From: Kris <krisholm@comcast.net>
Date: February 24, 2017 at 12:24:26 PM PST
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Subject: SRRTTF Data mining 5.14.1.a

Here is the exact language from the adopted CP re: how data mining to identify sites of concern for contaminated groundwater should be conducted.
The TF work group should work from this detailed description in any further refinement or summarization of this task. Does this section need to be posted or put into some kind of XCL spread sheet ? Note that next steps are to be determined after 1.a data mining is completed and a tech report is prepared and shared with TCP.

If the task force is proposing changes to this approach those changes need to be identified for and discussed with the full SRRTTF.
Please share as appropriate to help us have the most productive meeting next week. Thanks.

5.14.1 Actions
The Task Force will implement the following three-step process to identify sites of concern for contaminated groundwater:
1. Mine existing data
2. Consult with TCP
3. Determine next action (e.g., targeted monitoring)

5.14.1.a Mine Existing Data
Initial activities will consist of compiling and reviewing available data to assess the potential significance of new groundwater sites to contributing PCBs to the Spokane River. Separate activities will be conducted for each of the three categories of sites described immediately above.

With respect to the potential source up-gradient of Kaiser, existing data have largely been mined to the extent necessary to define that a source exists and that its magnitude is potentially of concern. Recent evaluations of hydrogeological and groundwater quality information collected by Kaiser show that there likely is an up-gradient source of PCBs entering via groundwater within the gaining portion of the river from just downstream of Sullivan Road to Kaiser monitoring well MW-15 (approximately 1.1. miles). This conclusion is based on available PCB homolog data collected from Kaiser monitoring wells, which show a difference between the PCB homolog patterns between the Kaiser site related monitoring well data and up-gradient and cross-gradient monitoring well data collected outside these areas (LimnoTech, 2016f). The Kaiser site related data are dominated by the tri- and tetra-homolog groups, while the up-gradient/cross-gradient PCB data are dominated by the tetra-, penta- and hexa-homolog groups (data shown in Figure 17 for locations shown in Figure 18).

Figure 16. Homolog Distribution of Groundwater Monitoring Data Collected from Kaiser Plume (top) and Up-Gradient/Cross-Gradient Wells (bottom)

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MW5s
North Supply Well
MW4
MW11
MW10
MW5

MW15

Figure 17. Kaiser Site Map Showing Location of Kaiser Plume (Blue Circle) and Up-Gradient/Cross-Gradient Wells (Red Circles)

For this stretch of the river, an initial up-gradient PCB loading estimate of 14 to 55 mg/day was calculated, assuming a representative seepage rate of 0.01 cfs per linear foot of river (Kahle and Bartolina, 2007), and representative average up-gradient PCB concentrations ranging from 0.1 to 0.384 ng/L. Although this analysis is not rigorous enough to prove that a significant up-gradient source exists, it is rigorous enough to show that up-gradient sources merit additional consideration.

The source of the up-gradient PCB groundwater loads is unknown, but the Spokane Industrial Park area may be one contributor. This observation is based on:

- The up-gradient location of the Industrial Park relative to the Kaiser boundary monitoring wells. These wells historically have shown detectable concentrations of PCBs up to 6 ng/L (median = 0.1 ng/L).
- Ecology's Urban Waters Initiative has identified the Industrial Park as a likely source of PCBs prior to 1994 (http://www.ecy.wa.gov/urbanwaters/spokaneriver.html).
- Past use of the area as a Naval Supply Depot.
- The presence of approximately 500 Underground Injection Control (UIC) wells registered in the UIC database as non-municipal stormwater wells that generally are 7 to 10 feet deep (Marti and Maggi, 2015).

With respect to the suspected source downstream of the Trent Avenue Bridge, data mining activities will consist of more detailed homolog-specific mass balance assessments to estimate the magnitude of the load. The mass balance assessments conducted to date at this site have only considered river concentration data and stream flow to determine that a net loading of penta- through hepta-chloro PCB homologs occurs. The specific magnitude of this potential loading source was not assessed further due to the confounding effects of groundwater exchange mechanisms that are more complex than assumed in the original mass balance assessment. Data mining activities to be conducted under the Comprehensive Plan will consist of:

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- Estimating groundwater gains and losses for the stream reach from available hydrogeologic data. Data related to this have been provided by Spokane County.
- Conducting a mass balance analysis for 2014 and 2015 synoptic survey data, using the gross gaining and losing flow estimates for this reach. This is in contrast to the prior mass balance assessment that only considered net groundwater flow to the reach.
- Calculate estimated loading rate and congener distribution of the potential source.
- Review existing TCP site information to identify potential contributing sites.

With respect to other TCP sites, data mining activities will consist of estimating the potential magnitude of loading from the 23 TCP sites with confirmed releases of PCBs identified by Marti and Maggi (2015). This will be done by:

- Calculating the amount of area potentially containing PCB concentrations at the cleanup target concentration, both in soil and groundwater.
- Reviewing existing hydrogeologic information to estimate groundwater seepage rates and flow paths for each site. Existing groundwater models from the USGS and the City of Spokane can be used to support this assessment.
- Merging areal extent, seepage rate and concentration estimates to calculate a potential loading contribution for each site.

5.14.1.b Package Information for and Consult with TCP

The results of the above data mining activities will be documented in a technical report, and shared with Ecology TCP staff. The Task Force will schedule a meeting (or meetings) with TCP to present and discuss results. Findings will be compared to those obtained by TCP (e.g., TCP will be conducting a separate assessment of the magnitude of the loading up-gradient of the Kaiser site). Result of the meeting(s) will feed directly in to the next step, determining subsequent actions.

5.14.1.c Determine next action

Based on the above findings and discussions, the Task Force will work with TCP to determine appropriate next steps, and the party (or parties) responsible for conducting them. Depending on findings from the data mining, next steps could include:

- Determining that certain sites are contributing to the impairment of the river, and identifying potential remediation actions.
- Targeted monitoring to better define the contribution of sites determined to be potentially important.
- Exclusion of certain sites that are determined to be insignificant contributors to the impairment of the river.

Should previously identified sites be determined to be contributing to impairment in the Spokane River, it is important to note that Ecology staff have indicated that TCP will not re-open activities at a site if the site has settled its liability, met cleanup levels and a remedy has not failed. EPA, however, may be able to provide assistance if this situation occurs.