

Final Report to the
Washington State Legislature

Washington Stormwater Management Study

Report and Recommendations
from the Stormwater Policy
Advisory Committee

September 2001

**Washington State Department of Ecology and
Washington State Department of Transportation**

Prepared by CH2M HILL

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(* Indicates members of the Stormwater Management Study Steering Committee)

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Acronyms

AGC	Association of General Contractors
BMP	Best Management Practices
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Capital Improvement Plan
CWA	Clean Water Act
CZM/CZARA	Coastal Zone Management/Coastal Zone Act Reauthorization Amendments
DNR	Washington Department of Natural Resources
Ecology	Washington Department of Ecology
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FPA	Forest Practices Act
GMA	Growth Management Act
HCP	Habitat Conservation Plan
HPA	Hydraulic Project Approval
MTCA	Model Toxics Control Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
OCD	Washington Office of Community Development
O&M	Operations and Maintenance
PSWQAT	Puget Sound Water Quality Action Team
SDWA	Safe Drinking Water Act
SEPA	State Environmental Policy Act
SMA	Shoreline Management Act
SSO	Sanitary Sewer Overflow
TMDLs	Total Maximum Daily Loads
UIC	Underground Injection Control
USFWS	U.S. Fish and Wildlife Service

WDFW	Washington Department of Fish and Wildlife
WQ Standards	Water Quality Standards
WRIA	Water Resources Inventory Area
WSDOT	Washington Department of Transportation

Key Findings

There is an inherent tension between the public's stated desire to develop and expand use of the land and the desire to protect and restore environmental resources. It is becoming increasingly apparent that protecting existing environmental resources from the adverse impacts resulting from stormwater runoff from new development will require substantial changes in the way stormwater is managed. In any case, it is difficult and costly to mitigate stormwater impacts. This has led to an increasing sense of frustration over how stormwater is managed and the effectiveness of policies and procedures related to stormwater management. The issues are substantial, complex and unavoidable.

Multiple perspectives

Many factors that affect stormwater management differ by location, organization or activity. The differences in these factors lead to a variety of perspectives, perceptions and opinions about issues and appropriate solutions. This points to the need for an overall state stormwater management program to be flexible enough to address these differences. Many jurisdictions in the urban areas of the state have created stormwater utilities to provide funding and have sophisticated stormwater management programs, while many smaller jurisdictions, particularly in the rural areas, do not or have not perceived the need to do this. In urban areas changes in stream flows and stormwater pollutants may be the dominant environmental impact factor. In other areas, agriculture and alterations to stream banks may be the dominant environmental factor. In many watersheds, these are related.

There are wide differences in rainfall and geology across the State. These differences affect the impacts and fate of stormwater. For example, in some parts of the State, even in urban areas, stormwater infiltrates where it may or may not carry pollutants to the groundwater depending on soil conditions. In other areas, stormwater rushes to streams where it erodes stream banks affecting water quality and fish habitat.

Additional perspectives from Advisory Committee members on stormwater management issues are attached to the end of this report.

Environmental impacts

Human activities on the landscape change stormwater flows and contribute pollutants to water bodies. This impacts our water quality and quantity and aquatic habitat. The impacts can degrade fish populations even at low levels of development, and can be unavoidable at urban densities given today's technology. Research on Puget Sound

	<p>streams by Karr and May indicates that very low levels of development alters the biology with measurable impacts to salmon populations occurring with as little one home per acre as a result of changes in stormwater flows. ¹</p>
Costs	<p>Stormwater management is costly for governments and private property owners. The costs fall primarily on local governments and private property owners. While local governments have the legal mechanisms to raise funds to cover the costs, there is a wide range in public acceptance and willingness across the state to fund stormwater activities at the local level. Federal and state requirements are substantial but provide minimal funding.</p>
Liability	<p>Federal and state regulations have imposed a legal mandate for local governments and property owners to treat and store stormwater. The regulations create financial and legal (civil and criminal penalties) liability for local governments and property owners that cannot be ignored.</p>

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- *¹Environmental impacts related to stormwater:*
 - *Since 1980, roughly 1/4 of Puget Sound commercial shellfish beds downgraded and taken out of production. There are contaminated sediments in many urban estuaries.*
 - *There are a total of 643 impaired water body segments out of the 1,099 for which data are available, many of which violate standards for more than one pollutant. (From the 1998 303(d) list. The 643 represent only about two percent of all the waters in Washington. The number of whole water bodies on the 1998 list increased by 32 over the 611 on the 1996 list.) This represents violations for Bacteria (285 listings) temperature (282 waters) Dissolved oxygen (133 waters) pH(87 water) , toxics (78) nutrients (28) and low flow (38). These factors are commonly associated with stormwater.*

Complexity and uncertainty

There are technical challenges as a result of science, regulations and governmental relationships related to stormwater. These complexities result in uncertainty and unpredictable outcomes for resource managers and property owners. Current technologies are limited in their effectiveness. Solutions are not always clear or simple.

Stormwater is regulated and managed by a multitude of federal, state and local agencies with differing but related regulatory missions and responsibilities. This increases the difficulty of compliance with regulations and results in project delays and increased costs with uncertain benefits in environmental protection.

Economic Impacts

Because of technical and regulatory complexity many public and private projects take longer to obtain permits resulting in added costs. Ultimately, this situation may constrain the regional economy. The State should improve coordination and efficiency in stormwater management including regulatory and permitting processes and planning while protecting the environment and assuring public participation.

Opportunity to benefit environment, business and government

Preventive approaches, including watershed-based land use planning, low impact development practices, and increased public education can be used to reduce long-term costs and stormwater impacts. These practices can allow for continuing economic development and environmental protection.

Resolution of issues would benefit the environment, business and government.

Key Policy Issues for Legislature

Who Pays?

The public has demanded environmental protection and there have been improvements in understanding how to manage stormwater to achieve this public objective. In many cases preventing stormwater impacts before they occur will be the least costly alternative. The cost and the responsibility for funding has typically fallen on WSDOT, local governments and private property owners. Despite current investments, stormwater funding is not sufficient to meet public environmental, health and safety objectives. The federal and state governments have not provided funding for stormwater management to match the regulatory requirements. The appropriate share of funding responsibility among private property owners and businesses, federal, state and local governments has not been determined. Not resolving the fair share issue shifts the costs to the public and increases overall cost for clean-up, flood control, habitat restoration and water

Improve coordination

quality treatment.

Stormwater is managed by a multitude of federal, state and local governments. There is no forum to coordinate the activities of these entities or to develop consistent policies, goals and standards. Coordination must be improved to achieve greater consistency and predictability in stormwater management.

Key Legislative Recommendations**Business plan**

The legislature should provide direction and funding to develop a **business plan** that identifies the cost of stormwater management and the fair share of funding responsibility among the federal, state and local governments and private entities.

Identify costs and benefits

The state should complete a comprehensive analysis of the cost of stormwater management for government and business using a risk-based approach to prioritize funding needs including an examination of cost savings from preventive approaches to stormwater management. The analysis should also describe the benefits of stormwater management in terms of human health, biological diversity, aquatic resource protection, recreational use of aquatic resources and aesthetics. The analysis must recognize the diversity of environment, economy and public opinion across the state.

Agree on shares

The business plan should include a policy regarding the appropriate share of the cost of stormwater management to be borne by federal, state and local governments and business or property owners.

Coordination team

The legislature should provide support for a **Coordination Team** (reporting to the Joint Natural Resources Cabinet and the legislature) to develop a business plan, address regulatory overlaps and permit streamlining and establish consistent policies for stormwater management. The Coordination Team will address consistency in regulatory goals and performance standards.

And...

There are additional recommendations in the body of the report for training and enhancing effectiveness of stormwater management activities. This includes coordinating research and monitoring. These should be considered interim recommendations pending development of the business plan.

Intent and Objectives

As an urbanizing society, we are faced with the challenge of stormwater management. Urban changes affect two characteristics of stormwater: quantity and quality. The increasing proportion of impervious surface associated with pavement or compacted soils results in stormflow peaks that are higher and more sudden, with less water going to groundwater storage and less uptake and interception by vegetation. The potential for flood impacts in winter is thus increased while our groundwater supply and instream base flows in summer are diminished. Because urbanization tends to occur along rivers, where transportation and trade are most available, the impacts of flooding are pronounced and repetitive. Similarly, the impacts to our aquifer-based water supplies are pronounced in urban areas, where the demands are also the greatest.

In addition to flooding, some of the earliest studies in the United States associated degradation of water quality in streams with contaminants in stormwater runoff. Metals, oil, and grease are commonly found in urban runoff, and nutrients, sediment, and organics are found in rural runoff. Sediment loads also may be released from construction sites with disturbed soil, and high bacteria counts are common in runoff from most urban and farmed lands (National Urban Runoff Program, 1984).

Changes in both water quantity and quality lead to alteration of the form, and flora and fauna of our wetlands, streams, rivers, and lakes. Streambanks may erode because of higher flood energy and sediment loads, and more sediment builds up in wetlands and lakes. Streambed gravels that were once well-aerated and provided successful spawning grounds become buried with sands and silts, thereby cutting off the supply of oxygen. As sediment load, discharge, and flow duration change, life assemblages change. Diminishing summer flows lead to temperature increases, exacerbated by streambank vegetation removal due to urbanization and land management practices. The interconnections of ecosystem dynamics integrate changes in upland and riparian systems with aquatic ecosystems.

As a result, our water resources become less available and of insufficient quality to meet the needs of humans and other life forms, today and for future generations. In some instances, stormwater impacts may be so significant as to threaten human health and safety. Flood damage costs in dollars and, occasionally, lives. Impaired water bodies become unsuitable for drinking water without treatment as well as for fisheries. In addition, waters may be no longer available for swimming and other human recreational contact. In urbanizing watersheds, there is less land available for mitigation and implementation of management alternatives. Finally,

the varying scales of these effects (stream reach to whole watershed) necessitate management across political boundaries.

To maintain local control and flexibility, the state sought and received delegation to implement the NPDES program in 1973. Through this delegation, the state is obligated to provide “swimmable” and “fishable” streams through its assumption of primacy from the U.S. Environmental Protection Agency (EPA) under the Clean Water Act (CWA). The state is thus obligated to implement water quality standards, National Pollutant Discharge Elimination System (NPDES) permits, total maximum daily loads (TMDLs), and other programs to protect the waters of the United States. The state is also legally bound to protect all ground water from potential water quality impacts through its assumption of primacy of the Underground Injection Control (UIC) program under the Safe Drinking Water Act (SDWA). An increase in the number of aquatic species listed under the Endangered Species Act (ESA) has brought additional requirements for aquatic resource management and stormwater management. The Coastal Zone Management/Coastal Zone Act Reauthorization Amendment (CZM/CZARA) addresses water quality issues in coastal watersheds and waterbodies, including nonpoint sources. Thus, high precipitation events, no matter where in the state, have potentially negative impacts on receiving water bodies that fall under state regulations and state, regional, and local program management.

Washington has invested in stormwater management, primarily in the urbanized areas of Puget Sound and Spokane County. The state has been a leader in basic research and technology development for many years, through agencies and universities. *Stakeholders*² have complemented this research with their own experience and *monitoring* results. The Washington Department of Ecology (Ecology), Washington’s leading stormwater regulatory agency, has based policy, manuals, and guidance on this science. Local and regional entities have collected data through *monitoring*, and have educated their communities. In addition, volunteer groups have been active in many Washington communities to understand, correct, and educate others about stormwater management.

Significant questions about future investments in stormwater management remain. Some issues relate to how much we are truly willing to pay to meet these goals, and through which funding source. How can we prioritize our investments in stormwater, given needs for protection of overall water resources, and given competing social, health, and education needs?

How can we achieve the greatest cost effectiveness with our current and future stormwater management investments across the state? Treatment

² The definitions of *italicized words and phrases* can be found in Appendix A, Definitions.

of stormwater is costly and revenues are currently insufficient to meet existing and future increasing treatment needs. Prevention is frequently more cost-effective than treatment, but relies on land use management and fundamental changes in how we (all *stakeholders*) live, to alter traditional outcomes. A key question is how we meet evolving requirements in our urban environments where land for mitigation of development impacts is largely unavailable. These issues raise difficult choices for local governments, businesses, and *stakeholders*.

The Stormwater Policy Advisory Committee

The 1999 Washington State Legislature directed Ecology to form an advisory committee to update the stormwater management plan and technical manual, and to make stormwater management recommendations. The Stormwater Policy Advisory Committee (SWPAC) was formed as a result of a \$100,000 general fund line item appropriation in the Fiscal Year 1999 budget.

The SWPAC, convened in September 1999, is comprised of more than 60 members selected to represent the many Washington *stakeholders* who are affected by and who can affect watershed management. The diverse SWPAC considers policy issues associated with the stormwater technical manual, provides comment and suggestions about the scope and content of the stormwater management plan, and submitted recommendations to the 2001 Washington State Legislature about how to improve stormwater management in Washington.

Stormwater Management Study

The Washington State Department of Transportation (WSDOT) in collaboration with Ecology and SWPAC elected to conduct a stormwater management study (Study) to develop these recommendations. A Steering Committee composed of SWPAC members was designated to serve as an immediate contact for the consultant tasked with the Study, and to review and discuss Study progress and interim work products on a periodic (generally monthly) basis. The Steering Committee is broad-based, representative of the diverse stormwater interest groups in Washington, and allows a high level of participation by its members. Steering Committee members represent state and local government, as well as tribal, environmental, and business interests.

The goals of the Study were to:

- Clarify relationships among existing stormwater management activities in Washington
- Identify opportunities for improved efficiency and effectiveness

- Identify approaches for removing barriers to improved efficiency and effectiveness

The Study's scope of work was reviewed and approved by the SWPAC, and included the following tasks:

- To advise the state's elected officials of stormwater management issues by preparing Interim and Final Reports of the Study for distribution to the Washington State Legislature
- To develop a summary of stormwater regulations and programs, including program elements, goals, policies, costs, "customers," future program visions, and existing outreach, education, and technical assistance programs
- To identify opportunities for improvement in existing stormwater management programs through analysis of program redundancies and overlaps, consistency, conflicting goals or processes, gaps and barriers to implementation, timing/sequencing, and opportunities for increased efficiency and effectiveness
- To review stormwater management coordination processes and institutional structures in other states where parallel drivers for multiple inter-related regulations and cross-jurisdictional issues exist
- To identify the scope of potential benefits, uses, and limitations of alternative mitigation and environmental credit trading as a means of mitigating or offsetting stormwater impacts and increasing statewide stormwater program effectiveness
- To summarize SWPAC's recommended improvements to existing stormwater regulations and programs including suggestions for how to improve itemization, tracking, and quantifying true costs
- To develop a Communications Plan to provide concise information about Washington stormwater management issues and this Study to interested *stakeholders*, and to develop a training program to promote stormwater awareness among implementing agencies, stakeholders, and citizens
- To communicate progress and solicit review comments about the Study from the Steering Committee and SWPAC, including coordination and facilitation of Steering Committee meetings.

Considerable difficulty was encountered in getting comparable data about stormwater program costs from background documents and interviews. For *stakeholders* looking ahead to NPDES Phase 2, ESA, and TMDL requirements, there were sufficient uncertainties that they could not describe future programs, or give an expected cost. The complexity and inter-relationships of stormwater programs throughout the state add

unpredictability (see Figure 1). The Washington Stormwater Management Implementation Pathway demonstrates the complexity of implementation of several stormwater-related federal regulations at the federal, state, and regional/local levels, and by the inter-relationships between stormwater programs and activities at the various levels. The complexity of these inter-relationships and uncertainty due to evolving stormwater-related regulations is compounded by the lack of available resources to implement stormwater programs, let alone coordinate them.

Stormwater program implementation in counties and municipalities are managed by multiple departments (e.g., Operations & Maintenance, Public Works, Transportation, and Planning) with some unidentified portion of funding from each. Also, some *stakeholders* implement stormwater management programs on a project-by-project basis (e.g., WSDOT), and costs are embedded in project budgets. As a result, rather than being able to give a probable range of costs for a particular set of stormwater management responsibilities, the Steering Committee elected to make recommendations on the more critical issues of how to fund costs beyond current budgets and those unknown costs expected in the near future, and where is the funding coming from?

This Final Report summarizes key findings of the Study. It presents Study themes, policy statements, and recommendations from the SWPAC regarding the intent and direction of a particular recommendation, based on data collection and interviews. Additional perspectives on stormwater management issues are attached to the end of this report.

Methodologies

The methodologies used in the Study included:

- Stakeholder interviews
- Review of pertinent documents, legislation, and regulations
- Identification of program interrelationships and regulatory authority through specific queries of program owners

In the course of the Study, specific terminology was adopted for common use; definitions are provided in Appendix A. Stakeholder interviews were conducted with more than 90 percent of the members of SWPAC using the Interview Questions and Stormwater Interrelationships Matrix in Appendix B, as revised by SWPAC. Results of the interview questions are presented in Appendix C. A technical memorandum that summarizes information about costs is presented in Appendix D. Stormwater-related regulations are summarized in tabular form in Appendix E. As it became clear that clarity in stormwater program implementation and compliance relationships did not exist, the Stormwater Interrelationships Matrix format was revised and the interview results of program owners (federal,

state, and local agencies responsible for enforcing stormwater regulations) were presented in separate matrices (Appendix F). Individual stormwater program summaries are included in Appendix G.

A series of three Technical Memorandums were used to communicate results of the Stormwater Management Study to the Steering Committee and the SWPAC. These are included here as Appendices H-J. The various stormwater regulations and programs are summarized and analyzed in Appendix H. Recommendations for stormwater regulations and programs are detailed in Appendix I. A policy review of compensatory mitigation including on-site mitigation, advanced mitigation and environmental credit trading is included in Appendix J.

A proposed Stormwater Communications Plan and Training Program are included in Appendix K. Two stormwater fact sheets, components of the Stormwater Communications Plan, are included in Appendix L. The first fact sheet is a general overview of stormwater management and actions to reduce stormwater pollution. The second fact sheet summarizes the results of this Study for a general audience. Documents, legislation, and regulations that were reviewed are listed in Appendix M.

Figure 1
11 x 17
Front

Figure 1
Back

Findings

Stakeholder interviews identified the wide range of geographic, institutional, regulatory, and political settings in which stormwater programs function. Figure 2 summarizes the continuum of conditions that affect stormwater program management in Washington. Any given program functions at some point in the spectrum of rural vs. urban, wet vs. dry, small catchment drainage vs. large megabasin drainage, etc. The number of these factors and their changing status – an area may be rural but urbanizing, or a species may be under consideration for listing as threatened or endangered – make this a complex management environment. Other factors also can be added, such as the location in a watershed (headwaters vs. confluence), and whether stormwater discharges to surface water or infiltrates to groundwater.

Figure 2. Washington Stormwater Continuum



Four common themes emerged as interviews and discussions took place with *stakeholders* from across the stormwater continuum. These themes were deemed by the Steering Committee and the SWPAC to merit further attention, and are the focus of this Final Report. They are:

- **Management Coordination**

SWPAC found a need for greater coordination among existing programs, which could lead to streamlined processes, predictability, and real benefit for the investment. This ongoing coordination will provide a mechanism to address the concern among *stakeholders* regarding integration of recent and pending (including ESA, TMDLs, sediments, and whatever is next) regulations into an already complex stormwater program.

- **Effectiveness**

The Study documented uncertainty among *stakeholders* as to the effectiveness of stormwater management programs. To sharpen program focus and clearly define “effectiveness” and document success, the SWPAC recommends that the following steps be undertaken: goal comparison and definition, identification of appropriate performance measures to evaluate progress toward goals, and development of a statewide *monitoring* strategy that could assist in coordination of *monitoring* programs.

- **Costs and Funding**

There was agreement among *stakeholders* that the current level of funding is a barrier to program effectiveness. There was also agreement that program costs are likely to increase, the exact costs are difficult to pinpoint for a number of reasons, and there are many water resources infrastructure needs competing for funding. SWPAC recommends that a stormwater program cost-benefit analysis be completed that incorporates analysis of risk, that a thorough review of all potential stormwater funding mechanisms and strategies be developed, and that these results be the basis for a *business plan* for stormwater management in Washington.

- **Technical Assistance, Outreach, and Education**

Stakeholders expressed a need for technical and educational materials and assistance so that they can better understand stormwater issues, technologies, and management needs. SWPAC recommends that this need be met through state-supported technical specialists, and development and distribution of a communications plan and education program.

The following sections present policy statements and recommendations that address each of these four themes, and summarize the intent of the SWPAC.

Management Coordination (M)

Discussion

There is a dichotomy in our regulatory programs based on history and institutional structures. Our regulations have been passed with the

overall goal of protecting environmental health but implemented by regulating limited aspects of the environment. For example, the goal of the Clean Water Act is to protect physical, chemical and biological health of the nation's waters. The Act has well defined processes for point source discharges, but has less well defined processes for addressing nonpoint discharges. Likewise, regulations have readily applied the numeric criteria to remove pollutants, but have difficulty assuring that designated uses are maintained. Regulations under the Act do not easily protect waterbodies from damage that can result from hydrological changes due to watershed development, loss of riparian corridors, or direct alteration of aquatic habitat. Thus, it is possible to have water bodies that are in compliance with the implementing regulations of the Clean Water Act, but fail to support a healthy diversity of aquatic species. Each regulation (NPDES, TMDLs, Sections 401 and 404 of the CWA, ESA) has similarly narrow application. Flood management and salmon recovery programs point out gaps in the CWA for water resources protection. If these issues are to be addressed, a governmental investment will be needed to fill-in the gaps, coordinate and resolve overlapping issues.

There is no provision in the statutes for flexibility to consider how to achieve designated uses of water bodies because of degradation or cost to maintain them, and approaches used nationally for re-evaluating current assignments of designated use (e.g. use attainability) are not commonly used tools in Washington state. This means that as the effects of urbanization become more pronounced, maintaining designated uses becomes more challenging, which typically increases the cost of development. New development must meet ever higher standards while existing development is not required to meet similar standards. Some may view this as a disproportionate burden placed on new development, compared with grandfathered existing land uses, to manage stormwater. Similarly, there is no mechanism for considering the host of "urban issues" such as those identified by the Tri-County ESA Urban Issues study (i.e. what is really achievable in urban areas versus what is required by regulations) or for considering the best environmental investment on a watershed basis. As well, there is lack of agreement among stakeholders on how much should be invested for the public good.

The objectives of this Study were to clarify relationships among existing stormwater management activities, identify opportunities for improved efficiency and effectiveness, and identify approaches for removing barriers to improved efficiency and effectiveness. Improved coordination among programs could lead to improvement in efficiency and effectiveness. To illustrate in a simplified manner the web of relationships that surveys identified, the Washington Stormwater Management Implementation Pathway (Figure 1) was developed. Figure 1 clearly

shows the complexity of stormwater management in Washington. The source of much stakeholder confusion and general frustration is evident as one attempts to negotiate a predictable path in this system and through the regulations, whether for program implementation, compliance, or permitting. For example, ESA authority is held only at the federal level, but the effects trickle down to local programs via multiple pathways, without input, control, or additional funding for the local level. While Figure 1 shows a snapshot of one point in time, this structure has evolved over time in response to regulatory and political forces, not necessarily functional drivers.

In response to such complexity, several mechanisms have been developed to simplify program and project development processes through increased consistency and predictability. Ecology and regional entities are working to develop stormwater technical manuals that provide standardized, approved approaches for particular environments and can be referenced in local/regional program and planning documents, ordinances, and in Ecology NPDES permits. These manuals would be used by all state regulatory programs.

Regional planning processes also have served to develop alliances and are working to receive regulatory approval from multiple authorities to simplify the process for those in the alliance. An important effort is the Tri-County Plan, which aims to meet both NPDES Phase 1 and ESA regulatory requirements. Such an approach might be taken by any group with enough commonality along the stormwater continuum. A special collaborative approach may be organized to lay out a coordinated pathway with funding mechanisms proposed to the Washington State Legislature.

Review of stormwater management roles, responsibilities, and implementation and compliance options showed different interpretations of these for any given program among *stakeholders* (see Appendixes C through F). This became clear when the initial Stormwater Interrelationships Matrix was compiled based on stakeholder interviews (see Appendix C) and results were discussed by the Steering Committee. Appendix E presents a summary of the various regulations and their effect on stormwater management approaches. A detailed summary of the views of regulatory program “owners” at the state level was compiled in footnoted matrices, to give more detail about program intent (Appendix F).

Given the disparate degrees of understanding and views of stormwater management roles, SWPAC expressed a desire for progress toward simplification through a standing coordination group. The intent of this coordination group is to:

- Develop a business plan for stormwater management
- Address regulatory gaps and overlaps

- Establish consistency in application of stormwater regulations
- Address effectiveness of stormwater mitigation

Such a management coordination team recognizes that clarification of goals (see Effectiveness theme) was not sufficient to consistently and efficiently assure effectiveness in this changing regulatory, economic, and natural environment. The essential characteristics of such a coordination group are:

- Organization and sponsorship allows independent comment on all stormwater management activities throughout the state
- Entity has appropriate status and credibility to make decisions and affect change
- Able to carry out coordination role with federal government
- Able to communicate with both executive and legislative branches of state government
- Able to provide broad and appropriate representation, and be viewed as objective
- Small enough to be able to make group decisions
- Members have decisionmaking and implementation authority for and within their respective spheres of influence (state or local departments or agencies, organizations, or communities)
- Members are committed to simplifying, increasing the effectiveness of, and addressing stormwater management issues (both those now identified and those brought to their attention) in future years. Note that this coordination team serves to simplify processes, and **not** to be an additional level of management

Several potential sponsors for such a group were discussed, including having it be a continuance or long-term formalization of SWPAC, a commission with an agency lead, a commission or a legislature-authorized committee, or a team established by the Governor's Office. Of the above suggestions, one that meets the criteria listed above would be a team convened and stewarded by the Departments of Ecology and Transportation. However, it is possible for other sponsorships to be successful, and SWPAC recommends legislative consideration and selection of the most effective sponsorship and format.

Policy Statement M-1

Washington needs a collaborative stormwater leadership structure, herein referenced as the "Coordination Team."

The SWPAC recommends that an effective convener for such a structure

is within Ecology, and stewarded by both Ecology and WSDOT, based on the need for this team to have an agency base from which to foster multi-agency decision-making, and the benefits of integration with direct stormwater regulatory authority and program legitimacy. There was the sense that a Governor-appointed commission or a Legislative-appointed committee also may be an option. WSDOT and Office of Community Development (OCD) also were seen as potential sponsors, because of their role in stormwater program implementation. However, there was concern that the perspective of the Coordination Team remain broad, without particular allegiance to any agency, program, or regulation.

The emphasis is to be on a forum for collaborative decisionmaking, rather than direction of others as to how to implement. As such, the Coordination Team should involve those who have the authority to commit to decisions.

There is currently no funding allocated for this Coordination Team. The Washington State Legislature should ensure that funding to cover the cost of supporting this Coordination Team is provided, including administrative support and expenses.

Recommendations

M-1-A: The Coordination Team will be convened by Ecology and report to the Joint Natural Resources Cabinet (JNRC) and the State Legislature. The Stormwater Policy Advisory Committee (or another broadly representative body) will act as an advisory group to the Coordination Team.

The Coordination Team will be a small, focused group consisting of representatives from state, regional and local governments involved in stormwater management. The intent of this group is to serve as a “process improvement” team, rather than a statutory authority. Ecology will sponsor stormwater issues of inter-agency interest and bring them to the Coordination Team for consideration and action. The Coordination Team will ensure that the relevant federal agencies endorse the resulting decisions. The Coordination Team should establish a broadly representative advisory team to collaborate with the Coordination Team. The Coordination Team will work with the agencies to integrate multiple stormwater-related regulations and programs to facilitate applicant needs. This integration will proceed through a collaborative process among the regulating agencies and with other stormwater-related stakeholders to achieve mutually desired outcomes. The JNRC will ultimately forward any policy recommendations for changes to state statutes from the Coordination Team on to the Legislature for consideration.

The Coordination Team can review other models of regional and statewide cooperative advisory groups on stormwater program issues

such as the North Central Texas Council Of Governments Stormwater Management Coordinating Council and the California Stormwater Quality Task Force (for more information on these programs, see Appendix I). These Texas and California coordination groups provide advisory roles to local governments and make recommendations for compliance with multiple stormwater-related regulations. The structure and experience of these groups could help Washington stormwater management-related stakeholders form the Coordination Team.

M-1-B Evaluate current roles; identify gaps, overlaps, and solutions; and develop agreement about solutions.

Initially, the sponsoring organization will need to identify and assemble the team members, establish the roles, and work to develop agreement about solutions among the parties. The Coordination Team is meant to represent all levels and aspects of stormwater management program ownership – state, regional, and local, perhaps with a technical research representative. A Memorandum of Agreement may be developed among the parties, similar to that between Ecology and Washington State Department of Health (WSDOH) to address drinking water and water rights issues.

M-1-C Define and establish the lead role on the Coordination Team, its accountability, and all accountable parties.

This includes identifying the leadership role, defining its responsibility and establishing accountability of all parties.

M-1-D The Coordination Team should establish coordination principles, and identify annual goals, work plans, and products.

The Coordination Team completes its charter with agreed-upon principles of coordination (e.g., why, when, where, how, with whom). Coordination is expected to include links to other ongoing forums and efforts. The Coordination Team should develop annual work plans with timelines as guidelines for products and progress. Products may include fact sheets regarding policy decisions, recommendations about interfaces among stormwater programs, and other activities as further defined in this Final Report. The Coordination Team thus functions in an operational policy-setting role in addition to an advisory role.

M-1-E The Coordination Team should complete a biennial report to the Washington State Legislature that itemizes progress on goals, work plans, and products; summarizes gains toward greater coordination, effectiveness, funding, education and outreach; and recommends changes that are needed.

This provides a measurable checkpoint regarding the benefits and functionality of the Coordination Team, and allows adjustment in mission, approach, make-up, and other components as the regulatory, political, economic, and technical environments change. Specific sections to be highlighted in the biennial report address progress in achieving Management Coordination policy statements M-2 through M-5, and

activities as described in Effectiveness; Costs and Funding; and Technical Assistance, Outreach, and Education themes.

Presentations of the biennial report by Coordination Team members will update local stormwater *stakeholders* on Coordination Team activities and will provide one avenue for local input on a regular basis. Such input augment that already provided by members of the Coordination Team, and can be incorporated into future workplans.

Policy Statement M-2

As the Coordination Team, stormwater management-related program owners should coordinate operational policy and implementation among state agencies, and among state agencies and regional and local entities.

The initial level of coordination recommended is both horizontally and vertically (with regional and local entities) across the Washington Stormwater Management Implementation Pathway (see Figure 1). Because the Coordination Team will be representative of many levels of program owners (federal, state, and local agencies responsible for enforcing stormwater regulations), these linkages will be discussed with the participation and endorsement of all levels of the Implementation Pathway. By “coordination,” the SWPAC means understanding who the implementers are in similar programs, and how they can work together to streamline processes and support each other in making their respective programs more effective with less investment and frustration.

Recommendations

M-2-A The Coordination Team should identify and prioritize a list of coordination and implementation issues.

A list of implementation issues was identified as a result of stakeholder interviews during this Study. The Coordination Team should review these issues and add to the list as necessary, then group the issues and prioritize for further activity. Examples of issues that have been posed to date with operational policy and implementation aspects are:

- Lack of funding to support mandates
- The relationship between stormwater management and groundwater protection
- The relationship between watershed planning and stormwater management
- How the GMA planning framework or other stormwater management mechanism takes into account cumulative effects of development

- Regulatory streamlining
- The roles of preventive strategies, advanced mitigation, and environmental credit trading

M-2-B: The Coordination Team should create recommendations for a streamlined permitting & consultation process that addresses CWA, CZM, ESA, SDWA, and state requirements (HPA, SEPA, GMA, SMA) for stormwater project elements.

Several regulatory programs are currently working to integrate stormwater program requirements. Effective coordination in this direction will result in clarified regulations, streamlined permitting processes, and increased compliance with stormwater regulations. The Coordination Team should oversee the integration of regulatory requirements with Washington's Department of Ecology (Ecology), Department of Transportation (WSDOT), Department of Fish and Wildlife (WDFW), Office of Community Development (OCD), and Department of Health (DOH). This oversight will facilitate inter-agency efforts to reduce redundant and/or conflicting stormwater management requirements, and ease compliance with stormwater-related regulations and programs. This process should include federal, state and local requirements, and with a goal of a seamless process for all stormwater requirements.

Note: This recommendation is subject to integration or coordination with the permit streamlining responsibility created by SB 6188, the Environmental Permit Streamlining Act.

M-2-C: The Coordination Team should promote watershed planning approaches that connect stormwater-related regulations and programs with GMA and land use planning programs.

State, regional, and local governments are currently involved in watershed planning. Planning is being conducted for large, river system-wide watersheds, or Water Resource Inventory Areas (WRIAs), and at smaller scales such as for local sub-basins. When implemented, watershed planning can be an effective tool to meet a variety of water resource objectives, including compliance with multiple stormwater-related regulations. Integration of land use planning and watershed planning can result in preventive approaches to reducing harmful stormwater discharges, reducing nonpoint source pollution, and protecting aquatic resources. Watershed planning efforts can collectively address the issues in a specific basin by gathering technical data; developing consistent stormwater management programs and Water Cleanup Plans/TMDL implementation plans; conducting water quantity/instream flow planning (including stormwater flow requirements); and determining habitat needs for ESA and HPA requirements.

Dealing with a comprehensive set of issues and public involvement and participation are key in developing watershed planning goals and objectives. These efforts are currently often limited in their scope due to availability of funding and staff time. Current grant programs supporting watershed plans often address a limited set of issues such as water quality, habitat, flooding or water supply rather than requiring that all the issues be addressed and the conflicting challenges resolved in a multi-disciplinary public context.

The Coordination Team can review the experience of the California Watershed Management Initiative and the Los Angeles County Watershed Management Division as potential models for coordination of regulatory activities on a watershed-wide scale (for more information on these programs, see Appendix I). These two examples of statewide and regional approaches to water quality issues demonstrate how stakeholders within individual watersheds can collaborate to develop local solutions, considering the appropriate issues and incorporating the concerns of the full range of relevant stakeholders.

M-2-D: Stormwater program owners should articulate and coordinate their future program visions with other agencies and stakeholders.

Regulatory program “owners” should seek opportunities to establish stormwater management efficiencies by identifying or establishing common goals with other agencies or jurisdictions. For example, NPDES, TMDLs, and 401 certifications all have the common goals of meeting water quality standards and preventing harmful stormwater discharges to surface waters. Regulatory agencies such as Ecology, WDFW, and the OCD can benefit both internally and externally by working with other agencies to develop coordinated programs to respond to stormwater management regulations. Jointly establishing goals that are consistent among programs will ensure that compliance with stormwater regulations meets the objectives of multiple programs without exceeding current standards.

Many planning and policy documents address stormwater management, including Ecology’s proposed *Stormwater Management Manual for Western Washington*, the 2000 update to the *Puget Sound Water Quality Management Plan*, and the *Statewide Strategy to Recover Salmon*. Future revisions to these documents, and any other future manuals or plans (such as the Ecology *Stormwater Management Manual for Eastern Washington*) should consider the recommendations of this Study.

M-2-E: The Coordination Team must provide recommendations addressing stormwater program customer needs (e.g., permits, compliance with multiple regulations) to simplify submittal and certification processes.

Some stormwater program customers believe that they are overlooked in

the development of programs and processes. Their input and suggestions regarding simplification approaches need to be specifically addressed.

M-2-F The Coordination Team should address implementation questions as they arise among state agencies and regional and local entities.

Recognizing that not all of the issues will be identified and addressed on a predictable basis, the Coordination Team should provide a forum for discussion, investigation, and resolution of those issues that arise, and lay the groundwork for collaborative actions. The Coordination Team is **not** intended to act as a review board.

Policy Statement M-3

Washington stormwater management-related regulatory agencies (regulators) need to work toward achieving consistency in policy and implementation with federal regulating agencies.

Recognizing that state agencies have no authority to achieve consistency across federal agencies, the state agencies can perform a much-needed role in persuading federal agencies to provide greater consistency in operational policy and implementation. The Coordination Team should encourage state regulatory agencies on areas needing focus, both in the course of issue resolution and long-term program improvements.

Recommendations

M-3-A Washington regulators need to seek delegation, where appropriate and funded, and seek to integrate and coordinate stormwater management and compliance with the ESA, CWA, SDWA and other federal regulations.

Concerns among stakeholders include coordinating requirements of the Endangered Species Act (ESA), the pending NPDES Phase 2 stormwater permits, Underground Injection Control (UIC) requirements for stormwater dry wells, and TMDL-setting in Washington. These are viewed as the issues of uncertainty, potential risk and liability, and unknown cost.

Requirements of these federal regulations have common goals, and it is possible to coordinate the responses to these regulations at the state and federal levels to create efficiencies and reduce redundancies. For example, Ecology and the National Marine Fisheries Service (NMFS) could coordinate stormwater program requirements in Washington to meet the objectives of the CWA and ESA. WDFW has the opportunity to work with NMFS to achieve efficiency in the Hydraulic Project Approval (HPA) permitting process with a Habitat Conservation Plan (HCP) or other similar mechanism to protect individual projects or activities from ESA liability.

Senior management in Ecology, WSDOT and WDFW need to actively support development of case studies using individual WSDOT projects to develop and test integrated approaches.

M-3-B Washington regulators need to endeavor to develop streamlined approaches to federal compliance.

To the extent that the state can negotiate programmatic compliance approaches with federal regulations, this would greatly ease current permitting complexity. Also, combining and coordinating permit applications where multiple agencies are involved, or any other approach to streamlining permitting, is recommended.

M-3-C Washington regulators have a responsibility for two-way communications with federal regulators, in order to avoid surprises due to federal regulatory requirements in stormwater management implementation.

Communication of precedence-setting legal and policy decisions at the federal level to Washington *stakeholders* is key. Also critical is communication of information regarding stormwater management issues, funding, and technology to federal agencies, on the behalf of Washington *stakeholders*.

M-3-D: The Coordination Team should identify appropriate practices, develop practical means of implementing advanced mitigation and environmental credit trading that meet federal and state regulatory requirements through cooperatively sponsored pilot projects that will develop application knowledge in the stormwater context.

To accomplish goals of regulatory compliance and resource protection, enhancement, and restoration on a watershed basis, innovative mitigation strategies such as advanced mitigation, mitigation banking and credit trading should be considered. The Coordination Team should recommend whether and what state and federal law/policy would require change to pursue these options statewide. These strategies may provide opportunities for new funding and partnerships to make projects that have already been identified as watershed and regional priorities become reality. Watershed planning and prioritization processes provide the context for such strategies, which allow local input. Mitigation efforts may allow economies of scale to be achieved through pooling of funding sources (at the watershed scale) and bundling of mitigation credits (at a minimum), while credit banking may provide market incentives and achievement of long-range plans.

Senior management on the Coordination Team should actively support pilot project options that show merit in developing and testing watershed-based approaches to advanced mitigation and environmental credit trading.

Resources and focus are needed to investigate and develop practices, endorsement, and guidance, and gain experience that will allow advanced mitigation and environmental credit trading approaches to be alternative tools for federal and state regulatory compliance.

Policy Statement M-4

Washington stormwater management-related agencies need to consistently apply technical standards and guidance.

The value of technical standards and guidance was highlighted as a tool for consistency, but the benefit is only obtained if such guidance is applied with technical and procedural consistency by multiple agencies. Standards and guidance need to be comparable and appropriate for local

conditions, in particular those differences identified in the Washington Stormwater Continuum (Figure 2).

Recommendations

M-4-A Enhance the value of technical standards and guidance by developing standards and guidance to achieve compliance with multiple regulations.

To the maximum extent possible, state technical standards and guidance should achieve compliance and meet multiple, regionally appropriate regulatory objectives when implemented. For example, a given recommended best management practice (BMP) should meet both CWA and Hydraulic Project Approval (HPA) requirements, where applicable.

M-4-B Washington should develop one commonly accepted technical and procedural standard for stormwater management for use by all state regulatory agencies in evaluating projects.

Ecology is currently in the final stages of developing the Western Washington Stormwater Technical Manual, and the framework for developing the Eastern Washington Technical Manual is completed. The technical and procedural standards included in these Manuals will have variations, such as different forms of BMPs, depending on stormwater continuum-related factors. However, project evaluation procedures will have predictable steps and outcomes.

M-4-C Implementation of new standards and practices should incorporate phased compliance schedules.

Because stormwater programs and standards dovetail with so many other programs, the procedures for implementing standards must take into account the timing in addition to the content of programs. Hence, some provision for phasing approaches is recommended. For example, the Western Washington Technical Manual will have a phase-in period.

M-4-D Implementation of new standards and practices should incorporate new information as it becomes available.

Stormwater research and technology developments are needed, and are ongoing in Washington and internationally. As research and monitoring results become available, the standards and the process for updating standards need to be sufficiently flexible to incorporate information. This is essential for the success of BMP evaluation and upgrading, and also for adaptive management (a flexible management approach that allows actions to take place with appropriate corrections to improve the likelihood of meeting goals). This does not mean that new requirements will be applied to a project under development immediately because of experience on another project, but rather that a process will be developed and followed to update and apply new standards and practices to individual projects in a predictable manner.

M-4-E A lead entity should be identified for data management and analysis coordination.

While no regulator, entity or person who is regulated, or stakeholder would be required to use these data management and analysis services, it was recognized that many medium and small programs in the regulated and stakeholder communities can neither fund nor manage such a program on an individual basis. In addition, such services would provide a geographic information system (GIS) and database platform that allow different but neighboring jurisdictions to coordinate assessment, planning, and implementation.

Policy Statement M-5

Working with the Coordination Team, Washington stormwater management stakeholders need to improve project predictability under regulatory and compliance programs.

With greater consistency of standards, guidance, and goals, and improved coordination among stormwater entities, the ability to plan and design projects to achieve compliance and minimize impacts at less cost may be achieved. As predictability in permitting requirements becomes commonplace, projects will spend less time in the permitting process. Government agencies will spend fewer resources negotiating project permits because the projects can be designed with a higher likelihood of meeting permit requirements. Under a complex and little understood system, permit preparation and processing are resource-intensive and costly operations for all. If all stormwater *stakeholders* work for greater predictability, and those in the regulatory process strive to achieve this on a day-to-day basis, more approaches to simplify the path through the current Washington Stormwater Management Implementation Pathway (Figure 1) will be developed.

Recommendations

M-5-A Case studies need to be examined biennially by the Coordination Team to evaluate permitting consistency, efficiency, and predictability through the stormwater coordination structures and approaches.

As a section of the Coordination Team's biennial report to the Washington State Legislature, selected projects and permits will be reviewed to identify progress in streamlining project development and permitting as a result of agency efforts. This activity is needed to provide feedback on the performance of policy, procedures, and technical standards during the project permitting process. This section of the biennial report would be distributed to permitted agencies and businesses, to provide regular updates about processes.

Effectiveness (E)

Discussion

A common statement among stormwater *stakeholders* during interviews was that they were uncertain about the effectiveness of stormwater programs. There is a perception among some *stakeholders* that the science has not clearly shown that water quality standards can be met, and designated uses restored, in the many already urbanized watersheds by implementing reasonable mitigation and control measures. For example, with BMPs and maintenance practice, relative effectiveness has not clearly been documented in all stormwater continuum settings.

Considerable stormwater research has been done in Washington; in fact, Washington has been leading the nation in basic stormwater research, having established one of the first research teams at the University of Washington. This research has been beneficial to stormwater managers. Research and documentation of stormwater tools are ongoing, particularly in the area of BMP effectiveness. Nevertheless, additional research is necessary to evaluate the effectiveness of approaches at multiple scales, for example land use planning in conjunction with BMPs on a watershed scale. Such research could be linked to stormwater management program needs to broaden the possible funding sources.

The perceived lack of demonstrated benefit is complicated by inadequate problem definition and lack of agreement on goals. It is difficult to determine the best solution when the problem and its causes are complex and lack consensus on outcome. There is lack of clarity or consensus on measurable outcomes and objectives. There also is disagreement about how much change is sufficient to show progress being made.

The limited effectiveness of stormwater mitigation efforts has been documented under selected conditions and in selected locations due to the difficulty of controlling land use changes. The literature shows that stormwater facilities are capable of removing certain percentages of pollutants or of reducing certain peak flows. Regulatory mitigation activities (other than avoidance) have shown dubious success since their use increased in the 1980s, whether air, water, or wetland impacts are involved.

Onsite mitigation requirements have led to “constructed systems,” which no longer provide the system conditions necessary to sustain the ecosystems and have no long-term maintenance provider. Onsite mitigation has not been a failure, but challenges to attainment of mitigation goals have included:

- incomplete biological understanding;
- the small size of replacement mitigation habitats;

- the lack of ability to track permitted projects to determine achievement of success criteria;
- the lack of long-term maintenance agreements;
- ongoing land use changes; and
- the lack of adaptive management.

Onsite mitigation using structural systems in urban areas can be particularly challenging given the limited availability of land for mitigation and the cost of stormwater retrofitting on existing developed sites. Some options to reduce mitigation costs could include dedicating green areas for stormwater mitigation or treatment.

Ecosystem protection, advanced mitigation and credit trading programs offer the potential for successful control and avoidance of impacts, particularly for air and wetland banking programs (which have the longest history), but also for special status habitat. These should be reviewed for application to stormwater mitigation. Local governments should more fully explore prevention, land use strategies, retrofitting existing sites, and the update or creation of programs which are based on best available science.

Explaining the value of stormwater programs, and educating both ratepayers and those accountable for compliance, if not done successfully, can decrease the available program funding and diminish the effectiveness of stormwater activities. A lack of clearly demonstrated effectiveness was viewed as opening the door to potential liability from third-party lawsuits for accountable parties. Lack of goals and a consistent methodology for *monitoring* effectiveness also limits the possibility of using adaptive management, viewed as a cost-effective approach.

The measurement of stormwater management effectiveness should be based on well-thought-out performance measures. This process of identifying and adopting performance measures is best done on a watershed basis, in conjunction with ongoing watershed management projects and in the context of regional efforts and considerations. Individuals and organizations with interests in the watershed must provide input to these performance measures, to ensure that the measures are both suitable for the watershed and are likely to be honored by those who reside within the watershed. This may mean a wide range of alternative approaches such as construction of regional treatment and detention facilities or purchase of development rights for wetlands, headwater areas or riparian corridors.

There is no one standard, no “one size fits all” approach to stormwater management. The gradient of wet-dry, urban-rural, etc., as summarized in the Washington Stormwater Continuum (Figure 2) increases the

number of possible approaches, but decreases the likelihood of the easy solution (i.e., pulling a ready-made program or standard off the shelf for all cases). The stormwater continuum identifies challenges which may be better addressed through a cost-effective stormwater management approach based on the particular situation of a management unit or watershed.

Policy Statement E-1

The Coordination Team, working with Washington stormwater management-related *stakeholders*, needs to identify and clarify program goals and objectives that recognize federal, state, and local regulatory obligations for stormwater management.

There is uncertain applicability and acceptance of stormwater program goals.

Recommendations

E-1-A Goals and objectives of stormwater management-related *stakeholders* should be articulated.

While regulatory intent is stated in legislation and rules, there was general agreement that the various program goals are not broadly understood by those who are outside of the program. Implementation of this recommendation should bring *stakeholders* together to look for consistencies among their various goals and objectives.

E-1-B Goals, objectives, and strategies need to be coordinated, at a minimum, and consistent where appropriate given differences across the stormwater continuum.

The Coordination Team should identify conflicting goals, objectives, and strategies, and to resolve these through coordination. Stakeholder interviews and discussions suggested that goals and objectives may not be synchronized or, in some cases, may be at odds, and that greater effectiveness could be achieved if there were some coordination and consistency. Coordinating complementing strategies also is expected to improve the likelihood of achieving the goals and objectives, and maximizing effectiveness and efficiency. However, the broad range of conditions implied by the stormwater continuum should be taken into account.

E-1-C Federal and state government stormwater management-related agencies need to identify programs for which they currently provide funding or plan to provide funding.

The lack of funding for adequate program implementation was emphasized as an acute challenge to achieving program effectiveness. This recommendation ties funding to regulatory requirements for programs and recognizes that without such funding, maximum effectiveness is unlikely to be achieved.

E-1-D Washington stormwater management-related *stakeholders* need to identify revenue sources for achieving goals, recognizing local circumstances and limited financial resources.

For programs that federal and state funding does not support or is not planning to support, the responsibility for developing funding should be identified, with an emphasis on determining a practicable level of program effectiveness.

Policy Statement E-2

The Coordination Team, working with Washington stormwater management-related *stakeholders*, should establish performance measures that document success at achieving the program goals established in Effectiveness policy statement E-1.

With program goals relating to both compliance and environmental outcomes understood, performance measures can be articulated that are appropriate for these goals. This represents a cascading approach to documenting effectiveness: goal setting and aligned strategies lead to corresponding performance measures, which lead to *monitoring* that demonstrates progress toward goals. The effective program will show consistent achievement of goals or progress toward achievement of goals, and their aligned strategies.

Recommendations

E-2-A Evaluate and select performance measures for each goal and its aligned strategy. Performance measures need to measure progress toward program goals.

To the extent possible, evaluated and selected performance measures need to have a demonstrated record of relationship to the particular goal, and attainability. Performance measures should be established for preventive and restorative approaches. Where a performance track record does not exist, adaptive management principles will be applied to allow flexibility.

E-2-B Performance measures need to establish reportable timelines and need to be referenced in relevant documents and Web sites.

Recognizing that varying lengths of time may be required to reach levels of performance, each level of performance should be associated with a timeline. Moreover, these performance measures need to be clearly stated and accessible via multiple paths so that any stakeholder can have access to the information.

E-2-C Local performance measures need to reference local program goals set on a watershed basis (within the context of meeting State and Federal requirements).

Watershed planning efforts need to include local considerations for appropriate stormwater program components to respond to state and

federal regulatory requirements. These performance measures will be used to determine the effectiveness of stormwater management programs and will be included in watershed plans and local regulatory compliance actions. Watershed-specific monitoring protocols and schedules, and adaptive management strategies will also be developed during local watershed planning activities.

E-2-D After several pilot projects and significant experience, the permitting agencies should develop performance measures for effective mitigation strategies.

Models are available for each of the media and parameters (air, wetlands, water, habitat) that have been used as a basis for evaluation of mitigation alternatives and credit banking/trading. For example, Washington has policy and guidance for air and wetlands banking. Trading in water parameters (also called “pollutant credit trading”) is occurring in more than a dozen states, with a wide range of equivalency models and rules. Habitat equivalencies have been set using the U.S. Fish and Wildlife Service “Habitat Equivalency Model” (HEP) for more than 20 years. And, as additional states have adopted “net environmental benefit” concepts (e.g., Arizona and California), policy and guidance for cross- and multi-parameter and media comparisons have been developed in these states.

Policy Statement E-3

The Coordination Team, working with Washington stormwater management-related stakeholders, should coordinate monitoring and research programs related to stormwater program effectiveness.

A lack of standardization and/or coordination among *monitoring* and research programs has resulted in an inability to share data and evaluate benefits and effectiveness of stormwater program implementation. Frequently, there are multiple *monitoring* programs underway in a given watershed. The results of a given program could be made more available across jurisdictions and across disciplines (e.g. planning, design, operations and *monitoring*) to better understand *monitoring* results.

The Coordination Team should consider the need for developing a model *monitoring* program similar to the use of model ordinances within the GMA planning framework. This model could be applied, given stormwater continuum-specific modifications, by any managing stakeholder. Some *stakeholders* expressed that this would be useful, but many indicated that the likelihood of any “model *monitoring* program” being an off-the-shelf approach was so remote that this tool would not be useful.

Numerous groups are conducting stormwater research within the state. To the extent that these programs can be encouraged based on the needs of state stormwater managers, and information shared, all *stakeholders*

will benefit. Of particular interest are communications that highlight how research results can be applied to stormwater programs.

Note that there was some discussion about different regulatory programs having different compliance requirements, even among state agencies, and about how broadly the term “*environmental monitoring*” could be construed. For example, what is the interaction between stormwater regulations for sediment and proposed sediment toxicity rules? These issues are items for further consideration.

To work toward a common strategy that could improve the ability to measure effectiveness, reduce duplication of effort, and increase the value per investment in *monitoring*, the following specific recommendations were detailed.

Recommendations

E-3-A The Coordination Team should develop a statewide strategy for stormwater *monitoring* linked to performance measures that support standardized methods, shared results among entities, and adaptive management feedback at all levels. Long-term *monitoring* also should be addressed in this strategy.

This recommendation aims to achieve a common *monitoring* “language,” similar to the ongoing effort for Salmon and Watershed Information Management (SWIM) of the Governor’s Salmon Recovery Office and the statewide GIS standards that were developed. It promotes cross-jurisdictional and cross-discipline *monitoring*. Integration of *monitoring* and research results will be more readily incorporated into programs, decisionmaking processes, and project design as a result. This recommendation also addresses the concern that on a year-to-year basis, program effectiveness may be difficult to document because indirect and cumulative effects occur during a longer period of time.

The Coordination Team strategy is expected to link with other *monitoring* strategies under development at the state level.

E-3-B The Coordination Team will identify funding needs for essential stormwater research, including evaluation of *monitoring* methodologies and performance measures.

In addition to routine *monitoring*, it was recognized that research is particularly needed in the areas of determining stormwater program effectiveness, and that such research is currently underfunded to meet federal and state requirements.

E-3-C Washington stormwater management-related *stakeholders* need to coordinate with other watershed stewards about *monitoring* program development and data sharing within each watershed and across watersheds.

In any given watershed, there are likely to be numerous *monitoring* programs under way simultaneously. There could be significant cost savings and increased benefit if *monitoring* programs were developed in a coordinated fashion (e.g., sample analysis costs, field collection costs). Resulting data are more likely to be comparable.

Costs and Funding (C)

Discussion

Stormwater costs and funding were identified early in this Study as a major issue of concern to *stakeholders*. Why is funding such an issue? Increasing regulations and increasing urbanization with associated stormwater treatment needs are putting pressure on local governments and developers to identify new funds or to redistribute existing limited funds. Some *stakeholders* believe that regulations are unfunded mandates. Others believe those who cause stormwater impacts should be responsible for mitigating or preventing those impacts. Funding demands for environmental resource protection and for other services, such as education and criminal justice, compete with stormwater needs and increase the funding pressure.

When interviewed, *stakeholders* were for the most part unsure of their real stormwater costs. There were multiple reasons for this uncertainty, in part because of the variety of approaches taken to estimating costs and the wide range of resulting cost estimates.

Several studies provide data from which to extrapolate stormwater costs (see Appendix D). The Local Government Infrastructure Study, conducted in 1999 by the Washington Department of Community, Trade, and Economic Development, found that a funding gap exists for stormwater projects necessary to control flooding and address water quality. The 324 jurisdictions that submitted information about funding needs identified a total need of \$570 million for stormwater projects from 1998 to 2003. Funding sources and amounts for stormwater projects reported by these jurisdictions totaled \$270 million, thus producing a \$300 million funding gap. This funding gap was equal to 52 percent of the stormwater funding need. This funding gap was the largest of any of the study's infrastructure categories (roads, bridges, domestic water, sanitary sewer, stormwater; Washington Public Works Board, 1999).

According to the EPA, the total national cost to local governments to implement a Phase 2 stormwater program is estimated to be \$297 million. The EPA used actual program costs from Phase 2-size communities in its estimates and assumed that all communities would incur costs relative to their population size. The EPA estimated that Phase 2 jurisdictions will incur an annual "fixed" cost of \$1,525 for administrative record-keeping and reporting activities, and a "variable" cost of \$8.93 per household for

annual operations of the six Phase 2 minimum control measures (Eagan, 2000). Many believe these costs are unrealistically low.

EPA's figures are controversial and are not reflective of costs observed in Washington. In its analysis, EPA assumed that the stormwater programs were not in the watersheds of water quality impaired water bodies or streams with endangered fish species listings. Both of these conditions are common in Washington.

In some areas, the six Phase 2 minimum control measures adopted by EPA may not be adequate to meet water quality standards. Costs in Washington are expected to exceed these estimates. In other areas, the Phase 2 requirements may not be necessary, but are still required where standards are currently met.

Other trade groups (Washington Association of Water and Sewer Districts, Association of Washington Cities, Washington Association of Counties) also have polled members on current and predicted stormwater program and capital costs; near-term cost estimates from their surveys and from our interviews range from \$1 million to \$40 million per year, depending on the size of the management area and situation in relationship to the stormwater continuum. In addition, stormwater capital costs often are embedded in individual capital project budgets (as is common in transportation projects), and range from 8 to 20 percent depending on project type and location.

These efforts at estimating stormwater costs neglect to take into account offsetting benefits and hidden costs. For example, there are costs for not managing stormwater, through flood damage, contaminated sediments, and loss of designated uses in waters of the state. In addition, the value of avoiding costs through preventive measures, such as land use planning, has not been thoroughly quantified, although a study completed in the Chesapeake Bay drainage indicated that significant infrastructure savings can be achieved through higher density residential development (CH2M HILL, 1993).

Stakeholders agree that stormwater and compliance costs are large but unquantifiable, and underfunded to meet federal, state, and local regulations. Management strategies have not been demonstrated that would ensure benefit. However, it is safe to say that, in the future, costs will be increasing rather than decreasing, so the gap between costs and funding will be increasing.

Implementation, compliance, and enforcement of programs to meet federal, state, and local regulations will require increases in stormwater-related expenditures, regardless of where the program owner is located in the stormwater continuum, and whether the costs involve maintenance only or also have a capital component. The economic impact of these new costs could be substantial and many jurisdictions do not have the

resources to meet these requirements. It is unclear who will pay for these costs and the source of the funding.

Washington *stakeholders* will benefit from analyses that consider the total costs of these stormwater management programs in relation to the benefits derived from these programs. A detailed review of potential sources of funding for stormwater management programs will allow *stakeholders* to pursue new and under-used opportunities to fund the various stormwater costs. Review of funding apportioning in other states and countries will allow Washington to develop an approach for funding. Funding sources are not equally available to all *stakeholders*, and some parties pay multiple times for stormwater management. A *business plan* is needed to provide Washington *stakeholders* with strategies for predicting and managing stormwater costs and securing the necessary funding.

The SWPAC, in its consideration of cost and funding issues, has determined that the issue poses important public policy questions for the Washington State Legislature to consider. The SWPAC could not resolve these questions:

- 1) People have embodied lofty goals for environmental protection in water quality and stormwater legislation and rules, including having “fishable” and “swimmable” streams, clean water, and an abundance of salmon in the streams in an urbanizing society. How much are we – federal, state, regional, local governments, business, taxpayers and project proponents – willing to pay to meet these goals?
- 2) What is the broader public interest context, if any, that covers what the individual is not willing to pay? And, who and how do we pay for this context? Does this context cover legacy effects, such as those encountered in redevelopment of a site or disturbing a natural condition (e.g., mining) both downstream and for future generations?
- 3) What is the state’s responsibility for funding stormwater management? What is the equitable source of funding and selection of recipients? What is the responsibility of the individual project proponent?

Policy Statement C-1

Washington should identify total costs and benefits of stormwater management activities.

Washington *stakeholders* face a broad range of stormwater management regulations, programs, and activities. The costs of these stormwater functions are unclear and overwhelming to many of the agencies and jurisdictions that must implement, enforce, and comply with them. Although difficult to quantify, an analysis to determine the total costs of the full range of stormwater management activities and the benefits of these activities will help *stakeholders* to evaluate and prioritize their

stormwater investments. Prioritization is necessary to ensure effective use of limited stormwater funding.

Task 1 of the scope of work for this Study directed the project team to summarize costs of stormwater management activities. The results of that process are presented in Appendix D. Cost data varied widely and it was not possible to discern the drivers or components of the cost equation. This Study also did not address the value of the benefits from stormwater management. Both of these components need to be further analyzed and juxtaposed. Results need to be put in the context as a cost-of-business issue.

Recommendations

C-1-A Preventive approaches (avoidance and minimization) should be considered.

Capital costs for stormwater infrastructure can be substantial and prohibitive to many jurisdictions. There are numerous effective stormwater management practices that do not rely on capital investments that need to be considered by the analysis team in the cost-benefit analysis. These non-structural controls often are referred to as “preventive” or “precautionary” standards, and can include both regulatory and non-regulatory approaches. New development can be undertaken in innovative ways to minimize impervious surfaces, reduce stormwater volume, and increase natural ecosystem functions of soils and vegetation. In general, the preventive approach is to avoid impacts as opposed to mitigating for these impacts, because the avoidance cost is frequently less than the mitigation cost. Preventive approaches include, but are not limited to, the following:

- Comprehensive land use plans
- Development standards
- Critical or sensitive areas ordinances
- Low-impact development practices
- Source control/pollution prevention programs
- Public education and outreach

Individual jurisdictions should modify and implement preventive standards to apply to local situations.

C-1-B The Coordination Team should develop recommendations for stormwater activity prioritization based on cost-benefit analysis.

The Coordination Team should convene an interagency analysis team with expertise in natural resource economics and stormwater management functions (including stormwater scientists and engineers,

and stormwater policy and funding experts) to analyze the costs and benefits of the various stormwater management activities. This team will be developed from the broad number of *stakeholders* involved in stormwater management, and could include economists from state agencies (Transportation, Ecology, Fish and Wildlife, Office of Community Development), federal agencies (EPA, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers), local governments, tribes, business, environmental and other interest groups.

This team should document and analyze the costs associated with stormwater management programs and activities necessary to comply with the CWA, ESA, and other regulatory requirements. These activities may include, but will not be limited to, the following capital, operation and maintenance, and programmatic activities:

- Stormwater conveyance systems
- Stormwater flow control BMPs (detention basins, retention basins, etc.)
- Stormwater treatment BMPs (oil/water separators, biofiltration swales, etc.)
- Stormwater dry wells/infiltration facilities
- Infrastructure operation and maintenance
- Construction site stormwater controls
- Street sweeping/pollution prevention
- Land use planning and growth management
- Development controls
- Enforcement activities
- Revisions to zoning
- Management zones
- Low impact development
- Habitat protection
- *Monitoring*
- Public education and outreach

The total costs of stormwater management should include costs to both the public and private sectors, and include existing and potential costs. Total costs should also consider environmental, human health and safety risks associated with not meeting stormwater management requirements,

including environmental costs and enforcement fines and penalties. Individual jurisdictions required to meet stormwater regulatory requirements need a broad array of capital, operations and maintenance, and administrative expenditures. These will include new and modified stormwater systems, new organizational arrangements, and new record-keeping and reporting responsibilities. Overall costs to various *stakeholders* depend on their region of the state, its precipitation patterns, its size, and the age of the existing infrastructure. Costs for infrastructure and land acquisition can be substantial. The analysis team should determine the range of costs for compliance with stormwater requirements and prepare information and potential tools to assist *stakeholders* to evaluate and address their own cost impacts.

In addition to costs of stormwater management, there is a broad range of regulatory, fiscal, social, and environmental benefits associated with stormwater management programs. The analysis team should evaluate these benefits, including, but not limited to, the following:

- Protection of human health and safety
- Regulatory compliance
- Protection of water quality
- Protection of fish habitat
- Flood prevention
- Education of the public on stormwater issues
- Cultural benefits
- Recreational benefits
- Visibility of benefits to *stakeholders*
- Avoided costs from no action

It can be difficult to document the benefits associated with protection of environmental resources and public education. However, the analysis team should evaluate the range of benefits, either quantitative or qualitative, resulting from stormwater management programs.

C-1-C A risk-based approach that looks at effects on human health and safety, property protection, water quality, and biological resources (such as threatened and endangered species) will be applied.

The cost-benefit analysis described above should incorporate the principles of risk and risk avoidance into the evaluation of various stormwater management activities. The concept of risk includes threats from uncontrolled stormwater to human health and safety, potential property damages, and threats to wildlife species health and safety as well as threats to those species' habitat. Both the potential costs and

benefits of managing these risks and allowing these risks to go unchecked need to be considered. For example, a stormwater activity to reduce flooding would consider the costs of controlling floodwaters, the costs of property damages resulting from uncontrolled floodwaters, and the benefits of both controlling floodwaters and not controlling them. This risk-based approach should consider different risk levels and the probability that different stormwater-related occurrences have different costs and benefits.

Policy Statement C-2

In recognition that stormwater program funding is not a one-time investment, and to address currently inadequate funding levels, the state should identify available funding options, with consideration of overall cost/benefits and opportunities for prioritizing investments, incentives, and leveraging multiple funding sources.

There is a strong need for new funding mechanisms to pay for existing and new stormwater management activities to meet federal, state, and local requirements. New regulations, such as NPDES Phase 2 permits and new listings under the ESA, will require many Washington stormwater management *stakeholders* to develop new regulations and practices that will increase their stormwater-related costs. Many jurisdictions that will be expected to comply with new regulations are facing severe financial limitations. *Stakeholders* must either make investments in stormwater management or accept the risk of impacts to lives, property, critical environmental resources, and economic development options due to legal liability.

Recommendations

C-2-A Identify and discuss current and potential funding programs.

Washington *stakeholders* need to review existing methods of funding for stormwater management activities, and identify funding sources. Some current sources of funding for stormwater management are property taxes, stormwater utilities, and impact fees. Many jurisdictions fund stormwater through general funds, usually as part of their street maintenance budgets. New regulations, such as NPDES Phase 2 permits and new listings under the ESA, will require expansion of those budgets and drawing on new funding sources. Some jurisdictions have formed stormwater utilities to provide a steady source of revenue from user fees to fund stormwater management activities. Individual municipalities that do not currently have a stormwater utility may choose to create this type of funding mechanism for their stormwater management needs. Other sources of funding include taxes, fees and charges, bonds and loans, grants, intergovernmental transfers, regional funds, and fines. Sources of funding for programs that secondarily increase costs of stormwater

management also should be identified. Similarly, those that serve as incentives to reduce costs should be examined.

C-2-B Examine ways to use existing funding and develop new funding sources.

New regulatory requirements for stormwater management will cause *stakeholders* to look for new ways to allocate resources to develop, operate, and maintain stormwater systems. *Stakeholders* also need to look for new mechanisms and sources to fund new and expanded stormwater management activities.

Washington *stakeholders* can look at a variety of sources to fund stormwater management. A baseline of existing funding sources and their applications should be developed as a reference tool. With this baseline, *stakeholders* will be able to identify and account for gaps in funding availability. These gaps may occur due to various funding time frames and eligibility requirements, and individual *stakeholders* may not be aware of some available sources. A review of available funding sources should include specific programs, their requirements, potential limitations based on recipient authority, and how the funding is to be used to support compliance with federal, state, and local or other stormwater benefits. Individual *stakeholders* then can review the available funding sources and determine the appropriate mix of funding mechanisms to meet local conditions and situations.

Stakeholders who have funding available can improve access to this funding and provide funding incentives. Improved access to funding provides incentives to *stakeholders* for implementing stormwater management activities. Each agency should clarify availability of funding opportunities and distribute information relevant to its own programs. Funding agencies need to recommend ways to promote interaction and coordination between funders and applicants, and encourage proactive approaches to securing funds. Washington *stakeholders* will review other sources of funding, including under-used and innovative approaches, such as public-private partnerships, to address stormwater problems.

Different approaches to project delivery, avoidance, and mitigation may have financial impacts, too. Advanced mitigation and environmental credit trading may change both cost and benefit considerations of stormwater in a particular watershed. They can create pathways for money to flow from those entities that require or desire credits to those entities that can affect the desired protection, mitigation, enhancement, or restoration outcome. Also, cost savings can be gained through watershed-level planning and design, project scaling, contract maintenance and monitoring, and centralized record-keeping and administration - these are incentives for local and regional participation and support. Innovative approaches sometimes attract outside funding. For these reasons, such approaches should be taken into consideration in

the examination of ways to use existing funding and develop and encourage new sources of funding.

C-2-C Seek establishment of an Ecology Web page that lists sources of funding for stormwater management activities.

There is no comprehensive listing of funding sources for stormwater management in Washington. A statewide database of funding information and sources should be compiled from state, federal, and other agencies and posted on an easily accessible Web site. Because Ecology's Web site is considered user-friendly by *stakeholders*, linking this page to Ecology's home page will enhance accessibility and usefulness. *Stakeholders* need to be able to access regularly updated funding information from multiple sources through this Web site. This clearinghouse can facilitate improved access to funding resources, improve coordination among funding sources, and increase stormwater compliance. A useful reference source is *An Internet Guide to Financing Stormwater Management* (<http://stormwaterfinance.urbancenter.iupui.edu/home.htm>).

Policy Statement C-3

The Coordination Team will develop a *business plan* for the fiscal aspects of stormwater management.

The *business plan* is based on information assembled in the cost-benefit analysis and review of funding sources activities. It is the key effort in resolving the cost and funding issues. A *business plan* presents strategic analysis of stormwater costs and benefits, and recommended approaches for Washington *stakeholders* to prioritize investments in stormwater management activities. This plan should recognize the variability of *stakeholders'* individual situations and needs, and to recommend approaches for regulatory compliance that minimize fiscal impacts, make use of incentives, and maximize benefits of stormwater activities. The *business plan* will also examine current and potential models of distributing funding responsibility (i.e., putting stormwater programs on sound financial footing). Finally, new ways of funding stormwater costs will be examined and strategies reviewed.

This *business plan* is not meant to be a template for a locality, but rather a broad overview of statewide costs, priorities, and recommended levels of state and federal funding that will be useful for all stormwater *stakeholders* in Washington. The business plan will consider the impact of stormwater management regulations and programs (in the context of other environmental programs) on the overall economy of the state. The plan will consider alternative management plans such as land use and low impact development. Cost analyses will be prepared based on assumptions that consider the different alternatives.

A draft outline is as follows:

-
- I. Executive Summary
 - II. Introduction and Objectives
 - III. Stormwater Cost Summary and Valuation
 - A. Current Process and Priorities for Investment
 - B. Current Distribution of Costs
 - C. Risk and Uncertainty
 - IV. Stormwater Benefits Summary and Valuation
 - A. Current Distribution of Benefits
 - B. Risk and Uncertainty
 - V. Stormwater Management Alternative Strategies
 - A. Low-Impact Development
 - B. Land Use Planning
 - VI. Cost:Benefit Analyses
 - VII. Stormwater Funding
 - A. Current Sources and Their Relationship to Cost Distribution
 - B. Potential Sources of Funding
 - i. Federal funding
 - ii. State funding
 - iii. Property Tax
 - iv. Stormwater Utilities
 - v. Impact Fees
 - vi. Grants from Non-profit Organizations
 - vii. Public/Private Partnerships
 - viii. Environmental Banking/Trading
 - ix. Incentives
 - x. Other
 - VIII. Recommendations
 - A. Prioritization of Investments for Maximum Return on Investment
 - B. Stormwater Management Approaches that Minimize Fiscal Impacts
 - C. Distribution of Funding Relative to Costs and Benefits
 - D. Funding Approaches and Sources
-

The Coordination Team will work with key members of appropriate legislative committees in the development of this *business plan*. The Coordination Team should seek stakeholder and public input on costs and benefits of stormwater management in the development of the business plan. The legislature should use the business plan to compare the costs and benefits of stormwater management with other environmental priorities, and to make appropriate stormwater-related policy decisions. A timeline for completion of the *business plan*, so that it is available when NPDES Phase 2 permits go into effect, would greatly help permittees to address permit requirements.

Recommendations

C-3-A The *business plan* will consider benefits, costs, risks, and needed funding for stormwater planning, capital and annual operations and management. The plan will suggest the most appropriate approaches for prioritizing projects for funding, and addressing risk of future regulatory uncertainty.

This *business plan* recommends use of the cost-benefit analysis described above for the full range of *stakeholders* to evaluate and prioritize investments for stormwater management. Funding options need to be included for *stakeholders* to implement cost-effective and technically sound capital and programmatic stormwater management approaches. In combination with improvements in efficiency, these funding approaches will ensure that funding options are distributed.

C-3-B The *business plan* will examine for Washington, other states, and other countries the current division of stormwater funding responsibilities at federal, state, regional, local levels and citizen levels (government, business, and non-profit).

Washington *stakeholders* are interested in funding strategies that reflect the interrelationships among regulatory requirements, entities responsible for stormwater management, and stormwater generators. The *business plan* will include analysis of distribution of costs and distribution of benefits relative to current and potential access to financial resources, and funding responsibilities among the of *stakeholders*. Benchmarking the level of funding and the level of service provided will ensure alignment of programs, costs, and values.

C-3-C The *business plan* will recommend a strategy for securing needed funding.

Stakeholders are facing new regulatory requirements that will require significant sources of funding. The *business plan* will present recommendations to assist *stakeholders* to gain access to necessary funds for effective stormwater management activities. Proactive funding approaches, investments in preventive activities, and access to a wide range of funding options will improve the ratio of benefits and costs for stormwater investments and improve *stakeholders'* overall stormwater management success. These recommendations will take into account advances in effectiveness and coordination that are occurring in parallel.

Technical Assistance, Outreach, and Education (T)

Discussion

Many *stakeholders* do not have ready access to technical and educational materials. For example, most small to medium-sized communities do not have a special department for stormwater, instead carrying out the functions of stormwater management through the activities of one or two

people in multiple departments. For each of these communities to develop outreach and education materials independently would be costly, and no network currently exists to share or distribute such materials across the state, other than the Ecology Web site, the University of Washington Center for Urban Water Resources, and the Washington State University hydraulics lab. Though critical to effectiveness, specialized technical expertise is similarly unavailable to many *stakeholders*. An educated citizenry is more likely to increase the effectiveness of needed programs both through their own actions and through willingness to help with program funding.

Technical assistance, outreach, and education programs that are currently funded by the Washington State Legislature include University of Washington's Sea Grant program; Washington State University Cooperative Extension Service field agents; and technical assistance through Ecology, Puget Sound Water Quality Action Team (PSWQAT), and WSDOT. These programs are applauded by *stakeholders*, but do not focus on stormwater. Additional funding for programs that focus on stormwater and provide student education at the K-12 grade level is essential to better managing stormwater in the future.

Policy Statement T-1

Stormwater management-related agencies need to provide technical assistance for stormwater program development and implementation at the regional and local levels.

Typically, state agencies develop programs like the university agricultural extension service, or the WSDOT technical outreach program, through which technical staff work primarily in the field in a particular geographic area. Technical staff develop rapport with local communities and connect these communities with needed sources of information as their programs are developing. Such staff also could work to integrate research into existing programs and decisionmaking processes.

Recommendations

T-1-A The Coordination Team should ensure coordinated development and distribution of outreach materials, including those addressing avoidance and minimization of impacts.

The intent of this recommendation is that the Coordination Team is best suited to identify Washington sources of technical outreach materials and coordination needs. The Coordination Team will work to identify and ensure that coordination of all available mechanisms for communicating data from historical and ongoing research and *monitoring* takes place.

T-1-B Technical assistance should be shared among agencies in Washington.

Individual stormwater programs have dedicated staff for program

development, implementation, and compliance activities, but the number of staff available to provide technical assistance is limited. Technical assistance staff were partially funded for implementation of the Puget Sound Plan and Watershed Planning Act, but there is a need for technical assistance on the full range of statewide stormwater management requirements, especially in rural communities.

Sharing technical assistance staff across agencies and programs would increase efficiency and reduce program implementation costs. Training technical assistance staff in multiple program areas would potentially eliminate duplicate staff needs in separate agencies, and would provide consistent technical assistance staff contacts for stakeholders who are implementing stormwater management programs. A regional technical assistance staff structure would draw on multiple funding sources, including the various stormwater-related agencies, and would function as a clearinghouse of information for agencies and jurisdictions. Staff could be provided by state agencies or through a consortium of local agencies under an Interlocal Agreement.

Policy Statement T-2

Washington stormwater management-related stakeholders need to develop a coordinated education program to inform stakeholders and to build community understanding of stormwater management.

In addition to providing technical outreach, an education program for the citizens in the community is clearly needed. Such a program could emphasize the preventative actions that citizens can take to minimize stormwater volumes and to improve stormwater quality.

Recommendations

T-2-A A comprehensive Stormwater Communications Plan for federal, state and local governments should be used to improve understanding and lead to sharing knowledge on stormwater issues.

A Stormwater Communications Plan will provide concise and updated information on stormwater policies and issues to stakeholders and will promote stormwater awareness. The Stormwater Communications Plan will define public outreach objectives, identify target audiences, develop materials for those audiences, and distribute the outreach materials to the appropriate audiences.

Implementation of the Stormwater Communications Plan will have the following potential benefits:

- Educate policy makers on stormwater problems and issues
- Provide information to watershed planning groups

- Educate residential and commercial property owners about stormwater impacts and management methods
- Promote natural resources stewardship by citizens
- Promote appropriate landscaping that reduces stormwater runoff
- Educate consumers about pollution prevention

The Stormwater Communications Plan can take advantage of public information and outreach materials that are already available. Stormwater program owners should identify existing stormwater education materials for use by local governments. New materials can be generated to complement those materials that are already available.

Specific messages can be tailored to reach a variety of stakeholder audiences, including:

- Elected officials
- State agencies
- Local jurisdictions
- Business, industry, and commercial interests
- Nonprofit groups
- General public

Once specific target audiences are identified, the appropriate communications materials can be developed and distributed. The following recommendations should not be implemented until the Stormwater Communications Plan is completed so that investments in training and educational efforts are targeted, focused and effective.

T-2-B State and regional/local agencies need to develop a modular Stormwater Training Program together to help implement the Stormwater Communications Plan, deliver specific information to target audiences identified in the Stormwater Communications Plan, and build community understanding of stormwater management.

A training program should be developed in conjunction with the Stormwater Communications Plan to meet the outreach objectives and to reach the target audiences as specified in the Stormwater Communications Plan. Potential training methods can include workshops, web-based learning modules, videos, guidance documents, and “train-the-trainer” approaches.

Potential training modules could include:

- Overview of stormwater issues in Washington for a general audience
- “What you can do to prevent stormwater pollution”: a citizen’s guide

- Summary of recommendations from the Stormwater Management Study
- Specific modules for stormwater regulatory program “owners”
- Guidance on operation and maintenance of stormwater facilities and practices
- Guidance on stormwater operations and maintenance for municipal operations
- Stormwater education and training for students to increase awareness of the issues
- Overview of non-capital solutions for managing stormwater
- Introduction to advanced mitigation and environmental credit trading processes and resources

Perspectives

APPENDIX A

Definitions

APPENDIX B

Interview Questions and Stormwater Interrelationships Matrix Forms

APPENDIX C

Interview Results Summary

APPENDIX D

**Stormwater Management Cost
Information**

APPENDIX E

Comparison of Regulatory Requirements

APPENDIX F

**Matrices: Stakeholder
Perception and Program Owners**

APPENDIX G

Stormwater Program Summaries

APPENDIX H

**Technical Memorandum—
Summary and Analysis of Stormwater
Regulations and Programs**

APPENDIX I

**Technical Memorandum—
Recommendations for Stormwater
Regulations and Programs**

APPENDIX J

**Technical Memorandum
Evaluation of Alternative
Mitigation and Environmental
Credit Trading Approaches to
Stormwater Impacts**

APPENDIX K

**Proposed Communications Plan
and Training Program**

APPENDIX L

Sample Fact Sheet

APPENDIX M

References
