

Long term MS4 planning to protect and recover receiving waters

I. Background discussion

The Municipal Separate Storm Sewer System (MS4) permits issued by Ecology require local jurisdictions to implement a wide range of programmatic stormwater management actions. The permits have made some progress toward illustrating the connection between stormwater management, MS4 outfalls, and receiving water conditions, but there are few requirements that are tied directly to receiving waters. Mapping is required, but only a TMDL or an S4 response causes permittees to focus on what specifically the receiving water needs to comply with State water quality standards.

While stormwater management has made great strides since the first permits were issued in 1995, the science is clear that a site and subdivision approach to controlling stormwater runoff from developed and developing areas still falls short of protecting receiving water quality conditions. Further, requirements based on new and redevelopment will have little impact on runoff from existing development without innovative program overlays (such as regional facilities or a flow control transfer program).

Early studies indicated that natural land cover and soils need to be preserved in a watershed to prevent channel degradation, and to maintain base flows and functional habitat conditions for salmonids. The Phase I Watershed-scale stormwater planning studies from the 2013 permit reinforce that applying all of our conventional flow control, runoff treatment, and low impact development best management practices will not be enough to fully attain standards protective of designated beneficial uses or to counteract the challenges posed by urbanization.

More work is needed, but funding for additional strategies and capital projects is limited. Local jurisdictions need to prioritize spending and direct strategic investments or effort to those basins and catchment areas where improvements can be most readily achieved and the benefits can be seen on a fairly near-term timeline.

The 2013 permit launched Stormwater Action Monitoring (SAM; formerly known as the Regional Stormwater Monitoring Program) – and planned for a corresponding receiving water monitoring program for the Lower Columbia – which will tell us broadly if conditions are getting better or worse, what BMPs are effective, and how we incorporate the latest science and the most effective approaches. The first round of SAM data collection in Puget Sound small streams and marine nearshore areas clearly showed a decrease in receiving water conditions with increased urbanization, and a significant difference inside and outside Urban Growth Areas. (Final reports are expected soon.)

The objective of the watershed-scale stormwater planning requirement in the 2013 permit was for each Phase I county to create a model to evaluate stormwater management strategies that would accommodate planned growth in a developing watershed and still maintain hydrologic and water quality conditions that fully support “existing uses” and “designated uses” (as those terms are defined in WAC 173-201A-020) throughout a stream system. The permit requirements focused on the scale and detail of modeling and planning to bring into focus the needs of the stream system – the receiving water body.

What we learned from the Phase I counties' watershed plans

Each of the four counties selected a medium sized (10-50 square miles) watershed located in an urban growth area designated pursuant to the Growth Management Act, and therefore known to be under pressure for development in the near future. The watersheds had unique characteristics, but all are already partially urbanized. The counties created models to test a suite of strategies in various scenarios to see if water quality standards were, or could be, met. The modeling reports for the three plans submitted so far (King County will

Commented [TC1]: GENERAL COMMENTS
Thurston County has been carrying out basin planning since the early 90s. With the establishment of our *Stormwater Capital Facilities Program*, we have completed more than 60 projects since 1998. These include project to reduce flooding, protect water quality, and preserve and restore aquatic habitat.

In crafting these requirements, we suggest taking into consideration the differences that exist between ultra-urban and suburban cities, cities and counties, and the distinctions in the permit geographic coverage configurations between Phase 1 & Phase 2 counties. As written, the proposed approach doesn't take into consideration the unique geographic scope of Phase 2 county permits.

Annexations are another complicating factor that comes into play for counties who, during the course of the planning and implementation process, could find themselves in the situation of having their priority planning area change jurisdictional hands.

Municipalities, such as ours, also have an obligation to our rate payers to distribute projects and program investments throughout the geographical area of their jurisdiction. To focus on one or two small areas at the exclusion of others can compromise political and rate payer support for our programs and investments. It could also trigger environmental justice concerns.

Based on our experience, we suggest revamping the proposed approach as its prescriptive nature lacks the context sensitivity necessary for the diverse range of relevant factors that exists among permittee. We concur with the Ad Hoc Watershed Planning Subgroup recommendation that: *The requirement should be reframed by its intended outcome An outcome-based requirement could allow more flexibility in the approach to achieve the prescribe outcome.*

1 submit their plan next spring) showed that current and future conditions in these watersheds do not meet water
2 quality standards, and that actions beyond site and subdivision scale of stormwater management will be needed
3 to prevent degradation of the receiving waters. The models in all of the watersheds projected that riparian
4 restoration (for temperature) and large amounts of additional stormwater detention and infiltration (for flow
5 control, for Benthic Index of Biotic Integrity (B-IBI) scores, and for bacteria) are needed to improve receiving
6 water conditions. Other in-stream projects (not associated with managing municipal stormwater discharges)
7 were also modeled as having near-term and cost-effective positive outcomes on receiving water bodies.

8 The anticipated costs to recover from these impairments is tens of thousands of dollars per acre of watershed in
9 Snohomish and Clark Counties. The costs per acre for these typical Puget lowland and lower Columbia
10 developing watersheds are significantly lower than for more developed basins (the Kirkland Juanita Creek Study
11 estimated costs were approximately \$300,000 per acre). While this demonstrates that current permit
12 requirements are having a significant impact, the modeled additional effort to recover the beneficial uses are
13 still well beyond current funding programs and approaches.

14 One important strategy that the counties did not highlight in their scenarios was changing the land use
15 designation or zoning codes established as part of the land use comprehensive planning process under the
16 Growth Management Act. Comprehensive planning, and stormwater management are regulated under different
17 laws and overseen by different state and local departments with separate administrative and public processes.
18 Despite knowing that such changes could help protect water quality without the high capital project costs
19 identified by the models, these non-structural strategies are difficult to project into the future given perceptions
20 of conflict between growth management and stormwater management. It is difficult for stormwater managers
21 to cross this boundary of authority and responsibility as part of an exercise required by the MS4 permit.

22 *What to do in the next permit*

23 Ecology received early recommendations on the approach for future stormwater planning requirements.
24 Ecology agrees with many of these recommendations, including developing a planning requirement that applies
25 to both Phase I and Phase II cities and counties. Ecology also agrees with the recommendation against including
26 a jurisdiction-specific modeling exercise similar to the 2013 requirement for the Phase I counties.

27 The recommended objectives include identification of prioritized sub-watersheds (basins or catchments) based
28 on scientific information related to receiving water and other watershed characteristics. Since the 2013 permit
29 was issued, new guidance associated with stormwater planning was published:

- 30 • [Building Cities in the Rain](#), (Department of Commerce 2016),
- 31 • [Watershed Characterization](#) (Ecology 2016), and
- 32 • [Development of a Stormwater Control Transfer Program](#) (Ecology 2016).

33 These guidance documents provide technical frameworks upon which to prioritize sub-basins or catchments and
34 potentially direct stormwater improvements. For the 2019 permit, Ecology proposes a stormwater planning
35 effort by both Phase I and Phase II permittees that is focused on the needs of local receiving waters. Knowledge
36 of receiving waters is the first step in helping to guide stormwater program decision-making and
37 implementation planning based on what the receiving water needs in order to restore/maintain beneficial uses.

38 *Connection to other areas of the permit*

39 Many jurisdictions already have various types of stormwater or watershed plans based partly on stormwater
40 infrastructure and/or receiving water needs. A long-term MS4 planning requirement can enhance these plans
41 and create tailored stormwater management implementation strategies based on local receiving water needs.
42 Beyond stormwater facility retrofits and land conservation planning, jurisdictions' Stormwater Management

Commented [TC2]: This supports the need to provide permittees an option to invest their S8-obligated contributions to support local monitoring efforts to help guide stormwater program decision-making and implementation planning.

Such an option would also provide a permit mandate to help guard against existing local monitoring programs being jettisoned to accommodate funding of other newly established permit conditions.

1 Programs (SWMPs) can include tailored strategies such as focused source control, education and outreach, or
2 maintenance efforts (e.g., whole system cleaning, or enhanced street sweeping in targeted areas).

3 II. Purpose and intent

4 The purpose of long-term MS4 planning is the protection and restoration of the beneficial uses of receiving
5 waters. To meet this purpose, the permit intends to support a prioritization and planning process that results in
6 targeted investments in BMPs and capital ~~actions~~ projects that contribute to preventing and reducing impacts to
7 receiving waters. Ecology recognizes that many receiving water impairments are tied to a broader set of
8 pressures/sources than just stormwater. This planning should put stormwater in a broader context with other
9 actions needed to protect and restore beneficial uses.

10 Objective

11 The proposed initiation of a long-term MS4 planning requirement will help permittees make informed decisions
12 about how and when to address existing and anticipated flow and water quality problems by:

- 13 1. Developing an inventory of basins all or partially inside your jurisdictional boundaries,
- 14 2. Using existing information to complete a prioritization of your basins, ~~and assessing data gaps,~~
- 15 3. Identifying catchment areas for planning within priority basins, and
- 16 4. Identifying specific approaches to apply within the catchment areas.

Commented [TC3]: During 12/11/17 workshop, Ecology said that they didn't intend this to be a data gathering exercise.

17 III. Approach

18 Permittees will use local information related to ~~basin and receiving waters~~ and ~~contributing area~~ conditions to
19 prioritize basins (approximately 1-10 square miles in area) for ~~planning~~ protection and/or restoration. Next, each permittee
20 will identify catchment areas (up to approximately 600 acres in area) for planning a tailored set of strategies or actions to protect and
21 improve water quality for the Permittee's ~~TBD~~ highest priority basins. The plan developed for the ~~TBD~~ catchment
22 areas will include consideration of the following MS4 and complementary strategies at a minimum: capital projects
23 including regional facilities; land acquisition and/or conservation easements; land use or zoning code
24 adjustments; new critical area designations; protected, enhanced, or restored riparian buffers; enhanced MS4
25 maintenance; education and outreach.

Commented [TC4]: This supports the need to provide permittees an option to invest their S8-obligated contributions to support local monitoring efforts to help guide basin prioritization.

Commented [TC5]: This geographic scale may prove very limiting in identifying strategies (e.g., projects often depend on landowner willingness and other fortuitous events).

Commented [TC6]: Thurston County anticipates that the cost per basin to do this work will be \$100,000 to \$250,000 each depending on existing data/studies, in-house capabilities and use of consultants, etc.

26 Methods/procedure for identifying and characterizing basins

- 27 1. Convene an interdisciplinary team to conduct and coordinate this effort. Team make-up should include
28 representatives from the jurisdiction's stormwater program, long-term planning, transportation, parks and
29 recreation, and scientific and technical experts.
 - 30 a. This team will be used to coordinate the planning effort across various departments, compile
31 existing information, refine initial prioritization results, prepare plans, and evaluate the process
32 and implementation of the plan ~~as an ongoing task.~~
- 33 2. Delineate basin boundaries for all receiving waters ~~within the geographic scope of your Permit~~ your
34 ~~jurisdiction~~ with approximately between 1-10 square mile total watershed areas (including contributing areas that lie outside your jurisdiction). Phase I
35 counties will limit this exercise to the Puget Lowland areas of their jurisdictions.
 - 36 a. Jurisdictions in Puget Sound may use the Watershed Characterization project basin delineation
37 boundaries as a starting point. If needed, correct the existing basin delineation.
 - 38 b. Assign a name and unique identification number to each basin (or use the name and unique
39 identification number assigned by the Watershed Characterization project). The name should
40 reflect the receiving water.

Commented [TC7]: This seems redundant given that the Permit already requires on ongoing evaluation of SWMP development and implementation.

Commented [TC8]: For Phase 2 counties, this extends beyond the geographic scope for their permit's regulated area.

Commented [TC9]: Clark County doesn't have any Puget Lowland areas.

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- 41 3. Provide an interim report with the following information for each basin:
- 42 a. The percentage of the basin that lies inside your [permit area as well as your](#) jurisdiction's
- 43 b. The other jurisdictions that share the basin.

Commented [TC10]: When is the expected due date for the interim report?

- 1 c. The total percent impervious area in the basin.
2 i. You may calculate the effective impervious surface if you have the information readily
3 available to do so.
4 d. Any existing planning documents upon which you might [reference or rely upon in the](#)
5 4. For basins [in which you have within the geographic scope of your permit and with](#) at least 10% of the total
6 watershed area [within your jurisdiction](#), or in which you are partnering with
7 another jurisdiction on an existing plan [\(or plan under development\)](#) for the receiving water body:
8 a. Compile existing information to inform understanding of receiving water condition and/or any
9 impairments to beneficial uses. [Include all of the information needed for the prioritization](#)
10 [process spelled out in the Building Cities in the Rain guidance document \(2016\).](#)
11 b. Conduct a qualitative (or quantitative) assessment of each receiving water [using available data.](#)
12 [Identify any data](#)
13 [gaps and develop a strategy to address data needs.](#)
14 5. Deliverable [submitted](#) in year TBD (to be determined) of permit: watershed inventory with key characteristics
15 of each
16 basin and, if applicable, GIS coverage with your refined basin delineation(s)
17 [Methods/procedure for prioritizing basins](#)
18 Use a prioritization process [that identifies equivalent to that found in the Building Cities in the Rain guidance](#)
19 [document and/or](#)
20 [in the Stormwater Control Transfer guidance to generate a prioritized ranking for each of the basins.](#) The highest
21 priority basins [which](#) are expected to benefit more quickly as a result of stormwater improvements [\(including](#)
22 [these](#)
23 [where habitat improvements are also needed\)](#). This prioritization will be based on the following principles:
24 1. For each of these basins, identify whether the receiving water [or habitat](#) is impacted [from stormwater](#)
25 [discharges](#) (needs recovery or
26 restoration) or is high quality (needs protection [from stormwater runoff-related impacts](#)).
27 2. Give highest priority to [watersheds at-risk basins](#) in need of protection [from stormwater discharges or](#)
28 [ecologically important basins with moderate levels of impairment that can expect to be substantially improved](#)
29 [with stormwater management improvements.](#)
30 a. Give priority to [basins with](#) receiving waters that show low to moderate levels of impairment (e.g.,
31 as
32 [assessed via water quality data, B-IBI scores, habitat surveys](#)).
33 b. Give a higher priority to [watersheds/basins within your permit area](#) where your municipality can
34 exert a greater influence (e.g.,
35 the majority of the watershed is within the jurisdiction, interlocal agreements are in place or
36 possible).
37 c. Give higher priority to [basins](#) where regional efforts are also focused.
38 d. [Give higher priority to basins that are likely to be more heavily impacted by future plans for](#)
39 [growth and development, as identified in Comprehensive Plans or other long-range planning](#)
40 [documents.](#)
41 3. Deliverable in year [TBD](#) of permit: watershed inventory with prioritization and ranking
42 [Approach/methods for catchment area planning](#)
43 Permittees will develop a long-term MS4 plan for the [TBD](#) catchment areas (receiving water body subbasins
44 approximately [400-600 acres in size](#)) which they identify in [each of their TBD](#) priority basins. The plans must
45 consider

Commented [TC11]: Suggest only including the minimum expectations.

Commented [TC12]: Collaborative efforts will likely require more time, but can often leverage better outcomes or more efficient use of resources. The permit should include accommodations (e.g., extended compliance timelines) to help foster such partnerships.

Commented [TC13]: What constitutes an existing plan? And what about when you are part of a watershed group? For example, the Nisqually Watershed Plan is updated by the Nisqually River Council, whose members include Pierce Co, Thurston Co, Yelm, Enumclaw, others.

Commented [TC14]: BCiTR, besides being data-intensive, isn't applicable for some permittees (e.g., counties). See related comments in regards to *Methods/procedure for prioritizing basins*.

Commented [TC15]: During 12/11/17 workshop, Ecology said that they didn't intend this to be a data gathering exercise. Requiring addition data collection will impede completion of overall basin prioritization in a timely manner.

Commented [TC16]: Please clarify expectations regarding what's considered *key characteristics*.

Commented [TC17]: Prioritization should be based on ecological value of basin, its future risk, and the likelihood that successful outcomes can be achieved in the basin by investing in stormwater-related improvements and programs (including targeting high value *low hanging fruit*).

Commented [TC18]: These guidance documents are inappropriate for some permittees (e.g., counties) as *BCiTR* is salmonid-centric with a focus on redevelopment and densification of urban centers. The *Stormwater Control Transfer guidance* pertains to an infill or redevelopment strategy to increase capacity in urban centers. Priority watersheds exist that don't meet these focuses (e.g., priorities related to non-salmon-bearing waters, groundwater, flow attenuation, etc.).

Commented [TC19]: This supports the need to provide permittees an option to invest their S8-obligated contributions to support local monitoring efforts to help assess the levels of impairment.

Commented [TC20]: This is a very small area. Is the expectation that catchments within a basin be prioritized?

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33 including an appropriate combination of ~~actions listed in 3 a. capital projects; regional facilities; land acquisition~~
and/or
34 ~~conservation easements; land use or zoning code adjustments; new critical area designations; protected,~~
3530 ~~enhanced, or restored riparian buffers; enhanced maintenance; and education and outreach~~ that the permittee
3631 either has capacity to implement or can seek ~~acquir~~inge the capacity to implement.

3732 Ecology acknowledges that many permittees have already done this, or something similar. Permittees are
3833 encouraged to use and/or build on prior plans to accomplish these goals and fulfill this permit requirement.

3934 1. Share the results of your basin prioritization process and engage your interdisciplinary team in identifying
which

4035 TBD catchment areas will be your focus for long-term MS4 planning to improve hydrologic and water quality
conditions.

4136 a. Include public/citizen representation and involvement in this process.

4237 2. For TBD of your top priority basins, identify TBD catchment areas for planning.

4338 3. ~~Focus primarily on i~~ identifying actions that are most likely to improve hydrologic and water quality
4439 conditions.

Commented [TC21]: Since this suggests that these permittees would have completed the first two proceeding steps, for these permittee, the Permit should allow the methods/procedures the permittee used for prioritizing basins rather than require them to take the prescriptive approaches described above.

- 1 a. ~~As noted above, c~~ Consider the following MS4 and complementary strategies at a minimum:
2 capital projects including regional facilities; land acquisition and/or conservation easements;
3 land use or zoning code adjustments; new critical area designations; protected, enhanced, or
4 restored riparian buffers; enhanced MS4 maintenance; education and outreach.¹
5 b. ~~Habitat improvements such as fish barrier removal, increased hydraulic complexity may also be
6 recommended as appropriate but are not a required element of a long-term MS4 plan intended
75 to develop basin-specific stormwater strategies.~~
86 c. For recovery/restoration, identify strategies to decrease stormwater inputs and impacts to
97 receiving waters. For protection, develop a strategy with projects and actions to maintain
108 beneficial uses ~~and habitat conditions~~ in the receiving waters. Identify both short-term and long-
119 term actions by conducting a guided assessment of BMPs based on what the receiving water
1210 needs; is your SWMP in this catchment adequate as-is, do some BMPs need to be focused,
1311 targeted, and/or added to provide what the receiving water needs to meet or recover beneficial
1412 uses?
1513 d. As is the case for TMDLs, the BMPs chosen for long-term MS4 planning must be effective,
1614 defensible, and specific. This planning process can take place at a variety of levels of technical
1715 certainty. An alternative scenarios analysis or even best professional judgment based on
1816 applying lessons learned elsewhere to your MS4 and local receiving waters may be both
1917 adequate and appropriate for this exercise. More rigorous exercises such as the [Development of](#)
2018 [a Stormwater Control Transfer Program](#) (Ecology 2016) might be needed in other situations and
2119 would be required to get credit for other changes to your SWMP.
2220 e. Consider all types of permit-required actions in a more targeted or focused manner: [\(e.g., catch](#)
basin
2321 cleaning, stormwater facility maintenance, IDDE screening, education and outreach, new and
2422 redevelopment, mapping, source control inspections, structural stormwater controls].
2523 f. Consider additional actions to achieve the goal of protecting or recovering the receiving water:
2624 enhanced system maintenance and cleaning, regional facilities, designating additional critical
2725 areas and/or riparian buffers. Identify where build-out at current or proposed zoning will not be
2826 adequately mitigated by stormwater facilities or other structural improvements. Integrate
2927 stormwater planning with Growth Management Act planning and other related/associated
3028 planning efforts. Address additional permit objectives for stormwater management where
3129 appropriate and practicable.
3230 4. Conduct a public review process and have discussions with planning officials throughout the process.
3331 5. Develop an effectiveness assessment to provide feedback on the implementation efforts.
3432 6. Deliverable in year TBD of permit: proposed plan (including rationale for selected BMPs/actions) and
3533 estimated budget/funding approach.

Commented [TC22]: Please provide applicable examples.

Commented [TC23]: Suggest moving this to a footnote to "a."

Fish barrier removal is more akin to potentially increasing access to habitat, rather than improving habitat itself. Furthermore, what's the nexus with this to stormwater management? Suggest removing this language, particularly since this is not a required element.

Commented [TC24]: Redundant and potential not applicable if the receiving waters pertain to groundwater.

Commented [TC25]: This language seems more appropriate for inclusion in the Permit's *Fact Sheet*.

Commented [TC26]: This seems to suggest that: 1) areas exists where new development and redevelopment would not be required to comply with the stormwater management manual; or 2) that the existing permit-mandated requirements are inadequate to mitigate for stormwater impacts.

Commented [TC27]: What is the extent of the expectation for such a process?

Commented [TC28]: This supports the need to provide permittees an option to invest their S8-obligated effectiveness contributions to support local monitoring efforts to provide feedback on the effectiveness of their implementation efforts.

¹ [Habitat barriers such as fish barrier removal, increased hydraulic complexity may also be recommended as appropriate but are not a required element of a long-term MS4 plan intended to develop basin-specific stormwater strategies.](#)