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Report To Congress On The Phase II Storm Water Regulations

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on the
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I. INTRODUCTION

A. PURPOSE OF REPORT TO CONGRESS

EPA provides this Report to Congress in compliance with Section 431(a) of the Departments of Veterans Affairs and Housing and Urban Development and Independent Agencies Appropriations Act of 2000, Pub. L. No. 106-74 (1999) ("Appropriations Act"). The Appropriations Act directs the Administrator of the Environmental Protection Agency ("EPA") to submit two reports to the Committee on Environment and Public Works in the Senate and the Committee on Transportation and Infrastructure in the House of Representatives. The first of the reports is to address several issues related to EPA rulemaking to implement Section 402(p)(6) of the Clean Water Act ("CWA"). This rulemaking is also referred to as the Storm Water Phase II rule. Section 431(a) of the Appropriations Act directs the Administrator to submit a report containing:

> (1) an in-depth impact analysis on the effect the final regulations will have on urban, suburban, and rural local governments subject to the regulations, including an estimate of --
>
>> (A) the costs of complying with the 6 minimum control measures described in the regulations; and
>>
>> (B) the costs resulting from the lowering of the construction threshold from 5 acres to 1 acre;
>
> (2) an explanation of the rationale of the Administrator for lowering the construction site threshold from 5 acres to 1 acre, including --
>
>> (A) an explanation, in light of recent court decisions, of why a 1-acre measure is any less arbitrarily determined than a 5-acre measure; and
>>
>> (B) all qualitative information used in determining an acre threshold for a construction site;
>
> (3) documentation demonstrating that storm water runoff is generally a problem in communities with populations of 50,000 to 100,000 (including an explanation of why the coverage of the regulation is based on a census-determined population instead of a water quality threshold); and
>
> (4) information that supports the position of the Administrator that the Phase II storm water program should be administered as part of the National Pollutant Discharge Elimination System under section 402 of the Federal Water Pollution Control Act (33 U.S.C. 1342).

Section 431(c) of the Appropriations Act directs EPA to publish the reports in the Federal Register for public comment. The Appropriations Act does not specify whether EPA should seek and respond to public comment on the reports prior to submitting them to the Committees. Section 431(a) does provide, however, that the Administrator shall not promulgate the Phase II rule until submitting the Section 431(a) report to the Committees. EPA is subject to a judicial consent decree in NRDC v. Browner, (D.D.C., Civ. No. 95-634 PLF) to take final action by October 29, 1999 on the Phase II rule proposed earlier. The Appropriations Act does not relieve EPA from the timing of this rulemaking obligation. Therefore, EPA will invite public comment on the Section 431(a) report after submitting it to the Committees. EPA will carefully review and evaluate comments received and determine whether the comments warrant further action regarding the October 29, 1999, final rule.

As noted above, on October 29, 1999, the Administrator of EPA will take final action on a notice of proposed rulemaking under CWA section 402(p)(6), 33 U.S.C. § 1342(p)(6). On January 9, 1998, at 63 Fed. Reg. 1536, EPA proposed to expand the National Pollutant Discharge Elimination System (NPDES) permitting program for storm water to apply to discharges from certain small municipal separate storm sewer systems (MS4s) and from construction activity generally disturbing between one and five acres of land surface. Although EPA designated for regulation discharges from these two categories, the rulemaking would also allow for waivers (for subsequent exclusion from regulation of certain sources in these categories) and designation (for subsequent inclusion of certain sources that fall outside of the categories). Waivers would be available based on criteria by which the NPDES permitting authority would determine a low potential for adverse water quality impact, and the permitting authority would designate additional sources on a localized basis when necessary to protect or remedy localized adverse water quality impacts.

Rulemaking under CWA section 402(p)(6) is to be based on a study that EPA was directed to provide to Congress under CWA section 402(p)(5). Section 402(p)(5) provides that:

> The Administrator, in consultation with the States, shall conduct a study for the purposes of -
>
> (A) identifying those stormwater discharges or classes of stormwater discharges for which permits are not required pursuant to [CWA sections 402(p)(1) and (p)(2)];
>
> (B) determining, to the maximum extent practicable, the nature and extent of pollutants in such discharges; and
>
> (C) establishing procedures and methods to control stormwater discharges to the extent necessary to mitigate impacts on water quality.

CWA section 402(p)(5) directed EPA to provide reports to Congress on the different components of this study. In proposing the regulations under CWA section 402(p)(6), EPA identified the reports to Congress comprising the study described in CWA section 402(p)(5), specifically, *Storm Water Discharges Potentially Addressed by Phase II of the National Pollutant Discharge Elimination System Storm Water Program: Report to Congress* (U.S. EPA, 1995, EPA 833-K-

94-002). Today's report under section 431(a) of the Appropriations Act is a supplement to the study described in CWA section 402(p)(5).

B. PURPOSE OF THE PHASE II RULE

The Phase II rule would establish a cost effective, flexible approach for reducing environmental harm by storm water discharges from many point sources of storm water that are currently unregulated. Some of the costs of implementing the Phase II rule are discussed in Chapter II of this report. A summary of the rule's benefits are described below. EPA's Economic Analysis of the Final Phase II Storm Water Rule fully analyzes the costs and benefits expected from implementation of the rule.

The environmental harm currently caused by discharges from municipal separate storm sewer systems (MS4s) and construction activity is well documented:

- Urbanization alters the natural infiltration capability of the land and generates a host of pollutants that are associated with the activities of dense populations, thus causing an increase in storm water runoff volumes and pollutant loadings in storm water discharged to receiving water bodies.

- The National Urban Runoff Program (NURP) Study (U.S. EPA 1983) indicated that discharges from MS4s draining runoff from residential, commercial, and light industrial areas carried more than ten times the annual loadings of total suspended solids as did discharges from municipal sewage treatment plants that provide secondary treatment, and somewhat higher annual loadings of chemical oxygen demand (COD), total lead, and total copper.

- The National Water Quality Inventory (305(b)), 1996 report to Congress shows that urban runoff/storm sewer discharges affect 13% of impaired rivers, 21% of impaired lakes and 45% of impaired estuaries.

- Urban storm water runoff, sanitary sewer overflows, and combined sewer overflows have become the largest causes of beach closings in the United States in the past three years. A survey of coastal and Great Lakes communities found that more than 1,500 beach closings and advisories were attributable to storm water runoff in 1998 based on EPA data supplemented with additional data (Natural Resources Defense Council. 1998. "Testing the Waters Volume VIII-Has Your Vacation Beach Cleaned Up Its Act?" New York, NY). Recreational bathers are at the highest risk for contracting illnesses such as gastroenteritis, typhoid, dysentery, hepatitis, skin rashes, and respiratory infections.

- The MS4 program will address illicit discharges, which can contribute high levels of pollutants, including heavy metals, toxic substances, oil and grease, solvents, nutrients, viruses and bacteria into receiving water bodies.

- The NURP study found that pollutant levels from illicit discharges were high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

- Discharges from construction activity impact the biological, chemical, and physical integrity of receiving waters. A number of pollutants are preferentially absorbed onto particles found in fine sediment. Estimates indicate that 80 percent of the phosphorus and 73 percent of the Kjeldahl nitrogen in streams is associated with eroded sediment from construction and other activities.

- Sediment yields from smaller construction sites are as high as or higher than the 20 to 150 tons/acre/year measured from larger sites.

- Siltation is the largest cause of impaired water quality in rivers and the third largest cause of impaired water quality in lakes, according to the 305(b) Report to Congress.

The implementation of the six minimum measures identified for small MS4s should significantly reduce pollutants in urban storm water compared to existing levels and do so in a cost effective manner. Similarly, the implementation of best management practice ("BMP") controls at small construction sites should also result in a significant reduction in pollutant discharges and an improvement in surface water quality. EPA's Economic Analysis of the Final Phase II Storm Water Rule details the expected benefits from implementation of the rule. These benefits include:

- Enhanced Commercial Fishing: Commercial fisheries are a significant part of the nation's economy. In 1997, the commercial shellfish catch was worth $1.04 Billion and the finfish catch was worth $581 Million. 18% of surveyed estuary miles identified storm water as a significant source of impairment.

- Enhanced Recreational and Subsistence Fishing: The potential value of marine recreational fishing is $1.1 Billion to $11.3 Billion annually. Pollutants in storm water may result in eliminating or decreasing the numbers or size of sport fish or shellfish in receiving waters. In September 1996, there were 2,196 fish consumption advisories and about 25% of waters designated for fishing did not support that use.

- Enhanced Opportunities for Boating: Storm water controls offer benefits to boaters by reducing sediment and other pollutants in waters, increasing water clarity and enhancing the experience for boating users. EPA estimates that pollution reduction due to Phase II controls may result in 3,000 currently non-boatable miles of river becoming boatable.

- Enhanced Opportunities for Swimming: EPA estimates that Americans participated in 1.3 billion non-pool swimming days. EPA estimates that at least 28% of these trips are to either marine or fresh water that is impacted by runoff from Phase II sources. For example, in 1998, storm water runoff caused beach closures that resulted in the loss of an estimated 86,000 individual trips to beaches impacted by Phase II sources.

- Enhanced Opportunities for Noncontact Recreation: Activities like picnicking, jogging, biking, camping and hunting do not necessitate direct contact with water, but water quality affects the ability to enjoy these activities when in close proximity to water. Storm water controls reduce turbidity, odors, floating trash and other pollutants and allow waters to be used as focal points for recreation, enhancing the experience of current and future users.

- Enhanced Nonconsumptive Wildlife Uses: An estimated 76.1 million people participated in observing wildlife and waterfowl in 1991. Storm water controls that result in greater numbers or diversity of viewable wildlife species will produce benefits.

- Reduced Flood Damage: Storm water runoff controls may mitigate flood damage by addressing problems due to the diversion of runoff, insufficient storage capacity, and reduced channel capacity from sedimentation.

- Drinking Water Benefits: Storm water was identified as a major source of impairment in rivers, streams, lakes, reservoirs and ponds. Pollutants from storm water runoff, such as solids, toxic pollutants (including pesticides) and bacteria, may impose additional costs for treatment or even render the water unusable for drinking.

- Water Storage Benefits: Storm Water is a major source of impairment for reservoirs. The heavy load of solids deposited by storm water runoff can lead to rapid sedimentation of reservoirs and the loss of needed water storage capacity.

- Navigational Benefits: Storm water also delivers high sediment loads to rivers and harbors critical to navigation and commerce. Where waters are used for navigation, solids must be dredged and disposed of to maintain the utility of the waterway. An estimated 5% of these sediments (12.6 million cubic yards of material) is attributed to storm water runoff from roads and constructions sites. Storm water controls will reduce the rate and amount of sediment loadings.

- Reduced Illness from Consuming Contaminated Seafood: Storm water controls may reduce the presence of pathogens in seafood caught by commercial or recreational anglers. Researchers have estimated 2,700 cases of illness annually from raw or partially cooked contaminated seafood.

- Reduced Illness from Swimming in Contaminated Water: Epidemiological studies have indicated that swimmers in water contaminated by storm water runoff are more likely to experience illness than those that swim farther from a storm water outfall. By reducing illicit connections and other sources of pathogens in storm water, EPA estimates that up to 500,000 cases of illness will be avoided annually.

- Enhanced Aesthetic Value: When storm water affects the appearance or quality of a water body, the desirability of working, living, traveling or owning property near that water body is similarly affected. Improvements in water quality due to reductions in storm water pollution will result in benefits as these waters recover and become more desirable locations near which people want to live, work, travel or own property.

Thus, the rule will result in significant monetized financial, recreational and health benefits, as well as benefits that EPA has been unable to monetize.

II. IMPACT OF PHASE II RULE ON LOCAL GOVERNMENTS

This section responds to the Appropriations Act's direction to provide a report containing:

"(1) an in-depth impact analysis on the effect the final regulations will have on urban, suburban, and rural local governments subject to the regulations, including an estimate of-
(A) the costs of complying with the 6 minimum control measures described in the regulations; and
(B) the costs resulting from the lowering of the construction threshold from 5 acres to 1 acre;"

A. SUMMARY OF PHASE II RULE REQUIREMENTS

EPA conducted an in-depth impact analysis of the effect of the final Storm Water Phase II Rule on local governments. Two provisions of the Phase II rule are expected to result in compliance costs for local governments. These are the provision requiring certain municipalities to regulate discharges from their municipal separate storm sewer systems (MS4s) and the provision which extends the storm water construction program to cover sites between one and five acres in size. The analysis considers potential cost impacts to all local governments, including urban, suburban and rural governments, and provides insight into the differing situations of small or very small local governments. Based on this analysis, EPA determined that the Phase II rule is not expected to have a significant impact on a substantial number of local governments.

Municipal Storm Water Program:

The Phase II Rule would automatically designate for regulation discharges from small MS4s located in urbanized areas, and require that NPDES permitting authorities examine for potential designation, at a minimum, a particular subset of discharges from small MS4s located outside of urbanized areas. The MS4 provision would result in costs primarily for local governments in urbanized areas. An urbanized area is defined by the U.S. Census Bureau as an area with a population of at least 50,000 and a minimum average population density of more than 1,000 people per square mile. Thus, this rule would primarily affect suburban and urban local governments, because these MS4s are more likely to be located in urbanized areas. Rural local governments may be designated on a case-by-case basis if the permitting authority determines that they have a significant impact on water quality. The Phase I storm water program addressed runoff from "medium" and "large" MS4s, generally those discharges from governmental jurisdictions serving populations of 100,000 or more people. The Phase II Storm Water regulations will address discharges from smaller MS4s. The rule also would allow MS4s that are automatically designated because they are within an urbanized area to obtain a waiver from the otherwise applicable requirements if the discharges from small MS4s are not causing impairment of a receiving water body. Qualifications for the waivers vary depending on whether the MS4 serves a population under 1,000 or a population under 10,000.

Under the Phase II rule, a storm water discharge control program that meets the requirements of six minimum control measures would be administered within the jurisdiction of all regulated small MS4s. Small MS4 operators would design and administer the program, or would arrange with other government entities (including operators of nearby larger MS4s) to do so. These minimum control measures would consist of: public education and outreach on storm water impacts, public involvement/ participation, illicit discharge detection and elimination, construction site storm water runoff control, post-construction storm water management in new development and redevelopment, and pollution prevention/good housekeeping for municipal operations. The Agency provides an analysis of the costs to local governments of implementing the six municipal minimum control measures in Section B below.

Municipal Construction:

The 1990 Phase I rule required all operators of construction activity disturbing five or more acres of land surface to apply for an NPDES permit for any resulting point source discharges of storm water.[1] The construction provisions of the Phase II rule would extend similar requirements to construction projects that disturb between one and five acres of land. This provision would impose additional requirements on small construction projects of local governments, regardless of whether the local government is urban, suburban or rural. The rule excludes routine road maintenance from the definition of construction, thereby excluding many municipal public works projects. EPA expects that most new one to five acre road construction projects are likely to be built in conjunction with either larger development projects or State and Federal transportation programs and at least partially funded by these other sources. The Phase II rule would also provide waivers from coverage based on the potential to discharge storm water and cause a significant impact to water quality. EPA's analysis of construction starts concluded that the additional requirement for municipally constructed projects should not have a significant impact on a substantial number of the local governments subject to the regulation. EPA reports on its analysis of the costs to local governments of implementing the soil erosion control provisions for their construction sites between one and five acres in Section C below.

Regulatory Flexibility:

In promulgating Storm Water Phase II, EPA examined regulatory flexibility issues and potential cost impacts on small entities, including small local governments. In order to solicit input from potentially regulated small entities, EPA convened a Small Business Regulatory

[1] On December 18, 1991, Congress enacted the Intermodal Surface Transportation Efficiency Act (ISTEA), which postponed NPDES permit application deadlines for most storm water discharges associated with industrial activity at facilities that are owned or operated by small municipalities, including construction activity over five acres.

Enforcement Flexibility Act (SBREFA) Panel which included small local government representatives as well as other stakeholders.   EPA conducted an analysis and determined that the rule was expected not to have a significant impact on a substantial number of small local governments or other small entities. However, in order to provide additional flexibility for small local governments, EPA included several programmatic options and potential waivers for small governments.

The rule would allow for a great deal of flexibility by providing various options for obtaining permit coverage and satisfying the required minimum control measures. For example, the NPDES permitting authority would be able to incorporate by reference qualifying State, Tribal, or local programs in a NPDES general permit and recognize existing responsibilities among different governmental entities for the implementation of minimum control measures. In addition, a regulated small MS4 could participate in the storm water management program of an adjoining regulated MS4 and could arrange to have another governmental entity implement a minimum control measure for them. The rule also provides potential waivers for MS4s serving a population less than 10,000 and also for construction projects not expected to significantly impair water quality. Therefore, Storm Water Phase II is not expected to have a significant impact on a substantial number of small local governments, and offers significant flexibility to those local governments in implementing provisions of the rule which may result in compliance cost impacts.

B. Impacts of the Municipal Minimum Control Measures on Local Governments

EPA estimated that the overall annual cost to local governments of implementing a storm water program based on the six minimum measures would be $297 million. EPA developed this estimate using actual program cost information from Phase II communities with existing storm water programs. The estimate assumes that all of the 5,040 Phase II designated municipalities would incur program costs and that costs are related to the size of the community served. Therefore, the Agency probably overestimates national costs because permitting authorities can waive permitting requirements for MS4s serving up to 10,000 people.

EPA conducted an in-depth analysis of the potential cost of complying with the six minimum measures on local governments in urbanized areas. These local governments are primarily urban and suburban, although a few rural governments may be designated by States to be included in the program based on potential water quality impacts. While the total regulatory costs associated with Phase II include all sizes of local government, EPA specifically considered the impacts to small local governments as required under the Regulatory Flexibility Act, as amended by the Small Business Regulatory and Enforcement Fairness Act. In preparing the analysis, EPA compared estimated annual compliance costs with annual municipal revenues for 4,455 small local governments (municipalities with fewer than 50,000 people) and evaluated cost-to-revenue ratios for indication of significant economic impacts. The results, which are reported in the economic analyses prepared for the proposed and final rules, led EPA to conclude that there would not be a substantial economic impact on a significant number of small governments; EPA expects even less of an impact on larger governments. Below is a summary of EPA's analysis.

Cost Analysis:

EPA estimated annual costs for the municipal programs based on a fixed cost component and a variable cost component. The fixed cost component included costs for the municipal application, record keeping, and reporting activities. On average, EPA estimated annual costs of $1,525 per municipality. Variable costs include the costs associated with annual operations for the six minimum measures. EPA reviewed cost data from existing Phase I storm water programs and cost data gathered from Phase II communities by the National Association of Flood and Storm Water Management Agencies (NAFSMA). These costs reflect the actual operating costs of program elements that are comparable to the six minimum measures for municipalities representing a wide range of population sizes. EPA estimated costs on a per household basis from both data sets. Annual mean costs per household are comparable across the data sets: $8.93 (NASFMA) and $8.85 (Phase I).

Total annual cost for each of the 4,455 municipalities was calculated as the sum of the $1,525 fixed cost and the urbanized area household estimate multiplied by the per household cost based on the NAFSMA data.[2] For example, a municipality with 5,000 households would have a total program cost of:

$$\$46,175 = \$1,525 + (5,000 * \$8.93).$$

Small Local Governments:

EPA estimated municipality revenues based on state-level revenue data collected by the U.S. Bureau of the Census 1992 Census of Governments. The Bureau of the Census reports municipal government revenues by population size for eight size categories including three used by EPA: less than 10,000, 10,000 to 24,999, and 25,000 to 49,999. For every state, EPA gathered the aggregate municipal revenue data and aggregate municipal population data reported by the Bureau of the Census for these three size categories.[3] EPA then divided revenue by population to obtain revenue per capita for each size category within each state. EPA merged this data set with the Phase II municipality population data set and multiplied the appropriate per capita revenue estimates by the Phase II urbanized area populations to obtain 4,455 estimates of annual municipal revenues.

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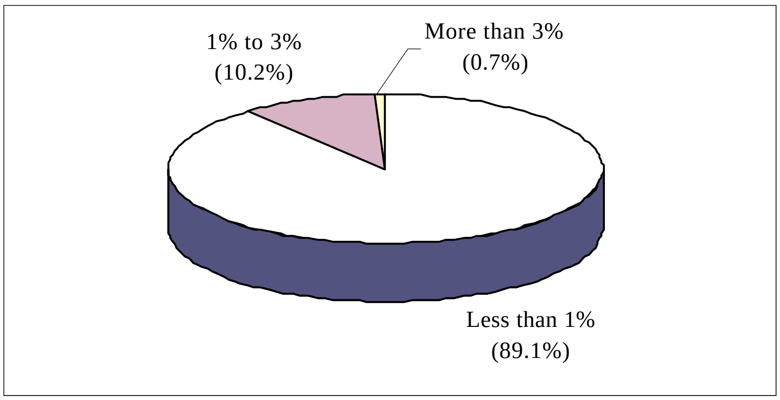
[2] Based on Census data, EPA used a conversion factor of 2.62 people per household to obtain household estimates for the Phase II communities.

[3] EPA did not adjust municipal revenue from their 1991 values to 1998 values, which is the unit of measure EPA used for costs. There is no standard adjustment factor for municipal revenues. Thus, the cost-to-revenue ratio probably overstates the cost impact.

Finally, EPA divided the 4,455 cost estimates by the 4,455 revenue estimates to obtain cost-to-revenue ratios. EPA categorized these ratios according to whether they were less than 1% (i.e., cost is less than 1% of revenue), between 1% and 3%, and greater than 3%. Figure A summarizes the results, showing that the cost-to-revenue ratios were less than 1% for 89% of the Phase II municipalities and greater than 3% for less than 1% of municipalities.

Under, the Phase II rule, the permitting authority could waive permitting requirements for systems serving less than 1,000 people. All of the municipalities with cost-to-revenue ratios that are greater than 3% have populations less than 1,000 people, and may qualify for a waiver. Consequently, the flexibility of the rule addresses any potentially significant adverse cost impacts. Because no Phase II municipality with a population of more than 6,000 had a cost-to-revenue ratio of more than 1%, EPA does not expect this provision will have significant economic impacts on the 585 municipalities with populations larger than 50,000.

Figure A. Summary of Cost-to-Revenue Ratios for 4,455 Phase II Municipalities with Populations Less than 50,000



C. COSTS OF THE SOIL EROSION CONTROL PROVISION ON LOCAL GOVERNMENTS

EPA's cost analysis for the soil erosion control provision multiplies cost estimates per construction site for soil erosion control measures and administrative costs by the number of construction sites potentially affected by the rule. EPA estimates that the rule would apply to approximately 110,223 currently unregulated construction starts per year (using 1998 estimates) out of a total of 528,499 construction starts. Annual costs associated with installing the soil erosion controls and completing permitting activities is estimated as $505 million. Less than 0.5% (< $500,000) is expected to accrue from local governments.

Cost Analysis:

Most soil erosion control costs would accrue to the private sector, primarily to dischargers in the construction industry. However, local governments may also incur soil erosion control costs for discharges from public works projects that disturb between one and five acres (costs borne either directly by the local government or indirectly through a contractor). Since routine road maintenance is excluded from coverage under Storm Water Phase II, those public works starts are excluded from analysis. EPA used the site-based estimates of soil erosion control costs that it developed for the economic analysis of the final rule and Bureau of Census construction start data to estimate the expected annual impact on local governments. Table A summarizes the two types of costs by site size that a construction company or public works department may incur.

Table A. Summary of Site-Based Soil Erosion Control Costs

Cost	1 Acre Site	3 Acre Site	5 Acre Site
Administrative [a]	$937	$937	$937
Soil Erosion Control BMPs [b]	$1,206	$4,598	$8,709
Total Cost	$2,143	$5,535	$9,646
Annualized Cost (7%)[c]	$202	$522	$910

Notes:
a. These activities would include costs to submit a notice of intent to be covered by a general permit, to notify the municipality, to develop a storm water pollution prevention plan, to retain records, and to file a notice of termination from a general permit.
b. BMPs (best management practices) costs are based on combinations of the following that differ across sites with different sizes, slopes, and soil types: silt fence, mulch, seed/mulch, stabilized entrance, stone check dam, earth dike, and sediment traps.
c. Annualized cost assumes a 20-year period and a 7% cost of capital. The capitalization factor is 0.09439.

Small Local Governments:

There are four categories of local governments which may experience costs of compliance associated with the Phase II rule. These are:

1) Phase I jurisdictions (subject to Phase II requirements for construction between one and five acres; already required to have a municipal storm water program),
2) Phase II jurisdiction above 50,000 population (subject to Phase II municipal and construction requirements),
3) Phase II jurisdictions below 50,000 population (subject to Phase II municipal and construction requirements; subject to SBREFA review), and
4) Jurisdictions that are not required to have a municipal storm water program under

Phase I or Phase II (subject to Phase II requirements for construction).

The greatest potential economic impact of the soil erosion control provision is expected to be on the third category, because they would incur soil and erosion control costs in addition to annual program costs for the six minimum measures, and because of their smaller size. Therefore, the analysis below focuses on the impacts on these small local governments.

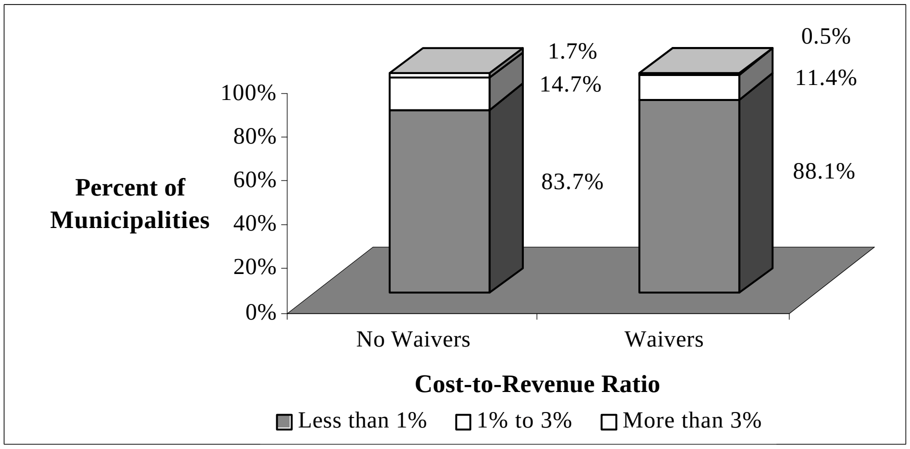
To evaluate the severity of potential impact, EPA used the Bureau of the Census construction start database to estimate the annual number of construction starts in Phase II municipalities that are classified by the Bureau of the Census as a "public works" start, excluding routine road maintenance. The data showed that 2% of municipalities are expected to have a 1-acre start, 2% are expected to have a 3-acre start and 1% are expected to have a 5-acre start. These results indicate that local governments would not incur soil and erosion control costs on an annual basis, because they would not necessarily have Phase II construction starts in any given year. As a conservative assumption (i.e., tending to overstate costs), EPA annualized the costs over a 20-year period, assuming a 7% cost of capital (see Table A). The 20-year assumption is conservative because it implies higher construction rates than the data suggest [i.e., 1-acre site (5%), 3-acre site (5%), and 5-acre site (5%)]. EPA then added the annualized values to obtain an annual cost of $1,634 per municipality for the soil erosion control provision.

Because the soil erosion control provision of the Phase II rule would apply to discharges from construction sites between one and five acres regardless of location, local governments other than Phase II designated municipalities could incur costs. EPA compared the annualized value across all site sizes of $1,634 to the national mean estimate of local government revenues. For the smallest municipality size category, the mean annual revenue was $1.4 million (1991 dollars; 1992 Census of Governments). The cost-to-revenue ratio for the smallest size category is well below 1%.

Finally, EPA then added the cost of complying with the Phase II soil erosion program for small construction to the cost-to-revenue ratios for the MS4 program discussed above to evaluate the combined impact on Phase II municipalities of the municipal minimum measures and soil erosion control costs that may be borne directly or indirectly (passed through from construction companies). Based on this revised cost-to-revenue analysis, the combined costs are not expected to have a significant economic impact on a substantial number of designated Phase II municipalities.

Figure B summarizes the cost-to-revenue impacts for all 4,455 Phase II municipalities with populations less than 50,000 (bar on left). Figure B also summarizes impacts for these Phase II municipalities assuming that the municipalities with populations below 1,000 are granted waivers so they incur soil erosion control costs as regulated small construction site dischargers but no program costs as small MS4 dischargers (bar on right). In either case, a vast majority of municipalities would not incur annual costs that are greater than 1% of revenues and fewer than 2% of municipalities would incur costs that are greater than 3% of revenues. Therefore, EPA concluded that the Phase II rule would not have a significant impact on potentially regulated small local governments.

Figure B. Summary of Cost-to-Revenue Ratios Revised to Include Soil Erosion Control Costs for 4,455 Phase II Municipalities with Populations under 50,000



* "No Waivers" estimates costs assuming (for the purpose of this analysis) that no small local governments with populations below 1,000 receive a waiver and, therefore, are subject to both the municipal and the soil erosion provisions of Phase II. Even if this were to occur, the potential impacts are not significant.

III. RATIONALE FOR THE ONE ACRE CONSTRUCTION THRESHOLD

This section responds to the Appropriations Act's direction to provide a report containing:

"(2) an explanation of the rationale of the Administrator for lowering the construction site threshold from 5 acres to 1 acre, including --
(A) an explanation, in light of recent court decisions, of why a 1-acre measure is any less arbitrarily determined than a 5-acre measure; and
(B) all qualitative information used in determining an acre threshold for a construction site;"

BACKGROUND

In 1990, EPA promulgated the first phase of the NPDES permit application rules for storm water. (*National Pollutant Discharge Elimination System Permit Application Requirements for Storm Water Discharges*, 55 Fed. Reg. 47990 (Nov. 16, 1990), referred to as the "Phase I" rule). As directed under CWA section 402(p)(4)(A), the Phase I rule set forth the permit application requirements for storm water discharges "associated with industrial activity," including, applicability provisions defining the term "storm water discharge associated with industrial activity." Under CWA section 402(p)(2)(B), storm water discharges associated with industrial activity were excluded from the moratorium against permitting discharges composed entirely of storm water.

Among other things, the Phase I rule defined storm water discharge associated with industrial activity to include discharges from "construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale." 40 C.F.R. 122.26(b)(14)(x). In 1992, a court ruled that the five acre threshold used for defining construction activity as "industrial activity" was improper because EPA had failed to identify information to support its position that construction activities on less than five acres are non-industrial in nature.

The Phase II rule would regulate storm water discharges from additional smaller construction activities. The rule would regulate these construction-related storm water sources under CWA section 402(p)(6) to protect water quality rather than under CWA section 402(p)(2). Designation under 402(p)(6) gives States and EPA the flexibility to waive the permit requirement for construction activity that is not likely to impair water quality, and to designate additional sources below one acre that are likely to cause water quality impairment. Thus, the one acre threshold under the Phase II rule would not be an absolute threshold like the five acre threshold that applies under the Phase I rule. The one acre threshold is reasonable for accomplishing the water quality goals of CWA section 402(p)(6) because it results in 97.5% of the total acreage disturbed by construction being designated for coverage by the NPDES storm water program, while excluding from automatic coverage the numerous smaller sites that represent 24.7% of the total number of construction sites.

RATIONALE FOR FIVE ACRE THRESHOLD IN THE PHASE I RULE

In the preamble to the Phase I rule, which regulates storm water discharges from construction activity disturbing five acres or more as "storm water discharges associated with industrial activity," EPA had explained that the construction industry should be subject to storm water permitting because at a high level of intensity, construction is equivalent to other regulated industrial activities. 55 Fed. Reg. 48033. The Phase I rule regulates storm water "associated with industrial activity." EPA had proposed that the Phase I regulations apply to construction site discharges from sites disturbing down to one acre. EPA increased the size threshold to five acres for the final rule.

After a judicial challenge to the Phase I regulations, the Ninth Circuit remanded the regulation to EPA for further proceedings. NRDC v. EPA, 966 F.2d 1292, 1306 (9th Cir. 1992). To support the increased threshold (from one to five acres), the Agency had explained that larger sites typically involve heavier equipment for removing vegetation and bedrock than smaller sites. 55 Fed. Reg. 48036. The court found that EPA's rationale for increasing the limit was inadequate because the Agency cited no information to support its perception that construction activities on less than five acres are non-industrial in nature. 966 F.2d at 1306. Thus, the Court focused on the relationship between the size threshold and the statutory reference to "industrial."

RATIONALE FOR ONE ACRE THRESHOLD IN THE PHASE II RULE

In lowering the threshold to one acre in the Phase II rule, the Phase II rule would not regulate discharges from small construction site as "industrial activity." Instead, EPA interprets the text of CWA section 402(p)(6) as a basis to designate small construction site discharges as sources "to be regulated to protect water quality." EPA interprets this language as less restrictive than the terms "associated with industrial activity" for the purpose of establishing an applicability threshold that is based on size alone but which may be modified by permitting authorities to account for higher and lower threat sources. In addition to water quality considerations, the text of CWA section 402(p)(6) allows for designations based on considerations of administrative feasibility by specifying that the Agency has discretion to identify sources "to be regulated."

Though the Phase II rule would not regulate a discharge from a construction site below the five acre threshold as a "discharge associated with industrial activity," the Phase II rule nonetheless responds to the Ninth Circuit's direction to conduct further rulemaking on the matter of discharges from sites disturbing more than one acre (from the Phase I proposed rule) and from sites disturbing less than five acres (from the Phase I final rule). For discharges from sources in this category, which the Agency still believes present water quality concerns based on the potential for water quality impairment due to gross sediment runoff (among other pollutants), CWA section 402(p)(6) rather than CWA section 402(p)(2)(B) and (3) provides a more sensible basis to address the sources that threaten water quality. In light of the Agency's decision to regulate these sources down to one acre to protect water quality with controls similar to those applied to Phase I sources, EPA believes it is unnecessary to examine further whether sites below five acres are "associated with industrial activity."

EPA is regulating storm water discharges from construction activity disturbing between 1 and 5 acres because the cumulative impact of many sources, and not just a single identified source, is typically the cause for water quality impairments, particularly in relation to sedimentation-related water quality standards.

The one acre threshold provides an administrative tool for more easily identifying those sites that are identified for coverage by the rule (but may receive a waiver) and those that are not automatically covered (but may be designated for inclusion). Although all construction sites less than five acres could have a significant water quality impact cumulatively, EPA is automatically designating for permit coverage only those storm water discharges from construction sites that disturb land equal to or greater than one acre. Categorical regulation of discharges from construction below this one acre threshold would overwhelm the resources of permitting authorities and might not yield corresponding water quality benefits. Construction activities that disturb less than one acre make up, in total, a very small percentage of the total land disturbance from construction nationwide (about 2.5%).

In addition to the diminishing water quality benefits of regulating all sites below one acre, the Agency relies on practical considerations in establishing a one acre threshold and not setting a lower threshold. Regardless of the threshold established by EPA, a NPDES permit can only be required if a construction site has a point source discharge. A point source discharge means that pollutants are added to waters of the United States through a discernible, confined, discrete conveyance. "Sheet flow" runoff from a small construction site would not result in a point source discharge unless and until it channelized. As the amount of disturbed land surface decreases, precipitation is less likely to channelize and create a "point source" discharge (assuming the absence of steep slopes or other factors that lead to increased channelization). Categorical designation of very small sites may create confusion about applicability of the NPDES permitting program to those sites. EPA's one acre threshold reflects, in part, the need to recognize that smaller sites are less likely to result in point source discharges. Of course, the NPDES permitting authority could designate smaller sites (below one acre, assuming point source discharges occur from the smaller designated sites) for regulation if a watershed or other local assessment indicated the need to do so. The Phase II rule would include this designation authority at 40 CFR 122.26(a)(9)(i)(D) and (b)(15)(ii).

Though location-specific water quality studies would provide the ideal information base from which to make regulatory decisions, the Phase II rule establishes one acre as a default standard for regulation in the absence of location-specific studies. The rule does account for location-specific water quality information, however, for any deviation from the default standard through additional designations and waivers. The rule codifies the ability of permitting authorities to provide waivers for sites greater than or equal to one acre and designate additional discharges from small sites below one acre when location-specific information suggests that the default one acre standard is either unnecessary (waivers) or too limited (designations) to protect water quality.

OTHER QUALITATIVE AND QUANTITATIVE INFORMATION ON SIZE THRESHOLDS

EPA had difficulty evaluating the water quality consequences of designating specific size thresholds because, while generally proportional to the size of the disturbed site, the water quality threat posed by discharges from construction sites of differing sizes varies nationwide, depending on the local climatological, geological, geographical, and hydrological influences. In order to ensure improvements in water quality nationwide, however, the Phase II rule does not allow various permitting authorities to establish different size thresholds except based on the waiver and designation provisions of the rule. EPA believes that a national one acre threshold for automatic designation, coupled with procedures for waiving sites above one acre and for designating sites below one acre based on local water quality considerations, ensures protection against adverse water quality impacts from storm water discharges from small construction sites while not overburdening the resources of permitting authorities and the construction industry.

EPA believes that the water quality impact from small construction sites is as high as or higher than the impact from larger sites on a per acre basis. The concentration of pollutants in the runoff from smaller sites is similar to the concentrations in the runoff from larger sites. The proportion of sediment that makes it from the construction site to surface waters is likely the same for larger and smaller construction sites in urban areas because the runoff from either site is usually delivered directly to the storm drain network where there is no opportunity for the sediment to be filtered out.

The expected contribution of total sediment yields from small sites depends, in part, on the extent to which erosion and sedimentation controls are being applied. Because current storm water regulations are more likely to require erosion and sedimentation controls on larger sites in urban areas, smaller construction sites that lack such programs are likely to contribute a disproportionate amount of the total sediment from construction activities (MacDonald, L.H. 1997. Technical Justification for Regulating Construction Sites 1-5 Acres in Size. Unpublished report submitted to the U.S. Environmental Protection Agency, Washington). Smaller construction sites are less likely to have an effective plan to control erosion and sedimentation, are less likely to properly implement and maintain their plans, and are less likely to be inspected (Brown, W. and D. Caraco. 1997. Controlling Storm Water Runoff Discharges from Small Construction Sites: A National Review. Submitted to the U.S. Environmental Protection Agency, Office of Wastewater Management, Washington, DC. by the Center for Watershed Protection, Silver Spring, MD).

To confirm its belief that sediment yields from small sites are as high as or higher than the 20 to 150 tons/acre/year measured from larger sites, EPA gave a grant to the Dane County, Wisconsin Land Conservation Department, in cooperation with the USGS, to evaluate sediment runoff from two small construction sites. The first was a 0.34 acre residential lot and the second was a 1.72 acre commercial office development. Runoff from the sites was channeled to a single discharge point for monitoring. Each site was monitored before, during, and after construction.

The Dane County study found that total solids concentrations from these small sites are similar to total solids concentrations from larger construction sites. Results show that for both of the study sites, total solids and suspended solids concentrations were significantly higher during construction than either before or after construction. For example, preconstruction total solids concentrations averaged 642 mg/L during the period when ryegrass was established, active construction total solids concentrations averaged 2,788 mg/L, and post-construction total solids concentrations averaged 132 mg/L (on a pollutant load basis, this equaled 7.4 lbs preconstruction, 35 lbs during construction, and 0.6 lbs post-construction for total solids). While this site was not properly stabilized before construction, after construction was complete and the site was stabilized, post-construction concentrations were more than 20 times less than during construction. The results were even more dramatic for the commercial site. The commercial site had one preconstruction event, which resulted in total solids concentrations of 138 mg/L, while active construction averaged more than 15,000 mg/L and post-construction averaged only 200 mg/L (on a pollutant load basis, this equaled 0.3 lbs preconstruction, 490 lbs during construction, and 13.4 lbs post-construction for total solids). The active construction period resulted in more than 75 times more sediment than either before or after construction (Owens, D.W., P. Jopke, D.W. Hall, J. Balousek and A. Roa. 1997. "Soil Erosion from Small Construction Sites in Dane County, Wisconsin." Draft Report. USGS and Dane County Land Conservation Department, WI).

Construction start data indicates that excluding construction sites below one acre from coverage under the Phase II rule would exclude a significant percentage of sites from automatic coverage while only excluding a small percentage of the total acreage. As is indicated in Table B, by choosing a nationwide threshold of one acre, the Phase I and Phase II rules will together address 97.5% of the national disturbed acreage yet will only regulate 75.3% of the construction starts. The remaining construction starts (24.7% or 130,435 starts) each occur on less than one acre of disturbed land and together constitute only 2.5% of total acreage disturbed by construction.

Table B. Percentage of national disturbed acreage and construction starts addressed by regulating all construction above different thresholds

	percentage of national disturbed area controlled by regulating all sites:	number of construction starts addressed (percent of national total)
all sites	100 %	527,774 (100 %)
greater than 1.0 acres	97.5 %	397,309 (75.3 %)
greater than 2.0 acres	92.3 %	301,941 (57.2 %)
greater than 3.0 acres	87.8 %	253,224 (48.0%)
greater than 4.0 acres	83.7 %	221,471 (42.0 %)
greater than 5.0 acres	78.1 %	188,425 (35.7 %)

* Table includes all construction starts. It does not exclude starts already regulated by Phase I, equivalent State programs, or potential Phase II waivers.

A two acre threshold would have tripled the total number acres that would not be designated for permit coverage. A threshold below one acre would have significantly increased the number of sites regulated without significantly increasing the number of acres for which storm water controls would be required. Thus, the additional increment in water quality protection that would be achieved by a lower size threshold would have resulted in a disproportionately higher burden on the regulated community.

CONCLUSION ON ONE ACRE THRESHOLD

The Ninth Circuit concluded that EPA arbitrarily defined discharges “associated with industrial activity” when the Agency established the five acre size threshold, particularly in light of the Agency’s proposal to establish the threshold at one acre. The Phase II one acre threshold is not arbitrary because (1) sediment loads from disturbed land surface cause adverse impacts on water quality, (2) as site size decreases, the likelihood that precipitation will create “discernible, confined, discrete conveyances” through channelization decreases, (3) the one acre threshold is not an absolute threshold because NPDES authorities can waive the threshold for sites (and during seasons) when there is a lower potential for a discharge that would impair water quality and can designate sources below the threshold where necessary to protect water quality on a localized basis, and (4) the number of additional sites that would be regulated by a threshold below one acre is disproportionately high relative to the total number of acres disturbed by those sites.

EPA recognizes that the size criterion alone may not be a perfect predictor of the need for regulation, but effective protection of water quality depends as much on simplicity in implementation as it does on the scientific information underlying the regulatory criteria. The default size criterion of one acre will ensure protection against adverse water quality impacts from storm water discharges from small construction sites while not overburdening the resources of permitting authorities and the construction industry to implement the program to protect water quality in the first place. Further, as noted above, NPDES permit authorities can designate sources below one acre where necessary to protect water quality in a particular area, or waive sites above one acre where NPDES permit coverage under the Phase II rule is not necessary to protect water quality.

IV. STORM WATER PROBLEMS IN CENSUS DESIGNATED URBANIZED AREAS

This section responds to the Appropriations Act's direction to provide a report containing:

"(3) documentation demonstrating that storm water runoff is generally a problem in communities with populations of 50,000 to 100,000 (including an explanation of why the coverage of the regulation is based on a census-determined population instead of a water quality threshold);

BACKGROUND

In 1990, EPA promulgated the first phase of the NPDES permit application rules for storm water ("Phase I"). Phase I required NPDES permits for storm water discharges from large and medium municipal separate storm sewer systems generally serving populations of 100,000 or more. Areas with a combined sewer were not included in the total population served for Phase I.

This definition of large and medium MS4s for Phase I created so-called "donut holes." Donut holes are unregulated MS4s located within those urbanized areas that include systems covered by the Phase I storm water program, but are not currently addressed by the storm water program because the Phase I regulations specify applicability based on political jurisdiction. In other words, donut holes are geographic gaps in the existing NPDES storm water program's regulatory scheme. Storm water discharges from donut hole areas present a problem due to their adverse impacts on local waters, as well as by frustrating the attainment of water quality goals of neighboring regulated communities.

The storm water Phase II rule designates discharges from small MS4s located in urbanized areas for NPDES permit coverage. EPA adopted the Bureau of the Census definition of an urbanized area as comprising a place and the adjacent densely settled surrounding territory that together have a minimum population of 50,000 people. A permitting authority may designate additional small MS4s after the authority develops designation criteria and applies those criteria to small MS4s located outside of an urbanized area, in particular those with a population of 10,000 or more and a population density of at least 1,000 per square mile. The permitting authority may waive the requirement for a permit for any small MS4 serving a jurisdiction with a population of less than 1,000 unless storm water controls are needed because the MS4 is contributing to a water quality impairment. The permitting authority may also waive permit coverage for MS4s serving a jurisdiction with a population of less than 10,000 if all waters that receive a discharge from the MS4 have been evaluated and discharges from the MS4 do not significantly contribute to a water quality impairment or have the potential to cause an impairment. The Phase II rule also allows States with a watershed permitting approach to phase in coverage for MS4s in jurisdictions with populations under 10,000.

EPA'S RATIONALE FOR BASING REGULATION ON CENSUS-DETERMINED POPULATION RATHER THAN A WATER QUALITY THRESHOLD

EPA adopted the Bureau of the Census definition of "urbanized area" for the purposes of the Phase II rule. The existing storm water Phase I rule already covers discharges from MS4s with more than 100,000 population. Phase II would address the remaining MS4s in urbanized areas.

The Bureau of the Census defines an urbanized area as comprising a place and the adjacent densely settled surrounding territory that together have a minimum population of 50,000 people. The densely settled surrounding territory generally has at least 1,000 people per square mile. The Bureau of the Census definition of "urbanized area," adopted by EPA for the purposes of the Phase II rule, was published in the Federal Register (55 FR 42592, October 22, 1990).

EPA is using urbanized areas to automatically designate regulated small MS4s on a nationwide basis for several reasons:

(1) Water Quality Impacts from Urban Runoff

Studies and data show a high correlation between degree of development/ urbanization and adverse impacts on receiving waters due to storm water. See section A below for a full discussion of storm water impacts due to urban development.

(2) Addresses gaps in coverage

The blanket coverage within the urbanized area encourages the watershed approach and addresses the problem of "donut-holes," where unregulated areas are surrounded by areas regulated under Phase I.

(3) Pollution Prevention

This approach targets present and future growth areas as a preventative measure to help ensure water quality protection. Urbanized areas have experienced significant growth over the past 50 years. According to EPA calculations based on Census data from 1980 to 1990, the national average rate of growth in the United States during that 10-year period was more than 4 percent. For the same period, the average rate of growth within urbanized areas was 15.7 percent and the average for outside of urbanized areas was just more than 1 percent. Table C below illustrates the growth of urbanized areas for the past five Census (EPA, 1995). The new development occurring in these growing areas can provide some of the best opportunities for implementing cost-effective storm water management controls.

Table C. Growth of Urbanized Areas in the United States Between 1950 and 1990

Year	Number of Urbanized Areas	Population in Urbanized Areas (millions)			Land Area (sq. mi.)
		Total	Central Cities	Urban Fringe	
1950	157	69.2	48.4	20.9	19,728
1960	213	95.8	57.9	37.8	25,544
1970	273	120.7	65.1	55.6	35,081
1980	366	139.2	67.0	72.1	52,017
1990	405	160.4	79.7	80.7	61,520

(4) Simplified Designation and Coverage

The determination of urbanized areas by the Bureau of the Census allows operators of small MS4s to quickly determine whether they are included in the NPDES storm water program as a regulated small MS4.

Using urbanized areas as a basis for designation effectively targets resources to the most densely developed territory. The 405 urbanized areas in the United States cover only 2 percent of the total U.S. land areas yet contain approximately 63 percent of the nation's population.

DOCUMENTATION OF WATER QUALITY PROBLEMS DUE TO STORM WATER RUNOFF FROM URBANIZED AREAS

EPA has compiled a number of studies demonstrating that storm water runoff is generally a problem in urbanized areas. This information is divided into storm water impacts due to urban development (section A below) and other discharges to municipal storm sewers (section B below). The Appropriations Act specifically requested that this report provide "documentation demonstrating that storm water runoff is generally a problem in communities with populations of 50,000 to 100,000." While 50,000 is the population threshold used by the Bureau of the Census for defining urbanized areas and EPA adopted the Census definition for the purpose of automatic designation in the Phase II rule, the studies below indicate that water quality impacts will occur in these areas and potentially in areas with lower population densities as well. The Phase II rule would allow the lower population density areas to be designated on a case by case basis.

A. Storm Water Impacts Due to Urban Development

EPA's 1995 Storm Water Phase II Report to Congress (EPA, 1995) and the Coastal Zone Management Measures Guidance (EPA, 1992) describe the impacts from urbanization. Urbanization impacts water quality principally through changes in hydrology and increases in pollutant loadings. Increases in population density and imperviousness due to urbanization can result in significant changes to stream hydrology including:

- increased peak discharges compared to predevelopment levels;
- increased volume of urban runoff produced by each storm in comparison to predevelopment conditions;
- decreased time needed for runoff to reach the stream, particularly if extensive drainage improvements are made;
- increased frequency and severity of flooding;
- reduced streamflow during prolonged periods of dry weather due to reduced level of infiltration in the watershed;
- greater runoff velocity during storms due to the combined effects of higher peak discharges, rapid time of concentration, and the smoother hydraulic surfaces that occur as a result of development.

An increase in imperviousness can also significantly decrease the amount of water infiltration, reducing groundwater recharge.

The types of pollutants found in urban runoff include sediment, nutrients, oxygen-demanding substances, pathogens, road salts, hydrocarbons, heavy metals, and toxics. In addition, thermal impacts from increased temperature of urban runoff and loss of riparian habitat can severely impair aquatic organisms that have finely tuned temperature limits.

1. Urbanization and Imperviousness

Urbanization alters the natural infiltration capability of the land and generates a host of pollutants that are associated with the activities of dense populations, thus causing an increase in storm water runoff volumes and pollutant loadings in storm water discharged to receiving waterbodies (U.S. EPA, 1992). Urban development increases the amount of impervious surface in a watershed as farmland, forests, and meadowlands with natural infiltration characteristics are converted into buildings with rooftops, driveways, sidewalks, roads, and parking lots with virtually no ability to absorb storm water. Storm water and snow-melt runoff wash over these impervious areas, picking up pollutants along the way while gaining speed and volume because of their inability to disperse and filter into the ground. What results are storm water flows that are higher in volume, pollutants, and temperature than the flows in less impervious areas, which have more natural vegetation and soil to filter the runoff (U.S. EPA, 1997. Urbanization and Streams: Studies of Hydrologic Impacts. EPA 841-R-97-009. Office of Water. Washington, DC).

Studies reveal that the level of imperviousness in an area strongly correlates with the quality of the nearby receiving waters. For example, a study in the Puget Sound lowland ecoregion found that when the level of basin development exceeded 5 percent of the total impervious area, the biological integrity and physical habitat conditions that are necessary to support natural biological diversity and complexity declined precipitously (May, C.W., E.B. Welch, R.R. Horner, J.R. Karr, and B.W. May. 1997. Quality Indices for Urbanization Effects in Puget Sound Lowland Streams, Technical Report No. 154. University of Washington Water Resources Series). Research conducted in numerous geographical areas, concentrating on various variables and employing widely different methods, has revealed a similar conclusion: stream degradation occurs at relatively low levels of imperviousness, such as 10 to 20 percent (even as low as 5 to 10 percent according to the findings of the Washington study referenced above) (Schueler, T.R. 1994. "The Importance of Imperviousness." Watershed Protection Techniques 1(3); May, C., R.R. Horner, J.R. Karr, B.W. Mar, and E.B. Welch. 1997. "Effects Of Urbanization On Small Streams In The Puget Sound Lowland Ecoregion." Watershed Protection Techniques 2(4); Yoder, C.O., R.J. Miltner, and D. White. 1999. "Assessing the Status of Aquatic Life Designated Uses in Urban and Suburban Watersheds." In Proceedings: National Conference on Retrofits Opportunities in Urban Environments. EPA 625-R-99-002, Washington, DC; Yoder, C.O and R.J. Miltner. 1999. "Assessing Biological Quality and Limitations to Biological Potential in Urban and Suburban Watersheds in Ohio." In Comprehensive Stormwater & Aquatic Ecosystem Management Conference Papers, Auckland, New Zealand). Furthermore, research has indicated that few, if any, urban streams can support diverse benthic communities at imperviousness levels of 25 percent or more. An area of medium density single family homes can be anywhere from 25 percent to nearly 60 percent impervious, depending on the design of the streets and parking (Schueler, 1994).

In addition to impervious areas, urban development creates new pollution sources as population density increases and brings with it proportionately higher levels of car emissions, car maintenance wastes, pet waste, litter, pesticides, and household hazardous wastes, which may be washed into receiving waters by storm water or dumped directly into storm drains designed to discharge to receiving waters. More people in less space results in a greater concentration of pollutants that can be mobilized by, or disposed into, storm water discharges from municipal separate storm sewer systems. A modeling system developed for the Chesapeake Bay indicated that contamination of the Bay and its tributaries from runoff is comparable to, if not greater than, contamination from industrial and sewage sources (Cohn-Lee, R. and D. Cameron. 1992. "Urban Stormwater Runoff Contamination of the Chesapeake Bay: Sources and Mitigation." The Environmental Professional, Vol. 14).

2. Large-Scale Studies and Assessments

In support of Phase II's regulatory designation of MS4s in urbanized areas, the Agency relied on broad-based assessments of urban storm water runoff and related water quality impacts, as well as more site-specific studies. The first national assessment of urban runoff characteristics was completed for the Nationwide Urban Runoff Program (NURP) study (U.S. EPA. 1983.

Results of the Nationwide Urban Runoff Program, Volume 1 - Final Report. Office of Water. Washington, D.C.). The NURP study is the largest nationwide evaluation of storm water discharges, which includes adverse impacts and sources, undertaken to date.

EPA conducted the NURP study to facilitate understanding of the nature of urban runoff from residential, commercial, and industrial areas. One objective of the study was to characterize the water quality of discharges from separate storm sewer systems that drain residential, commercial, and light industrial (industrial parks) sites. Storm water samples from 81 residential and commercial properties in 22 urban/suburban areas nationwide were collected and analyzed during the 5-year period between 1978 and 1983. The majority of samples collected in the study were analyzed for eight conventional pollutants and three heavy metals.

Data collected under the NURP study indicated that discharges from separate storm sewer systems draining runoff from residential, commercial, and light industrial areas carried more than 10 times the annual loadings of total suspended solids (TSS) than discharges from municipal sewage treatment plants that provide secondary treatment. The NURP study also indicated that runoff from residential and commercial areas carried somewhat higher annual loadings of chemical oxygen demand (COD), total lead, and total copper than effluent from secondary treatment plants. Study findings showed that fecal coliform counts in urban runoff typically range from tens to hundreds of thousands per hundred milliliters of runoff during warm weather conditions, with the median for all sites being around 21,000/100 ml. This is generally consistent with studies that found that fecal coliform mean values range from 1,600 coliform fecal units (CFU)/100 ml to 250,000 cfu/100 ml (Makepeace, D.K., D.W. Smith, and S.J. Stanley. 1995. "Urban Storm Water Quality: Summary of Contaminant Data." Critical Reviews in Environmental Science and Technology 25(2):93-139). Makepeace, et al., summarized ranges of contaminants from storm water, including physical contaminants such as total solids (76 - 36,200 mg/L) and copper (up to 1.41 mg/L); organic chemicals; organic compounds, such as oil and grease (up to 110 mg/L); and microorganisms.

Monitoring data summarized in the NURP study provided important information about urban runoff from residential, commercial, and light industrial areas. The study concluded that the quality of urban runoff can be affected adversely by several sources of pollution that were not directly evaluated in the study, including illicit discharges, construction site runoff, and illegal dumping. Data from the NURP study were analyzed further in the U.S. Geological Survey (USGS) Urban Storm Water Data Base for 22 Metropolitan Areas Throughout the United States study (Driver, N.E., M.H. Mustard, R.B. Rhinesmith, and R.F. Middleburg. 1985. U.S. Geological Survey Urban Storm Water Data Base for 22 Metropolitan Areas Throughout the United States. Report No. 85-337 USGS. Lakewood, CO). The USGS report summarized additional monitoring data compiled during the mid-1980s, covering 717 storm events at 99 sites in 22 metropolitan areas and documented problems associated with metals and sediment concentrations in urban storm water runoff. More recent reports have confirmed the pollutant concentration data collected in the NURP study (Marsalek, J. 1990. "Evaluation of Pollutant Loads from Urban Nonpoint Sources." Wat. Sci. Tech. 22(10/11):23-30; Makepeace, et al., 1995).[4]

America's Clean Water - the States' Nonpoint Source Assessment (Association of State and Interstate Water Pollution Control Administrators (ASIWPCA). 1985. America's Clean Water - The States' Nonpoint Source Assessment. Prepared in cooperation with the U.S. EPA, Office of Water, Washington, DC), a comprehensive study of diffuse pollution sources conducted under the sponsorship of the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) and EPA revealed that 38 States reported urban runoff as a major cause of designated beneficial use impairment and 21 States reported storm water runoff from construction sites as a major cause of beneficial use impairment. In addition, the 1996 305(b) Report (U.S. EPA. 1998. The National Water Quality Inventory, 1996 Report to Congress. EPA 841-R-97-008. Office of Water. Washington, DC), provides a national assessment of water quality based on biennial reports submitted by the States as required under CWA section 305(b) of the CWA. In the CWA 305(b) reports, States, Tribes, and Territories assess their individual water quality control programs by examining the attainment or nonattainment of the designated uses assigned to their rivers, lakes, estuaries, wetlands, and ocean shores. A designated use is the legally applicable use specified in a water quality standard for a watershed, waterbody, or segment of a waterbody. The designated use is the desirable use that the water quality should support. Examples of designated uses include drinking water supply, primary contact recreation (swimming), and aquatic life support. Each CWA 305(b) report indicates the assessed fraction of a State's waters that are fully supporting, partially supporting, or not supporting designated beneficial uses.

In their reports, States, Tribes, and Territories first identified and then assigned the sources of water quality impairment for each impaired waterbody using the following categories: industrial, municipal sewage, combined sewer overflows, urban runoff/storm sewers, agricultural, silvicultural, construction, resource extraction, land disposal, hydrologic modification, and habitat modification. The 1996 Inventory, based on a compilation of 60 individual 305(b) reports submitted by States, Tribes, and Territories, assessed the following percentages of total waters nationwide: 19 percent of river and stream miles; 40 percent of lake, pond, and reservoir acres; 72 percent of estuary square miles; and 6 percent of ocean shoreline waters. The 1996 Inventory indicated that approximately 40 percent of the Nation's assessed rivers, lakes, and estuaries are impaired. Waterbodies deemed as "impaired" are either partially supporting designated uses or not supporting designated uses.

The 1996 Inventory also found urban runoff/discharges from storm sewers to be a major source of water quality impairment nationwide. Urban runoff/storm sewers were found to be a source of pollution in 13 percent of impaired rivers; 21 percent of impaired lakes, ponds, and

[4] EPA notes that it is not relying solely on the NURP study to describe current water quality impairment. Rather, EPA is citing NURP as a source of data on typical pollutant concentrations in urban runoff. Recent studies have not found significantly different pollutant concentrations in urban runoff compared to the original NURP data (see Makepeace, et al., 1995; Marsalek, 1990; and Pitt, et al., 1995).

reservoirs; and 45 percent of impaired estuaries (second only to industrial discharges). In addition, urban runoff was found to be the leading cause of ocean impairment for those ocean miles surveyed.

In addition, a recent USGS study of urban watersheds across the United States has revealed a link between urban development and contamination of local waterbodies. The study found the highest levels of organic contaminants, known as polycyclic aromatic hydrocarbons (PAHs) (products of combustion of wood, grass, and fossil fuels), in the reservoirs of urbanized watersheds (U.S. Geological Survey (USGS). 1998. Research Reveals Link Between Development and Contamination in Urban Watersheds. USGS news release. USGS National Water-Quality Assessment Program).

Urban storm water also can contribute significant amounts of toxicants to receiving waters. Pitt, et. al. (1993), found heavy metal concentrations in the majority of samples analyzed. Industrial or commercial areas were likely to be the most significant pollutant source areas (Pitt, R., R. Field, M. Lalor, M. Brown 1993. "Urban stormwater toxic pollutants: assessment, sources, and treatability" Water Environment Research, 67(3):260-75).

3. Local and Watershed-Based Studies

In addition to the large-scale nationwide studies and assessments, a number of local and watershed-based studies from across the country have documented the detrimental effects of urban storm water runoff on water quality. A study of urban streams in Milwaukee County, Wisconsin, found local streams to be highly degraded due primarily to urban runoff, while three studies in the Atlanta, Georgia, region were characterized as being “the first documentation in the Southeast of the strong negative relationship between urbanization and stream quality that has been observed in other ecoregions” (Masterson, J. and R. Bannerman. 1994. "Impacts of Storm Water Runoff on Urban Streams in Milwaukee County, Wisconsin." Paper presented at National Symposium on Water Quality: American Water Resources Association; Schueler, T.R. 1997. "Fish Dynamics in Urban Streams Near Atlanta, Georgia." Technical Note 94. Watershed Protection Techniques 2(4)). Several other studies, including those performed in Arizona (Maricopa County), California (San Jose’s Coyote Creek), Massachusetts (Green River), Virginia (Tuckahoe Creek), and Washington (Puget Sound lowland ecoregion), all had the same finding: runoff from urban areas greatly impair stream ecology and the health of aquatic life; the more heavily developed the area, the more detrimental the effects (Lopes, T. and K. Fossum. 1995. "Selected Chemical Characteristics and Acute Toxicity of Urban Stormwater, Streamflow, and Bed Material, Maricopa County, Arizona." Water Resources Investigations Report 95-4074. USGS; Pitt, R. 1995. “Effects of Urban Runoff on Aquatic Biota.” In Handbook of Ecotoxicology; Pratt, J. and R. Coler. 1979. "Ecological Effects of Urban Stormwater Runoff on Benthic Macroinvertebrates Inhabiting the Green River, Massachusetts." Completion Report Project No. A-094. Water Resources Research Center. University of Massachusetts at Amherst.; Schueler, T.R. 1997. "Historical Change in a Warmwater Fish Community in an Urbanizing Watershed." Technical Note 93. Watershed Protection Techniques 2(4); May, C., R. Horner, J.

Karr, B. Mar, and E. Welch. 1997. "Effects Of Urbanization On Small Streams In The Puget Sound Lowland Ecoregion." Watershed Protection Techniques 2(4)).

Pitt and others also described the receiving water effects on aquatic organisms associated with urban runoff (Pitt, R.E. 1995. "Biological Effects of Urban Runoff Discharges" In Stormwater Runoff and Receiving Systems: Impact, Monitoring, and Assessment, ed. E.E Herricks, Lewis Publishers; Crunkilton, R., J. Kleist, D. Bierman, J. Ramcheck, and W. DeVita. 1999. "Importance of Toxicity as a Factor Controlling the Distribution of Aquatic Organisms in an Urban Stream." In Comprehensive Stormwater & Aquatic Ecosystem Management Conference Papers. Auckland, New Zealand).

In Wisconsin, runoff samples were collected from streets, parking lots, roofs, driveways, and lawns. Source areas were broken up into residential, commercial, and industrial. Geometric mean concentration data for residential areas included total solids of about 500-800 mg/L from streets and 600 mg/L from lawns. Fecal coliform data from residential areas ranged from 34,000 to 92,000 cfu/100 mL for streets and driveways. Contaminant concentration data from commercial and industrial source areas were lower for total solids and fecal coliform, but higher for total zinc (Bannerman, R.T., D.W. Owens, R.B. Dods, and N.J. Hornewer. 1993. "Sources of Pollutants in Wisconsin Stormwater." Wat. Sci. Tech. 28(3-5):241-59).

Bannerman, et al. also found that streets contribute higher loads of pollutants to urban storm water than any other residential development source. Two small urban residential watersheds were evaluated to determine that lawns and streets are the largest sources of total and dissolved phosphorus in the basins (Waschbusch, R.J., W.R. Selbig, and R.T. Bannerman. 1999. "Sources of Phosphorus in Stormwater and Street Dirt from Two Urban Residential Basins In Madison, Wisconsin, 1994-95." Water Resources Investigations Report 99-4021. U.S. Geological Survey). A number of other studies have indicated that urban roadways often contain significant quantities of metal elements and solids (Sansalone, J.J. and S.G. Buchberger. 1997. "Partitioning and First Flush of Metals in Urban Roadway Storm Water." ASCE Journal of Environmental Engineering 123(2); Sansalone, J.J., J.M. Koran, J.A. Smithson, and S.G. Buchberger. 1998. "Physical Characteristics of Urban Roadway Solids Transported During Rain Events" ASCE Journal of Environmental Engineering 124(5); Klein, L.A., M. Lang, N. Nash, and S.L. Kirschner. 1974. "Sources of Metals in New York City Wastewater" J. Water Pollution Control Federation 46(12):2653-62; Barrett, M.E, R.D. Zuber, E.R. Collins, J.F. Malina, R.J. Charbeneau, and G.H Ward., 1993. "A Review and Evaluation of Literature Pertaining to the Quantity and Control of Pollution from Highway Runoff and Construction." Research Report 1943-1. Center for Transportation Research, University of Texas, Austin).

4. Beach Closings/Advisories

Urban wet weather flows have been recognized as the primary sources of estuarine pollution in coastal communities. Urban storm water runoff, sanitary sewer overflows, and combined sewer overflows have become the largest causes of beach closings in the United States in the past three years. Storm water discharges from urban areas not only pose a threat to the ecological environment, they also can substantially affect human health. A survey of coastal and Great Lakes communities found that more than 1,500 beach closings and advisories where attributable to storm water runoff in 1998 (Natural Resources Defense Council. 1998. "Testing the Waters Volume VIII-Has Your Vacation Beach Cleaned Up Its Act?" New York, NY). Other reports also document public health, shellfish bed, and habitat impacts from storm water runoff, including more than 823 beach closings/advisories issued in 1995 and more than 407 beach closing/advisories issued in 1996 due to urban runoff (Natural Resources Defense Council. 1996. Testing the Waters Volume VI: Who Knows What You're Getting Into. New York, NY; NRDC. 1997. Testing the Waters Volume VII: How Does Your Vacation Beach Rate. New York, NY; Morton, T. 1997. Draining to the Ocean: The Effects of Stormwater Pollution on Coastal Waters. American Oceans Campaign, Santa Monica, CA). The Epidemiological Study of Possible Adverse Health Effects of Swimming in Santa Monica Bay (Haile, R.W., et. al. 1996. "An Epidemiological Study of Possible Adverse Health Effects of Swimming in Santa Monica Bay." Final Report prepared for the Santa Monica Bay Restoration Project) concluded that there is a 57 percent higher rate of illness in swimmers who swim adjacent to storm drains than in swimmers who swim more than 400 yards away from storm drains. This and other studies document a relationship between gastrointestinal illness in swimmers and water quality, the latter of which can be heavily compromised by polluted storm water discharges.

B. Other Discharges to Municipal Storm Sewers

In addition to runoff from storm events, municipal separate storm sewer systems may receive and ultimately discharge other materials introduced into the system. Non-storm water discharges to storm sewers come from a variety of sources, including:

- illicit connections and cross connections from industrial, commercial, and sanitary sewage sources
- leaking sanitary sewage systems
- malfunctioning on-site disposal systems (septic systems)
- improper disposal of wastes such as used oil, wastewater and litter
- spills
- infiltration of ground water contaminated by a variety of sources, including leaking underground storage tanks
- wash waters, lawn irrigation, and other drainage sources.

Studies have shown that discharges from MS4s often include wastes and wastewater from non-storm water sources. Federal regulations (§ 122.26(b)(2)) define an illicit discharge as "...any discharge to an MS4 that is not composed entirely of storm water...," with some exceptions. These discharges are "illicit" because municipal storm sewer systems are not designed to accept, process, or discharge such wastes. Sources of illicit discharges include, but are not limited to,: sanitary wastewater; effluent from septic tanks; car wash, laundry, and other industrial wastewaters; improper disposal of auto and household toxics, such as used motor oil and pesticides; and spills from roadway and other accidents.

Illicit discharges enter the system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, and paint or used oil dumped directly into a drain). The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses and bacteria into receiving waterbodies. The NURP study, discussed earlier, found that pollutant levels from illicit discharges were high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health. The study noted particular problems with illicit discharges of sanitary wastes, which can be directly linked to high bacterial counts in receiving waters and can be dangerous to public health.

Because illicit discharges to MS4s can create severe widespread contamination and water quality problems, several municipalities and urban counties performed studies to identify and eliminate such discharges. In Michigan, the Ann Arbor and Ypsilanti water quality projects inspected 660 businesses, homes, and other buildings and identified 14 percent of the buildings as having improper storm sewer drain connections. The program assessment revealed that, on average, 60 percent of automobile-related businesses, including service stations, automobile dealerships, car washes, body shops, and light industrial facilities, had illicit connections to storm sewer drains. The program assessment also showed that a majority of the illicit discharges to the storm sewer system resulted from improper plumbing and connections, which had been approved by the municipality when installed (Washtenaw County Statutory Drainage Board. 1987. Huron River Pollution Abatement Program).

In addition, an inspection of urban storm water outfalls draining into Inner Grays, Washington, indicated that 32 percent of these outfalls had dry weather flows. Of these flows, 21 percent were determined to have pollutant levels higher than the pollutant levels expected in typical urban storm water runoff characterized in the NURP study (U.S. EPA. 1993. <u>Investigation of Inappropriate Pollutant Entries Into Storm Drainage Systems -- A User's Guide</u>. EPA 600/R-92/238. Office of Research and Development. Washington, DC). That same document reports a study in Toronto, Canada, that found that 59 percent of outfalls from the MS4 had dry-weather flows. Chemical tests revealed that 14 percent of these dry-weather flows were determined to be grossly polluted.

Inflows from aging sanitary sewer collection systems are one of the most serious illicit discharge-related problems. Sanitary sewer systems frequently develop leaks and cracks, resulting in discharges of pollutants to receiving waters through separate storm sewers. These pollutants include sanitary waste and materials from sewer main construction (e.g., asbestos cement, brick, cast iron, vitrified clay). Municipalities have long recognized the reverse problem of storm water infiltration into sanitary sewer collection systems; this type of infiltration often disrupts the operation of the municipal sewage treatment plant.

The improper disposal of materials is another illicit discharge-related problem that can result in contaminated discharges from separate storm sewer systems in two ways. First, materials may be disposed of directly in a catch basin or other storm water conveyance. Second, materials disposed of on the ground may either drain directly to a storm sewer or be washed into a storm sewer during a storm event. Improper disposal of materials to street catch basins and other storm sewer inlets often occurs when people mistakenly believe that disposal to such areas is an environmentally sound practice. Part of the confusion may occur because some areas are served by combined sewer systems, which are part of the sanitary sewer collection system, and people assume that materials discharged to a catch basin will reach a municipal sewage treatment plant. Materials that are commonly disposed of improperly include used motor oil; household toxic materials; radiator fluids; and litter, such as disposable cups, cans, and fast-food packages. EPA believes that there has been increasing success in addressing these problems through initiatives such as storm drain stenciling and recycling programs, including household hazardous waste special collection days.

Programs that reduce illicit discharges to separate storm sewers have improved water quality in several municipalities. For example, Michigan's Huron River Pollution Abatement Program found the elimination of illicit connections caused a measurable improvement in the water quality of the Washtenaw County storm sewers and the Huron River (Washtenaw County Statutory Drainage Board, 1987). In addition, an illicit detection and remediation program in Houston, Texas, has significantly improved the water quality of Buffalo Bayou. Houston estimated that illicit flows from 132 sources had a flow rate as high as 500 gal/min. Sources of the illicit discharges included broken and plugged sanitary sewer lines, illicit connections from sanitary lines to storm sewer lines, and floor drain connections (Glanton, T., M.T. Garrett, and B. Goloby. 1992. The Illicit Connection: Is It the Problem? Wat. Env. Tech. 4(9):63-8).

V. RATIONALE FOR USING A NPDES APPROACH

This section responds to the Appropriations Act's direction to provide a report containing:

"(4) information that supports the position of the Administrator that the Phase II stormwater program should be administered as part of the National Pollutant Discharge Elimination System under section 402 of the Federal Water Pollution Control Act (33 U.S.C. 1342)"

EPA interprets Clean Water Act section 402(p)(6) as authorizing the Agency to develop a storm water program for Phase II sources either as part of the existing NPDES permit program or as a stand alone non-NPDES program such as a self-implementing rule. Although EPA believes that it has the discretion to not require sources regulated under CWA section 402(p)(6) to be covered by NPDES permits, the Agency has determined, for the reasons discussed below, that it is most appropriate to use NPDES permits in implementing the program to address the sources designated for regulation in Phase II. EPA believes that the NPDES program best achieves the goals of the Phase II rule for the following reasons:

- Applying an NPDES permit approach to Phase II sources allows for consistent regulation between larger MS4s and construction sites regulated under Phase I and smaller sources regulated under Phase II.
- Use of NPDES permits to regulate Phase II municipalities will allow co-permitting of small regulated MS4s with larger MS4s regulated under the existing Phase I storm water program.
- The use of NPDES permits is a familiar regulatory implementation vehicle that is well understood by State regulators and potential permittees.
- NPDES permits provide the flexibility to allow the use of general permits on a watershed basis, while also allowing site-specific controls to be developed on a case-by-case basis.
- NPDES permits allow incorporation by reference of existing State, Tribal and local programs.
- NPDES permit applications and NOIs provide important information to regulatory authorities and the public.
- NPDES permit procedures include beneficial processes for citizen participation and enforcement.
- NPDES permits are federally enforceable under the CWA.

- NPDES permit coverage provides "permit as a shield" legal protection to the permittee.

- NPDES permit coverage provides an established and predictable regulatory regime to avoid duplicative regulation under the Resource Conservation and Recovery Act and the Comprehensive Emergency Response, Compensation, and Liability Act, due to exclusions from regulation for facilities subject to NPDES permits.

In developing an approach for the Phase II rule, individual members of both the FACA Committee and the Storm Water Phase II FACA Subcommittee encouraged EPA to seek opportunities to integrate, where possible, the proposed Phase II requirements with existing Phase I requirements, thus facilitating a unified and "seamless" storm water discharge control program. EPA believes that using the NPDES framework is the best means of integrating the regulation of Phase II sources with the existing storm water program. The NPDES framework is already applied to regulated storm water sources and can be extended to the sources to be regulated in Phase II. This approach facilitates program consistency, public access to information, and program oversight.

Requiring Phase II sources to be covered by NPDES permits would help address the consistency problems currently caused by municipal "donut holes." Donut holes are gaps in program coverage where a small unregulated MS4 is located next to or within a regulated larger MS4 that is subject to an NPDES permit under the existing NPDES storm water program. The existence of such "donut holes" creates an equity problem because similar discharges may remain unregulated even though they cause or contribute to the same adverse water quality impacts. Using NPDES permits to regulate the unregulated discharges in these areas is intended to facilitate the development of a seamless regulatory program for the mitigation and control of contaminated storm water discharges in an urbanized area. For example, the Phase II rule would allow a newly regulated MS4 to join as a "limited" co-permittee with a regulated MS4 by referencing a common storm water management program. Such cooperation should be further encouraged by the fact that the minimum control measures to be required in the Phase II rule for regulated small MS4s are very similar to a number of the permit requirements for medium and large MS4s under the existing storm water program. The minimum control measures applicable to discharges from smaller MS4s under Phase II are described with slightly more generality than under the Phase I permit application regulations for larger MS4s, thus enabling maximum flexibility for operators of smaller MS4s to optimize efforts to protect water quality.

The Phase II rule would also apply NPDES permit requirements to construction sites below 5 acres that are similar to the existing requirements for those 5 acres and above. In addition, the rule would allow compliance with qualifying local, Tribal, or State erosion and sediment controls to meet the erosion and sediment control requirements of the general permits for storm water discharges associated with construction, both above and below 5 acres.

Incorporating the CWA section 402(p)(6) program into the NPDES program capitalizes upon the existing governmental infrastructure for administration of the NPDES program.

Moreover, much of the regulated community already understands the NPDES program and the way it works.

Another goal of the NPDES program approach is to provide flexibility in order to facilitate and promote watershed planning and sensitivity to local conditions. The following are some of the more significant examples of the flexibility provided by the NPDES approach:

- NPDES general permits may be used to cover a category of regulated sources on a watershed basis or within political boundaries.

- The NPDES permitting process provides a mechanism for storm water controls tailored on a case-by-case basis, where necessary.

- The NPDES permit requirements of a permittee may be satisfied by another cooperating entity.

- NPDES permits may incorporate the requirements of existing State, Tribal and local programs, thereby accommodating State and Tribes seeking to coordinate the storm water program with other programs, including those that focus on watershed-based nonpoint source regulation.

NPDES permits generally require an application or a notice of intent to trigger coverage. This information exchange assures communication between the permitting authority and the regulated community. This communication is critical in ensuring that the regulated community is aware of the requirements and the permitting authority is aware of the potential for adverse impacts to water quality from identifiable locations. The NPDES permitting process includes the public as a valuable stakeholder and ensures that the public is included and information is made publicly available.

Another concern for EPA and several of the individual FACA Subcommittee members was that the program ensure citizen participation. The NPDES approach ensures opportunities for citizen participation throughout the permit issuance process, as well as in enforcement actions. NPDES permits are also federally enforceable under the CWA.

EPA believes that the use of NPDES permits makes a significant difference in the degree of compliance with regulations in the storm water program. The Agency does not anticipate that a self-implementing rule would ensure the degree of public participation needed for the development, enforcement and revision of the storm water management program. Citizen suit enforcement has assisted in focusing attention on adverse water quality impacts on a localized, public priority basis. Citizens frequently rely on the NPDES permitting process and the availability of NOIs to track program implementation and help them enforce regulatory requirements.

NPDES permits are also advantageous to the permittee. The NPDES permit informs the permittee about the scope of what it is expected do to be in compliance with the Clean Water Act. As explained more fully in EPA's April 1995 guidance, Policy Statement on Scope of Discharge Authorization and Shield Associated with NPDES Permits, compliance with an NPDES permit constitutes compliance with the Clean Water Act (see CWA section 402(k)). In addition, NPDES permittees are excluded from duplicative regulatory regimes under the Resource Conservation and Recovery Act and the Comprehensive Emergency Response, Compensation and Liability Act under RCRA's exclusions to the definition of "solid waste" and CERCLA's exemption for "federally permitted releases."

Throughout development of the rule, State representatives sought alternatives to the NPDES approach for State implementation of the storm water program for Phase II sources. Discussions focused on an approach whereby States could develop an alternative program that EPA would approve or disapprove based on identified criteria, including that the alternative non-NPDES program would result in "equivalent or better protection of water quality." The State representatives, however, were unable to propose or recommend criteria for gauging whether a program would provide equivalent protection. EPA also did not receive any suggestions for objective, workable criteria in response to the Agency's explicit request for specific criteria (by which EPA could objectively judge such programs) in the preamble to the proposed rule.

EPA also considered suggestions that the Agency authorize Phase II to be implemented as a self-implementing rule, which would be a regulation promulgated at the Federal, State, or Tribal level to control some or all of the storm water dischargers regulated under the Phase II rule. Under this approach, a rule would spell out the specific requirements for dischargers and impose the restrictions and conditions that would otherwise be contained in an NPDES permit. It would be effective until modified by EPA, a State, or a Tribe, unlike an NPDES permit which cannot exceed a duration of five years. Some stakeholders believed that this approach would reduce the burden on the regulated community (e.g., by not requiring permit applications), and considerably reduce the amount of additional paperwork, staff time and accounting required to administer the proposed permit requirements.

EPA is sensitive to the interest of some stakeholders in having a streamlined program that minimizes the burden associated with permit administration and maximizes opportunities for field time spent by regulatory authorities. Key provisions in the Phase II rule would address some of these concerns by promoting a streamlined approach to permit issuance by, for example, using general permits for coverage of Phase II permittees and allowing the incorporation of existing programs. By adopting the NPDES approach rather than a self-implementing rule, the Phase II rule also allows for consistent regulation between larger MS4s and construction sites regulated under the Phase I rule and smaller sources regulated under Phase II.

EPA believes that it is most appropriate to use NPDES permits to implement a program to address Phase II sources. In addition to the reasons discussed above, NPDES permits provide a better mechanism than would a self-implementing rule for tailoring storm water controls on a case-by-case basis, where necessary. A self-implementing rule would not ensure the degree of public participation that the NPDES permit process provides for the development, enforcement and revision of the storm water management program. A self-implementing rule also might not have provided the regulated community the "permit shield" under CWA section 402(k) that is provided by an NPDES permit. Based on all these considerations, EPA declined to adopt a self-implementing rule approach and adopted the NPDES approach for Phase II sources.