

Response to Comments on the Spokane River PCB TMDL Stormwater Loading Analysis Report.

Ecology Responses: [Brandi Lubliner and Dale Norton](#)

Comments made by City of Spokane: Wastewater Management

Comment 1: We are concerned that first flush data may have been used directly with annual runoff in determining loading, which would overestimate PCB loading vs. composite or flow-weighted data and any seasonal variations.

ECY Response 1: The purpose of this study was to refine the stormwater loading contribution to the river. The contracted samplers attempted to capture the first flush, however it is my understanding that they captured water in the first day of a storm, most if not all the samples were not actually captured in the first 20 min or 1 hour, which is the definition of first flush. We did use this sample data directly with annual runoff to determine the high-end of the loading range.

In designing this study Ecology contemplated using composite or flow-weighted methods for sample collection; however the actual sampling logistics made sample compositing not possible. The stormwater was not flowing when samplers returned to make a composite sample. Leaving compositing equipment at these sites was not an option for this study. Although this data was taken within only one season, the concentrations range was similar to the TMDL study (Serdar et al. 2006).

Comment 2: The tables indicate parking lots and driveways were included in calculations of impervious area tributary to the storm system. Generally, only surfaces within the right-of-way are collected by the storm system. Including driveways and parking lots overestimates PCB loading.

ECY Response 2: This may be unique to Spokane. Generally the parking areas and all roads are calculated in the impervious area figure for a municipality.

Comment 3: Combined Sewer systems (CSO basins) function quite differently than do separated storm systems in terms of discharge to the river. Most (but not all) CSO basins will overflow to the river for large storm events, and the first flush is generally captured before the onset of overflow. Consequently, most runoff in CSO basins is treated at the City's Riverside Park Water Reclamation Facility. PCB loading from CSO's must consider the CSO overflow thresholds. (Note: the City has begun installing storage tanks to reduce CSO volume and frequency. These tanks are expected to also reduce any current PCB loading to the river via CSOs.)

ECY Response 3: This report did use flow figures from the City of Spokane to calculate a lower load value based on the CSO overflows. The storage aspect of this comment is an important to keep in mind for the Detailed Implementation Plan. The storage tanks may reduce CSO overflows and if so, then water treated at the WWTP will provide PCB treatment.

Comment 4: We expected a stronger correlation between PCB concentrations and TSS concentrations than is reported in the tables; can these differences be explained?

ECY Response 4: PCBs are not evenly distributed on TSS, they are variable in the environment and therefore variable among these sampled stormwater basins. Each basin itself may have a better relationship between PCB and TSS; and they may be worth exploring.

Comment 5: It was unclear what the green cell highlights mean in the tables.

ECY Response 5: The green highlight means there was a “J” flag associated with the reported value. A “J” flag is our code to mean that the analyte was positively identified; the associated numerical value is an estimate for some reason. The reason is usually due to low recovery of the quality control standards used at the lab. Manchester Environmental Laboratory explains the data and codes in the data reviews provided in Appendix A.

Comment 6: Because PCBs are often from discrete sources and concentrations at end-of-pipe are particularly affected by “hot spots,” extrapolating data from sampled basins to unsampled basins may introduce significant errors. Similarly, regarding the reference early in the report to a prioritized list of basins for cleanup, (which we did not find), we have reservations about the validity of such a list being developed from limited data. We would also like to see more detail supporting the premise that the sampled basins are representative of land uses City-wide or in other basins.

ECY Response 6: The sampled basin’s drain 12600 acres (table 13a) of 17282 acres (table 12) for the Spokane city limit. Extrapolating data is never really a good idea, but this study did attempt to minimize that error by sampling 73% of the city area. The criteria are specified in the report –pg 11. The basins ranked for priority cleanup are on the last page (36): Cochran, CSO 34, Union Street, and 105 Upper. More detailed source investigations are the next step.

Comment 7: We would also like more information re: detection limits, etc. relating to the sampling analysis.

ECY Response 7: Attached is the Quality Assurance Project Plan that details much more of the projects sampling analysis.

Comments made by City of Spokane: Environmental Programs

Comment 8: I'm not sure I understand how PCB detections were used in the Table 8. It appears that the Total PCBs are calculated as the sum of the fractions. But the use of non-detects and "J" designations (estimates) confuses me.

For the following line of data, all the analytes are non-detects, but the Total PCB is given as a whole number and not flagged. In the preceding narrative, it states that non-detects were not assigned a value, so I don't understand this Total PCB value.

07184215 STMWTR_CLARKE 05/02/07 4 < 0.139 < 0.277 < 0.392 < 0.518 < 0.543 < 0.518 < 0.392 < 0.277 < 0.139 < 0.080 0.062

For the following data, all the analytes are either non-detects or estimates, but the Total PCB is not flagged as an estimate.

07214215 STMWTR_CLARKE 05/21/07 2 < 0.070 0.101 < 0.200 0.124 0.022 < 0.260 < 0.200 < 0.140 < 0.070 < 0.040 0.247

I did not check all the lines of data, but found these two by randomly checking just a few.

ECY Response 8: There appears to be an error with the stmwtr_clarke data. I'll most likely have to put together an addendum, which you will receive.

Comment 9: There were 16 samples taken on 06/05/07. For two of the 5-Cl analytes, the detection limit appears to be < 0.270 ng/L. But for 5 of the 16 samples the result was flagged as estimated when the result was greater than 10 times the detection limit. There needs to be greater discussion than a footnote for the table, about the need and method for estimations.

ECY Response 9: Agreed that this method for estimation is confusing. Flagging as estimate “J” is done for a variety of reasons including, <10 times the detection limit. Other reasons include, poor recovery of surrogate standards, labeled compounds, etc. The Appendix A gives some explanations to this process. More clarification is needed for future projects.

Comment 10:

In Table 13 the Annual Total PCB Load/Acre (mg/acre) is totaled at the bottom as 16.1. This number appears to be the total load of PCB per day divided by the drainage area time 365. But this number is not the average of the calculated result for each of the basins. If I round each number to the next whole number, I still only get approx. 14.6. It should be closer than this or it needs to be explained.

ECY Response 10: Correct the total annual load/acre was calculated as follows:

Total PCB load/total drainage area -->

(557 mg/day*365 days/year)/12600 acres = 16.1 mg/acre

This is not averaged because these were the sampled basins. The average concentration detected from the sampled basins is applied to the un-sampled basins in the following table for load estimations.

Comment 11: I would have anticipated another table after Table 13. The first page clearly stated that there would be an extrapolation of detected results to the non-sampled basins. I would have expected the results from Table 13 to be used for this purpose. I do not agree that PCB loading can be assigned to non-sampled basins when the results clearly indicate that loading originates from discrete sources. But if this concept were part of the report, it should have been included in this section if the introduction specifically discusses it.

ECY Response 11: Another Table has been added.

Comment 12: Looks like Erie and Union have the same point source(s) of PCB. Would recommend that Cochran be re-sampled more discreetly to determine if point source(s) is (are) involved. Should match basins with potential contaminant source data to determine candidate sources.

ECY Response 12: Further work to identify the point sources is needed, however that is beyond the scope of this project. Follow-up work should be part of the more detailed source investigations planned as part of the Urban Waters Initiative that began in July 2007 in Spokane.