

Stormwater Rulemaking Consultation with State and Local Governments

US Environmental Protection Agency



Purpose

- ▶ To seek input from state and local governments about the range of regulatory options being considered.

Agenda

- ▶ Stormwater Program Background
 - History of Stormwater Program
 - Green Infrastructure Approaches
- ▶ Proposed Stormwater Rulemaking
 - Key Stormwater Rulemaking Activities
 - Rulemaking Options Under Considerations
- ▶ Potential Impacts on State and Local Governments
- ▶ Discussion

Background on Permit Program

- ▶ The National Pollutant Discharge Elimination System (NPDES) permit program, authorized under the Clean Water Act (CWA), regulates point sources that discharge pollutants into waters of the United States
- ▶ Certain sources of stormwater discharges, including those from municipal separate storm sewer systems (MS4s), construction activities, and industrial activities are regulated under the NPDES permit program
- ▶ Most states are authorized to provide oversight and issue NPDES stormwater permits
- ▶ EPA remains the NPDES permitting authority in a few states, territories, and most tribal lands



Stormwater Regulatory Background

- ▶ Section 402(p) of the Clean Water Act established phased approach to permitting certain stormwater discharges:
 - Section 402(p)(2), (3), and (4) required EPA to establish permit requirements for industrial and medium and large municipal separate storm sewer (MS4) discharges (100,000 population and greater)
 - Section 402(p)(5) required EPA to
 - Conduct a study to identify other discharges, assess their pollutant loadings and establish methods to control the pollutants, and
 - Submit the results in a Report to Congress.
 - Section 402(p)(6) provides authority for EPA to designate other stormwater discharges to be regulated to “to protect water quality”

Stormwater Regulatory Background:

Phase I Stormwater Regulations

- ▶ Finalized in 1990
- ▶ Regulates stormwater discharges from:
 - 10 categories of industrial operations, including construction activity disturbing 5 acres or more
 - Medium and large municipal separate storm sewer systems (MS4s) that serve 100,000 or more people
- ▶ Established:
 - Permit application requirements and deadlines
 - Requirements for a municipal stormwater management plan
 - Permit exclusion for industrial activities that are not exposed to stormwater
- ▶ 761 Phase I MS4s

Stormwater Regulatory Background:

Phase II Stormwater Regulations

- ▶ Finalized in 1999
- ▶ Regulates stormwater discharges from:
 - Small MS4s, defined as:
 - An MS4 not already covered by an MS4 permit and
 - Located in an “urbanized area” as defined by the Bureau of Census, or
 - Designated by the NPDES permitting authority on a case-by-case basis.
 - Construction activities disturbing between one and five acres
- ▶ Established six minimum control measures for small MS4 permits:
 1. Public Education & Outreach
 2. Public Participation/Involvement
 3. Illicit Discharge Detection & Elimination
 4. Construction Site Runoff Control
 5. Post-Construction Runoff Control
 6. Pollution Prevention/Good Housekeeping
- ▶ Basis for regulation: 1995 Report to Congress and 402(p)(6) authority
- ▶ Approximately 6,675 Phase II MS4s

Current Status of Stormwater Program

Much progress has been made; however, significant challenges remain to protect waterbodies from the impact of stormwater discharges.

According to EPA's 2004 Water Quality Inventory, urban stormwater discharge is the source of impairment in:

- 22,559 miles, or 9.2% of all impaired rivers and streams
- 701,024 acres, or 6.7% of all impaired lakes
- 867 square miles, or 11.3% of all impaired estuaries



Stormwater Management Issues

1. Increased amounts of stormwater and pollutants...



2. Enter the municipal separate storm sewer system (MS4) or is directly discharged to a nearby waterbody...



3. Which can lead to stream degradation and increased pollutants entering waterbodies



NRC Report *Urban Stormwater Management in the United States* (Oct. 08)

► Findings:

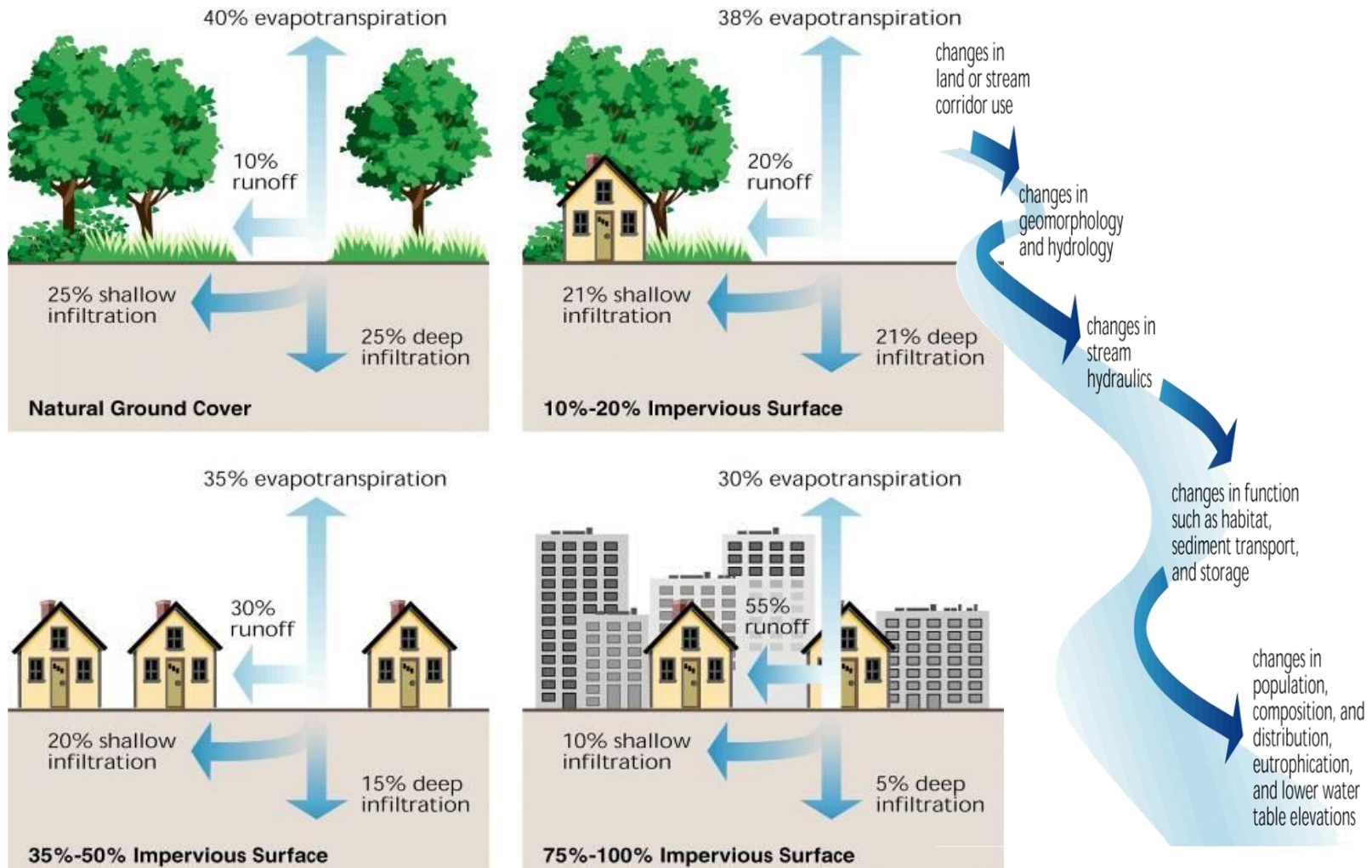
- Current approach unlikely to produce an accurate picture of the problem and unlikely to adequately control stormwater's contribution to waterbody impairment
- Requirements leave a great deal of discretion to dischargers to ensure compliance
- Poor accountability and uncertain effectiveness
- A more straightforward way to regulate stormwater would be to use flow or a surrogate, like impervious cover, as a measure of stormwater loading

► Recommendation:

- Stormwater control measures that harvest, infiltrate, and evapotranspire stormwater are critical to reducing the volume and pollutant loading of small storms.

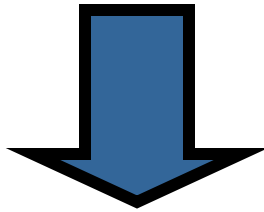
- The NRC Report confirmed EPA's beliefs that current stormwater control efforts are not adequate

Impacts of Urbanization on Stormwater Discharges



New Approach to Stormwater Management

- ▶ Shift from the concept of moving stormwater as far away as quickly as possible in large, buried collection, storage & conveyance systems.



- ▶ Shift towards the concept of managing stormwater where it falls; using infiltration, evapotranspiration, and harvesting/use.

Green Infrastructure Approaches

Mimic Natural Hydrologic Site Conditions

Infiltration ~ Evapotranspiration ~ Capture & Use



- ▶ Bioretention
- ▶ Permeable pavements
- ▶ Green roofs
- ▶ Cisterns & rain barrels
- ▶ Trees & expanded tree boxes
- ▶ Reforestation & restoration
- ▶ Parking & street designs
- ▶ Water Conservation

Green Infrastructure Approaches



Green roof, Washington, DC



Rain garden, Philadelphia



Bioretention, Portland



Vegetated swale, Lenexa, KS



Parking lot swale
Santa Monica, CA



Disconnected downspout
Emeryville, CA

Green Infrastructure Approaches



Open swale, Portland, OR



Terraced open swale, Washington, DC



Permeable pavement, Seattle

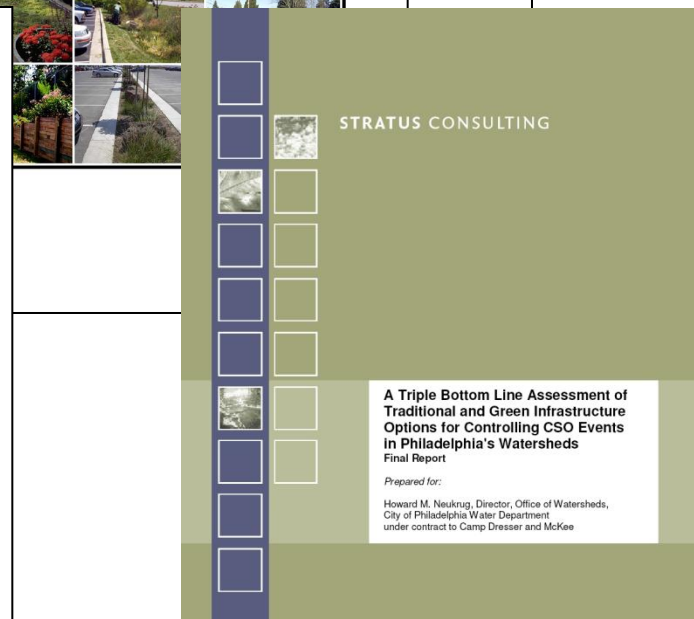
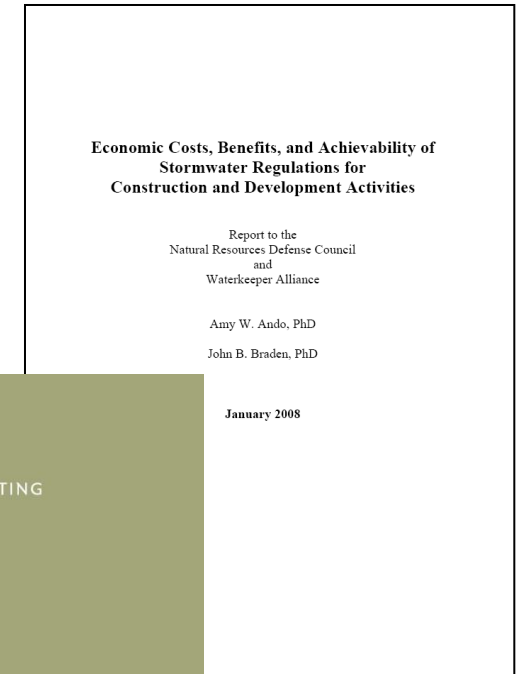
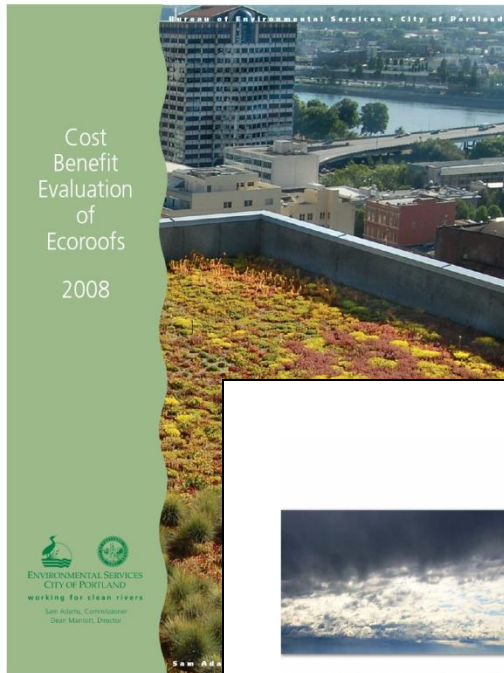


Porous pavers, Philadelphia



Large cistern, Chicago

Studies on Costs and Benefits of Green Infrastructure



Stormwater Program
Background

Proposed
Stormwater
Rulemaking

Potential Impacts for
S/L Governments

Discussion

Examples of Green Infrastructure Implementation in State and Local Stormwater Programs

- ▶ States are integrating green infrastructure principles into their permits
 - North Carolina - Montana - Maryland
 - New Jersey - Oregon - Wisconsin
 - Ohio - Connecticut - Colorado
 - West Virginia - Maine - Washington
 - California - Vermont - Kansas
 - Massachusetts - New York

- ▶ Communities are adopting green infrastructure approaches
 - Philadelphia, PA - Portland, OR - Washington, DC
 - Kansas City, MO - Chicago, IL - Richmond, VA
 - Milwaukee, WI - Louisville, KY - Seattle, WA

Stormwater Rulemaking



- ▶ EPA is considering developing performance standards for discharges from new and redevelopment that promote green infrastructure practices that mimic natural processes to infiltrate and recharge, evapotranspire, and/or harvest and use precipitation.
- ▶ As part of this effort, EPA is also:
 - Exploring options for expanding the universe of federally regulated municipal separate storm sewer system (MS4s),
 - Exploring the desirability of establishing different requirements for transportation facilities,
 - Evaluating options for establishing retrofit requirements on MS4s,
 - Evaluating additional provisions specific to the Chesapeake Bay
- ▶ EPA intends to propose a rule in September 2011 and to take final action by November 2012.

Benefits of Stormwater Rule

- ▶ Proactively Protects Local Water Quality
 - Development and sprawl are increasing at a rate faster than population growth. Increased impervious cover associated with this development impacts water quality by increasing pollutant loadings and stormwater discharges that cause stream erosion.
 - EPA's rule seeks protect water quality from these adverse water quality impacts.
- ▶ Helps to Restore Impaired Waters
 - Stormwater discharges are a primary cause of water quality impairment.
 - One goal of EPA's rule is to restore these impaired waters by establishing standards that must be met as redevelopment occurs and by promoting retrofits of stormwater practices that have not been effective in protecting streams from stream erosion and pollutant loading.
- ▶ Green infrastructure provides a cost-effective means of protecting water quality from stormwater discharges

Benefits of Stormwater Rule

- ▶ Cities should also realize other benefits from a rule that promotes green infrastructure. Green infrastructure:
 - Reduces the amount of rainwater that enters sewer systems, thereby reducing overflows of raw or partially treated wastewater
 - Increases job diversity by creating a demand for certified installers, operations and maintenance staff, and landscape architects
 - Creates more liveable communities by providing more trees, vegetation and open space
 - Mitigates urban heat island effects
 - Reduces energy usage
 - Recharges groundwater and restores depleting groundwater supplies
 - Creates more habitat for wildlife
 - Improves air quality
- ▶ Green infrastructure offers cities a holistic approach to solving many problems.
- ▶ EPA's stormwater rule aims to provide standards with appropriate flexibility so that states and cities can tailor solutions and take advantage of the benefits of green infrastructure in a way that best meets their needs.

MS4 Expansion Regulatory Options

- ▶ No change – 2010 Urbanized Area defined by Census.
- ▶ Extend coverage to jurisdiction boundaries of the MS4 rather than urbanized area boundary
- ▶ Extend coverage to urbanized clusters (Census)
- ▶ Extend coverage to Metropolitan Statistical Areas (Census)
- ▶ Extend coverage to Metropolitan Planning Areas (FHA)
- ▶ Regulate based on a population or impervious cover threshold
- ▶ Extend coverage to watershed boundaries (using HUC defined watershed)
- ▶ Regulate all MS4s and allow States to exclude areas
- ▶ Require states to designate additional regulated MS4s

Possible Requirement for New Development

- ▶ Natural hydrology with regard to discharge volume, rate and duration must be maintained or restored for discharges from newly developed sites using practices that infiltrate, evapotranspire, or harvest and use the discharge volume.
- ▶ This could be based on the hydrology of the land before construction (e.g., forest, prairie, meadow).

Regulatory Options for New Development Standard to Meet Requirement

1. Permitting authorities must, in their permits or state rule, establish specific numeric standards that ensure compliance with the requirement

Note: EPA plans to provide guidance to states to assist them in developing the numeric standard.

2. Permitting authorities must, in their permits or state rule, comply with the requirement by either:

- a. Adopting the numeric criteria in the federal rule, or
- b. Developing State-specific numeric criteria that are as protective as the criteria in the federal rule

Exceptions

- ▶ For all options, there could be exceptions if the numeric standard cannot be met. For example,
 - groundwater pollution concern for source water protection
 - conflict with water rights
 - site constraints, especially for new transportation projects
- ▶ Permitting authority could develop offsite mitigation or payment in lieu programs, develop an alternative standard or develop another mitigation measure

Additional Regulatory Considerations

- ▶ EPA could apply the requirement to sites discharging to the MS4 AND sites outside regulated MS4s
- ▶ EPA expects to establish a size threshold of sites
- ▶ EPA could allow states to approve a numeric standard developed for a specific site with unique conditions using an EPA calculator as an alternative to meeting state's numeric standard

Current Volumetric Retention Standards for Discharges from New Development

| State or Locality (date enacted) | Size Threshold | Standard |
|-------------------------------------|-----------------------------------|--|
| Vermont (2003, draft 2010) | 1 acre | Capture 90 percent of the annual storm events |
| New Hampshire (2009) | 1 acre/ 100,000 sq ft outside MS4 | Infiltrate, evapotranspire or capture first 1.0 inch from 24-hr storm |
| Wisconsin (2010) | 1 acre | Infiltrate runoff to achieve 60% -90% of predevelopment volume based on impervious cover level |
| West Virginia (2009) | 1 acre | Keep and manage on site 1" rainfall from 24-hour storm preceded by 48 hours of no rain |
| Montana (2009) | 1 acre | Infiltrate, evapotranspire, or capture for reuse runoff from first 0.5" of rain |
| Portland, OR (1990) | 500 sq ft of impervious cover | Infiltrate 10-yr, 24-hr storm |
| Anchorage, AK (2009) | 10,000 sq ft | Keep and manage the runoff generated from the first 0.52 inches of rainfall from a 24 hour event preceded by 48 hours of no measureable precipitation. |

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Background**

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**Potential Impacts for
S/L Governments**

Discussion

Regulatory Options for Redevelopment Standard

1. Redevelopment standard is the same as the standard for new development, however additional exceptions are provided
2. Same as Option 1, except that credits are given for developing in certain areas (e.g., brownfields)
3. Redeveloped sites must be designed and constructed to reduce by 20% (or other percent reduction) the impervious cover from the preconstruction condition
4. Combination of (1) and (3) – some states already have this

Current Volumetric Standards for Onsite Retention of Discharges from Redevelopment

| State or Locality (date enacted) | Size Threshold | Redevelopment Standard |
|-------------------------------------|-----------------------------------|--|
| Vermont (2003, draft 2010) | 1 acre | Reduce impervious cover by 20% or treat 20% of WQ volume |
| New Hampshire (2009) | 1 acre/ 100,000 sq ft outside MS4 | Same as new development |
| Wisconsin (2010) | 1 acre | 40% TSS reduction from parking areas and roads or MEP |
| West Virginia (2009) | 1 acre | 0.2" reduction of 1" on site retention standard and additional 0.2" reductions exist |
| Montana (2009) | 1 acre | Same as new development |
| Portland, OR (1990) | 500 sq ft of impervious cover | Same as new development |
| Anchorage, AK (2009) | 10,000 sq ft | Same as new development |

Possible Regulatory Approach for Municipal Retrofits

- Requirement – MS4s must develop and implement a retrofit plan
 - ▶ What could a municipal retrofit plan look like?
 - Identification of sensitive waters
 - Identification of stormwater contribution to degradation or impairment
 - Development of goals and milestones for reducing stormwater contributions
 - Identification of priority projects and initiatives to meet permit-term milestones including retrofits for public sites undergoing redevelopment or routine repair and maintenance
 - Development of incentives for retrofits on private property
 - ▶ Who it could apply to?
 - Phase I MS4s
 - Phase I & II MS4s
 - Phase I & II MS4 that have waters impaired for stormwater

Examples of Retrofit Programs

- ▶ Portland, OR
 - Manage 56% of stormwater by 2040
- ▶ Milwaukee, WI
 - Reduce TSS by 40% by 2013 in MS4 areas
- ▶ Philadelphia, PA
 - Manage 34% of impervious cover over next 20 years
- ▶ NYC's Sustainable Stormwater Management Plan
 - Improve public access to tributaries by 90% by 2030 and detain or capture over 1 billion gallons of stormwater annually
- ▶ Use of Residual Designation Authority in the Charles River Watershed, MA
 - Reduce P annual discharge by 65%
- ▶ Washington DC
 - Using Green Buildout Model to identify goals to reduce stormwater discharges to District's rivers

Examples of Chesapeake Bay Specific Requirements

- ▶ Apply the post construction standard to smaller sized newly developed and redeveloped sites than covered by the national standard.
- ▶ Expand the universe of regulated discharges beyond what would occur through national provision.
- ▶ Establish shorter timeframes to implement retrofit requirements and extend retrofit requirements to large existing properties that do not discharge to a federally regulated MS4.
- ▶ Require MS4s to restrict the use of fertilizers and pesticides.

Industrial Program

- ▶ Replace the SIC code system with the NAICS system to modernize the identification of industrial discharges covered by NPDES stormwater regulations.
- ▶ Phase II MS4 carry out industrial program as described in Phase I requirements.
- ▶ Clarify that stormwater discharges from government owned/operated maintenance yards are industrial stormwater discharges.

Key Rulemaking Activities

- ▶ Conducted listening sessions and national webcasts
- ▶ Distributed questionnaires to regulated MS4s, transportation-related MS4, unregulated MS4s, NPDES permitting authorities and owners/developers of developed sites to gather information - Summer and Fall 2010)
- ▶ Sites visits to collect data
- ▶ Monthly meetings with States
- ▶ Developing models to analyze the costs and pollutant reductions associated with stormwater control options; to evaluate the impacts of stormwater under baseline conditions and each control option; and to assess the financial impact of each control option
- ▶ Supplementing the Report to Congress submitted under CWA 402(p)(5)

www.epa.gov/npdes/stormwater/rulemaking

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How This Rule Could Impact State and Local Governments

▶ Benefits

- Water Quality
- Many Others

▶ Costs

- Increased number of MS4 permits
- New requirements for direct discharges to waters of the U.S. and direct discharges to MS4s
- Retrofits

- ▶ EPA is conducting a thorough analysis of the costs and benefits of all of the rulemaking options

Discussion

- ▶ Potential impacts to state and local governments from the new federal stormwater requirements that EPA should consider.
- ▶ Suggestions for how EPA can develop regulatory requirements that strengthen the stormwater program yet provide needed flexibility to allow adjustments for local conditions or circumstances.
- ▶ Suggestions for how EPA can lessen the costs of federal stormwater requirements on state and local governments.
- ▶ Other suggestions?

**Please provide EPA with written input by
January 22, 2011 to:**

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