MEETING AGENDA

KELSO STORMWATER ADVISORY COMMITTEE

DATE: August 25, 2010
TIME: 4:00 pm – 5:00 pm
LOCATION: Kelso City Hall, Suite 203

Unfinished Business

1) May 26, 2010 meeting minutes approval

New Business

1) Stormwater issues and directions; National, State, Local – Van McKay

Kelso Stormwater Advisory Committee Meeting
August 25, 2010 @ 4:00 p.m.
City Hall Conference Room 203
203 S. Pacific Ave.

Attendees:

1. Van McKay
2. Gloria A. Nichols
3. Stefanie Taylor
4. Don Lyman
5. Jay Friedman
6. Michael Dyer
7. Steph Allen
8.
9.
10.
11.
12.
13.
14.
15.

Engineering Phone 360-423-6590
Fax 360-423-6591
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Fax 360-423-8196

CITY OF KELSO
Public Works Department
203 S. Pacific Ave., Suite 205
PO Box 819
Kelso, WA 98626

Stormwater Advisory Committee Meeting

May 26, 2010

Call to Order:

Tim Wines called the meeting to order at 4:03 p.m., at City of Kelso City Hall, 203 S. Pacific Ave., Conference Room 203.

Those present were as follows:

Advisory Committee Members:
Gloria Nichols
Tim Wines
Steffanie Taylor
Dan Howell
Don Lemmons
Gary Fredricks

Staff:
Van McKay, City of Kelso
Stephanie Helem, City of Kelso

Approval of Minutes:

Don Lemmons made the motion, seconded by Dan Howell to approve the minutes of February 22, 2010. Motion carried, all in favor.

Unfinished Business:

1. Advisory Committee Youth Member

Van McKay led a brief discussion regarding the Advisory Committee Youth Member position. He has spoken with Michael Dyer a sophomore at Kelso High School who may be interested and is anticipating an application submittal soon.

2. Development Ordinance Update

Van McKay provided the committee an update on the Development Ordinance being presented at the March 2, 2010 Council Meeting for the 1st Reading. The 2nd Reading of the Ordinances, with minor revisions from the 1st Reading, was presented at the March 16, 2010 Council Meeting and was approved being effective 5 days after approval.

3. Integrated Pest Management and Herbicide Plan Draft Review

Van McKay gave a brief overview of the drafted plan. He interviewed the City Operations and Parks employees regarding practices. This plan is required by the NPDES Permit. A review and discussion of the Plan was performed. The following items were discussed:

Page 3

- IV. Qualified Personnel – List code reference.

Page 4

- V. Description of Properties – Consistency of picnic tables in all parks.

Page 6

- V. Description of Properties.
  - Q. Kelso Regional Airport – Van will verify airport acreage.
  - R. Should read "Right-of-Ways".
- VI. Best Management Practices
  - A. Nutrients – remove "such as" replace with "that contain".
  - C. Herbicides – Last sentence to read as follows, "The airport, right-of-ways, Cowlitz River…."
  - Discussion on auditing to insure best management practices are being followed. Homeowner vs. License holders. Encourage less use of pesticides. Round Up vs. Oust or other chemicals. Environmental effects.

Page 7

- 1st Paragraph – Clarification on adding Round-up. Is Oust legal to use and/or sale in Washington?
- 1st Paragraph – Clarification on "Facilities staff". Change to "The License Holders and authorized staff apply the following herbicides:"
- Table – Capitalize all seasons in table.

Page 8

- Table – Water Treatment Plan Section. Several changes in wording starting with third sentence in paragraph. Should read as follows: "…The program has changed, on a trial basis, where the lawn will no longer be fertilized. Also, during mowing, grass clippings will be left on the lawn. The trial program includes inspection….". Also, "… If the lawn can thrive with no fertilizer, the City will consider permanently…".
- D.2 – Replace the words "nutrients" and "fertilizers" with the word "chemicals".

Page 9

- F.1 – "PPE" define as "Personal Protective Equipment".
- G – Spell out "3".

Page 10

- VIII. Training
  - Replace "and or" with "and/or".
  - 1st sentence to read "…apply nutrients, pesticides, and herbicides on public …".
  - Brief discussion on certification.

Global Search regarding formatting 1, 2, 3 or a, b, c.

Preventative Maintenance Appendices. The following revisions were suggested:

- Procedure applies monthly – Van will verify.
- Addition – monthly "or as needed"
- Weeding Program –
    - No. 3 – "Spray to kill weeds". Define what is being sprayed.
    - No. 3 – Formatting
- Leaf Maintenance Program
    - No. 3 – Take out "Be able to".
    - No. 9 – Safety misspelled.
- Brief discussion on safety equipment and spill clean-up/prevention.

The Park and Operation Departments are currently reviewing the Nutrient, Integrated Pest Management and Herbicide Plan.

Motion:

Dan Howell made the motion, seconded by Gary Fredricks, "Approve Nutrient, Integrated Pest Management and Herbicide Plan with revision proposed". Motion carried, all in favor.

Discussion following on Public Education for Stormwater. Gloria suggested a 30 minute show per month. "Important for Environment" dialog. This would be a visual reminder for the public.

Next Meeting:

Committee discussed and agreed the next meeting shall be held August 25, 2010.

Meeting adjourned at 5:10 pm.

Approved:

Tim Wines, Chairperson

Stephanie Helem, Recording Secretary

Proposed Requirements and Timelines to Update Development Codes to Incorporate LID

August 2010

LID development principles – Refers to LID measures authorized through a variety of local development codes beyond the stormwater code. Examples include provisions for:

- clustering and impervious surface limits (zoning and subdivision code),
- narrower roads (road standards),
- native vegetation retention (clearing and grading and subdivision code),
- reduced lot setbacks (zoning and utilities code).

Proposed Approach:

1. Permits would use the PCHB language and performance standard to frame the requirements. Jurisdictions would have flexibility in the specifics of code revisions.[i]
2. Deadlines for implementation would align with Growth Management Act (GMA) update deadlines.[ii]

The local program would require non-structural preventative actions and source reduction approaches, including low impact development techniques, to minimize the creation of impervious surfaces, and measures to minimize the disturbance of soils and vegetation where feasible and to facilitate meeting the performance standard.

Phase I and Phase II jurisdictions in King, Pierce, Snohomish, Clark, Kitsap, Thurston, Whatcom, and Clallam Counties[iii]

a. Proposed deadline to adopt LID site and subdivision performance standard, checklists, and technical practices is no later than December 1, 2014.
b. Proposed deadline to review and, as necessary to incorporate LID principles[iv], revise ordinances and other enforceable documents that apply to site and subdivision development, such as codes applying to zoning, subdivision, road and parking standards, landscaping, clearing and grading, and utilities is no later than December 1, 2014.

Phase II jurisdictions in Island, Skagit, Lewis, Cowlitz, and Grays Harbor Counties

a. Proposed deadline to adopt LID site and subdivision performance standard, checklists, and technical practices is no later than December 1, 2015
b. Proposed deadline to review and, as necessary to incorporate LID principles, revise ordinances and other enforceable documents that apply to site and subdivision development, such as codes applying to zoning, subdivisions, road and parking standards, landscaping, clearing and grading, and utilities is no later than December 1, 2015.[v]

END NOTES

[i] Ecology proposes to use the performance standard to drive the use of LID techniques and development principles. Most projects meeting the threshold would need to use development principles such as narrower roads, clustering, or retention of native vegetation to meet the performance standard. Ecology's proposed approach is consistent with past practice of setting a hydrologic performance standard and providing a menu of BMPs and practices to achieve that performance standard. This allows developers flexibility in applying LID techniques and development principles to specific sites and project designs. It also provides each local government the flexibility to determine which development principles work best in its jurisdiction.

[ii] The 2010 Washington State Legislature delayed the GMA deadlines to update comprehensive plans and development codes to changes in the GMA by three years from previous deadlines. By proposing to align the deadline for LID development code updates with the new GMA update deadlines, Ecology intends to provide efficiencies for concurrent review, amendment, and public process. Ecology also proposes the deadlines in response to input from advisory committee members that local governments prefer to amend the stormwater codes at the same time as other development codes. This is in part for efficiency, but additionally because developments will need to use the LID development principles to meet the performance standard.

[iii] Because the GMA update deadlines apply to the counties and all the cities within those counties, aligning the LID deadline means that some of the Phase II cities and counties have the same deadline as the Phase I permittees. New permittees under the 2012 permit would not be subject to this deadline.

[iv] Ecology proposes to require review and revision of codes "as necessary" rather than identifying and requiring amendment of specific development codes. That level of specificity is not possible because local government codes vary widely in organization, terminology, and approach. In addition, many local governments already have adopted some LID development principles, and permit language requiring an amendment to those codes is unnecessary and could raise concerns about compliance.

[v] Aberdeen is the only Phase II with a proposed LID deadline that does not align with the GMA update deadline. The city is in a non-GMA county and has a deadline to update critical areas and resource lands ordinances no later than December 1, 2017. Because this date is after the end of the next permit term, we are proposing a deadline of December 1, 2015 to adopt LID site and subdivision standards and development principles.

Proposed Requirements for Basin-Scale Approach

August 12, 2010

Proposed Approach: When permittees take land use actions to significantly increase the Urban Growth Area (UGA) or to significantly increase densities, the permit would require the local government to conduct an analysis of impacts to water quality and hydrology and a description of the public interest rationale for the action. The outcome of the analysis would be sub-basin targets established to prevent or mitigate impacts of the action, and a description of the measures the local government will take to achieve those targets.[i] The analysis would be subject to a public review process.

A. Actions that would trigger an analysis under this proposed approach
   1. Significant expansion of UGA
      a. Proposed definition of "significant" as 80 acres or ≥5% of area of the existing UGA, whichever is smaller[ii]. The requirement would apply to cumulative increases in area.
      b. Ecology would encourage permittees to conduct an analysis beyond the immediate incremental increase in the UGA to address a longer-term expansion area. This could be done at a 7-year Growth Management Act (GMA) update, a 10-year UGA review[iii], or at any annual Comprehensive Plan amendment.[iv]
   2. Significant increase in density
      a. Proposed definition of "significant" as any increase in density for an area of 80 acres or, for cities, ≥5% of the area of the incorporated city, whichever is smaller. The requirement would apply to cumulative areas of increases in density.
      b. If there is a density range (e.g., 4-8 du/acre), the analysis would address the higher density.

B. Water quality impact and mitigation analysis
   Ecology recognizes that urbanization of relatively undeveloped areas and significant increases in density will impact water quality and hydrology. Current GMA and State Environmental Policy Act (SEPA) laws require a review of these impacts and measures to prevent or mitigate for those impacts. The analysis could be incorporated into those processes or as a separate public process.[v]

   1. The proposal would require an analysis that includes[vi] the following:

a. An assessment of the predicted water quality impacts from the proposed UGA expansion and/or increase in density (done with models at the sub-basin or basin scale).
b. Pollution prevention measures and other mitigation alternatives. The analysis would establish mitigation targets to track for the sub-basin. For example, targets in some sub-basins could include setting limits on the maximum impervious area and minimum area to be retained as native vegetation.
c. The public interest benefits of the action, including social, environmental, and economic benefits. The public interest intersection with GMA is as follows:
   - **UGA Expansion:** It is in the public interest under GMA goals to concentrate growth in UGAs and to provide sufficient land to accommodate growth.
   - **Increase Density Inside UGAs:** It is in the public interest as a GMA goal to have higher density in UGAs.
   - **Increase Density Outside UGAs:** It would be more difficult to justify these actions as consistent with GMA goals, however stormwater impacts at rural densities (1 dwelling unit/5 acres) are much easier to mitigate.[vii]

2. Compliance with the permit would be achieved by conducting the analysis and including it in the public process either as part of SEPA or under the public process for the GMA action.
3. At a minimum, the analysis would:
   a. be conducted at the appropriate sub-basin or basin scale to address upstream and downstream impacts to hydrology and water quality,
   b. include a statement of benefits and costs of the social, economic, and environmental effects associated with the action, including impacts to hydrology and water quality,
   c. identify the best combination of measures to prevent or minimize the impacts to hydrology and water quality,
   d. set targets to track such as for sub-basin impervious surface limits and native vegetation retention[viii]. The targets and measures to achieve them would be the primary outcome of the analysis.
4. The action could not allow a violation of water quality standards.

Implementation and Timing

1. For fully-planning GMA jurisdictions, Ecology proposes to require this analysis for a significant UGA expansion or density increase after 6 months from the effective date of the permit.

2. For non-fully planning GMA jurisdictions (applies only to the City of Aberdeen) Ecology proposes to require this analysis for a significant expansion of boundaries of the incorporated city or density increase after 6 months from the effective date of the permit.

END NOTES

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[i] Ecology proposes to apply the requirement for basin (or sub-basin) analysis based on specific actions or triggers, rather than imposing a general basin planning requirement. This approach addresses future changes in land cover, hydrology, and water quality resulting from increased urbanization.

[ii] Ecology proposes definitions of "significant" and requests advisory committee input on these thresholds.

[iii] The GMA requires cities and counties to provide sufficient land capacity for the 20-year projected growth. (RCW 36.70A.115) Fully-planning local governments must conduct a review of the UGA and densities at least every 10 years (RCW 36.70A.130(3)(a).

[iv] Ecology intends to provide local government permittees with some flexibility in the timing for such an analysis, especially since the trigger actions can occur with any comprehensive plan amendment. Ecology also encourages local governments to use either the GMA public process and/or the SEPA process, but does not specify a public process mechanism.

[v] A consideration of the impact of such actions to water quality and beneficial uses is already required under GMA and SEPA:

a. The State Environmental Policy Act (SEPA) RCW 43.71C.020:

(1) The legislature, recognizing that a human being depends on biological and physical surroundings for food, shelter, and other needs, and for cultural enrichment as well; and recognizing further the profound impact of a human being's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource utilization and exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of human beings, declares that it is the continuing policy of the state of Washington, in cooperation with federal and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to: (a) Foster and promote the general welfare; (b) create and maintain conditions under which human beings and nature can exist in productive harmony; and (c) fulfill the social, economic, and other requirements of present and future generations of Washington citizens.

(2) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the state of Washington and all agencies of the state to use all practicable means, consistent with other essential considerations of state policy, to improve and coordinate plans, functions, programs, and resources to the end that the state and its citizens may:

(a) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(b) Assure for all people of Washington safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

(c) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(d) Preserve important historic, cultural, and natural aspects of our national heritage;

(e) Maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(f) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(g) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(3) The legislature recognizes that each person has a fundamental and inalienable right to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

b. The GMA (RCW 36.70A.070(1) in the land use element:

"Where applicable, the land use element shall review drainage, flooding, and storm water run-off in the area and nearby jurisdictions and provide guidance for corrective actions to mitigate or cleanse those discharges that pollute waters of the state, including Puget Sound or waters entering Puget Sound."

[vi] Ecology plans to provide guidance for this analysis when it issues the draft permits.

[vii] This requirement would also apply to other rural lands such as Limited Areas of More Intense Rural Development (LAMIRD). The authority for counties to designate LAMIRDs is found in the GMA under RCW 36.70A.070(5)(d). They are unincorporated rural areas of more intensive rural development that existed prior to July 1, 1990.

[viii] Ecology recognizes that local governments may set targets other than maximum percent of sub-basin impervious area or minimum percent of vegetated area for some sub-basins. The specific targets would depend on the existing level of development or other factors. For example, in some sub-basins a mitigation target could be a structural retrofit project, or reducing densities in another part of the sub-basin. In other sub-basins a county could propose to expand a UGA in one area and propose to mitigate the action by reducing the UGA in another area.

Ecology Proposal for LID Site and Subdivision Technical Requirements

August 12, 2010

Ecology's presents proposed LID technical requirements for site and subdivision scale development and redevelopment as outlined below:

A. Table of LID Requirements—refer to End Notes for annotated comments on the rationale for the requirements.

B. LID Requirements Table—Clarifications
   Explanation of mandatory checklists
   LID Performance Standard
   Full Dispersion Option
   Treatment Credits

C. LID Requirements in Specific Areas
   Flow Control Exempt Areas
   Projects on Outwash Soils
   Projects in Highly Urbanized Basins

D. Technical Considerations
   Identification of Permeable Pavement Infeasibility
   Procedures for Identifying Saturated Hydraulic Conductivity

Attachment #1 – Feasibility Review Criteria

Attachment #2 – Results of Updated Modeling Summary

LID Curves

Low Impact Development Minimum Requirements for New Development and Redevelopment

A. Table of LID Requirements

Type of Development	Saturated Hydraulic Conductivity[i] > 0.15 inch/hour	Saturated Hydraulic Conductivity ≤ 0.15 inch/hour
New Development—Inside UGA[ii] Based on project size[iii]:		
<2,000 sq ft hard surface; < 7,000 sq ft disturbed area	No LID requirements.	No LID requirements.
>2,000 sq ft hard surface or > 7,000 sq ft disturbed area	M.R. #5-Onsite SW BMP's expanded to include infiltration below pavement unless engineering infeasibility.	M.R. #5-Onsite SW BMP's expanded to include infiltration below pavement unless engineering infeasibility.
>10,000 sq ft hard surface, or >3/4 acre disturbed but < 5 acres disturbed	Performance Standard[iv] or Mandatory list #1[v] (applicant option). Engineering & competing needs feasibility review.[vi] Cost analysis[vii] for commercial green roofs.	Performance Standard or Mandatory list #2[viii] (applicant option). Engineering & competing needs feasibility review. Cost analysis for commercial green roofs.
>5 acres disturbed, or part of a larger common plan of development or sale exceeding 5 acres	Performance Standard with Engineering & competing needs feasibility review. Cost analysis for commercial green roofs.	Performance Standard or Mandatory list #2 (applicant option). Engineering and competing needs feasibility review. Cost analysis for commercial green roofs.
New Development—Outside Current UGA/CUA		
Parcels below 5 acres	See above.	See above.
≥5 acres and any project on parcels 5 acres or larger	Performance standard.	Performance standard.
Redevelopment—Outside UGA/CUA		
Parcels below 5 acres	See above for new hard surfaces. If value of improvements > 50% of existing, apply LID to replaced hard surfaces too.	See above for new hard surfaces. If value of improvements > 50% of existing, apply LID to replaced hard surfaces too.
≥5 acres and any project on parcels 5 acres or larger	Performance standard for new hard surfaces. Cost feasibility analysis only for green roofs. If > 50% value, Performance Standard for replaced hard surfaces.	Performance standard for new hard surfaces. Cost feasibility analysis only for green roofs. If > 50% value, Performance Standard for replaced hard surfaces.

Type of Development	LID Requirement
Redevelopment—Inside UGA Based on project size:	
<2,000 sq ft new hard surface; < 7,000 sq ft disturbed area	No LID requirements.
>2,000 sq ft new hard surface; > 7,000 sq ft disturbed area	M.R. #5-Onsite SW BMP's expanded to include infiltration below pavement unless engineering infeasibility.
>10,000 sq ft new hard surface; >3/4 acre conversion. See below for replaced hard surfaces	Mandatory list #2 or Performance Standard (applicant option), with Engineering & Competing needs feasibility review for these new surfaces. Cost feasibility review only for green roofs.
>5 acre project site or part of a larger common plan of development or sale exceeding 5 acres. See below for replaced hard surfaces	Mandatory list # 1* or Performance Standard (applicant option), with Engineering & Competing needs feasibility review. Cost feasibility review only for green roofs.
Replaced hard surfaces: Where the 50% area or value thresholds are exceeded	The applicable mandatory list* or Performance Standard (applicant option) with Engineering & Competing needs feasibility review.

*Use mandatory list #2 if saturated hydraulic conductivity is < 0.15 in/hr

B. LID REQUIREMENTS TABLE - CLARIFICATIONS

1. *Mandatory List #1: Items below are mandatory unless otherwise noted*
    a. On-site SW Management BMP's of M.R. #5
    b. Use site- appropriate development principles to retain native vegetation and minimize impervious surfaces to the extent feasible as required by local code.
    c. Infiltration below pavement (permeable pavement or impermeable pavement with collection and redistribution below) for new and replaced (if 50% cost or space threshold exceeded)hard surfaces, e.g., public and private walks, driveways, patios, sports courts, roads, parking lots
    d. Rain Gardens meeting a minimum size designation and through which all runoff and overflow from permeable pavement storage basins must pass. Rain gardens should comprise at least 7.5% of residential developments and 4% of commercial developments.
    e. For commercial buildings (not single family residences), green roofs or an impervious roof with runoff routed below the parking lot (cost analysis to claim unreasonableness of green roof if parking lot option not used)

2. *Mandatory List #2 : Items in list are mandatory unless otherwise noted*

   Same as list #1 without rain gardens

3. *LID Performance Standard*

The proposed LID Performance Standard requires meeting ***historic*** flow durations from 8% of the 2-year flow through 50% of the 2-year flow. In basins designated by Ecology as "highly urbanized" (> 40% TIA as of 1985), the LID Performance Standard requires meeting ***existing*** flow durations from 8% of 2-year flow through 50% of the 2-year flow. Project sites which must meet minimum requirement #7 – flow control, and the LID performance standard must meet flow durations between 8% of the 2-year flow through the full 50-year flow.

4. *Full Dispersion Option*

Projects meeting full dispersion (65/10/0) allowed in all development situations. Full dispersion meets treatment, flow control (stream protection), and LID performance standards.

5. *Treatment credits*

An additional benefit of LID techniques is that they provide water quality treatment. Projects can claim to partially or wholly meet their water quality treatment obligations through LID techniques. The water quality requirement would be to treat 91% of the total runoff file water volumes that either enter or bypass LID techniques that provide the adequate level of treatment. Cumulative water volumes that have passed through bioretention soils or through native soils (that meet the soil quality criteria) beneath pavements can be tracked by approved continuous runoff models. Those volumes can be subtracted from the 91% target. Projects not fully meeting the 91% target through approved LID techniques must locate approved, engineered treatment systems sized to effectively treat sufficient additional runoff to raise the treated runoff volume to at least 91%.

C. LID REQUIREMENTS IN SPECIFIC AREAS

6. *Flow Control Exempt Areas*

At project sites which drain to surface waters not significantly impacted by hydrologic changes caused by development (see Appendix I-E, Flow Control Exempt Surface Waters in the Western Washington storm water manual), the LID requirement is modified. LID techniques and principles have pollution control benefits as well as hydrologic benefits. Therefore, the requirement for LID techniques can be restricted to those surfaces that are pollution-generating.

- Projects are relieved from meeting the flow control standard (matching flow durations from 50% of the 2-year through the 50-year flows).

- Projects may choose to meet the LID performance standard (match durations from 8% of 2-year through 50% of 2-year flow), or apply the LID techniques from the applicable mandatory list only to pollution-generating surfaces.
- In these areas, lists #1 and #2 do not require rain gardens serving non-PGIS or non-PGPS, nor infiltration below non-PGIS (sidewalks, patios). Also, for commercial sites, roof runoff control via infiltration below permeable pavement or application of green roof technology is not required unless the roof is classified as a Pollution-Generating Impervious Surface (roofs are classified as PGIS if they are metal or vent a significant amount of pollutants).

7. Projects on Outwash Soils

At project sites on soils with higher infiltration rates characteristic of outwash soils, the performance standard may be achieved with the use of a centralized retention (a.k.a. infiltration) basin. The minimum requirements for treatment, including pre-treatment prior to infiltration, must also be achieved.

8. Projects in Highly Urbanized Basins

Ecology has allowed a reduced stream protection standard in highly urbanized basins (defined as basins with 40% or more total impervious area as of 1985, as further identified on maps released by Ecology). That standard is to match durations produced by the existing land cover of the project site. If Ecology retains that standard, it follows that the LID standard should also be based on matching durations to the existing land cover. The same rationale for the stream standard applies to the LID standard. Until such time as a basin-specific strategy for improving hydrology and habitat conditions is developed, it is difficult to justify matching flow durations to an historic land cover condition.

D. TECHNICAL CONSIDERATIONS

9. Identification of Permeable Pavement Infeasibility

Ecology would appreciate additional input to establish instances where permeable pavements, or impermeable pavements with re-distribution of runoff below the pavement, should be considered not feasible

Possible Example: Roads with AADTs above 10,000 and any collector/distributor or arterial

10. Updated Guidance on Procedures for Identifying Saturated Hydraulic Conductivity:

This performance standard approach requires assessment of project site saturated hydraulic conductivity rates. Revised guidance re how to establish short-term and long-term rates and averaging rates across a site would be needed.

END NOTES

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[i] The primary intent and benefit of LID is to retain and infiltrate storm water on the project site. Where the underlying soil has extremely low infiltration capability, there is minimal ability to infiltrate deeply. In those instances, it would be very difficult to impossible for a project to meet the performance standard as measured by the accepted runoff models. The project would have to export water from the site through rainwater harvesting, internal use, and discharge to a sanitary sewer, which would have to discharge through a municipal sewage treatment plant out of the basin. Ecology has decided that rainwater harvesting is not an LID technique that is ready for common use throughout western Washington.
Ecology has revised the high density residential and commercial projects examples presented earlier to the committee and varied the assumed site infiltration rates to determine a minimal infiltration rate at which it could expect compliance with the performance standard (See Attachment #2). The examples assumed extensive use of permeable pavement and rain gardens, and detention facilities to meet both the proposed LID standard and the stream protection standard. Further description of the assumptions is available in the January 25th meeting materials posted at the LID Technical Committee website. Based upon those examples, Ecology has decided to place the minimal infiltration rate for the performance standard at 0.15 inches per hour. Compliance with both performance standards is considered reasonably achievable with the assumed LID techniques and a detention facility which is not any larger than if LID techniques were not used.

[ii] Areas outside the UGA generally have much less land disturbance and corresponding higher quality aquatic habitat and resources. We want to preserve that high quality. Because most parcels are multiple acres, there are more storm water management options for keeping runoff on-site and meeting the hydrologic performance standard.
Inside the UGA, there can be more confounding factors that make keeping runoff on-site more difficult and application of some LID techniques impractical or unwise. So, while we would prefer all sites to meet the performance standard, it may not be feasible in some cases. Therefore it is appropriate to identify instances that warrant relief from the standard. But even in these instances, some LID techniques and principles are appropriate and implementable and should be used.

[iii] Ecology has long-standing guidance and permit requirements for triggering storm water requirements based upon project size. To reduce regulatory confusion, Ecology considers it appropriate to use those same size thresholds to apply project-level LID requirements.

The lowest level of triggers, 2,000 sq. ft. of impervious area and 7,000 sq. ft. of disturbed area are used to apply Minimum Requirement #5, On-site Stormwater Management BMP's. These are BMP's that are considered appropriate for a single family home or a small commercial project. They generally do not require the services of a professional engineer. The existing M.R. #5 requires implementation of a soil quality and depth standard, and roof and driveway dispersion or infiltration depending upon project soil type. To these requirements, we propose to add use of permeable pavements. A drawback with this approach is that professional services may have to be employed to justify not using permeable pavement. e.g., confirmation of a seasonal high groundwater table.
At 10,000 sq. ft. of impervious area, or conversion of ¾ acres of native vegetation to lawn/landscape, or conversion of 2.5 acres of native vegetation to pasture, the stream and wetland hydrologic performance standards apply. Since the primary need for the LID requirement is to reduce hydrologic disruption caused by projects, Ecology decided to use these same project sizes to trigger the performance standard and the mandatory lists of LID techniques. Compliance with the performance standard requires the services of a professional engineer.
Also, the larger the project, the less potential for surrounding development to restrict LID options, and more options are available to the developer (e.g., location of developed and undeveloped areas, location and options for LID techniques.). Therefore, for sites that have sufficient locations to infiltrate storm water at or above 0.15 in./hr, Ecology has chosen 5 acres as a project size which should be expected to meet the performance standard without the option of simply using the mandatory list option.

[iv] Ecology has indicated that its bottom line interests lie in preserving and to the extent possible restoring high quality aquatic natural resources. So, Ecology prefers having an aspect to the LID requirement that focuses on the achievement of a hydrologic performance standard that would significantly reduce alterations in the natural hydrology and thus impacts on the beneficial uses dependent on that hydrology. Ecology already has a stream erosion protection standard that controls the duration of flows in the range of ½ the 2-year flow to the 50-year flow. But that standard is only intended to prevent accelerated stream channel erosion. It controls flows that are exceeded 1% of the time or less in a natural land cover situation. It does not guard against other significant alterations in the natural hydrology that impact the beneficial uses. Those alterations commonly occur with land development in most watersheds in western Washington.
The proposed LID standard extends the lower limit of the range of flows whose duration must be matched to 8% of the 2-year flow. That flow rate is associated with flows that are exceeded approximately 10% of the time and less. Extending the duration standard to the 10% level will also have the effect of reducing the magnitude of deviations in the flows that are exceeded greater than 10% of the time as compared to deviations from historical flows by projects that only have to match durations to the flows occurring at 1% frequency and lower. Ecology cannot quantify the relative benefits to the beneficial uses of this more stringent standard. It can say that more closely matching the natural hydrology will reduce the impact of land development on the physical aspects of surface water habitat, and will reduce pollutant loading to surface waters through trapping of pollutants in the soils.
The 10% exceedance level was selected because matching flows up to that level is readily achievable with LID techniques that Ecology considers to be AKART. However, the proposal allows the developer to choose a different combination of LID techniques than those in the "mandatory list" as long as the performance standard is achieved.

[v] State water pollution control laws require the use of all known available and reasonable treatment (AKART) to control and prevent pollution must be implemented regardless of the quality of the receiving waters. The federal

Clean Water Act has a similar technology-based requirement. The Pollution Control Hearings Board has indicated that some amount of LID should be considered AKART.
Ecology considers the LID techniques and principles in the Mandatory Lists as AKART unless there are engineering/site or competing need constraints. Ecology has concluded that a reasonable application of those techniques can result in achieving the proposed performance standard at even high density project sites. If one or more LID techniques cannot be applied at a site, the performance standard does not have to be achieved, but the use of all the remaining LID techniques on the applicable "mandatory list" is required.

[vi] Ecology and the advisory committees generally agreed that there are instances where an LID technique is either infeasible or not advisable for public health and safety reasons. Ecology has drafted a list of engineering/site constraints for each of the three LID techniques – rain gardens, permeable pavements, and green roofs - that play prominent roles in this proposal. (See Attachment #1.) The lists are primarily drawn from LID advisory committees' input; a matrix developed by the local American Public Works Association storm water managers group; and AHBL Consultants on behalf of the Puget Sound Partnership.
Ecology also proposes to identify a "Competing Needs" list that could be used to disqualify use of LID techniques on a project level. The committees discussed situations where LID techniques or principles could conflict with other requirements, local codes, local vision, values or preferences. Ecology can agree to relief from a requirement where it conflicts directly with another state or federal mandate. Ecology cannot agree to granting relief from local preferences, values, or vision on a general basis. Ecology may be able to concur with a municipal decision to grant relief on a case-by-case basis using the variance/exception provisions.

[vii] Based on their extensive use in Europe and expanding use on commercial buildings in the United States, Ecology considers green roofs a proven and accepted LID technology. However, in many instances, a building can more effectively reduce its surface runoff by routing impervious roof runoff to its pervious parking area. If a project chooses the latter, no cost analysis is necessary. If a project chooses to not route its runoff to its parking area - or cannot send it there because of a site limitation reason - and also to not employ a green roof, then a cost analysis is called for. Though green roofs can have a lower lifetime cost, their initial construction cost is higher. However, Ecology does not have the benefit of substantial local experience with green roofs to propose a generic cost basis for deciding when a green roof is cost reasonable or not. By requiring projects to submit a comparison of the cost of green roof installation over a standard roof, it may be possible to eventually establish a basis.
Green roofs have not been introduced into mainstream residential development sector nearly as extensively. Therefore, Ecology has not assumed that they are an accepted residential LID technology, and has not yet added green roofs to the "Mandatory Lists."

[viii] Ecology has not included rain gardens in mandatory list #2 to reduce the potential for extended periods of standing water in late spring. During the height of the mosquito breeding season, the presence of shallow water for 4 to 7 days will enable mosquito development. A rain garden with a 12-inch water depth and a 0.1 inch per hour infiltration rate will have standing water for 120 hours (5 days).

Attachment #1
Feasibility Review Criteria

I. Site/Engineering Constraints

A. Bioretention/Rain Gardens

Land is within area designated as a Landslide Hazard Area.

Site cannot be reasonably designed to locate bioretention facilities on slopes less than 15%.

Bioretention would be located within 50 feet from the top of slopes that are > 20%.

Geotechnical evaluation recommends infiltration not be used anywhere within the project area due to plausible concerns about erosion, or slope failure.

Within 100 feet of a known contaminated site or abandoned landfill.

Within 100 feet of a drinking water well, a spring used for drinking water supply, or an onsite sewage disposal drainfield.

Within 10 feet of an underground storage tank.

Within local setbacks from structures.

Where the drainage area is less than 5,000 sq. ft. of pollution-generating impervious surface, or less than 10,000 sq. ft. of impervious surface; or less than ¾ acres of lawn & landscape, the minimum vertical separation of 1 foot to the seasonal high water table, bedrock, or other impervious layer is not achieved.

Where the drainage area is more than any of the above amounts, and cannot reasonably be broken down into amounts smaller than those designated above, the minimum vertical separation of 3 feet to seasonal high water table, bedrock, or other impervious layer is not achieved.

Test pits determined the native soil infiltration rate to be less than 0.15 inches per hour.

Bioretention facilities not compatible with surrounding drainage system.

B. Permeable Pavements

Land is within area designated as a Landslide Hazard Area

Geotechnical evaluation recommends infiltration not be used anywhere within the project area due to plausible concerns about erosion, or slope failure

Within 100 feet of a known contaminated site or abandoned landfill

Within 100 feet of a drinking water well, a spring used for drinking water supply, or an onsite sewage disposal drainfield.

Site cannot reasonably be designed to have pavement surface at less than 5 percent slope. Portions of pavements that must be laid at greater than 5 percent slope must prevent drainage from upgradient base courses into its base course.

Native soils below the road do not meet the soil suitability criteria for providing treatment. Note: a six-inch layer of media meeting the soil suitability criteria or the sand filter specification can be placed within the subgrade to meet the treatment requirement.

Site design cannot avoid putting pavement in areas likely to have long-term excessive sediment deposition after construction (e.g., construction and landscaping material yards)

Sites down slope of steep, erosion prone areas that are likely to deliver sediment

Sites where the risk of concentrated pollutant spills is more likely such as gas stations, truck stops, and industrial chemical storage sites

Sites where seasonal high groundwater creates prolonged saturated conditions at the ground surface, within the wearing course, or within one foot of the bottom of the base course.

Sites that receive regular, heavy applications of sand to maintain traction during winter

Site design cannot avoid a contributing tributary impervious area that is more than 3 times larger than the permeable facility

Infiltrating and ponded water below new permeable pavement area will compromise adjacent impervious pavements.

C. Green Roofs

Roof design has a slope greater than 20%.

Building cannot technically be designed to accommodate structural load of a green roof.

II. Competing Needs

A. The LID requirement is superseded by other federal and state requirements.

B. The LID requirement is not superseded by:

- local community values and vision,
- Growth Management Act requirements (GMA requirements are compatible with LID).

Attachment #2
Results of Revised Computer Modeling of 10 Units/Acre & Commercial Development

Development layouts and most assumptions used in examples by SvR were retained.

The assumptions changed by Ecology were:

In the 10 DU/acre example:

Eliminated the small, private bioretention facilities on individual lots. Area converted to lawn/landscape. Larger bioretention along the road retained.

Used Run B which assumes the public road is permeable.

In the Commercial example:

Ran two scenarios: green roof; impermeable roof to infiltration below parking lot.

Green roofs represented in the model as ½ impervious/ ½ grass rather than as all grass.

Used Run A which assumes the public road and the truck delivery access are impervious.

In both examples:

Long-term infiltration below permeable pavements used a correction factor that cut the initial infiltration in half. For example, @ initial of 0.25 in/hr, the long-term rate = 0.125 in/hr.

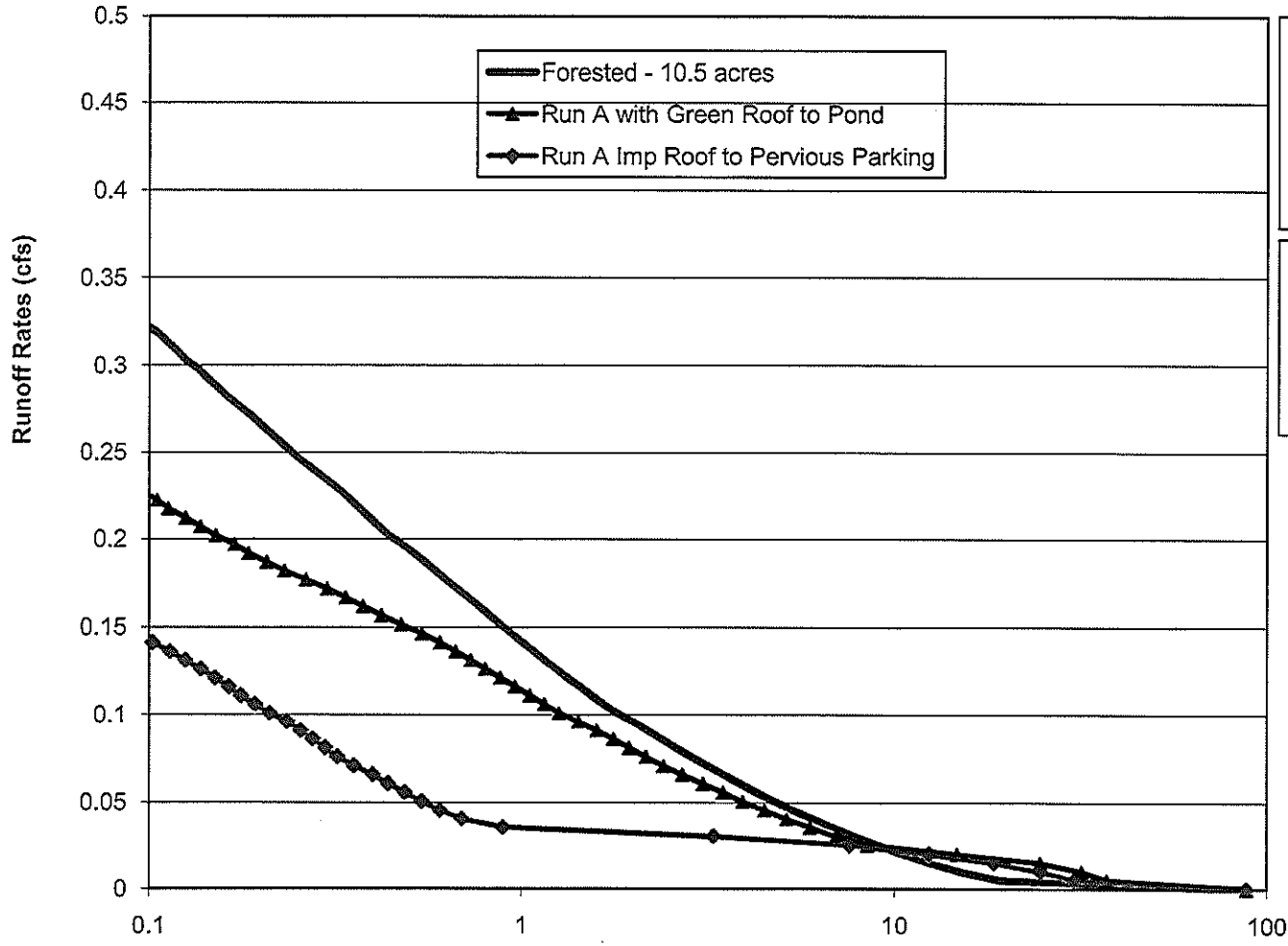
Additional runs assuming 0.15 in/hr and 0.1 in/hr initial infiltration rates.

Summary of Results

"Yes" means the standard was met. "No" means it was not met.

Development Type & Infiltration Rate	Flow Duration Standard	Volume Standard
10 DU/ac @ 0.1 in/hr	No	No
Commercial @ 0.1 in/hr & Green Roof	No	No
Commercial @ 0.1 in/hr & Roof to Parking Lot	Yes	No
10 DU/ac @ 0.15 in/hr	Yes	No
Commercial @ 0.15 in/hr Green Roof	Yes	No
Commercial @ 0.15 in/hr & Roof to Parking Lot	Yes	Yes
10 DU/ac @ 0.25 in/hr	Yes	Yes
Commercial @ 0.25 in/hr	Yes	Yes

Scenario 5 / Commercial *
Infiltration Rate = 0.15 in/hr



Runoff Volumes:

10 ac Drainage+0.5 ac Pond
10.5 ac Forested = 301 ac-ft
Green Roof = 359 ac-ft
Imp Roof to Parking = 222 ac-ft

Pond Area:

8% of 2 yr to 50 yr
Green Roof = 0.9 ac
Imp Roof to Parking = 0.68 ac

**** Changes from SVR Jan 2010 are:***

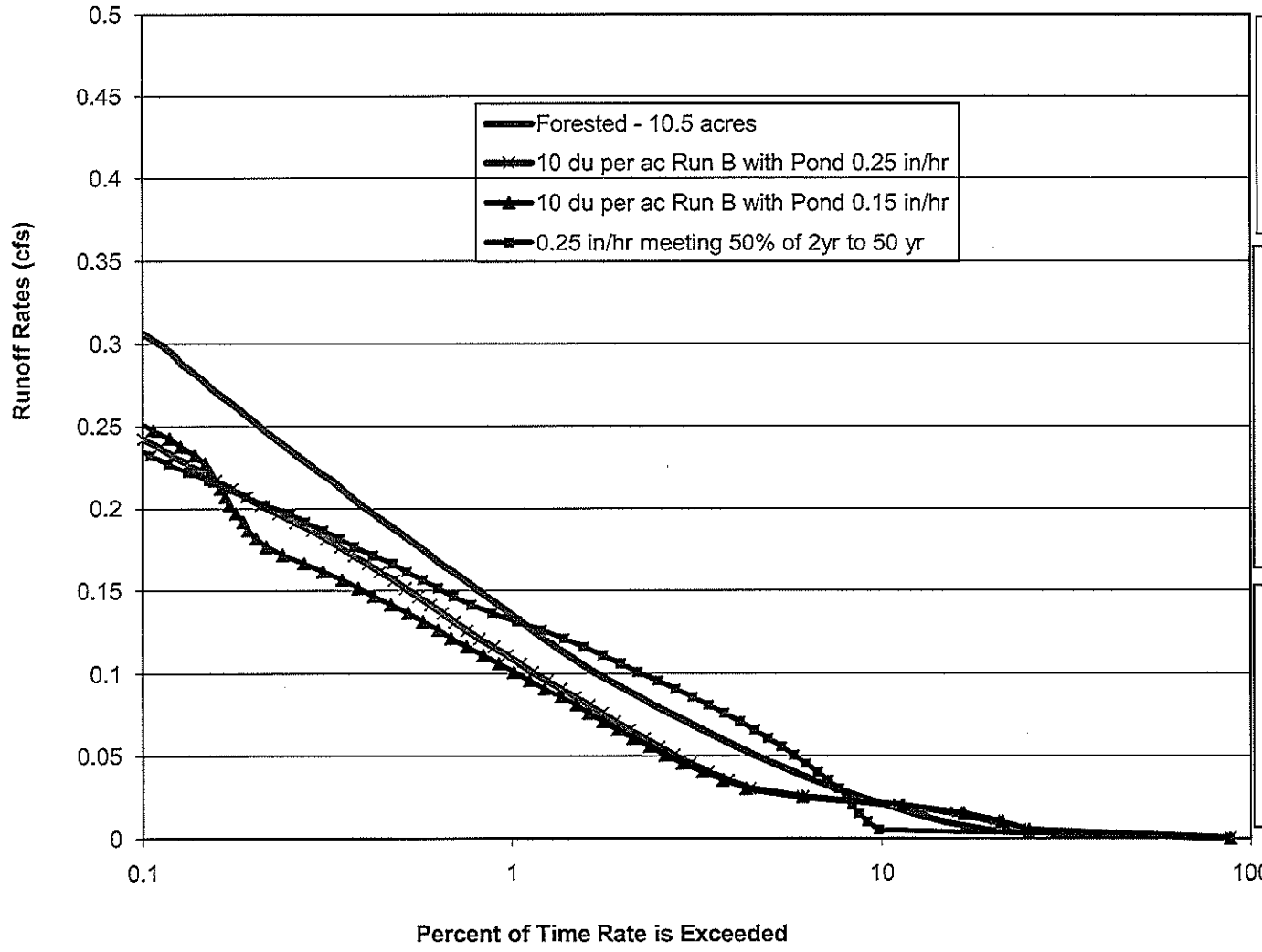
Green Roof Modeled as half Lawn half Impervious

Coventional/Imp Roof to Parking

Perm Pave Infiltration Reduction Factor = 0.5

Delivery+Public Rds are Impervious to Public Bio-Retention.

0.25 in/hr, 0.15 in/hr, & 0.1 in/hr Infiltration Rates Scenario 4 *



Runoff Volumes:

SVR area adds to 10 ac
10 ac Forested = 287 ac-ft
0.25 in/hr = 250 ac-ft
0.15 in/hr = 363 ac-ft
0.10 in/hr = 439 ac-ft

Pond Area:

8% of 2 yr to 50 yr
For 0.25 in/hr = 0.54 ac
For 0.15 in/hr = 0.65 ac
For 0.10 in/hr *Infeasible*

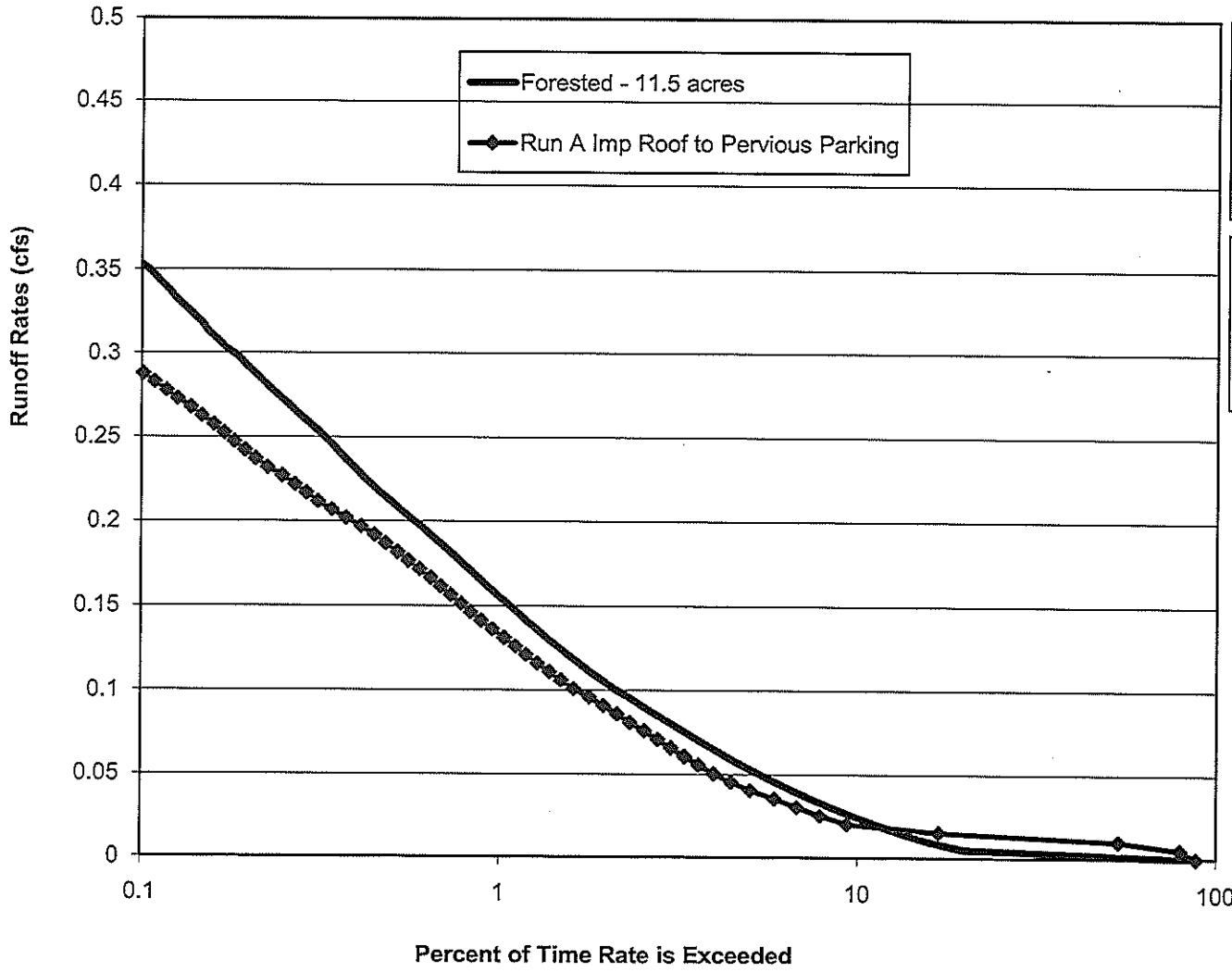
50% of 2 yr to 50 yr
For 0.25 in/hr = 0.43 ac
Without LID = 0.84 ac

**** Changes from SVR Jan 2010 are:***

Perm Pave Infil tration Reduction Factor = 0.5

No Private Bio-Retention.

Infiltration Rate = 0.1 in/hr Scenario 5 / Commercial *



Runoff Volumes:

10 ac Drainage+1.5 ac Pond
11.5 ac Forested = 330 ac-ft
Imp Roof to Parking = 336 ac-ft
Green Roof = 431 ac-ft

Pond Area:

8% of 2 yr to 50 yr
Imp Roof to Parking = 1.18 ac
Green Roof = *Infeasible*

**** Changes from SVR Jan 2010 are:***

Green Roof Modeled as half Lawn half Impervious

Coventional/Imp Roof to Parking

Perm Pave Infiltration Reduction Factor = 0.5

Delivery+Public Rds are Impervious to Public Bio-Retention.

COMING TOGETHER FOR CLEAN WATER:
EPA's STRATEGY FOR ACHIEVING CLEAN WATER
Public Discussion Draft – August 2010

On April 15, 2010, Environmental Protection Agency (EPA) Administrator Lisa P. Jackson brought together a diverse group of individuals to discuss and explore opportunities for reinvigorating EPA's approaches to achieving clean water in America. At this forum, *The Coming Together for Clean Water*, Administrator Jackson stated her desire "to see a huge leap forward in water quality as we saw in the 1970s after the passage of the Clean Water Act." The forum was one of many drivers for this strategy which charts EPA's path to achieve that leap forward in our nation's water quality and outlines a sustainable approach to meet our economic needs and improve the quality of the nation's water for generations to come.

EPA's approach focuses around our two thematic lines: 1) healthy watersheds, and 2) sustainable communities – both critical Administration and EPA priorities. It relies on the concepts and ideas generated at the Coming Together for Clean Water forum and also incorporates the bold new approaches identified from the October 2009 *Clean Water Action Plan,* which initiated efforts to revamp the National Pollutant Discharge Elimination System (NPDES) compliance and enforcement program.

CLEAN WATER CHALLENGES

The Clean Water Act (CWA) set a vision for all the waters of the United States to be fishable and swimmable. While we have certainly made progress toward that vision since 1972, we face challenges in attaining it completely; legacy pollution problems and new sources and contaminants are compounded by factors such as population growth, continued urbanization, and the effects of climate change.

In 1972 when the CWA was enacted, traditional point sources were the dominant cause of pollution. Much of the progress made over the last 30 to 40 years has come by addressing those problems through broad, consistent implementation of national programs for municipal and industrial point sources, developing effluent guidelines, and significant federal, state, and local investments in water infrastructure. Despite our best efforts and many local successes, our aquatic ecosystems are declining nationwide[1]. The rate at which new waters are being listed for water quality impairments exceeds the pace at which restored waters are removed from the list.

Over the last 30 years, stressors have shifted, as demonstrated by EPA's National Aquatic Resource Surveys. These recent surveys found that nutrient pollution, excess sedimentation, and degradation of shoreline vegetation affect upwards of 50 percent of our lakes and streams. In addition, recent National Water Quality Inventories have documented pathogens as a leading cause of river and stream impairments. Sources of these stressors vary regionally, but the main national sources of water degradation are: agriculture, stormwater runoff, habitat, hydrology and landscape modifications, municipal wastewater, and air deposition. EPA's strategy must now meet these shifting needs and priorities.

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[1] This trend has been documented by The Heinz Center (State of the Nation's Ecosystems, 2008), American Fisheries Society, and the EPA Wadeable Streams Assessment (2006).

Our waters face other challenges as well, loss of habitat and habitat fragmentation, hydrologic alteration, the spread of invasive species, and climate change are impacting aquatic ecosystems. This degradation not only impacts surface waters, it can also threaten our drinking water supplies. For example, increased nutrient pollution can decrease drinking water quality, increase drinking water treatment costs, and can generate disinfection byproducts that can threaten human health and ecosystems. Moreover, pollutants have been detected in virtually all tested stream water and streambed sediment and about three-quarters of groundwater wells and human health benchmarks were exceeded in one-fifth of all stream samples and one-third of all groundwater wells. In sufficient quantities, pollutants can create ecological and human health problems, affecting the safety of the fish we eat, the water we drink or swim in, and even the land we live on.[2] Impacts on human health are amplified in disadvantaged communities that heavily rely on local waters for subsistence fishing, bathing, consumption, and recreation.

The need for a revitalized approach has long been acknowledged. The nationally significant sources of pollution are more diverse than ever, and we know that there is no single approach to address them. Challenges are compounded by fiscal pressure on states, dwindling resources, and the demands of economic growth and climate adaptation and require a more pragmatic and systematic approach that will address the most critical water quality problems and effectively deliver measurable results. This proposed strategy outlines EPA's plans to address the most critical stressors, sources, and threats. It will build on EPA's core programs and emphasize implementation of both existing and new tools and approaches in an effort to catalyze a leap forward in water quality improvement nationally.

This strategy is by no means the end of the discussion; it is the beginning of a more meaningful conversation with our partners and the first step together on a new path towards more sustainable and healthy waterbodies, watersheds and communities.

A NEW PATH TO CLEAN WATER

The vision outlined in the CWA—fishable, swimmable waters— has not changed. In fact, this strategy is about how we can achieve a leap forward in our nation's water quality to move us closer to realizing this vision.

From several decades of strong, science-based research, we know the primary causes and sources of impairments to our waters. Now, in cooperation with tribal, state, and local partners, we can attack these problems with a set of targeted actions designed to address these main stressors in the full range of waterbodies. This will require us to build on the strong foundation of existing clean water programs; as well we must identify and implement new opportunities under current authorities. Most importantly, it will require us to "come together for clean water."

There is no silver bullet – no single program or regulation will allow us to accomplish our goal. Carrying out all of these principles is where the true "coming together" must happen to address the primary stressors from multiple angles: smarter regulations, stronger partnerships, more balanced

[2] U.S. Geological Survey, National Water Quality Assessment Program, referenced in *The State of the Nation's Ecosystems 2008*, The Heinz Center.

and coordinated compliance and enforcement, more integrated approaches to capitalize on synergies, improved communication with a broader audience, and greater leveraging of programs. Just as EPA will have to employ all of its tools, so too must all our partners—state, local, tribal, and federal—play their roles.

EPA must improve and adapt regulations, permitting and compliance/enforcement efforts as a key first step to change our current path. EPA will also work to greatly increase cooperation, partnerships and communication to achieve victories in areas where regulatory approaches are not appropriate. We will support legislation and consider administrative action to restore the CWA protections to wetlands and headwater streams that provide clean water for human and ecological uses. We will take action to ensure all major point sources of pollution have permits that require clear, verifiable results. And by implementing new enforcement approaches per the *Clean Water Action Plan*, including more integrated problem solving, collaboration across standards setting, permitting and enforcement programs, EPA will bring violators into compliance.

Another key element of this strategy is improvement of assessment and classification of waters. And building on this, EPA will increase cooperation with states to identify and protect those waters that are healthy; a far more cost effective approach than cleaning up a waterbody after it has been polluted. EPA also seeks to find ways to better integrate new technologies and approaches into our clean water programs. For example, green infrastructure provides an important set of tools for changing the way stormwater discharges are viewed—from being treated as a waste product that comes with high-cost infrastructure systems – to realizing and using it as a valued resource. Green infrastructure can also have positive effects on sanitary sewer overflows and combined sewer overflows, which are major urban water concerns. EPA will also explore opportunities to better integrate other sustainable practices into our policies and programs; for instance: energy-neutral wastewater treatment, water efficiency, energy efficiency, and water reuse.

EPA will seek solutions and implement programs to address recent, emerging, and growing threats to water quality including increased mining activities, drilling, aging infrastructure and increased urbanization and development. Invasive species are also a significant threat to aquatic ecosystems. Using both regulatory and non-regulatory programs, EPA is taking meaningful steps to reduce the likelihood that invasive species are able to spread from one waterbody to another. Additionally, as excess nutrient pollution continues to be a major concern, EPA sees a better means to addressing this problem on the critical path to success. EPA will work in partnership with states to better manage excess nutrient enrichment in surface waters and promote state accountability frameworks that include publicly-available, science-based, state nutrient reduction implementation activities that are watershed-based and have locally-binding mechanisms to achieve the reductions.

STRATEGIES TO ACHIEVE CLEAN WATER GOALS

This strategy's success depends on many factors working together. Local governments, states, and tribes must join us, each working under their own authorities and capacities, to ensure waters in their jurisdiction are clean. It is up to EPA to bring these groups together to more smoothly coordinate and harmonize our efforts in order to optimize the results.

EPA has identified several key strategies to guide our efforts, and actions that respond to the challenges we face:

- Systematically assess the nation's waters to provide a baseline for transparently tracking progress;
- Increase focus on protection of healthy waters;
- Enhance EPA's ability to restore degraded waters, restore ecosystems, and take action to increase the number of restored waterbodies;
- Reduce pollution entering our waters; and
- Enhance watershed resiliency and revitalize communities through multi-benefit, sustainable technologies and approaches that will ensure resiliency to increased threats associated with climate change, development, urbanization and other factors.

KEY ACTIONS FOR STRENGTHENING WATER PROTECTIONS

By approaching the most significant clean water challenges facing the nation from a more holistic perspective and using resources creatively, we will undertake a range of actions to implement these strategies to get a better understanding of the state of our nation's waters, work to protect what we've got, fix what's broken, expand our work to keep waters clean, and build for the future while ensuring we are meeting our economic and community needs. In doing so, EPA will expand existing partnerships and develop new, locally-based partnerships, and implement tools and policies that will foster tailored approaches. In addition to strengthening and expanding partnerships, to achieve the next level of protection, we will work within EPA and outside EPA to strategically leverage funding opportunities to reduce pollution from unregulated sources.

In implementing these actions, EPA remains committed to the following principles:

- Use bold, new, creative, more effective ways to implement CWA and other programs, more strategically deploy existing regulatory authorities and enforcement programs, as well as voluntary approaches and market-based incentives;
- Rely on robust science and cutting-edge technologies, particularly in emerging areas of concern such as climate adaptation, ecosystem services, integrated watershed approaches, and emerging pollutants of concern;
- Increase focus on improving environmental quality in disadvantaged communities that have historically suffered severe degradation of water quality and habitats that provide key ecosystem services;
- Engage a broader range of stakeholders in decision-making and provide the public and other stakeholders with reliable information about their waters and the pollution impacting their waters; and
- Achieve and document measurable results.

Know What You've Got – Systematically Assess the Nation's Waters to Provide a Baseline for Progress

Effective management of water resources requires reliable information and an informed public. To better inform our efforts, improve accountability, policy, planning, increase stewardship, and better measure progress of ongoing efforts to improve the quality of data in the long-term; EPA will focus on systematically assessing the nation's waters. The National Aquatic Resource Surveys for streams, lakes and coastal waters already provide the baseline for the condition of waters across the

nation against which we can track changes in water condition at the national and regional scales. In the next several years, EPA will complete the first set of five Aquatic Resource Surveys that will give us a complete picture of the condition of all waterbody types across the nation. EPA, working with our partners, will also explore opportunities to build on existing monitoring and assessment efforts to better identify, classify, and track the status of our waters. This multi-scaled approach to monitoring and assessment will give policy makers the information they need to make informed decisions about how best to manage water resources and help the public understand the effectiveness of federal and state investments in clean water.

Key EPA Actions:

- Complete cycle of National Aquatic Resource Surveys to provide baseline for documenting trends in degradation and major stressors in the next several years,
- Complement existing impaired waters listings with identification of healthy watersheds across the U.S.; and
- Explore opportunities for increasing strategic information attained from and integrity of the Integrated Water Quality Monitoring and Assessment Reports to provide a more comprehensive picture.

Protect What You Have – Increased Focus on Protection of Healthy Waters

EPA's water quality protection program has long focused on the remediation of impaired waterbodies and the reduction of specific pollutant levels in waterbodies. While EPA and our state partners have made and are continuing to make considerable progress in this important work, we recognize the need to protect and maintain healthy waterbodies as well. Healthy watersheds provide our communities with drinking water, recreational opportunities, environmental benefits and services, including clean water for healthy aquatic ecosystems, habitat for fish and wildlife, and better resilience against storms and floods, climate change and future land-use changes. Protecting healthy watersheds will result in considerable savings over time if the need for costly restoration can be avoided in watersheds that would otherwise become impaired by cumulative impacts of multiple stressors.

EPA will utilize a range of tools to ensure that healthy waters are sufficiently protected and to prevent further pollution of lakes, rivers and streams. EPA will explore, develop, and make available more effective tools to conduct ecological assessments, to classify and list healthy watersheds. By developing, along with our state partners, a science-based structure on a national level, EPA hopes to provide the tools to help them inventory and then take action to protect their healthy waters. EPA will also enhance public awareness and, together with better equipped and organized State action, will ultimately lead to increased protection of their ecological assets.

EPA will utilize CWA tools to increase protection of high quality waters, including revisions to water quality standards to strengthen antidegradation provisions, and focus on protecting those waters that are threatened by coal and hard rock mining activities.

Key EPA Actions:

- Through the new Healthy Watershed Initiative, develop a common set of comprehensive metrics to create a national list of healthy watersheds (e.g., linking watershed protection and species diversity); use the latest state-of-the-science, peer-reviewed methods to conduct

assessments to identify healthy watersheds across states using CWA funds (e.g., 604(b), 319, and 106) in partnership with other Federal agencies. With these assessments, help set States set priorities and implement protection and conservation programs;
- Support legislation and consider administrative action to restore the CWA protections for our waters and the ecological systems;
- Use the full suite of CWA tools to protect high-quality streams from destruction and degradation caused by mining activities;
- Propose changes to the federal water quality standard regulations that would clarify and strengthen antidegradation regulations to protect high-quality waters; and
- Ensure States are – and, where EPA has permitting authority, EPA is – applying antidegradation effectively in NPDES permitting programs.

Fix What's Broken – Enhance EPA's Ability to Restore Degraded Waters, Restore Ecosystems, and Take Action to Increase the Number of Restored Waterbodies

The restoration of impaired water bodies will also be critical to making significant progress in clean water. In order to do so EPA will use the Chesapeake Bay as a demonstration for strengthening total maximum daily load (TMDL) pollution reduction plans and improved monitoring of restoration progress. Success in cleaning up the Chesapeake Bay watershed will be a model for watershed protection in other parts of the country. This combined approach of protecting healthy watersheds and restoring impaired waters will ultimately improve the overall state of our nation's waters.

Key EPA Actions
- Work with states to carry out more strategic and effective implementation of TMDL pollution reduction plans and watershed-based nonpoint source plans;
- Develop and implement reasonable assurance guidelines regarding non-point source reductions identified in TMDLs;
- Coordinate funding opportunities with USDA to accelerate nutrient and sediment reductions and tackle key agriculture challenges through an integrated approach using 319 Program, Clean Water State Revolving Fund (CWSRF), CWA section 117, STAR grants and USDA Conservation programs;
- Use trading offsets and other market-based tools where appropriate, to improve cost-effective clean up of impaired watersheds;
- Implement all of the above actions in conjunction with states in the Chesapeake Bay watershed and other federal agencies to execute the President's Executive Order to clean up the Chesapeake Bay. In addition, in the Chesapeake Bay watershed, EPA will:
    - Implement federal land management practices that protect forests and wetlands, and incorporate sustainable practices;
    - Create a system for tracking and reporting for TMDL pollution reduction commitments and two-year milestone commitments;
    - Implement current regulations for concentrated animal feeding operations (CAFOs) and propose new regulations to more effectively achieve pollutant reductions necessary to meet the Chesapeake Bay TMDL; and
    - Implement improvements to the current stormwater program and initiate new national stormwater rulemaking with Chesapeake Bay watershed provisions.

Keep it Clean – Reduce Pollution Entering Our Waters

EPA seeks to increase protection of our waters from pollution by reducing current loadings and preparing for substantial predicted increases associated with development, urbanization, climate change and other factors. Across the board, under the CWA, EPA will more fully utilize regulatory tools and enforcement to address a number of water quality challenges. Where problems are identified, EPA seeks to apply the best cost-effective standards available, eliminate loopholes, increase the regulatory universe, and set performance standards through robust modifications to current regulations.

For example, in addition to the work underway in Chesapeake Bay as part of the President's recent Executive Order, EPA will use its authority robustly to protect and restore threatened natural treasures such as the Great Lakes and the Gulf of Mexico. EPA is heading up a multi-agency effort to restore and protect the Great Lakes, one of America's great waters, through the Great Lakes Restoration Initiative. In other parts of the nation, we will focus on nutrient pollution, which threatens the long-term health of important ecosystems such as the Mississippi River Basin. Further, given the environmental catastrophe resulting from the Deepwater BP oil spill, EPA will take all necessary actions to support efforts to clean up and restore the Gulf of Mexico ecosystem.

Key EPA Actions:

- Strengthen the National Pollutant Discharge Elimination System (NPDES) to significantly reduce pollution entering our waters; for instance, propose a national rule which will streamline the regulatory authority to designate an animal feeding operating (AFO) as a concentrated animal feeding operation (CAFO);
- Develop requirements for publicly owned treatment works (POTWs) to protect the public and the environment from the harmful effects of sanitary sewer overflows and the release of partially treated wastewater from treatment facilities. Potential regulatory approaches include additional reporting and public notice when overflows occur, increased responsibilities for properly operating and maintaining sewer systems, clarifying the requirements for satellite collection systems, and addressing peak wet weather flows at the treatment plant. EPA will also explore more widespread use of green infrastructure techniques in combined sewer overflow control plans;
- Expand municipal stormwater permitting coverage to currently unregulated areas and establish performance standards for stormwater discharges from newly developed and redeveloped sites that result in reduced discharge of pollutants, including through the use of green infrastructure techniques;
- Develop NPDES permit requirements to reduce pesticide discharges to waters of the U.S.;
- Audit point source programs (CAFOs, stormwater, water quality based permits) that have significant nutrient reduction potential to assure full CWA tools implementation;
- Evaluate implications of study currently underway within EPA's Office of Research and Development on the relationship between hydraulic fracturing and water resources for taking further action to protect water quality;
- Develop regulations to save trillions of aquatic organisms per year that would otherwise be withdrawn by cooling water intakes at over 1200 power plants and manufacturing facilities; and
- Work in partnership with states to better manage excess nutrient enrichment in surface waters, including:

- Initiating scientific report(s) based on best available science and subject to peer review to determine necessary nutrient loads to restore and maintain water quality in key areas;
- Developing and implementing guidance to assist permitting authorities in establishing protective limits for point sources based on narrative water quality standards for nutrients;
- Improving public understanding of the seriousness of nutrient pollution including impacts on drinking water and other public health, environmental impacts, and economics; and
- Leveraging federal funding to assist communities in implementing targeted nutrient reduction strategies.

Build for the Future – Enhance Watershed Resiliency and Revitalize Communities

In order to maximize clean water protection under current authorities, EPA is making a substantial shift in our programmatic approaches to identify and implement multi-benefit solutions that will help communities plan and be more responsive to changing factors such as population growth, increased urbanization and climate change. A more holistic and systemic approach will facilitate capitalizing on existing programs, tools, policies and available funding to achieve measurable results. A collaborative approach to community-based programs – within as well as beyond EPA – will achieve multiple objectives, break down traditionally stovepipe divisions, and broadly engage local communities in decisions that impact local and state waters. For example, capitalizing on green infrastructure, water/energy synergies and integrated water management are key features in this new approach.

EPA will develop and implement a renewed strategy on green infrastructure to identify and target the next set of actions that need to be undertaken to promote and support green infrastructure practices. EPA will also develop a framework for encouraging and facilitating more integrated water management approaches at the state and local level, and will support solutions that reduce infrastructure costs and promote more efficient, regionally coordinated resource use. These more integrated solutions, ultimately, lead to long-term sustainability, community buy-in, better water quality, and more robust ecosystem services.

Key EPA Actions:

- Promote green infrastructure more broadly. Consider policy options to make green infrastructure solutions an available tool for meeting CWA requirements by: ensuring that MS4 permits include cost-effective green infrastructure approaches, including green infrastructure in CSO long-term control plans, considering the incorporation of non-traditional or green infrastructure alternatives in enforcement orders/consent decrees, and other policies to increase adoption of green infrastructure practices;
- Encourage integrated water management approaches. Implement policies and help direct national attention toward more sustainable water management practices that better integrate traditionally siloed areas such as: water quantity, quality, energy requirements, carbon emissions, development and land use at the watershed/aquifer level. Building on synergies within the water sector, integrated approaches can allow communities to more sustainably manage water infrastructure and supply costs and investments and adapt to climate change,

as well as potentially reduce overall energy consumption, and both utilize renewable energy and/or create new energy sources;

- Encourage states to use their Clean Water State Revolving Funds (CWSRF) for projects that will best advance these policies and are consistent with EPA's sustainability policy. Additionally, EPA will continue to work with States to ensure that all CWSRF programs meet the mandated requirement to use at least 20% of FY 2010 appropriated funds for green projects such as green stormwater infrastructure, water efficiency projects, energy efficiency projects, and other innovative environmental projects;
- Develop policies that will facilitate greater collaboration and accelerate the commercialization of cutting-edge technologies that help deliver clean water such as energy self-sufficient wastewater treatment;
- Develop comprehensive approaches, including all of the above actions, to help transform previously degraded urban waters into community assets by:
    - Linking environmental programs with existing priorities such as economic development;
    - Adding environmental components to economic programs in pilot areas
    - Facilitating water clean-up efforts; and
- Work to ensure the overall sustainability and climate resiliency of drinking water and wastewater utilities by better incorporating adaptation and mitigation strategies and other cost-efficient infrastructure practices into planning and operations.

CONCLUSION

Without clean water, no part of a community—its ecology, its economy, its health—can thrive. It is at the core of our communities and is crucial to the vitality of our rural areas. Realizing this imperative for clean water in every waterbody in our nation will require the balanced, organized, and thoughtful effort and collaboration of all levels of government. We will make the most of all of the resources, authorities and programs available to us.

The only way to bring the Clean Water Act's vision into reality is for EPA to strengthen and expand the national conversation on protecting and maintaining our waters. Growing our partnerships will be vital in solving these challenging problems. The call to action has never been more urgent especially in light of national trends in water quality and recent environmental disasters. EPA invites all tribes, all states, all communities, all Americans to come together for clean water and re-commit to our national quest to achieve the promise of the CWA. Together, we can build sustainable communities and restore and protect the quality of our nation's streams, rivers, lakes, bays, oceans and aquifers.

SW WA PHASE II MONITORING PROPOSAL

The Phase II cities and counties in Southwest Washington shall prepare to implement a comprehensive, long-term monitoring program. The monitoring program shall include three components: monitoring of the ecological status and trends of receiving waters, source identification and diagnostic monitoring, and targeted monitoring of Stormwater Management Program (SWMP) effectiveness. Permittees are encouraged to partner with Ecology and other jurisdictions in Southwest Washington to design a regional monitoring program, comparable to the Stormwater Monitoring and Assessment Strategy for the Puget Sound Region.

Status and Trends

By the end of the 2012 - 2017 permit cycle, prepare to implement a monitoring program focused on understanding whether stormwater management programs are improving aquatic ecosystems. To the extent practicable, the program shall:

- Use existing methodologies and programs and build on previous work
- Link with Source Identification and Diagnostic Monitoring (see below)
- Support WRIA, regional, and/or statewide efforts (e.g. salmon recovery, shellfish, etc.)

Source Identification and Diagnostics

Within three years of the effective date of the 2012 – 2017 permit, determine the locations and sources of stressors for the highest priority water quality problems at the local level. By the end of the permit, for at least one high priority problem, identify corrective action(s) to reduce the stressors, set targets for source reduction, and prepare an adaptive management strategy.

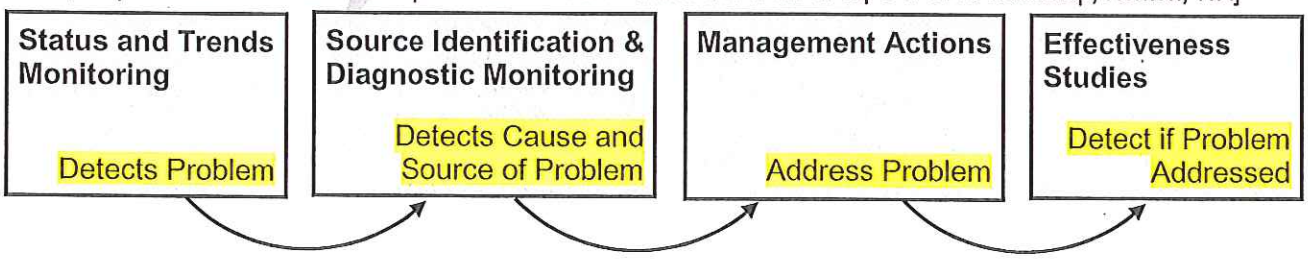
Permittees are encouraged to partner with other jurisdictions and agencies to develop a long-term, iterative process whereby limited resources in each watershed are targeted on restoring the highest priority problems or impairments related to stormwater (addressing, for example, shellfish closures, TMDL requirements – or early action plans necessary to avoid a TMDL, salmon habitat restoration projects, etc.).

Effectiveness

Within three years of the effective date of the 2012 – 2017 permit, begin monitoring the effectiveness of the SWMP. The permittee may monitor specific activities required by the permit (e.g. new development, existing development, non-structural) or study general stormwater topics germane to stormwater management (e.g. LID, retrofits, agricultural BMPS, land-use, emerging technologies, and key data gaps). Studies shall be designed to answer specific questions and, where applicable, evaluate cost effectiveness and may be coordinated through other entities.

Role of each proposed monitoring component in the Municipal Stormwater Program

[Adapted from Dr. Carol Smith's presentation at the Stormwater Work Group's 5/19/10 workshop, Renton, WA]



MUNICIPAL STORMWATER CAPACITY GRANTS PROGRAM
FUNDING AGREEMENT BETWEEN
THE STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
AND
CITY OF KELSO

THIS is a binding agreement entered into, by, and between the state of Washington Department of Ecology (DEPARTMENT), and the City of Anacortes (RECIPIENT). The purpose of this agreement is to provide funds to the RECIPIENT to carry out the requirements described herein.

PART I. GENERAL INFORMATION

Project Title:	**Municipal Stormwater Capacity Grant Program**
State Fiscal Year:	**FY2011**
Grant Number:	**G1100051**
RECIPIENT Name:	**City of Kelso**
Mailing Address:	**203 Pacific Ave., Suite 205 Kelso, WA 98626**
RECIPIENT Federal ID Number:	**91-6001252**

Total Eligible Cost ($70,000 plus per capita calculated amount): **$101,139**

DEPARTMENT Funding Sources:

State Toxics Control Account:	**$31,139**
Local Toxics Control Account:	**$70,000**
Referendum ##:	**$**
Referendum ##:	**$**

DEPARTMENT Share: **$101,139**

DEPARTMENT Maximum Percentage: **100%**

RECIPIENT Contact: **David Sypher**
Telephone Number: **(360) 423-6590**
Fax Number:
E-Mail Address: david.sypher@kelso.gov

RECIPIENT Billing Contact:
Telephone Number:
Fax Number:
E-Mail Address:

DEPARTMENT Project/Financial Manager: **Tracy Farrell**
Mailing Address: **Water Quality Program**
Washington State Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600
Telephone Number: **360- 407-6502**
Fax Number: **360- 407-7151**
E-Mail Address:

DESIGNATED LOCAL GOVERNMENT PARTNERS (if applicable) N.A.

For partnerships, the lead government and partners must submit a copy of the signed agreement in Appendix B with each copy of the grant agreement.

The effective date of this grant agreement is **July 1, 2010**. Any work performed prior to the effective date of this agreement is not eligible for reimbursement.

This agreement expires on **June 30, 2012.**

PART II. PERFORMANCE MEASURES

A. Water Quality Goal.

Improved stormwater oversight and water quality protection through the direct development and implementation of a comprehensive stormwater management program.

OR ** Use the following for Construction Projects – delete if not applicable

A. The overall goals of this project are focused on the protection of [name of water body] and include one or more of the following:

1. Stormwater system retrofits
2. Low impact development best management practices

B. Project Outcomes.