applicable WQC. The model was constrained to assume that PCBs were fully mixed and conserved in the river and that incoming PCBs were transported downstream. The model ignored PCBs in sediment and focused on water column concentrations, given that WQC are written with respect to that metric. Load allocations (LAs) and waste load allocations (WLAs) were developed to achieve a 1.3 pg/L PCB concentration at the confluence with the Columbia River. However, the lowest estimated PCB concentration in the river study area is 48 pg/L, which was measured in the Spokane River water column at the Washington/Idaho border (EPA 2024). The Draft TMDL Report states that PCB loading from the upstream Idaho extension of the river may be due to stormwater runoff, groundwater infiltration, and aerial deposition in Coeur d'Alene Lake, approximately 11 miles upriver. To determine WLAs for point sources, the model constrained non-point source concentrations to 1.3 pg/L, including river water crossing the state border and groundwater infiltrating into the river. As a result, the model indicates that PCB concentrations from point sources along the river must be at or below 1.3 pg/L to meet the WQC.

A figure showing a map of the study area near Kaiser Aluminum with groundwater sampling locations is attached (Figure 2). Technical comments related to the following considerations are provided below:

- TMDL Limitations;
- Comparison to previous TMDLs for PCBs;
- PCB Analytical Method Detection Limits; and
- TMDL Model technical comments.

2.1 TMDL Limitations

The Draft TMDL uses a conservative, simplified approach and makes several assumptions which are atypical for a study of this scope and level of contamination. Typically, TMDLs for rivers with high PCB loadings consider multiple PCB removal mechanisms from the water column (TetraTech 2016, Virginia Tech 2023). The simplified Draft TMDL assumes that no PCBs are lost from the system due to volatilization, sedimentation, adsorption, or degradation. This conservative assumption is considered to provide an inherent margin of safety (MOS) for the TMDL. While PCB degradation in natural waters is a slow process, the omission of volatilization and sedimentation removal mechanisms from the Draft TMDL will not yield accurate results. These removal mechanisms and other considerations for the Draft TMDL are described in more detail in the following subsections. A discussion of the mass balance model included in the Draft TMDL is included in Section 2.4.

2.1.1 Volatilization

The model ignores volatilization as a PCB removal mechanism from natural waters, despite atmospheric transport being the most important mechanism for global dispersion of PCBs (Martinez 2019; Swarupa 2005). Net volatilization of PCBs from contaminated waterways has been measured as greatly exceeding aerial deposition in multiple studies (Apell 2017; Martinez 2019). PCB transport to the atmosphere increases with concentration in the water column and is most associated with lower molecular weight congeners. PCBs readily volatilize from the water column when adsorption effects are absent (EPA "Technical Factsheet on PCBs," n.d.). In certain segments of the Spokane river with low sediment loading and high PCB concentration, PCB volatilization may be a removal mechanism that should be considered.

2.1.2 Sediment and Stormwater

The model omits sediment and stormwater interactions with the water column. Sediment acts as a reservoir of PCBs for bioaccumulation by aquatic receptors as well as transport to the water column followed by losses from volatilization. A 2019 study of Spokane River sediments within the TMDL boundaries measured total PCB concentrations as high as 125 ng/g dry weight in sediments (Ecology, 2022). PCB concentrations in the upper 10 cm of sediments in Long Lake in Spokane have been measured from 8 to 33 ng/g in the upper portion of the lake, and 28 to 75 ng/g in the lower portion of the lake (LimnoTech, 2016). Ingestion of sediments and contact with contaminated sediments are mechanisms for uptake of PCBs into fish tissue. Fish with benthic habits have been shown to bioaccumulate more PCBs than those with pelagic habits (Zamudio et al, 2021).

Sediment associated with stormwater runoff has also been ignored as a source of PCBs in the model. A previous TMDL for PCBs in the Palouse River identified erosion mitigation measures as the primary best management practices (BMPs) to reduce PCB pollution (Ecology 2007). Suspended sediments in stormwater are believed to be the main contributor of PCB loading to the Spokane River during storm events (Ecology 2007b). The continued deposition of contaminated sediments from stormwater runoff may lead to dissolution in the river water column. This would prevent the attainment of WQC until natural degradation processes lower background sediment concentrations.

The Draft TMDL is proposing monitored natural attenuation as the primary method to achieve the WQC due to there being no sediment remedial actions presented in the Draft TMDL. Multiple TMDL reports propose natural attenuation processes to remove PCBs (ORSANCO 2002; Ecology 2007) and it is important to note that PCB concentrations in sediment and fish tissue have decreased over the past 10-20 years (Ecology 2007; Hornbuckle 2006; Rodenburg 2021). The Spokane River has a high flow velocity which induces scouring of the riverbed, and these same conditions may promote the rapid movement of eroded sediment through the water column followed by losses through desorption and volatilization. The Draft TMDL did not provide any details including a map showing areas of riverbed scouring and deposition, so it is unclear how important this transport mechanism is.

Due to the high concentration of PCBs in Long Lake sediments and sediment disturbing feeding habits of fish, fish tissue concentrations could remain above safe levels for human consumption even if water column PCB concentrations were reduced to 1.3 pg/L. The Draft TMDL report acknowledges that PCB diffusion from surface sediment is a transport pathway but assumes that continued sediment deposition would cover contaminated sediment. The report also states that this would require many years or decades, which would lead to ongoing partitioning of PCBs from sediment to surface water until sediments are naturally capped.

2.1.3 Variable Toxicity of Congeners

The Draft TMDL ignores the differences in toxic effect from each of the unique 209 PCB congeners. The report determines TMDL limits based on total PCBs instead of identifying and targeting the primary congeners of concern for removal. Congeners with high molecular weights adsorb more strongly to sediment and bioaccumulate more efficiently than lower molecular weight congeners (TMDL 2018). Research has also revealed variable PCB homologue distributions in loadings from point and non-point sources on the Spokane River (LimnoTech 2018). The same study showed that PCB homologue distribution in fish tissues may be shifting toward lower molecular weight congeners over time, potentially due to implementation of advanced filtration technologies at sanitary treatment plants indicating that this is an important removal and management consideration in the Spokane River that the Draft TMDL ignores.

2.2 Current Method Detection Limits

The Draft TMDL does not provide a plan for measuring PCBs in the water column at the WQC. The compliance method listed in the Draft TMDL, Method 1668C, has a reporting limit of 20 to 200 pg/L for individual congeners, which is higher than the proposed TMDL of 1.3 pg/L (EPA, 2010). There is currently no reliable analytical method approved by EPA that can detect total PCB concentrations below approximately 65,000 pg/L (EPA 2024).

Below is a summary of the available analytical methods for measuring PCBs.

2.2.1 EPA Method 608.3 (PCB Homologs)

EPA Method 608.3 detects the presence of nine PCB aroclors via gas chromatography (GC) and is the only PCB method listed in 40 CFR part 136 for CWA compliance. This is the most sensitive method for PCB aroclors and can also be used for organochlorine pesticides. The published MDL and reporting limit are only provided for Aroclor-1242 (EPA 2016). The

published MDL is 65 ng/L (65,000 pg/L) and the published reporting limit is 195 ng/L (195,000 pg/L). Based on NPDES permits, the MDL for all aroclors is listed as 65,000 pg/L (EPA 2024).

2.2.2 EPA Method 8082 (PCB Aroclors)

EPA Method 8082 detects the presence of PCB aroclors via GC. If PCBs are present but not in the form of one of the aroclors, or the aroclor is too weathered, the results can be reported as not detected. Aroclors may not be detected at concentrations above the minimum method detection limits (MDLs) of 0.1 to 0.5 parts per billion (µg/L).

2.2.3 EPA Method 680 (PCB Homologs)

EPA Method 680 detects the presence of PCB homologs via GC. Homologs are the 10 groupings of congeners that contain 1 to 10 chlorine atoms, regardless of position on the biphenyl molecule. This method has the advantage of detecting the presence of PCBs that may not be in the form of aroclors, as well as aroclors that have been weathered, or were misidentified or not detected by EPA Method 8082. EPA Method 680 MDLs are approximately the same as EPA Method 8082 MDLs (0.1 to 0.5 parts per billion, µg/L).

2.2.4 EPA Method 1628 (PCB Congeners)

EPA Method 1628 is a low-resolution GC/MS using a selected ion monitoring (SIM) procedure that identifies the presence and concentration of each of the 209 PCB congeners. The method calibrates and quantifies 65 PCB congeners selected by EPA as priorities and the remaining 144 congeners are quantified indirectly using isotope dilution standards of similar congeners with the same level of chlorination. The method detection limits are 920 to 4,980 pg/L), which is lower than EPA Method 8082 and EPA Method 680. However, EPA Method 1628 has only practically been used for monitoring as the repeatability and consistency of this method have yet to be approved in 40 Code of Federal Regulations (CFR) part 136 for CWA compliance (Johnson, 2013; 40 CFR part 136 Appendix A). Method 1628 can be considered appropriate as a screening level tool for determining PCB concentrations. The average MDL of the 209 PCB congeners is approximately double the proposed TMDL limit. Table 1 shows a comparison between the published MDLs of different analytical methods.

2.2.5 EPA Method 1668C (PCB Congeners)

EPA Method 1668C is a high-resolution gas chromatography/mass spectrometry (GC/MS) procedure that identifies the presence and concentration of each of the 209 PCB congeners. The method detection limits are 300 to 800 pg/L total PCBs), which is much lower than EPA Method 8082 and EPA Method 680. However, EPA Method 1668c has only practically been used for monitoring as the repeatability and consistency of this method have yet to be approved in 40 Code of Federal Regulations (CFR) part 136 for CWA compliance (Johnson, 2013; 40 CFR part 136 Appendix A). Method 1668 can be considered appropriate as a screening level tool for determining PCB concentrations. The average MDL of the 209 PCB congeners is an order of magnitude above the proposed TMDL limit. Table 1 shows a comparison between the published MDLs of different analytical methods.

MDLs are established by the EPA in ideal laboratory conditions that do not include dilution or matrix interference. Additional information from two labs regarding their ability to meet these MDLs is presented in Table 1.

2.3 Comparison to Previous TMDLs

EPA and several states in the U.S. have developed TMDLs to address PCBs in multiple waterbodies on CWA 303(d) lists. Review of established PCB TMDLs identifies approaches that may be more appropriate for the Spokane River for consideration in developing the PCB TMDL for the Spokane River.

The EPA (2011) PCB TMDL Handbook recommends for multi-jurisdictional waterbodies (e.g., the Spokane River) that a TMDL "*should demonstrate that it is set at a level to achieve the Water Quality Standard (WQS) in each state; where the state standards are different, the TMDL should include a separate TMDL calculation to meet each standard*." The Spokane River comprises a multi-jurisdictional watershed spanning portions of the states of Washington and Idaho. PCB WQC to protect human health vary within the Spokane River watershed, ranging from 1.3 pg/l (for waters within the Spokane Tribe reservation) to 7 pg/l (for surface water in Washington) to 190 pg/l (for surface water in Idaho). The draft TMDL targets achieving the 1.3 pg/l WQC throughout the Spokane River in Washington – from the Idaho state line to the Columbia River. The Draft TMDL states that "*The EPA expects that Idaho and Spokane Tribe will meet their boundary condition [PCB] concentrations of 1.3 pg/l*". The draft TMDL should be revised to present data, calculations, and modeling to evaluate and support this expectation. Other PCB TMDL evaluations for interstate waters provide examples of such, including the Delaware River (for Delaware, New Jersey, Pennsylvania), Ohio River (for Ohio, Pennsylvania, West Virginia), and Shenandoah River (for Virginia, West Virginia).

The TMDL report does not include a plan for implementing the WLAs or reducing background water column or groundwater concentrations to 1.3 pg/L. The EPA recommends that states or agencies develop an implementation plan within PCB TMDL reports, though this is not a federal requirement that is subject to EPA approval (EPA 2011). Some PCB TMDL documents prepared by Ecology and other state agencies include either implementation concepts or explicit implementation plans to explain regulatory, best management practices, minimization actions, and adaptive management, and monitoring approaches to outline means and methods to pursuing compliance with WQC. The Palouse River Chlorinated Pesticide and PCB TMDL, Water Quality Improvement Report, and Implementation Plan provides one example developed by the Washing Department of Ecology (Ecology) (Ecology 2007).

2.4 TMDL Model Technical Comments

The EPA used a simple mass balance spreadsheet to estimate the cumulative impact of the allocated loading to sources throughout the study area presented in the Draft TMDL. The spreadsheet model estimated PCB concentrations in the river at multiple locations, including locations with known tributary or groundwater inflows and point source discharges. This section presents several limitations with the Draft TMDL model for consideration.

2.4.1 Model Calibration

Spokane River PCB Mass Balance Assessment Tools included as Appendix C to the Draft TMDL summarizes the approach and results of the modeling effort used as the basis for the Draft TMDL approach to meeting WQC for PCBs. The model has several limitations that the authors identify but do not address or resolve.

The following assumptions were presented in the model approach and are discussed below:

1. Concentrations calculated at a given location assume that inflows are completely mixed with the mainstem Spokane River flow.

    a. The data used for the model (August 2014) are a single set of limited synoptic PCB data during late summer low river flow. These concentrations are not likely to be representative of a statistical mean of PCB concentrations found in the river.

2. The flow balance assumes that diffuse and groundwater inflows and outflows are similar to conditions measured in the United States Geological Survey (USGS) groundwater study in September 2004.

    a. The 2004 study had a mainstem flow at river mile 100.7 of 645 cubic feet per second (cfs). The 30-year harmonic mean flow at river mile 100.7 is 1,988 cfs. This is over a 300% increase from the data used to calibrate the model. Additionally, the data used for groundwater inflow at the 2004 flow is likely not applicable at the higher flow rate as lower groundwater inflow would be expected with increased hydraulic head in the river.

    b. There is an anomalous groundwater outflow and diffuse PCB concentration at river mile 72.8.m presented in the model.

    c. The TMDL report uses a single source of 10-year-old sample data with a small sample size to calibrate the model. Additionally, this data was collected at a measured mainstream flow of 742 cfs at river mile 100.7, which is 37% of the 30-year harmonic mean to calculate the TMDLs. Additional data should be collected for model calibration that is more in line with the 30-year harmonic mean flow.

    d. Table 2 presents the model calibration summary as presented in the Draft TMDL. From Table 2, the model is calibrated well at the far upstream and downstream reaches of the model, however, the flow and PCB concentration calibration in the central portion of the model vary widely from measured values as presented below (up to 47% high for PCBs and 20% low for flow).

3. The flow balance assumes that diffuse and groundwater inflows are the only unmeasured flows. Estimated groundwater inflows/outflows are distributed uniformly between gauge locations.

a. Other unmeasured flows likely contribute to the river balance and total PCBs (TPCBs), including stormwater not captured by the publicly owned treatment works (POTWs) that flow directly into the Spokane River.

In summary, the model calibration includes older data that may no longer be relevant and considers a small PCB concentration data set over a short period of time in 2014. The model calibration appears to only be valid for final upstream and downstream locations (endpoint calibration). The model also assumes that 11.4 cfs of groundwater is coming from the Kaiser area with PCB concentrations exceeding 100 pg/L. The source of this data is unclear and may not be accurate.

Additionally, model calibration and validation data quality objectives were not presented with the model report and it is unclear what was considered acceptable. As already discussed, PCB data is limited, however, additional flow data could also have been used to perform sensitivity analyses on a larger set of flow data to determine if the model was property constructed through various flow conditions.

2.4.2 River Flow

Following EPA's promulgation of Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (65 FR 66444), the EPA applied the annual harmonic mean river flow as the critical condition for applying WQC to protect human health. EPA assumed that working with the long-term river flow information and average annual PCB concentrations was more critical than assessing seasonal variability of those parameters; whereas the CWA requires TMDLs to consider seasonal variation to assess the critical condition. The EPA used a 30-year record period (1991-2021) to compute the harmonic mean flow for the TMDL project. However, EPA also states that early data may not represent current and future flows (due to differing water uses, dam operations, and climate change effects), as such, relying on harmonic mean flows may not provide insight into the critical condition required under the CWA.

2.4.3 Groundwater

The EPA also assigned a PCB boundary condition concentration ranging from 0 to 1.3 pg/L for tributaries and groundwater that flow directly into the Spokane River. This condition includes groundwater near Kaiser Aluminum which recharges the river between Greenacres Gaging Station and Trent Bridge Gaging Station with current estimated bulk concentrations from 80 to 121 pg/L (Kaiser 2019). Four shallow monitoring wells upgradient of the Kaiser site have long term (2009-2018) average, 5X blank corrected PCB concentrations ranging from 94 to 320 pg/L (Kaiser 2019). These non-point source wells have a different PCB composition than wells within the Kaiser legacy PCB plume (LimnoTech 2018). Also note that Kaiser groundwater intake from deep wells has long term average, 5X blank corrected PCB concentrations ranging from 12 to 18 pg/L (Kaiser 2019). These higher observed groundwater concentrations likely add more mass to the mass balance model than what was assumed, leading to a biased low result in regard to PCB concentration results of the model.

2.4.4 Stormwater

Stormwater runoff from urbanized areas of the City of Spokane is a major contributor of PCBs to the river. The assimilative capacity analysis assigned a PCB concentration in stormwater from 0 to 7.0 pg/L to achieve WQC at the mouth of the Spokane River. The Draft TMDL recommends BMPs such as infiltration basins and rain gardens to reduce sediment transport from stormwater. However, such BMPs cannot provide reductions in stormwater PCB concentration to the WQC, as the average concentration is four orders of magnitude greater than the tribal standard. PCB concentrations in water as high as 280,000 pg/L have been measured in Spokane stormwater basins (Ecology 2007b). In addition, stormwater sources may include uncontrolled stormwater outside of City and County infrastructure that may collect it and treat it. These higher observed stormwater concentrations likely add more mass to the mass balance model than what was assumed, leading to a biased low result in regard to PCB concentration results of the model.

2.4.5 Aerial Deposition

Aerial deposition may represent a large PCB source for remote areas (Rodenburg, 2022b). There has been limited investigation into aerial deposition of PCBs in the study area. One study determined that homolog profiles and PCB loading from aerial deposition vary considerably across the Spokane area (Ecology 2019). From May 2016 through May 2017 Ecology's Environmental Assessment Program (EAP) conducted a PCB atmospheric deposition study at three locations in the Spokane vicinity, including two locations within the city itself. Average wet deposition concentrations were measured as 1,366 and 3,718 pg/L at these two locations (Kaiser 2019).

Aerial deposition will be a continuous PCB source within the watershed for the foreseeable future and may be a major source of PCB loading to sediments and stormwater runoff. This may be the primary PCB loading source to Lake Coeur d'Alene, which has PCB concentrations above the WQC. Given the potential for aerial deposition of PCBs, the 1.3 pg/L WQC may not be achievable in natural waters. Further investigation into this PCB loading mechanism is warranted.

2.4.6 Assimilative Capacity Analysis and Border Waters

The EPA ran four simplified scenarios through the TMDL mass balance spreadsheet. The first was a baseline scenario where inflows are set to the PCB WQC of 1.3 pg/L. The second scenario increased the influent concentration at the Washington-Idaho border to the Washington PCB WQC of 7 pg/L and reduced all other inflow concentrations to zero. The third started with the baseline scenario, then reduced the groundwater influx along the entire length of the river by half (to 0.65 pg/L) and increased the influent concentration at the Washington-Idaho border to 1.8 pg/L. The fourth scenario reduced the Washington-Idaho border and groundwater influx concentrations to 0.65 pg/L (one-half the PCB WQC) and set the influent from the tributaries to 3.5 pg/L (one-half the Washington river WQC of 7.0), then set point sources and contaminated groundwater discharges to 7.0 pg/L. Only the second scenario did not result in attainment of the 1.3 pg/L PCB WQC at the mouth of the Spokane River.

The assimilative capacity analyses showed that the influent concentration at the Washington-Idaho border cannot be substantially higher than the 1.3 pg/L PCB WQC and meet the criterion in waters under the Tribe's jurisdiction. As such, the EPA assigned a boundary condition concentration of 1.3 pg/L to the river water influent at the Washington-Idaho border. Ecology is responsible for developing an implementation plan but has no jurisdiction over Idaho. Until Idaho can reduce the in-water concentration at the border to, or close to, the PCB WQC of 1.3 pg/L, the criterion in waters under the Tribe's jurisdiction will not be achievable.

Section 3: Attainability

EPA recommends that implementing agencies include an Implementation Plan section in TMDL reports, detailing BMPs, remediation, and treatment activities to achieve the TMDL limits (EPA 2011). The Draft TMDL Report for PCBs does not include a plan, despite the WLAs and LAs being orders of magnitude below current loadings. To achieve the WQC, the PCB loadings must be reduced from point sources and non-point sources including upstream waters (Idaho), groundwater, stormwater, and sediment. Based on current conditions and treatment technologies, there is no feasible path forward to achieve the WQC without relying on monitored natural attenuation for a period of several decades. Even if the 1.3 pg/L target concentration could be achieved in river waters, the current CWA approved analytical method detection limits are several orders of magnitude above this concentration.

3.1 Boundary Conditions

The Draft TMDL report assigns a 1.3 pg/L concentration to incoming river water at the Washington/Idaho border prior to determining WLAs for point sources. However, influent water column concentrations of PCBs have been measured at 37 times the WQC. Even if all point source PCB loadings are reduced to zero, the river water column PCB concentration will remain well above the WQC unless PCBs are actively removed from upstream waters. This would require coordination with the Idaho Department of Environmental Quality, which is not under the jurisdiction of Ecology. A reduction in Idaho water column concentrations would also introduce similar attainability concerns as discussed in this section.

3.1.1 Groundwater Conditions

The Draft TMDL report assigns a 1.3 pg/L concentration to groundwater prior to determining WLAs for point sources. Groundwater concentrations of PCBs have also been measured at one to two orders of magnitude above WQC upgradient of the Kaiser site, indicating diffuse contamination sources (Kaiser 2019). Another study found 2,150 pg/L of PCBs in an artesian well in the Mission Reach of the Spokane River (LimnoTech 2022). Even if all point source PCB loadings were reduced to zero, the river water column PCB concentration would be well above the WQC unless PCBs are removed from affected groundwater.

3.1.2 Sediment Influence

As discussed in the Draft TMDL, river sediments will serve as a PCB source if water column concentrations are reduced to 1.3 pg/L. The report assumes that water column concentrations will be reduced over a period of several years or decades, allowing time for upstream sediments to cover currently exposed sediment and limit PCB diffusion and dispersion. Core samples exhibit increasing PCB concentrations with depth, indicating that heavily contaminated soils have been buried by incoming sediment over a period of several decades (Mathieu, 2018). However, any implementation effort for the proposed TMDL limits should recognize that substantial timeframes will be required to achieve water column WQC due solely to sediment contributions. In addition, climatic changes to sediment scour should be considered and may require more active management of sediments in the Spokane River.

3.2 Treatment Methods

The Washington state Human Health Criteria (HHC) for PCBs in the Spokane River is 7 pg/L, which is below all current method detection limits for methods approved for compliance monitoring. Upon establishment of the HHC as the WQC, Kaiser and all PCB point sources within the study area applied for water quality variance, as this concentration cannot be achieved with available treatment technologies, given current background concentrations (Trueblood 2020).

Water treatment technologies for PCBs include membrane filtration and walnut shell filtration with ongoing advancements using an ultraviolet advance oxidation process (UV-AOP). All three processes have been proven to reduce PCB loading from point sources, but not to the degree required to achieve the WQC. For example, even at groundwater background concentrations of 200 pg/L, a removal efficiency of 99.4% would be required to achieve the Tribal WQC (Kaiser 2019). No other applicable technologies for PCB removal have been identified. Based on the information presented below, there are no feasible treatment options capable of reducing PCB concentrations to the WQC. Concerns with technology limitations were discussed in Applications for Water Quality Variance from each point source discharger in the study area for the state WQC of 7 pg/L.

3.2.1 Membrane Filtration

Advanced biological membrane filtration technologies have been implemented at all municipal wastewater treatment plants within the study area and a paper mill wastewater treatment plant. This technology removes PCBs by separating organic particulate matter with high PCB loading from the effluent stream and maintaining a high concentration of biomass (10,000 mg/L) in the process to help facilitate adsorption and physical separation. This provides ample residence time for incorporation of PCBs into biomass, which is removed and concentrated in the sludge. Congeners with high molecular weights are preferentially removed, as these have a greater affinity for suspended solids. Membrane filtration systems consistently remove 95 to 99% of PCB loading from the municipal treatment plants (Ecology 2023).

Membranes without biological pretreatment have not been shown to be effective for removal of low molecular weight congeners (Yao 2014, Rodenburg 2022). Biological treatment processes help to facilitate PCB removal due to high total suspended solids (TSS) containing organic carbon and long periods of solids retention time which promotes biosorption and biotransformation of slowly biodegradable organic substances such as PCBs that may then be removed with biomass on the membranes. Membrane filtration is only a feasible PCB removal technology for waters with high particulate matter and organic content, as the system relies on incorporation of PCBs into microbial biomass.

3.2.2 Walnut Shell Filtration

In accordance with Agreed Order No. 02WQER-3487, dated January 30, 2002, Kaiser prepared an Engineering Report with analysis of all known, available, and reasonable methods of prevention, control, and treatment (AKART) for PCBs at an industrial facility. Based on this analysis, the facility installed a Walnut Shell Filtration System (WSFS) upstream of the discharge location to remove PCBs. The process blends water with a low dose of castor oil (<10

ppm), which absorbs PCBs. The solution is then passed through a walnut shell media, which adsorbs the oil. Filter vessels are backwashed to remove the PCB-rich oil, which is treated and disposed offsite. The process reliably removes greater than 80% of PCBs from waters with high PCB concentrations (>5,000 pg/L) but is unable to remove greater than 99% of PCBs as would be required to meet the 1.3 pg/L limit.

The performance of the WSFS has improved with reductions in process water flow over twenty years of operation. An optimization study is underway as of May 2024 to further improve WSFS performance, but the technology is not capable of reducing process water PCB concentrations to 1.3 pg/L. An updated AKART analysis was performed in 2022 and determined that an advanced oxidation process can achieve higher PCB removal rates than WSFS (CDM 2021).

3.2.3 UV/AOP

Kaiser is currently starting up a groundwater pump-and-treat system to degrade PCBs by UV-AOP. The process combines ultraviolet (UV) irradiation with an oxidizer, typically hydrogen peroxide, to generate hydroxyl radicals. These radicals indiscriminately break down organic molecules, eventually yielding carbon dioxide and water. The technology is primarily useful for clean waters with low organic and solids content; organics will increase oxidant demand, UV attenuation, and result in fouling of the UV bulbs. The technology is likely incapable of achieving 1.3 pg/L concentrations in point source discharge water, given the high concentration of PCBs and competing oxidant demand in the process water.

Section 4: Conclusion and Recommendations

The goal of the TMDL program is to establish a three-step path that will lead to reasonable assurance that attainment of the applicable WQS will be achieved (EPA 2023). The first step is to develop TMDLs that will result in the attainment of the desired WQC. The second step is to develop an implementation plan using existing data, obtaining new data to fill data gaps, and identifying operational improvements and best management practices that will improve current WQC. The third step is to initiate the implementation plan, monitor WQC, and adapt and revise the plan as needed to reach attainment. The following section describes data gaps that should be filled and incorporated into an updated TMDL and recommendations for updating the TMDL considering the technical comments and attainability concerns addressed in this white paper.

4.1 Data Gaps

Data gaps based on the technical review comments provided above are summarized in this section. These data gaps should be filled and used to update the TMDL to reflect current conditions of the Spokane and Little Spokane Rivers and to evaluate the attainability of the TMDL, including an implementation plan.

- The largest data gap is represented by the small amount of PCB data available. River flow and PCB concentration data should be collected for all tributaries, point sources, and mainstem locations.

- River flow data is systematically monitored for water management purposes and should be used to derive the critical condition based on recent flow data and changes to the Spokane River system.

- Few sampling programs have employed synoptic data collection, while others have included only a fraction of the locations/times of interest, requiring the EPA to fill gaps in with the available information, for a given time period.

- The toxicity of individual PCB congeners and bioaccumulation potential within fish tissue should be assessed, as TPCBs may not be the most appropriate metric for toxicity.

- Criteria to determine impairment and AU designation should be clearly defined including equivalent fish tissue concentrations. AUs should be determined based on more recent fish tissue samples.

- The potential for atmospheric deposition and PCB loss by volatilization and continued water column pollution from contaminated sediments in the study area including from stormwater should be reviewed and incorporated into the model. In nearly all samples throughout the watershed, PCBs are above 1.3 pg/L in water. Additionally, regional PCBs are above 1.3 pg/L in groundwater.

- An interlaboratory study on Method 1668C should be completed to resolve concerns with variability and inaccuracy of measurements at low PCB concentrations (<1 ng/L). This is the only EPA method capable of detecting PCBs at concentrations below

100,000 pg/L and is not listed as an approved method for CWA compliance reporting in 40 CFR part 136 and should be considered a screening level tool in its current form.

- Pilot testing is currently being performed by Kaiser Aluminum to evaluate the performance of a UV-AOP system in degrading PCBs in industrial process water. The TMDL should investigate UV-AOP processes with the Implementation Plan, as this technology may have the greatest potential for PCB removal given previous AKART analysis and is the only method capable of PCB destruction; all other current technologies are separation and concentration processes.

4.2 Recommendations

The Draft TMDL does not include an implementation plan, instead stating that Ecology will implement nonpoint source and point source controls to achieve the WQC. The Draft TMDL's assumed boundary condition of 1.3 pg/L for each identified source is not achievable in the short-term, especially given that river concentrations at the Washington-Idaho border and groundwater sources from areas outside of the identified groundwater contaminated sites far exceed this WQC. Ecology has no control over state programs or WQC set by Idaho Department of Environmental Quality.

The following are recommendations to approach the TMDL:

- EPA should consider revising the PCB model presented in the Draft TMDL to include the following:

  a) Consider using Hydrological Simulation Program – Fortran, similar to the approach that was used for the James River TMDL (EPA 2023);
  b) Groundwater sources including non-point sources;
  c) Stormwater sources including BMPs and non-point source contributions;
  d) Aerial deposition;
  e) Sediment interaction and management; and
  f) Fish tissue and toxicity of PCB homologs.

- Critical conditions for an individual TMDL typically depend on applicable water quality standards, characteristics of the observed impairments, source type and behavior, pollutant, and waterbody type. The EPA used a 30-year record period (1991-2021) to compute the harmonic mean flow for the TMDL project and assumed that working with the long-term river flow information and average annual PCB concentrations was more critical than assessing seasonal variability of those parameters. However, seasonal variation of the river flow would likely be considered a critical condition by the CWA and should be evaluated, especially considering the impact of seasonal flow on the gaining/losing reaches of the river system.

- The TMDL model should be validated against recent flow and PCB concentration data and a sensitivity analysis performed. Model calibration and validation data quality objectives should be presented with the model report.

- The TMDL should include a map showing portions of the river which are subject to sediment scouring and deposition.

- Implementability concerns have been expressed by Kaiser and other point source dischargers previously (Application for Variance). Proposed WLAs cannot be achieved by point source dischargers with currently available technologies.

- Consider and assess monitored natural attenuation as an implementation approach, as PCB concentrations in the river water column and sediments have decreased over the past several decades. PCB loading from non-industrial sources including stormwater, Lake Coeur d'Alene, and sections of groundwater make achievement of the WQS impossible as shown in the TMDL model.

In conclusion, the PCB concentrations stipulated in the WLA is greatly exceeded by existing conditions and is not technically achievable or measurable. Several decades will likely be required for PCB concentrations in affected sediment, groundwater, stormwater, tributaries, and Lake Coeur d'Alene to approach the WQS. Until that time, a TMDL should be adopted which accounts for existing background water column concentrations.

Section 5: References

Apell J.N., Gschwend P.M., The atmosphere as a source/sink of polychlorinated biphenyls to/from the Lower Duwamish Waterway Superfund site, Environmental Pollution, Volume 227, 2017, Pages 263-270, ISSN 0269-7491, https://doi.org/10.1016/j.envpol.2017.04.070.

CDM, 2021. *Task 2 of Part IV.A Technology Evaluation Results, and Proposed Scope and Schedule for Technology Testing All Known, Available, and Reasonable Methods for Preventions, Control, and Treatment (AKART) of PCBs*. (May 2021).

Ecology, 2007. *Palouse River Chlorinated Pesticide and PCB Total Maximum Daily Load: Water Quality Improvement Report and Implementation Plan* (July 2007). Publication No. 07-03-018. https://apps.ecology.wa.gov/publications/documents/0703018.pdf

Ecology, 2007b. *Spokane River PCB TMDL Stormwater Loading Analysis: Final Technical Report*. (December 2007). Publication No. 07-03-055. https://apps.ecology.wa.gov/publications/documents/0703055.pdf

Ecology, 2009. Washington State Toxics Monitoring Program: Freshwater Fish Tissue Component, 2007. (January 2009). Publication No. 09-03-003. https://apps.ecology.wa.gov/publications/documents/0903003.pdf

Ecology, 2015. *When to Use EPA Method 1668 for PCB Congener Analysis: Implementation Memorandum #12*. (July 2015). Publication No. 15-09-052. https://apps.ecology.wa.gov/publications/documents/1509052.pdf

Ecology, 2019. Atmospheric Deposition of PCBs in the Spokane River Watershed. (March 2019). Publication No. 19-03-003. https://apps.ecology.wa.gov/publications/documents/1903003.pdf

Ecology, 2022. *Spokane River PCBs in Biofilm, Sediment, and Invertebrates, 2018 and 2019: Screening Study Results* (March 2022). Publication No. 22-03-002. https://apps.ecology.wa.gov/publications/documents/2203002.pdf

Ecology, 2023. *Spokane River is getting cleaner with local task force's help: Report shows success in reducing PCBs in the watershed.* (March 2023). Online. https://ecology.wa.gov/blog/march-2023/spokane-river-is-getting-cleaner-with-task-force

EPA, 1985. *Method 680. Determination of Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry*. (November 1985). https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=20016OGU.TXT

EPA, 2007. *Method 8082A: Polychlorinated Biphenyls (PCBs) by Gas Chromatography.* (February 2007). Method 8082A: Polychlorinated Biphenyls (PCBs) by Gas Chromatography, part of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (epa.gov)

EPA, 2010. *Method 1668C: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS*. (April 2010). https://www.epa.gov/sites/default/files/2015-09/documents/method_1668c_2010.pdf

EPA, 2011. *PCB TMDL Handbook*. (December 2011). EPA 841-R-11-006. USEPA Office of Wetlands, Oceans and Watersheds. https://www.epa.gov/system/files/documents/2021-08/p100dp8k.pdf

EPA, 2016. *Method 608.3: Organochlorine Pesticides and PCBs by GC/HSD. EPA 821-R-16-009. U.S. EPA. Office of Water*. (December 2016). https://www.epa.gov/sites/default/files/2017-08/documents/method_6083_2016.pdf.

EPA, 2021. *Alternate PCB Extraction Methods and Amendments to PCB Cleanup and Disposal Regulations*. (Proposed Rule). (December 2021). Document No. 2021-19305. https://www.federalregister.gov/documents/2021/10/22/2021-19305/alternate-pcb-extraction-methods-and-amendments-to-pcb-cleanup-and-disposal-regulations

EPA, 2024. *Spokane and Little Spokane Rivers Polychlorinated Biphenyls: Total Maximum Daily Loads*. Public Comment Draft. (May 2024). https://www.epa.gov/system/files/documents/2024-05/spokane_pcb_tmdls.pdf

EPA, Archive. *Technical Factsheet on POLYCHLORINATED BIPHENYLS (PCBs).* (No date given) https://archive.epa.gov/water/archive/web/pdf/archived-technical-fact-sheet-on-polychlorinated-biphenyls.pdf

Hornbuckle, K.C., Carlson, D.L., Swackhamer, D.L., Baker, J.E., Eisenreich, S.J. Polychlorinated Biphenyls in the Great Lakes. In: Hites, R.A. (eds) Persistent Organic Pollutants in the Great Lakes. The Handbook of Environmental Chemistry, vol 5N. Springer, Berlin, Heidelberg. https://doi.org/10.1007/698_5_039

Johnson, Bill. "*Sampling Analysis and Reporting Protocols Using EPA Method 1668C for Final Order No. R2-2012-0096, NPDES Permit No. CA0038849*." Dec. 31, 2013. https://bacwa.org/document/pcbs-sampling-analysis-and-reporting-protocol/

Kaiser 2019. "RE: Water Quality Variance Application Kaiser Trentwood NPDES Permit No. WQ0000892." Email to Cheryl Niemi. April 29, 2019.

LimnoTech 2016. *2016 Comprehensive Plan to Reduce Polychlorinated Biphenyls (PCBs) in the Spokane River* (November 2016). https://srrttf.org/wpcontent/uploads/2016/04/2016_Comp_Plan_Final_Approved.pdf

LimnoTech 2018. *Technical Memorandum: Fingerprinting of Groundwater Samples in the Vicinity of the Kaiser Facility*. (August 2018). https://srrttf.org/wpcontent/uploads/2019/07/Final_KaiserFingerprintingMemo_082718.pdf

LimnoTech 2018b. *Technical Memorandum (DRAFT): Groundwater PCB Sources Upgradient of Kaiser Trentwood Facility: Task 5A & 5B Findings.* (August 27, 2018).

https://srrttf.org/wp-content/uploads/2018/10/3C-Draft_Tasks_5AB_Memo_Spokane_River_08272018_LimnoTech.pdf

LimnoTech 2022. *Monitoring to Assist in Defining the Sources of PCB Contamination in the Spokane River Mission Reach*. (DRAFT). (April 14, 2022). https://srrttf.org/wp-content/uploads/2022/04/6-MissionReachSourceAssessmentMonitoriongReport_04142022_redline.pdf

Martinez S., Awad A.M., Herkert N.J., Hornbuckle K.C., Determination of PCB fluxes from Indiana Harbor and Ship Canal using dual-deployed air and water passive samplers, Environmental Pollution, Volume 244, 2019, Pages 469-476, ISSN 0269-7491, https://doi.org/10.1016/j.envpol.2018.10.048.

Mathieu, 2018. PBT Trends in Lake Sediment Cores: 2016 Results. Environmental Assessment Program, Washington State Department of Ecology. Publication No. 18-03-029. (September 2018). https://apps.ecology.wa.gov/publications/documents/1803029.pdf

National Research Council (NRC) 2001. *A Risk-Management Strategy for PCB-Contaminated Sediments: Appendix G.* Washington, DC: The National Academies Press. https://doi.org/10.17226/10041.

ORSANCO, 2002. *Ohio River Total Maximum Daily Load for PCBs: Ohio River Miles 40.0 to 317.1.* (September 2002). Ohio River Valley Water Sanitation Commission. https://www.orsanco.org/wp-content/uploads/2016/12/Ohio-River-Total-Maxium-Daily-Load-for-PCBs-Ohio-River-Miles-40-to-317.pdf

Rodenburg 2021. *Fingerprinting of PCBs in Spokane River fish, biofilm, and SPMDs*. Spokane River Regional Toxics Task Force. https://srrttf.org/wp-content/uploads/2022/02/Fish-and-biofilm-report-final.pdf

Rodenburg, L. A., Hermanson, M. R., & Sumner, A. L. 2022. Effect of membrane filtration on the fate of polychlorinated biphenyls in wastewater treatment. *Chemosphere*, *287*, Article 132335. https://doi.org/10.1016/j.chemosphere.2021.132335

Rodenburg 2022b. *What have we learned about PCB source to the Spokane Rive from Positive Matrix Factorization analysis?* Spokane River Regional Toxics Task Force. (March 2022). https://srrttf.org/wp-content/uploads/2022/03/5-Holistic-draft-final-031622.pdf

Swarupa G. Kulkarni, Harihara M. Mehendale, Polychlorinated Biphenyls (PCBs), Editor(s): Philip Wexler, Encyclopedia of Toxicology (Second Edition), Elsevier, 2005, Pages 509-511, ISBN 9780123694003, https://doi.org/10.1016/B0-12-369400-0/00785-7.

TetraTech 2016, Modeling Quality Assurance Project Plan for Green/Duwamish River Watershed Pollutant Loading Assessment. (July 2016). QAPP 450, Rev. 0. https://apps.ecology.wa.gov/publications/documents/2010041.pdf

Trueblood, C.S., Szalay, E.M., & Thompson, G.E. 2020. Ecology Releases First-Ever Water Quality Standards Variances for PCBs. Online. 2020 July 10;

https://www.klgates.com/washington-state-department-of-ecology-releases-first-ever-water-quality-standards-variances-for-pcbs-07-10-2020

Virginia Tech & Virginia Department of Environmental Quality. 2023. PCB Total Maximum Daily Load Development for the James River, Maury River, and Jackson River Watersheds. (November 2023). https://www.deq.virginia.gov/home/showpublisheddocument/22390/638418616451370000

Yao, Min 2014. Polychlorinated Biphenyls in the Centralized Wastewater Treatment Plan in a Chemical Industry Zone: Source, Distribution, and Removal. (August 2014). https://doi.org/10.1155/2014/352675

Zamudio et al, 2021. *Bioaccumulation of PCBs and PBDEs in Fish from a Tropical Lake Chapala, Mexico*. Toxics. 2021 Sep 29; 9(10):241. doi: 10.3390/toxics9100241. PMID: 34678937; PMCID: PMC8540629. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8540629/

Tables

Table 1 - PCB Method Detection Limits

EPA TMDL for PCBs in the Spokane River - Technical Comments

Kennedy Jenks

Method	Minimum MDL (pg/L)	Maximum MDL (pg/L)	Average MDL (pg/L)	Notes
608.3[1]	65,000	--	--	Total PCB detection limit for 7 Aroclors
608.3[2]	172,639	270,000	228,274	Individual detection limits for 7 Aroclors
8082[3]	100,000	500,000	--	Total PCB detection limit for 7 Aroclors
680[3]	100,000	500,000	--	Total PCB detection limit for 10 Homologs
1628[4]	190	4,980	916	Individual detection limits for 209 Congeners
1668c[5]	7.0	77	26	Individual detection limits for 209 Congeners
1668c[6]	5.0	148	15	Individual detection limits for 209 Congeners
1668c[2]	7.3	359	23	Individual detection limits for 209 Congeners
1668c[7]	4.0	132	11	Individual detection limits for 209 Congeners

Notes:

1. From: *Spokane and Little Spokane Rivers Polychlorinated Biphenyls: Total Maximum Daily Loads. Public Comment Draft (Appendix D).* (May 2024).
2. From: Pace Laboratories
3. From: Delewater Department of Natural Resources and Environmental Control 2014. *Policy for Polychlorinated Biphenyl (PCB) Analysis Method.* (November 24, 2014).
4. From: *Method 1628: Polychlorinated Biphenyl (PCB) Congeners in Water, Soil, Sediment, Biosolids, and Tissue by Low-resolution GC/MS using Selected Ion Monitoring.*
5. From: *Method 1668C: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS* (EPA, April 2010).
6. From: Eurofins Laboratories
7. From: SGS Axys Laboratories

Abbreviations:

MDL = minimum detection limit

pg/L = picograms per liter

Table 2 - TMDL Model Calibration Data

EPA TMDL for PCBs in the Spokane River - Technical Comments

Kennedy Jenks

Point Source, Tributary, or Mainstem	Site Name	River Mile	Calculated Mainstem Flow (CFS)	Calculated Mainstem TPCB (pg/L)	Aug 2014 Measured TPCB (pg/L)	TPCB Model Fit Percentage	Measured Mainstem Flow (CFS)	Flow Model Fit Percentage
	GW Junction	100.7	742	21	21	0%	742	0%
Mainstem	Barker Road	90.7	463	21.4	19	13%	399	16%
Mainstem	Trent Bridge	85.1	793	171.7	172	0%	974	-19%
Mainstem	Spokane River @Greene Street	77.8	1,173	188.3	128	47%	1,374	-15%
Mainstem	Spokane River @Spokane	72.8	1,071	185.3	202	-8%	1,132	-5%
Mainstem	Spokane River @Nine Mile	57.5	1,291	190.3	163	17%	NM	NM
Mainstem	Spokane River @Long Lake Dam	33.9	1,815	161.2	NM	NM	1,815	0%

Notes:

Abbreviations:

CFS = cubic feet per second

GW = groundwater

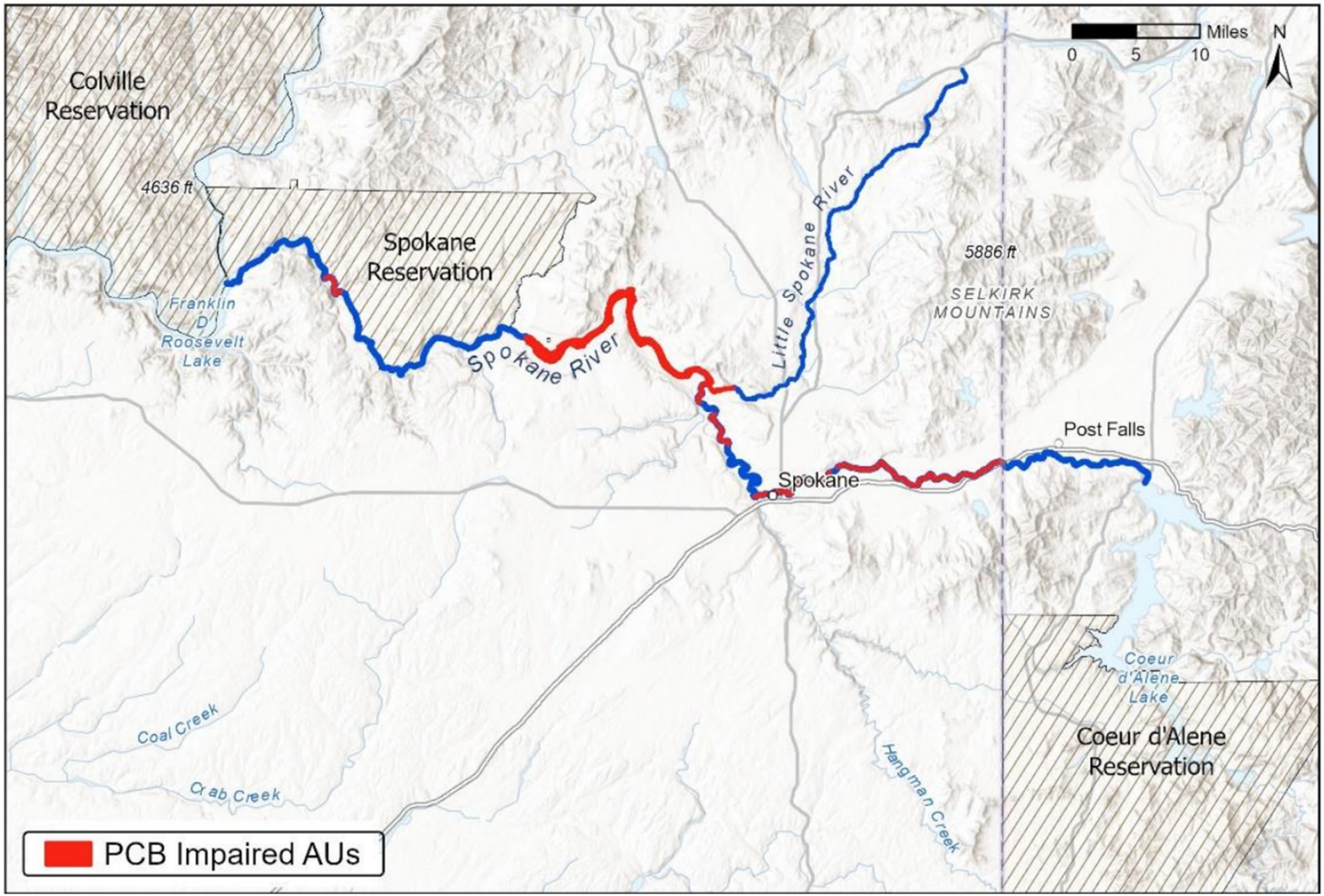
NM = not measured

pg/L = picograms per liter

TMDL = Total Maximum Daily Load

TPCB = total polychlorinated biphenyls

Figures



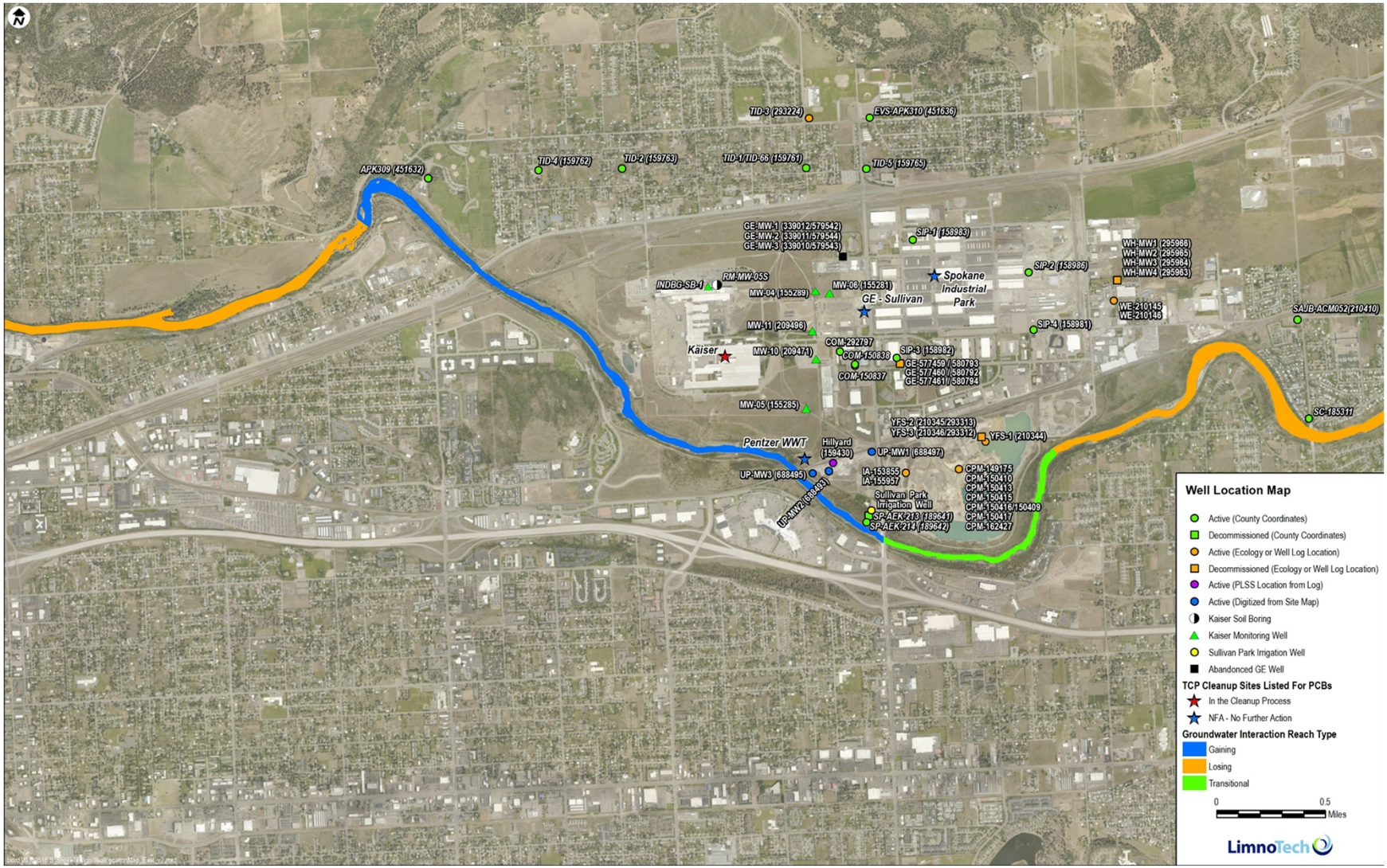
Source: Ecology 2024. *Spokane and Little Spokane Rivers Polychlorinated Biphenyls: Total Maximum Daily Loads.* (May 15, 2024).

Kennedy Jenks

Kaiser Aluminum Trentwood
Spokane Valley, WA

Study Area AUs impaired by PCBs for most recent 2014-2018 303(d) listings

2465009*00
Figure 1



Source: LimnoTech 2018b. *Technical Memorandum (DRAFT): Groundwater PCB Sources Upgradient of Kaiser Trentwood Facility: Task 5A & 5B Findings.* (May 21, 2018).

Kennedy Jenks

Kaiser Aluminum Trentwood
Spokane Valley, WA

Aerial Photo of Spokane River near Kaiser Aluminum

2465009*00
Figure 2

July 15, 2024

U.S. Environmental Protection Agency (EPA) Sent via email to
SpokaneRiverTMDL@EPA.gov
Region 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3188

Subject: Spokane and Little Spokane Rivers Polychlorinated Biphenyls (PCB) Total Maximum Daily Loads (TMDL) Public Comment Draft May 15, 2024 – Liberty Lake Sewer and Water District Comments

Liberty Lake Sewer and Water District (District) is providing the following comments to EPA's Spokane and Little Spokane Rivers (Spokane Rivers) PCB TMDL Public Comment Draft, dated May 15, 2024.

Comment #1: The Wasteload Allocation (WLA) cannot be met with available technology requiring a variance or other compliance pathway.
In April 2019, the District applied for an individual discharger water quality variance from the Washington State total PCBs water quality standard of 7.0 pg/L in the Spokane River. The Washington State Department of Ecology (Ecology) did not move forward with the state rulemaking process for the variance at that time. The District has spent $25 million on upgrading its water reclamation facility which has resulted in a 110% increase to its annual debt service obligations through 2038. These upgrades included its ultrafiltration membrane system that removes over 97% of influent PCBs before discharging to the Spokane River. This system uses the most advanced technology available and still cannot meet the Wasteload Allocation (WLA) concentration of 1.3 pg/L. Furthermore, EPA Method 1668C cannot accurately measure to the WLA concentration of 1.3 pg/L due to the potential for field and laboratory contamination of samples, and therefore compliance with the assigned WLA incorporated into an NPDES permit is not possible. Therefore, the District will require a variance or other compliance pathway. Please include a statement in the TMDL report that the District, as an NPDES permit holder, will need a variance or other compliance pathway because the WLA concentration in the TMDL cannot be met with available treatment technology.

Comment #2: The flow value used to calculate the District's WLA should be the permitted annual average design flow for the facility.
The WLA for the District's facility should be based on the District's permitted annual average design flow of 1.5 MGD instead of 0.83 MGD as listed in Table 15 of the TMDL report. This is also the basis of the loadings use to develop the Spokane River and Lake Spokane Dissolved Oxygen TMDL developed by Ecology in 2010. For calculating NPDES permit conditions, 40 CFR 122.45(b)(1) requires that "In the case of POTWs, permit effluent limitations, standards, or prohibitions shall be calculated based on design flow." On page 53, the report states *"Additionally, the translation from these WLAs to permit limits can incorporate future growth in approved facility plans."* This statement conflicts with the Washington State antidegradation policy in WAC 173-201A-300 to 330 which does not allow increases in loadings once incorporated into NPDES permits.

Comment #3: A TMDL is required for the upstream Spokane River segments in Idaho.
The boundary condition concentration of 1.3 pg/L at the state line cannot be met when the Idaho state WQS for PCBs is 190 pg/L. Please include a statement in the TMDL report that the EPA or the Idaho Department of Environmental Quality (IDEQ) must develop a TMDL for the Idaho segments of the Spokane River that will ensure the Load Allocation (LA) concentration of 1.3 pg/L at the Stateline. Until this is implemented, the Spokane River TMDL in Washington State will not achieve the Spokane Tribe Water Quality Standard.

Comment #4: The Clean Water Act Section 303(d) Category 5 listing is based on fish consumption.
On page 20, the TMDL report states "*Ecology based these impairment determinations on fish tissue data with elevated PCB concentrations using its listing methodology from Policy 1-11, that provides a translator from PCB WQC in the water column to PCBs in fish tissue*". The Category 5 PCB listings in the Spokane and Little Spokane Rivers are based on fish tissue concentration exceedances. It is our understanding that the ambient water quality criterion is based on fish and drinking water consumption, a bioaccumulation factor, and a cancer slope factor. Please show how the translator has been calculated. Please also include in the TMDL report the fish tissue PCB concentration required for compliance for a Category 1 (i.e., non- impaired) listing.

Comment #5: The EPA should support improved source control under TSCA.
The EPA has rejected Ecology's 2024 PCB Toxic Substances Control Act (TSCA) Petition, which specifically asked the EPA to take action to reduce the inadvertent generation of PCBs in consumer products. The District requests that the EPA reconsider its position with regard to Ecology's TSCA Petition and that the EPA take action to lower the acceptable PCB concentrations in consumer products to levels commensurate with the water quality standard imposed by this TMDL.

Comment #6: All stormwater loads must be included in the TMDL model.
There was no effort on the part of the EPA to quantify loading from stormwater nonpoint sources beyond the City of Spokane's permitted stormwater discharges. Load allocations should be assigned to all nonpoint sources in the watershed so that the appropriate lead agencies have compliance targets. Stormwater load allocations can be calculated by estimating stormwater flows from ground surface area, land use, and soil types in the watershed. Load allocations should be assigned to other existing industrial, construction, and general stormwater permits in the TMDL study area.

Comment #7: Tribal facilities and fish hatcheries must be provided with WLAs.
The Wellpinit WWTP on the Spokane Reservation discharges to Little Tshimikain Creek in Wellpinit, Washington under Permit No. WA0025704. The outfall is located upstream Wellpinit Creek, which flows into Little Chamokane, which flows into the Spokane River. The Ford State Fish Hatchery discharges into the Chamokane Creek, which discharges to the Spokane River under NPDES General Permit WAG130009. The Spokane Tribal Fish Hatchery discharges into Chamokane Creek which discharges to the Spokane River under NPDES General Permit WAG130019. In a 2016 study performed by the Washington State Department of Ecology (Ecology), PCBs were detected in the Spokane Tribal Fish Hatchery discharge at concentrations

in the range of 147 to 219 pg/L which results in significant PCB loading to the river. Please include WLAs corresponding to a WLA concentration of 1.3 pg/L into the TMDL for these point sources.

Comment #8: The WLAs do not reflect the PCBs in fish tissue versus treated effluent.
The District's treatment system effluent consists of lighter PCB homologs because the District's ultrafiltration membrane system filters out larger molecular weight PCB homologs. It is heavier homologs (hexa-chlorinated homologs and heavier) that have a much greater potential to bioaccumulate in fish tissue. The WLAs and LAs should be apportioned based on the potential of the source to contribute to the fish tissue PCB concentrations in the Spokane River. Sources without membrane filtration have a much higher potential to contribute to PCB concentrations in fish tissue in the Spokane River than those sources with membrane filtration.

Comment #9: The model does not incorporate mass losses from the Spokane River.
On pages 9 and 37, the TMDL report states "*This PCB TMDL assumes that there is no PCB mass loss from the release point into the river, and all PCB mass is transported downstream with the river flow.*" Water samples collected from the Spokane River by LimnoTech in 2014, 2015, and 2018 indicate that the river has assimilative capacity for tetra-chloro and lighter homologs in certain segments of the river. Furthermore, the river has reaches of groundwater outflow that would result in losses of PCBs. Table 19 includes a value for groundwater outflow loading but there is no calculation associated with this value. The report should evaluate and incorporate these loss calculations into the report and model.

Comment #10: The WLAs for the PCB contaminated groundwater plumes should be listed in the TMDL report.
Section 5.4.3 of the TMDL report references the calculation used to determine the WLAs for the contaminated groundwater plumes from Kaiser Aluminum and General Electric but does not provide the annual average flow used for the calculation or WLA in the report. Please include a table with these values in the report.

Comment #11: The EPA should post the TMDL model spreadsheet on its website for the public to review.
The EPA should post the TMDL model spreadsheet on its website for the public to review and verify the accuracy of the calculations and data used in the analysis. Furthermore, there is no TMDL support spreadsheet in Appendix C for the selected model scenario. Failure to provide the spreadsheet to the public shows a lack of transparency by the EPA.

Sincerely,

Bijay Adams
General Manager
Liberty Lake Sewer and Water District
22510 E. Mission Ave, Liberty Lake WA 99019
Phone: (509) 922-9016
Email: bijay@libertylake.org

CC: Norman M. Semanko, Attorney at Law, Parsons Behle & Latimer
Allison Esvelt, Principal Engineer, Esvelt Environmental Engineering LLC
File

NCASI
IMPACT. SCIENCE. SOLUTIONS.

July 15, 2024

TO: Gunnar Johnson, EPA

FROM: Brad Barnhart, Project Leader, NCASI
Camille Flinders, Director, NCASI
Giffe Johnson, Senior Program Manager, NCASI

SUBJECT: Comments on EPA's Spokane and Little Spokane Rivers PCB TMDL

NCASI has evaluated the Environmental Protection Agency's (EPA) proposed Total Maximum Daily Loads (TMDL) for Polychlorinated Biphenyls (PCBs) in the Spokane and Little Spokane Rivers (henceforth, Draft TMDL), and provided comments below. NCASI is an independent, non-profit research organization that focuses on environmental topics of interest to the forest products industry. NCASI conducts research and technical studies on behalf of forest products companies across the US, and its members represent over 80% of the pulp and paper production and two-thirds of wood panels produced nationwide. In its capacity as a research organization, NCASI has a long history of working to inform the science needed to address numerous environmental topics related to the forest products industry including effluent regulation, water quality management, and relationships between human and natural stressors on aquatic ecosystems. The following comments are provided to help strengthen important scientific aspects of EPA's TMDL approach for PCBs in the Spokane and Little Spokane rivers.

1. *Conservative, steady-state model assumptions may not be relevant in the low-concentration conditions stipulated by the TMDL*

In the Draft TMDL, EPA selected "a conservative mass balance approach that assumes all PCBs that reach the river are fully mixed, conserved within the water column along the length of the Spokane River, and not subject to significant degradation, volatilization, stable long-term sequestration, or otherwise removed from the Spokane River water column by any process other than discharge to the Columbia River." That is, EPA "assumed that there is no loss of PCB mass from the point of release into the river, and all mass is transported downstream with the river flow." EPA rationalizes that because PCBs are persistent in the environment with chemical transformations occurring slowly, this is a reasonable and conservative approach that provides an inherent margin of safety.

The above model assumptions may not be appropriate for the low concentration levels currently found in surface waters (Figure 7 from post-2010 data) as well as concentrations significantly lower than those observed, as would be found if the objectives of the TMDL are met. At these low concentrations, processes such as adsorption to sediments (e.g., Schwarzenbach et al. 2016), biotic uptake (e.g., Borgå et al. 2005), atmospheric volatilization (e.g., Mackay and Wolkoff, 1973), and other natural attenuation mechanisms (e.g., Masset et al. 2019) may become more significant, potentially altering PCB mass in the

water column. Other modeling assumptions that may change at the low concentrations described in the TMDL include whether Lake Coeur d'Alene acts as a net source or sink for PCBs, especially for the semivolatile PCB congeners. Therefore, caution should be taken when attempting to estimate PCB persistence and downstream transport under future scenarios. Model refinement should be encouraged during implementation at lower concentrations to enhance the accuracy and relevance of the TMDL implementation.

Ultimately, there is a significant disconnect between the current conditions described from post-2010 data and those conditions attributed to the maximum daily load to meet water quality standards. The lack of system knowledge at such low concentrations should be acknowledged in the TMDL. And, as suggested below, a justifiable implementation plan should be pursued before completion of the TMDL.

2. *A coordinated state/federal implementation plan should be created and approved prior to the completion of TMDL in this case, due to lack of reasonable assurance*

The purpose of a TMDL's reasonable assurance section (Section 5.8, p. 60) is to demonstrate that there are sufficient mechanisms, commitments, and resources in place to implement the proposed TMDL and achieve the necessary pollutant load reductions. For the following reasons, it is not technically feasible to implement this TMDL:

- The TMDL aims to reduce total PCB concentrations to 1.3 pg/L and provides wasteload allocations among various sources accordingly. This translates to necessary PCB reductions consistently exceeding 97% and oftentimes exceeding 99% among river segments (Table 20). Even historic upstream, groundwater-fed tributary monitoring data recorded surface water concentrations of 6 pg/L, requiring a 77% reduction in current values to meet the proposed water quality criterion. Given the percentage of reductions needed, it is not feasible to expect that these reductions can be achieved.
- Analytical methods (Method 608, Method 1668) cannot reliably detect PCB concentrations near 1.3 pg/L.
- The Draft TMDL states that "The EPA expects that Idaho and Spokane Tribe will meet their boundary condition concentrations of 1.3 pg/L to achieve applicable WQS, including WQS to protect downstream standards." However, Figure 7, showing PCB monitoring data collected post-2010, and Table 20, showing the needed reductions to meet the water quality standard, do not validate this statement.
- Under the federal Toxic Substances Control Act (TSCA) [40 CFR, Part 761] the inadvertent generation of PCBs must have an annual average concentration of <25 parts per million (ppm), with a 50 ppm maximum. This allowable 'background' concentration of PCBs in the environment directly conflicts with the surface water criterion used in this TMDL.
- Modeling assumptions of PCBs as a conservative substance may be flawed at the low concentrations described in the TMDL.

One suggestion to address this issue is to create and approve an implementation plan before finalizing this TMDL. This would require coordination between state and federal agencies and would ensure that the objectives of the TMDL would be feasible to implement.

3. Section 3.1 (Overview of PCB Sources) insufficiently depicts PCB levels allowable under TSCA

The Draft TMDL discusses legacy and ongoing sources of PCBs in Section 3.1. Here, specifically, the document states that "while concentrations of inadvertent PCBs are regulated by TSCA, the wide range of products that contain them continue to contaminate many waste streams (Xiaoyu et al. 2022)." It would be beneficial to highlight that the TSCA [Toxic Substances Control Act] regulation allows for the generation and release of inadvertently produced PCBs at concentration levels that are orders of magnitude greater than current Washington and tribal water quality standards. For example, products must not contain >50 ppm at maximum or 25 ppm as an annual average, emissions to ambient air must not be above 10 ppm up to 1 lb/year, and discharges of individual congeners to water must not be above 100 µg/L (CFR 2013). PCB generation and emission can occur in a variety of industrial processes and consumer products (Vorkamp 2016, Lui et al. 2022), several of which are present in the Spokane River basin. Inclusion of text recognizing that discharge of the allowable PCB levels from even a single source has the potential to far exceed existing PCB concentrations in the Spokane River basin and obstruct TMDL efforts is important to increase transparency in the Draft TMDL. It will also serve to highlight the challenges faced by water quality managers in implementing the TMDL and industrial environmental managers who have limited operational and technological controls for addressing outside PCB loads.

4. Censorship level of PCB data may overestimate PCB contamination in the Spokane River Basin

EPA's application of a 5x blank censoring level in the Draft TMDL likely overestimates PCB contamination in the Spokane River basin and is counter to EPA's own guidance and that of Washington Department of Ecology (henceforth, Ecology). Censoring is used to reduce the influence of low-level sample blank detections and increase confidence that observed river concentrations are reflective of actual environmental and not inadvertent sample contamination, and is particularly important for PCBs given their ubiquity in the environment, that most Spokane River basin PCB concentrations are close to or below analytical detection limits, and levels of PCBs in laboratory blanks using highly distilled laboratory water can be as high as 50 pg/L. Guidance in EPA's National Functional Guidelines for Organic Data Review recommends using 10x the amount in the blank as a threshold for positively identifying target analytes that are common laboratory contaminants (EPA 1999). For PCB method 1668, this equates to a 95% confidence level that the congener is present in the sample and quantifiable. Ecology has adopted EPA guidance in their regulatory frameworks (Ecology 2018) and its own PCB sampling program (Friese and Coots 2016). The Draft TMDL points to the use of a 3x blank censoring level by the Spokane River Regional Toxics Task Force (SRRTTF) in highlighting the increased confidence the 5x blank censoring used in the Draft TMDL brings to PCB concentration data. However, SRRTTF's 3x blank censoring level was selected because their data collection efforts were "not intended to satisfy the requirements of data collection needs for regulatory undertakings such as evaluating compliance with applicable water quality standards for PCB or developing information for Load or Wasteload Allocations." (LimnoTech 2014). The fact remains that the application of 5x censoring still results in semi-quantitative concentration estimates with greater potential for false positives. The application of a 10x blank censoring level would better ensure that measurements of PCB contamination reflect true environmental conditions, and

serve as a more appropriate basis for estimating loads and establishing allocations than 5x blank censored data.

5. *Data generated using Method 1668 may not produce scientifically defensible risk assessment outcomes and margins of safety.*

The toxicity value associated with EPA's human health-based water quality criteria for PCBs was originally derived based on toxicity testing using four Aroclors (1260, 1254, 1242, and 1016), and the resulting value has been in use for more than two decades (IRIS 1996). As such, PCB concentrations Method 608, an Aroclor-specific method (and potentially 8082 for Aroclor analytes), would be comparable to criteria derived using this toxicity factor. However, Method 1668 yields individual congener data, which complicates a comparison of measured PCB concentrations to the toxicity factor and cancer risk, both because bioaccumulated PCB congeners may be more toxic than commercial PCBs (measured as Aroclors) and because congeners lower in chlorine content than the original Aroclor mixture tend to be more inclined to metabolism and elimination and lower in persistence and toxicity. There is a paucity of toxicity and bioaccumulation data for many of these 209 congeners/congener groups, although the relative toxicity and mode of action is known to vary among PCB congeners (e.g., Simon et al. 2007). Further, known existing sources of PCBs, such as PCB-11 (Fisher 2010, Rodenburg et al. 2010) that are lower in chlorine content can be significant contributors to the mass of PCBs quantified using Method 1668. As such, these results are not directly comparable to the criteria without some assessment of toxicity and bioaccumulation equivalency between the congeners identified using 1668 in present day water samples and those contributing to the toxicity reflected in the Cancer Slope Factor (CSF) used to derive the water quality criteria.

By relying on Method 1668 to input exposure data into the risk assessment algorithm, it is highly likely that risk is overestimated related to the degree in which less toxic PCB congeners make up the totality of PCBs measured. Unless all PCBs measured are, in fact, Aroclors (1260, 1254, 1242, and 1016), the risk will be overestimated. It is likely that regional and temporal measurements of PCBs will vary in concentration. Therefore, not only is the margin of safety provided by the current criteria unknown, but it will vary from region to region and date of sampling. An analytical method, such as Method 608, that directly links measured concentrations with the well characterized health risk of specific constituents at those concentrations would create a more scientifically defensible method to meet health protection targets and define a reliable margin of safety.

Literature Cited

Borgå, K., Fisk, A.T., Hargrave, B., Hoekstra, P.F., Swackhamer, D. and Muir, D.C., 2005. Bioaccumulation factors for PCBs revisited. *Environmental Science & Technology*, *39*(12), pp. 4523-4532.

CFR [Code of Federal Regulations]. 2013. 40 CFR 761.3. Code of Federal Regulations. Title 40: Protection of the Environment. Parts 700 to 789. Revised as of July 1, 2013. Published by the Office of the Federal Register Archives and Records Administration as a Special Edition of the Federal Register.

Ecology [Washington Department of Ecology]. 2018. Water Quality Program Permit Writer's Manual, Revised July 2018. Publication 92-109. 555 pg.

EPA [Environmental Protection Agency]. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. EPA540/R-99/008. 123 pg.

Fisher, B. 2010. Researchers find little-known PCB "pretty much everywhere." Environmental Science and Technology. April 15, 2010. (http://pubs.acs.org/doi/pdf/10.1021/es100692h)

Friese M. and R. Coots. 2016. Little Spokane River PCBs: Screening Survey of Water, Sediment, and Fish Tissue. Washington State Department of Ecology, Olympia, WA. Publication No. 16-03-001. https://fortress.wa.gov/ecy/publications/SummaryPages/1603001.html

IRIS [Integrated Risk Information System]. 1996. Polychlorinated biphenyls (PCBs); CASRN 1336-36-3. U.S. Environmental Protection Agency.

LimnoTech. 2014. Quality Assurance Project Plan, Spokane River Toxics Reduction Strategy Study. Prepared for the Spokane River Regional Toxics Task Force; effective July 23, 2014. 220 pg. https://srrttf.org/wp-content/uploads/2013/05/QAPP_FINAL_081114.pdf

Lui X, Mullin MR, Egeghy P, Woodward KA, Compton KC, Nickel B, Aguilar M, Folk E IV. Inadvertently Generated PCBs in Consumer Products: Concentrations, Fate and Transport, and Preliminary Exposure Assessment. Environmental Science & Technology 56:12228-12236. https://doi.org/10.1021/acs.est.2c02517

Mackay D and Wolkoff AW. 1973. Rate of evaporation of low-solubility contaminants from water bodies to atmosphere. Environmental Science & Technology, 7(7), pp.611-614.

Masset T, Cottin N, Piot C, Fanget P, Naffrechoux E. 2019. PCB mass budget in a perialpine lake undergoing natural decontamination in a context of global change. Science of The Total Environment 693: 133590. https://doi.org/10.1016/j.scitotenv.2019.133590

Rodenburg LA, Guo J, Du S, Cavallo GJ. 2010. Evidence for Unique and Ubiquitous Environmental Sources of 3,3'- Dichlorobiphenyl (PCB 11). Environmental Science and Technology. 44(8), pp 2816-2821 https://doi.org/10.1021/es901155h

Schwarzenbach RP, Gschwend PM, Imboden DM. 2016. Environmental organic chemistry. John Wiley & Sons.

Simon T, Britt JK, James RC. 2007. Development of a neurotoxic equivalence scheme of relative potency for assessing the risk of PCB mixtures. Regulatory Toxicology and Pharmacology 48: 148–170. https://doi.org/10.1016/j.yrtph.2007.03.005

Vorkamp K. 2016. An overlooked environmental issue? A review of the inadvertent formation of PCB-11 and other PCB congeners and their occurrence in consumer products and in the environment. Science of the Total Environment 541: 1463–1476. https://doi.org/10.1016/j.scitotenv.2015.10.019

Northwest Pulp & Paper
ASSOCIATION

July 15, 2024

*Via E-mail (*SpokaneRiverTMDL@epa.gov.*)*

Mr. Gunnar Johnson
Washington TMDL Manager
U.S. E.P.A., Region 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101

Re: NWPPA comments on Draft Spokane and Little Spokane Rivers PCBs Total Maximum Daily Loads

Dear Mr. Johnson:

Thank you for the opportunity for the Northwest Pulp & Paper Association (NWPPA) to provide comments on the proposed total maximum daily load for PCBs on the Spokane and Little Spokane Rivers.

NWPPA is a 69-year-old regional trade association representing pulp and paper mills in Washington, Oregon and Idaho. In Washington, we represent Inland Empire Paper Company (IEP), as well as several other mills, all of which hold NPDES permits issued by the Washington Department of Ecology. NWPPA and its members are very concerned about the proposed PCBs TMDL on the Spokane and Little Spokane Rivers, and the precedent that it will set for other water bodies across the state.

NWPPA wholly supports the comments submitted by IEP, dated July 15, 2024. We also support and echo the technical concerns expressed in the memo submitted by the National Council for Air and Stream Improvement (NCASI).

Thank you for your time and consideration.

Sincerely,

Jackie White
Director of Regulatory and Technical Affairs
Northwest Pulp & Paper Association

CITY OF POST FALLS

Public Works Department
Water Reclamation Division

JULY 15, 2024

U.S. EPA Region 10
Attn: Gunnar Johnson
1200 Sixth Avenue, Suite 155
Seattle, WA 98101
SpokaneRiverTMDL@epa.gov

RE: Spokane and Little Spokane Rivers PCB DRAFT TMDL – Public Comment on behalf of The City of Post Falls, Idaho

Mr. Johnson,

FACTUAL BACKGROUND

The City of Post Falls Idaho is an incorporated city with a population of approximately 44,000. Post Falls is located in Kootenai County Idaho within the Coeur d'Alene Urbanized Area. The city owns and operates a publicly owned treatment works (POTW) that serves both the City of Post Falls and the City of Rathdrum. The POTW serves an estimated population of 52,833. The POTW currently discharges through Outfall 001 to the Spokane River pursuant to existing Idaho IPDES Permit ID0025852. The existing Permit became effective on January 1, 2024.

GENERAL INFORMATION

The City of Post Falls is committed to the fundamental goals of the Clean Water Act and improving water quality as a means of protecting public health and supporting a high quality of life for our communities. The city takes seriously our role as a steward of water quality within the Spokane River watershed as demonstrated by completion of regular compliance sampling and reporting, development of various management plans, infrastructure investments to meet current discharge limits, and voluntary participation with the Spokane River Stewardship Partnership and Spokane River Toxics Advisory Committee.

The City of Post Falls intends to continue this stewardship by operating the City of Post Falls Water Reclamation Facility utilizing all necessary staff, equipment, power, best management practices (BMPs) and chemicals to meet applicable water quality discharge limits while employing a sustainable, cost-efficient, and effective treatment methodology.

The city spent considerable time and resources reviewing the Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads Public Comment Draft (Draft TMDL). As a result, the city would like to provide the following comments related to the draft document.

GENERAL COMMENTS

COMMENT #1

At the outset, the city believes that EPA lacks the authority to include the Idaho segments of the Spokane River in the Draft TMDL or, within the TMDL, to propose or specify future discharge requirements for Idaho dischargers regulated by the Idaho Department of Environmental Quality (IDEQ) permitting process. The consent decree under which EPA has proposed the PCB TMDL specifies the segments of the Spokane River in Washington state and adjacent to tribal lands in Washington as the scope of the TMDL required. EPA's work on the Idaho segments of the Spokane River is unnecessary to comply with the consent decree and is outside of its scope. In addition, the city does not believe EPA has any independent authority under Clean Water Act Section 303 to establish a TMDL for the Idaho segments of the Spokane River or to speak to future permit requirements for Idaho dischargers as the statutory prerequisites for taking such action have not been triggered. Thus, EPA's analysis of and commentary on "the river" or the "watershed" are beyond the scope of its authority in this circumstance. Despite these concerns and objections, the city provides comments pertaining to concerns with EPA's methodology generally and its commentary regarding the Idaho segments and potential sources of PCBs specifically.

REQUEST #1a
Please explain if the full scope of the Draft TMDL is limited to the areas specified in the Consent Decree and thus exclusive of any segments of the Spokane River in Idaho.

REQUEST #1b
Please explain if the Draft TMDL either explicitly or implicitly specifies future requirements for Idaho dischargers who are regulated by the IDEQ permitting process.

COMMENT #2

The U.S. EPA published the Polychlorinated Biphenyl (PCB) Total Maximum Daily Load (TMDL) Handbook in December 2011 (TMDL Handbook).

https://www.epa.gov/system/files/documents/2021-08/p100dp8k.pdf

Section II of the handbook discusses the scale at which PCB TMDLs should be developed. The TMDL Handbook utilized the Delaware River Estuary as an example for scale development indicated a distinct TMDL was established for each of five riverine zones of the Delaware River Estuary "in order to account for the variations in PCB concentrations throughout the estuary."

Complexity also exists within the Washington segments of the Spokane River including gaining and losing reaches of the river via interaction with the Spokane River Rathdrum Prairie Aquifer within Washington, sediment impoundments behind the Upriver Dam and Nine Mile Dam, and industrial and remediation site inputs from legacy contamination and possibly yet to be identified legacy sources.

Complexity throughout the Washington segments of the Spokane River, the immeasurably low levels of PCBs in the upper segments of the study area, and variability observed in semi-quantitative sampling events would suggest the need for a more complex analysis than the selected conservative mass balance approach utilized in the Draft TMDL. While the Draft TMDL lists simplicity and lower resource needs as advantages of this approach (pg. 37) the reality is that the situation is not simple and requires adequate resources to be invested to make sound regulatory decisions.

REQUEST #2a
Please explain if EPA staff discussed the time and resource needs necessary to complete a TMDL that accounts for the complex fate and transport of PCBs in the sections of the Spokane River covered in the Consent Decree. If so, what were the estimated time needs?

REQUEST #2b
Please explain on what factual and technical basis was the conservative mass balance approach selected to allocate PCB loadings in the Draft TMDL required by the consent decree.

COMMENT #3
The U.S. EPA published the Polychlorinated Biphenyl (PCB) Total Maximum Daily Load (TMDL) Handbook in December 2011 (TMDL Handbook).

https://www.epa.gov/system/files/documents/2021-08/p100dp8k.pdf

Section II of the handbook discusses source identification and directs TMDL writers to consider sources indicating "A PCB TMDL can more quickly guide cleanup if a localized source or sources are determined to be affecting the waterbody."

REQUEST #3a
Whereas PCB concentrations appear to spike between Barker Road and Upriver Dam based on semi-quantitative sample events conducted as part of a source identification effort. Please explain if EPA completed an analysis regarding localized source identification efforts in this area as part of the early stages of TMDL development.

REQUEST #3b
If source identification efforts were completed what were the results of the analysis?

REQUEST #3c
If source identification efforts were not completed why not?

REQUEST #3d
If localized sources of PCBs are identified within Washington segments of the Spokane River, please explain what remediation tools or legal authorities are available to control the sources with the goal of further PCB concentration reductions through completion of additional cleanup efforts.

COMMENT #4
Post Falls understands the Draft TMDL has been prepared to satisfy requirements of Consent Decree C11-1759BJR with the requirement to be complete by September 30, 2024. Section 3 of the Consent Decree allows for an extension of the deadline if requested by EPA for extensions of a limited timeframe or longer if both Parties agree.

REQUEST #4a
Please explain if EPA have staff discussed requesting an extension to the September 30, 2024 deadline for any purpose.

REQUEST #4b
Please explain if EPA staff have discussed requesting an extension to the September 30, 2024 deadline in order to complete a TMDL that accounts for the assimilative capacity or other issues related to the fate and transport of PCBs in the sections of the Spokane River covered in the Consent Decree. If not, why not?

REQUEST #4c
Please explain if the Parties to the Consent Decree have discussed extending the September 30, 2024 deadline.

DRAFT TMDL COMMENTS

COMMENT #5
The data used by the EPA for this Draft TMDL has been either provided by the Spokane River Regional Toxics Task (SRRTTF) or collected by other agencies using Quality Assurance Project Plans (QAPPs) with very similar data objectives. The purpose of these data collection efforts was expressly limited to identifying the relative magnitude of PCB contributions from various sources. Specifically, the SRRTTF QAPP states, "these data will be used to support a *semi-quantitative* low-flow mass balance assessment and assess the seasonal variability of upstream loads to the Spokane River." (emphasis added).

The proposed quantitative use of the data to assign any WLA or LA to specific entities, and especially to an upstream state, is an irresponsible misuse of the data. If a field measurement cannot be quantified, it stands to reason a precise decrease from that number also cannot be quantified. This is especially true in the upstream reaches of the study area where the differences between blank samples and river samples are nearly indecipherable. SRRTTF made a conscious decision to proceed with their efforts knowing that more precision would be possible at downstream locations where a stronger signal to noise ratio was possible. Therefore, the use of this data is inappropriate for making calculations in the development of a TMDL.

Context on the use of SRRTTF data quality can be found in the meeting notes at the following URLs:

http://srrttf.org/wp-content/uploads/2012/10/SRRTTF-Meeting-Summary-6-18-14-final.pdf
http://srrttf.org/wp-content/uploads/2012/10/7-23-14-SRRTTF-Meeting-Summary-Final.pdf

REQUEST #5
As the magnitude of the Idaho contribution of PCBs to the Spokane River cannot be quantified, it should be assumed to be negligible for the purposes of this TMDL.

COMMENT #6
EPA has based the analysis within the Draft TMDL on a false premise that PCBs are a conservative pollutant through the river system. This means EPA assumes that each PCB molecule entering the river remains suspended in the water column throughout the entire downstream river, not settling, not interacting with sediments or aquatic life (including fish), and even after passing through any distance of the Spokane Valley Rathdrum Prairie Aquifer. EPA's assumption contradicts established science that PCBs are hydrophobic, bio-accumulative, and readily bind to small particulates. There is no scientific rationale to support EPA's simplistic assumption. The Draft TMDL discusses this decision on page 37, eventually concluding with a decision to use a "simple spreadsheet" requiring "fewer agency staff resources" to conduct the required analysis.

The Draft TMDL asserts the conservative mass balance approach provides an inherent margin of safety. Perhaps theoretically accurate, this presents a wildly over-simplistic view of watershed toxics fate and transport. If the assumption were true, PCBs would need to be regulated in every stream contributing to every water body listed for PCBs contamination throughout the nation. Further, if PCBs were truly conserved in the water column, there would be no uptake by aquatic life. Specifically, there would be no uptake by fish and therefore no need for this TMDL.

Ignoring the assimilative capacity of the river segments covered by this Draft TMDL, toxics source hot spots, sediments, and aquifer dynamics is an arbitrarily simplistic decision with major ramifications for the conclusion of the study.

REQUEST #6a
Conduct the appropriate studies to understand the assimilative capacity of the river segments covered by this Draft TMDL.

REQUEST #6b
Incorporate information gained from an understanding of assimilative capacity to more appropriately allocate loads to entities within the river segments covered by this Draft TMDL. Should additional time be required to complete the appropriate studies, EPA should propose an extension to the Consent Decree deadlines per the procedures outlined in the decree.

COMMENT #7
EPA indicates in section 3.1.4 of the Draft TMDL "Sewage treatment plants and POTWs receive residential, commercial, and some industrial wastewater that contains both legacy and inadvertent PCBs, though their PCB treatment levels have dramatically increased as an added benefit from upgrades many made to comply with the 2010 Spokane River dissolved oxygen TMDL."

The use of the phrase "PCB treatment levels" is generally inappropriate. While bench scale and pilot studies have been conducted, the City is unaware of any large-scale treatment technologies implemented by a POTW for the purpose of specifically treating for PCBs.

The statement does correctly note the facility upgrades which have been made to comply with the 2010 Spokane River dissolved oxygen TMDL; Post Falls appreciates the use of the general word "upgrades." Secondary treatment has been shown to effectively reduce PCB concentrations by 90-99%. Comparing PCB effluent concentrations prior to and following next level treatment upgrades appears to show there may be the potential for further reductions in total PCBs concentrations after completion of upgrades. What remains unknown is the effectiveness or efficiency of the various types of next level treatment at reducing PCB concentrations, particularly where, as noted, no known technology exists for PCB removal and reduction at a POTW required to implement secondary treatment. A wide variety of treatment methodologies and technologies have been implemented by facilities for the purpose of meeting the Spokane River dissolved oxygen TMDL including membrane bioreactors, solids contact clarifiers, ultrafiltration pressure membranes, and inclined plate clarifier technologies. None of these technologies are designed specifically for PCB treatment or removal.

As no comparative analysis has been completed, it would be inappropriate to go beyond a general statement that facility upgrades may further reduce PCB concentrations beyond that observed during secondary treatment or treatment designed to address dissolved oxygen.

It would also be inappropriate to direct facilities as to which technologies they should be operating for PCB removal without further analysis.

REQUEST #7a
Please explain if EPA is aware of any published and peer-reviewed comparative analysis evaluating the relative effectiveness of PCB concentration reductions through various tertiary treatment technologies such as membrane bioreactors, solids contact clarifiers, ultrafiltration pressure membranes, and inclined plate clarifiers. Please provide any specific scientific studies or analyses used by EPA in developing the Draft TMDL.

REQUEST #7b
Revise the statement in the Draft TMDL to read:

> "Sewage treatment plants and POTWs receive residential, commercial, and some industrial wastewater that contains both legacy and inadvertent PCBs. Treatment plants and POTWs have been shown to be effective at reducing PCB concentrations through the treatment processes designed and installed for secondary treatment or other non-PCB specific reasons. Many facilities completed a variety of upgrades to comply with the 2010 Spokane River dissolved oxygen TMDL. These upgrades are not designed for PCB treatment or removal although in some cases such technology may be providing additional reductions in PCB concentrations benefiting water quality as compared to before the upgrades were complete."

COMMENT #8
In section 3.1.6, EPA has concluded that no PCBs are removed when water flows through the "Rathdrum Aquifer" due to "paucity" of "fine-grained sediments". This is not borne out by any data. In fact, WA Department of Ecology sampled several wells and springs for PCBs in 2015, including locations expected to be influenced and locations not expected to be influenced by historical industrial contamination. One of these samples was at Idaho Road, an area of the aquifer largely fed by the Spokane River in Idaho. This sample did not detect PCBs using

method 1668c. While one semi-quantitative sampling event is hardly conclusive, the implication is clear: the aquifer does indeed filter PCBs.

WA Department of Ecology Environmental Assessment Program Data: https://apps.ecology.wa.gov/eim/search/Detail/Detail.aspx?DetailType=Study&SystemProjectId=99971160

REQUEST #8a
Revise the Draft TMDL to properly account for a different level of PCBs entering the river through groundwater. This should be done with careful consideration of localized information, such as where there is no historic industrial contamination.

REQUEST #8b
Consideration should especially be given to the losing reach of the Spokane River immediately downstream of the Idaho state line and the implications on downstream water quality.

REQUEST #8c
The TMDL should be revised to correctly reference the Spokane Valley Rathdrum Prairie Aquifer.

COMMENT #9
EPA has relied on the WA Department of Ecology 303(d) listing of the Spokane River at the state line. Water Quality data, including data used in the TMDL, show this is unlikely a realistic description of the PCBs issues within the Spokane River.

All water quality measurements at or above Barker Road in Washington have shown the Spokane River to be at essentially background levels for PCBs. A major increase in water column concentrations is observed downstream of these locations and above Upriver Dam. WA Department of Ecology listed the water body for PCBs using fish tissue studies only, as the detection limits for water column PCBs are not sufficiently sensitive to quantify and PCBs which are present.

Utilizing only fish tissue samples for comparative analysis of river segments throughout a watershed, especially where a conservative mass balance approach is proposed, is inappropriate. Fish swim. Fish are known to migrate up and down stream throughout the year. It does not make sense for fish to have high levels of PCBs in their tissue if there is no source of PCBs. In this case the explanation is straightforward, fish harvested for the water quality assessment were likely influenced by the higher levels of PCBs downstream of Barker Road and are not reflective of the water quality near the Idaho state line.

WA Department of Ecology anticipated this would be a difficulty in using fish tissue as a screening tool. In Water Quality Program Policy 1-11, which describes the methodology used to assess impaired water bodies for 303(d) listings in WA, Ecology states, “It should not be interpreted that the displayed stream reach or grid cell AU represents the true spatial extent of a harvest use impairment. This would require additional study, such as through a TMDL.” In this Draft TMDL, EPA has failed to conduct the additional study necessary to determine the true spatial extent of the impairment.

REQUEST #9a
The city requests EPA to acknowledge the serious issues with utilizing only fish tissue studies from one POTW on a Washington state segment of the Spokane River to estimate water column PCB concentrations. These limitations and resulting unfounded assumptions should be explicitly stated in the TMDL.

REQUEST #9b
EPA should conduct the appropriate studies necessary to determine the true spatial extent of the water quality impairment and not rely on the illogical conclusions of the fish tissue study.

REQUEST #9c
If the appropriate studies cannot be completed in time to revise the Draft TMDL, the spatial extent of the Draft TMDL should be modified to exclude Washington Assessment Unit WA17010305000012_001_001, from RM 94.8 to 96.3.

COMMENT #10
The Draft TMDL has conflicting information pertaining to the spatial distribution of PCBs in the Spokane River. Figure 7, pg 35, depicts the known PCB river monitoring data from 2010 onward. In this figure, PCBs at river mile 90.3 are shown near zero. However, in Table 9, the mean total PCB concentration for river miles 94.8 – 96.3 is listed as 48 pg/L with a footnote that this value is extrapolated from downstream measurements.

REQUEST #10a
The Draft TMDL should be revised to correctly list the near-zero mean PCB value for the first assessment unit listed in Table 9.

REQUEST #10b
Based on the near-zero PCBs measured at river mile 90.3, the Draft TMDL should be modified to exclude Washington Assessment Unit WA17010305000012_001_001, from RM 94.8 to 96.3.

COMMENT #11
The city acknowledges the challenge EPA faces in assigning boundary conditions, wasteload allocations, and load allocations for a water quality standard which is immeasurable and unachievable with today's technology. The city reiterates its comment that EPA does not have authority in the present circumstances to include Idaho segments of the Spokane River in its draft PCB TMDL for Washington state. We nevertheless provide the following technical comments on EPA's approach.

In attempting to meet the requirements of the Consent Decree, EPA concludes the effective water quality criteria at the Idaho state line must be 1.3 pg/L based on the flawed and overly simplistic assumption that PCBs are conserved in the water column and through groundwater. In reality, EPA has not conducted the research to validate this assumption.

In the summer, when the Draft TMDL states PCBs in the water column appear to be at a higher concentration, as much as 75% of the water from the Idaho state line infiltrates into the aquifer. At all times water in the river passes through five reservoirs, over or through five dams, past

multiple large tributaries, as it travels over 63 miles to the boundary of the Spokane Tribe's jurisdiction.

EPA has expended no effort to determine the actual assimilative capacity of the river. This blanket assumption may be reasonable for downstream reaches of the river which appear to have levels of PCBs which are significantly higher. However, given the semi-quantitative nature of sampling efforts for this stretch, there is a very real possibility the immeasurably low levels of PCBs entering the Study Area from the Idaho state line could be assimilated by the various components of the river.

REQUEST #11
The Draft TMDL should be revised to include a study of the fate and transport of PCBs within the watershed.

COMMENT #12
The city reiterates our belief EPA lacks the authority to include Idaho segments of the Spokane River in the Draft TMDL, or, within the TMDL. The below comment should not be interpreted as sanctioning inclusion of any analysis within Idaho but is made to further point out the severe flaws in the factual and technical basis EPA has used throughout the Draft TMDL.

Consent Decree C11- 1759BJR requires the EPA to develop a TMDL that has the meaning provided at 40 C.F.R. §130.2(i). 40 C.F.R. §130.2(i) indicates a TMDL should be the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background. Since the TMDL required by the consent decree does not include Idaho segments of the Spokane River, EPA's approach to include an allocation for Idaho at the state boundary line is inappropriate.

Section 3.1.5 of the Draft TMDL covers Atmospheric PCB Deposition. Per section 3.1.5, atmospheric deposition is addressed within the study areas boundary conditions, "In the upper basin, atmospherically deposited PCBs are integrated into the source waters of the Spokane River flowing from the outlet of Lake Coeur d'Alene and are part of the boundary conditions considerations."

Further in the Draft TMDL, Section 5.2 covers Loading Capacity indicating the sum of load allocations is "the portion of the TMDL attributed to existing and future nonpoint sources and natural background. The loadings associated with tributaries, groundwater, and assigned boundary conditions are included in the total LA loading."

The phrasing within these sections creates ambiguity regarding a difference between "natural background" and the "boundary conditions."

REQUEST #12a
EPA should use the best available information and conclude the water quality of the Spokane River at the Idaho state line is effectively "background" and therefore negligible for this Draft TMDL.

REQUEST #12b
Should EPA believe the boundary conditions of the Spokane River at the Idaho state line differ from a natural background level, EPA needs to explain the factual and technical bases for this assertion. Also, the Draft TMDL should include a definition for each term as well as the quantifiable level for each and rationale used to differentiate the two.

If you have any questions, feel free to contact to contact me.

Sincerely,

Craig Borrenpohl, P.E. MPA
Utilities Manager
cborrenpohl@postfalls.gov

PUBLIC WORKS
808 WEST SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201

July 12, 2024

US Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3188

Sent via Email: SpokaneRiverTMDL@epa.gov

RE: Spokane and Little Spokane Rivers Polychlorinated Biphenyls (PCB) Total Maximum Daily Loads (TMDL) Public Comment Draft

INTRODUCTION

The City of Spokane (City) provides the following comments to USEPA's Spokane and Little Spokane Rivers PCB TMDL Public Comment Draft, dated May 15, 2024. While the City supports efforts to protect and improve these natural resources, the process utilized by the USEPA to develop the TMDLs and wasteload allocations is simplistic, highly conservative and not consistent with the Clean Water Act. First, the load and wasteload allocations are not currently attainable and will not be attainable for the foreseeable future. Second, the extraordinarily low wasteload allocation concentration of 1.3 pg/L cannot be measured using any available laboratory method. Third, USEPA is not regulating "toxic pollutants in toxic amounts" but instead arbitrarily assumes that all PCBs have the same effect on fish and human health. Finally, USEPA's approach fails to address key sources of PCBs in fish and as a result does not provide a pathway to restoring fishing as a designated beneficial use.

The City understands USEPA has prepared this Draft TMDL, and that the Washington State Department of Ecology will have the responsibility to prepare the eventual Implementation Plan. The City is providing these comments to highlight issues to consider during the TMDL development and implementation process. These comments also incorporate the attached technical memorandum from Dr. Tom McHugh and Ms. Lila Beckley of GSI Environmental, Attachment "A".

GENERAL COMMENTS

The City values the Spokane and Little Spokane Rivers and has invested heavily to protect these resources.

The City recognizes and values the Spokane and Little Spokane rivers as significant natural resources and is committed to preserving and improving these resources including managing PCB loadings into the rivers. Over the past 10 years, the City has made a generational investment exceeding $450 million in its wastewater/stormwater infrastructure. These investments include:

Improved Wastewater Treatment: In 2021, the City completed an upgrade to the Riverside Park Water Reclamation Facility (RPWRF) including installation of the Next Level Treatment (NLT) system, a state-of-the-art membrane filtration system that provides tertiary treatment for the City's wastewater effluent prior to discharge to the Spokane River. Due to the very low solubility of PCBs, PCBs in wastewater are almost exclusively bound to suspended particles. As a result, the removal of particles in the treated effluent through microfiltration is a best available technology for removal of PCBs. The City's membrane filtration system (0.1 micron pore size) became fully operational in 2022. The membrane filtration system has a standard operating capacity of 50 million gallons per day (MGD) but can be operated at rates as high as 75 MGD for short periods of time. The RPWRF receives an average flow of approximately 30 MGD, thus, under normal operating conditions, the membrane filtration system treats 100% of the RPWRF influent. As discussed in the technical comments, the PCB concentrations in the treated RPWRF effluent are so low that they cannot be accurately measured. However, based on influent and effluent testing conducted since the installation of the membrane filtration system, the best estimate is that the RPWRF is achieving, on average, over **99% removal of PCBs** compared to influent concentrations.

Improved Management of Combined Sewer Flows: In addition to upgrading the RPWRF, the City has implemented a number of measures to minimize direct discharge of untreated mixed stormwater and wastewater associated with combined sewer overflow (CSO) events. The City has also been working for many years to reduce or eliminate CSO events. The most recent improvements include construction and maintenance of a storage capacity for up to 13 MG of combined sewer flow within the collection system, and operation and maintenance of the sewer network to maximize flow capacity to the RPWRF including routine maintenance to remove debris, roots, and other blockages. In addition, the City has an on-going program to install cured in-place pipe ("CIPP") liners in sewer lines identified to have excess infiltration of groundwater or storm water. These liners minimize infiltration within the rehabilitated sections reserving flow capacity for other inflow sources. Although the number of CSO events varies from year to year due to variations in total precipitation and storm event magnitude, the City has seen a steady decline in the number and magnitude of CSO events from 2016 to 2023.

Identification and Control of PCB Sources: The City has a comprehensive program to identify and control sources of PCBs. The source identification program includes two key elements:

1) Identification of products and industries that are likely to be significant sources of PCBs. From 2014 to 2016, the City conducted product testing programs to measure the PCB concentrations in specific products used by the City. These data are used to shape source control measures discussed below.

2) Analysis for PCBs on wastewater samples collected from key locations throughout the City's wastewater collection system. These data are used to determine which parts of the system receive the greatest inflows of PCBs. Fingerprinting analyses are used to determine what products and/or industries may be contributing to these inflows.

In order to reduce PCB concentrations in the City's wastewater influent, the City has implemented a broad range of source reduction measures including: removal of PCB-containing equipment from City departments; public education concerning PCB sources and control measures; low impact development incentives; procurement practices that support use of "PCB-free" products; green infrastructure projects that, where feasible, eliminate direct discharge of storm water into the Spokane River; and participation in regional initiatives to control migration of PCBs in the environment.

Diverting Direct Stormwater Discharges into Infiltration Basins: The City completed a series of projects in 2015 and 2020, which disconnected the Union Basin stormwater system from discharging directly to the river. This basin was identified in the early 2000s as containing elevated PCB concentrations compared to the rest of the municipal separate storm sewer system (MS4). These projects converted the basin into an infiltration system, utilizing green infrastructure technologies. The City is also in the midst of bringing online infiltration infrastructure for the majority of the Cochran Basin MS4. The basin is the largest in the City and encompasses an area of approximately 5,160 acres. Once online, the new Cochran treatment facility will vastly decrease the amount of stormwater flows (and associated PCBs) going into the Spokane River.

As a result of public education, source control, treatment, and control actions for wastewater and stormwater, the City has significantly reduced the amount of PCBs entering the Spokane River. The technologies and activities described above constitute best available treatment and management practices to remove PCBs and other pollutants from wastewater and stormwater and to minimize CSO discharges. The City has minimized its discharges of PCBs to the Spokane River to the extent practicable.

The City supports a comprehensive regional approach to management of PCBs in the Spokane and Little Spokane Rivers

Despite the control measures implemented by the City, the City recognizes that the total PCB loading to the Spokane River from all point sources and non-point sources throughout the watershed continues to result in exceedances of water quality standards (WQS) in the Spokane and Little Spokane Rivers. The City agrees that a comprehensive regional approach is needed to continue reductions on PCB loading and improvement in overall water quality. The City was an active participant in the Spokane River Regional Toxics Taskforce (SRRTTF). The SRRTTF led valuable efforts to identify and understand sources of PCBs to the Rivers and developed recommendations for management and reduction of PCB loadings. The City believes that regional efforts such as the SRRTTF are important for continued progress in reduction of PCB loading to the Spokane and Little Spokane Rivers.

Although the City endorses a regional management approach, we have a number of important concerns with the USEPA's proposed TMDL and wasteload allocations. Most importantly, the load and wasteload allocation concentration of 1.3 pg/L, which is applied to all point and non-point sources is so low that it is neither measurable nor attainable. As a result, this effluent

concentration and the associated loads and wasteloads do not provide a useful framework for guiding continued progress in reducing PCB loading to the Spokane and Little Spokane Rivers. More details regarding these concerns are provided in the attached technical comments.

Assigning Wasteloads for "Total PCBs" Exceeds USEPA's Authority under the CWA

The CWA authorizes USEPA to regulate "toxic pollutants in toxic amounts." 33 U.S.C. §§ 1251(a)(3) and 1311(b)(2)(C) and (D). The proposed TMDL departs from this statutory authority by broadly imposing wasteloads for "Total PCBs." As a result, USEPA is effectively regulating all PCB congeners in the City's wastewater discharge equally, regardless of toxicity, persistence or bioaccumulation.

While the CWA refers to the "combination of pollutants" in defining "toxic pollutants" (33 U.S.C. § 1362(13)), as noted above, the plain language of the CWA also directs USEPA to regulate "toxic pollutants in toxic amounts." The agency cannot simply ignore this plain language when it interprets the scope of its authority to develop a TMDL. A great deal has been learned about PCB congeners since 1977 when USEPA adopted the concept of regulating congeners en masse as "PCB mixtures." 42 Fed. Reg. 6555 (Feb. 2, 1977). In developing wasteloads for PCBs in the Spokane River, USEPA must take into consideration all of the data and analysis on the toxicity, bioaccumulation and persistence of the PCB congeners, and what is actually detected in the City's highly treated wastewater.

As noted under Comment #2 in the attached Memo, extensive data show that the City's wastewater treatment facility preferentially removes the more highly chlorinated PCBs yielding a Total PCB mixture that is less persistent, less bioaccumulative and less toxic. Rather than regulating PCBs "in toxic amounts," the TMDL wrongly assumes that PCBs in the City's treated wastewater has the same impact as untreated discharges to the Spokane River. Not only is this regulatory approach arbitrary, but it is also inconsistent with the plain language of the CWA and therefore lacks clear legislative authority. USEPA is authorized to regulate "toxic pollutants in toxic amounts" and cannot ignore the relative toxicity of the various PCB congeners when imposing wasteloads in a TMDL.

The draft TMDL utilizes outdated information on mass loadings from point sources.

The assessment mass balance model presented in the draft TMDL utilizes outdated information on mass loading based on monitoring data collected more than 10 years ago. In addition to supporting the development of load and wasteload allocations, the mass balance model is used in the draft TMDL to "assess current sources of PCBs to the Spokane River." According to the draft TMDL:

> "*The assessment spreadsheet predicts flow and PCB concentration in August 2014 for purposes of assessing current conditions and PCB sources.*" (Section 4.1.1)

This model uses flow conditions and PCB input concentration data from August 2014. These data are 10 years old and do not reflect the impact of the NLT installed by the City of Spokane and measures implemented by the City and by other dischargers that have greatly reduced

point source mass loading. As a result, the assessment mass balance model greatly overstates the current point source mass loading to the Spokane River. The USEPA's PCB TMDL Handbook indicates that the TMDL should utilize "*data on point source loadings most representative of current conditions where relevant information is available*".

The final TMDL should utilize recent monitoring results that more accurately reflect current point source mass loading to the Spokane River. Effluent monitoring results for the RPWRF since the City's microfiltration system was brought online in 2021 have been provided to Ecology and is available through their web site (https://apps.ecology.wa.gov/paris/DischargeMonitoringData.aspx).

Responsibility for TMDL implementation in areas outside the jurisdiction of the State of Washington is unclear.

The TMDL indicates that Ecology will be responsible for implementing the TMDL in areas under the jurisdiction of State of Washington. The draft TMDL assumes that the river will contain no more than 1.3 pg/L total PCBs as the River enters the State of Washington. The draft TMDL also assumes that tributaries under the jurisdiction of USEPA and the Spokane Tribe (i.e., Chamokane Creek) will contain no more than 1.3 pg/L total PCBs at the point of entry to the Spokane River. Based on the simple mass balance model used for the TMDL, if PCB concentrations at the Idaho/Washington border remain at the 21 pg/L (the assumed concentration based on 2014 data) then the concentration at the Spokane Reservation boundary will remain almost 10x above the tribal water quality standard even if all other load allocations are attained. If PCB concentrations in Chamokane Creek are at the level of 117 pg/L used by the USEPA in the 2014 mass balance model, then the concentration at the Spokane Reservation boundary will be almost 2x the tribal water quality standard even if all other load allocations are attained (and assuming that the concentration at the Idaho/Washington border is 1.3 pg/L). Thus, the Tribe's water quality standard will not be attained without source control measures in Idaho and within the Spokane Reservation.

USEPA needs to articulate the roles of the USEPA and Idaho DEQ for controlling point and non-point sources of PCBs into the Spokane River within Idaho in order to move toward attainment of the target concentration of 1.3 pg/L at the Idaho/Washington border. The Idaho WQS for PCBs is 190 pg/L and would not be protective of a downstream boundary condition of 1.3 pg/L. In addition, USEPA needs to articulate the roles of the USEPA and Spokane Tribe for controlling point and non-point sources of PCBs into the Spokane River within the Spokane Reservation. The fish hatcheries on Chamokane Creek operate under a USEPA-issued general NPDES permit (Permit No. WAG130000, effective March 1, 2024). This permit includes language indicating that the USEPA may require dischargers to obtain individual permits if a TMDL containing requirements applicable to the point source(s) is approved after the effective date of the general permit. The final TMDL should clarify that the hatcheries on Chamokane Creek are covered by this TMDL and should indicate whether USEPA anticipates requiring individual permits for these hatcheries or using some other enforceable mechanism to attain wasteload allocations for these point sources.

CONCLUSIONS

The comments provided above and the technical comments provided in the attachment to this letter highlight how USEPA's proposed TMDL is not workable for the City unless a variance is granted at the same time the TMDL wasteload and associated effluent limit are incorporated into the City's NPDES permit. The City submitted a variance application in 2019 (Application for Variance from Human Health Water Quality Standard for PCBs. https://fortress.wa.gov/ecy/ezshare/wq/standards/CityApp.pdf); however, Ecology has yet to act on this application. The City urges USEPA to work with Ecology now to ensure the variance process moves forward in parallel with the TMDL process.

Importantly, due to the unattainable load and wasteload allocations, USEPA's TMDL does not create a workable framework for reducing PCBs in fish to safe levels as required to restore this beneficial use of the Spokane River. Among other barriers, USEPA's unwillingness to adequately regulate the amount of PCBs in consumer products under the Toxics Substances Control Act ensures that fish will continue to be contaminated no matter what the businesses and residents of Spokane do to remove PCBs in wastewater and stormwater.

We urge the USEPA to reconsider its approach to the TMDL. The final TMDL should clearly acknowledge the many technical and logistical challenges to managing and removing PCBs in the environment. Load and wasteload allocations should be established in a way that facilitates measurable improvement in Spokane River water quality and restoration of beneficial uses. In the interim, the City will continue to employ the most effective treatment technologies available to remove PCBs from its wastewater and stormwater. In addition, the City will continue to educate the public about how they might help keep PCBs out of the City's wastewater and stormwater.

Thank you for your attention to these comments. The City appreciates the opportunity to provide comments on the Draft PCB TMDL. Should you need additional information or if you would like to discuss these comments, please contact Jeff Donovan at 509-625-4638 or JDonovan@spokanecity.org.

Sincerely,

Marlene Feist
Public Works Director

Enclosure:
Attachment A: Technical Memorandum

ATTACHMENT A: TECHNICAL MEMORANDUM

TO: City of Spokane

FROM: Tom McHugh and Lila Beckley, GSI Environmental Inc.

RE: Technical Comments on Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads, Public Comment Draft, May 15, 2024.

Introduction

On May 15, 2024, the USEPA issued proposed Total Maximum Daily Loads (TMDLs) for Polychlorinated Biphenyls (PCBs) for the Spokane and Little Spokane Rivers (USEPA, 2024a). These TMDLs were, in turn, used to develop wasteload allocations for point source discharges and load allocations for non-point source discharges to these rivers. GSI Environmental Inc. (GSI) has worked with the City of Spokane to develop technical comments on this draft TMDL. These technical comments are provided in this memo.

Comment #1: The proposed wasteload allocation concentration of 1.3 pg/L for point sources cannot currently be attained though any technology or management practice and will not be attainable for the foreseeable future. The TMDL should acknowledge the technological limitations for PCB removal from wastewater effluent and should utilize a wasteload allocation method that results in attainable wasteload allocations.

Despite being man-made, PCBs are ubiquitous in both the man-made and natural environments. PCBs migrate from both historical sources and recently manufactured industrial and consumer products into the environment and into the wastewater and stormwater that flow to the City's wastewater treatment plant (i.e., the Riverside Park Water Reclamation Facility (RPWRF)). PCBs are a world-wide contaminant that can be found in all environmental media (e.g., air, soil, groundwater, surface water) and biota. Historical and current releases have resulted in the cycling of PCBs through wind and water currents, sediment transport, and cycling in food webs. Due to the scale and reach of these transport processes, PCBs are ubiquitous, such that they are frequently detected in remote and undeveloped environments with little to no local human-caused influence (Church, 2023).

Today, PCBs from legacy manufactured products continue to enter the environment. The historical use of legacy PCBs has resulted in PCBs in soil, groundwater, and sediments at hundreds to thousands of contaminated sites that are undergoing remediation under federal or state regulatory oversight. Within the Spokane area, these sites are an on-going source of legacy PCBs to the City's wastewater sewer system and also a direct source of PCBs to the Spokane River. Marti and Maggi (2015) identified 31 sites in the Washington State Department of Ecology (Ecology) database of clean-up sites that could be contributing PCB contamination to the Spokane River via groundwater, 23 of which were confirmed to have PCBs in site soils.

Although the intentional production of PCBs was banned in the US in 1979, additional, inadvertent PCBs are created through a variety of manufacturing processes. At least seventy (70) manufacturing processes likely produce these inadvertent PCBs (Panero, 2005). Although the USEPA and other federal agencies have established limits on the amounts of inadvertent PCBs allowed in new manufactured products, these limits are in the parts per million (ppm) range, more than one billion times higher than the 1.3 pg/L (1.3 parts per quadrillion, ppq) wasteload allocation concentration in the draft TMDL. As a result, a number of widely distributed goods manufactured today contain significant levels of PCBs that continue to be released into the natural environment and are on-going sources of PCBs to the City's wastewater and directly to the Spokane and Little Spokane Rivers. Ecology (2016a) measured PCB concentrations in 216 different consumer products. They found that 156 of the products tested (72%) contained PCBs at a concentration of 1 part per billion (ppb) or higher (i.e., one million or more times higher than the proposed wasteload allocation concentration of 1.3 ppq). Many of the products found to contain more than 1 ppb of PCBs were products intended to be used outdoors (e.g., sidewalk chalk, pesticides and other lawncare products, and road paints) leaving no doubt that the PCBs in these products continue to be released into the environment.

Washington State recently petitioned the USEPA to reevaluate the Toxic Substances Control Act (TSCA) limit on inadvertently produced PCBs at 50 ppm. Despite the documented presence of PCBs in a wide variety of consumer products in the ppb range or higher, USEPA concluded that there was not enough evidence that PCBs at these concentrations posed a risk to human health or the environment (USEPA, 2024b). In contrast, in this draft TMDL, the same agency has proposed that load and wasteload allocation concentrations of 1.3 ppq (1.3 pg/L) are needed to attain health-protective concentrations in the Spokane River. The final TMDL should address this inconsistency and state why the agency has arrived at this seemingly paradoxical conclusion. The final TMDL should explain how load and wasteload allocations can be attained without addressing these on-going releases of PCBs from consumer products into the environment.

Although concentrations of PCBs in the City's wastewater influent have declined over time, they remain thousands of times higher than the proposed wasteload allocation concentration of 1.3 pg/L for the RPWRF. Although the City has implemented a number of measures to reduce PCB concentrations in the wastewater influent, the effectiveness of these measures is limited by the ubiquity of sources of legacy and inadvertent PCBs. As a result of high PCB concentrations in the wastewater influent, over 99.9% removal of PCBs from the influent would be required to attain the wasteload concentration allocation in the treated effluent. Although the City's recently completed Next Level Treatment (NLT) system achieves on average over 99% removal of PCBs, no technology has been shown to achieve over 99.9% removal of PCBs for wastewater.

The ubiquity of PCBs in the environment and the impossibility of attaining the proposed wasteload allocation concentration of 1.3 pg/L is further illustrated by the laboratory analytical results for laboratory blank samples analyzed on behalf of the City. Laboratory blank samples are highly purified water samples intended to be free of PCBs and other contaminants. However, even in laboratory blank samples, the total PCB concentration usually exceeds 1.3 pg/L. Out of 152 laboratory blank samples analyzed on behalf of the City from 2011 to 2022, 139 (91%) contained total PCB concentrations above 1.3 pg/L. For this set of blank samples, the average total PCB concentration was 244 pg/L. This 200x exceedance of the proposed wasteload allocation concentration in laboratory blank samples further demonstrates that this concentration cannot be attained in the treated RPWRF effluent or other point source discharges to the Spokane River.

The final TMDL should acknowledge that the wasteload allocation concentrations cannot be attained with any currently available technology (and, as discussed below, this concentration cannot be measured). The final TMDL should include a variance justification discussion that includes information on sources of PCBs in the environment, limitations of available removal technologies, and the limitations of available laboratory analytical methods to accurately measure total PCBs at concentrations of 100s pg/L or lower. Such variance justification discussions have been included in other TMDLs established by the USEPA. For example, the TMDL for Mercury in the Willamette Basin, Oregon (USEPA, 2021) clearly acknowledges that there are no feasible treatment technologies that could reduce mercury levels in wastewater effluent to the TMDL target concentration of 0.14 ng/L. The TMDL also includes a discussion of various treatment technologies and their documented mercury removal efficiencies. Because of the recognized technological limitation in removal of mercury from wastewater, the wasteload allocation for wastewater treatment systems covered by that TMDL were structured as percentage reductions from current discharges. That TMDL document indicates that source control measures rather than treatment technologies will be the primary tool for attainment of these wasteload allocations. If the USEPA utilizes a similar approach for wasteload allocation in the final TMDL for PCBs in the Spokane and Little Spokane Rivers, the USEPA could establish wasteload allocations that are both attainable and facilitate measurable progress in reducing PCB discharges to the rivers.

Comment #2: The USEPA's proposed wasteload allocations do not appropriately reflect the preferential removal of the more toxic, persistent, and bioaccumulative PCB congeners by the City's wastewater treatment system.

The total PCB impairment listings on Washington's 303(d) for the Spokane and Little Spokane Rivers are based entirely upon fish tissue data. The Washington and Spokane Tribe WQC are driven predominately by human consumption of fish. Thus, the ultimate goal of the TMDL for the Spokane and Little Spokane Rivers should be to reduce PCB concentrations in fish. Based on recent analyses, the penta- and hexa- PCB homologs (i.e., the PCB congeners with 5 and 6 chlorines) predominate in fish, comprising, on average, 56% to 74% of the Total PCBs in fish depending on river reach (SRRTTF, 2022; see example in Figure 1 below). Earlier studies of the Spokane and Little Spokane Rivers have found similar predominance of penta- and hexa- PCB homologs (Ecology, 2014; Ecology, 2016b). Untreated wastewater influent to the RPWRF exhibits a similar homolog distribution with penta- and hexa- homologs present at the highest concentrations (City of Spokane, 2023). However, as discussed below, RPWRF preferentially removes more chlorinated PCBs from the City's wastewater yielding a Total PCB mixture that is less persistent, less bioaccumulative, and less toxic than untreated sources of PCBs to the Rivers.

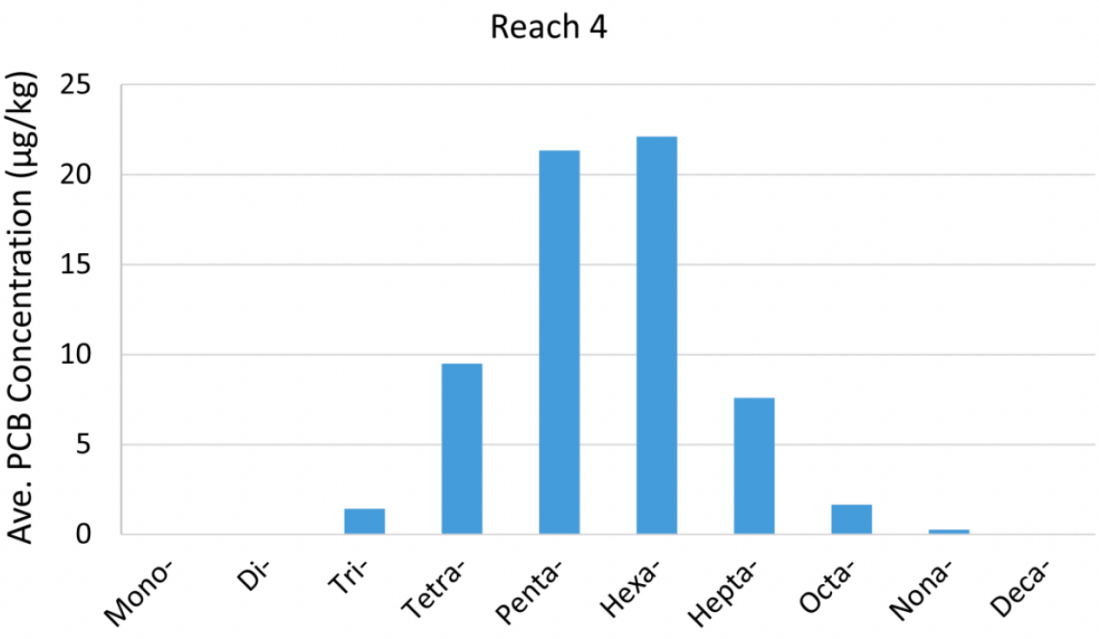


Figure 5. Average Blank-Corrected Homolog Concentrations for All Fish from Reach 4: Crestline to Division.

Figure 1. Representative Homolog Distribution in Fish from Spokane and Little Spokane River (from SRRTTF, 2022)

When using microfiltration, the removal efficiency for more chlorinated PCBs is higher than for less chlorinated PCBs. A SRRTF study published in 2021 (Rodenburg, 2021) found that the membrane filtration systems operated by Spokane County and Coeur d'Alene achieved much higher removal efficiencies for PCB congeners with four or more chlorines (i.e., tetra- to deca-homologs) compared to PCB congeners with three or fewer chlorines (i.e., mono- to tri-homologs). While this study was conducted prior to operation of the RPWRF NLT membrane filtration system, a similar difference in removal efficiencies has been observed by the City since the NLT commenced operation (City of Spokane, 2023). Thus, in addition to removing over 99% of all PCBs, the RPWRF membrane filtration system reduces the risk profile of the remaining PCBs compared to the influent by shifting the homolog distribution towards the less chlorinated PCBs which are less persistent, less bioaccumulate, and less toxic. Because most historical Aroclor mixtures are comprised predominantly of the more chlorinated PCBs, the homolog distribution and associated risk profile for most untreated sources of PCBs to the Spokane and Little Spokane Rivers is likely similar to the untreated RPWRF influent. For example, the untreated groundwater PCB source identified by the SRRTTF as entering the "Mission Reach" of the Spokane River has a homolog distribution similar to Arochlor 1260 (LimnoTech, 2023).

The USEPA's proposed wasteload allocations do not account for the lower risk profile of the RPWRF effluent compared to untreated sources of PCBs entering the Spokane and Little Spokane Rivers and the reduced potential for this mixture of PCBs to bioaccumulate in fish.

Comment #3: The City of Spokane utilizes best available technologies for control and removal of PCBs from the City's point sources. If the final wasteload allocation concentrations for the City point sources are below the current discharge levels, the City will require a variance or other compliance pathway in order to continue operations.

As discussed in the cover letter, the City has installed the NLT system at the RPWRF including a state-of-the-art membrane filtration system that provides best-available tertiary treatment for the City's wastewater effluent prior to discharge to the Spokane River with a typical operating capacity of 50 MGD. With operation of this tertiary treatment system, the City is achieving over 99% removal efficiency for Total PCBs. As discussed below, the PCB concentrations in the RPWRF effluent are so low that they cannot be accurately measured.

In addition to installation of microfiltration at the RPWRF, the City has invested over $100 million in recent years to reduce combined sewer overflow (CSO) events. As shown in Figure 2, the number and magnitude of CSO events has declined dramatically as a result of these measures. Considering both the tertiary treatment at the RPWRF and the measures to minimize CSO events, the City has implemented all practicable measures to minimize discharges of wastewater-associated PCBs to the Spokane River. Additional reductions are not practicable at this time. If the final wasteload allocation concentrations for the City point sources are below the current discharge levels, the City will require a variance or other compliance pathway in order to continue operations.

In April 2019, the City submitted an application to Ecology for an individual discharger variance from the Human Health Water Quality Standard (HHWQS) for total PCBs (City of Spokane, 2019). As explained in the City's application, the City is not able to achieve either of the current water quality standards that have been promulgated for the Spokane River (i.e., the Tribal standard of 1.3 pg/L or the State standard of 7 pg/L). The City's application for a water quality standard variance for PCBs is still pending with Ecology. Ecology "paused" processing this application, in part, because USEPA was in the process of preparing this TMDL. Although the application was prepared more than five years ago, before the NLT was brought on line, the limitations of this system for attainment of the water quality standards were accurately characterized in the application based on the similarity of the City's system with the microfiltration system at the Spokane County wastewater treatment plant. The City believes that the 2019 variance application is still accurate and valid and does not need to be revised in order to be processed by Ecology. If the proposed wasteload allocations are retained, the final TMDL should recognize that the City and other dischargers will require variances and should encourage Ecology to process outstanding variance applications. Additionally, the final TMDL should investigate and discuss other permitting tools such as waterbody variances, use attainability analyses, or other options for maintaining compliance.

FIGURE 4-4: 2004 – 2023 CSO EVENTS & PRECIPITATION

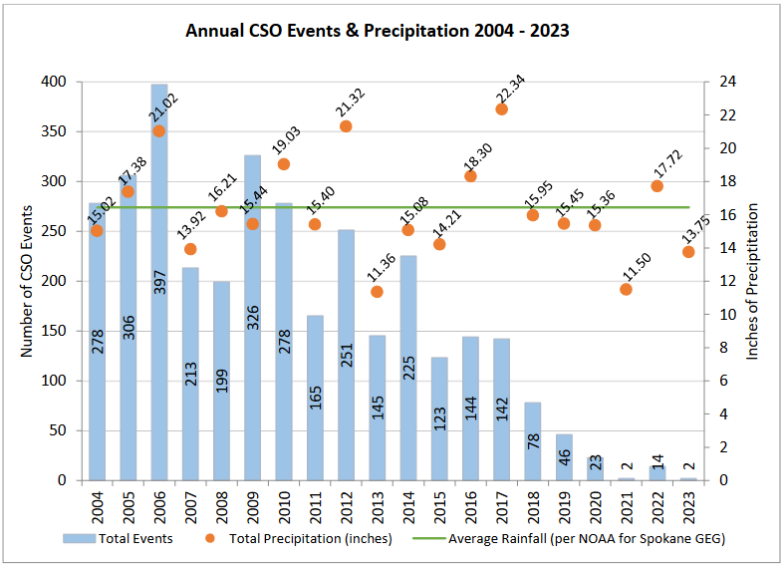


FIGURE 4-5: 2004 – 2023 CSO VOLUME & PRECIPITATION

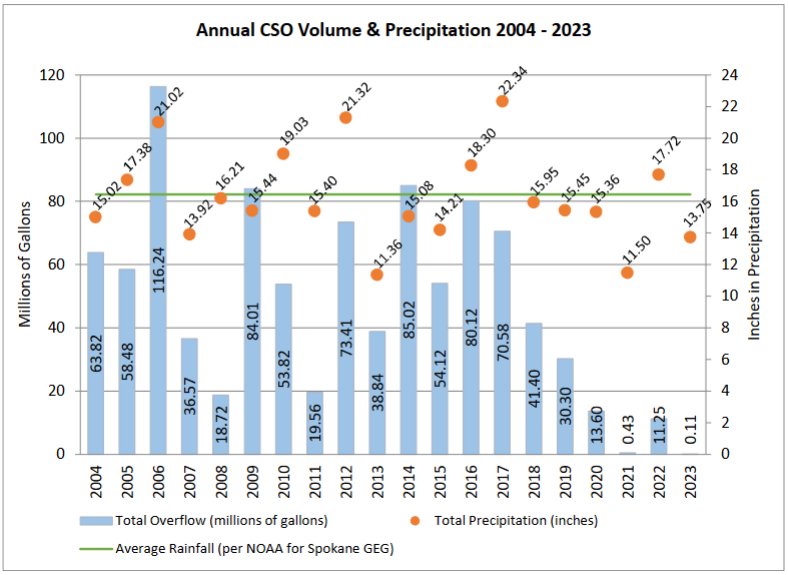


Figure 2. Summary of City of Spokane CSO Events by Year (From City of Spokane, 2024)

Comment #4: The proposed wasteload allocation concentration for the City of Spokane point sources (1.3 pg/L Total PCBs) cannot be measured using any available analytical method.

Currently, there are five primary USEPA Analytical Methods for measurement of PCBs in environmental samples (Table 1). None of these analytical methods are capable of accurately measuring Total PCBs in water when the true total PCB concentration is in the low 100s of pg/L (parts per quadrillion) or less. Method 608.3 and Method 1668C are the two analytical methods

most commonly used to measure PCBs in the environment; therefore, these methods are discussed in more detail below.

Table 1. Primary Laboratory Analytical Methods for PCBs

Method	Name (Equipment[a])	Current Version	Approved under 40 CFR Part 136?	PCBs Reported[b]	Typical DL/QL (pg/L)[c]
608	Organochlorine Pesticides and PCBs (GC/HSD)	608.3	Yes	Aroclors (7)	65,000 / 195,000 (Individual Aroclors)
1668	Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue (HRGC/HRMS)	1668C	No	Congeners (209)	5 / 7 (Individual Congeners)
680	Determination of Pesticides and PCBs in Water and Soil/Sediment (LRGC/LRMS-SIM)	680	No	Homologs (10)	Not specified in method
1628	PCB Congeners (LRGC/MS-SIM)	In draft	No	Congeners (209)	1000 / 2000 (Individual Congeners)
8082	PCBs by GC (GC/ECD)	8082A	No	Aroclors (7) and congeners (19)	8000 / 16,000 (Individual Aroclors)

Notes: a) Some methods include options for use of alternate detectors. b) Table lists primary PCB target analyte list. Total PCBs and/or homologs may also be reported. c) Detection/Quantitation Limits from Ecology Permit Writer's Guide for 608, 1668, and 8082. DL/QL from method for 1628. DL/QL not specified in method for 680. d) GC = gas chromatograph, MS = mass spectrometer, HSD = halogen-specific detector, ECD = electron capture detector, HR = high resolution, LR = low resolution, SIM = Selected Ion Monitoring.

There are two basic approaches used to measure the Total PCB concentrations in an environmental sample: i) measure the concentration of each of the 209 individual PCB congeners and determine the total by adding up these 209 individual concentrations or ii) measure the

concentration of the combined mixture of PCBs using a similar commercial Aroclor mixture as a calibration reference.

Method 608.3: Only Method 608.3 is approved by USEPA under the Clean Water Act (40 Code of Federal Regulations (CFR) Part 136). Method 608.3 can detect Total PCBs when they are present in a sample at a concentration of at least 65,000 pg/L. This detection limit is 50,000 times higher than the proposed wasteload allocation concentration for point sources of 1.3 pg/L. Because of the extreme technical challenges of measuring concentrations of all individual PCB congeners, Method 608.3 utilizes the mixture approach for measuring Total PCB concentrations in environmental samples. Method 608.3 uses a gas chromatograph (GC) to partially separate the complex mixture of PCBs in the environmental sample. The pattern generated by this partial separation is matched to one of the seven historical commercial Aroclor mixtures and then the Total PCB concentration in the sample is determined using that specific Aroclor mixture as a reference.

Method 1668C: Method 1668C uses more complex sample processing procedures and very sophisticated analytical instruments to separate and directly measure the concentrations of the individual PCB congeners in the environmental sample. This highly complex analytical method allows for identification and measurement of approximately 137 of the 209 individual PCB congeners. The remaining approximately 70 congeners are not fully separated by the method and, as a result, the concentrations are reported as groupings of 2 or more co-eluting (i.e., not fully separated) congeners. The Total PCB concentration is determined by adding up the concentrations of all the detected individual PCB congeners (and small groups of congeners). According to the method documentation, Method 1668C can detect individual PCB congeners when they are present in a sample at a concentration of at least 5 to 7 pg/L. Because environmental samples contain mixtures of 10s to 100s of individual PCB congeners, Method 1668C will yield non-detected results for samples containing a mixture of individual congeners all present at concentrations below the individual congener detection limit even though the true Total PCBs concentration may be over 100 pg/L. Thus, Method 1668C could yield non-detect results for a sample with Total PCBs more than 100 times higher than the proposed wasteload allocation concentration of 1.3 pg/L for point sources.

More importantly, persistent and on-going quality assurance/quality control (QA/QC) problems associated with Method 1668C undermine the accuracy of the Total PCB concentration results for samples with reported Total PCBs in the range of 100s of pg/L or lower even when detected results are reported. Specifically, at these low concentrations, similar concentrations of Total PCBs are often detected in QA/QC “blank” samples that are intended to be free of PCBs. In this situation, the true concentration of Total PCBs can only be estimated (with significant uncertainty) using “background correction” procedures. Because PCBs are ubiquitous in the environment, PCBs are detected in most samples analyzed by Method 1668C including “blank” samples consisting of highly purified water intended to be free of PCBs. For environmental samples, the Total PCB concentration reported by the laboratory reflects the PCBs in the original sample, the PCBs inadvertently added to the sample during collection, the PCBs inadvertently added to the sample during laboratory analysis, and chromatogram peaks incorrectly identified as PCB congeners due to matrix interference problems (see Figure 3).

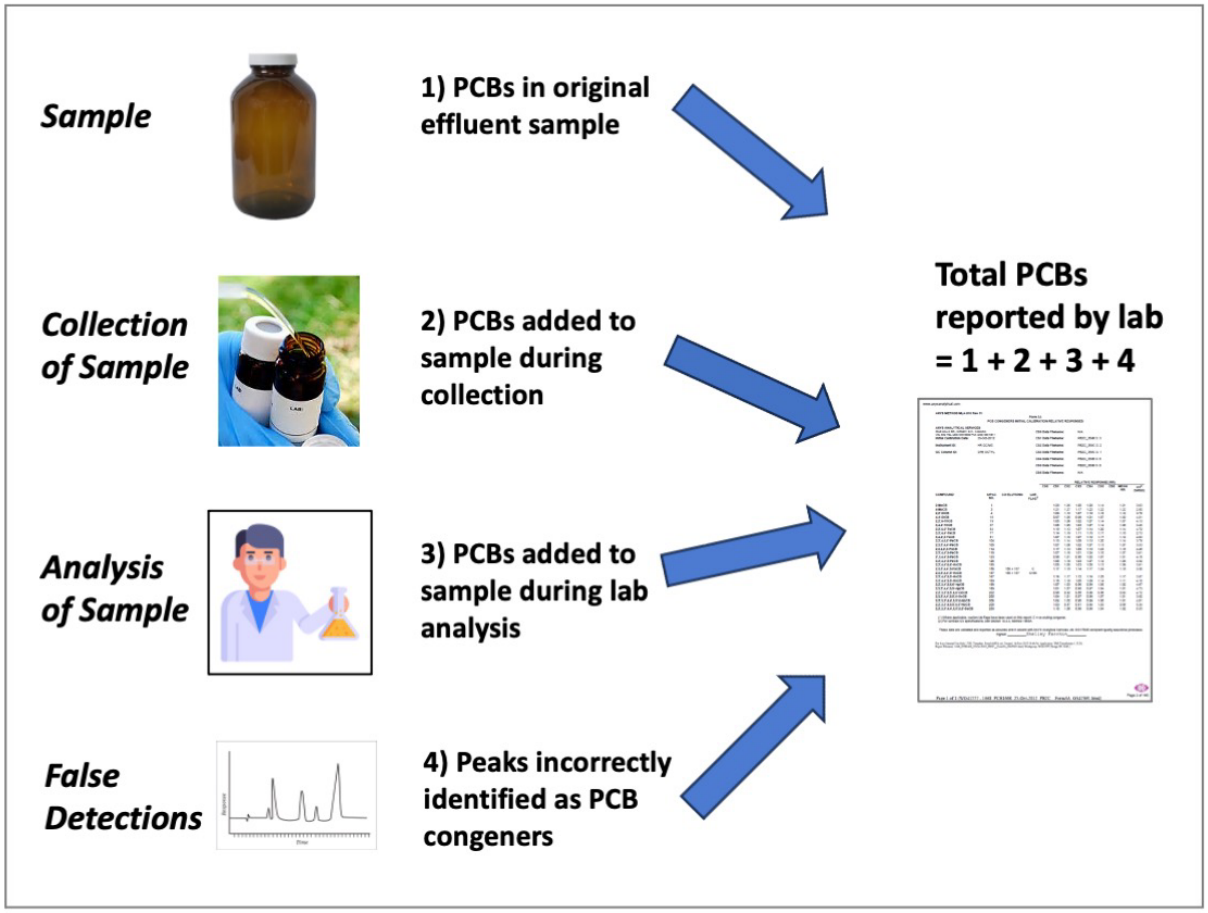
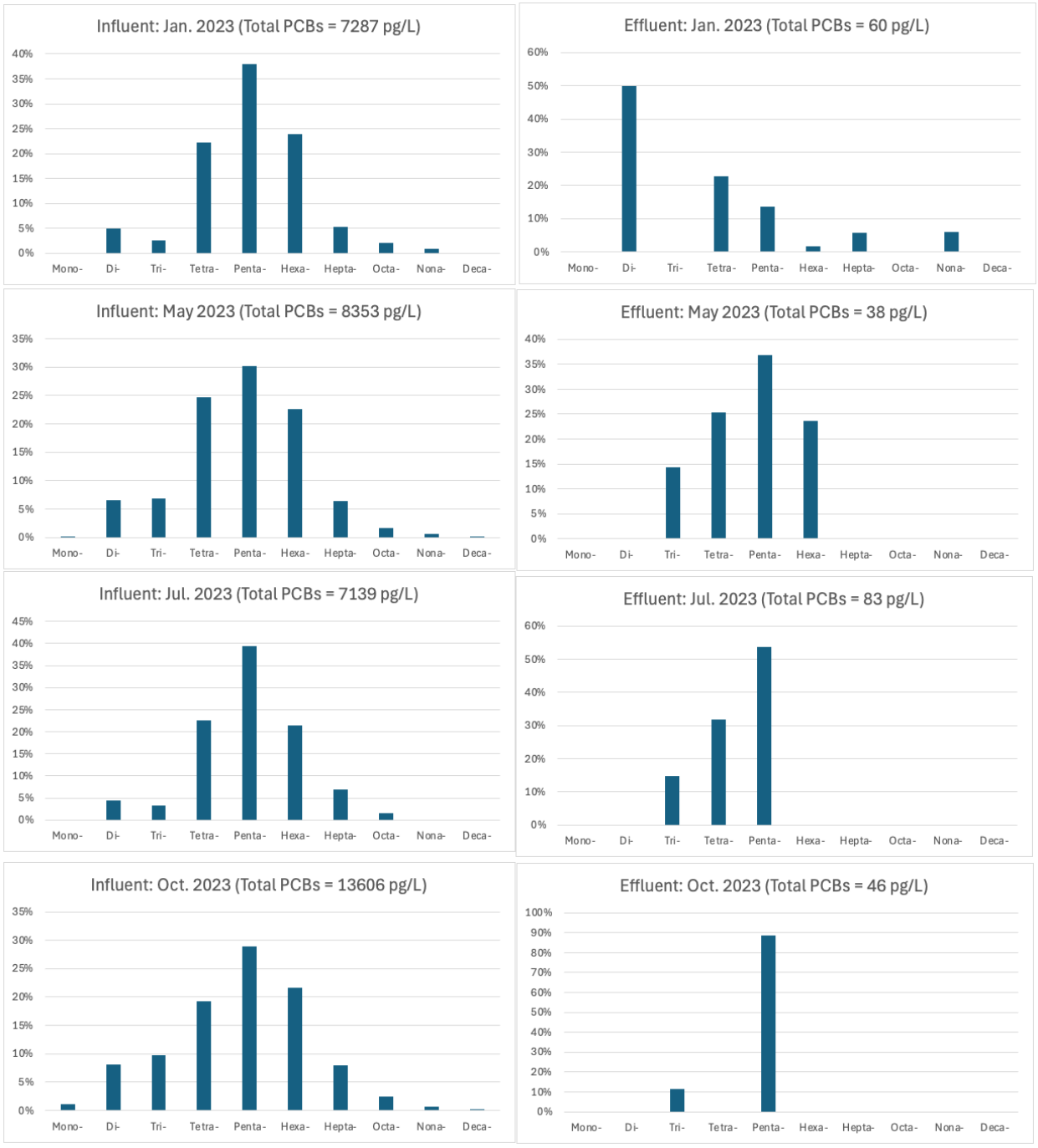


Figure 3. Sources of PCBs Included in the Total PCB Concentration Results Reported by the Laboratory.

For water samples where the laboratory reports very low concentrations of Total PCBs (i.e., 100s of pg/L or less), it is impossible to accurately determine what portions of the Total PCBs were actually present in the sample and what portions were inadvertently introduced into the sample while the sample was being collected or being processed by the laboratory. Although "background correction" (also known as "blank censoring") procedures can be used to estimate the Total PCB concentration in the original sample, these procedures provide only an estimate of the concentration with a large degree of uncertainty. In fact, the estimated Total PCB concentration can vary depending on the specific correction procedure used.

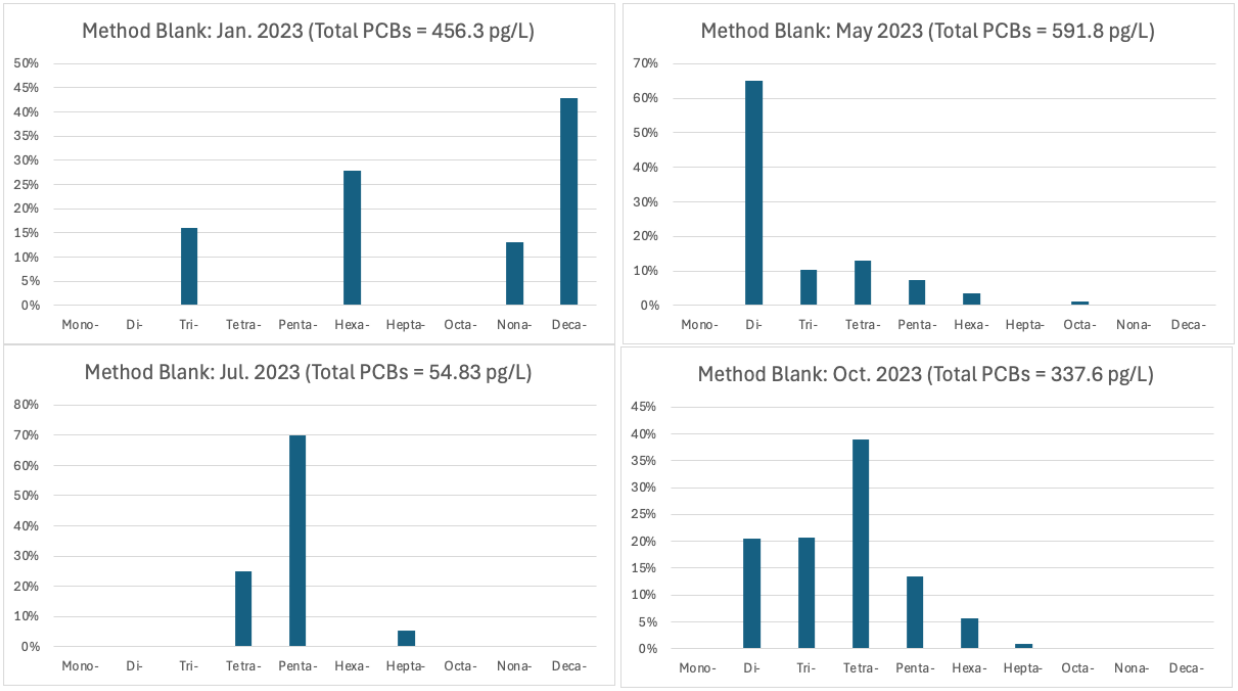
The "blank censoring" method for estimating Total PCB concentrations in low concentration samples is based on the assumption that laboratory blank and trip blank samples can be used to accurately account for both i) the PCB contamination introduced in an environmental sample during sample collection and analysis and ii) the false detections of PCB congeners associated with matrix interferences. However, the analytical results for samples, such as the RPWRF treated effluent, that contain very low concentrations of PCBs (i.e., 100s of pg/L or less), exhibit a high degree of randomness indicating that the results are unreliable even after blank censoring. This can be illustrated by comparing influent and effluent sample results. The homolog

distribution of the RPWRF influent is stable over time with tetra-, penta-, and hexa- homologs comprising more than 70% of the Total PCB concentration (Figure 4). In contrast, the homolog distribution of the RPWRF effluent is highly variable over time. For example, for the RPWRF effluent samples, in January 2023, the laboratory reported that the di- homologs comprised 50% of the Total PCB concentration in the sample while in October 2023, the laboratory reported that the penta- homologs comprised almost 90% of the Total PCB concentration in the sample (Figure 4). Based on the consistent PCB composition of the wastewater influent and the consistent treatment applied by the NLT system, the treated effluent should also exhibit a consistent PCB composition. Even if variations in treatment efficiency result in variations in Total PCB concentration, there is no mechanistic basis to explain why the homolog distribution in the treated effluent is observed to vary greatly from one sample to the next. As noted in Comment 1, above, the RPWRF NLT process including microfiltration removes over 99% of all PCBs and removes more chlorinated PCBs with a higher efficiency compared to the less chlorinated PCBs. If the laboratory method were able to accurately measure the PCBs in the treated RPWRF effluent, the analytical results should show a consistent shift in the effluent homolog distribution towards the less chlorinated congeners compared to the influent homolog distribution. The highly variable homolog distribution reported by the laboratory for the effluent samples indicates that the laboratory is not accurately measuring the PCBs in the effluent samples. The homolog distribution in the laboratory method blanks also exhibit a high degree of variability (Figure 5) further illustrating that laboratory reported Total PCB concentrations in the 100s of pg/L or less are not reliable.



Note: “NJ” flagged results excluded.

Figure 4. Homolog Distribution for Quarterly RPWRF Influent and Effluent Samples Collected in 2023. 3x Blank Correction.



Note: "NJ" flagged results excluded.

Figure 5. Homolog Distribution for Method Blank Samples Associated with the RPWRF Effluent Samples Collected in 2023.

The randomness and unreliability of laboratory-reported Total PCB concentrations of 100s of pg/L or less is further illustrated by looking at the individual PCB congeners (and individual sets of co-eluting congeners) reported as detected in the effluent samples. Across the four standard quarterly effluent samples collected at the RPWRF in 2023, a total of 28 different individual PCB congeners were reported as detected by the laboratory prior to any blank correction. Of these 28 congeners, only one (4%) was detected in all four samples. 18 of these 28 congeners (64%) were detected in only one of the four samples. After 3x blank correction a total of 18 different individual PCB congeners were reported as detected by the laboratory. None of these were detected in all four effluent samples and 14 of the 18 (78%) were detected in only one of the samples. This analysis shows that the detection of individual PCB congeners in RPWRF effluent samples are essentially random. There is no mechanistic reason why the individual PCB congeners actually present in the RPWRF effluent would vary from quarter to quarter. The essentially random "detections" of individual PCB congeners in the RPWRF treated effluent most likely reflects a combination of laboratory contamination and chromatogram peaks incorrectly identified as PCBs. As a result, the laboratory analytical results for the RPWRF effluent samples do not accurately reflect either the actual individual PCB congeners in the effluent or the actual Total PCB concentration in these samples. In fact, the true levels of PCBs in the RPWRF are too low to measure using Method 1668C or any other standard analytical method.

Table 2. Summary of Individual PCB Congeners Detected in 2023 Quarterly RPWRF Effluent Samples

Blank Correction Method	Congeners detected in at least one sample	Congeners detected in all four samples	Congeners detected in three of four samples	Congeners detected in two of four samples	Congeners detected in only one sample
No Blank Correction	28	1	3	6	18
3x Blank Correction	18	0	1	3	14

RPWRF Effluent samples collected in January 19, May, 10, July 19, and October 11, 2023.

In characterizing current PCB concentrations in the water of the Spokane and Little Spokane Rivers, the draft TMDL states that:

> "*Of the entire subset of blank-corrected samples, 74.5% were above Spokane Tribe WQC, and 64.0% were above Washington WQC.*" (USEPA, 2024a pg 32)

However, as shown here, laboratory analytical results for water samples containing PCB concentrations of 100s of pg/L exhibit a high degree of randomness that is not adequately addressed by blank correction. This section of the TMDL should include an analysis of the reliability of this dataset of surface water samples. This analysis should cover:

- The proportion of *blank* samples in the sample batches analyzed which exceed the Spokane Tribe and Washington WQC.
- Whether the water samples within each river reach evaluated exhibit consistency across samples the set if individual congeners detected.
- Whether the water samples within each river reach evaluated exhibit consistency the homolog distribution.

Regardless of blank censoring and other standardized QA evaluations, if the water samples from an individual river reach do not exhibit consistency in the individual congeners and/or the homolog distribution, then the reported total PCB concentrations likely reflect primarily laboratory artifacts rather than the true levels of PCBs in the surface water.

An additional issue with Method 1668C is that data quality flags are often prevalent and handled differently depending upon the lab and the end user of the data. Certain reported values will often be "NJ" or "EMPC" flagged, indicating that a given congener was tentatively identified. This happens when there are interference issues or method criteria are not fully met for quantification of a result. For these congeners, an estimated maximum possible concentration (EMPC) will often be reported along with these "NJ" flagged results, which means the true value could be anywhere between zero and the EMPC value. Depending upon the data user, these values may be treated as either detections with a concentration equal to the EMPC or as non-detect results. For samples with low levels of PCBs such as the Spokane River surface water samples, inclusion

or exclusion of the "NJ" flagged congeners can have a large impact on the reported total PCB concentration (e.g., see Kiridena et al., 2024). It is unclear how flagged data were used in compiling total PCB information presented in the draft TMDL. The final TMDL should clarify how specifically "NJ" flagged, and other qualified method 1668C data were treated.

In summary, neither USEPA Method 608.3 nor USEPA Method 1668C (nor any other available laboratory method) can accurately measure trace Total PCB concentrations in the range of 100s of pg/L, much less 1.3 pg/L. A wasteload allocation concentration that is too small to be measured is not useful for managing PCB loads in the Spokane and Little Spokane Rivers.

Comment #5: The wasteload allocation for point sources does not reflect the practical impossibility of controlling many non-point sources of PCBs to the Spokane River

The USEPA Draft TMDL acknowledges that non-point sources of PCBs constitute the majority of mass loading to the Spokane and Little Spokane Rivers. Figure 12 in the draft TMDL indicated that 58% of mass loading was attributable to non-point sources in 2014. Given the improved treatment technologies implemented at the RPWRF and other point sources since 2014, the non-point sources certainly comprise a greater percentage of the mass loading today. Non-point sources of PCBs will continue to dominate for the indefinite future because legacy PCBs, although no longer manufactured, are widely distributed in the environment and will continue to migrate to the Spokane and Little Spokane River through multiple pathways. In addition, inadvertent PCBs continue to be produced through a variety of manufacturing processes and are present in a wide range of consumer products and other materials. These inadvertent PCBs will continue to be released into the environment and will continue to migrate to the Spokane and Little Spokane Rivers.

In assigning load allocation, the draft TMDL drastically favors non-point sources over point sources giving 98% of the total load allocation to non-point sources and only 2% to point sources. While the draft TMDL establishes load allocations for non-point sources based on load allocation concentrations of 1.3 pg/L for all water entering the Spokane and Little Spokane Rivers, the USEPA acknowledges that it is not aware of any technologies or best practices that can achieve these levels for non-point sources:

> "*the EPA does not currently have information that control technologies and best management practices can achieve PCB concentrations below the criterion in regional groundwater and tributaries*" (USEPA, 2024a pg 49)

Despite this, the draft TMDL states that:

> "*Ecology will implement nonpoint source controls to assure reductions in nonpoint source pollution. Nonpoint source dischargers typically implement their LAs through diverse programs (which may be regulatory, non-regulatory, or incentive-based, depending on the state or Tribal program) and voluntary actions."* (USEPA, 2024a, pg 60)

Due to the ubiquitous presence of PCBs in the environment, the load allocation concentration of 1.3 pg/L will not be attainable through these measures or any other actions. As discussed above, a load allocation concentration of 1.3 pg/L is not even measurable. The use of unattainable load

allocations for non-point sources creates a misleading impression that extreme reductions in point sources will contribute to attainment of the water quality standard. In reality, even complete elimination of all point sources of PCBs into the Spokane and Little Spokane Rivers would not bring the Spokane River system close to attainment of the State water quality standard of 7 pg/L or the tribal water quality standard of 1.3 pg/L.

A more practical approach to point source wasteload allocations would be to assign these allocations as achievable reductions from current discharges. As discussed above, such an approach has been utilized for other TMDLs where there are no feasible options for meaningful near-term reductions on non-point source loadings. Wasteload allocations based on reductions from current discharges would provide a clear framework for measurable progress even for facilities such as the RPWRF with very low PCB concentrations in the treated effluent. Because the RPWRF already utilizes best available technology for removal of PCBs, a source control Best Management Plan (BMP) would be the primary tool for attainment of assigned reductions from current discharges. Although PCB concentrations the RPWRF effluent are already too low to measure accurately, the effectiveness of such a BMP could be monitored through measurement of PCB concentrations in the RPWRF influent, which can be measured using available laboratory methods. For the RPWRF, it is reasonable to assume that average PCB concentrations in the treated effluent are proportional to average PCB concentrations in the influent; thus, reductions in influent PCB concentrations would document progress towards attainment of the reduction-based wasteload allocation. In 2015, the USEPA recommended a BMP approach for reducing discharges of PCBs from point sources into the Spokane River (USEPA, 2015). A key rational provided by the USEPA for this approach was the inadequacy of laboratory methods for measuring compliance with water quality-based effluent limits.

In contrast, a wasteload allocation concentration of 1.3 pg/L will remain both unattainable and unmeasurable for the foreseeable future. As a result, the current wasteload allocations based on this concentration do not create a framework for measurable progress.

Comment #6: The approach of tying wasteload allocations directly to wasteload allocation concentrations may hinder measures to decrease PCB loads to the Spokane and Little Spokane Rivers.

In the draft TMDL, all point sources are assigned a wasteload allocation concentration of 1.3 pg/L. Wasteload allocations are then determined by multiplying waste flows by the wasteload allocation concentration of 1.3 pg/L. Using this simplistic approach, management approaches that permanently reduce the volume of discharge from a point source without attaining a discharge concentration of 1.3 pg/L result in no apparent progress towards attainment of the overall TMDL. For example, the City would have no incentive to reduce CSO or stormwater flow volumes entering the river based on the concentration based WLAs in the draft TMDL. As discussed above, as an alternative to the concentration-based WLAs in the draft TMDL, USEPA should consider using percent reduction from current loading coupled with source control BMPs.

If the current approach is retained, the final TMDL should be explicit in defining actual WLAs for purposes of compliance. As the draft TMDL is currently written, it is unclear whether the concentration or the total load should be applied when implementing the TMDL. Table 15 and Table 16 of the draft TMDL list both concentration and loading WLAs without much in the way of

further explanation (USEPA 2024a, pg 53-54). If loading-based WLAs are left in the final TMDL, discharger flows should be based on total permitted future flows, and not current flows.

Comment #7: Fish hatcheries are not adequately addressed in the draft TMDL.

While fish hatcheries are documented sources of PCBs, the draft TMDL does not explicitly assign wasteload allocations to the fish hatcheries that discharge to the Spokane River tributaries. While the USEPA may have intended to cover the fish hatcheries through the language in Section 5.3.3 of the draft TMDL on general NPDES permits, this is not clear. The draft TMDL indicates that wasteload allocations for facilities covered by general NPDES permits are not specified because the discharge volumes are not known. However, the fish hatchery general permits require these facilities to monitor and report facility flows; therefore, the wasteload allocations for these facilities can be determined and the TMDL should specify wasteload allocations for the hatcheries in addition to the wasteload allocation concentrations. Hatcheries discharge PCBs not only in wastewater (and sediment in the wastewater) but also in the fish released to the river. The wasteload allocations assigned to the hatcheries should account for the PCBs discharged to the River through the release of fish containing PCBs.

In addition to the Spokane Hatchery (NPDES permit number WAG137007), which discharges directly to the Little Spokane River, there are two hatcheries that discharge to Chamokane Creek, a tributary to the Spokane River upstream of the confluence with the Columbia River. These are the Spokane Tribal Hatchery and Ford State Fish Hatchery, both regulated by EPA under the NPDES General Permit WAG130000. Neither the Spokane Tribal Hatchery nor Ford State Fish Hatchery is mentioned in the draft TMDL. In addition, no load allocation is assigned to Chamokane Creek. Please review and utilize the data collected at the three hatcheries that discharge PCBs to tributaries to the Spokane River and include these studies in the list of references in the TMDL. Ecology has conducted studies on the Spokane Hatchery (Ecology, 2018). USEPA has required PCB monitoring at the two federally permitted hatcheries. The final TMDL should clearly indicate that the two hatcheries that discharge to Chamokane Creek are covered by the TMDL and should explicitly assign wasteload allocations to all three of these hatcheries.

Comment #8: The Mass Balance model used to develop the wasteload allocations is overly simplistic, overly conservative, and was evaluated using out-of-date monitoring data.

The draft TMDL relies on a simple mass balance with an assumption that total PCBs released into the river will flow downstream with no loss of instream PCBs due to mechanisms such as settling, volatilization, biological uptake, and chemical breakdown. However, settling, volatilization, biological uptake, and chemical breakdown are known mechanisms of PCB loss. USEPA notes in the draft TMDL:

> "*PCBs bioaccumulate in food webs…"* (USEPA, 2024a pg 9)

But the draft TMDL also states:

> "*This approach assumes that there is no PCB mass loss from the release point into the river, and all PCB mass is transported downstream with the river flow…"* (USEPA, 2024a pg 9)

These two statements in the TMDL are contradictory.

In fact, both direct and indirect monitoring indicate that mass loss is important in the Spokane River. Direct measurement of PCB concentrations in River water show modest decreases in PCB concentrations in the Spokane River downstream of the City's urban core area. These data provide suggestive evidence that mass loss mechanisms are important. Fish tissue data (e.g., SRRTTF, 2022), biofilm data (Rodenburg, 2022; LimnoTech, 2023) and solid-phase matrix diffusion (SPMD) sampler data (Rodenburg, 2022) more clearly document decreases in PCB levels in the Spokane River downstream of the City's urban core demonstrating the importance of loss mechanisms for decreasing PCB levels in the Spokane River. Because PCBs are concentrated in fish tissue, biofilms, and SPMD samplers relative to the river water, these three data types are less impacted by laboratory contamination and can more accurately document variations in PCB concentrations within the river. The biofilm samples, in particular, document a greater than 90% decrease in PCB levels downstream of the Spokane urban core. These data demonstrate that the mass balance model assumptions are overly conservative and that higher upstream mass loading could be protective at the Spokane Reservation boundary.

In USEPA's Willamette River TMDL for Mercury (USEPA, 2021), the agency linked mercury sources to water column concentrations and fish tissue methylmercury concentrations using three linked models – a food web model, a mercury translator model, and a mass balance model. The mass balance model was first used to estimate mercury loads for each source category at the point where they originate ("At Source Loads"). Transport of the source load to the stream network was modeled subsequently. Loads delivered to the stream ("Delivered Loads") are less than "At Source" loads due to transport losses (e.g. storage, volatilization, etc.). The use of a more realistic model of PCB fate and transport in the Spokane River would support the development of a more reasonable TMDL.

Comment #9: The draft TMDL does not explain how achieving load allocations will restore beneficial uses in the Spokane and Little Spokane River.

Under the Clean Water Act, the goals for a TMDL are not limited to attainment of water quality standards in the water column but also include elimination of all of the water body impairments. The Spokane River is designated as water quality impaired because fish contain levels of PCBs that are unsafe for human consumption. While the draft TMDL acknowledges the current impairment associated with fish consumption, the draft document focuses exclusively on attainment of water quality standards in the water column. The simplistic mass balance model used to support load allocations and allocation concentrations ignores the accumulation and storage of PCBs within the river system (i.e., in fish tissue, other biota, and sediments). The draft TMDL does not address how recirculation of PCBs already present in the river system may affect restoration of beneficial uses of the rivers. While work by SRRTTF has identified a number of complexities in the relationship between discharges of PCBs into the Spokane River system and PCB concentrations in fish tissue, these complexities are ignored in the TMDL.

The final TMDL should focus more directly on how USEPA's proposed TMDL will restore beneficial uses by focusing more on the importance of PCB concentrations in fish tissue. There is no discussion in the TMDL of the acceptable concentration of PCBs in fish tissue that must be attained to restore this beneficial use of the river. The final TMDL should specify what fish tissue PCB concentrations would return the river to a Category 1, non-impaired, listing. While existing

PCB concentrations in the water column are difficult to accurately measure due to the very low concentrations, the bioconcentration of PCBs in fish tissue allows for much more accurate measurement. Thus, monitoring of PCB concentrations in fish tissue provides both a more accurate and a more direct assessment of progress towards restoration of the beneficial use of the Rivers. For this purpose, it is necessary to define the end goal of the TMDL in terms if PCB concentrations in fish tissue.

Cited References

City of Spokane, 2019. Application for Variance from Human Health Water Quality Standard for PCBs. https://fortress.wa.gov/ecy/ezshare/wq/standards/CityApp.pdf

City of Spokane, 2023. Toxics Reduction Best Management Practices Plan (BMPs Plan) for PCBs and PBDEs September 1, 2023 NPDES Permit Number WA0024473.

City of Spokane, 2024. Combined Sewer Overflow Annual Report for 2023. NPDES Permit Number WA0024473.

Church, B. G., Toll, J., Tobiason, S., & White, A. (2023). Characterization of ambient polychlorinated biphenyl background conditions in surface waters of the Pajarito Plateau, New Mexico. *Integrated Environmental Assessment and Management*, *19*(5), 1307-1319.

Ecology, 2014. Freshwater Fish Contaminant Monitoring Program 2012 Results. May 2014. Publication No. 14-03-020.

Ecology, 2016a. Polychlorinated Biphenyls in Consumer Products. November 2016, Publication No. 16-04-014.

Ecology, 2016b. Little Spokane River PCBs Screening Survey of Water, Sediment, and Fish Tissue. March 2016. Publication No. 16-03-001.

Ecology, 2018. Evaluation of Fish Hatcheries as Sources of PCBs to the Spokane River. April 2018. Publication No. 18-03-014.

Kiridena, W., Wiegand, P., Booth, M., & Lindelien, C. (2024). A comparative assessment of low- and high-resolution gas chromatography/mass spectrometry methods for polychlorinated biphenyl congener analysis in industry wastewater. *Journal of Chromatography Open*, *5*, 100124.

LimnoTech, 2023. Biofilm and Surface Water Fingerprinting of PCB Data near the General Electric Co. Site. June 21, 2023 Preliminary Draft. https://www.ezview.wa.gov/Portals/_1962/Documents/SpokaneRiverWatershed/SRRTTF_GE_PVA_Report_06-21-2023_PreliminaryDraft.pdf

Marti, P. and M. Maggi, “Assessment of PCBs in Spokane Valley Groundwater” Memo, September 16, 2015. http://srrttf.org/wp-content/uploads/2015/10/Tech-Memo-PCBs-in-Spokane-Valley-GW-Marti-9-16-15-FINAL-2.pdf

Panero, M., Boehme, S., & Muñoz, G. (2005). *Pollution prevention and management strategies for polychlorinated biphenyls in the New York/New Jersey harbor*. New York, NY:: New York Academy of Sciences.

Rodenburg, L.A., 2022. Fingerprinting of PCBs in Spokane River fish, biofilm, and SPMDs. Prepared for: Spokane River Regional Toxics Task Force.

Rodenburg, L.A., 2021. Effect of Membrane Filtration on the Fate of Polychlorinated Biphenyls in Wastewater Treatment. April 29, 2021. Prepared for: Spokane River Regional Toxics Task Force.

SRRTTF, 2022. 2022 Spokane River Regional Toxics Task Force Evaluation of PCBs in Spokane River Redband Trout. May 17, 2022 PROVISIONAL FINAL DRAFT

USEPA, 2024a. Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads, U.S. Environmental Protection Agency Region 10. Public Comment Draft May 15, 2024

USEPA, 2024b. Polychlorinated Biphenyls (PCBs); TSCA Section 21 Petition for Rulemaking Under TSCA Section 6; Reasons for Agency Response; Denial of Requested Rulemaking. Docket ID # EPA-HQ-OPPT-2024-0029.

USEPA, 2021. Total Maximum Daily Load (TMDL) for Mercury in the Willamette Basin, Oregon. U.S. Environmental Protection Agency Region 10. February 4, 2021. https://www.epa.gov/sites/default/files/2021-02/documents/tmdl-willamette-mercury-final-02-04-2021.pdf

USEPA, 2015. Letter to Mr. Jim Bellatty, Washington State Department of Ecology Re: NDPES Permitting Recommendations for the Spokane River Watershed from Michael Lidgard, Manager, NPDES Permits Unit. Received July 13, 2015.

Spokane County
PUBLIC WORKS

July 11, 2024

U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3188

Sent via email to SpokaneRiverTMDL@EPA.gov

Subject: Spokane and Little Spokane Rivers Polychlorinated Biphenyls (PCB) Total Maximum Daily Loads (TMDL) Public Comment Draft – Spokane County Comments

Spokane County appreciates the opportunity to provide the following comments to EPA's Spokane and Little Spokane Rivers PCB TMDL Public Comment Draft, dated May 15, 2024.

Spokane County understands the EPA has prepared this Draft TMDL, and that the Washington Department of Ecology has responsibility to prepare the eventual Implementation Plan.

Comment #1: The Wasteload Allocations (WLA) cannot be met with contemporary technology.
Spokane County Public Works is committed to protecting and enhancing the water resources in our region. Our membrane ultrafiltration water reclamation facility removes contaminants to very low levels. Even with this level of advanced wastewater treatment, the TMDL recognizes the WLA based on the Water Quality Standard (WQS) of 1.3 pg/L cannot be met.

In the Spokane region, expansion and improvements to sanitary sewer collection and treatment led to dramatic increases in water quality in the Spokane River and the Spokane Valley-Rathdrum Prairie Aquifer. This TMDL will not remove PCBs from our lakes, river, and groundwater, and may become a hinderance to connecting existing and new businesses and homes to sanitary sewers.

Comment #2: Lack of Available Technology will require a variance, UAA, or other compliance pathway.
Please include a statement that the County, as an NPDES permit holder, will need a variance or other compliance pathway because the wasteload allocation in the TMDL cannot be met with available treatment technology.

In April 2019, the County applied for a discharger-specific water quality variance for total PCBs in the Spokane River under the Washington state WQS of 7.0 pg/L. However, the Washington State Department of Ecology (Ecology) did not move forward with the state rulemaking process for the variance at that time. As noted on page 49 of the TMDL, there is no current technology or best management practices that can meet the proposed TMDL PCB wasteload allocations. Spokane County currently uses ultrafiltration

membranes and removes 99% of influent PCBs before discharging to the Spokane River, but still cannot meet the WLA concentration of 1.3 pg/L. Because the level of treatment currently available cannot meet the County's wasteload allocation, the County will require a variance or other compliance pathway. We appreciate EPA's support in implementing a variance or alternative compliance pathway, if it becomes necessary.

Comment #3: Proposed WLAs cannot be measured by existing analytical methods.
Existing analytical methods for PCB analysis cannot accurately measure down to the WLA concentration of 1.3 pg/L. The EPA recognizes this discrepancy and has provided a detailed inventory and capabilities of analytical methods in Appendix D of the Draft TMDL. For example, Method 608, which is approved for use in NPDES permits, has a Method Detection Limit (MDL) of 65,000 pg/L and Method 1668, which detects PCB on a per congener basis, has MDLs for each congener ranging from 7 pg/L to 77 pg/L. In addition, the low-level, more sensitive methods have challenges with blank contamination and correction. The County's data from over a decade of testing shows that method/lab, equipment, and travel blanks all have PCB concentrations over the WLA concentration.

Comment# 4: Wasteload Allocations based on PCB concentration versus a load may preclude some PCB reduction measures
A WLA concentration rather than a load precludes some measures that might reduce PCB load but might not affect concentration at the point of discharge (e.g. control of discharge flow).

Comment #5: Lack of distributed Wasteload Allocations in Idaho.
The County understands that the EPA was not mandated to address the Spokane River under Idaho's jurisdiction in the Order issued by the U.S. District Court in Sierra Club, et al. v. McLerran, No. 11-CV-1759-BJR (March 16, 2015). However, the basis for this TMDL is a boundary condition concentration of 1.3 pg/L at the state line that cannot be met when the Idaho state WQS for PCBs is 190 pg/L. This disparity at the state line imposes a challenge that the EPA has recognized during public outreach but failed to adequately account for in the TMDL. The EPA should explicitly recognize that Idaho Department of Environmental Quality must consider these downstream limits when developing state WQS per 40 CFR 131.10(b) and in their Clean Water Act permitting actions in order to meet this TMDL's boundary condition at the state line.

Comment #6: What is the Fish Tissue PCB concentration that is necessary to comply with water quality standards?
The TMDL states "Ecology based these impairment determinations on fish tissue data with elevated PCB concentrations using its listing methodology from Policy 1-11, that provides a translator from PCB WQC in the water column to PCBs in fish tissue" (page 20). All Category 5 PCB listings in the Spokane and Little Spokane Rivers are based on fish tissues exceedances.

What is the fish tissue PCB concentration that is required for a Category 1 (i.e., non- impaired) listing? Please provide in the TMDL the fish tissue PCB concentration required for compliance with the State of Washington and Spokane Tribal standards.

Comment #7: WLAs do not reflect preferential removal of more toxic PCBs such as those shown to bioaccumulate in fish tissue.

If the TMDL is intended to address impairment determined through fish tissue concentrations of PCBs, then WLA should preferentially address PCB congeners that are known to bioaccumulate in fish tissue. Various studies conducted by the former Spokane River Regional Toxics Task Force (SRRTTF) in partnership with Dr. Lisa Rodenburg as well as Ecology have demonstrated that fish tissue tends towards higher molecular weight PCB congeners whereas wastewater effluent and the Spokane River water column tend toward lower molecular weight PCB congeners. Wastewater treatment with membrane technology is already highly effective in removing the PCB congeners of high concentration in fish tissue. Regulatory WLA based on concentration of total PCBs may not effectively improve fish tissue concentrations.

Link to Dr. Rodenburg's studies:

Fingerprinting of PCBs in Spokane River... (srrttf.org)
What have we learned about PCB sources... [draft] (srrttf.org)

Comment # 8: TMDL model is oversimplistic.

The TMDL model is overly simplistic and does not account for the complexity of the Spokane River system including attenuation, seasonal variability, groundwater-surface water interactions, all sources of PCBs (e.g., the Mission Reach at RM 75.9).

Comment #9: Why was Scenario 1 selected over the other examined scenarios that also led to 1.3 pg/L?

The TMDL discusses four scenarios (pages 46 and 47) that were examined with the TMDL mass balance spreadsheet. While not necessarily disagreeing with the scenario selection, Spokane County requests clarification on why Scenario 1 was chosen over the others that achieved the WQS of 1.3 pg/L downstream.

Comment #10: EPA should support improved source control under TSCA.

In the TMDL, EPA recommends that Ecology focus should include "strengthened source controls, especially on inadvertent PCB production" (page 61). Spokane County agrees that source controls are an important aspect of improving water quality and that federal leadership is needed to address inadvertent PCB production at a meaningful scale. However, EPA rejected Ecology's 2024 PCB Toxic Substances Control Act (TSCA) Petition, which specifically asked EPA to take action to reduce the inadvertent generation of PCBs in consumer products. We are confounded by the EPA's contradiction in position because EPA is the regulatory agency responsible for TSCA and is, therefore, in the best position to reduce these sources of PCBs, which would accomplish far more than the WLAs proposed in this TMDL. By rejecting Ecology's TSCA petition, EPA has ensured that, regardless of the TMDL, PCBs will continue to reach the Spokane River through consumer products that our citizens use every day. We are also confused by EPA statements in its denial of the TSCA petition that PCBs inadvertently generated at levels that are orders of magnitude higher than the County's WLA do not present an unreasonable risk of injury to human health or the environment. EPA cannot rationally take the position that it is acceptable to have inadvertently generated PCBs at 50 ppm because they pose no threat to human health or the environment and, at the same time, contend that the WLA must be set at 1.3 pg/L to protect human health or the environment. We encourage EPA to include this information in the TMDL and to reconsider its position with regard to Ecology's TSCA Petition. At a minimum, EPA should impose on itself an obligation to strengthen source controls on the inadvertent generation of PCBs in consumer products because EPA is the regulatory agency with primary responsibility for TSCA.

Thank you. If you need any additional information or if you would like to discuss these comments, please contact Rob Lindsay at 509-477-7576 or rlindsay@spokanecounty.org.

Sincerely,

Kyle Twohig,
Senior Director of Public Works

CC: File

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Jul 10, 2024

Gunnar Johnson
EPA Region 10 TMDL Project Manager

Dear Mr. Johnson:

SUBJECT: Comments on EPA's Draft Spokane River and Little Spokane River PCB TMDL

Spokane Riverkeeper and the co-signers hereto have appreciated the opportunity to participate in the PCB TMDL process and, specifically provide substantive input and comments on the draft PCB TMDL for the Spokane River and Little Spokane River and throughout the development process. We know this is a complex process and appreciate your efforts to incorporate feedback from a wide variety of environmental stakeholders and other interested parties on the critically important issues of achieving PCB load reductions, attaining PCB water quality standards (WQS), and restoring impaired beneficial uses for the Spokane River watershed. It is imperative to use the most protective standards available to achieve these reductions.

We appreciate EPA's efforts to complete the draft TMDL in compliance with the schedule set forth in the Consent Decree. In addition to completing the draft TMDLs in compliance with this schedule, we believe that EPA, together with the TMDL advisory group and stakeholders, must complete a TMDL that can meaningfully be implemented to promote PCB load reductions and achieve water quality objectives over the coming years. In order to meaningfully fulfill its obligations under the consent decree, the EPA must fulfill its duty under Section 303(d) of the Clean Water Act to issue a PCB TMDL for the impaired segments of the Spokane River, the Little Spokane River, and Lake Spokane (Long Lake) that addresses all distinguishable sources of PCB pollution.

We appreciate your effort to attempt to reach the Spokane Tribe's standard. It is imperative to use the highest standards available and ensure we are working towards meeting all downstream standards. Using this standard is the first step necessary to respect downstream water quality standards and tribal authority of their waters.

Technical Approach and Input Data Comments

Because a TMDL is not enforceable in and of itself under the Clean Water Act (CWA), numerical WQS, as well as other numerical benchmarks and guidelines, including, fish tissue guidelines, sediment quality standards, groundwater standards, and other guidelines become all the more significant. EPA has a nondiscretionary duty under Section 303(d) of the Clean Water Act to approve or disapprove and, upon disapproval, issue Total Maximum Daily Loads ("TMDLs") for

polychlorinated biphenyls ("PCBs") for certain segments of the Spokane River, the Little Spokane River, and Lake Spokane (Long Lake) in Washington State, which are all listed as impaired for PCBs.

The 303(d) water quality impairment listings for the watershed, which provide the legal basis for requiring a TMDL, are based on elevated concentrations of PCBs in fish tissue, which under CWA constitutes an impaired beneficial use requiring reinstatement and restoration. It is thus important to stay focused on improving fish tissue quality for a wide variety of fishers, including Tribal subsistence fishers.

The draft PCB TMDLs (EPA 2024) were developed based exclusively on water column data needed to support a steady-state mass balance model, calculate PCB load reductions and load/wasteload allocations (WLA/LA). The data used for the model were very limited, only 2010 or more recently, from data that have been input into Ecology's Environmental Information Management (EIM) database, along with other limitations and restrictions. We reviewed Appendix B, which shows the limited water quality data used, which were generally from recent SRRTTF monitoring and discharger-supported data sources. The model requires numerous simplifying assumptions that do not account for key environmental characteristics of PCBs such as bioaccumulation, sediment flux, degradation, and the varying characteristics for each of the 209 PCB congeners. Congeners behave differently from each other, and have variable toxicity, solubility, bioaccumulation, degradation dynamics, etc. Most PCB congeners are not very soluble but rather sorb preferentially to sediment, so relying solely on water column concentrations for the TMDL modeling approach adds significant uncertainty. PCB data should therefore be represented throughout different media compartments, including bedded sediment and fish tissue.

Sediments. We appreciate the incorporation of tissue and sediment sampling into the draft TMDL, however we believe that this is still insufficient given the data available. It is important to have a clean up plan extensive enough to address the known contamination. EPA recognized during the public meeting in May that there is a need for sustained long term dedication and that there is no simple solution.

Although the watershed is relatively poor in fine sediment deposition, there are multiple dams in the system which are effective depositional sites and serve as "sediment traps". Sediment flux of PCBs is a major issue, as also confirmed by SRRTTF. We recommend incorporating the abundant sediment data in the water collected over the past approximately 20 years, along with SPMD and biofilm data to identify further "hot spots" in sediment. Once hotspots are identified, we suggest that removal actions be conducted where appropriate, which will help to diminish the overall load of legacy PCBs currently residing in the system. This would add a proactive

aspect to the approach of excluding legacy sediment data and simply relying on passive "natural attenuation" of PCBs to occur over years and decades.

Based on synoptic monitoring conducted by multiple investigators, it is clear that PCB concentrations increase markedly between Mirabeau Point (mean PCB concentration in water of 37 pg/L) and Trent Bridge (mean PCB concentration of 133 pg/L), and we recommend incorporating sediment SPMD and fish tissue data downstream of that area. We also suggest that the final TMDL be revised to assign additional allocations for bedded sediments, as has been done for other PCB TMDLs (see discission below).

Hobbs et al. (2019) of Ecology's Environmental Assessment program has shown that use of a semi-permeable monitoring device (SPMD) such as biofilm is a valuable and important tool for a stable, non-polar, bioaccumulative contaminant such as PCBs. Biofilm can be used to do congener matching, and has been done in fish tissue data also; the fingerprint for specific congeners from specific sources can be passed along to both fish and biofilm. Serdar (2011) used a Spokane River PCB source assessment to provide target PCB loads in five specific locations throughout the watershed. It was suggested that validated bioaccumulation/food web models such as those recommended by Arnot and Gobas (2004) to be used to predict PCB tissue concentrations, a valuable tool in PCB TMDL development. We point out that PCBs are very chemically stable, bioaccumulative, and unlike most other contaminants, conducive to food web and tissue risk assessment and modeling to achieve long-term reductions.

Modeling approach. The one-dimensional box model used for the draft PCB TMDLs is useful because it allows for creation of a mass balance-based "budget" for PCBs entering and leaving the watershed, but it imposes serious limitations on the voluminous environmental data collected in the watershed, much of it by Ecology's Environmental Assessment Program over the past 20 years (Serdar et al. 2011; Johnson et al. 2010; Seiders et al. 2018). Numerous other similar PCB TMDLs (e.g. Fox River, San Francisco Bay, Anacostia River, and Delaware River, as examples) involved creating of comprehensive site-specific, food web-based models, which account for the flux of sediments from depositional sediments, and use SPMDs such as biofilm to both address bioaccumulation dynamics and also to account for individual PCB congeners.

We have reviewed several other approved TMDLs for PCBs from elsewhere in the country to provide a context on technical assumptions, overall approach, uncertainty and margin of safety considerations, implementability, data used to support the action, and other key factors. For example, an approved PCB TMDL for the Delaware River watershed (Fikslin 2003) used site-specific fish tissue data and incorporated PCB congener/homolog distribution rather than using the more generalized metric of total PCBs, which allows focus on more toxic PCB congener groups which are of different toxicity, mobility, solubility, and therefore bioaccumulation profile. They incorporated the use of a "sediment reservoir", which acknowledges the

importance of legacy PCBs as reservoirs of ongoing contamination, toxicity, and potential bioaccumulation.

The Delaware River PCB TMDL model was based on an EPA-supported model called DYNHYD5/TOXI5, which incorporated both water column and sediments. It also incorporated organic carbon sorbent dynamics and can accommodate different PCB congeners. They concluded that water column PCBs are strongly influenced by loadings and sediments. The model also allowed for identifying and quantifying PCB sources using congener-specific analytical methods, which helped to further reduce uncertainty and allows permittees to track effectiveness of PCB load reduction and minimization strategies. They added that reductions in PCB loadings would not immediately result in reduced water column concentrations or tissue concentrations, because of continuing flux of PCBs from sediments to the water column.

The Fox River PCB TMDL in Wisconsin required years to attain ecological and human health risk reduction; sediments were capped because they were an acknowledged continuing source of PCBs within the watershed. For the San Francisco Bay PCB TMDL, PCBs are also acknowledged as ongoing PCB sources. Similarly, the Anacostia River PCB TMDL (EPA 2007) used a linked hydrodynamic and PCB fate and transport model calibrated for existing site-specific data over the course of five years. The site-specific model was run with a series of loading scenarios to identify the impact of individual sources.

Regarding the technical assumptions related to “permanent burial” of PCBs in sediments, it is well known that different congeners of PCBs weather and degrade differently partly as a function of degree of chlorination, and that lower-chlorinated congeners (e.g. PCB-11) are quite soluble and while they are less persistent, they are more toxic. For example, Davis (2004) showed that half-lives of congeners ranged from 4 years for PCB 18 (lower chlorinated, less persistent) to 30 years for PCB 194 (also see Greenfield and Allen (2013). Therefore, we suggest that different congeners with their variable environmental characteristics be considered when integrating PCB contributions to overall loadings via the sediment pathway.

Analytical methods. Selecting the most appropriate analytical method is critically important, because the older, Aroclor-based methods (e.g. EPA Method 8082) use reporting and method detection limits that are normally so high (i.e. unrestrictive) that it cannot be determined whether toxicity-based protection of aquatic life or human health can be achieved. They are not sensitive enough to determine whether toxic levels of PCBs are present in the watershed. More updated, congener-based methods with much lower reporting limits (e.g. EPA Method 1668C), and which has been approved for about 125 congeners, would be better for this purpose where practicable, including for analysis of water, sediments, and tissue.

The published method detection limit for EPA Method 608.3 (Aroclors only) is 65,000 pg/L, orders of magnitude above WQS target value of 1.3 pg/L, and is commonly used. Method 1628 is a newer, congener-specific analytical method, not yet approved under 40 CFR 136, and has not yet been used in the Spokane River watershed, but we suggest using this method when it becomes available and practical. In general, these newer, more sensitive methods are not always required as part of NPDES monitoring requirements and it is therefore difficult to determine compliance with these lower limits. We ask that Ecology and/or EPA require the more sensitive, congener-specific analytical methods when practicable.

DMR requirements. Discharge monitoring reports (DMRs) should be emphasized to assure that PCB load reductions are achieved over the coming years. The types of analytical methods recommended or required as part of NPDES monitoring requirements is especially important with PCBs, because the analytical methods traditionally required are wholly inadequate and insufficient for assuring PCB load reductions in both point and nonpoint discharges, as discussed above. As part of monitoring requirements, we recommend that monitoring:

- Be conducted during periodic (wet- and dry- conditions, spatially representative receiving water monitoring of water column, sediment and biological tissue, specifically targeting key sources both upriver and downriver of PCB discharge the waterway;
- For fish tissue, we recommend that greater emphasis be placed on older, bottom-feeding fish that are much more likely to bioaccumulate and/or biomagnify PCB residues over time, thus exposing human consumers and fish predators to PCB contamination and potential toxicity
- We ask that compositing of tissue be limited where appropriate, as use of individual (when adequate sample size is available), preserves valuable information concerning where specific problem areas and specific contaminated fish lie.
- Incorporate SPMD/biofilm data into PCB monitoring requirements, as this also provides valuable information concerning PCB locations on contamination and bioaccumulation.

Harmonic flows. The use of “harmonic flows” is not representative of most Spokane River flows or future flow trends. The selected harmonic flows are higher than flows we see most of the year, and thus not representative of our river flows. Moreover, due to climate change and the region’s population growth, we have been seeing a consistent drop in annual flows. Fishing rates are higher in the summer, during low flow months. Using a flow level more consistent with fish consumption is more protective of human health. Even though there is an extensive amount of flow data for the Spokane River, using historical data may not represent the future flows accurately. Given that, this calculation at a minimum should include an adjustment for this consistent drop in flows.

Margin of safety. We note that only implicit MOS provisions have been incorporated into the draft TMDLs. Because of high uncertainty within the watershed regarding the discharge of PCBs

from both point and nonpoint discharges, it is recommended that an explicit MOS be incorporated into the TMDL toward the upper end of the normal range of MOS. This would be considered an explicit MOS under EPA guidelines (EPA (2015), PCB TMDL handbook). As an example, the MOS for the Anacostia River TMDL (EPA 2007) was applied both implicitly and explicitly. The implicit MOS was applied by using conservative assumptions throughout, and explicitly applied by deducting 5% from the TMDL load allocation for all source categories except wastewater treatment plants (these were more uncertain) as a means of increasing protectiveness.

Wasteload Allocations and Potential Sources

EPA must adequately address all known sources of PCBs into the Spokane River system. By failing to address upstream sources in Idaho, MS4s, CSOs, dams, and hatcheries in a meaningful manner leaves a significant load practically unaddressed. EPA should include long-term plans to assess and respond to loading from MS4 stormwater, CSOs, fish hatcheries, and dams.

Using Post Falls as the upstream boundary neglects EPA's responsibility to oversee Idaho's compliance with downstream water quality standards. By failing to address Idaho sources, the TMDL essentially allows Idaho to continue to violate downstream water quality standards. It is clear from the supporting data that there are increasing concentrations from Lake Coeur d'Alene to Post Falls. The TMDL clearly recognizes that incoming concentrations have a significant impact on downstream concentrations. Starting at the border is insufficient for ultimately meeting standards and cleaning up this contamination. At a minimum, this plan should ask Idaho to implement an assessment of sources and timely response developed for Idaho dischargers.

Additionally, though the TMDL recognizes that the dams (especially Long Lake Dam) create the largest PCB loading areas from sediments, the plan does not actually address reducing this existing load. Waiting for the sediment to reach equilibrium is inadequate and fails to protect those subsistence fishers, who are often fishing in these high loading areas.

Excluding the Little Spokane Fish Hatchery further ignores what is likely the most significant source of PCBs to the Little Spokane. Ecology research shows that water, fish tissue, fish feed, and sediment from hatcheries and hatchery fish contain actionable levels of PCBs. A 2018 Ecology study found that PCB concentrations in the wastewater samples at Spokane Hatchery ranged from 147-219 pg/L, and a total PCB load from Hatchery Operations at 7.8 mg/day. Fish feed containing high oils, fats, and lipids were believed to be the primary source of PCBs in unstocked hatchery-raised fish, and correlative relationships between PCBs in fish feed and hatchery fish that consume the feed have been documented (Carline et al., 2004; Serdar et al., 2006).

Implementation Plan

The consent decree was the result of government agencies over multiple years failing to remedy the Spokane River's PCB pollution. An efficacious remedy for the river requires (1) a protective PCB TMDL and (2) an agency committed to implement it. We appreciate the inclusion of Ecology in the implementation of this plan. Ecology has been invaluable and will continue to be invaluable in implementation of the PCB TMDLs. Ecology has been active in monitoring PCBs throughout the watershed for many years, and has generated abundant valuable data. It is pertinent that Ecology holds a prominent role in implementation as it is more familiar with the site and contamination area.

In constructing an implementation strategy, we suggest that Ecology incorporate both point and nonpoint source controls, regulatory measures to minimize PCB inputs, and continue to focus on reducing or improving stormwater connectivity to receiving water bodies by installing specific features (e.g. BMPs such as infiltration basins, rain gardens, etc.). Increased wastewater treatment, increased source identification and management and focusing on inadvertent PCB production would all be prudent and valuable aspects of Ecology's implementation plan. We also encourage measurable timelines and milestones for assuring PCB reductions, and recommend that the monitoring database is regularly updated to allow for evaluation of progress. Creating the SRTAC last year was a positive step in promoting effective communication and management as part of TMDL implementation.

We also encourage development of a comprehensive toxics control strategy. Such a strategy would be used to support and develop an implementation plan led by Ecology. The implementation plan can be developed in a tiered and individualized manner.

To assist Ecology in the implementation of this TMDL, EPA should address the incongruence between the TSCA regulations and applicable wasteload allocations.The most straightforward approach would be to strengthen the TSCA rules pertaining to inadvertent PCBs to be consistent with the effluent limits in this TMDL. Significantly more information is available today than there was when the current standards were set in 1984. We recommend following up on the petition to EPA to reconsider the TSCA the 1970s-era provision that allows for up to 25 ppm in manufactured products (e.g. pigments and inks), a completely arbitrary provision, which we believe is used as a loophole for PCB discharge reduction as "incidental" PCBs. This applies directly to the Spokane River watershed, as incidental levels of PCBs are still being discharged under this provision. Parts-per-million is a full *nine* orders of magnitude above the parts-per-quadrillion levels we are seeking to achieve as part of TMDL load reduction

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We offer our sincere thanks for the opportunity to allow us to provide these comments to you concerning the PCB TMDL and hope they are helpful. If you have any questions, need clarification, or wish to discuss the issues covered in this letter, we invite you to contact us at your convenience. We look forward to continuing to work with you on this important project.

Kind Regards,

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Water Protector
Spokane Riverkeeper

Allan B. Chartrand, DABT
Toxicologist and Water Quality Expert for Sierra Club and the Spokane Riverkeeper

Spokane River Team
Upper Columbia River Group - Sierra Club

Trish Rolfe
Executive Director
Center for Environmental Law & Policy

Tanya Riordan
Policy and Advocacy Director
Save Our wild Salmon Coalition

References

Arnot, J., and F. Gobas. 2004. A food web bioaccumulation model for organic chemicals in aquatic ecosystems. Environ. Toxicol. Chem. 32(10); 2343 – 2355.

Carline, R.F., P.M. Barry, and H.G. Ketola, 2004. Dietary Uptake of Polychlorinated Biphenyls (PCBs) by Rainbow Trout. North American Journal of Aquaculture 66:91-99.

City of Spokane Toxics Management Plan 2017. Monitoring results sent to Ecology, and technical approach for PCB reduction measures. 42 pp.

WA Department of Ecology (Ecology). 2022, Spokane River PCBs in biofilm, sediments, and invertebrates 2018 and 2019: screening study results. 83 pp. https://apps.ecology.wa.gov/publications/documents/2203002.pdf

Ecology 2022. Water Quality Assessment Policy 1-11 Chapter 1 (allows Ecology to confirm new PCB sources). https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d/Assessment-policy-1-11

Ecology 2020. Water Quality Program. https://ecology.wa.gov/Water-Shorelines/Water-quality

Ecology 2020. Draft State Technical Support Document for PCB variances on the Spokane River (WAC 173-201A, WAS for surface water of the State). https://ecology.wa.gov/DOE/files/89/892829e8-0a74-4085-ad25-10619b014ee4.pdf

Ecology 2018. Evaluation of Fish Hatcheries as Sources of PCBs to the Spokane River. https://apps.ecology.wa.gov/publications/documents/1803014.pdf

Ecology 2015. PCB Cleanup Action Plan [CAP], including Spokane River. Publ. 15-07-002. 223 pp. https://apps.ecology.wa.gov/publications/documents/1507002.pdf

Ecology. 2011. Spokane River PCB source assessment. Publ. 11-02-13. 156 pp. https://apps.ecology.wa.gov/publications/documents/1103013.pdf

Ecology 2009. Washington State technical support document for fish consumption rates., version 2.0. Final. Publ. No. 12-09-058. 194 pp.

EPA Region 10. 2024. Draft TMDLs for PCBs in Spokane River and Little Spokane River. EPA Region 10. 68 pp. plus four technical appendices.

EPA 2022a. Water quality standard regulations: Spokane Tribe. https://www.epa.gov/wqs-tech/water-quality-standards-regulations-spokane-tribe

EPA 2022b. Total Maximum Daily Loads (TMDL) 303(d) Impaired Water Body Technical Support Document. http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/techsupp.cfm

EPA 2022c. Impaired Waters and Total Maximum Daily Loads: http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/index.cfm

EPA, 2020. Technical Directive (TD): TSWAP Contract EP-C-17-046 Task Order 7

EPA 2015. PCB TMDL Handbook. https://www.epa.gov/sites/default/files/2015-10/documents/pcb-tmdl-handbook-fact-sheet.pdf. Also http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/pcb_tmdl_handbook.pdf.

EPA. 2013. Spokane Tribe of Indians Surface Water Quality Standards. 133 pp. https://www.epa.gov/sites/default/files/2014-12/documents/spokane-tribe-wqs.pdf

EPA. 2007. PCB TMDLs for tidal portions of the Potomac and Anacostia Rivers. Prep for EPA Water Protection Div., DC Depart. of the Env., MD Dept. of the Env., and VA Dept. of Env. Quality. 179 pp.

Fikslin, T. 2003. TMDLs for PCBs for the Delaware River Estuary. Delaware Dept. of the Environment, Modeling, Monitoring and Assessment Branch. 40 pp.

Hobbs., W. et al. 2019. Toxic burdens of freshwater biofilms and use as a source tracking tool in rivers and streams. Environ. Toxicol. Chem. 53(19): 11102 – 11111.

Johnson et al. 2010 (also Ecology 2010). An assessment of the PCB and dioxin background in Washington freshwater fish, with recommendations for prioritizing 303(d) listings. 80 pp. Publ. 10-03-007, Jan. 2010. https://apps.ecology.wa.gov/publications/SummaryPages/1003007.html

LimnoTech (LTI) 2022. Historical PCB source Review – 17 pp.

LTI 2018. Comparison of Homolog-Patterns for Groundwater Well Data and Suspected Loads. Technical memorandum prepared for the Spokane River Regional Toxics Task Force. January 22, 2018. http://srrttf.org/wpcontent/uploads/2018/01/GroundwaterFingerprinting Memo_Final_012218.pdf US
LTI 2016a. Comprehensive plan to reduce PCBs in the Spokane River. Prep. For SRRTTF, Ann Arbor MI.

LTI 2016b. SRRTTF Technical action report: Continued identification of potential unmonitored dry-weather sources of PCBs to the Spokane River. Prep. For SRRTTF, Ann Arbor MI.
Rodenburg 2022. What have we learned about PCB sources to the Spokane River from Positive Matrix Factorization analysis? 26 pp.

Rodenburg 2020. Fingerprinting of PCB congener patterns in samples from the Spokane area. Prep. For SRRTTF, New Brunswick, NJ.

Seiders, K. et al. 2018. Freshwater fish contaminant monitoring program, 2015 results. Publ 18-03-011. 60 pp. https://apps.ecology.wa.gov/publications/SummaryPages/1803011.html

Seiders, K and C. Deligeannis. 2009. Washington State Toxics Monitoring Program: Freshwater fish tissue component 2007. Publ. 09-03-. 55 pp.

Serdar, D. and A. Johnson. 2006. PCBs, PBDEs, and Selected Metals in Spokane River Fish, 2005. Washington State Department of Ecology, Olympia, WA. Publication No. 06-03-025. https://fortress.wa.gov/ecy/publications/summarypages/0603025.htm

US District Court, Seattle. 2022. Consent Decree between Serra Club and the Spokane Tribe of Indians. No. C11-1759BJR. 10 pp.

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WATER
DIVISION

Public Comments Received on the Spokane and Little Spokane Rivers PCBs TMDL from

May 15 through July 15, 2024

August 28, 2024

EPA has compiled the public comments received on the draft Spokane and Little Spokane Rivers TMDL for polychorinated biphenyls (PCBs) from May 15 through July 15, 2024. EPA received comments from 13 entities, listed below.

Avista
Hayden Area Regional Sewer Board
Idaho Department of Environmental Quality
Inland Empire Paper Company
Liberty Lake Sewer District
National Council for Air and Stream Improvement, Inc
Northwest Pulp and Paper
City of Post Falls Public Works Department
City of Spokane Public Works
Spokane County Public Works
Spokane Riverkeeper
Washington Department of Ecology

You can also find public comments that EPA received on the draft Spokane and Little Spokane Rivers PCBs TMDL from May 15 through July 15, 2024 at [insert website].

If you experience a problem reading this document with assistive technology, please contact us at (R10_Web_Team@epa.gov).

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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July 15, 2024

Gunnar Johnson
United States Environmental Protection Agency - Region 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101

Sent by email only: SpokaneRiverTMDL@epa.gov

RE: Ecology's comments on the Draft Total Maximum Daily Load for Polychlorinated Biphenyls in the Spokane River

Dear Gunnar Johnson:

Thank you for the opportunity to comment on the draft Total Maximum Daily Load (TMDL) for Polychlorinated Biphenyls (PCB) in the Spokane River, dated May 15, 2024.

The Washington State Department of Ecology (Ecology) submits these comments intended to clarify the TMDL and better support its successful implementation. Our comments are divided into three areas: technical, regulatory, and implementation.

Technical comments

1. Meaningful implementation of this TMDL requires better explanation about the data that was used (sources, median, ranges, assumptions and resulting levels of certainty) so that progress can be charted toward achieving the water quality criteria. As written, it is difficult to understand EPA's underlying basis, assumptions, and analysis associated with background PCB concentrations, boundary conditions, methods of data extrapolation, flow conditions, impact of Lake Spokane on PCB loading, and the defined critical period.
2. The Spokane River system is highly dynamic and this statement on page 44 requires further explanation: "Unlike many TMDLs, intra annual (i.e., seasonal) variability of river flows or PCB concentrations are less relevant than the long-term annual concentration. As such, the critical condition does not relate to seasonal variation in the TMDL." The critical period should be during the August low flow period where PCB would have the highest concentrations. Using the annual average doesn't define a critical period.

3. The draft TMDL includes a load allocation (LA) based on a concentration of 1.3 pg/L total PCBs applicable to regional groundwater. Specifically, the TMDL identifies a computed LA in mg/day for the flow of contaminated groundwater to the river from the Kaiser Trentwood location. Ecology currently requires cleanup at the Kaiser Trentwood Site under Washington's Model Toxics Control Act, including operation of a full-scale pump-and-treat system. This system, which is an Interim Action under the Amended Agreed Order between Kaiser and Ecology, is expected to significantly decrease the concentration and mass flux of PCBs in groundwater at the site. Ecology intends to continue implementing a multi-faceted approach at this location, with the goal of eliminating the impacts of PCB to the Spokane River and Spokane Valley/Rathdrum Prairie Aquifer from this location.

Regulatory comments

1. Please outline the actions the federal government will take toward TMDL implementation, and the role EPA will play in delivering those federal actions. As written, the reasonable assurances section minimizes EPA's contribution towards TMDL implementation. To be successful and achieve the TMDL goals, federal programs should also be consistent with the Clean Water Act's requirement to reduce PCB loading to the Spokane River. For example, EPA can further regulate PCBs through the Toxic Substances Control Act and address the background inputs. The TMDL assumes these inputs contribute to exceedances of the water quality criteria in all surface and groundwater inflows to the river and "there is effectively no dilution of total PCB loadings entering the rivers."
2. Ecology expects EPA to provide active and long-term support towards implementation of the TMDL. Federal funding that supports implementation of the TMDL is especially important--particularly, actions that address diffuse nonpoint contributions.
3. The Waste Load Allocations for the NPDES facilities were calculated based on average flow. A more appropriate calculation would be to use the design flow, which is available in the NPDES permit documents. This more accurately represents present and future growth trends.
4. Please check the permit number for Midnite Mine. EPA's website lists the permit number for this facility as WA0026841, located on the Spokane Indian Reservation. WA0026841 is the current EPA-issued permit to Dawn Mining for discharges from the Midnite Mine to the Spokane Arm of Lake Roosevelt. According to our records, WA0025721, referenced in the draft TMDL, is an expired EPA-issued permit to Dawn Mining for discharges from the Midnite Mine to Blue Creek.

Implementation comments

1. Please recognize and identify shared implementation responsibilities. While Ecology agrees that we have an important implementation role for this TMDL, implementation is ultimately a responsibility shared by Ecology, Idaho Department of Environmental Quality, other state agencies, local governments, the federal government (including EPA), Tribes, permittees in Washington and Idaho, private landowners, and other entities that address PCB discharges through on-the-ground actions.
2. EPA's modeling supports the proposition that a boundary condition concentration of 1.3 pg/L is needed at the Washington-Idaho border to meet the applicable water quality standards and EPA established boundary conditions of 1.3 pg/L with Idaho and the Spokane Tribe. EPA also expects Idaho and the Spokane Tribe to meet these boundary conditions. We look forward to working with EPA on implementation of TMDL actions in areas outside of Washington jurisdiction so that these boundary conditions can be met.
3. Please provide any guidance or direction on how to appropriately express effluent limits in NPDES permits that are below levels measurable by analytical methods, such as the 1.3 pg/L allocation in this TMDL. Any examples of federal NPDES permits where this has been done would be appreciated.
4. If available analytical methods cannot reliably measure to low levels (e.g. 1/3 pg/L), and the technology to achieve them is not currently known to exist, please describe how EPA would consider approval or disapproval of a water quality standards variance. Ecology, Idaho Department of Environmental Quality, EPA, and any other water quality permitting agencies will benefit from this information to ensure a consistent and defensible approach.

We appreciate your consideration of these comments. If you have any questions or would like to discuss Ecology's comments further, please contact Adriane Borgias at adriane.borgias@ecy.wa.gov or (509) 329-3515.

Sincerely

Vincent McGowan, PE
Water Quality Program Manager

cc: Adriane Borgias, Ecology
Melissa Gildersleeve, Ecology
Nick Acklam, Ecology
Lucy Edmondson, EPA
Caleb Shaffer, EPA
Mary Anne Nelson, Idaho Dept. of Environmental Quality