Spokane River Regional Toxics Task Force

Technical Workshop Notes

Wednesday, December 4, 2013 | 9:00 am – 4:00 pm
Thursday, December 5, 2013 | 8:30 am – 12:30 pm
Spokane, WA

BiJay Adams, Liberty Lake Sewer & Water
Tom Agnew, Liberty Lake Sewer & Water
Mahbub Alam, Ecology
Dale Arnold, City of Spokane
Joel Baker, University of Washington
Jim Bellatty, Ecology
Joel Bird, Ecology
Kevin Booth, Avista
Adriane Borgias, Ecology
Ben Brattebo, Spokane County
John Crawford, Kaiser Aluminum
Dan Cargill, Ecology
Greg Cavallo, Delaware River Basin Commission
Lisa Dally Wilson, Dally Environmental
Aubri Denevan, Ruckelshaus Center
Dave Dilks, LimnoTech
Jeff Donovan, City of Spokane
Ryan Ekre, Inland Empire Paper
Arianne Fernandez, Ecology
Pat Hallinan, Ecology
Mike Hermanson, Spokane County
Will Hobbs, Ecology
Kristine Holm, City of Coeur d'Alene
Paul Klatt, JUB Engineers
Don Keil, City of Coeur d'Alene
Ellie Key, City of Spokane
Doug Krapas, Inland Empire Paper
Mike LaScuola, Spokane Regional Health District
Bud Leber, Kaiser
Rachel McCrae, Ecology (on phone)
Lester McKee, San Francisco Estuary Institute
Dave Moss, Spokane County
Dale Norton, Ecology
Chris Page, Ruckelshaus Center
Mike Peterson, The Lands Council
Sandy Phillips, Spokane Regional Health District
Paul Savage, Spokane Regional Health District
Lynn Schmidt, City of Spokane
Tim Towey, LimnoTech

Wednesday, December 4, 2013

<u>Briefing Session #1</u>: SRRTTF – Background, Issues, Goals

Tom Eaton gave a brief overview of the SRRTTF's objectives and goals. Dave Dilks gave an overview of LimnoTech's work to date and what they've been tasked with moving forward, including the approved and draft memos 1 – 8.

Questions from the audience:

- What's your rationale for improving atmospheric deposition testing? It seems uncontrollable. Dave Dilks and others responded by saying it's an unknown here.
- Why dry season testing focus, not wet season? Dave Dilks explained: the dry season testing is to get at the groundwater data. There are two distinctions: wet & dry *season*, and wet & dry *events*.
- How confident are we at understanding how PCBs get into fish? Answer: LimnoTech is looking at water quality only. There has been some discussion around fish, but that's not the original purpose.

Briefing Session #2: PCB Experiences from Other Watersheds

***Joel Baker**, Center for Urban Waters*

Bio[1]: Professor Joel Baker holds the Port of Tacoma Chair in Environmental Science and is the Science Director of the Center for Urban Waters. He earned a B.S. degree in Environmental Chemistry from SUNY Syracuse (1982) and M.S. (1985) and Ph.D. (1988) degrees in Civil and Environmental Engineering from the University of Minnesota. Dr. Baker's research centers on the transport of organic contaminants in the environment, specifically atmospheric transport and deposition, aerosol chemistry, the dynamics of contaminant transport in estuaries, and modeling the exposure and transfer of bio-accumulative chemicals in aquatic food webs. He teaches courses in water quality modeling, environmental chemistry, and quantitative methods. He has co-authored over ninety papers on contaminant cycling in the Great Lakes, the Chesapeake Bay and coastal waters, and edited Atmospheric Deposition of Contaminants to the Great Lakes and Coastal Waters (SETAC Press, 1997). He was the lead author on a scientific review of PCBs in the Hudson River, a contributing author to the Pew Oceans Commission report Marine Pollution in the United States, and a member of the NRC's Committee on Oil in the Sea, chaired the New York Harbor Model Evaluation Group, advised the European Commission on water quality modeling, and served on the Board of Directors of the Society of Environmental Toxicology and Chemistry. Dr. Baker is a member of the Puget Sound Partnership Science Panel, which he chaired from 2007-2009.

Dr. Baker's thoughts:

- Consider sample collection, transport and storage as important parts of the 'method'
- Most problems are in the field
- The method must be able to reliably and consistently measure each analyte at 10% the reporting limit.
- Agreement on overarching objective is critical; is it:
    - Meeting current water quality standards?
    - Meeting future water quality standards?
    - Reducing mass of PCBs in the system?
    - Reducing risk from fish consumption?
- Assessment is possible but requires research-grade field and laboratory methods.
- Make a decision early on as to which congeners to measure. There are 209 in total, Monsanto made 160. Dr. Baker has found that only 70 are really crucial, and of those, he believes only a handful may be presenting real problems in the Spokane River system.

Questions from the audience, with answers –

- Have you had success in convincing other regulatory bodies to focus? On acceptable methods: EPA category 1668a has supported categorization with respect to status of the water under the Clean Water Act; however, 608 is the only one approved by EPA for compliance. Method 1668 is limited and can't be used for compliance purposes (but can be used for monitoring and environmental assessment) unless a state approves it. Washington did not approve 1668 for compliance. Delaware has been working for 10 years—the PCB numbers go down each year, but do not comply with water quality standards.

[1] www.urbanwaters.org/about-center/center-leadership/dr-baker/baker-phd

- What about the aerial deposition? Joel did a large study for EPA in the 90s looking at urban influence up stream and down. He wasn't able to see any major influence.

There was a concern raised about dioxins that aren't causing direct cancer links but are potentially causing other health concerns. Finger printing the PCBs would help to understanding the source. Toxic Equivalency Factors (TEFs) have been vetted by the World Health Organization (WHO). There are numbers of health impacts that aren't registered by the TEFs.

***Greg Cavallo**, Delaware River Basin Commission*
Bio[2]: Greg Cavallo is a Geologist for the Delaware River Basin Commission, Modeling Monitoring and Assessment Branch since 1994. He is the project manager for the collection, analysis and assessment of PCB monitoring data for water, fish tissue, sediment, air and point source samples in support of the PCB Total Maximum Daily Load (TMDL) water quality standard. Provided modeling information by integrating Geographical Information System (GIS) and database techniques to provide spatial and temporal distribution of contaminants of concern. Developed electronic data deliverables (EDD) formats and database structure for data collected in support of the Stage 2 PCB TMDL.

The Delaware River Basin Commission published the methods they use on their website. They have been working with the gas chromatograph column makers[3] to reduce the amount of PCBs in blanks.

Questions from the audience, with answers:

- Did you offer a training course for labs? Yes, originally they did. They talked about cleaning methods and having backup equipment ready to go if something breaks. He recommends using one lab for consistency. What about non numeric waste loads in the permits?. Right now it's monitoring and best management practices (BMPs), not an effluent limit. There is a TMDL, and EPA is on board with this. He doesn't feel that we are there yet. We need to do more testing.
- What if the blanks are higher than your sample? They won't accept the data point if a sample is lower than the blank.
- Did you have any lawsuits driving the sampling? Where the stakeholders under suit? No, not at the time. Everyone was threating to sue, but no lawsuits.
- Why did you choose 1668a? Forget b & c. They were not as acceptable for their work.

***Lester McKee**, San Francisco Estuary Institute*
Bio[4]: Dr. McKee graduated with a BSc. in Geology from the University of Canterbury in New Zealand in 1993. He conducted his Ph.D. research at Southern Cross University, northern New South Wales, Australia, in hydrology and nutrient biogeochemistry. In 1997, Dr. McKee began work as a consultant in the Center for Coastal

[2] www.linkedin.com/pub/dir/Greg/Cavallo
[3] Gas chromatographs (GCs) use long "columns" or tubes that are packed with media. The media act like mini distillation columns and separate the PCBs based on differences in boiling points. Smaller, lighter-weight PCBs with lower boiling points travel through the column faster than heavier weight ones. The identification of the PCB is related to how long it takes to get through the column.
[4] www.sfei.org/user/15

Management in Australia where he carried out management related field, laboratory, and desktop research. In 2000, he joined the staff of SFEI as Director of the Watershed Program. Dr. McKee and his team get to look at watershed processes through a variety of scientific methodologies; he himself specializes in the design and implementation of scientific studies on the sources, transport, transformation, and loadings of sediments, nutrients and trace contaminants in Bay Area watersheds.

The San Francisco Bay Estuary Institute has spent a minimum of $300K each year on testing storm water (6-7 million dollars' worth of work). They measure for 14 PCBs, not the full 209. 70% of total PCBs are quantified by the 40 PCBs their labs are testing.

What sources were considered in the Bay Area?

- Fluorescent light ballast
- Electrical facilities
- Old factory transformers
- Caulking
- Floor polish
- Household appliances

Total system mass balance focused on mobilizable PCBs in the area--for example, oil used to kill weeds around railways. They also have a comprehensive GIS of the area including "spills, superfund sites, etc." Dr. McKee talked about higher leverage sites: those with high levels of contaminants coming from a smaller load that can be controlled. They have started to clean these high leverage sites up first.

EPA has a self-reporting database in SF Bay (www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/data.htm)

Examples of management techniques include:

- Municipal Solid Waste Plans
- Local ordinances for demolition, cleaning, land development
- Street sweeping (improve efficiency)
- Drop inlet cleaning
- Industrial areas
- Redevelopment
- Street washing

San Francisco Bay started with sampling the public right of way areas in the highest leverage areas to determine where the highest levels of contaminants are coming from. They did more than 700 samples (the cheapest sampling possible) to give them a good idea of where this was coming from. Key takeaways: the maximum level of contaminants is more important than the mean, avoid just reporting averages, and keep information in your charts that will allow you to not miss opportunities.

They did settling experiments, and also experimented with street sweeping practices.

Questions from the Audience, with answers –

- Was street sweeping truly an effective abatement? Lester clarified that it says "[high] management potential" so it's not in effect now. The street sweeping program will happen in the beginning of the next permitting term. High efficiency sweepers, sweeping down.
- Some of the storage that people are doing is probably illegal due to the Toxic Substances Control Act (TSCA). If we set tight controls are we opening a period for things to get dumped? Yes, there will be folks that see law as something to value and some that will work against it.

For management measures, they are trying:

- Catch basin clean out
- Street sweeping
- Stormwater treatment by retrofit
- Routing stormwater to wastewater for treatment
- Clean up abatement of industrial waste sites (any pollution associated with the sites)

Work Session #1: Source Identification & Reduction

Questions (with answers) and Comments from guest experts:

- Have you done a literature review of data and apply those numbers to your situation? LimnoTech has not. Ecology did that before they came on board, but it didn't answer that.
- Joel Baker recommended looking at an Aerial Deposition study done by National Forestry Service, though there could be a more recent data set to look at. He cautions on the spring snow melt, there's more flow which increases the multiplication.
- Lester – is caulking used in tills or other equipment? Haven't seen anything coming from mines (in literature). Looked at a dissolved concentration (rather than wet/dry) and sediment distillation. Arianne Fernandez: total suspended solids (TSS) are difficult to link to carbon or sediment.
- Lester – urban stormwater has heavier PCBs as opposed to aerial deposition and wastewater treatment (the lighter spectrum PCBs).

Atmospheric/Aerial Deposition

Questions (with answers) and Comments from guest experts:

- What is the status of the atmospheric deposition assessment? Will Ecology take this on? If not, what should the direction be on this? *(Baker).* WSU is capable of modeling air for PCB impact.
- Is it "trivial"? Is Spokane a source to the urban watershed? What is the regional/global contribution and how to tease this out? *(Cavallo)*
- PCB in atmosphere could come from the urban area. The "city effect" for atmospheric dispersal is about 10-20 km.

DECISION for monitoring plan: Dave Dilks asked if there was any objection to LimnoTech waiting a year to do aerial sampling. No. This was moved to year two.

- Based on the design of the river monitoring plan, what is the inventory of potential PCB sources in each river segment?

- What other data on potential PCB sources should we collect to define the current state? (Consider land use, aerial deposition, and other factors in determining the rationale for the monitoring plan.)

What's missing?

- Hangman creek
- City of Spokane stormwater below Monroe Street Upper Falls Dam
- Idaho sources: City of Coeur d'Alene stormwater (ongoing)
- Idaho Wastewater Treatment Plant (will start discharging soon)

Lester recommended normalizing the data by area. Look at water volume and per measurement area.

- Why is highest PCB concentration in fish closer to Washington/Idaho border (if it's higher downstream)?
- Concerns were expressed that the data is over a decade old.
- What specific types of potential sources exist in each river segment?
- What are the concentrations and congener distribution patterns at various locations?
- Are you considering multiple grabs over a period of time? Yes. Lester asked how much money they have to spend on this testing. Where's the bio accumulation happening that you're most concerned with? Arianne it's the river, but also important in the Lake. If it's not be stored long enough accumulate in the river sediment, then wet weather testing be more.
- Is there a good inventory of hazardous waste sites (e.g., Superfund and state sites) that have known or suspected PCB contamination? Are there pathways from these sites to the river?

Black tank site is under investigation right now. Delaware developed their own superfund and contaminated sites, and went to state agencies with that list.

Work Session #2: QAPP and Data Management

Quality Assurance Assessment Tools

The Delaware Basin team likes 1668A. It's laid out on their website. You can sample to 1-2 picograms per liter (pg/L) for congener data. Greg Cavallo has a lot of confidence in making those relations. They have contracted with the Axys Analytical Services Ltd laboratory for the past 10 years. They also have a list of 4-5 other labs that say they can do that level of testing as well.

ACTION ITEM: Greg Cavallo will share the Delaware monitoring information with Arianne Fernandez.

Doug Krapas asked about the term "contract lab." Are their multiple people using the Delaware River Basin contract? How much does it cost? Greg noted the pricing is negotiated by group (Delaware is charged $750/sample; data package is 10% more).

Sampling Methods –

- 40 CFR 136 states that if a method is not sensitive enough, an alternate method can be specified. EPA method 1668 has a detection limit of 2 pg/L. But median levels of PCB in method and rinsate blanks can be has high as 50 pg/L
- The San Francisco Bay started at 8 liters, then moved to 4 liters, then to 2 liters, and now use 1 liter.
- Dr. Baker mentioned a sampling bottle he's used in oceanic testing—opening and sealing while underwater. There are new testing methods out now, but it's not certified yet. The City of Tacoma recently purchased a triple quadrupole mass spectrometer that's been giving them lower results.

What project-specific requirements will be made where a method provides options or recommendations?

- Necessary detection limits to quantify sources and monitor Spokane River:
    - Method 1668c method detection limits (MDLs) for individual congeners are in the range of 7-30 pg/L, higher than the tribal standard for Total PCBs
    - MDLs depend on matrix interference – more likely to achieve low detections limits in a groundwater sample that a CSO sample
- Discrete sampling versus passive sampling
    - For discrete sampling, individual grabs versus composites
- Toxic Equivalents (TEQ) evaluation
    - Additional emphasis on dioxin-like PCBs?
- Cost considerations
    - Analyses are in the range of $1,000 per sample for method 1668c

Database questions:

- Several questions were posed to the San Francisco Bay representatives on the phone. Did an Access database work? Are there other better databases worth considering? The SF Bay team stores their data in SQL database system. It has stronger query features and allows for the sharing of the data with other groups. They use the scripting (JAVA script) or coding in the queries on the web.
- What about multiple people putting things into the system? They are part of a larger statewide effort that has templates and checkers to look at the data quality.
- Are those formatting rules available? Christina will share those with Arianne Fernandez.

Thursday, December 5, 2013

Work Session #3: Modeling

Required decisions for selecting a modeling approach

- Spatial domain: Spokane River to Lake Spokane or Entire System?
- Spatial variability: 0, 1, 2, or 3 dimensions?
- Time variability: steady-state or time-variable? River alone would fit a steady-state model, but moving down to the Lake would require a time variable.
- Kinetic Complexity: sediment interaction, loss processes, and/or bioaccumulation?

Monitoring Periodization

Monitoring Component	Purpose	Priority
Backbone dry weather monitoring	Define dry weather loads & groundwater, support river water quality model	High?
Backbone wet weather monitoring	Define aggregate weather loads, support river water quality model	?
Fish tissue in upper river	Support bioaccumulation assessment in upper river	?
Water quality in Lake Spokane and downstream	Support downstream water quality model	?
Bioaccumulation assessment in Lake Spokane and downstream	Support downstream bioaccumulation assessment	
Up-watershed monitoring	Define sources, support watershed model	Low?

Questions, answers, and comments on modeling:
Would monitoring higher tropic level chironomids (insects eaten by fish) help? Measuring just for quantity would. Bio-monitoring data is good from a public health perspective. It would complement the source data.

What's the lag time to see improvements in the fish population—five years, ten years, to see the impact? Where are the sources coming from? The City has been on a five-year cycle for fish sampling.

We need to know current conditions along with what the endpoint is, and measure progress toward that. Where does that measuring occur: in the water column, or in fish? Fish have been monitored since the 80's. Think about the endpoints we want to get to, and build the models accordingly.

Is there enough fish data to let us know whether or not we need to model food chain? The fish and food haven't been monitored at the same time. Bud Leber noted the challenge that change happening in the river quality takes years to show up in the fish.

Where does the receiving water start for the Spokane Tribe's water quality standard if that's a goal? That boundary was down by the Long Lake Dam. It gets back to the objectives, and what you want to monitor – then decide the boundaries.

Delaware Basin uses a one-dimension model. They had long-term fish data that first generated concern about water quality. Does the current five-year testing the same methods? There is congener data and some non-congener fish tissue data. Consider a composite (over a year) fish sample and extend the fish boundary to a wider net than you're looking at now. Then with the same method and same congeners, take a baseline.

In 2001, Joel Baker did a bioaccumulation model for SF Bay (another was done in 2002). Task Force can use a TMDL framework, focusing on a mass balance. In 2001 it seemed consistent with the monitoring data (a corroborating system). The bioaccumulation model was done with little data; it was linking system to biologic responses. They are doing improved modeling to see what's going on around the bay now. Roughly 2/3 of the population lives in the part of the bay south of San Francisco. The point is they went form a single box to multi box model with a longitudinal through the bay, and have not done a lateral look in 13 years.

Since the Task Force is early in the process, Lester McKee sees suggests a single-dimension model, looking at PBCs in the water column attached to a biological carbon. The SF Bay does fish sampling every three years; more frequent would be a waste of money. The Task Force may have to do one round of monitoring one year, another the next year, and so on based on budgetary cycles. The point is: the SF Bay started simple and then got more specific as needed.

Bud would like to focus on sources, and wait until later (as we get smarter) for other stuff – with the simple stuff first. He recommends the "Upper" Spokane River for sampling boundary. The Task Force is also budget-limited; if we expand to Lake Roosevelt then that stretches the budget. The boundary needs to be set, because this is a legal issue. The Task Force has been talking about the Idaho state line as monitoring boundary. Overall, study domain is all the way to the tribal lands, but for measurable progress the mass balance focus will initially be on a smaller reach, from Nine Mile Dam upstream, to identify more sources and impacts.

ACTION ITEM: Adriane asked to include a "put the pin on the map" session at a future task force or work group meeting to mark: known sources, possible sources, and significant vs. not.

There is a hydrodynamic model that doesn't explicitly model chemical transport (PCBs) (CE-QUAL- W_2) used in EPA modeling. They might be able to strip out and we might be able to use that down the road. Dave Dilks now sees us using a one dimensional excel spread sheet knowing that this is an option. It might also be possible to use portions of the existing DO TMDL model.

Has LimnoTech looked at the Fox River work? Lester mentioned that USGS had done a lot of monitoring and modeling. It may be a better resource. Yes, LimnoTech did the modeling for it.

Work Session #4: Monitoring Plan for Loading Assessment

The physical monitoring plan revolves around these key questions:

- What do we sample?
- Where do we sample it?
- How do we sample it?
- When do we sample it?
- How often do we sample it?
- Who samples it?
- Under what conditions do we sample it?
- What do we analyze it for?
- Do we sample in phases?

All of the things heard over the past two days feed into these specifics. Any other items?

- The issue of what lab to use and the QAPP. All of these need to support that decision.
- When should a synoptic sampling be done?

Bud suggested sampling the groundwater seeps; once we got a good idea of where the magnitude is coming from then we could get more specific. Arianne suggested complimenting the sampling with temperature measurements. Adriane suggested looking at and marking groundwater wells.

Areas that have existing monitoring wells:

- Kaiser
- GE at 4400 E Trent
- Browns Building Supply
- Avista
- Davenport Hotel (was this checked for PCB?)

The City of Spokane is currently monitoring 20-40 wells for metals that could potentially be monitored for PCBs. Arianne cautioned that the materials used to make wells could taint the PCB samples.

Suggestions:

- Close the loop on what to sample.
- Back-calculate aquifer influence.
- New gauging station at Nine Mile (Avista owns it) can be used for synoptic sampling.
- Ecology's mass balance assessment had a mass loading estimate. Avista has an agreement with the tribe so they must calculate that.

Lester recommends doing sampling and testing 3-4 days after a major rain event. Choose a time to sample during the snow melt to help understand the influence of runoff, ground water, and stormwater. Which do you want to characterize with this year's sampling? He suggested four season sampling – if money wasn't an issue. The non-point sources will be seen in rain event period. Test at the Lake monthly. But testing additional testing of stormwater will still need to happen during rain events to help inform.

Lester suggested doing a synoptic testing over a number of days, if you've only got limited equipment relative to the travel time of the system. He's assuming the travel time is a day or two. What about having a reference point at Long Lake Dam? Kevin Booth will check for coordinating options.

Confidence intervals: what is the current coefficient of variation? 0.3 represents a moderate variability. Variability needs to be accommodated: sampling variability from sampling techniques needs to be split out from laboratory or analytical variability. How is variability in environmental samples accounted for? For example, loadings are calculated over large areas using limited discrete samples at low concentrations, which can introduce high variability.

ACTION ITEM: Error bars need to be included with the data when it is reported.

The county went through a resin column testing. SF Bay uses two methods in river sampling. They start at their cleaner site using an eight liter sample at Axys Lab (charge $70 per additional liter). As they learned about their

concentration levels and congeners, they went down lower. Spokane River levels are lower than SF Bay so there might be a problem getting that low. SF Bay does use the 100 liter resin.

Driving the detection limits lower gets more complicated. The City of Spokane did compare samples with different methods, and got a lot of non-detects – CLAMs got good detections. They had the same problem in the Delaware, so they used 20 liter dissolve.

The group agreed to defer the questions of "how to sample" and "volume of sample" until LimnoTech has had a conversation with the San Francisco Bay tester (John Yee).

Under what conditions do we sample? Do we start in late July/August when it's hasn't rained for a while in the body of the river? Lester McKee thought doing a single synoptic survey is a good first step. See if there are other times of the year that are worth spending time sampling. Have a mid-station, upper boundary, and lower boundary on the monthly composite basis.

Gauging stations will be needed downstream. Lester asked about the quality of gauge data. If there's one better than another, it would be smart to use the more accurate.

Hearing the entire system at the gauging stations we suggested, monthly composites would be collected. What to sample for?

- Dissolved Organic Carbon (DOC)
- Total Organic Carbon
- Temperature
- Total Suspended Solids
- Total Dissolved Solids
- PCBs
- Conductivity
- pH
- Snapshot turbidity
- Optional: culled samples for dioxin – 7 day holding time?

Greg Cavallo recommended collecting replicate samples in case there's an issue with the lab. There was a suggestion to establish confidence levels before sampling for other things.

ACTION ITEM: Assess confidence levels early in the year, to establish them before synoptic sampling.

Do we sample in phases? Yes. Who samples it? Send out a survey to the local colleges and community colleges. What's the skillset for the samplers? Kris Holm asked about the protocols of the QAPP: Do we do our own stuff or hire a third party. Greg. C. replied that the best work has been done by a contractor. They have their own ISCO sampler (www.isco.com/products/products1.asp?PL=201). He suggested limiting who does the sampling to one or two contractors doing it the exact same way. It's a little more money, but the results are consistent. Ecology is not clean enough to do this type of testing.

ACTION ITEM: Consider contacting the City of Tacoma to discuss their recent experience testing at this level

Lester McKee noted that the Task Force can purchase bottles that have been cleaned or proofed, but they will need to do some more proofing. The lab could take the sampling equipment and proof it to their level.

SF Bay started using proofing bottles from Axys Labs, they then relaxed to purchasing bottles after they saw their initial numbers were consistent. Lester suggested using really clean bottles in the beginning until you better understand the system.

DECISION – LimnoTech will distill this information into a report that the Task Force will need to approve. The requests for proposals (RFPs) for labs and monitoring work will need to be written and posted and the budget needs to be established. The goal is to have a contractor on board in time for the composite samples collect prior to high flows to determine confidence limits of the sampling and testing methodology.

ACTION ITEM: Please send any comments that might help logistical planning to Aubri Denevan (aubri.denevan@wsu.edu).

Recap of Recommendations:

- Year one sampling in the river, measuring at gauging stations. Sample in phases – Year One is "one-time", dry weather synoptic event, up-gradient composite sampling to identify load, and early season sampling to determine confidence limits.
- May want to do a literature review in year 1, filter data sets from more applicable watersheds to better understand atmospheric deposition.
- Use Ecology fish data to identify congeners for analysis, match congener patterns in fish to congener patterns in water/loads – as part of data mining in year 1/phase 1. This will help determine which congeners to test for.
- Groundwater is a source of PCB input to the system – sampling in year 2 to assess groundwater – in year one, assess groundwater by calculation: back-calculate aquifer influence and use this to determine whether sampling of individual wells is warranted in phase 2.
- Seasonal sampling: start with the July/August synoptic survey.
- Assess snowmelt hydrology/seasonal influence. This year: Look at what is coming out of Lake Coeur d'Alene through composite sampling over time. Assess monthly for any seasonal change in PCB loading – may be indicative of snow melt and activities up-gradient in the watershed.
- Add 2 sample locations – CC/Green Street, & Nine Mile Dam (currently flow estimates are made by Avista at this location). A reference sampling point downstream at or near Long Lake Dam is needed (budget-related) All river samples will be depth-integrated composite samples.
- Consider large volume samples, concentrating them in lab to reduce detection issues.
- Assess confidence limits early (prior to Synoptic survey) with data collected prior to high spring flows (e.g., Feb-March). Synoptic sampling will be a challenge (synoptic is the one-time dry weather "snapshot" of the river)

- Analysis – preference for 1668 A over 1668 C – 1-2pg/l per congener – consider Axys Analytical lab. First samples to assess for full suite of congeners, then reduce once first results are in.
- Analyze for parameters listed *at top of page 11*
- During year 1: proposed monthly composites upstream (and consider downstream). Composite samples over the month at the outlet of Lake Coeur d'Alene throughout the year (composite PCBs and keep the other analytes separate). Up-gradient composite sampling will identify loading inputs and identify seasonality of load.
- Request that EPA add PCB monitoring to their site at Lake Coeur d'Alene.
- Atmospheric deposition – may be important, likely address in second year.
- Collect sample for dioxin (save for possible future analysis)
- Collect replicates at minimal cost (do not analyze them unless needed)
- Who will conduct sampling? – to be determined (Arianne called three people, two responded with we can kind of do this. One still waiting to respond).
- Assess mining equipment/activities for possible contribution.

Lisa suggested putting together a Task Force team to develop and bring a proposal back to the Task Force for Who's going to sample, who's going to coordinate.

ACTION ITEM: Add this to the next agenda

Adriane asked if there's enough for a QAPP to be drafted. Dave thinks there is enough to get it started. Give this task to the Technical Work Group; they can discuss what Ecology can do, the budget, look at academia.

ACTION ITEM: Resend the sampling survey out again, asking the members of the Task Force and the RFP list.

Fish data will be available from Ecology by March, assuming the reporting will be done. All congeners were included in the assessment of PCBs in fish tissue. There's a lot of data mining that can be done with current data (e.g., matching congener patterns in fish to congener patterns in water/loads – as part of data mining in year 1/phase 1). This will help determine which congeners to test for.

Post Workshop Comments (submitted by email):

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From: Cristina Grosso [mailto:cristina@sfei.org]
Sent: Thursday, December 05, 2013 9:05 AM
To: Borgias, Adriane P. (ECY)
Cc: Fernandez, Arianne (ECY); Page, Chris; Denevan, Aubri; Bud Leber (bud.leber@kaisertwd.com); Dave Dilks
Subject: Re: Workshop call-in information

Hi Adriane,

Below are better links to CEDEN's templates and documentation:

- Data templates and documentation: http://ceden.org/ceden_datatemplates.shtml
- Controlled Vocabulary lists: http://www.ceden.us/Metadata/ControlledVocab.php

Hope you have a good session today.
Cristina

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From: Cristina Grosso [mailto:cristina@sfei.org]
Sent: Wednesday, December 04, 2013 5:04 PM
To: Borgias, Adriane P. (ECY)
Subject: Re: Workshop call-in information

Thank you for the opportunity to participate in the workshop this afternoon. I have a couple of recommendations to add, but please forgive me if these were already discussed by the group.

- Think about the overall system of data management, including input, storage, and output of data. If you limit data management to just the database design, you may design a more normalized database that makes uploading new data and retrieving data more difficult. We've found it helpful to balance the level of effort for these three essential tasks.
- Invest in developing automated scripts and tools for uploading data. We've found it easier to clean-up the data before it is uploaded into our Regional Data Center database. We have upload scripts that we continue to enhance with new checks.

You can access data templates and documentation for the California Environmental Data Exchange Network (CEDEN) at http://www.ceden.org/.

Please contact me if you have any additional questions.
Cristina

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