

Wednesday, January 13, 2010, Stormwater Work Group

Agenda for “Decisions on Major Issues Raised in Comments”

- Recall in our last meeting we identified Topics that to address as a group.
- Committee members summarized the comments related to each topic
- Committee members have proposed responses to comments, these are the documents posted on the web site.
- Today we will “tee up” these proposals and vote.

Our goal is consensus. When we don’t agree we will briefly discuss if a change could lead to consensus. If not, we will go with the majority and make a note of dissenting opinion. If we do not have a majority we will note that we couldn’t decide and move on.

We have 8 Topics, 3.5 hours, or about 200 minutes, that means ~25 minutes per topic.

# comments	Lead	Start Time		Topic
~25	L4	9:15	1	Modeling
~50	MF	9:30	2	Connecting the three categories of monitoring
34	TP	9:55	3	Loads/characterization
40	KP	11:20	4	New Figure and Table
~130	TD	1/27	1	Hypotheses
50	MF	1/27	2	Indicators
71	TP	1/27	3	Source ID
<10	L4	1/27	4	Research
	TP	1/27	5	<i>Gap analysis</i>
	DB	1/27	6	<i>Describe analyses that will be performed</i>
	DB	1/27	7	<i>Adaptive management framework</i>
	DK	1/27	8	<i>Ancillary data</i>
	KD	1/27	9	<i>"Increased/improved stormwater management efforts"</i>
	JL	1/27	10	<i>Experimental designs</i>

1. Modeling

Modify the current section on models to say:

1. There are different types of model that 1) model problems and mechanisms, 2) extrapolate results from small scale studies to regional (urban and rural) effects, and 3) extrapolate the benefits associated with different management actions.
2. Our goal is to connect our monitoring to the models that support actions to restore watershed health, but the specifics of all the possible connections is outside the scope of this document.
3. In the meantime, author might describe an appropriate, relevant example of how we would connect to a program (for example, HSPF/WHM or others).
4. Process to determine what we need to collect. Go through/identify the list of most relevant models that are out there and identify their data needs. (What priorities have been identified by PS Science Panel? What suits focus of what we need for stormwater management?) State intention that we'll collect data under this monitoring plan that we know is needed for many stormwater-related models, and key relevant data gaps. Cross boundaries to see where our efforts inform other activities.

Discussion: work we're doing needs to feed into the modeling work that is needed (and vice versa). For example, Toxics Loading committee has a list of modeling needs. Need to identify this step and create this list for stormwater.

Decision: **AGREED**

2. Connect Trio of Monitoring Types

5. Apply Horner's recommended categories to our current three categories of monitoring to explain how they fit together – but do not rename our categories of monitoring. His comments address:
Progress Evaluation (S&T),
Diagnostic Tier (Source ID), where relevant and/or appropriate,
Adaptive Management (Effectiveness and perhaps Compliance monitoring? – not deciding whether/how to address compliance yet),
We are not addressing Research in this topic discussion.
 - o Add Horner's ideas to our descriptions of our three categories: works for status and trends. We've described how monitoring applies, and need to link things together logically and clearly describe how change is made.
 - o Discussion: are there goals for all watersheds in PS that suit this approach? Biotic endpoints suffice for this? Extrapolate based on what learning in certain areas?
 - o Note: Horner's recommendations assumed watershed-based *permitting*.

- **DECISION: agreed to the above**
6. Use a watershed approach to tie the three types of monitoring
-- this is one of the scales at which we could do monitoring – **AGREED**
 7. Start with the stressors/problem for the region or in a particular watershed (use info from S&T monitoring to direct source ID efforts and prioritize effectiveness monitoring). Prioritize monitoring across categories, based upon impact. Tie S&T monitoring and management actions to the impacts in that watershed. See also figure 2/table 1 discussion topic. – **AGREED**

Did not discuss the following 5 recommendations

8. Narrow the focus of each type of monitoring (scale) – already addressed
9. Overlap Progress Evaluation monitoring with effectiveness monitoring to focus on diagnosing and fixing problems – already addressed
10. Focus on the strict definition of stormwater (conveyance) and not non-point (other sources such as failing septic systems, historical sediment toxics, etc.). – different topic, doesn't belong here, hold for later discussion
11. Tie effectiveness small scale monitoring to land use and scale up to a larger scale to estimate the benefits. – already addressed
12. Investigate tying the monitoring to other existing Puget Sound long-term or short-term monitoring programs. – outside of tying together the three types, but needs to be discussed in our document somewhere, fits with literature search

3. Loadings/Characterization

13. Yes, include characterization in source identification section. (*PSP: This was stated clearly in the "SWG's initial work plan... (2) Identify and characterize sources and loadings of pollutants in stormwater throughout the basin,..." (p.6).*)

Define characterization (variation in relevant indicators/variables across the landscape and through time), the need for it in various studies, and what info we can get out of literature for a particular study. Relate back to an identified problem (S&T, existing literature, etc).

Discussion:

- Where are sources of problems and how much is coming from each source, to inform actions.
- Will need a certain characterization study design to calculate loads (not currently in strategy). Different data gap.
- Might be included in a research category – separate discussion

Decision: **AGREED**

14. Add text to document that says:

- We need a literature review before specific studies can be implemented -- AGREED
 - We need to evaluate existing monitoring before implement more monitoring. Integrate existing outfall information where possible. As appropriate, evaluate data from Phase 1 monitoring and other NPDES permit-related monitoring (industrial, boatyard, shipyard, etc. for early identification of problem sectors, areas, and information gaps)
 - As relates to Experimental Design: At some point in experimental design the assumptions being made should be clarified and explicitly stated. What is the “prevailing knowledge” about the relationship of concentrations, flow rates, volumes, loadings, sediment transport, particle size, etc.? Reference should be made to a prevailing theory, a reference, or perhaps some topics should be the subject of a white paper so that monitoring participants and study designers will be aware of background assumptions. – see literature review and table 1/figure 2 discussion (agreed)
 - For Experimental Design. Review programs and research currently dealing with these chemicals in Appendix E. Some of the parameters may warrant inclusion in the list for monitoring. We may modify the list in Appendix E in the future consider this as a list of examples and review as a group -- AGREED, and discuss with experimental design
 - Discussion: need to be careful with examples in the document. Show what we’re going to do but more disclaimer -- haven’t discussed them as a group
- For implementation: How does info feed into regulatory approach and adaptive management? – capture in implementation discussion (agreed)
- We will work with modeling experts to identify specific data needs for models. Incorporate a modeling-specific data collection plan into the strategy. – discussed this with modeling (agreed)

As a group (for the next three issues) we need to decide what hypotheses to address and what experimental design to use; also fits into table 1/figure 2 discussion and selection of indicators.

Describe the process by which these decisions will be made: when ID a problem (or early warning signal) through S&T or literature, design an appropriate study with appropriate indicators to address the problem. Short term process of describing the initial study design and long term process to add/connect. Process includes review/evaluation/vetting of new studies. Need a better discussion of what examples are included. -- AGREED

15. Incorporate water quality analysis/hypotheses into LID monitoring (Ho in strategy is flow; experimental design in appendix is Q and WQ)

16. Nutrient loading should be included as a parameter for monitoring and should be correlated to its possible impacts in fresh and marine waters.
17. Prioritize development of benthic indicators and biological indices, especially for nearshore and marine environments.

Address uncertainty range as an overarching goal of the strategy – articulate credibility and confidence in each of our experimental designs. Study designs need to reflect our collective/joint ability to sustain the effort to provide the answers we need. Add a paragraph that talks about our need to address this. Connects to the description of how we are prioritizing our efforts: what where. Also need to articulate scale, how much, how often, and what we get for the effort. Be honest and transparent in approach to creating the overall study design, ensure that level of confidence is clearly articulated and appropriate for decision makers. – Generally AGREED; concern remains that studies are not yet defined, and implementation details are yet to be decided.

4. Hypotheses (read through summary first)

18. Discuss in Strategy a well qualified monitoring consortium with authority to assure funding, rule on adequacy of science, study design, QA/QC, peer review completed work, track projects, maintain databases, etc.. Include proposal in Implementation document.
19. Include short discussion of hypotheses in Strategy. Use Spooner’s Goals and Hypotheses (in her peer review). Be sure to include discussion of “power” of statistical tests.
20. Include discussion of literature review. Stress importance of using existing data (particularly local data) to inform stormwater monitoring efforts.
21. Do not include rigorous study designs. Consider inclusion of hypotheses as discussion points illustrating how to prepare rigorous study designs.

5. Indicators

22. What is the purpose of Indicator Monitoring?
 - To determine if stormwater management actions are protective of resources.
 - To measure improvements or decline in a biological endpoint.
 - To determine which water bodies are to be 303(d) listed.
 - To determine the miles of streams in poor health.
 - To provide data for modeling
 - To provide data for mass loading to PS.
23. Where (water bodies) will Indicators be evaluated?
 - Only small streams and nearshore

- Allow flexibility based upon local prioritization of resources to protect, such as a critical aquifer, wetland, large river or lake.

24. Where within the water bodies will indicators/endpoints be evaluated?

- Use the probabilistic design
- Do not use the probabilistic design and position stations near problem areas and resources of interest to protect.
- Select locations representative of reference conditions and can provide paired watershed approach sites.

25. Biological Indicators for S&T Monitoring:

- Salmon in small streams is not a good biological indicator for assessing stormwater impacts.
- Benthic measurement (B-IBI) in small streams is a good biological indicator.
- Resident fish in nearshore areas is a good biological indicator.
- Forage fish in nearshore areas is a good biological indicator.
- Bacteria levels in water and shellfish along nearshore is a good biological indicator.
- In situ Salmonid Embryo tox testing is a good biological indicator.
- Add coho to cutthroat ratio as an indicator in small streams.
- Add sediment and energy as indicators.
- Add Pre-Spawn Mortality as an indicator.

26. WQ parameters for S&T Monitoring:

- **IS Ecology's WQI SOP adequate or do we need more?**
- Use the list of parameters on pages 63-64 of the strategy document (TSS, TP, TN, Tand D Cu, T and D Zn, Hdness, Temp, TPH, SVOCs, FC, OPhos Pest)
- Use peer review list of parameters: Microtox screening test (chronic not acute?), zinc, copper, lead, bacteria (FC, EC, enterococci), ammonia, nitrates, phosphates, pH, cond, turbidity, suspended solids, COD.
- Add organic carbon to small stream list.
- Focus less on WQ parameters and more sediment and energy.
- Use the Ecology WQI methodology for WQ parameters (Temp, DO, pH, FC, TN, TP, TSS and turbidity placed into a formula) so conform to this index.

27. Hydrologic Parameters

- Keep what's there
- Use level and flow (continuous) as in the document

28. Sediment parameters

- IS this a priority?
- Add sediment tox test for wet weather
- Focus on sediment contamination

29. Physical Habitat Parameters

- Use list of parameters
- Use Ecology Federal Pacific Fish/Interior Fish Biological Opinion stream physical habitat index

6. Table 1 and Figure 2

30. Propose replacing Figure 2 with a new figure that shows greater ecosystem processes/human impacts/beneficial uses; figure to be further improved? Subgroup plus Heather T to work on. -- okay to develop a new proposal
- Include all land uses in Figure 2 – forestry and highways as separate groups – “Basic land use types”; also add groundwater
 - Incorporate stressors and pathways, review arrows, explain boxes.
31. Drop Table 1 and add list of WAC BU’s in text; id which exist in each water body – most agree but 3 disagree; losing a lot of relevant information that really helped us move forward, did a good job of articulating the impacts we know about.
- Alternate proposal: Change table. Title: help people know what are the most sensitive water bodies, where. Explain role of table 1 in prioritization; make it more comprehensive for both land uses and beneficial uses. Make consistent content in cells. – 1 disagree, rest agree or okay to develop a new proposal
 - Table doesn’t have literature review – relies on BPJ
 - Perhaps use Ecology’s WQ Assessment document to revise.
 - Gary T and Heather T and Jim S to work on revision
32. Include new text to address monitoring program in which this strategy is housed. Take key recommendations from monitoring consortium and how all of the pieces fit and how to tie to other efforts. Kit and Jonathan to work on. okay to develop a new proposal
33. Include new text to explain that each area of focus would need to have more specific literature review, articulation of impacts, and focal areas. Connect new figure 2 to drill-down each cell in table 1 and a literature review to populate it. Use urban streams as an example.
- Include Seattle State of the Waters graphic as an example conceptual model for urban streams – will need to highlight the boxes for STORMWATER monitoring (p. 9, Part 2: A brief primer on Stream Ecosystems)
 - 3 disagree, and a few on the fence

34. Propose including the Puget Sound Partnership/NOAA Drivers, Stressors, and Responses graphics as an appendix. Alternate proposal: cite the documents
35. *Cannot address all the missed elements from Table 1 at this point, it will need a literature review for each area of focus. By including each specific comment on impacts into table 1, the table shows impacts in every box and becomes less useful as a tool for sorting between the hypotheses. ?Use cells to ID priorities?*

7. Source ID

36. Recommend: Add a sentence to Section 2.6.3 that “An essential component of the monitoring program will be to identify and characterize sources and loadings of pollutants in stormwater throughout the basin” in the source ID section.
37. Recommend: Add a sentence to Section 2.6.3 as follows: “Data from compliance monitoring, characterization data, and illicit discharge survey information will be used to help diagnose reasons water quality/beneficial use conditions are not met.”
38. Recommend: Further discussion. This is a HUGE question and reflects a lack of detail in the Science Framework. The document must acknowledge that part of experimental design will be to evaluate known source ID information, screen for stressors, and focus on receiving water monitoring where impacts may be greatest.
39. All four source ID Hypotheses were roundly trashed; Recommendations should be made by the person reviewing comments on Hypotheses.
40. This can only be resolved when the structure and relationships in the monitoring agency are clarified. Recommendation is to deal with this in the implementation stage. Do a lit review and set up a framework for SOPs and data reporting for collective regional assessments
41. Is this an oversight? Write a short Appendix for Source ID
42. These omissions should be dealt with at the implementation stage; some should be written into the Implementation Plan and some will be resolved when the Monitoring Program gets underway. Recommend that comments be revisited when writing specific portions of the Implementation Plan, and that we start a “parking lot” for details and issues that could be helpful at a later phase of implementation.

8. Research

Add a short section to the document that says:

43. Research is important, agency support is needed to manage research projects, and list the projects above as examples.
44. But, it is outside the scope of this document to define the structure needed to make this happen.

45. Our current goal is to implement best available science now, that is, connect management to results of earlier research; and address emerging issues and distribution of research dollars at a later time.

Horner's comments about research vs. problem diagnosis to be addressed under topic = "Hypotheses." Horner's comments about what is already known to be addressed under topic = "Gaps"

Leftover stuff

- We may identify a representative number of specific outfalls and perform monitoring for characterization. Weisberg recommended loadings and hydrographs as proximate indicators of management responses – discuss this with indicators
 - This may be a data gap
 - Link to characterization data needed for other studies