Pressure Reduction Conceptual Model Summary – Runoff from the Built Environment

June 6, 2011

This document summarizes work-to-date on a conceptual model representing the current context of stormwater pressures to ecosystems, species, ecological processes and people in the Puget Sound Basin. The direct pressure addressed in this model is **Runoff from the Built Environment.** Figure 1 provides an overview of all topic areas addressed by the interdisciplinary stormwater team (Team). Figure 2 and Table 2 provide further detail on strategies and factors contributing to stormwater pressures in Puget Sound.

Summary of Conceptual Model Development and Next Steps

Model Overview

The conceptual model can be divided into six main strategies:

1. Develop, Support & Use Information from Watershed-Based Stormwater & Land Development Planning
2. Prevent Problems from New Development
3. Fix Problems Caused by Existing Development (Structural & O&M)
4. Accelerate Source Controls
5. Stormwater-Focused Education & Involvement
6. Assess Actions & Effects on Environment

These six strategies were developed by an interdisciplinary team (see list of participants below) to address the contributing factors listed in the conceptual model, and draw heavily from the draft Stormwater Vision document (December 2010 version). The Stormwater Report developed by the Ecosystem Coordinating Board's Stormwater Subcommittee is a second foundation document used.

Strategy #1 is intended to address factors relating to the limitations of managing stormwater on a site by site basis, and the need for more watershed/landscape scale information, planning and management. (Note: There is potential overlap with the Land Development pressure reduction group.)

Strategy #2 is aimed at preventing problems during the construction process and post-construction; issues with federal Clean Water Act (CWA) compliance and enforcement; variability in local programs outside CWA-permitted areas; variability in stormwater standards used; and the need to develop and use low impact development and other promising management practices.

Strategy #3 addresses the need for a structural retrofit strategy, prioritization, and increased retrofits; importance of improving maintenance of systems (including legacy pollutants loads), and need to ensure redevelopment policies result in improvements.

Strategy #4 targets sources of stormwater contaminants, through Pollution Identification & Correction (PIC) programs; TMDLs; inspections; enforcement; banning sale of high-priority products; business-directed education and outreach; and information from the toxics loadings studies.

Strategy #5 addresses the need for increased and more targeted stormwater-related education and outreach to property owners, elected officials, members of the development community, stormwater professionals, and others.

Strategy #6 provides the feedback loop to address the need for monitoring and assessment; technical review and approval of technologies; and research.

A separate funding strategy was not developed, as each strategy (and sub-strategies) requires adequate funding to ensure success.

For more information and detail on each strategy, see Table 2 below.

Next Steps

This conceptual model should be considered a starting point. In addition to additional conversations among Team members, feedback from a broader audience is needed. The Partnership will host a work session on this topic on June 28, 2011 at the Tacoma Rhodes Center. The half-day work session will provide an opportunity for a larger group of regional stormwater professionals to review this draft model and strategies, share ideas, and provide valuable input into this process. Leading up to this meeting, conversations among Team members will continue. Following this work session, Partnership staff, with help from Team members, will develop materials for a public review draft, scheduled for August 2011.

Process and Interdisciplinary Team Members

The process for developing this information was extremely brief, due to the short time frame provided and the need to first develop candidate indicators and objectives for Runoff from the Built Environment. The Team (Table 1) held just two meetings that were focused on developing and refining this conceptual model. The first meeting was held April 13, 2011 at the Center for Urban Waters; the second meeting was a virtual meeting held on June 1, 2011. Additional time is needed for the team to reach a common level of understanding and agreement on this draft conceptual model. One team member has expressed concerns regarding several elements of this draft model.

Table 1. Runoff Interdisciplinary Team Members. Team members consisted of those who helped develop candidate objectives, plus additional local government staff who were invited to the second meeting. Early in the process of developing the conceptual model the team also received technical support from Foundations of Success. Team members (in alphabetical order):

PSP staff	Interdisciplinary Team Members
PSP Staff Lead: Bruce Wulkan	Allison Butcher, Master Builders Association of King and Snohomish Counties Dana Deleon, City of Tacoma Karen Dinicola, Washington Department of Ecology Jenny Gaus, City of Kirkland Chris May, Kitsap County Doug Navetski, King County John Palmer, U.S. EPA Region 10 Dave Peeler, People for Puget Sound Tom Putnam, Puget Soundkeeper Alliance Larry Schaffner, Washington Department of Transportation Jim Simmonds, King County Naki Stevens, Washington Department of Natural Resources

	Chris Wilke, Puget Soundkeeper Alliance

Details and Comments on Strategies and Contributing Factors

This section summarizes additional information associated with draft strategies targeted at reducing stormwater pressures to the Sound. The details included here will inform upcoming development of strategies and near-term actions targeted at reducing pressures associated with runoff from the built environment.

Note: Contributing factors represent the major forces contributing to stormwater as a direct pressure to Puget Sound ecosystems and people. Contributing Factors can include indirect pressures (or threats), enabling conditions, or opportunities.

Table 2. Draft Strategies

	Strategy or Contributing Factor	Details and Comments
DRAFT Strategy I	DEVELOP, SUPPORT & USE INFO FROM WATERSHED-BASED SW & LAND DEVELOPMENT PLANNING	Item I. of 12.9.10 Draft SW Vision includes: 1. Support development of watershed plans based on watershed characterization data that integrate land use planning with stormwater planning (management) by either: a. reactivating and funding CWA 208 planning for the Puget Sound basin to include all major land uses (urban, agricultural/rural, and forestry) and all water resource elements such as stormwater, combined sewers, wastewater, water supply, reuse and non-point sources; or b. supporting and funding the development of stormwater plans, watershed plans, and/or WRIA plans that address the full spectrum of water resource elements and land use on a regional basis 2. Use watershed plans to prioritize and fund water quality and water quantity retrofits, protective property rights acquisition, and non-point source programs; and fund them 3. Align regulations with watershed plans, including municipal, industrial and construction NPDES permits, non-point source control programs, and the Growth Management Act if warranted. 4. Provide incentives to NPDES permittees who by interlocal agreement have created a structure sufficient to take responsibility for regional or watershed scale NPDES implementation 5. Support EPA Clean Water Act rule making that assigns the Puget Sound basin sensitive status

	Strategy or Contributing Factor	Details and Comments
DRAFT Strategy II	PREVENT PROBLEMS FROM NEW DEVELOPMENT	Details: 1. Site new development appropriately through GMA, SMA, planning, SEPA, WS Characterization, etc. (note: overlap with land development pressure reduction objectives group/Priority) 2. Use smart growth concepts (design & build new development appropriately 3. Build new development appropriately (following latest version of Ecology manual or equivalent, including LID). Element 1 in item II of 12.9.10 draft Stormwater Vision: 1. Site new development appropriately through GMA, SMA planning, Complete Watershed Characterization methodology for use in prioritizing areas for restoration, identifying areas least sensitive to development, and land areas and forms that should be protected 2. Develop funding source(s) for critical area protections (e.g. protective property rights acquisitions; transfer of development rights) 3. Complete the development of new Stormwater TMDLs (shift to fix existing problems?) 4. Implement the PCHB decision regarding LID – continue transition of the region to LID as the first, preferred method for SW management 5. Strengthen SEPA to address cumulative landscape-scale impacts of new development and re-development

	Strategy or Contributing Factor	Details and Comments
DRAFT Strategy III	FIX PROBLEMS CAUSED BY EXISTING DEVELOPMENT (Structural & O&M)	Details: 1. Develop and implement regional retrofit strategy (for flow and treatment). Regional strategy should include retrofits to transportation network. 2. Ensure that redevelopment policies bring about improvements in runoff (flow and treatment) 3. Address legacy loads through enhanced O&M 4. Ensure that all systems are maintained to function to engineering design standards (O&M) (Tools: Ensure that state and federal permits are issued and include current standards) Element 2 of item II in 12.9.10 draft SW Vision, steps include: 1. Create a stormwater retrofit strategy that: a. retrofits the highest priority areas where stormwater pollution and flows are documented and serious problems (e.g. areas tributary to superfund sediment cleanup sites, 303D listed sites, closed swimming beaches, closed shellfish growing areas, degraded salmon streams, etc.), and b. designs an approach to retrofit the local transportation network, and properties that drain to them, that specifies the highest priority investments in urban and suburban areas. 2. Fund and implement the stormwater retrofit strategy. 3. Fund and implement a stormwater retrofit strategy that prioritizes retrofits on state and federal roadways. 4. EPA to issue NPDES permits for Federal and Tribal lands/facilities consistent with DOE NPDES standards, including benchmarks for copper and zinc 5. Fund full implementation of the NPDES permit program, including MS4, WSDOT, industrial, construction, and other point source. 6. Fund local governments to accelerate removal of legacy loads of contaminants in stormwater systems beyond that which is required by permit.

	Strategy or Contributing Factor	Details and Comments
DRAFT Strategy IV	ACCELERATE SOURCE CONTROLS	Element 3 of item II in 12.9.10 draft SW vision, includes: 1. Fund an accelerated pro-active program to trace the origin of pollutants causing 303D listings, shellfish bed closures, swimming beach closures, fish consumption advisories, and the recontamination of cleaned up sites by 2020. 2. Implement TMDL actions through completed water quality implementation plans. 3. Inspect 100% of potentially polluting properties and achieve 85% compliance with stormwater source controls by 2020 4. Fund increased level of enforcement program for water quality control 5. Determine means and authorities to prevent toxic substances of greatest concern (PBTs) from reaching the marketplace. Work statewide and nationally to enact controls of PBTs, including bans and phaseouts of products and substances. 6. Develop funding for an intensive 5-year public education program at the state level to build support for source controls, including potentially banning toxic substances, and changes to social behaviors 7. Investigate the Clean Air Act authorities for assistance in controlling or eliminating air pollutant sources to stormwater 8. Use results of the Toxic Loading Studies for Puget Sound to control PBTs.
DRAFT Strategy V	SW-FOCUSED EDUCATION & INVOLVEMENT	Details: 1. Citizens, elected officials, SW professionals, others 2. Include transportation-related topics; funding; controlling sources of pollution; other 3. Utilize PSSH, STORM and other big, regional efforts

	Strategy or Contributing Factor	Details and Comments
DRAFT Strategy VI	ASSESS ACTIONS & EFFECTS ON ENVIRONMENT	Details: 1. Status & Trends monitoring through muni permit; PSAMP; EAP; locals 2. Effectiveness monitoring through muni permit; TAPE, WA Stormwater Center 3. Source ID database & sharing of activities 4. Toxics loading studies Element 4 of item II in 12.9.10 draft SW vision, steps (with BWulkan edits) include: 1. Develop funding for SWG recommendations 2. Develop funding for the various tasks of the Stormwater Technical Resource Center 3. Develop funding for research to improve pollutant metrics 4. Complete Puget Sound Toxic Loading Studies
Overarching Strategy Need:	Additional funding for all strategies, adapted from ECB Stormwater Subcommittee report to ECB:	Details: 1. Local govs, WSDOT have limited resources for basic, ongoing program activities, retrofits, enhanced maintenance 2. Local govs currently fund most SWM – need greater contributions from federal, state 3. Watershed-based permits should be explored to ensure new and existing funds spent most efficiently