

CDA DRAFT COMMENTS ON DRAFT LIMNOTECH MAGNITUDE OF SOURCES AND PATHWAYS

5/16/16

- Care should be taken to avoid filling in “data gaps” such as the Lake CDA loading estimate when the data cannot be used with any acceptable level of confidence. One of the main purposes of this study is to identify data gaps such as this.
- An attempt should be made to apply a hierarchy of data preference when both synoptic and discharger data has been collected.
- Combining 3x and 10 x Method blank correction data may misrepresent even “semi quantitative” loads.

Up Watershed page 9

“PCB loading from Lake Coeur d’Alene represents the aggregate contributions of PCBs from the upper watersheds after travelling through the lake. An estimate of PCB load currently present in Lake Coeur d’Alene was calculated by multiplying the volume of the lake (2.79 km³) by the average PCB concentration in the lake, represented by data collected by the SRRTTF during confidence testing and synoptic surveys. It is recognized, however, that the analytical results utilized to estimate this concentration are below concentrations at which PCBs can be measured with confidence in the environment. The average total PCB concentration of 17 pg/l is less than the average of field blanks from the same confidence testing and synoptic survey, corrected in the same manner (27 pg/l). In addition, available PCB concentration data are dominated by summer measurements, although no significant difference in concentrations were observed between seasons. To account for this uncertainty in lake concentrations, the mass calculation was conducted for a range of PCB concentrations from 0 to 17 pg/l. The resulting load estimate is 0 to 0.047 kg. The mid-point value of this range, 0,024 kg, is presented in Table 1.”

Comment:

The draft report states “ It is recognized, however, that the analytical results utilized to estimate this concentration are below concentrations at which PCBs can be measured with confidence in the environment.” Does Limnotech consider any of the collected lake data to be useable or was all of it suspect based on comparison to the average field blanks? Is it acceptable to use an average of values based “conducted for a range and presented as a mid point value” to calculate even a “semi quantitative” load? It seems more accurate to acknowledge the initial statement that values cannot be measured with confidence and propose that additional studies be conducted. The poor data quality seems to support a determination that there is a data gap that should be addressed by more study at some time.

Transport of PCBs from Upstream Sources through Lake Coeur d’Alene

“Transport of PCBs from upstream sources through Lake Coeur d’Alene was estimated using the assumed average concentration (8.5 pg/l) discussed in the previous section, in conjunction the annual average flow out of the lake (175 m³/sec) to produce an estimated loading rate of 132 mg/day.. Because the average flow out of the lake is much better understood than average lake concentration, this estimate is likely accurate to within a factor of three, consistent with the uncertainty in the average lake concentration estimated above.”

Comment:

This estimated loading rate is an example of how reliance on highly qualified data should not be made to develop such a rate and present the “results” quantitatively. Here the assumed average concentration has been developed using extremely unreliable data. See comments above. This report should acknowledge the lack of useable data for the lake. Restricting the use of such data is most pertinent here where recent attempts to measure PCBs in the specific water body were made and failed to produce sufficiently reliable results. Application of an uncertainty factor cannot substitute for the inherent problem in attempting to collect data at extremely low concentrations in the water column. It may be most useful to explain somewhere the inherent problems with PCB data collection and analysis in the synoptic study and continue to note this reality when synoptic data is used to estimate loads.

Discharge from Municipal and Industrial Wastewater Treatment Plants

“Loading estimates for municipal and industrial wastewater treatment plants were calculated from effluent data collected by the plants during routine monitoring, along with data obtained during the SRRTTF synoptic surveys. Results are summarized in Table 3. These loading estimates are presented as a range rather than one loading estimate. This is due to differences in blank correction methodology between the SRRTTF source identification studies and discharger effluent monitoring. The SRRTTF recognizes that the selection of blank correction methodology is dependent on the use of the data (LimnoTech 2014). The SRRTTF has determined that a “3x blank censoring” correction methodology is appropriate for source area identification studies. Ecology has indicated that a “10x blank censoring” correction methodology is appropriate for reporting effluent monitoring results. Differences in reported concentrations between the synoptic surveys and routine monitoring may also be explained by the sampling methods used, as routine monitoring is primarily conducted with composite samples while the synoptic surveys used grab samples. Therefore the loading estimates are based on a range bounded by the average of the values reported in the SRRTTF source area identification studies and the average of values reported for discharger effluent monitoring. The mid-point of the range is utilized as appropriate in other portions of this report.. The range in total loading rate is 250 – 315 mg/day, with a midpoint value of 282 mg/day. “

Comment:

Limnotech should consider applying a hierarchy of data preference when both synoptic and discharger collected data is available. This may apply to other sources but certainly is applicable for those sources collecting and reporting effluent data under permit conditions and, where available, accepted regulatory protocols.

The use of 3 times blank corrected synoptic data for the purposes of estimating loads is inconsistent with the QAPP. The SRRTTF QAPP for source identification allows for 3x blank correction to help identify potential sources that otherwise may not be identified. The synoptic

data using 3 times blank correction has identified the effluent from the listed facilities as potential sources. All of these permitted sources have now collected data pursuant to their permit conditions and submitted the data under the Ecology, DEQ and EPA available protocols. These sources should be presented using only this best available data corrected at 10 times. Alternately the synoptic data might also be useable if the 10x correction used by these agencies was applied to the synoptic data. Additionally can or should the Kaiser data for be blank corrected to make it more compatible for comparative purposes?

Regardless, comparison of 3x and 10x correction is not appropriate for the purposes of demonstrating even the estimated magnitude of these sources. The effluent data should stand on its own and not be combined with synoptic data intended to be used at 3 times for source identification. Can you cite to any other studies where blank corrected data using 2 such different blank correction methods have been presented as mid point values? A cursory review of other studies shows that use of 5 or 10 times blank correction is most common. Does the Kaiser data inherently overestimate its load because the data is not blank corrected and if so what is the best way to address this concern when presenting the effluent discharger data collectively?

Private septic systems

There are over 45,000 private septic systems in Spokane County, with 200 to 300 new systems are added annually and 50 to 150 systems removed due to connection to sewer or abandonment. At least 10,000 systems are likely located over the aquifer contributing to the Spokane River (S. Phillips, personal communication). Furthermore, the USGS calculated an average hydraulic input to the entire aquifer of 23 cubic feet per second for the period 1990 to 2005 (USGS, 2007). Given observed PCB concentrations greater than 10,000 pg/l in municipal wastewater influent as discussed above, it is reasonable to assume that similarly high PCB concentrations are delivered to septic tanks. No quantitative information exists defining the rate at which these PCBs may be delivered to the groundwater contributing to the Spokane River.

Comment:

Additionally, the maintenance of the remaining active septic systems over the water shed requires solids removal every three years. It is highly likely some muni's Influent will show this PCB addition (in every septage-is-allowed muni) or have hidden additions if they feed septic sludge directly to their digesters. This concentrated septic sludge is likely to resemble three years of average SFD sewer in 1000 gals of septage. The current CFR 503 rules allow septage disposal by direct injection into area soils (route not shown within study)..