

Comments on: **DRAFT: Homolog-Specific PCB Mass Balance for the Spokane River**
Draft July 5, 2017

From: Spokane County Environmental Services
Date: Comments prepared July 13, 2017

Comment 1

Page 1, Summary:

Where is the summary of the homolog mass balance for the proposed new study reaches: Trent to Upriver Dam and Upriver Dam to Greene Street? A component of this study was the disaggregation of PCB loads in the Trent to Greene reach. Specifically, the Quality Assurance Project Plan Addendum 4 described the homolog mass balance (page 7):

The refined analysis to be conducted for this task will divide the reach into two segments: 1) The losing section from Plante's Ferry to just downstream of Upriver Dam (47.685784, -117.328556), and 2) The gaining section from just downstream of Upriver Dam to Green Street.

Suggestion:

- Add in the homolog mass balance on the new reaches or describe why it was not conducted.

Comment 2

Page 5, Mass Balance Assessment:

The inclusion (or exclusion) of previously identified PCB "outlier" values can have an impact on the homolog mass balance results. It appears that the inclusion or exclusion of outliers was not consistent in this memo between monitoring years.

- For this report, in the analysis of the 2014 synoptic data it appears the homolog mass balance was conducted with the "outliers" excluded.
- For this report, in the analysis of the 2015 synoptic data appears the "outliers" were included.
- But in an earlier report, the analysis of the 2015 synoptic data (dated November 16, 2016), did not include the "outliers" during the homolog mass balance assessment.

Suggestion:

- Please provide in the report a description of which data were included and/or excluded in the homolog mass balance.
- The inclusion or exclusion of "outliers" should be consistent between monitoring years. If consistency is not appropriate, then please justify why. Alternatively, present both analyses, with and without outliers.

Comment 3

Page 5, first paragraph, Mass Balance Assessment:

The text states:

load estimates in the 10 to 50 mg/day range are strongly influenced by the uncertainty of the analysis.

It appears that the source of the uncertainty in this report is in the data, and not the analysis. For example, flow measurements, may only be accurate +/- 10% and PCB measurements has collection and measurement uncertainty.

Suggestion:

- Please revise the text to read: *load estimates in the 10 to 50 mg/day range are strongly influenced by the uncertainty of ~~the analysis~~ field and laboratory measurements.*

Comment 4

Page 5, Table 1:

It would be helpful to have a sum of homologs (total PCBs) at the bottom of the table.

Suggestion:

- Add a line at the bottom of Table 1 with the sum of homologs (total PCBs).

Comment 5

Page 5, Table 1 and Page 8, Figure 7:

The lack of flow data at Greene Street during the 2014 synoptic survey makes the homolog mass balance from Greene St. to Spokane Gage highly uncertain. It seems inappropriate to discount the 2015 results for Greene St. to Spokane Gage by comparing them with the uncertain 2014 results.

Suggestion:

- Consider not including the results of the 2014 homolog mass balance between Greene St. and Spokane Gage due to lack of data. If the analysis is retained in the report, then provide additional description of how the 2015 results are from a full set of data, while the 2014 results are not.
- Please also consider the above comment related to the 2014 Trent to Greene mass balance. The November 2016 report with homolog mass balances included only the Trent to Spokane Gage reach for 2014 due to lack flow data at Greene St.

Comment 6

Page 9, Table 2:

It would be helpful to have a sum of homologs (total PCBs) at the bottom of the table.

Suggestion:

- Add a line at the bottom of Table 2 with the sum of homologs (total PCBs).

Comment 7

Page 9, first paragraph:

The report states:

...though, the calculated load in this reach is driven solely by a single elevated PCB sample at Mirabeau and it is not clear whether this represents an anomalous measurement of the presence of an ephemeral groundwater loading source.

It seems possible that the elevated concentration at Mirabeau could also be due to sample contamination or laboratory error.

Suggestion:

- Revise the text to provide potential alternative explanations of the elevated concentration at Mirabeau Point, other than an ephemeral load.

Comment 8

Page 12, second paragraph.

The report provides two potential reasons for an unexplained preferential loss of low molecular weight homologs (tri, tetra, and dicholor (in 2015) between Trent and Greene St. While the two explanation may be appropriate, it seems a third, equally possible, explanation is missing. That is, a potential loss of all PCBs homologs (non-preferential) in the Trent to Greene reach above Upriver Dam, followed by a gain of certain homologs (likely penta, hexa, and hepta) from a different source downstream of the dam.

The river between Trent and Greene includes several items that complicate the homolog mass balance. Specifically, the river has a relatively large losing section above Upriver Dam followed by a relatively large gaining section downstream of dam. Additionally, two PCB cleanup projects occurred in the Upriver Dam pool and one occurred south of the river downstream of the dam.

The disaggregation of this reach (Trent to Upriver to Greene) as proposed in the QAPP might provide clarity on this topic.

Suggestion:

- Provide a third potential explanation of homolog gain-losses in the Trent to Green St. reach.
- Provide the disaggregation of homolog mass balance in the reach to include Trent to Upriver Dam and Upriver Dam to Greene St. as planned in the QAPP.

Comment 9

Page 12, third paragraph:

Please revise the text to say:

...between Greene St. and the USGS Spokane Gage, as this load...

Suggestion:

- Revise text as noted.

Comment 10

Page 12, final paragraph:

The report states:

Many of the above inconsistencies can be explained by the determination made previously that individual loading estimates could be uncertain by up to 50 mg/day.

What is the basis of this threshold and when was it determined?

Suggestion:

- Provide a brief explanation of the 50 mg/day threshold to aid the reader.

Comment 14

Page 12, final paragraph:

The highlighted word below in the final sentence appears to be a typo.

The results will still provide value, however, as part of a weight of evidence approach when considering the likelihood of groundwater from various wells contributing significant PCB contamination to the Spokane River.

Suggestion:

- Please revise the word “well”; consider the word ‘sources’.