

## Phase I Municipal Stormwater Permit Guidance for Structural Stormwater Control Program

Draft Fact Sheet Language and Guidance for Special Condition S5.C.6 and Appendix 11 as proposed for preliminary review and comment October 3, 2017 (Revised October 24, 2017).

### Purpose

Phase I Permittees are required to implement a program for structural stormwater controls (SSC) as part of their Stormwater Management Program (SWMP). Ecology aims this program toward retrofitting existing developed areas; and promotes planning and prioritization of these projects to reduce impacts to watershed hydrology and pollutant discharges from MS4s. Qualifying projects reduce or prevent negative water quality impacts from MS4s. Ecology does not intend SSC projects to mitigate or compensate for previous impacts from MS4s. This program also addresses regional stormwater facilities and stormwater impacts inadequately controlled by other permit requirements.

Note to the reviewer: For the first time, Ecology proposes a defined level of effort for the SSC Program. The level of effort is counted in “retrofit incentive points,” which is an accounting system created to standardize quantification of project benefits for a wide range of qualifying project types that are implemented to varying degrees of effectiveness across a multitude of landscapes, land uses and scales. Ecology’s proposed calculation of a project’s retrofit incentive is intended to reflect MS4 retrofit priorities as well as receiving water conditions and project effectiveness. This permit cycle’s minimum point requirement is intended to allow for a “ramp up” adjustment to reflect program planning, and therefore includes a level of effort for design-stage incentive points as well as complete/maintenance-stage incentive points. Details are provided in this Draft Guidance document and reviewers are encouraged to read this document in its entirety.

Ecology requires permittees to include an updated list of planned individual projects scheduled for implementation during the term of the permit with their annual reports. Appendix 11 provides a standardized reporting format that allows for transparent benefit and incentive point calculations and limited project details, such as costs and funding sources.

Ecology intends the SSC Program’s defined level of effort as reflected in Retrofit Incentive Points (and as reported in Appendix 11 and calculated per this guidance) to achieve the following goals:

- Allow for comparisons of runoff treatment and hydrological benefits. Benefits from LID BMPs are quantified for hydrological benefit separately from flow control facilities.
- Allow for comparisons of project types across jurisdictional landscapes. This acknowledges that Washington’s Phase I Permittees consist of cities and unincorporated counties.

- Provide a standardized means to quantify the benefits each project and each jurisdiction achieves.
- Count the following types of projects within the structural controls requirement:
  - Regional facilities that provide hydrologic or treatment benefit for existing MS4 discharges that is not otherwise required. Regional facilities that do not have a system to credit new development and redevelopment projects will fully qualify. Regional facilities that provide for use of fee-in-lieu, minimum technical requirement transfer, or other new/redevelopment-benefitting program, only partially qualify under the SSC Program; the portion of the regional facility that is preserved to address existing MS4 service area (such as roadways) may be counted in the SSC program.
  - The retrofit of existing MS4 runoff by providing additional hydrologic or treatment capacity in a stormwater facility being constructed as part of a new or redevelopment project (i.e. those required under a development project approval but also providing additional new treatment or flow control). The portion of the project serving the existing area, not otherwise required to be addressed, will qualify for the SSC Program.

Note to reviewers: Ecology proposes the clarifications described in the 2 bullets above regarding how these projects qualify under the SSC Program. Information about how to perform the necessary calculations for these projects under the SSC Program is provided in How to Calculate Equivalent Area, below.

- Projects not directly related to stormwater (i.e. not driven by stormwater capital planning) but providing stormwater benefits. This includes forest protection (i.e., acquisition), forest conservation easements, forest cover restoration and riparian buffer restoration.
- Operations and maintenance projects with large capital construction costs and projects that go beyond Permit O&M requirements (ex. whole system cleaning, intensive facility maintenance/upgrades).
- Source control work that goes beyond source control permit requirements

Ecology expects Permittees to establish criteria for selecting SSC projects, including small projects not planned in advance, per the requirement in S5.C.6.b.ii(7). In order for any project or action to be counted under the SSC Program, Ecology expects it to have a quantifiable and verifiable hydrologic or pollutant removal (or runoff treatment) benefit. The Permittee is responsible for documenting hydrologic and pollutant removal benefits, and variables used in retrofit incentive calculations.

Ecology provides this guidance for the SSC Program to clarify and explain qualifying project types and retrofit incentive point structure, and address variability in project characteristics that relate to reporting consistency and compliance-related calculations. This guidance is organized as follows:

- Qualifying Project Types
- Defined Level of Effort: Retrofit Incentive Points
- How to Calculate Equivalent Area
- Instructions for Appendix 11 Reporting

### Qualifying Project Types

Special Condition S5.C.6.a lists the types of projects that qualify under the SSC Program. Qualifying projects and activities reduce or prevent negative water quality impacts (includes contaminants and hydrology) from MS4s. All qualifying projects or actions must be associated with the MS4. The project types are divided into two categories: S5.C.6.a.i contains project types that are required for inclusion; S5.C.6.a.ii lists project types that are allowable (but not required) for inclusion.

The following information provides background and clarifying information for each qualifying SSC project type:

**(1) New flow control facilities (S5.C.6.a.i(1))**—Flow control facilities need not be regional. These facilities do not have to meet the “standard flow control requirement” (refer to Permit Appendix 1 Section 4.7) but they shall be new facilities designed to control stormwater flow from existing development. Projects that don’t follow design criteria from the SWMMWW, or equivalent, should be prepared to provide additional project details at Ecology’s request to support calculations for equivalent area, water quality benefits, and retrofit incentive points.

**(2) New runoff treatment facilities (S5.C.6.a.i(2))**—Runoff treatment facilities include facilities that provide oil control, phosphorus treatment, enhanced (dissolved metals) treatment, and basic treatment. Facilities in this category do not have to meet runoff treatment requirements but they shall be new facilities that provide a treatment benefit for existing development. Projects that don’t follow design criteria from the SWMMWW, or equivalent, should be prepared to provide additional project details at Ecology’s request to support calculations for equivalent area, water quality benefits, and retrofit incentive points. Maintenance activities are not classified under this project type.

**(3) New LID BMPs (S5.C.6.a.i(3))**—These facilities are consistent with the lists of On-Site Stormwater Management BMPs of Minimum Requirement 5 and reduce the volume of runoff by infiltrating runoff from the small, more frequent storms. Qualifying new LID BMP projects result in the reduction or prevention of hydrologic changes through use of on-site (e.g., infiltration, dispersion, evapotranspiration, rainwater harvesting) stormwater management BMPs. LID principles reflected in site design techniques do not qualify because projects that apply LID principles in a retrofit setting should be accommodated in other qualifying project

**Table 1: Qualifying Project Types**

1. New flow control facility
2. New runoff treatment facility (or treatment and flow control facility)
3. New LID BMPs
4. Retrofit of existing treatment and/or flow control facility
5. Property acquisition
6. Maintenance with capital construction costs  $\geq$  \$25,000
7. Restoration of riparian buffer
8. Restoration of forest cover
9. Floodplain reconnection projects
10. Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C

types (such as property acquisition and restoration of forest cover). Qualifying projects in this category will be compared against the LID Performance Standard for retrofit incentive point calculations.

Note to reviewers: Ecology once again proposes the LID BMP project type as separate from the flow control facility (after having combined them as a result of public comments on the 2013-2018 Permit). This enables LID BMPs to receive independent credit for achieving the LID Performance Standard. Doing so changes the Project Type Numbers that were used during the 2013-2018 permit cycle.

**(4) Retrofitting of existing stormwater facilities (S5.C.6.a.i(4))**—Retrofitting is expected to occur on previously constructed stormwater facilities that, if modified, would provide additional hydrologic or runoff treatment benefits. For example, Ecology considers the retrofit of a stormwater pond to provide a settling area and more storage a retrofit to a stormwater facility. Maintenance activities are not classified under this project type.

**(5) Property acquisition to provide additional runoff treatment and/or flow control benefits (S5.C.6.a.i(5))**— This category excludes the purchase of property for the siting of a stormwater facility. Instead, purchase of a likely development site to permanently prevent it from being developed would qualify under this category. This category includes forest protection and conservation easements. Riparian habitat acquisition qualifies under this project type. Property used for dispersion does not qualify under this project type; it is considered a new LID BMP (Project Type 3).

Note to reviewers: Ecology proposes to include the purchase of riparian habitat in this Project Type #5 group instead of addressing it as its own Project Type (formerly #6). Doing so changes the Project Type Numbers that were used during the 2013-2018 permit cycle.

**(6) Maintenance with capital construction costs  $\geq$  \$25,000 (S5.C.6.a.i(6))** — This project type applies to repair projects that improve the hydrologic or treatment performance of stormwater facilities. This project type is directly related to Operations and Maintenance Program requirements at S5.C.9.a.ii which reflects that maintenance projects, including repairs, which require capital construction  $\geq$  \$25,000 are not subject to the required 2-year window for completing the maintenance. These projects typically compete with the other types of retrofit projects for limited capital construction funding. Ecology intends that these projects be reflected in the SSC program in order to provide a comprehensive view of MS4 maintenance activities and requirements. Permittees may develop criteria for identifying maintenance projects that reach the capital construction cost threshold on an area-wide or system-wide basis per the requirement in S5.C.6.b.ii (7).

**(7) Restoration of riparian buffers (S5.C.6.a.ii(1))** — Retained from the 2007 permit, this project type is not directly related to stormwater (i.e. not driven by stormwater capital planning) but provides stormwater benefits.

Note to reviewers: Ecology is considering assigning a greater retrofit incentive point multiplier for projects that restore riparian buffers than those that restore forest cover due to direct benefits to receiving water quality (i.e., shade).

**(8) Restoration of forest cover** (S5.C.6.a.ii(2)) — Retained from the 2007 permit, this project type is not directly related to stormwater (i.e. not driven by stormwater capital planning) but provides stormwater benefits.

**(9) Floodplain reconnection projects on water bodies that are not flow control exempt per Appendix 1** (S5.C.6.a.ii(3)) – Qualifying floodplain reconnection projects will have an MS4 nexus and provide flow reduction and runoff treatment benefits. Ecology added this project type in response to comments on the 2013-2018 Permit.

**(10) Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C** (S5.C.6.a.ii(4)) — Ecology included this project type in the SSC Program to allow permittees to count the runoff treatment (pollutant removal) and/or hydrologic benefits of maintenance actions that address existing stormwater runoff into or from the MS4 not otherwise required in the Stormwater Management Program requirements of S5.C. Ecology intends this category to encompass “enhanced maintenance” projects, such as high efficiency street sweeping and line cleaning not otherwise used to comply with S5C9 (i.e., catch basin inspection alternatives). In order for any action to receive credit under the SSC Program, it must have a quantifiable hydrologic or runoff treatment/pollutant removal benefit and sufficient recordkeeping to verify implementation and benefits. While this project type will generally consist of “activities,” Ecology considers them “projects” due to the data collection and analysis that are necessary to support assignment of retrofit incentive points.

Note to reviewers: Ecology understands that there are numerous details, such as segregating mixed wastes, measuring moisture content and calculating lane widths, that can be associated with providing a comparable calculation of maintenance actions across permittees. Ecology proposes to eliminate the requirement to calculate pounds of total solids removed per year due, in part, to such detailed distinctions. We propose to focus on right-of-way miles and frequency of event for the calculation of the applicable retrofit incentive points. We therefore will no longer require reporting of total solids removed.

Limitations and details of specific applications of this project type are provided below.

Street Sweeping Programs – Ecology intends street sweeping projects to qualify under the SSC program, and be counted toward the SSC minimum level of effort, only if they are designed, executed and documented to have the following characteristics:

- Only street sweeping routes from applicable MS4 service areas can be used to support runoff treatment benefit calculations.
- The retrofit incentive points for a qualifying street sweeping program is based on ~~lane~~ curb miles swept (as documented through broom use) and frequency of sweeping. Ecology added sweeping frequency because qualifying sweeping projects service the same surfaces (e.g., repeat routes swept) more than once per year. Each year where this

activity qualifies under the SSC Program is reported in Appendix 11 as an individual line item (not summed over the reporting period). Implementing the action over a documented route counts as one event. A street sweeping event that occurs only once per year, or less frequently, does not qualify under the SSC Program.

Based on the street sweeping program variations between Seattle and Tacoma, and the importance of establishing an appropriate retrofit incentive point assignment for these projects, Ecology proposes the following formula be used to calculate street sweeping program points:

~~lane~~curb miles swept X (frequency of sweeping in events/year – 1 event)

Line Cleaning Programs – Line cleaning of the same section of stormwater conveyance pipe within a 5-year permit cycle does not qualify under the SSC Program. Therefore, the retrofit incentive is based solely on line miles cleaned during the specified time period. Portions of lines that were inaccessible during line cleaning cannot be included in the calculation. If line cleaning is used to comply with S5C9.d catch basin inspection alternative #3, it cannot be counted toward the SSC program.

The allowance of a program designed to implement small scale projects that are not planned in advance (S5C6.a.iv) is not considered a project type in itself. Instead, those projects are expected to be reflected in the other project type categories as applicable.

### Non-Qualifying Projects

The following projects and project characteristics DO NOT qualify:

- Projects that do not have a nexus with the current MS4 or do not prevent future MS4 impacts.
- Projects that mitigate or compensate from previous impacts to the receiving water body from MS4 discharges. For example, problems caused by excessive stormwater runoff peak flow and geomorphologically significant flows. These types of projects generally occur within the receiving water. Consistent with previous permit cycles, the following types of projects do not qualify:
  - In-channel habitat and stream restoration.
  - Fish barrier removal.
  - Stabilization of down cutting.
  - In-stream culvert replacement.
  - Mitigation projects otherwise required.

Wetland restoration projects may qualify if existing degraded wetlands are designed to become treatment wetlands in accordance with the SMMWW. Such a project would be a “new treatment facility” project type.

Note to reviewers: Should Ecology include a qualifying project type for the permanent protection of working farmland (i.e., easements and transfer of development rights)? Ecology is considering specifying that this qualifies under the SSC Program consistent with the intent to prevent its likely development (i.e., creation of impervious and pollution-generating surfaces). Would a retrofit incentive point multiplier of 0.25 be appropriate?

Note to reviewers: Should Ecology include a qualifying project type for the permanent removal of hard surfaces and conversion to vegetation? Would a retrofit incentive point multiplier of 0.25 be appropriate?

#### Defined Level of Effort: Retrofit Incentive Points

Note to reviewers: This entire section describes Ecology's preliminary draft proposal for an SSC Program Defined Level of Effort, and is based on prior Appendix 11 submittals (see Attachment A).

Ecology created an accounting system, counted in "retrofit incentive points" to reflect the SSC Program's defined level of effort. Retrofit Incentive Point calculations are intended to standardize quantification of qualifying projects that permittees implement over a wide range of conditions and in response to a multitude of colliding environmental, technical, regulatory, and social drivers.

Points are assigned differently to each qualifying project type. The scaling basis of point assignments is relative only and is used solely for calculating compliance with the retrofit incentive point requirements of the SSC Program. Many point assignments are based on an "equivalent area" calculation. Ecology bases the equivalent area calculation on a scale that compares the amount of runoff treatment or hydrologic control achieved through the proposed project to the amount achieved if you designed the project to meet the new and redevelopment criteria for the area draining to the new BMP(s).

Equivalent area is then used for flow control, LID or runoff treatment benefit standardization reflected as a ratio. Because hydrologic and treatment benefits from stormwater facilities vary, Ecology has divided each into different levels of project achievement. Each level is given a retrofit incentive point multiplier that reflects a point system that is used to define the required SSC Program level of effort.

When creating the point system, Ecology placed particular emphasis on:

- Reducing negative water quality impacts from existing MS4 discharges
- Project effectiveness (as compared to minimum technical requirements for new/redevelopment projects)
- Addressing receiving water quality impairments (i.e., 303(d) listings)
- Preventing future negative water quality impacts from the creation of MS4s (i.e., permanent protection from development) and MS4-related discharges.

The point system is intended to accommodate:

- Diverse qualifying project types – For example, projects that involve habitat protection or reforestation are difficult to quantify in terms of a hydrologic and/or runoff treatment benefit. Thus, Ecology based the retrofit incentive points on the land area protected or restored.
- Different MS4 service area scales, landscapes and land uses – Cities and counties have distinctly different landscapes in their MS4 service areas, and thus present different opportunities for project types.

In general, the proposed Retrofit Incentive Point structure is intended to result in:

- More incentive points for projects that improve water quality discharges to a water body with known water quality problems (such as 303(d) listing or contaminated sediment cleanup site).
- More incentive points for projects that treat greater volumes of stormwater runoff (using a metric based on the 91% volume required for new and redevelopment projects) than projects with runoff treatment facilities that treat lesser volumes of water.
- More incentive points for projects that provide greater “large storm” hydrologic benefit as compared to the standard flow control requirement
- More incentive points for projects that provide greater “small storm” hydrologic benefit as compared to the LID Performance Standard.
- More incentive points for runoff treatment projects that quantifiably address targeted pollutants, such as dissolved metals, phosphorus or other chemicals of concern.
- Modest incentive points for property acquisition or other permanent protection of forest cover and riparian habitat.
- Lesser incentive points for expensive capital maintenance projects and for enhanced maintenance activities that provide variable or conditional outcomes.
- Lesser incentive points for projects that restore riparian buffer because this project type can be construed to, at least in part, mitigate for prior negative impacts from MS4 discharges or land disturbing activities. Due to its likely direct improvement to surface water quality via shade and vegetative cover, riparian restoration is assigned slightly more points than forest restoration.
- Least incentive points for projects that restore forest cover and reconnect floodplains because these project types can be construed to, at least in part, mitigate for prior negative impacts from land disturbing activities.

Table 2: Proposed Retrofit Incentive Point Structure

| Relevant <sup>a</sup> Project Type #s | Project Achievement Description                                | Incentive Factors & Retrofit Incentive Points <sup>b</sup>               |
|---------------------------------------|--|--|
| #1 & #4                               | Flow Control Benefit ratio less than 0.5                       | 1.0 times <u>Flow Control</u> Equivalent <u>New/Redevelopment</u> -area  |
| #1 & #4                               | Flow Control Benefit ratio less than 0.80 and greater than 0.5 | 1.25 times <u>Flow Control</u> Equivalent <u>New/Redevelopment</u> -area |



| Relevant <sup>a</sup> Project Type #s | Project Achievement Description   | Incentive Factors & Retrofit Incentive Points <sup>b</sup>   |
|---------------------------------------|---|--|
| #1 & #4                               | Flow Control Benefit ratio greater than 0.8   | 1.5 times <u>Flow Control</u> Equivalent <u>New/Redevelopment</u> -area  |
| #1 & #4                               | Flow Control Benefit ratio less than 0.80 and greater than 0.5 in a known flow control problem area.          | 1.5 times <u>Flow Control</u> Equivalent <u>New/Redevelopment</u> -area  |
| #2 & #4                               | Runoff Treatment Benefit ratio less than 0.75   | 1.0 times <u>Runoff Treatment</u> Equivalent <u>New/Redevelopment</u> -area  |
| #2 & #4                               | Runoff Treatment Benefit ratio less than 0.75 in a known water quality problem area                           | 1.5 times <u>Runoff Treatment</u> Equivalent <u>New/Redevelopment</u> -area  |
| #2 & #4                               | Achieves Basic Treatment with Runoff Treatment Benefit ratio greater than 0.75                                | 1.5 times <u>Runoff Treatment</u> Equivalent <u>New/Redevelopment</u> -area  |
| #2 & #4                               | Achieves Enhanced or Phosphorus Treatment with Runoff Treatment Benefit ratio greater than 0.75               | 1.75 times <u>Runoff Treatment</u> Equivalent <u>New/Redevelopment</u> -area   |
| #2 & #4                               | Meets WQ standards for target pollutant with Runoff Treatment Benefit ratio equal to 1.0                      | 2.0 times <u>Runoff Treatment</u> Equivalent <u>New/Redevelopment</u> -area  |
| #3                                    | Meets LID Performance Standard ( <u>LID Equivalent Area Ratio = 1.0</u> )                                     | 2.0 times <u>LID</u> Equivalent <u>New/Redevelopment</u> -area   |
| #5                                    | Property Acquisition  | 0.50 times acres acquired  |
| #6 & #10                              | Maintenance with capital construction costs $\geq$ \$25,000 or other maintenance actions per S5.C.6.a.ii.(5). | 0.25 times the area served by the maintenance activity, or<br>0.25 times (curb miles swept x # events/year), or<br>0.25 times the linear feet lines cleaned. |
| #7                                    | Restoration of Riparian Buffer  | 0.35 times acres restored  |
| #8                                    | Restoration of Forest Cover   | 0.25 times acres restored  |
| #9                                    | Floodplain Reconnection   | 0.10 times acres reconnected, with a maximum of 200 points <sup>c</sup>  |

a: Project Type #10 may involve projects that are not maintenance activities addressed in this document. For such projects, Ecology expects that the retrofit incentive points can be calculated based on the project's quantified water quality benefit as assigned to project types 1 – 3.

b: Add 0.10 to the applicable multiplier for capital projects related to the MS4 which implement an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

c: Ecology proposes a small retrofit incentive point multiplier and a maximum point allowance because we expect such projects to be large in scope, and their MS4 nexus weak. As proposed, the maximum points allowed for a qualifying floodplain reconnection equates to 2,000 acres reconnected.

Note to reviewers: Ecology proposes to include modest additional credit for qualifying projects related to the MS4 which implement an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13). The 2013-2018 Permit included, as a

distinct qualifying project type, “capital projects related to the MS4 which implement an Ecology-approved basin or watershed plan.” Ecology proposes to remove this as an independent qualifying project type because qualifying projects are included in other Project Type categories. Instead, such projects are given additional retrofit incentive points. Ecology proposes the addition of 0.10 to the applicable multiplier. Ecology proposes to limit this addition to capital projects and explicitly exclude maintenance actions under Project Type #10.

### Proposed Retrofit Incentive Point Achievement Requirement

Including a minimum point requirement in the Phase I Permit means there needs to be a deadline for conducting the compliance tally, clarity on project status that qualifies for tallying, and a target number of retrofit incentive points to achieve over the course of the tallying period.

- There has to be a date by which the points must be achieved. Ecology proposes December 31, 2022 as the cut-off date for calculating points toward the required minimum. This allows for reporting by March 31, 2023 in advance of the permit expiration date. This equates to a tallying period of 3.5 years.
- The projects that qualify for tallying must be at defined project stage(s) or frequencies. This permit cycle’s minimum point requirement is intended to allow for a “ramp up” adjustment to reflect program planning, and therefore includes a level of effort for design-stage incentive points as well as complete/maintenance-stage incentive points. Construction-stage and complete/maintenance-stage incentive points may substitute for design-stage incentive points. Qualifying maintenance projects which sum annual activities are to be reported and tallied individually per year (e.g, separate line items in Appendix 11 reporting).
- Points to be achieved must be both goal-oriented and reasonable. Based on data provided in the 2013-2018 Permit Appendix 11 reports and an associated projection analysis (see Attachment A), Ecology proposes the following defined level of effort for the 2019-2024 permit cycle:

1000 design-stage retrofit incentive points, and

300 complete/maintenance-stage incentive points.

Ecology generated these values by using information from Appendix 11 submittals and stormwater grant projects to project potential retrofit incentive point totals for a three year period (see Attachment A).

Note to reviewers: Permittees would still submit annual Appendix 11 reports after the December 31, 2022 deadline for achieving retrofit incentive points. Should Ecology specify that projects completed during 2023 and beyond would qualify towards future compliance with a retrofit incentive point requirement?

### How to Calculate Benefit Ratios and Equivalent Area

Ecology bases the benefit ratios and equivalent area calculations (flow control, runoff treatment and LID) on a scale that compares the amount of runoff treatment or hydrologic control achieved through the proposed project to the amount you could achieve if you

designed the project to meet the new and redevelopment criteria for the area draining to the new BMP(s). At the completion of a retrofit facility design, the designer back-calculates the basin area that produces a treatment flow rate or volume that matches the flow rate or volume of the BMP design. This calculated area is the “equivalent area” for the project and Ecology uses this area to establish the level of treatment obtained through the project and for eventually calculating retrofit incentive points.

For example, if the retrofit project is a biofiltration swale followed by a detention pond, the project could provide both runoff treatment and flow control. If a jurisdiction designs the biofiltration swale for a flow rate of 1 cfs (based on available area) and the design runoff treatment flow rate is 2 cfs from an area of 5 acres, the equivalent area is less than 5 acres. The designer must identify the area that generates a runoff treatment flow rate of 1 cfs. This area is the equivalent area. The process is similar for flow control and LID benefits.

The “equivalent area” concept is used by the Stormwater Financial Assistance Program (SFAP) grants to inform the State Legislature of the success of the stormwater grant program using a metric other than the number of grants. The calculation compares the anticipated water quality (runoff treatment and flow control) benefit of the constructed project with anticipated water quality benefit if the project met new/redevelopment design and sizing criteria (i.e. treat 91% annual average volume, flow duration curve). For each project, calculate the area of a basin that flows to the new BMP that would meet new/redevelopment criteria. That value is reported as the “equivalent area.”

#### LID Performance Standard (MR#5) Benefit Ratio and Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the “full basin” in these steps.

2. Run the Western Washington Hydrology Model (WWHM 2012) to determine if the BMPs meet the LID Performance Standard for the full basin area.

1.—

- If the project meets the LID Performance Standard, the LID Equivalent AreaBenefit Ratio = 1.0.  
~~Use WWHM 2012 and calculate the amount of retention/detention storage that would be required to meet the LID Performance Standard (e.g., match developed discharge durations to applicable pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow up to 50% of the 2-year peak flow).~~
- If the project uses Full Dispersion functionally equivalent to BMP T 5.30 in Chapter 5 of Volume V of the Stormwater Management Manual for Western Washington, the LID Equivalent AreaBenefit Ratio = 1.0.
- If the project does not meet the LID Performance Standard for the full basin, the LID Benefit Ratio = 0.0.

- ~~2. If the project does not meet the LID Performance Standard, run WWHM 2012 with a reduced drainage basin area (with similar ratio of permeable and impermeable surfaces) until you do meet the LID Performance Standard.~~
- ~~3. Equivalent Area Ratio = Reduced Area (2)/Original Area (1).~~
- ~~4-3. Multiply the equivalent area LID Benefit ratio (32) by the full basin area from (1) to obtain the LID Equivalent Area. The equivalent area cannot be greater than the full basin area.~~
- ~~— The equivalent area cannot be greater than the full basin area.~~
4. Using the LID Benefit ratio (2) identify the appropriate Incentive Factor from Table 2.
5. Multiply the LID Equivalent area (3) by the appropriate Incentive Factor (4) to calculate the LID Retrofit Incentive Points for the project.

#### Runoff Treatment (MR#6) Benefit Ratio and Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the “full basin” in these steps.
- ~~1-2. Determine the required New/Redevelopment Runoff Treatment flow (cfs) or Volume (ac-ft) for the full basin using WWHM 2012.~~
- ~~2-3. Determine the flow rate or volume used in the design of the provided by the project. This is the “actual” runoff treatment flow rate or volume of a new BMP project, or the “actual” flow rate or volume added through a project that retrofits an existing BMP.~~
- ~~3. Determine the basin area that delivers the design flow rate or volume to the BMP by iteratively running WWHM 2012 using smaller basins (with the same proportion of pervious and impervious surface as in the full basin analysis) until you obtain the flow rate or volume that matches the actual BMP design.~~
4. Divide the design basin area actual flow rate or volume (3) by the required area full basin required flow rate or volume (12) to get the equivalent area Runoff Treatment Benefit ratio.
5. Multiply the Runoff Treatment Benefit equivalent area ratio (4) by the full basin area from (1) to get the MR #6 equivalent Runoff Treatment Equivalent area. The equivalent area cannot be greater than the full basin area.
- ~~6. The equivalent area cannot be greater than the full basin area. Using the Runoff Treatment Benefit ratio (4), identify the appropriate Incentive Factor from Table 2.~~
- ~~6-7. Multiply the Runoff Treatment Equivalent area (5) by the appropriate Incentive Factor (6) to calculate the Runoff Treatment Retrofit Incentive Points for the project.~~

#### Flow Control (MR#7) Benefit Ratio and Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the “full basin” in these steps.

- 1-2. Determine the required New/Redevelopment Retention/Detention Volume (ac-ft) for full basin.

Use the Western Washington Hydrology Model (WWHM 2012) and calculate the amount of retention/detention storage that would be required to meet the Standard Flow Control Requirement (refer to Permit Appendix 1, Section 4.7) (e.g., match developed discharge durations to applicable pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow).

- 2-3. Identify the volume of retention/detention at the overflow installed for the project (ac-ft). This is the "actual" retention/detention volume of a new BMP project, or the "actual" volume added through a project that retrofits an existing BMP.

- 3-4. Divide the actual retention/detention volume (23) by the full basin required New/Redevelopment retention/detention volume (12) to get the equivalent volume Flow Control Benefit ratio. If the ratio is greater than 1.0, use 1.0 as your Flow Control Benefit equivalent volume ratio.

- 4-5. Multiply the Flow Control Benefit equivalent volume ratio (34) by the full basin area (ac1) ~~used in the first calculation~~ to get the MR #7 Flow Control equivalent Equivalent area. The equivalent area cannot be greater than the full basin area.

6. ~~The equivalent area cannot be greater than the full basin area.~~ Using the Flow Control Benefit ratio (4), identify the appropriate Incentive Factor from Table 2.

7. Multiply the Flow Control Equivalent area (5) by the appropriate Incentive Factor (6) to calculate the Flow Control Retrofit Incentive Points for the project.

### Instructions for Appendix 11 Reporting

Each year Phase I city and county permittees must submit an updated list to Ecology with their Annual Reports. Appendix 11 provides a format for this reporting. This section provides additional guidance for completing the Appendix 11 table.

Even though the defined level of effort is due to be tallied at the end of 2022, annual reporting of SSC Program projects provides the opportunity to track and report progress. Fill in all values as completely as possible each year. In subsequent years, permittees should update the values for each project and add projects to new rows, as needed. You can remove projects that are cancelled or otherwise will not be used toward achieving the defined level of effort (as expressed in retrofit incentive points). Projects that were completed prior to January 1, 2019 may not be included.

### Project List & Project Name

Permittees should assign each SSC project its own row. Project names may change over time. If a project name changes, include a note or parenthetical that ties the new name to the old name. Maintenance actions with a recurring event frequency over multiple years must be named uniquely for each year (e.g., Sweeping for WQ 2020).

## Type

Ecology assigned each project type a number as described in Appendix 11 and this document. The project type numbers reflect the order in which they are listed in S5.C.6.a.

## Status

Ecology proposes the 2019-2024 Permit's defined level of effort be reflected in retrofit incentive points calculated for up to two project stages: design and completion. Projects at or beyond the 60% design stage may be counted toward the defined level of effort allowed for design-stage projects. The complete/maintenance-stage is appropriate for completed facility construction projects, fully executed property purchases, completed restoration projects, and implemented maintenance actions that are associated with Project Types #6 and #10. For tracking purposes, update the status of projects (as of December 31) for each yearly submittal.

## Cost Estimate

Estimate total costs during the design-stage and provide actual costs for the complete/maintenance stage. Update costs over the course of the project where known.

Where known, include local/state/federal funding sources by percentage in the Comments field. Once a project is complete, the Comments should reflect the accurate funding source distribution. For projects still underway, you may want to include an explanatory note to distinguish between funding sources that are secured and funding sources that you estimate.

## Basin Area

Enter the total area served by the structural stormwater control project (e.g., the full basin area). For stormwater facilities, this is the catchment area contributing runoff to the facility. For other project types, this is the area purchased or otherwise conserved. For line cleaning projects, this is the line miles cleaned. For street sweeping projects, enter the formula variables for lane-curb miles swept x # events/year – 1 event [e.g., 20 x (12-1)].

## LID Equivalent Area and Incentive Factor

For each structural stormwater control project that you expect to result in a hydrologic benefit for small storms, use the LID Performance Standard Benefit Ratio and equivalent-Equivalent area-Area process described above. Enter the calculated LID Equivalent Area in the relevant Appendix 11 column. Then use Table 2 to identify the appropriate LID Incentive Factor and populate the relevant Appendix 11 column with the multiplier value. Remember to add 0.10 if the project implements an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

If the project also provides benefits for standard flow control and/or runoff treatment, calculate equivalent areas and retrofit incentives for each benefit. There can be a different retrofit incentive for each of the three equivalent areas. Ecology proposes that retrofit incentive points for LID, runoff treatment and flow control can be summed.

### Runoff Treatment (RT) Equivalent Area and Incentive Factor

For each structural stormwater control project that you expect to result in a runoff treatment benefit (e.g., TSS, dissolved Copper, dissolved Zinc, or Total Phosphorus), calculate Runoff Treatment **Benefit Ratio and** Equivalent Area as described above. Enter the calculated RT Equivalent Area in the relevant Appendix 11 column. Then use Table 2 to identify the appropriate RT Incentive Factor and populate the relevant Appendix 11 column with the multiplier value. Remember to add 0.10 if the project implements an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

If the project also provides benefits for LID and/or standard flow control, calculate equivalent areas and retrofit incentives for each benefit. There can be a different retrofit incentive for each of the three equivalent areas. Ecology proposes that retrofit incentive points for LID, runoff treatment and flow control can be summed.

### Flow Control (FC) Equivalent Area and Incentive Factor

For each structural stormwater control project that you expect to result in a hydrologic benefit for larger storms, use the Flow Control **Benefit Ratio and** Equivalent Area process described above. Enter the calculated FC Equivalent Area in the relevant Appendix 11 column. Then use Table 2 to identify the appropriate FC Incentive Factor and populate the relevant Appendix 11 column with the multiplier value. Remember to add 0.10 if the project implements an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

If the project also provides benefits for LID and/or runoff treatment, calculate equivalent areas and retrofit incentives for each benefit. There can be a different retrofit incentive for each of the three equivalent areas. Ecology proposes that retrofit incentive points for LID, runoff treatment and flow control can be summed.

### Other Incentive Factor

For each structural stormwater control project that is not Project Type 1, 2, 3 or 4, use Table 2 to identify the appropriate Incentive Factor and populate the "Other Incentive Factor" column with the multiplier value. Remember to add 0.10 if the project implements an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).



### Total Retrofit Incentive Points

Refer to Table 2 and associated project details to determine the Retrofit Incentive Points for each SSC project. Insert the calculated value in the Appendix 11 total retrofit incentive points column.

For project types 1, 2, 3 and 4 that provide benefits for LID, runoff treatment and flow control, calculate retrofit incentive points for each benefit based on the appropriate Equivalent Areas and Incentive Factors. Then add the results of the ~~two or~~ three calculations together to obtain the total retrofit incentive points. Enter this value in the Appendix 11 total retrofit incentive points column.

### Latitude/Longitude and Receiving Water Body Name

If your project has multiple locations, include a lat/long for each location and describe the reason why in an explanatory note. Maintenance actions that cover a geographic area should provide zip codes for the area addressed and attach a map at the time the retrofit incentive points are calculated for a compliance measure. If a receiving water body is unnamed, also include the name of the water body that the unnamed creek/lake is a tributary.



## Preliminary Draft Permit Language S5C6

### 6. Structural Stormwater Controls

Each Permittee shall implement a structural stormwater controls program to prevent or reduce impacts to waters of the state caused by discharges from the MS4. Impacts that shall be addressed include disturbances to watershed hydrology and stormwater pollutant discharges.

The program shall consider impacts caused by stormwater discharges from areas of existing development, including runoff from highways, streets and roads owned or operated by the Permittee, and areas of new development, where impacts are anticipated as development occurs.

Minimum performance measures:

- a. The program shall address impacts that are not adequately controlled by the other required actions of the SWMP.
  - i. The program shall consider the following projects:
    - (1) New flow control facilities, ~~including LID BMPs.~~
    - ~~(2)~~ (2) New treatment (or treatment and flow control) facilities, ~~including LID BMPs.~~
    - ~~(2)~~(3) New LID BMPs
    - ~~(3)~~(4) Retrofit of existing treatment and/or flow control facilities.
    - ~~(4)~~(5) Property acquisition for water quality and/or flow control benefits (not associated with future facilities), including riparian habitat acquisition.
    - ~~(5)~~(6) Maintenance with capital construction costs  $\geq$  \$25,000.
  - ii. Permittees should consider other projects to address impacts, such as:
    - (1) ~~Riparian habitat acquisition~~ Restoration of riparian buffers.
    - (2) Restoration of forest cover ~~and/or riparian buffers.~~
    - (3) Floodplain reconnection projects on water bodies that are not flow control exempt per Appendix 1.
    - ~~(4)~~ ~~Capital projects related to the MS4 which implement an Ecology-approved basin or watershed plan.~~
    - ~~(5)~~(4) Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C.
  - iii. Permittees may not use in-stream culvert replacement or channel restoration projects for compliance with this requirement.
  - iv. The Structural Stormwater Control program may also include a program designed to implement small scale projects that are not planned in advance.

b. Each Permittee's SWMP Plan shall describe the Structural Stormwater Control Program including the following:

- i. The Structural Stormwater Control Program goals.
- ii. The planning process used to develop the Structural Stormwater Control Program, including:
  - (1) The geographic scale of the planning process.
  - (2) Issues and regulations addressed.
  - (3) Steps in the planning process.
  - (4) Types of characterization information considered.
  - (5) Amount budgeted for implementation.
  - (6) The public involvement process.
  - (7) A description of the prioritization process, procedures and criteria used to select the Structural Stormwater Control projects.

c. ~~No later than March 31, 2014~~ With each annual report, each Permittee shall provide a list of planned, individual projects scheduled for implementation during this permit term. This list must include at a minimum the information and formatting specified in Appendix 11. Each Permittee's annual report shall provide an update of this list.

d. No later than December 31, 2022, each Permittee shall achieve the following retrofit incentive points, as calculated per Appendix 11:

1000 design-stage retrofit incentive points, and

300 complete/maintenance-stage incentive points.

Construction-stage and complete/maintenance-stage incentive points may substitute for design-stage incentive points.

## Preliminary Draft Permit Language Appendix 11

### APPENDIX 11 – Structural Stormwater Controls Project List

The annual reporting requirement described in S5.C.6.c must follow the format and instructions provided in this appendix and the associated *Phase I Municipal Stormwater Permit Guidance for Structural Stormwater Control Program (dated September 30, 2017)*.

| Project Name | Project Type <sup>a</sup> | Status <sup>b</sup> | Cost Est. | Basin Area (ac) | LID Equiv. Area | LID Incentive Factor <sup>c</sup> | RT Equiv. Area | RT Incentive Factor <sup>c</sup> | FC Equiv. Area | FC Incentive Factor <sup>c</sup> | Other Incentive Factor <sup>c</sup> | Total Retrofit Incentive | Other Benefit | Lat / Long (X,Y) | Receiving waterbody name | Comments |
|--------------|---------------------------|---------------------|-----------|-----------------|-----------------|-----------------------------------|----------------|----------------------------------|----------------|----------------------------------|-------------------------------------|--------------------------|---------------|------------------|--------------------------|----------|
|              |                           |                     |           |                 |                 |                                   |                |                                  |                |                                  |                                     |                          |               |                  |                          |          |

a . Project Type numbers are as follows:

#### Project Type Numbers

1. New flow control facility
2. New runoff treatment facility (or treatment and flow control facility)
3. New LID BMPs
4. Retrofit of existing treatment and/or flow control facility
5. Property acquisition
6. Maintenance with capital construction costs  $\geq$  \$25,000
7. Restoration of riparian buffer
8. Restoration of forest cover
9. Floodplain reconnection projects
10. Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C

b . Enter project Status as follows:

- Design = 60% or more complete with design phase project planning

- Complete = construction complete or property purchase complete/
- Maintenance = indicates successful implementation of qualifying action under Project Type 10.

c. Incentive Factors are the multipliers described in the following table:

| Relevant <sup>1</sup> Project Type #s | Project Achievement Description   | Incentive Factors & Retrofit Incentive Points <sup>2</sup>   |
|---------------------------------------|---|--|
| #1 & #4                               | Flow Control Benefit ratio less than 0.5  | 1.0 times <a href="#">Flow Control</a> Equivalent <a href="#">New/Redevelopment</a> area   |
| #1 & #4                               | Flow Control Benefit ratio less than 0.80 and greater than 0.5  | 1.25 times <a href="#">Flow Control</a> Equivalent <a href="#">New/Redevelopment</a> area  |
| #1 & #4                               | Flow Control Benefit ratio greater than 0.8   | 1.5 times <a href="#">Flow Control</a> Equivalent <a href="#">New/Redevelopment</a> area   |
| #1 & #4                               | Flow Control Benefit ratio less than 0.80 and greater than 0.5 in a known flow control problem area.          | 1.5 times <a href="#">Flow Control</a> Equivalent <a href="#">New/Redevelopment</a> area   |
| #2 & #4                               | Runoff Treatment Benefit ratio less than 0.75   | 1.0 times <a href="#">Runoff Treatment</a> Equivalent <a href="#">New/Redevelopment</a> area   |
| #2 & #4                               | Runoff Treatment Benefit ratio less than 0.75 in a known water quality problem area                           | 1.5 times <a href="#">Runoff Treatment</a> Equivalent <a href="#">New/Redevelopment</a> area   |
| #2 & #4                               | Achieves Basic Treatment with Runoff Treatment Benefit ratio greater than 0.75                                | 1.5 times <a href="#">Runoff Treatment</a> Equivalent <a href="#">New/Redevelopment</a> area   |
| #2 & #4                               | Achieves Enhanced or Phosphorus Treatment with Runoff Treatment Benefit ratio greater than 0.75               | 1.75 times <a href="#">Runoff Treatment</a> Equivalent <a href="#">New/Redevelopment</a> area  |
| #2 & #4                               | Meets WQ standards for target pollutant with Runoff Treatment Benefit ratio equal to 1.0                      | 2.0 times <a href="#">Runoff Treatment</a> Equivalent <a href="#">New/Redevelopment</a> area   |
| #3                                    | Meets LID Performance Standard  | 2.0 times <a href="#">LID</a> Equivalent <a href="#">New/Redevelopment</a> area  |
| #5                                    | Property Acquisition  | 0.50 times acres acquired  |
| #6 & #10                              | Maintenance with capital construction costs $\geq$ \$25,000 or other maintenance actions per S5.C.6.a.ii.(5). | 0.25 times the area served by the maintenance activity, or 0.25 times (curb miles swept x # events/year), or 0.25 times the linear feet lines cleaned. |
| #7                                    | Restoration of Riparian Buffer  | 0.35 times acres restored  |
| #8                                    | Restoration of Forest Cover   | 0.25 times acres restored  |
| #9                                    | Floodplain Reconnection   | 0.10 times acres reconnected, with a maximum of 200 points   |

Notes:

- 1: Project Type #10 may involve projects that are not maintenance activities addressed in this document. For such projects, Ecology expects that the retrofit incentive points can be calculated based on the project's quantified water quality benefit as assigned to project types 1 – 3.
- 2: Add 0.10 to the applicable multiplier for capital projects related to the MS4 which implement an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

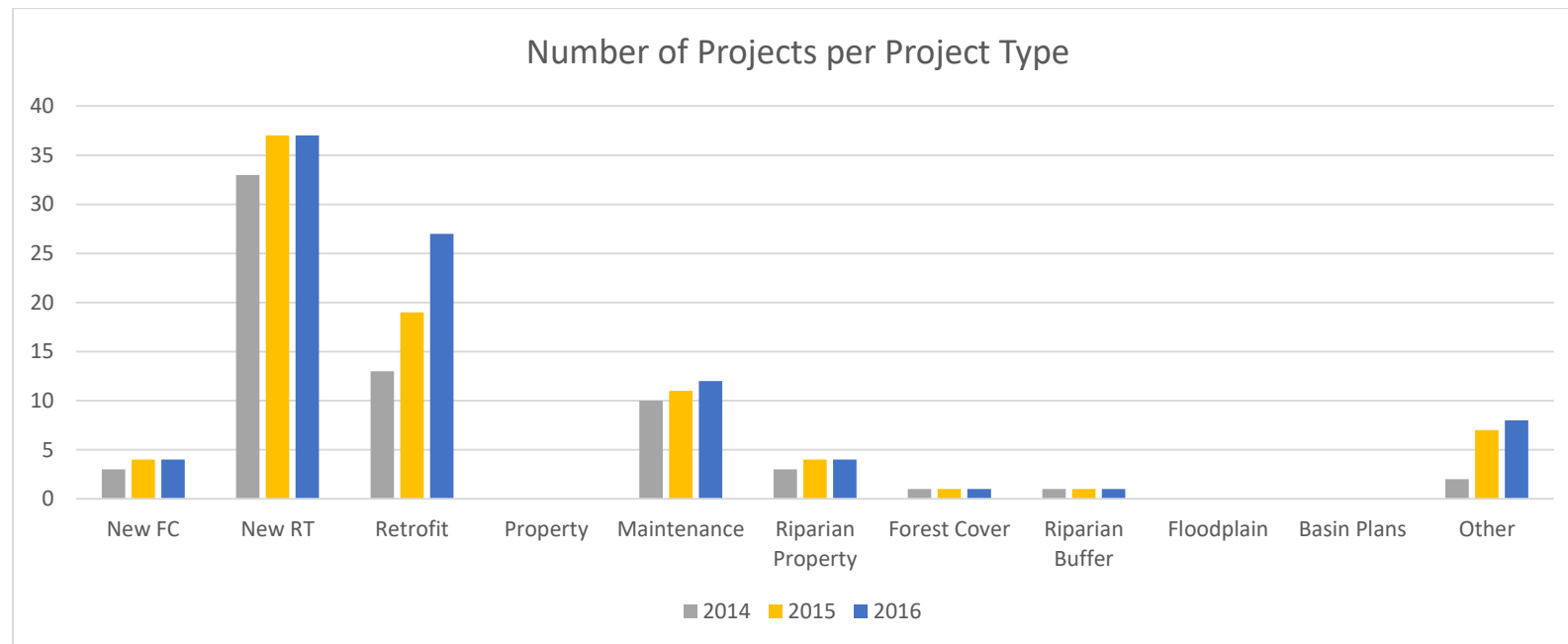
## Attachment A

### What We Learned from the 2014-2016 Annual Report Appendix 11 Submittals

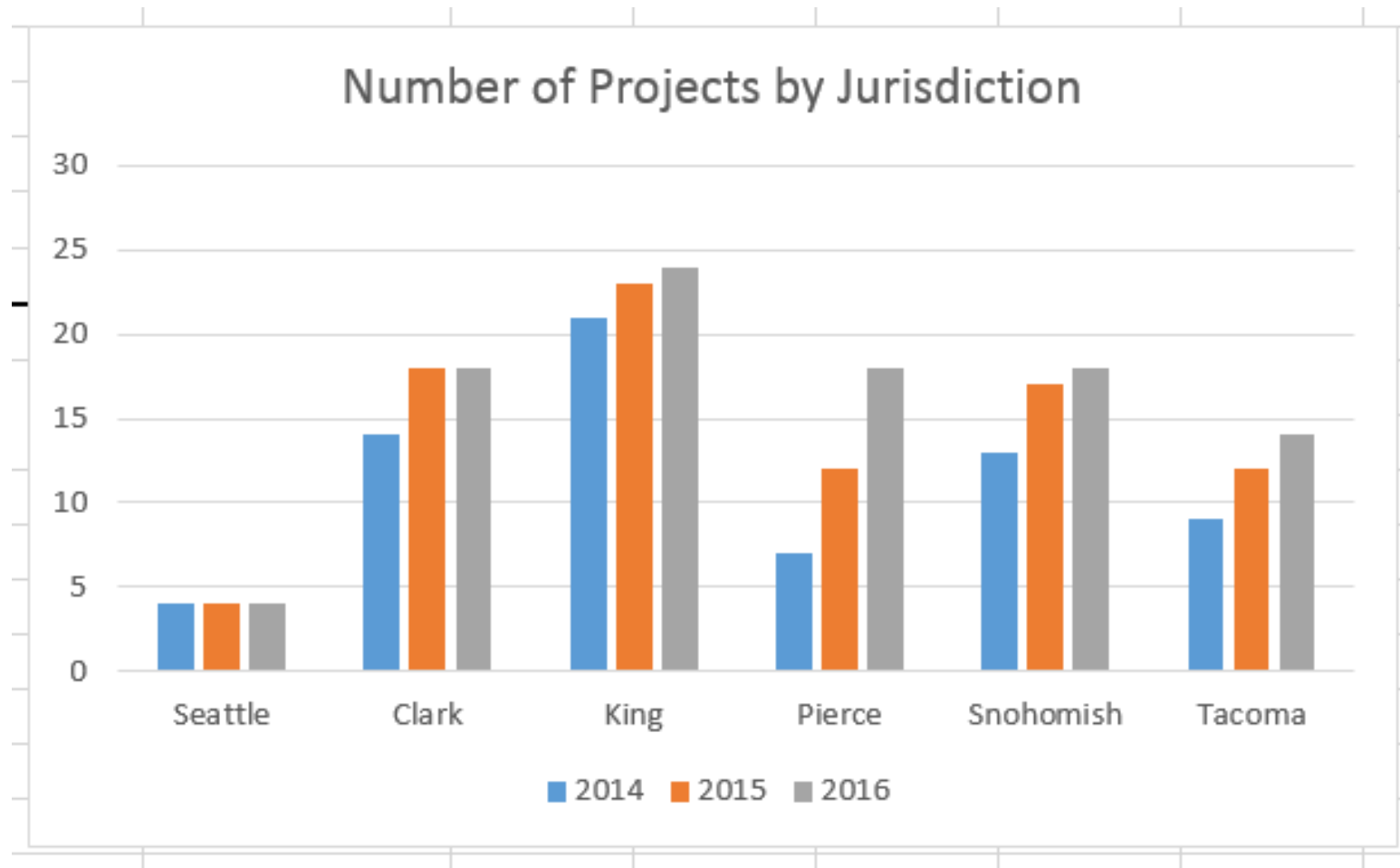
Ecology compiled and assessed the Appendix 11 Annual Report data from calendar years 2014, 2015 and 2016. This included: project types, cost estimates, water quality benefits (in TSS or TSS lbs/yr), hydrologic benefits, and retrofit incentive points. In some cases, Permittees provided additional information to explain calculations and project details that were unclear or unanticipated. Ecology's preliminary proposed requirements and associated guidance document are based in part on the results of this assessment.

Summary statistics are provided in the following figures.

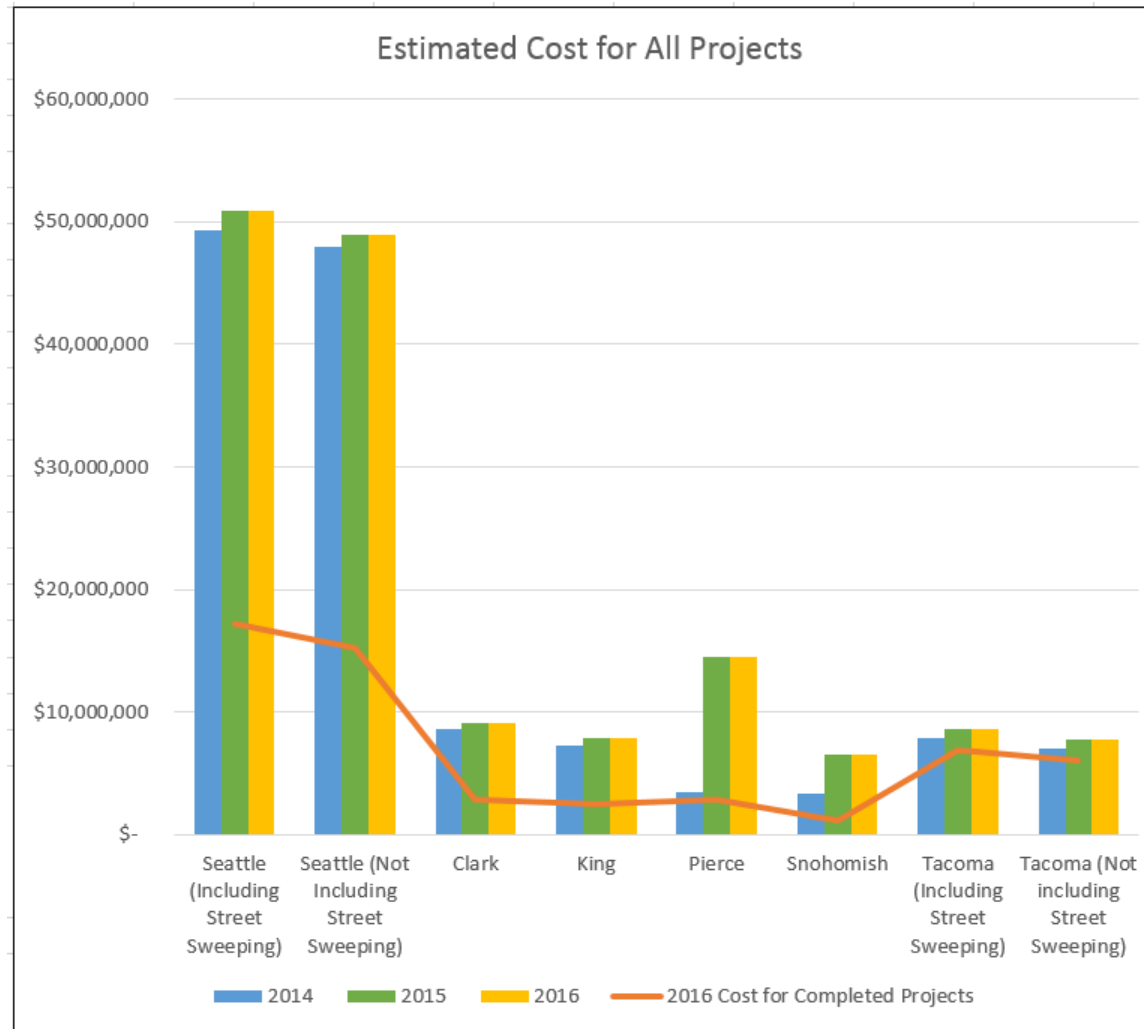
Not all of the eleven project types were equally used. Three project types (Property Acquisition for water quality and/or flow control benefits, Floodplain reconnection, and Capital project related to the MS4 which implement an Ecology-approved basin or watershed plan) were not used. Two other project types (restoration of forest cover and restoration of riparian buffer) only had one project. The majority of the reported projects (70-percent) were in new runoff treatment or retrofit treatment and flow control projects. Annual sweeping programs fit into the Project Type "Other actions to address stormwater runoff" (S5.C.6.a.ii(4)).



The number of projects reported by the jurisdictions differed greatly. In the 2016 reports, the number of projects ranged from 4 to 24, with three jurisdictions reporting a total of 18 projects.

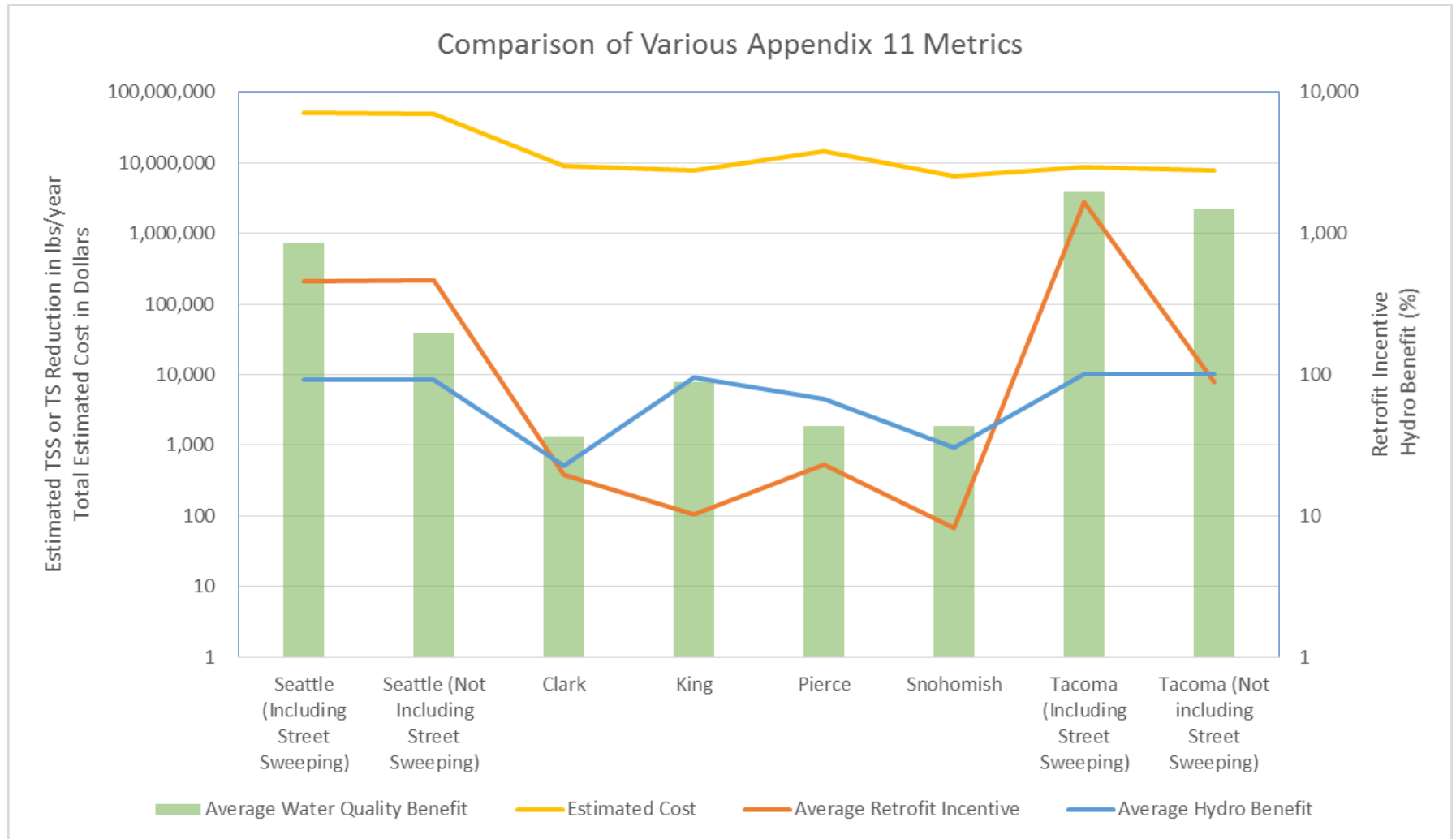


The amount of money planned or actually spent on the project also varied dramatically between jurisdictions. Using total reported costs, without including sweeping activities, the 2016 costs range from \$6.5M to \$48.9M. The average cost for the six jurisdictions is \$15.8M.





The summary chart below attempts to show water quality benefit (in TSS reduction in pounds/year) alongside estimated costs, retrofit incentive points, and hydro benefits.



Ecology's findings are summarized below.

- The number of projects is not associated with costs or retrofit incentive points.
- Costs are not comparable between jurisdictions and higher cost does not necessarily result in a higher water quality benefit.
- Irregularities and inconsistencies associated with street sweeping project calculations suggest that improved guidance and changes to the retrofit 2013-2018 Permit incentive factor are necessary.
- Not all projects that could be included on the Appendix 11 form are included in the submittals. Reasons for leaving out specific projects are different between jurisdictions.
- Not all project types are represented in the submittals.
- Types of projects differ by jurisdiction with more sweeping done in the cities and more retrofit construction in the counties.
- The calculation of water treatment benefit for runoff treatment BMPs using pounds Total Suspended Solids (TSS) per year is subject to a large number of assumptions and variables for each specific application and is difficult to apply equitably over the six jurisdictions. These assumptions and variables include: the amount of rainfall, the volume of runoff, the TSS concentration in the runoff, and the ability of the BMP to remove TSS.

#### How we calculated the Proposed Retrofit Incentive Point-based Defined Level of Effort

Ecology used information from the 2016 Annual Report submittals to calculate possible retrofit incentive points using the following actions and set of assumptions:

- This analysis considers a subset of Project Types only. These are the types of projects that were reported by the six jurisdictions with the exception of Project Type: Other actions to address stormwater runoff (typically sweeping).
  - New flow control facility including LID BMPs (4 projects)
  - New runoff treatment facility (or treatment and flow control facility), including LID BMPs (37 projects)
  - Retrofit of existing runoff treatment and/or flow control facility (27 projects)
  - Maintenance with capital construction costs  $\geq$  \$25,000 (12 projects)
  - Restoration of forest cover (1 project)
  - Restoration of riparian buffer (1 project)
- Since there is no information submitted on the basin area controlled or the level of treatment and flow control provided by projects listed in the jurisdiction's tables, we assumed random values so we could calculate points.
- Ecology used information gathered from closed Stormwater Financial Assistance Program (SFAP) projects (from FY2009 through FY2016) where basin area and equivalent area for runoff treatment and flow control are stored. There are approximately 153 grant projects in the database as of September 1, 2017.
- Information from the grant database used in the analysis are:

- Average basin area = 59.84 acres
- Average Runoff Treatment (MR #6) equivalent area = 43.08 acres (equivalent area ratio of 0.72)
- Average Flow Control (MR #7) equivalent area = 32.91 acres (equivalent area ratio of 0.55)
- Average LID (MR #5) equivalent area = 32.91 acres (equivalent area ratio of 0.55)
- We assumed the average LID equivalent area equal to the average flow control ratio since we didn't have specific information in the grant database to distinguish between LID and Flow Control projects.
- Ecology ran 50 simulations of the data using the projects from the 2016 Appendix 11 report and randomly generating basin area, and the three equivalent area ratios.
- So we would see a minimum value of total retrofit incentive points, the retrofit incentive ratio was set at the lowest incentive point value available for the project. The calculation used the following values:
  - 1.0 for project types: New flow control facility including LID BMPs; New runoff treatment facility (or treatment and flow control facility), including LID BMPs; and Retrofit of existing runoff treatment and/or flow control facility;
  - 0.5 for project type: Maintenance with capital construction costs  $\geq$  \$25,000;
  - 0.35 for project type: Restoration of forest cover; and
  - 0.25 for project type: Restoration of riparian buffer.
- The random number generator provided numbers ranging from zero to twice the average values. This way, the average value over the 50 simulations should be close to the average values in the grant database.
  - Project areas averaged 58.95 acres (goal of 59.84 acres)
  - Runoff Treatment equivalent areas averaged 38.90 acres (goal of 43.07 acres)
  - Flow control equivalent areas averaged 32.42 acres (goal of 32.91 acres)
  - LID equivalent areas averaged 32.42 acres (goal of 32.91 acres)
- The retrofit incentive value averaged 1,214 per Phase I jurisdiction (total points of 7,286)
- The retrofit incentive points per jurisdiction ranged from a low of 311 to 2,409 points
- The results of the simulations are shown in the table below.

### Summary of Retrofit Incentive Point Monte Carlo Evaluation

|                  |                 | Equivalent Areas (ac) |              |       |                                  |
|------------------|-----------------|-----------------------|--------------|-------|----------------------------------|
|                  |                 | Runoff Treatment      | Flow Control |       |                                  |
| Jurisdiction     | Basin Area (ac) | MR #6                 | MR #5        | MR #7 | Sum of Retrofit Incentive Points |
| Clark County     | 299             | 201                   | 164          | 151   | 516                              |
| King County      | 1,449           | 936                   | 790          | 793   | 2,409                            |
| Pierce County    | 1,082           | 693                   | 600          | 595   | 1,839                            |
| Seattle          | 171             | 112                   | 104          | 95    | 311                              |
| Snohomish County | 939             | 621                   | 503          | 519   | 1,573                            |
| Tacoma           | 399             | 266                   | 223          | 214   | 637                              |
| Grand Total      | 4,339           | 2,829                 | 2,384        | 2,367 | 7,285                            |