Key Recommendations for SWG voting

Recommendations in blue have already been approved

Program Design:

1. AGREED: Formalize SWG as an ongoing part of the ecosystem monitoring program being created by PSP
    a. AGREED: Continue to use SWG to prioritize regional stormwater ~~science~~ monitoring and assessment activities
    b. AGREED: Maintain SWG roles of decision making and leadership, coordination, and advising the regional stormwater control strategy
    ~~b.~~c. Note: ensure includes holistic assessments to id key regional issues, common problems, etc
2. AGREED: Create a ~~revolving~~ fund dedicated to stormwater-related monitoring and assessment that includes a pay-in option for NPDES permittees. These are things we are considering include but are not limited to:
    a. Likely a revolving fund – describe and define
        i. Placeholder for more criteria for establishing the revolving fund
        ii. Dependent upon seed money? Intent is to manage cash flow, continuous contributions
    ~~a.~~b. Limit expenditures to SWG-approved activities and projects
    c. Allow all interested parties to pay-in
        i. All pay-in participants need to contribute to fund administration and value-added analyses
    ~~b.~~d. Allow all interested parties to participate in various ways, including in-kind contributions, through formal arrangements
    ~~c.~~e. Allow permittees to pay-in and/or conduct permit-required monitoring on their own
        i. All permittees should contribute to fund administration and value-added analyses even if opting to conduct their own monitoring
        ii. Permittees opting to conduct their own monitoring must perform a comparable level of analysis
    f. Use a new or existing entity to house the revolving fund
        i. ~~the new Stormwater Resource Technical Center to house the revolving fund~~List and continue to evaluate other options available for housing the fund, and articulate the criteria for selecting one:
            1. Considering, but not limited to: the new Stormwater Resource Technical Center or Puget Sound Institute's 501(c)3
            2. show thorough analysis of options and start from PSMC report (harvest their recommendations), articulate any changes; what is process for selecting an option?
        ~~i.~~ii. What is timeline to meet permit need? – sooner than later
    ~~d.~~g. Use the Center to coordinate data collection, access, interpretation and synthesis
        i. Center will manage contracts to conduct work articulated by SWG
    h. Develop fiscal arrangements and oversight that ensure permittees' and regulators' needs are met
    ~~e.~~

~~f. All participants need to contribute to fund administration and value-added analyses~~

Effectiveness Monitoring:

Scientific Framework for Effectiveness Monitoring

3. We recommend that effectiveness monitoring:
    a. be conducted in the following categories:
        i. New Development / Redevelopment
        ii. Retrofit
        iii. Programmatic / non-structural BMP
        iv. New technologies
        v. Fill key data gaps for existing technologies
    b. occur at the site scale, basin scale, and regional scale,
    c. be designed to answer specific questions with clearly articulated hypotheses for testing,
    d. be directed to evaluating *programs*, as well as specific practices and activities,
    e. quantify the cost of the stormwater management activity being studied, and
    f. be used as part of an adaptive management approach for stormwater management.
4. We recommend that a literature review be conducted as soon as possible to focus data collection efforts on studies that are needed and to avoid addressing questions that have already been answered.
5. We recommend that all effectiveness monitoring projects be required to follow all applicable regional protocols; and that all data and findings be submitted to a central effectiveness monitoring data management system and readily available to the public.

Recommendations Specific to Municipal NPDES Stormwater Permits

6. AGREED: We recommend that municipal NPDES stormwater permits include effectiveness monitoring requirements and allow jurisdictions the flexibility to meet their requirements by either 1) paying into a fund for effectiveness monitoring activities (the "pay-in option"), or 2) conducting effectiveness monitoring themselves (the "self-conducted study option").
   Concern: same caveats as on pay-in option in program design section for self-conducted monitoring
    a. We recommend that funds generated by the "pay-in option" be managed by a Stormwater Monitoring Entity whose budget is permanently dedicated to monitoring and cannot be reappropriated to other purposes by any legislative body.
    b. We recommend that studies funded via the municipal pay-in option be related to municipal stormwater management actions and activities.
    c. We recommend that all effectiveness monitoring conducted through the "pay-in option" and through the "self-conducted study option" of the municipal NPDES stormwater permit have their quality assurance project plans (QAPPs) reviewed and approved by Ecology.

7. AGREED: We recommend that the cost to each municipal stormwater NPDES permittee should be developed based on equitable factors such as population, or about $___ total per year for the five-year permit cycle (cost estimate coming). Concerns: 1. Equitable contributions (not population-based) need to be identified for WSDOT. 2. Seattle doesn't agree to population basis.

Recommendations for Other Effectiveness Monitoring Efforts

8. AGREED: We recommend that the new technology effectiveness monitoring program (TAP-E) continue, with funding from new technology proponents and other long-term, reliable funding sources.

9. AGREED: We recommend that other entities beyond NPDES permittees be encouraged to self-fund and/or conduct effectiveness monitoring following SWG priorities and guidance and regional protocols. Entities should partner to share resources.

10. AGREED: We recommend that other entities beyond NPDES permittees be encouraged to contribute to the "~~pay in~~dedicated stormwater monitoring and assessment fund" to increase funding available for coordinated effectiveness monitoring.

Initial Priorities and Process for Selecting Effectiveness Monitoring Topics and Studies:

11. ~~We recommend that t~~The Stormwater Work Group proposes the following initial priority **topics**, questions, and/or hypotheses to be answered within each category based on the results of the literature review, existing monitoring programs, and other information. The initial focus of effectiveness monitoring should be on the following topics within each category:
    a. New Development / Redevelopment: effectiveness of various LID techniques in new development.
    b. Retrofit: effectiveness and cost of retrofitting existing development with various flow management and water quality treatment approaches
    c. Programmatic / non-structural BMP: effectiveness and cost of various provisions of the municipal NPDES stormwater permit and effectiveness of various agricultural best management practices.
    d. New Technologies: fecal coliform and metals treatment techniques.
    e. Fill Key Data Gaps for existing technologies: no topics prioritized at this time.

12. AGREED: We recommend a public, transparent process to identify and prioritize future and more specific **topics**, questions, and hypotheses for effectiveness monitoring, applying the following criteria for evaluating and selecting effectiveness monitoring studies:
    a. Addresses one of the most important stormwater-caused threats or impacts in Puget Sound, based on prior assessments.
    ~~a.~~b. Diversity of studies across all of the prioritized topics within the new development / redevelopment, retrofit, and programmatic / non-structural BMP effectiveness monitoring categories.
    ~~b.~~c. Likelihood of the practice to result in improvements to beneficial uses.

~~c.~~d. Likelihood of the study to result in increased cost-effectiveness of stormwater management actions.

~~d.~~e. Likelihood to generate results within a 2 year time frame.

~~e.~~f. Strength of link to the PSP Action Agenda and results chains.

13. AGREED: We recommend that requests for proposals be issued for effectiveness monitoring **studies**, based on the guidance and priorities identified by the Stormwater Work Group, and that an open and transparent process be developed to evaluate the submitted proposals and select those for initial implementation. Concern about timing: process outlined in document is probably not practicable to implement in the next permit term. Address need to expedite this process in order for it to work. (Recommendation is broader, how to make it work for NPDES?)

    ~~.~~a. AGREED: For NPDES effectiveness proposals, this needs to be expedited in order to meet the needs for the coming permit cycle.

14. AGREED: We recommend that the Stormwater Work Group reevaluate the focus of effectiveness monitoring on a ~~routine~~ periodic basis. Concern: what does this mean? Issues to consider include: Timing and frequency? Based on what information/assessments – S&T and source ID, plus?? Funding and capacity?

    ~~.~~a. Stormwater impacts from other land use management approaches and other stormwater permits also need to be addressed in future steps.

Status and Trends Monitoring:

15. We recommend that status and trend monitoring occur in wadeable streams and marine nearshore areas initially. Other water body types will be added to the monitoring program in the future.
16. We recommend that for wadeable streams, the status and trend monitoring design will visit 30 randomly selected streams sites within each of 13 Puget Sound WRIAs. The survey design and site selection for trend monitoring will be derived from those data.
17. We recommend that indicators for streams include water quality, benthic macroinvertebrates, physical features, fish diversity and abundance, and sediment chemistry.
18. We recommend that continuous flow and temperature measurements be monitored at existing (non-random) gauging stations; these sites are monitored in addition to those selected for biological and water/sediment quality monitoring.
19. We recommend that the monitoring strategy partner with Department of Ecology's status and trend monitoring program and use common protocols or develop a crosswalk between data collection methods as needed.
20. We recommend for nearshore areas that the monitoring strategy will partner with the Mussel Watch Program to develop a probabilistic survey approach.

21. We recommend that indicators for nearshore areas include fecal coliform, sediment chemistry and <insert Mussel Watch Indicators>.

Freshwater

22. Focus mainly on Watershed/WRIA scale – except for island-based watersheds – using probabilistic approach that can be more densely focused within urban growth areas, if appropriate.
23. Target 2nd-3rd order "wadeable" streams that are more directly (but not exclusively) affected by stormwater.
24. Adopt the State Status and Trends parameters and methodology for wadeable streams
25. AGREED: Starting point for implementation recommendation: Ramp-up and Conduct two rounds of densified wadeable stream status and trends sampling (30 sites each WRIA except islands) within ~~the~~ next ~~first~~ five-year municipal stormwater permit cycle~~window,~~ and ~~make~~ allow sufficient time for analyses to refine the monitoring program design and inform the following cycle of permits.~~within the permit requirements.~~ Sampling is conducted by permittees, state, and others.

    Concerns: won't be able to evaluate trends with this level of effort – need to see approach that promises a routine trend analysis for the Puget Sound region; balance status/characterization within WRIAs and trends across region. Confusion about tying this to the muni permit – ea jurisdiction may not have all elements (what if no streams in jurisdiction?). Does timing work? Has this been calendared: can you get QAPP done, sites chosen and confirmed, gearing up, training, and all of the other required pieces in place? Note that Rebecca Ponzio (salmon person at PSP) likes focus of the streams S&T program, couldn't speak to nearshore. Make sure timing works, two rounds is a good concept but could be too prescriptive.

26. AGREED: At Puget Sound scale, Add to the state wadeable stream sampling protocols:
    a. additional continuous sampling for flow and temperature.~~,~~
    b. annual grab samples for sediment toxic chemicals, and
    ~~,~~c. monthly water quality samples ~~at Puget Sound scale~~.
27. Coordinate with salmon recovery and Puget Sound Clean-up efforts.
28. See Table ~~XXX~~ E.1 for parameters and recommended NPDES municipal monitoring elements.
    SWG vote on NPDES components for S&T: AGREED
    Concern: what happens to end of pipe monitoring? Feds pay for fish? Big program, reality check?
    Review frequencies: consider as recommendations

Marine Nearshore

29. Focus on the nearshore marine areas that are more directly (but not exclusively) affected by stormwater.

30. Conduct Mussel Watch toxicity monitoring at randomly selected outfalls to Puget Sound.
31. Collect sediment samples from randomly selected depositional nearshore areas within Puget Sound – parameters focus mainly on organic carbon, metals, and other toxic chemicals.
32. Conduct monthly randomly selected fecal coliform at the Puget Sound scale as an indicator of impacts to beneficial uses.
33. Coordinate with other existing monitoring efforts.
34. AGREED: See Table ~~XXX~~ E.3 for parameters and recommended NPDES municipal monitoring elements.

Implementation Recommendations

35. AGREED: We recommend that an effort be made to contact and coordinate with existing monitoring programs within the first year to identify opportunities for collaboration.
36. AGREED: We recommend an effort within the first year to identify relevant existing data that could further refine the final sampling frequency and design.
37. AGREED: We recommend focusing initial implementation planning on the full suite of status and trends monitoring elements, as there will be cost-savings for implementing all wadeable streams elements at the same time. (Conduct sampling at the same time: NPDES and other components such as fish and habitats that will be implemented by other entities)
38. AGREED: We recommend the Puget Sound Partnership, Salmon Recovery Funding Board, Washington Forum on Monitoring, the Stormwater Work Group and others develop~~ing~~ status and trends monitoring proposals for other water bodies (lakes, rivers, groundwater, wetlands, or other) ~~in coordination with the Puget Sound Partnership, Salmon Recovery Funding Board, and Washington Forum on Monitoring~~. Move this recommendation from S&T section?
39. AGREED: We recommend that the Stormwater Work Group coordinate with the Puget Sound Partnership, Puget Sound Salmon Recovery Council, and others to seek funding to conduct the proposed Status and Trends monitoring plan for wadeable streams and nearshore areas. How to make the effort work: What funding sources are already identified? Concept applicable to entire strategy but we know have specific needs for the S&T program we propose. Overarching need. Move this recommendation from S&T section? How big is the gap we're trying to fill? Is ensuring sufficient funding part of program design recommendations?
40. AGREED: We recommend compiling information within the next year on current flow gauging stations in Puget Sound, analyzing current regional monitoring capacity, and developing a regional network of gauges associated, if possible, with the permanent water quality monitoring sites.

Source Identification Monitoring:

41. We recommend that source identification monitoring occur based on observed occurrences of surface water impairment (e.g., water quality, flow, tissue quality, community health, sediment quality, etc) as identified in TMDLs, 303d lists, Superfund listings, basin plans, shellfish protection district data, etc.
42. We recommend that watershed-specific priorities are followed to initially target source identification monitoring on those impairments of greatest local concern.
43. We recommend that the source identification monitoring occur as part of a program for identifying and eliminating pollution sources.
44. We recommend that source identification monitoring and source control activities occur in an iterative process, to ensure that improvements are realized in receiving waters following different control activities or to identify the need for additional control activities.
45. We recommend that status and trends, effectiveness, and source identification monitoring results be reviewed to assess progress and to reprioritize source identification monitoring within each WRIA.
46. We recommend that source identification monitoring data be housed in a well-designed, publicly-accessible database with appropriate meta-data and data descriptors and qualifiers.
47. AGREED: Where the source of a problem is not linked to a specific ~~jurisdiction~~entity, multiple ~~jurisdictions~~entities shall coordinate.
48. AGREED: After prioritization of existing information of problems/impairments ~~jurisdictions~~ entities will develop a plan and proceed to implement an appropriate monitoring program, ~~develop a plan~~ and implement early management actions on the priority problems. (follows #42 above) Concern: is this in addition to TMDLs, IDDE, etc or is it included, or does it replace? See write-up
49. Implementation recommendation for level of effort: Phase 1 jurisdictions will address long-term priority receiving-water impairments by doing a minimum of 5 source identification investigations per permit term, large Phase II-3 per term, ~~and~~ small Phase II-1 per term; and very small - 0 (contribute as they can). Prioritization at WRIA level, how to tackle all of the problems. Concerns: What is an investigation (range from tracking a spill to doing a TMDL)? Clarification: small, immediate, acute types of local sources (spills, illicit discharges) not the target of this type of investigation – that IDDE activity is still required. This should be a WRIA coordinated process rather than permit-driven: source ID chapter writers will propose an estimated # of these types of investigations per WRIA in a 5-year period, and propose that an equitable contribution be developed for NPDES jurisdictions. How does WSDOT fit in – widespread source contributing many locally identified problems? Need more equitable, tiered distribution than these 3 categories (there are 3 tiers in Phase II permit not just 2). Suggest have jurisdictions participate through IDDE requirements in the priority investigations for their WRIA. How do track backward to regional monitoring from local actions to correct impairments. Pay-in or watershed lead option? Get cooperation and contribution to cleaning up the priority problems. AGREED to highlighted text.

50. ~~Where the source of a problem is not linked to a specific jurisdiction, multiple jurisdictions shall coordinate.~~

51. NOT NEEDED: Ecology shall be the lead for addressing problems from General and Individual NPDES stormwater permittees when these are identified as the source or suspected source of an identified high priority problem. Relates to WSDOT situation. Local governments are required to adopt and enforce ordinances. Ecology is responsible for administering permits. Shared responsibility.

~~51.~~52. AGREED: Other programs besides muni NPDES permits such as TMDLs address other sources and contamination problems.

Data Collection:

~~52.~~53. AGREED: We recommend that the regional stormwater monitoring program ensure that credible data are collected in a quality manner by ensuring that:

a. Each study identify Data Quality Objectives (DQOs), have an approved Quality Analysis Project Plan (QAPP), and follow Standard Operating Procedures (SOPs).
   ~~.~~i. not all QAPPs must be pre-approved, there are choices: see #c, d
b. Approved QAPPs are web-accessible.
c. Sampling methods be standardized for quality data collection and a selectable list of NPDES monitoring approved sampling methods are web-accessible.
   d. Formulate and support a process to develop and approve standard methods
      i. Populate a library with an extensive set of approved SOPs
      ii. Keep ongoing prioritized list of SOPs we need to develop.

~~d.~~e. Standard analytical methods with the appropriate accuracy, precision and reporting limits are used.

~~e.~~f. NPDES permittees select from a web-accessible list of approved analytical methods.

~~f.~~g. Detection limits match the intent of the hypothesis tested.
(Example: if the program requires low level detection, low reporting limits should be used and the rationale for the selected limits should be reported in the DQO).

h. Ecology-accredited laboratories are used

i. GIS data must follow state guidelines

j. Follow requirements for meta data and field protocols

~~g.~~ .

Data Management and Analysis:

Key Recommendations for SWG voting

Recommendations in blue have already been approved

~~53.~~54. AGREED: We recommend that all monitoring results data, QC data, meta data, and reports be stored in data management system(s) where:

~~a. All data are owned by those responsible for the data~~

~~b.~~a. Responsibility for providing QA/QC for data and for correcting, editing, and updating data lies with the data generators. ~~Only data owners are allowed to edit, correct, and update the data if there are mistakes or clarifications needed.~~

~~c.~~b. All data are easily shared with all interested parties and the public

~~54.~~55. NOT AGREED: We recommend that Ecology's Environmental Information Management (EIM) system be the final submittal system for all appropriate studies conducted by the regional stormwater monitoring program. —Concerns: there is a large range of data that EIM cannot manage. EPA has proposed a portal system with access to specific data bases. EIM exists, the portal does not. We want the portal and need an interim solution. Use EIM for status and trends but look at others. Most important to enumerate the criteria. Not all data is WQ centric. Start discussion of a regional coordinated data management system.

56. AGREED: Create and maintain data management systems

a. Include data repository, storage, and management structure(s)
b. Provide easy public access to all data and findings
c. QA/QC follows recommendations data collection section

Concern: be consistent with other recommendations, identify options: EIM, stream benthos examples to build on. See notes on #54 above. And on #57 below.

57. AGREED: We recommend that all ~~organizations~~ entities contribute funding and/or in-kind services to data management and data analysis activities.

Don't include the following examples (build on these current and proposed activities):

a. ~~That l~~Local jurisdictions contribute funds to a Stormwater Monitoring Entity for data management and analysis as a provision of the municipal NPDES stormwater permit. Concern: This needs sideboards and clarifying detail.
b. ~~That~~ Washington State contributes through O&M of the EIM system
c. ~~That~~ USGS contributes through O&M of the national hydrologic data management system

~~56.~~58. NOT AGREED (too specific for where we are) We recommend that the Puget Sound Stream Benthos data management system be used for stream benthos monitoring (two disagree with this recommendation), and that other data management systems be developed as needed for other types of status and trends, source ID, and effectiveness monitoring for processing data, presenting data via the web, and submitting data to Ecology's EIM system. Concern: want to use a single data base for stream benthos data – what is state doing? Most of this recommendation (general need) is captured by #55 above. Provide stream benthos database as example of what needs to be done for that recommendation. It's an excellent data management system, and it's for one of our key indicators. Need to dot i's and cross t's on what state is doing. Recommend the process

~~57.~~59. NOT NEEDED, already stated. We recommend that the Stormwater Monitoring Entity conduct holistic stormwater assessment and integration across all monitoring and assessment approaches.

See program design recommendations and functions. Want to make sure we id who will do it. Make sure this is included in new entity. Focus: id regional issues?