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Local Government Recommendations to Increase CSO/SSO Flexibility in Achieving Clean Water Goals

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Local Government Recommendations to Increase CSO/SSO Flexibility in Achieving Clean Water Goals

The United States Conference of Mayors (USCM), on behalf of its Members - the Principal Cities of the Nation, appreciate the opportunity afforded to it by the United States Environmental Protection Agency (EPA) and Department of Justice (DOJ) to further a dialogue addressing EPA's policies for control of combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) to achieve the goals of the Clean Water Act (CWA).

The Nation's Cities, we believe, define the frontier of environmental steward leadership by virtue of investing over \$100 billion annually in water and wastewater services and infrastructure to support public health, environmental protection and economic development, all of which are necessary to create and maintain sustainable communities of all sizes. In addition to major financial investments, cities have established an elaborate system of local laws and policies, efficient administrative procedures, and they diligently participate in a complex system of checks and balances with state and federal regulators to monitor, report and achieve compliance with federal and state water laws. These "activities" demonstrate effective leadership and commitment to achieving the goals of the CWA. And, as leaders responsible for balancing health, environment and economic goals we are compelled to express our growing consensus that the aggressive and inflexible way EPA and DOJ are pursuing sewer overflow controls is becoming no longer generally acceptable and needs to be reformed.

At the same time, mayors fully understand that EPA and DOJ have the legal authority to continue CSO and SSO enforcement. However, we question the wisdom of the current pattern of enforcement, and the serious way in which it undermines local government confidence in the federal bureaucracy and the ability of local government to garner public support for the goals of the CWA. In fact, federal agencies are sometimes counterproductive and negate progress made by local government when they force local governments to renegotiate consent decrees even after consensus has been reached with an authorized state; and by attempting to impose penalties on local government. These actions increase the public resources spent on lawyers and consultants and decrease the public resources available for environmental improvements. Historically, the federal government used to work as "partners" with local government in order to develop cost-effective solutions for those communities. We would like to see a return to that model. We have consulted with many cities to identify what changes to the current CSO and SSO enforcement patterns should, in our opinion, be addressed. Some of these points are summarily mentioned here, and are elaborated on in the rest of this document.

The root problem is that for many cities the cost of Long-term control plans to comply with the CWA is at the limit of affordability, but the calculation of affordability is insensitive to many other demands on local government resources. A growing information base shared by cities indicates that the costs are unnecessarily high because



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the EPA and DOJ are forcing prescriptive control plans. The CSO and SSO consent negotiation process is problematic because:

- It rarely encourages, or allows credit toward achievement for, incorporation of Green Infrastructure which provides additional environmental benefits over traditional gray infrastructure;
- It rarely allows for consideration of cost-effective solutions, opting instead for forcing cities to spend to the limit of affordability and adopt federally prescribed control design plans; and,
- It fails to allow for careful consideration of carbon footprint reduction and Long-term control plan trade-offs between gray and green infrastructure.

The general consensus among the mayors of the nation's principal cities is that EPA and DOJ are simply attempting to maximize the amount expended by cities on sewer overflow controls while rejecting local government requests to consider the cost, administrative burden and condensed timeframes that cities are required to deal with. Essentially, the federal agencies are impeding the efforts of local elected officials to balance health, environmental and economic goals. Further, mayors are focused on a "Triple Bottom Line" valuation of benefits (including life cycle, community aesthetics, and greenhouse gas reduction) when comparing gray versus green infrastructure. All of these concerns argue strongly in favor of EPA and DOJ to provide cities with as much flexibility as possible (schedule and level of control for sewer overflows) to allow cities to promote the use of Green Infrastructure for watershed management and urban revitalization. In seeking flexibility, local governments are not asking EPA and DOJ to relax regulations. Rather, local governments are asking EPA and DOJ to take into consideration the broad ranges of costs and benefits of a range of potential management solutions, look at water quality as one of a suite of environmental benefits, take the timing of implementation into consideration, and embrace adaptive management principles.

Mayors Request Consideration of the Following Sewer Overflow Control Policy Options

As a result of some preliminary discussions with EPA and DOJ officials, and a lengthy review with city officials of sewer overflow control policy implementation at the local level, it is clear that the current CSO Control Policy and the CWA contain ample flexibility that can be exercised by EPA and DOJ in enforcement actions. The Conference of Mayors is requesting that EPA and DOJ issue a Joint Memorandum to clarify the exercise of existing flexibility in the CWA, EPA regulations, and the Control Policy to the EPA Regions and DOJ attorneys and enforcement officials when engaging local entities concerning adoption of control strategies. In particular, we request both Agencies to issue clarification memoranda to address the following four areas of concern.



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Financial Capability of Cities

In place of the current enforcement model of requiring cities to impose costs of two percent or more of median household income on their citizens for sewer overflow controls, direct the EPA Regions and DOJ attorneys to broaden consideration of: diminishing environmental benefits, the availability of more cost-effective controls, other financial demands on the community, and other fiscal constraints on households in the community.

Benefits

Do not force communities to spend as much as the community can afford to control sewer overflows, where spending more will not produce water quality or public health and environmental benefits or where less expensive alternative measures will provide equivalent or greater benefits while saving ratepayer/taxpayer money. The agreed upon level of control should be based on an evaluation of incremental costs and benefits that will ultimately help achieve compliance with water quality standards in the most cost-efficient manner.

Green Infrastructure

EPA should, consistent with achieving compliance with water quality standards, allow the maximum credit possible toward compliance through a combination of Green Infrastructure and gray infrastructure solutions, recognizing that successful implementation of green infrastructure to reduce stormwater runoff and its contribution to sewer overflows will require careful consideration, significant capital resources, and long-term implementation schedules. EPA should provide cities with as much flexibility as possible (schedule and level of control for sewer overflows) to allow cities to promote the use of green infrastructure for watershed management and urban revitalization.

Carbon Footprint Considerations

EPA should support a community's desire to balance the trade-offs between energy intensive approaches and non-energy intensive approaches to managing sewer overflows, including their carbon footprint, their ability to adapt to climate change, and other non-water environmental impacts, in the community's assessment of sewer overflow control options and the community's determination of which option should be implemented.

This document represents the collaborative effort of the USCM staff, the staff of over a dozen cities actively engaged in developing/implementing sewer overflow control strategies, and expert consultants and attorneys who represent cities on these matters. It provides a summary of the collective experience of many people involved with developing Long-term control plans to achieve compliance with water quality standards at the local level.

The document is arranged with this introductory section that summarizes the policy options mayors would like to discuss with EPA and DOJ; followed by a separate section devoted to each of the four areas of concern. Each area of concern section is further arranged in the following order: a statement of request from the mayors; suggestions on



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how EPA and DOJ can implement the request within the current framework of the CSO Control Policy and the CWA; a discussion of the legal basis for the request including a description of how it conforms to existing law and policy; and, some examples of consent negotiations and what lessons they provide concerning flexibility.



FINANCIAL CAPABILITY CONSIDERATIONS RELATING TO SEWER OVERFLOW CONTROLS

I. Mayors' Request:

In place of the current enforcement model of requiring cities to impose costs of two percent or more of median household income on their citizens for sewer overflow controls, direct the EPA Regions and DOJ attorneys to broaden consideration of: diminishing environmental benefits, the availability of more cost-effective controls, other financial demands on the community, and other fiscal constraints on households in the community.

II. How EPA and DOJ Can Implement This Request:

Issue a Joint Memorandum to EPA Regions and DOJ attorneys directing them to:

- Work with communities to identify and implement cost-effective controls while conserving public dollars.
- Approach cities as partners who share a common goal, rather than as adversaries.
- Conserve public dollars by providing communities with longer time periods to achieve the selected level of control, without establishing arbitrary limits (such as 10, 15 and 20 years).
- Employ the existing flexibility in the Financial Capability guidance to be cognizant of the specific economic circumstances of each city, and by:
 - Taking into consideration that the affordability of controls is based on more than a percentage of the median household income of a service area, and includes factors such as the cost of housing and other utilities (shelter costs), employment trends, and the state of the overall economy,
 - Taking into consideration that the median household income of an area may not reflect the utility's customer base, and
 - Taking into consideration that affordability concerns go beyond residential customers and affect all customer classes.
- Stop requiring communities to spend public dollars "to the limits of affordability" where the benefits do not match the costs.¹

¹ The need to focus on incremental costs and benefits is discussed in a separate section, but is relevant to the financial capability discussion as well.



III. Legal and Policy Bases For This Request

A. These proposed policy clarifications are not precluded by the Clean Water Act or its implementing regulations.

Point sources must meet technology-based and water quality-based effluent limitations. For CSOs this means compliance with the nine minimum controls established in the CSO Policy as the minimum best available technology economically achievable and best conventional technology (BAT and BCT), based on best professional judgment. CSOs are not subject to secondary treatment requirements. Thus, the focus of CSO controls is on achieving water quality standards.

Water quality standards are established by states and are set at levels necessary to protect designated uses. In general, discharges must not cause or have a reasonable potential to cause or contribute to the violation of a water quality standard. If that goal cannot be achieved immediately, a permit may include a compliance schedule (available for water quality standards established or revised after 1977) or, for CSOs, a Long-term control plan. A compliance schedule or Long-term control plan also may be included in a consent decree.

If, based on a use attainability analysis, meeting water quality standards is not achievable, the unachievable standards may be modified. One basis for changing water quality standards is a showing that compliance with the standard would result in “substantial and widespread economic and social impact.”

The Clean Water Act and its implementing regulations do not establish specific time frames for compliance schedules and Long-term control plans. Thus, federal law does not preclude the use of longer time-frames to increase the affordability of sewer overflow controls. The law and regulations also do not limit how EPA evaluates affordability; nor do they require that dischargers spend to the limit of affordability to control CSOs.

As for SSOs, EPA has generally addressed these discharges in an enforcement context, through requirements in orders and decrees to reduce/eliminate SSOs and to develop and implement “capacity, management, operation and maintenance” (CMOM) plans. EPA is currently considering whether to adopt regulations that would provide specific requirements for monitoring, reporting, recordkeeping and planning as to SSOs. (*See 75 Fed. Reg. 30395 (June 1, 2010)*). SSO requirements that have been imposed to date have varied among different communities, with different time schedules for reducing/eliminating the SSOs and different planning and other requirements. Nothing in the CWA or the NPDES regulations specifies how EPA should consider financial capability issues in determining what requirements and schedules should apply to the control of SSOs.²

² In fact, EPA has significant flexibility with regard to SSO controls given that EPA’s regulations give the Agency the authority to develop limits and technology-based controls in the context of an individual permit. 40 C.F.R. 122.45.



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B. These proposals are supported by the CSO Policy.

In 1994, EPA adopted the Combined Sewer Overflow (CSO) Control Policy.³ In 2000, Congress codified that policy in section 402(q) (1) of the CWA as follows:

Each permit, order, or decree issued pursuant to this Act after the date of enactment of this subsection for a discharge from a municipal combined sewer and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator on April 11, 1994 (in this subsection referred to as the 'CSO Control Policy').

Thus, for the purpose of developing CSO permits, orders, and decrees, the CSO Policy has the force of law.

The overall goal of the CSO Policy is cost-effective control of CSOs that meets the objectives of the CWA.⁴ Under the policy, cost-effectiveness is intended to play a significant role in determining the level of control (recognizing water quality standards must be met⁵) and financial capability is intended to play a significant role in determining the time frame within which that level of control must be achieved. Two of the four key principles enunciated in the CSO Policy focus on cost-effectiveness and financial considerations:

The key principles are:

2. Providing sufficient flexibility to municipalities, especially disadvantaged communities, to consider the site-specific nature of CSOs and to determine the most cost-effective means of reducing pollutants and meeting CWA objectives and requirements;

3. Allowing a phased approach to implementation of CSO controls considering a community's financial capability;⁶

³ 59 Fed. Reg. 18688 (Apr. 19, 1994).

⁴ 59 Fed. Reg. at 18689.

⁵ If meeting water quality standards would cause substantial and widespread economic and social impact, the CSO Policy recognizes the availability of a change in standards, following a use attainability analysis. 59 Fed. Reg. at 18694.

⁶ 59 Fed. Reg. at 18689.



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To help identify the appropriate length of time for implementation of CSO controls, the CSO Policy allows implementation to be phased “based on the relative importance of adverse impacts upon water quality standards and designated uses, priority projects identified in the long-term plan [such as projects to control overflows to sensitive areas], and on a permittee’s financial capability.”⁷ To determine financial capability, the policy lists (1) median household income (MHI), (2) total control costs per household as a percent of MHI, (3) property tax as a percent of property values, (4) property tax collection rate, (5) unemployment, and (6) bond rating, as examples of factors to be considered.⁸ Other financial considerations include grant and loan availability, previous and current user fees and rate structures, and other funding mechanisms and financing sources.⁹ The CSO Policy is not prescriptive and does not mandate how these factors are to be considered and weighed.

The CSO Policy requires cost-effective controls and does not establish arbitrary limits on time frames to achieve the controls or arbitrary expectations regarding the percentage of median household income that should be spent on controls.

While EPA has not issued a policy for SSOs, the concepts in the CSO Policy regarding cost-effective controls and flexible time frames should apply equally in the SSO context.

C. These proposals are consistent with EPA guidance documents.

As noted above, the CSO Policy identifies a number of factors that may be considered when evaluating a permittee’s financial capability to implement a CSO control plan over a specific period of time. In the Policy, these factors are examples of factors that may be considered. In a 1997 guidance titled: “Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development,” EPA 832-B-97-004 (hereinafter Financial Capability Guidance), EPA sets forth methodologies for evaluating these factors.¹⁰ The guidance is not a tool for selecting a particular CSO control. It is intended to be a planning tool for determining the length of time over which the selected CSO controls may be implemented. Finally, the guidance is intended to be implemented in a flexible way:

It must be emphasized that the financial indicators found in this guidance might not present the most complete picture of a permittee’s financial capability to fund the CSO controls. However, the financial indicators do provide a common basis

⁷ 59 Fed. Reg. at 18694.

⁸ *Id.*

⁹ *Id.*

¹⁰ The CSO Financial Capability Guidance is based on the 1995 “Interim Economic Guidance for Water Quality Standards,” EPA-823-B-95-002 (1995). *See* Financial Capability Guidance, at 9 (“The process to identify ‘substantial’ impacts is similar to the process used in this guidance to analyze financial capability and its implications for scheduling CSO controls.”).



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for financial burden discussions between the permittee and EPA and state NPDES authorities.

Since flexibility is an important aspect of the CSO Policy, permittees are encouraged to submit any additional documentation that would create a more accurate and complete picture of their financial capability.¹¹

As set forth in the CSO Policy, the implementation schedule for Long-term controls is based on a consideration of sensitive areas, use impairment, grant and loan availability, and sewer rates, as well as financial capability. The Financial Capability Guidance contemplates that the schedule “would be negotiated between the permittee, EPA, and state NPDES authorities.”¹²

Although schedules are to be negotiated, the guidance establishes general “scheduling boundaries.” If the cost of CSO controls is considered a low burden, the guidance states that the implementation schedule should be based on the normal engineering and construction schedule. If the burden is considered medium, an implementation schedule up to 10 years is considered appropriate. Finally, “[i]n unusually “High Burden” situations, an implementation schedule up to 20 years may be negotiated with state NPDES and EPA authorities.”¹³ The guidance expressly states that these boundaries are not binding:

The general implementation schedule time boundaries provide a basis for developing consistent and reasonably uniform implementation schedules across the nation in situations where permittee’s CSO controls impose similar financial burdens. The time boundaries are not intended to replace the negotiations and deliberations necessary to balance all of the environmental and financial considerations that influence the site specific nature of the controls and implementation schedules.¹⁴

Thus, the Financial Capability Guidance should be used merely as a starting point when discussing implementation schedules. Nothing in the guidance precludes EPA from taking a broader perspective when reviewing a community’s financial capability. Specifically, when reviewing the affordability of a particular implementation schedule, nothing in the guidance precludes EPA from considering all household expenditures for shelter; the cumulative impacts of multiple Clean Water Act requirements (CSO, SSO, stormwater, nutrients, etc.); operation and maintenance costs; costs for annual renewal and replacement of capital assets; system upgrades to ensure continued compliance with regulatory requirements; limitations on the ability of permittees to obtain financing; other non-water related facility capital, operations and maintenance needs in the community, and impacts on sub-populations within a community.

¹¹ Financial Capability Guidance, at 7.

¹² Financial Capability Guidance, at 43.

¹³ *Id.* at 46.

¹⁴ *Id.*; see also *id.*, at p. 51 for a similar statement.



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For public sector permittees, EPA's 1995 Interim Economic Guidance for Water Quality Standards Workbook (EPA-823-B95-002) (hereinafter WQS Economic Guidance), is very similar to the CSO Financial Capability Guidance discussed above, even though the purpose of this guidance is to determine when controls more stringent than technology-based control "would result in substantial and widespread economic and social impact" as that term is used in 40 CFR 131.10(g). This guidance also does not prevent EPA from examining broad economic impacts. In fact, the guidance suggests that EPA may look at factors such as impacts on low income households, the presence of a failing local industry, and other projects a community would have to forego to meet water quality standards. These factors provide a more comprehensive picture of the financial capability of a community, and are not limited to the "silo" view of the CSO/SSO needs.

Under guidelines issued by the EPA Office of Enforcement and Compliance Assistance, EPA also uses the CSO Financial Capability Guidance to develop SSO compliance schedules.¹⁵ EPA's draft December 2005 policy on peak wet weather flows from SSOs also recommends use of the CSO Financial Capability Guidance.

EPA's financial guidance does not prevent EPA from looking at any factor that impacts the affordability of a sewer overflow control measure. Moreover, EPA's financial guidance is not intended to be used to select the level of control.¹⁶

IV. Examples

Emerging information from numerous enforcement actions demonstrate that EPA and DOJ employees are misreading the Financial Capability Guidance, and frequently applying an arbitrary median household income (MHI) percentage as the sole criterion for selecting sewer overflow controls. As local elected officials it is our responsibility to point out that MHI is only one of many factors that should be considered in achieving the CSO Policy's goal of "cost-effective CSO controls that ultimately meet appropriate health and environmental objectives and requirements."¹⁷ These EPA/DOJ actions have focused too narrowly on determining how high utility bills can go to pay for wastewater services and to service the debt incurred to install control measures, rather than seeking the most cost-effective solution to an environmental problem. For example:

- EPA has been unwilling to recognize that a focus on property taxes and debt backed by property taxes under the Financial Capability Guidance may not be appropriate in communities that use user fees to fund capital projects.

¹⁵ Guidelines for Federal Enforcement in CSO/SSO cases.

¹⁶ However, a similar economic analysis is used to justify a change in water quality standards in the context of a use attainability analysis.

¹⁷ 59 Fed. Reg. at 18689.



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- By rigidly following the Financial Capability Guidance focus on a snapshot MHI, EPA has been unwilling to consider the disproportionate burdens placed on low income households by higher sewer and water costs or the trends in income levels in a community, which can dramatically affect the ability of a community to pay for future capital projects and services.
- EPA has not considered the impact of debt on a community's ability to continue providing basic wastewater services. For example, one city's wastewater treatment system is currently \$3.2 billion in debt and spends 43% of its annual budget on debt service. Another community will have to reduce operation and maintenance expenditures to meet consent decree commitments.
- By following the bond financing assumptions in the Financial Capability Guidance, EPA is employing outdated methods for evaluating financing costs.
- EPA erroneously assumes that utilities with a significant number of industrial customers can simply pass on all Long-term control plan costs based on flow, particularly when industrial flows are decreasing due to the economic downturn.
- In most cases, EPA treats 20 years as the maximum length of time that may be allowed for implementation of a Long-term control plan, notwithstanding the financial impacts.
- EPA frequently fails to recognize the relationship between financial capability and diminishing environmental returns.

EPA and DOJ are not always inflexible. For example:

- In 1996, EPA Region 1 approved a bypass application submitted by the City of Bangor, Maine, with the statement that: "Economic infeasibility was demonstrated by showing that the cost and resulting economic burden place on the community would not result in appreciable improvement in effluent quality from the facility."
- EPA recently agreed to give Kansas City 25 years to implement their Long-term control plan.

Adoption of clear, consistent EPA/DOJ directives, based on the above recommendations, will promote use of more constructive approaches, and create an environment of partnership between all levels of government to advance the goals of the Clean Water Act.



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FOCUS ON ENVIRONMENTAL BENEFITS WHEN SELECTING AND IMPLEMENTING SEWER OVERFLOW CONTROLS

I. Mayors' Request:

Do not force communities to spend as much as the community can afford to control sewer overflows, where spending more will not produce water quality or public health and environmental benefits or where less expensive alternative measures will provide equivalent or greater benefits while saving ratepayer/taxpayer money. The agreed upon level of control should be based on an evaluation of incremental costs and benefits, that will achieve compliance with water quality standards in the most cost-efficient manner.

II. How EPA and DOJ Can Implement This Request:

Issue a Joint Memorandum to EPA Regions and DOJ attorneys directing them to:

- Maximize existing flexibility and allow communities to control sewer overflows based on either the presumptive approach in the CSO policy or on an approach that demonstrates that water quality standards will be met (including revised standards if justified by a use attainability analysis).
- Work with communities to identify sensitive areas that should receive greater or more rapid control measures. For example, if a municipal ordinance forbids swimming, an area should not be considered a primary contact recreation area.
- Encourage performance criteria based on actual improvements in water quality and protection of public health or the environment. Performance criteria should not be based on reducing overflows to an arbitrary number of overflows if significant water quality or public health and environmental improvements will not ensue.
- Deem overflow performance criteria that have been established in a TMDL allocation to be sufficient, to meet water quality standards.
- Encourage communities to make decisions about the appropriate level of control based on an incremental cost/benefit analysis ("knee-of-the-curve"¹⁸). The base of the curve (beginning point) should be set at the beginning of the overflow control program, in cases where the city has already made investments in overflow controls.
- Recognize that EPA's current focus on CSO elimination hinders consideration of newer and lower cost technologies to remediate the relative contribution of

¹⁸ Knee-of-the-curve is defined in the CSO Control Policy as "an analysis to determine where the increment of pollution reduction achieved in the receiving water diminishes compared to the increased costs." (59 Fed. Reg. 18693).



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CSOs to water quality impairment. EPA policy should incentivize municipalities to develop newer and lower cost technologies in developing Long-term control plans.

- Share information about EPA-accepted “best practices” among regional offices and with local communities.
- Create web-based “best practice” regional and national lists of options based on evaluations of cost-effectiveness. This website should include positive examples and data associated with the use of green infrastructure to reduce sewer overflows, as discussed in the green infrastructure section.
- Hold the community accountable for achieving performance criteria without micromanaging how that achievement is accomplished.
- Allow communities to build flexibility into their Long-term control plans to accommodate new or more effective approaches such as achieving performance standards by substituting lower cost technology in the future.
- Allow communities to use the watershed approach to phase implementation of sewer overflow controls and/or to implement a mix of controls that provides equivalent or better water quality or human health protection. This approach may have significant influence in providing flexibility regarding compliance schedules.
- Recognize that significant early reductions in pollutant loadings can justify flexibility in other implementation areas, such as a longer implementation time period.

III. Legal and Policy Bases For This Request

A. These proposals are not precluded by the Clean Water Act, EPA regulations, or EPA guidance.

The goal of the Clean Water Act is to achieve water quality standards. Even technology-based standards that are promulgated under the Act establish a level of control and do not mandate a specific technology or implementation strategy.

Similarly, the purpose of CSO Control Policy¹⁹ (which has been codified²⁰) is to develop and implement cost-effective controls to meet water quality standards. For example, one of the four key principles enunciated in the CSO Control Policy focuses on cost-effectiveness:

¹⁹ 59 Fed. Reg. 18688 (Apr. 19, 1994).

²⁰ Clean Water Act, section 402(q)(1).



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2. Providing sufficient flexibility to municipalities, especially disadvantaged communities, to consider the site-specific nature of CSOs and to determine the most cost-effective means of reducing pollutants and meeting CWA objectives and requirements;²¹

The CSO Control Policy provides a presumption that CSO controls will achieve water quality standards if they (1) reduce CSOs to no more than 4 to 6 overflows a year, or (2) capture for treatment at least 85% of the flow during a storm event on a system-wide annual average basis, or (3) eliminate or remove the mass of pollutants causing water quality impairments. Alternatively, a permittee can demonstrate that its proposed CSO controls will meet water quality standards, or, if there are other sources of pollutants, that the CSOs will not prevent receiving waters from meeting water quality standards. Finally, the CSO Control Policy acknowledges that following a use attainability analysis, water quality standards may be modified so that designated uses are appropriate and can actually be attained. In fact, the CSO Control Policy specifically directs states to conduct a water quality standards review at the same time as the development of Long-term control plan: “Coordinating the development of the Long-term CSO control plan and the review of the WQS and implementation procedures provides greater assurance that the Long-term control plan selected and the limits and requirements included in the NPDES permit will be sufficient to meet WQS and comply with sections 301(b)(1)(C) and 402(a)(2) of the CWA.”²²

To help identify the level of control that is appropriate, the CSO Control Policy establishes the expectation that a CSO control plan will consider a reasonable range of alternatives. For example, the plan could evaluate the controls necessary to achieve discharges ranging from zero to twelve discharges a year. Alternatively, the plan could evaluate the controls needed to achieve a level of capture of flows ranging from 100% to 75%. The policy then recommends that the permittee develop appropriate cost/performance curves to demonstrate the relationships among these control alternatives:

This should include an analysis to determine where the increment of pollution reduction achieved in the receiving water diminishes compared to the increased costs. This analysis, often known as the knee of the curve, should be among the considerations used to help guide the selection of controls.²³

²¹ 59 Fed. Reg. at 18689.

²² *Id.*

²³ 59 Fed. Reg. at 18693.



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EPA's guidance documents also support flexible implementation of sewer overflow controls. For example, EPA guidance allows phasing of sewer overflow Long-term control plans with cyclical evaluation of effectiveness, especially if other sources of impairment exist.²⁴ EPA also recognizes that technologies for controlling CSOs and SSOs are still evolving. In the 2004 Report to Congress, EPA stated: "Emerging technologies and innovative practices hold promise for even greater reductions in pollution."²⁵

Finally, EPA encourages communities to consider using a "watershed" planning approach to better address water resources issues. EPA should work with communities to better understand that sewer overflows are only one potential source of water quality impairment and risk to public health. Other sources, including agricultural livestock, aviary, septic and wildlife, may be the primary contributors in the watershed. According to EPA, "A watershed approach is the most effective framework to address today's water resource challenges. The Watershed Approach is one of the four pillars of the Sustainable Infrastructure Initiative."²⁶

B. EPA and DOJ often focus on the control measure and expediting control schedules rather than relying on the concept of Long-term control plans that are necessary for local government to finance and administer achievement of water quality standards.

The federal government and communities share the goal of improving water quality. Unfortunately, in the context of many negotiations relating to sewer overflow controls, EPA and DOJ sometimes lose sight of that goal and focus on mandating specific control measures. This rigidity may be a result of misreading the CSO Policy and EPA guidance documents as iron-clad templates, ignoring the language of flexibility that is included in these documents.

For example, for the purpose of counting the number of overflows under the presumptive approach discussed above (reducing over flows to 4 to 6 a year is presumed to meet water quality standards) the Policy does not count overflows that receive primary clarification, solids disposal, and disinfection if needed to meet water quality standards. However, in implementing the Policy, EPA and DOJ have interpreted the Policy to mean that they should never agree to a Long-term control plan that would allow more than 4 overflows a year, even if the overflows are treated and the city's plan is supported by a cost-benefit analysis.²⁷ Their interpretation is at odds with the plain language of the Policy, as well as the Agency's commitment to applying flexibility.

²⁴ EPA. CSOs: Guidance for Long-term Control Plans. EPA 832-B-95-002. p. 1-19.

²⁵ EPA. Report to Congress: Impacts and Control of CSOs and SSOs. EPA 833-R-04-001., p. ES-10.

²⁶ <http://www.epa.gov/owow/watershed/approach.html>

²⁷ For example, EPA has refused to allow one community to develop a long-term control plan that would allow 12 treated overflows a year, instead preferring a plan to would allow 4 untreated overflows, notwithstanding an incremental cost-benefit analysis that supports the City's position. In another City, EPA has interpreted the CSO control policy to require a community to reduce CSOs to no more than 4 to 6



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Similarly, EPA and DOJ take a very inflexible view of the portions of the CSO Policy concerning sensitive areas.²⁸ The CSO Policy recommends elimination of overflows in sensitive areas where physically possible and economically achievable, except where those actions would provide less environmental protection.²⁹ EPA and DOJ have implemented this recommendation without any willingness to consider environmentally protective alternatives, including meeting beach water quality standards. EPA also has taken an overly broad view of what should be considered a “sensitive” area, including areas where contact recreational activities are illegal or where the community has collected data to show that contact recreation is unlikely to occur.

EPA and DOJ also appear to elevate a goal of completing sewer overflow control measures in 20 years over the goal of improving water quality, even though the goal of completion in 20 years does not appear in the statute, EPA’s regulations, or even in the CSO Policy itself. For example, one community offered to completely eliminate sewer overflows in 25 years. EPA insisted on a plan that could be completed in 20 years, even though that meant some overflows would continue, untreated.

EPA’s and DOJ’s desire to write prescriptive consent decrees also has delayed settlements and prevented the application of flexibility found in EPA guidance documents. Cities are reluctant to agree to a highly prescriptive set of control measures in a consent decree, particularly when decrees are written before even design level plans are developed. Standard engineering practice recognizes technology improvements may provide new options for achieving water quality goals. Nevertheless, EPA and DOJ have stalled negotiations for years by insisting that cities agree to include prescriptive language in consent decrees, rather than simply establishing an appropriate level of control and allowing the community to decide how best to meet it.³⁰

Past experience has taught us that we do not have perfect foresight about the best way to address sewer overflows. There are many causes of water quality impairment other than sewer overflows including agricultural run-off, wildlife, and failing septic systems. Given such contributors, we do not have perfect foresight about the best way to address sewer overflows contribution to such impairment. EPA’s current narrow focus on CSO elimination hinders consideration of newer and lower cost technologies to remediate the relative contribution to water quality impairment from sewer overflows. EPA policy

a year, **and** capture at least 85% of the flow, **and** eliminate the mass of pollutants causing water quality impairments – even though the Policy clearly indicates these are three separate alternatives.

²⁸ Sensitive areas as defined under the CSO Control Policy are: Outstanding National Resource Waters, National Marina Sanctuaries, waters with threatened or endangered species and their habitat, waters with primary contact recreation, public drinking water intakes or their designated protection areas, and shellfish beds.

²⁹ 75 Fed. Reg. at 18692.

³⁰ For example, one community would like its decree to give it the flexibility to adjust the size of the control measures that are built to meet the actual needs on the ground. However, the United States has been unwilling to grant that flexibility.



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should incentivize municipalities to develop new and lower cost technologies in developing Long-term control plan remedies for CSOs contribution to water quality impairment.

The EPA and DOJ focus on prescriptive control measures also is a barrier to using the watershed approaches that EPA would like to encourage. For example, one community has included a watershed approach in its consent decree. This is where the maximum flexibility can have a significant and positive impact, and EPA should provide as much flexibility as possible. EPA will also need to focus on cost-effectiveness and actual environmental and public health benefits when allowing the community to select and implement sewer overflow and other controls.

C. EPA and DOJ should acknowledge that the cost-effective level of control may require an update to water quality standards and take that into account in establishing schedules.

Based on the “knee of the curve” analysis, discussed above, and based on financial capability, discussed in a separate section, the cost-effective level of control may require a change in water quality standards. Such a change is carried out through a use attainability analysis, which typically will require a consideration of the affordability of meeting existing water quality standards.

However, enforcement schedules set by EPA are often blind to administrative logistics, and typically do not take into account the actions that must be taken by states and EPA to update water quality standards to match agreed-upon levels of CSO control. Communities are hesitant to commit to large investments in CSO control without having the necessary commitments from the state and EPA that remaining overflows which exceed the required level of control will be specifically allowed in their NPDES permits.

IV. Examples

Some examples of problems caused by EPA and DOJ interpretations are discussed above. However, there also are positive examples that can be used as models.

For example, the City of Indianapolis recently concluded a negotiation that will allow the City to reduce the size of some of its control measures while continuing to meet its performance criteria. This modification also will allow the City to accelerate certain control measures. EPA and DOJ recognized that the consent decree performance criteria would be met, significant water quality benefits would be achieved sooner, and taxpayer dollars would be saved. Accordingly, the government agreed to a consent decree modification. EPA should emphasize that these types of modifications make sense and should be encouraged.

There also are past examples of how success can be achieved through flexibility. The state of Oregon has entered into stipulated final order (SFO) agreements with three CSO



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communities: Portland, Corvallis and Astoria. Each SFO initially set the frequency of allowed CSO discharges based on water quality standards. CSO's were to be eliminated for all storms smaller than a 5-year winter return frequency storm and a 10-year summer return frequency storm. The SFO did not dictate specific technologies or facilities. Instead, each SFO set an initial 20-year schedule with intermediate milestones identifying the number of outfalls that must be controlled by specific dates. Each SFO also contained a re-opener clause that could be triggered when substantially new information was made available. Oregon cities were able to demonstrate the appropriateness of a lower level of control based on a "knee-of-the-curve" cost versus water quality impacts and therefore received an amended SFO.

Without specifying the "how" CSOs were to be controlled, Oregon allowed these three cities to successfully implement the Long-term control plan most appropriate for their system and community. As a result:

- Corvallis completed their CSO program in 2001 and achieved 99% annual volume reduction³¹
- Portland will complete their CSO program in 2011 and will achieve a 96% annual volume reduction
- Astoria is scheduled to complete their program in 2022 and will likely achieve a 96% annual volume reduction.
- Due to very good cost-effective results and community support, Portland expanded the scope and coverage of its Downspout Disconnection Program twice beyond the original Long-term control plan. New green infrastructure approaches (low-impact development-type stormwater controls) were added over to time to bring the amount of natural approaches included in Portland's CSO reduction to about 35% of the total 6 billion gallons/year CSO target.
- During implementation of the Long-term control plan, new areas were determined to be connected to the combined system. Therefore, Portland increased the geographic service area and size of the deep CSO tunnels while eliminating from the Long-term control plan smaller facilities that would not have been adequate.

Another positive example is how EPA Region 1 addressed the relationship between cost and environmental benefits in 1996 when it approved a bypass application submitted by the City of Bangor, Maine. In that approval, EPA Region 1 stated that: "Economic infeasibility was demonstrated by showing that the cost and resulting economic burden place on the community would not result in appreciable improvement in effluent quality from the facility."

³¹ Corvallis' CSO Program received EPA's CSO Award of Excellence in 2000.



GREEN INFRASTRUCTURE CONSIDERATIONS RELATING TO URBAN STORMWATER MANAGEMENT

V. Mayors' Request:

EPA should, consistent with achieving compliance with water quality standards, allow the maximum credit possible toward compliance through a combination of Green Infrastructure and gray infrastructure solutions, recognizing that successful implementation of green infrastructure to reduce stormwater runoff and its contribution to sewer overflows will require careful consideration, significant capital resources, and long-term implementation schedules (likely more than 30 to 40 years). EPA should provide cities with as much flexibility as possible (schedule and level of control for sewer overflows) to allow cities to promote the use of green infrastructure for watershed management and urban revitalization.

VI. How EPA and DOJ Can Implement This Request:

Issue a Joint Memorandum to EPA Regions and DOJ attorneys directing them to provide communities with the flexibility to implement an appropriate balance of “green” and “gray” infrastructure solutions to manage urban stormwater as a watershed resource and reduce its impacts on sewer capacity problems, including overflows. Specifically, the Joint Memorandum should:

- Encourage, but not mandate Green Infrastructure solutions. The Administrator should state that encouraging green infrastructure that is feasible, cost-effective, designed with the benefit of local knowledge of the watershed, and supported by a community, is a national priority for NPDES permitting and enforcement, water quality standards, and watershed management programs for stormwater and sewer overflow management.
- Promote and provide assistance to communities via the EPA Regional Offices to incorporate Green Infrastructure solutions. The Administrator should direct the EPA Regional officials to assist communities in identifying appropriate Green Infrastructure approaches to manage wet weather flow through flexible approaches in combination with gray infrastructure.
- EPA should not expect cities to spend additional money on green infrastructure on top of a gray infrastructure solution. Instead, EPA should work with cities to determine the most efficient utilization of both approaches to leverage limited local resources for maximum environmental benefit.
- Establish consistent guidance and permitting between regulatory agencies to support use of green stormwater infrastructure, and revisit this guidance



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as more information becomes available. Offer green infrastructure to communities as an option but not a mandate to address urban wet weather management issues.

- Ensure full credit towards CSO compliance is granted to communities for the Green Infrastructure components of their Long-term control plans. The Administrator should clearly state that the ample additional ecosystem, social, and economic benefits of green infrastructure justifies providing reasonable credit in terms of implementation timing or required levels of control or both. Encourage the regions to approve Use Attainability Analyses or waivers that accommodate this goal, if necessary. Provide longer compliance schedules that recognize the risks and uncertainties of green infrastructure as compared to other engineered controls.
- Encourage adaptive Long-term control plans that allow for incremental steps to implement, evaluate, and make appropriate modifications to Long-term control plans³² for CSOs, SSOs, peak flows and stormwater management. The Administrator should direct the EPA Regional Offices to ensure that cities are provided the flexibility to evaluate uncertainty associated with implementation of large-scale green infrastructure controls (local feasibility, performance, and the mix of appropriate control types).
- Establish a website to provide positive examples and data associated with the use of green infrastructure to reduce sewer overflows.

VII. Legal and Policy Bases For This Request

A. EPA and cities should embrace a modern approach to cost-effective municipal stormwater management, including CSO and SSO control.

Many American cities, particularly in the Midwest, continue to face urban decline and crippling economic circumstances. A modern approach to municipal stormwater management, centered on green infrastructure, could provide a critical part of the infrastructure rehabilitation necessary for urban revitalization. This will be a slow process due to the current, inefficient regulatory structure for addressing the various impacts of stormwater³³, and the missteps of past advice from EPA to cities to separate

³² For the purposes of this paper, Long-term control plan means a capital improvement plan related to CSO control, SSO control, stormwater management, and/or peak flow treatment. This is because these programs are generally related to excess stormwater runoff, are capital intensive, and in most cases require long (multi-decade) implementation schedules.

³³ In response to EPA's request for information on the effectiveness of the MS4 program, the National Research Council recommended that EPA focus on strategies and practices to reduce impervious surfaces and overall stormwater flow by volume (National Research Council (2008). *Urban Stormwater Management in the United States*; Committee on Reducing Stormwater Discharge Contributions to Water Pollution, Water Science and Technology Board, Division on Earth and Life Studies; National Academies Press: Washington, D.C. http://www.nap.edu/catalog.php?record_id=12465



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combined systems at great cost, and now a growing recognition that that approach may have had adverse environmental consequences by reducing treatment of stormwater.

Currently, there is a lack of integration of permit requirements for municipal separate stormwater systems (MS4), CSO, SSO, and peak excess flow treatment; site variability and constraints (which affect both costs and effectiveness); land use planning and zoning requirements; and other issues that can impede large-scale green infrastructure implementation. For example, EPA is initiating a national stormwater rule making process to reduce stormwater discharges from development and redevelopment. Green infrastructure will likely be a key element in that process. States such as Maryland have also enacted stormwater regulations that require the use of low impact development to the maximum extent practicable. This may clash with control strategies related to sewer overflows.

One local government example of the need to integrate stormwater and sewer overflow programs is Johnson County, Kansas. Johnson County Wastewater identified that green infrastructure and stormwater best management practices can introduce more inflow / infiltration (I/I) into different types of sewer systems, particularly in low-lying areas³⁴. This may require the utility to develop new codes and ordinances that require sewers to be replaced with more I/I resistant material or develop another strategy. As the country works to solve the stormwater management problems these examples will become more prevalent. Cities need time and support from EPA to address these challenges, particularly due to the enormous costs associated with meeting all of the regulatory demands. EPA should revisit its current approaches to permitting of wet weather discharges to ensure that cities are provided with incentives to cost-effectively manage stormwater runoff and reduce CSOs and SSOs³⁵.

B. EPA should clearly identify the flexibility it will provide cities so that they can maximize the use of these technologies to cost-effectively address sewer overflow problems. EPA should accept flexible solutions when asked to accept a long-term sewer overflow control plan or a modification to a plan.

EPA and Congress³⁶ are promoting the use of green infrastructure as a sustainable stormwater management solution for both MS4 and CSO programs. In pilot studies and demonstration projects across the United States, green infrastructure has repeatedly shown considerable potential to reduce runoff volumes, peak flow rates, and pollutant

³⁴ Wade & Associates, Inc. (2006). Impact Study of I/I from Detention/Retention Basins. Prepared for Johnson County Wastewater.

³⁵ For more information, see "Management of Wet Weather Flows by Municipal Utilities". Water Environment Federation Position Statement. April 30, 2010.

³⁶ HR 4202, The Green Infrastructure for Clean Water Act of 2009, will establish five Centers of Excellence for conducting green infrastructure research, provide for incentive funding to help communities with technologies, and require EPA to examine green infrastructure approaches in Clean Water Act permitting and enforcement.



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loads, among many other ecosystem benefits, including adaptation to climate change. EPA recognizes the viability of green infrastructure for urban stormwater management, while simultaneously understanding that sole reliance on gray infrastructure may not provide a sustainable solution, or even the “best” solution to problems created by urban stormwater. As such, EPA Headquarters has been actively promoting the use of green infrastructure to manage urban stormwater. There is, however, a disconnect between the Headquarters attitude and the reluctance of Regional Offices to accept Green Infrastructure as a creditworthy element of a Long-term control plan.

In March 2007, the Assistant Administrator for the Office of Water sent a memorandum³⁷ to EPA’s Regional Administrators highlighting opportunities to increase the development and use of green infrastructure in water program implementation. In the memo, the Assistant Administrator recognized that:

“[g]reen infrastructure can be both a cost effective and an environmentally preferable approach to reduce stormwater and other excess flows entering combined or separate sewer systems in combination with, or in lieu of, centralized hard infrastructure solutions.”

In April 2007, EPA and four other signatory organizations signed a Green Infrastructure Statement of Intent:³⁸

“to promote the benefits of using green infrastructure in protecting drinking water supplies and public health, mitigating overflows from combined and separate sewers and reducing stormwater pollution, and to encourage the use of green infrastructure by cities and wastewater treatment plants as a prominent component of their Combined and Separate Sewer Overflow (CSO & SSO) and municipal stormwater (MS4) programs.”

To further clarify the role of green infrastructure in EPA permitting and enforcement, Directors of the Water Permits Division and the Water Enforcement Division delivered a memorandum³⁹ to Regional Water Division Directors, Regional Enforcement Coordinators, and State NPDES Directors in August 2007. This memorandum stated that:

“[i]n developing permit requirements, permitting authorities may structure their permits, as well as guidance or criteria for stormwater plans and CSO Long-term control plans, to encourage permittees to utilize green infrastructure approaches, where appropriate, in lieu of or in addition to more traditional controls. EPA will

³⁷ Using Green Infrastructure to Protect Water Quality in Stormwater, CSO, Nonpoint Source and Other Water Programs. Memorandum from Benjamin H. Grumbles Assistant Administrator. March 5, 2007

³⁸ Green Infrastructure Statement of Intent. U.S. Environmental Protection Agency (EPA), National Association of Clean Water Agencies (NACWA), Natural Resources Defense Council (NRDC), Low Impact Development Center (LID), Association of State and Interstate Water Pollution Control Administrators (ASIWPCA). April 19, 2007

³⁹ Use of Green Infrastructure in NPDES Permits and Enforcement. Memorandum from Linda Boornazian, Director, Water Permits Division and Mark Pollins, Director, Water Enforcement Division. August 16, 2007.



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also consider the feasibility of the use of green infrastructure as a water pollution control technology in its enforcement activities.”

Since these policy documents were developed in 2007, EPA has helped craft a Green Infrastructure Action Strategy⁴⁰ to establish a collaborative set of actions among the signatory organizations of the Statement of Intent to promote green infrastructure. In addition, EPA has actively promoted green infrastructure solutions in the Regions by holding a series of multi-day training workshops to facilitate adoption of green infrastructure in urban stormwater management planning. EPA also developed a municipal handbook to help local communities better understand how to implement green infrastructure⁴¹. Most recently, EPA's "Public Discussion Draft Strategy paper for "Achieving Clean Water " (August 2010) states that a key EPA action is to "[p]romote green infrastructure more broadly ... including green infrastructure in CSO Long-term control plans, considering the incorporation of non-traditional or green infrastructure alternatives in enforcement order/consent decrees, and other policies to increase adoption of green infrastructure practices" (p. 8).

EPA clearly recognizes that nothing in the Clean Water Act, EPA regulations, or EPA guidance prohibits the use of green infrastructure to meet the requirements of the Act. In fact, the Clean Water Act expressly encourages the use of innovative technologies,⁴² and Congress recently mandated funding for green infrastructure in the Clean Water and Drinking Water State Revolving Loan Fund Programs.⁴³ Green infrastructure solutions are compatible with the 1994 CSO Control Policy and can provide a cost-effective way to meet sewer overflow performance standards and other environmental benefits.

Notwithstanding the promotion of green infrastructure by both EPA and Congress, there has been little follow through and inconsistent application. For example, Objective IV.3 in the Action Strategy called for development of a guidebook for state and regional NPDES programs (permitting and enforcement) on facilitating the use of green infrastructure via regulatory programs. EPA would be the lead responsible agency for this high priority document, but it is not available and nearly two years overdue.

⁴⁰ Managing Wet Weather with Green Infrastructure Action Strategy. American Rivers, ASWIPCA, NRDC, NACWA, LID Center, U.S. EPA. January 2008

⁴¹ See EPA website at <http://cfpub.epa.gov/npdes/greeninfrastructure/munichandbook.cfm>, which includes documents on funding options, retrofit policies, green streets, rainwater harvesting policies, and incentive mechanisms.

⁴² See section 121(a)(2) (authorizing grants for innovative technologies to reduce pollutants in stormwater discharges); section 201(g)(1) (authorizing grants for innovative and alternative approaches to the control of nonpoint sources of pollution); section 201(g)(5)(requiring study and evaluation of innovative and alternative approaches before making grants for grey infrastructure); section 202 (authorizing a higher federal cost share for innovative technologies); section 205(i) (set-aside for innovative and alternative projects).

⁴³ P.L. 111-88, 123 Stat. 2904, 2935 (requiring a 20 percent set-aside for green infrastructure from the state revolving loan fund programs).



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Furthermore, EPA Regions typically emphasize that green infrastructure needs to be implemented in addition to gray infrastructure. The EPA/DOJ cautious approach essentially creates a presumption against green infrastructure that is hard for a municipality to overcome. This is a costly path at odds with earlier enthusiasm about green infrastructure and statements to the effect that green infrastructure could be used “in lieu of” gray infrastructure. Further, many consent decrees were signed prior to the recognition of the social, economic and other benefits of green infrastructure. Even in a recent consent decree that includes green infrastructure, EPA is requiring that the level of green infrastructure achieve equivalent or greater reductions in CSO discharges than gray infrastructure⁴⁴. This approach ignores the potential additional socio-economic benefits provided by investment of public dollars in green infrastructure as described below.

Communities also need to be assured that they can achieve relief in the agreed upon schedule for implementation of the Long-term control plan if green infrastructure fails to achieve the desired level of control. In general, the effectiveness of green infrastructure will be less certain than the use of gray infrastructure, since there is a greater reliance on nature and site-specific conditions and the country has less experience in measuring the effectiveness of green infrastructure, particularly for large-scale implementation. To embrace large-scale application of green infrastructure, communities need to be assured that they will be given more time to re-evaluate controls and secure funding for additional controls should the green infrastructure fail to deliver the desired reductions.

EPA is currently working with a handful of large cities (e.g., Louisville, Kansas City, New York, Philadelphia, Portland, and Washington, DC) to incorporate some level of green infrastructure into their Long-term control plans and MS4 permits. Consistency in acceptance across the country is needed as more and more cities embrace green infrastructure. Financial capability should be considered, and EPA should encourage the regions to provide communities with financial flexibility so that the use of green infrastructure can be promoted. EPA should work to ensure that it continues to promote approval of green infrastructure in a consistent fashion from one region to another and from city to city. This would make implementation easier for cities and strengthen the entire permitting process. While EPA should promote Green infrastructure, it should not, however, be mandated in permits or consent decrees but instead should be provided as an option for municipalities to consider. Mandating such approaches can significantly burden cities and negatively impact their ability to carry out much-needed urban redevelopment projects⁴⁵.

C. EPA needs to fully embrace adaptive watershed management and recognize the additional socio-economic and environmental benefits that green infrastructure provides beyond gray infrastructure.

⁴⁴ U.S. vs. The City of Kansas City, Missouri. 4:10-cv-00497-GAF, p. 18.

⁴⁵ The recent MS4 permit that EPA proposed for the District of Columbia is an example of an inappropriate green infrastructure mandate. More information is provided in Section IV.



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In addition to working with cities to incorporate green infrastructure into Long-term control plans and MS4 permits, EPA needs to begin embracing the concepts of adaptive watershed management in these programs and recognize the additional benefits that green infrastructure provides. Attainment of water quality criteria in impaired urban waters is an incremental process that takes time. An iterative approach with adaptive management is needed wherein the performance of existing infrastructure is evaluated and new infrastructure, including green infrastructure, is added over several permitting cycles. The monitoring and assessment components of adaptive management minimize risk and foster progress in situations where there is some uncertainty about the performance of controls. Adaptive management also provides a framework for cities to plan for climate change adaptation, and incorporate the benefits of green stormwater infrastructure in mitigating the effects of climate change.

Green infrastructure practices include engineered structures like green roofs, bioretention, vegetated swales, permeable pavement, rain barrels, and cisterns, as well as natural practices like planting trees and native landscaping. Green infrastructure practices represent decentralized alternatives to the traditional approach of capture, conveyance, and discharge downstream. While stormwater management is viewed as the primary function of green infrastructure to some, it also provides many additional socio-economic benefits in addition to cleaner water for streams and rivers. These socio-economic benefits can include improved public health and safety (for example improved pedestrian and bicycle safety, promotion of more non-vehicle trips in neighborhoods, reductions in respiratory diseases, and reductions in crimes associated with tree canopy). These benefits can also include reduced energy and chemical costs, cleaner air, cooler local temperatures, carbon capture, wildlife habitat, recreational opportunities, and community support for investment in municipal sewer systems.⁴⁶

While these benefits may not be directly applicable to Clean Water Act requirements, they provide benefits that are critical to other EPA programs and initiatives. Given this, EPA should provide some additional flexibility in terms of implementation timing or required levels of control for those cities that choose to adopt green infrastructure approaches. Further, the investment in green infrastructure might be better evaluated across multiple programs related to the Clean Water Act, Safe Drinking Water Act, Clean Air Act, the Energy Policy Act, and other environmental requirements in a manner that takes a more comprehensive look at cost and benefits. The benefits of green infrastructure should be used as a way to offset or delay traditional gray infrastructure controls for sewer overflows, particularly if established performance criteria will be met once the Long-term control plans are implemented. If EPA does not provide

⁴⁶ Nothing in the Clean Water Act precludes the examination of non-water quality impacts. In fact, in determining what is Best Practicable Control Technology Currently Available and Best Available Technology Economically Achievable under section 304 of the Clean Water Act, and New Source Performance Standards under section 306 of the Clean Water Act, for the purpose of developing technology based effluent limitations, EPA takes into account non-water quality environmental impacts, including energy requirements.



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communities relief in terms of a longer schedule or recognizing that requiring sewer overflow controls that go beyond cost-effectiveness is wasted money, there will be little incentive for communities to revise their approach to controlling sewer overflows with gray infrastructure.

D. Green infrastructure may require a longer schedule and/or recognition that communities should not be required to spend money on overflow controls that exceed the cost-effective breakpoint.

Green infrastructure relies on localized, individual practices that mimic natural landscapes to capture, cleanse and reduce stormwater runoff. As such, the effectiveness of any green infrastructure program depends on relationships and understanding between the public and private sectors. Landscaping is the “entry point” for conversations about whether landowners will agree to embrace the use of green infrastructure on their land.

Green infrastructure can be targeted at impermeable surfaces with the intent of making them less impermeable. Individual practices, such as rain gardens, green roofs, or permeable pavement parking lots, cover relatively small areas. Consequently, hundreds or thousands of these practices are needed in most communities to make a difference. In fact, the number of green infrastructure practices required to make a difference will likely need to be more widespread than other infrastructure we are more familiar with – like fire hydrants (e.g., one every three hundred feet in urban areas) and catchment basins (e.g., several per intersection). While the potential for green infrastructure is considerable, there is still some level of uncertainty in the performance of large scale applications necessary to meet the requirements of the Clean Water Act. Several factors that affect schedule require consideration:

- Communities need to grow localized expertise in the development professions, and the entire supply chain of a local stormwater economy. Growers, soil providers, geo-technical engineers, architects, landscapers, and many more professions need to become familiar with the principles of green infrastructure and their application to private developments and public works.
- The effectiveness and utility of green infrastructure practices will undoubtedly change over time as more information on costs and performance becomes available. Communities, consultants, researchers, and contractors need time to evaluate and modify technologies to be more resilient and cost-effective.
- Property owners may be reluctant to change their landscaping practices to include the needs of public roads, etc. Time will be needed for property owners to change their value system so that they embrace green infrastructure landscaping. Time will also be needed for communities to evolve new ways of doing business and to build lasting partnerships so that green infrastructure can be maintained by both the private and the public sectors.



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- Implementation will require several decades (more than 30 to 40 years), with the pace of implementation governed to a large extent by the useful life and serviceability of existing material and products that cover impermeable surfaces.
- Implementation will require municipalities to conduct business in new ways. It will require changes to policies and planning practices, and development of new standards, building codes, and enforceable ordinances. In addition, it will require substantial interagency coordination that might not be in place in order to get planning, transportation, public works, parks and recreation, and education interests invested in the process.
- Opportunities for green infrastructure retrofits will be very site-specific related to parcel ownership, building footprints, topography, soils and redevelopment initiatives. Flexibility with regard to the types and performance of practices will be required.

Given these uncertainties, implementation schedules have to be flexible to accommodate unforeseen circumstances wherein green infrastructure does not fully achieve performance goals or requires modification to perform better.⁴⁷ For example, EPA could accept a proposed Long-term control plan that relies on green infrastructure as long as the City committed to updating its (enforceable) Long-term control plan with additional controls (gray or green) if necessary. In many negotiation settings, EPA or DOJ staff has taken a position that CSOs and SSOs should be eliminated or controlled as much as possible, without regard to actual improvement in water quality. This has often forced cities to agree to additional gray infrastructure controls that provide little, or no, water quality or public health benefit. This results in cities having little or no money for green infrastructure. From the municipal standpoint, the incentive to move ahead with green infrastructure is decidedly lessened in the absence of flexibility.

IV. Examples

Cities and EPA are making progress towards establishing a partnership to ensure appropriate implementation of green infrastructure for MS4 and sewer overflow controls. Because this is not a mature program, it is critical that EPA avoid rigid, adversarial approaches on its implementation. Examples of rigid, adversarial approaches include:

- In recent negotiations, a community proposed committing to a level of gray control (4 overflows per year). EPA and DOJ demanded that the community agree

⁴⁷ The Clean Water Act and its implementing regulations do not establish specific time frames for compliance schedules and Long-term control plan. Thus, federal law does not preclude the use of longer time-frames to allow the use of green infrastructure to control sewer overflows. Similarly, the CSO Control Policy recognizes the need for implementation schedules that are phased (59 Fed. Reg. 18688, 18694 (Apr. 19, 1994), and EPA's Financial Capability Guidance recognizes that schedules are "negotiated between the permittee, EPA, and state NPDES authorities" ("Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development," EPA 832-B-97-004, at 43) so nothing in policy or guidance precludes the use of longer implementation schedules to allow the use of green infrastructure.



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- to a higher level of gray control (less than 4 overflows per year), even though water quality standards would be met at the lower level of control and the communities' financial capability assessment indicated that this was a high burden. The community then proposed achieving a higher level of control (the difference between 4 overflows per year and the U.S. government's more expensive proposal) using green infrastructure. EPA and DOJ's initial basis for considering acceptable levels of green infrastructure implementation was based on the difference in cost of the gray infrastructure between the two scenarios (not the volume of CSO reduced).
- EPA recently proposed a MS4 permit for the District of Columbia that mandates the use of green infrastructure without fully anticipating all of the unintended consequences or considering cost-effectiveness. The draft permit establishes a redevelopment requirement that all new projects over 5,000 square feet have a 90% on-site capture rate for runoff. The draft permit also requires that approximately 20% of the impervious surface in the city be retrofitted during the permit term. These extreme requirements place a severe burden on the city at a time of economic recession and also threaten to significantly impact urban redevelopment, without recognizing the economic consequences to the City and surrounding jurisdictions.

If green infrastructure is to be successfully incorporated into long-term sewer overflow control planning and stormwater management, EPA should direct the regions to take more positive approaches that are built upon the principles of trust, cooperation, and shared goals. These positive examples include:

- The City of Portland, Oregon is attempting to implement a shared vision through an Oregon amended stipulated order (ASFO) and the NPDES permit rather than an EPA / DOJ consent decree. The City is still working with Oregon and the EPA to get their NPDES permit renewed with this vision included. This has provided Portland with additional flexibility to establish a cost-effective balance of gray and green infrastructure. Portland's green infrastructure "Cornerstone Projects" have removed 2 billion gallons of stormwater per year (33% reduction of initial 6 billion gallons CSO annually) at a cost to date of \$145 million. Portland has instituted its own performance measures for its green infrastructure program and has been able to adjust the goals (in some cases exceeding those goals) as the City gained experience in implementing its program. The City has also drafted a post Long-term control plan to sustain a high level of CSO control by implementing additional cost-effective green infrastructure in the combined sewer area to address capacity backup problems, improve the hydrology watershed function, and mitigate increased runoff from additional impervious surfaces created by new and re-development.



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Portland's tree-planting initiative (with a goal of 83,000 trees planted in 5 years) is an example of why communities need sufficient time to build public support for green infrastructure implementation. The street tree targets are currently not limited by funding, but rather, the willingness of property owners to say "yes" to a tree in their front parking strip. This barrier will be overcome only with a combination of understanding the values of trees to their individual property, having the choice of tree to fit their personal taste, and sharing some amount of the long term maintenance of the tree).

Tabor to the River [<http://www.portlandonline.com/BES/index.cfm?c=47591>] is an example of incorporation of asset management and triple bottom line valuation in CSO planning. This program could not have come about without the decade or more of consistent and persistent messaging about CSOs and stormwater management, the construction of pioneering green facilities that serve to show the future, and the door-to-door outreach to actually engage property owners at their doorsteps.

- The recently negotiated Kansas City, Missouri consent decree allows up to 25 years to implement overflow control measures. The decree provides the city with time to develop and implement green infrastructure in lieu of or in addition to structural controls. The decree allows the city to develop a green infrastructure pilot project and to develop a more comprehensive green infrastructure plan, based on the pilot's results.
- The consent decree for Sanitation District No. 1 (SD1) of Northern Kentucky allows for an adaptive, watershed-based approach for developing sewer overflow controls and watershed controls to improve water quality. This provides a process for SD1 to propose controls in 5-year increments and to adjust their overflow control plans. There are a number of issues that SD1, the state of Kentucky, and EPA Region 4 will need to work through, but the approach holds significant promise for thoughtful and cost-effective implementation of green infrastructure.
- The decree for DC Water (formerly District of Columbia Water and Sewer Authority) directs the utility to incorporate low impact development techniques into new construction or reconstruction of DC Water facilities up to a total expenditure of \$3 million. DC Water also committed to \$1.7 million in stormwater pollution prevention projects and funding of a \$300,000 green roof demonstration project.
- The decree for the Louisville Jefferson County Metropolitan Sewer District (MSD) provides for 19 demonstration projects in green infrastructure. MSD calculated up to \$120 million savings over traditional approaches, depending on performance results and future green/gray mix of controls.
- The decree for Hamilton County, Ohio includes a provision for substitution of green or gray infrastructure on a project by project basis. The utility estimated a



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net savings of \$16.7 million for one area (Deer Park and Silverton) and \$5.4 million (East Ohio Opportunities Project). The decree was recently amended in part to accommodate the results of a three year study on green infrastructure strategies that could refine the Long-term control plan with sustainable and environmentally- friendly techniques that can reduce the amount of storm water that would otherwise flow within the sewer system. (order entering amendment, 8/10/10)

CARBON FOOTPRINT/CLIMATE CHANGE CONSIDERATIONS RELATING TO SEWER OVERFLOW CONTROLS

I. Mayor's Request:

EPA should support a community's desire to balance the trade-offs between energy intensive approaches and non-energy intensive approaches to managing sewer overflows, including their carbon footprint, their ability to adapt to climate change, and other non-water environmental impacts, in the community's assessment of sewer overflow control options and the community's determination of which option should be implemented.

II. How EPA and DOJ Can Implement This Request:

Issue a Joint Memorandum to EPA Regions and DOJ attorneys directing them to provide communities with the flexibility to consider the carbon footprint of a control option, as well as its ability to adapt to climate change and other non-water quality impacts, when selecting sewer overflow controls. Specifically, the Joint Memorandum should:

- Allow communities to trade-off water quality impacts against non-water quality impacts when making sewer overflow decisions.
- Allow communities to evaluate sewer overflow options based on life-cycle costs and benefits that include climate change and adaptation impacts.

III. Legal and Policy Bases For This Request:

A. Standard solutions to overflow control challenges can result in significant increased energy use, greenhouse gas emissions, and other adverse environmental impacts.



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Often, the new control systems that EPA is requiring communities to install for sewer overflows use a large amount of energy. The result is an increased carbon footprint for the treatment operations. But EPA's policies do not choose to consider those increased air emissions in determining whether it makes sense to require installation of those control systems. In some cases, the increase in carbon footprint between two control options can be significant, while the change in discharge levels may be small.

In one CSO situation, use of a standard, "gray" solution would involve installation of "enhanced high-rate treatment" (EHRT) at three facilities, with an estimate of total greenhouse gas (GHG) emissions for the lifecycle of the facilities of about 236,000 tons.

On the other hand, use of a "lower tech" solution of chemical addition and high-rate disinfection would result in a much lower GHG emissions total of 75,000 tons. Similar analyses have been done in non-overflow situations. For example, reduction in phosphorus levels at one publicly-owned treatment works (POTW) in Boise, ID, from a low level of 0.2 milligrams per liter (mg/L) to a "limit of technology" level of 0.07 mg/L, was estimated to result in increased GHG emissions of 6,200 metric tons per year, with no significant change in water quality in the downstream segment that was being protected. In both instances, EPA staff felt more "comfortable" with the option that resulted in increased GHG emissions, relying solely on an argument that the control would somehow provide more certainty that water quality standards would be met.

An example outside the context of the CSO provides telling information. These impacts of "high tech" or "gray" solutions are not limited to GHG emissions from increased energy use. For instance, one POTW (Upper Blackstone Water Pollution Abatement District, in Worcester, MA) determined that lower nutrient limits called for in a revised NPDES permit, and installing the extra control systems needed to meet those limits, would have the following impacts:

- 20% increase in power consumption
- 5 extra chemical tanker trucks per day
- Use of 150,000 gallons of methanol annually
- 50% increase in sludge and 400% increase in coal ash
- Use of more than 20 million cubic ft of natural gas
- 14% increase in NOx emissions from furnaces

B. Consideration of GHG emissions and other environmental impacts is not precluded by the Clean Water Act, EPA's regulations, or Agency guidance.

The focus of CSO controls is on achieving water quality standards. In determining how to meet those objectives and how long it will take to do so, communities and EPA, working as partners, have significant flexibility to consider a variety of factors. The CSO Control Policy itself stresses that one of its key principles is "[p]roviding sufficient flexibility to municipalities, especially disadvantaged communities, to consider the site-



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specific nature of CSOs and to determine the most cost-effective means of reducing pollutants and meeting CWA objectives and requirements”.

The Policy calls for communities to consider a range of control options, and to consider, as a factor in selecting the level of control “where the increment of pollution reduction achieved in the receiving water diminishes compared to the increased costs.” Moreover, the Policy discusses a range of factors to be considered in determining time schedules for implementing controls, but does not specify how those factors should be weighed. There is certainly no mandate in the Policy, or in EPA’s guidance documents implementing the Policy, that communities, or EPA, should ignore other environmental impacts caused by possible control options, including (but not limited to) climate change, in choosing between options and determining appropriate timeframes.

Allowing consideration of resulting carbon footprint of a control measure and its ability to adapt to climate change also is consistent with other EPA policies. For example, Administrator Jackson has announced that EPA “must also recognize that climate change will affect other parts of our core mission, such as protecting air and water quality, and we must include those considerations in our future plans”⁴⁸. EPA also has begun to develop methods for assessing decisions for their climate change and adaptation potential⁴⁹.

As long as the community can demonstrate that controls will allow water quality standards to be met at some point in time in the future, the mandate in the statute as to CSO control is met. Therefore, EPA has flexibility to base its policy choices (such as schedule for implementation of overflow controls) on climate and other environmental factors, in addition to Clean Water Act considerations. The same would be true for SSOs: to the extent that EPA is currently addressing SSOs in an enforcement context, there is ample discretion to consider climate and other environmental factors in determining timeframes for reducing or eliminating SSOs and in developing and implementing reasonable, cost-effective requirements within site-specific capacity, management, operation and maintenance (CMOM) plans.

⁴⁸ See January 12, 2010, memorandum from Lisa P. Jackson to All EPA Employees.
<http://yosemite.epa.gov/opa/admpress.nsf/3ee0a48cce87f7ca85257359003f533d/bb39e443097b5df5852576a9006a5a86!OpenDocument>

⁴⁹ See June 2010 External Review Draft. A Method to Assess Climate-Relevant Decisions: Application in the Chesapeake Bay, at <http://cfpub.epa.gov/ncea/cfm/recorddisplay.cfm?deid=227483>