


March 2009

National Advisory Council for Environmental Policy and Technology



***Encouraging Regional Solutions to
Sustaining Water Sector Utilities***



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The Honorable Lisa Jackson
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Jackson:

From the early days of the American West came the saying, “Whiskey’s for drinking, water’s for fighting.” Unfortunately, too many battles are still being waged within the water sector over resources and coordination. Your National Advisory Council for Environmental Policy and Technology believes the time has come to call a stop to the fighting and get on with the work of making America’s water infrastructure responsive to the needs of the 21st century.

The attached report outlines six key strategic recommendations for achieving sustainability in the water sector. This advice was developed from the collective experience of the Council’s membership, which cuts across multiple sectors of the American economy, geography, and political philosophies. The Council’s work was led by an outstanding Work Group of its members; Work Group members were Howard Neukrug, Jeff Crane, Suzanne Goss, Clayton Matt, Bill Mullican, Arleen O’Donnell, Harrison Rue, and Dan Watts. The full Council endorses the recommendations in the report.

We believe the six recommended strategies can be readily implemented by EPA. The most critical need is for principled and strong support of regional and watershed collaboration and partnerships to fulfill essential water services to the nation’s growing population. EPA must continue to move to watershed-based, regional solutions to solve the water sector’s infrastructure challenges.

This transition, while essential, will not be simple. The water sector’s infrastructure system has been built over the past 150 years. It is largely fragmented among political jurisdictional boundaries and divided among the drinking water supply, wastewater, stormwater, and water storage components of the water sector. The structures of current environmental regulations, the water sector business, and EPA do not easily accommodate locally-based, holistic solutions that are needed to sustain the water sector and the communities that depend upon the sector.

This report calls on EPA to move quickly and forcefully in adopting integrated water resource planning and watershed management as the governing framework for all Office of Water regulations and policies. We recommend that the Office of Water integrate across its own programs and work more intentionally and vigorously with other federal agencies to address regional water issues. We also highlight the need for EPA to work more directly with local and regional collaborative efforts; to provide new economic, regulatory, policy, and enforcement incentives for collaboration; and to improve technical guidance, education, and outreach in support of such collaborations.

The recent American Revitalization and Recovery Act provides the Agency with a fresh opportunity to tackle the water infrastructure challenge. It can do so best by focusing on sustainable, green infrastructure strategies that consider the entire water cycle and are balanced with other elements of the nation's environmental, societal, and economic needs. Business as usual will keep us fighting about water in the future as we have in the past. Channeling the substantial investment provided by the stimulus into sustainable, green infrastructure concepts is essential to rebuilding the Nation's water infrastructure for the 21st century.

We hope you find this report and its recommendations useful. We look forward to working with you on any next steps.

Erik J. Meyers
NACEPT Chair

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A close-up photograph of blue and red industrial pipes and valves, likely part of a water treatment facility, set against a background of rippling blue water.

EXECUTIVE SUMMARY

One of the most critical challenges facing the nation's water and wastewater systems is how to sustain its infrastructure network to ensure that the public continues to enjoy the environmental, health, social, and economic benefits that clean and safe water provide.

The traditional business model for water sector utilities typically focuses on providing one or two specific services (e.g., provision of drinking water, wastewater collection, storm water management, water resource management, etc.) within a defined service area. This system works well when populations are isolated and the impacts of communities on their water resources are small relative to the abundance of the supply.

However, this business model is ill-equipped to deal with current infrastructure, regulatory, ecological, political, and economic realities. Today, it is hard to make a clear distinction between wastewater, drinking water, and storm water issues and needs. It is difficult, if not impossible, to separate the long-term ability of a utility to deliver essential services from the planning and political realities of the surrounding community, or the resource limitations of the surrounding watershed. The long-term viability of water-sector systems needs to be examined and addressed on a more comprehensive basis with these interrelationships in mind.

Further, the issues of environmental sustainability, energy management, and global climate change are altering the environmental landscape forever. At some point, environmental priorities will need to be re-examined with possible legislative changes in light of the shifting landscape. Until then, EPA should do everything within its power to shift away from an emphasis on single media and single programs towards recognizing and rewarding positive, collaborative, broad-based behaviors within the Agency and in the regulated and stakeholder communities. Across the country, changes are being made by water utilities to become more financially sustainable. It is important that utilities and stakeholders also consider the larger environmental context to ensure that their strategies are viable in the future.

To meet the growing challenges of sustainable water management, EPA needs to think beyond a single statute's regulatory requirements to solve problems. Today, watersheds are the more appropriate unit and scale of management for an integrated approach to managing the nation's water resources. Applying the watershed approach across EPA water programs would better inform the effective application of regulations and resources to solve the most pressing problems. By recalibrating EPA's agenda internally, a strong "lead by example" message is sent, lending credibility to EPA efforts to support sustainable water resources management and innovative approaches.

In sum, while EPA recognizes regional collaboration as an effective tool for improving the long-term service of water sector utilities, identifying the specific function that EPA could play in promoting this approach is more challenging. The answer is not straightforward because many of the activities needed to create regional cooperation and partnerships lie outside the traditional roles of EPA.

This report identifies specific tasks that EPA can implement to strengthen the framework of regional or watershed-based partnerships in an effort to create sustainable water systems throughout the nation. These tasks include:

- 1. Adopt integrated water resource planning and watershed management as the governing framework for all Office of Water regulations and policy.**

Integrated water resource planning and watershed management are the basic building blocks for a sustainable water sector. The Office of Water needs to revisit opportunities to integrate across its programs for: EPA to ensure that federal agencies provide a coordinated effort when addressing regional water issues; regional EPA offices to expand their watershed-based programs and resources to support local dialogue; and EPA to offer more support to local and regional collaborative efforts.

One of the predominant themes throughout the National Advisory Council for Environmental Policy and Technology (NACEPT) deliberations was the need for EPA to “break down the walls!” NACEPT recommends a number of actions including revisiting the current EPA organizational structure to reduce internal barriers, and focus policies, activities, and resources away from single-media, single-issue programmatic goals. Instead, NACEPT recommends using the broader, more collaborative watershed approach as the unifying theme and ethic; this includes integration of enforcement staff to work in collaborative settings.

- 2. Encourage the collaborative process.**

By creating a positive environment for regionally linked water sector utilities to work more collaboratively, EPA can help almost all utilities and their communities create efficiencies. EPA can encourage local and regional collaborative efforts by offering regional EPA office support to local groups. EPA regional offices can provide venues where stakeholders can meet; offer support to local groups for identifying and training effective, respected leaders; and help water sector utilities and leaders recognize their long-term sustainability interests and needs. In addition, EPA can foster implementation of the recommendations by stakeholder groups by organizing an advisory group representative of these involved organizations and individuals to assist in developing specific action plans for how best to initiate the broadened initiatives.

3. Provide new economic incentives.

EPA can support collaborations by: (1) strengthening its public message regarding the gap between available, sustainable water financial resources and the need to address the problems successfully, whether under the banner of the infrastructure crisis, water system security, emerging contaminants, water resource planning, or water quality; (2) working to identify and establish new financial incentives to encourage water sector systems to pursue regional collaboration opportunities by leveraging existing funded programs; and (3) reactivating and revitalizing Section 208 as the Clean Water Act's cornerstone of watershed-based infrastructure planning.

4. Provide new regulatory and policy incentives.

EPA can encourage collaborations by regulatory and policy incentives such as: (1) identifying and establishing regulatory and policy flexibility to encourage water sector systems to explore integrated watershed management and regional collaborative opportunities; and (2) working to effectively utilize enforcement tools, including flexibility in enforcement and permitting schedules to encourage collaboration.

5. Reduce internal barriers.

EPA needs to do more in support of internal focus on collaborations beyond the significant strides it has already made. While legislative and regulatory mandates can inhibit the Agency's ability to advance broader environmental, public health, and sustainability goals, EPA should revisit its organizational structure to identify and overcome any internal barriers to water system collaboration. One action recommended is to use the broader, collaborative watershed approach as the unifying theme and ethic. Additional progress toward collaboration could be achieved by detailing members of the enforcement staff to work in collaborative settings.

6. Provide better technical guidance, education, and outreach related to integrated water resource planning and watershed management.

EPA should: (1) review the Agency's existing body of literature and programs to update, consolidate, and streamline the information and, if necessary, conduct research and gather new information; (2) partner with water sector professional organizations to create new, utility-focused initiatives in education, communication, and outreach; (3) partner with watershed stakeholder organizations to create a new "sustainable watershed" initiative through education, communication, and outreach; (4) revise its Web site, particularly that of the Office of Water, to align with the watershed and regional collaboration approach; (5) create an accessible, centralized, Web-based repository of tools and resources; (6) train and educate its regional offices, the states, and tribes on these tools and methods so that a clear and consistent message is communicated to the water sector and other stakeholders from

policy makers and regulators; and (7) redeploy staff to increase dialogue and face-to-face meetings to determine how to promote the long-term sustainability of systems effectively on a local or regional level.

Where necessary and appropriate, NACEPT recommends that EPA conduct research and publish guidance regarding the benefits of watershed and regional collaborative approaches using case studies and other analyses.

In conclusion, EPA has the opportunity to be a leader, visionary, motivator, catalyst, mentor, partner, financier, peer, supporter, and facilitator in strong support for the water sector and other stakeholders to develop sustainable water resource management solutions. EPA needs to assist with guidance, encouragement, and education; while also recognizing and rewarding those who are successful, thereby helping to move forward regional solutions through partnerships.



I. INTRODUCTION

A. Purpose of this Report

The purpose of this report is to provide advice to EPA on strategies it can implement to promote and support water sector utility sustainability by encouraging regional or watershed-scale partnerships through changes in Agency policy, outreach, internal operations, and incentives or disincentives.

Concerns about the Long-term Sustainability of Water Sector Utilities

Water sector utilities include systems that provide drinking water, wastewater and/or storm water services, and/or are responsible for the protection of our water resources. A combination of forces—including population shifts, aging infrastructure, droughts, and economic constraints—impose increased stress on the country's water resources and society's ability to maintain or improve quality water sector systems. It is recognized that many water systems will witness tremendous cost pressures over the next several decades due to increasing infrastructure, operation, and maintenance expenses. Given current funding mechanisms, and existing infrastructure and system constraints, EPA, Congress, water sector organizations and others are concerned that a growing number of water systems are not sustainable in their current form. They anticipate that the number of unsustainable water systems will continue to increase as new demands and costs are realized.

In May 2006, EPA requested that the NACEPT "Identify ways EPA can better advance sustainable approaches to water resource management and infrastructure to meet watershed goals." The report, *NACEPT's Initial Findings and Recommendations on EPA's Sustainable Infrastructure Watershed Pillar* (July 2007), was submitted to EPA Administrator Stephen L. Johnson offering a large set of recommendations that fall within four categories of specific steps EPA should take: (1) lead by example; (2) educate, communicate, and provide information; (3) encourage, facilitate, and fund collaboration; and (4) develop, use, and fund specific tools.

In August 2007, the Agency amended its request to NACEPT by asking that the Council "recommend to EPA changes in policy, outreach, internal operations, and/or incentives and disincentives to foster collaborative partnerships in the water utility sector." This NACEPT report specifically addresses this amended request from EPA.

Regional Collaborations and Partnerships are One Possible Solution

There are numerous management, operational, financial, and technical approaches, alone or combined, being used to address the looming financial, environmental, and sustainability issues within the water sector. This report addresses only one such approach; creating new regional collaborations and partnerships. By

using this approach, water sector systems can resolve a key weakness found in many of our nation's water systems – a profusion of discreet water utilities planned, designed, built, operated, regulated, and managed independently of each other.

By creating a positive environment for independent, regionally-linked water sector utilities to work more collaboratively or in partnership, utilities and their communities can better identify, prioritize, and integrate a regional approach to long-term water system planning and infrastructure needs. This approach not only can reduce future water utility costs, create gains in efficiency, and limit new infrastructure needs, it can also provide a comprehensive approach to environmental and ecological improvement while expanding water utility and community sustainability.

Defining a Role for EPA

EPA recognizes regional collaboration as an effective tool for improving the long-term sustainability of water sector utilities. However, identifying the specific function that EPA could play in promoting this approach is more challenging. The answer is not straightforward because many of the activities needed to create regional cooperation and partnerships lie outside the traditional roles of EPA.

This report identifies specific tasks that EPA can implement to strengthen the framework of regional or watershed based partnerships in an effort to create sustainable water systems throughout the nation.

B. Background

Beginning with the creation of the National Environmental Protection Act (NEPA) in 1969 and EPA as an agency one year later, there has been a dramatic decrease in levels of pollution throughout the United States. As this “veil of pollution” lifted and basic understanding of environmental systems matured, the overall approach to meeting environmental, public health protection, and ecological mandates changed. Today, EPA uses a mix of regulatory, enforcement, mentoring, leadership, and partnering relationships to achieve these goals.

Unfortunately, federal legislation and resulting regulation, has not kept up with changing environmental realities. Many of the legislated requirements have created inflexible mandates and organizational structures that can, at times, result in a compartmentalized approach to problem solving.

EPA's current organizational structure and programs mirror the authority provided the Agency under federal environmental legislation such as the Safe Drinking Water Act and the Clean Water Act. Similarly, states and water utilities have also structured their programs, functions, and organizations using the same categories offered by EPA and the original federal legislation. Today, the water sector includes four major areas:

- Water resources management and source water protection

- Drinking water treatment and distribution
- Wastewater collection and treatment
- Wet weather management (storm water)

This approach served the nation and environment well when addressing the large, almost insurmountable, water pollution and infrastructure challenges of the 1970s and 1980s. Major programs targeted highly polluted rivers and streams and limited regulations to protect the public drinking water supply. This resulted in large, federally funded infrastructure programs, such as the construction grants program for new water pollution control plants under the Clean Water Act.

Today's Funding Gap

Today, there is growing discussion of the water sector's enormous infrastructure and capital investment crisis. While the primary issues of concern vary across the country and by water sector utility, increasing regulatory burdens, deferred maintenance, a "natural" convergence of aging infrastructure demands, poor system management, jurisdictional limitations, and new system capacity needs have created an estimated \$1 trillion funding gap between known sources of capital and the anticipated future costs for maintaining and upgrading the nation's water, wastewater, and storm water infrastructure systems.

When also considering new challenges posed by global climate change, shifting and growing US populations, and their anticipated impacts on water resources—water supplies, flooding, drought, river and lake water quality, and changing industrial and agricultural water requirements—the future becomes even more ominous.

As the problem has become better defined over the past decade, so has the reality that federal, state, local, and tribal governments will be largely unable (or unwilling) to provide the necessary funds to bridge the funding gap. Additionally, the traditional remedy of passing these increased costs directly onto the consumer is unaffordable in many urban and rural communities.

The EPA Response – The Sustainable Water Infrastructure Initiative

In response to growing concerns expressed by Congress, states, tribes, and water sector stakeholders, EPA, led by the Office of Water, established a new program called the Sustainable Water Infrastructure (SI) Initiative. EPA Administrator Johnson noted that sustainability of the water sector "is everyone's challenge:"

"By supporting collaborations...we are working with our utility and private sector partners to develop solutions for managing and sustaining our shared infrastructure assets."

SI activities are organized around four priority areas:

- Better utility management

- Full-cost pricing of water
- Water efficiency and conservation
- Watershed approaches to water management

Progress is being made on many fronts. For example, a group of utility experts and executives are working with EPA on a manual entitled “Effective Utility Management.”¹ This manual is designed to assist utility managers with improving their business skills, especially those skills unique to the water sector.

In addition to these activities, the Agency is moving forward with innovative approaches to best utilize the remaining federal and state funds, especially those available through the State Revolving Fund (SRF) program support for small systems, including tribal set asides. For example, EPA is providing tools and technical assistance to small water and wastewater systems to improve technical, managerial, and financial capacities in a series of newly released EPA documents¹ and programs: *National Capacity Development Strategic Plan*², *Analysis on the Use of Drinking Water State Revolving Fund Set-Asides: Promoting Capacity Development*³, and *The Check Up Program for Small Systems (CUPSS)*⁴. EPA believes that these tools will help bridge the growing financial gap faced by small drinking water and wastewater systems as they repair and replace infrastructure.

Integrated Water Resource Planning and Watershed Management

Integrated Water Resource Planning (IWRP) is the management of water resources over an entire watershed, providing integrated solutions to meet drinking water, water supply, wastewater, and storm water needs and requirements. IWRP allows communities to collaborate as they identify, prioritize, and balance resource needs within a watershed. IWRP can be a catalyst to bring about cooperation among the officials responsible for managing water sector systems.

The importance of IWRP was alluded to in the first NACEPT report on Sustainable Water Infrastructure which emphasized the importance of this approach to EPA:

“...build upon and leverage its existing partnerships and alliances to promote collaboration among water, wastewater, and storm water utilities, and industries in a given watershed area. This would give them a more effective voice with local decision makers and stakeholders. EPA, tribes, states, and utilities should elucidate the benefits of working together to the many different types of organizations that might participate in the watershed approach.”

¹ <http://yosemite.epa.gov/water/owrccatalog.nsf/HomePage?OpenForm&CartID=8189-102727>

² [EPA# 816K07003](#)

³ [EPA# 816R06004](#)

⁴ <http://www.epa.gov/safewater/cupss/index.html>

NACEPT recognizes that it is difficult to communicate among people, agencies, utilities, and other stakeholders when there is no venue to articulate one's needs and interests. IWRP, as well as utility collaboration and partnerships, can be difficult to organize and make successful. As stated in the first NACEPT report on Sustainable Water Infrastructure:

The primary recommendation of this NACEPT report is for EPA to re-invigorate its active support and participation in IWRP, and for the Agency to use Watershed-Based Management as its organizational foundation for supporting regional collaboration and partnerships throughout the United States.

"Promotion of this type of collaboration will require clear demonstration in the local context of advantage. Without that, natural resistance to the uncertainties of change will interfere with movement to collaboration."

Even so, as described in the next section of this report, regional collaboration holds significant promise as a tool to remedy some of the water sector's issues of sustainability.

Regional Collaboration is not Structural Consolidation

A word of caution is in order – regional collaboration is not the same as regional facilities. Expanding regional facilities into new areas can promote sprawl and encourage development in exurbia/rural areas instead of redeveloping brownfields and other developed areas. From the first NACEPT report on Sustainable Water Infrastructure:

"When the authors of this report speak about regional collaboration, regionalization, partnerships, etc, we are speaking about a functional, operational, communicative, supportive arrangement among stakeholders and not necessarily are we promoting structural or infrastructure consolidation."

The Infrastructure Action Group of Southeastern Pennsylvania First Suburbs Project

An example of the new way of approaching water sector sustainability is being attempted in the Philadelphia suburbs by a group of citizens, academicians, political leaders, and clergy. They have worked to identify the biggest issues in these first-ring suburbs and narrowed their focus to affordable housing, education, social services, and water infrastructure. The Infrastructure Action Group of Southeastern Pennsylvania First Suburbs Project prescribes that the goals of system regionalization and sound infrastructure investment involve the following five principals:

- Efficiency – fix existing infrastructure before building new facilities and systems
- Fiscal Sustainability – adopt full-cost pricing policies that build future maintenance and renewal costs into current rate structures
- Environmental Sustainability – encourage a comprehensive approach to water management that protects water quality, conserves ground water, prevents ecologically harmful withdrawals from rivers and streams, and coordinates infrastructure investments with sound land use management
- Equity – water flows across municipal boundaries, therefore the cost of water needs to be shared among all in the watershed
- Coordination – new investments should be accompanied by new institutional arrangements for improved coordination and more efficient service delivery

C. NACEPT Sustainable Water Infrastructure Workgroup

EPA Charge to NACEPT and the Phase I Report

EPA asked NACEPT to assist the Agency in advancing cost-effective and sustainable approaches to water resource management and infrastructure to meet water quality goals. A workgroup, a subset of the Council, was established to assist NACEPT to respond to the charge. The full charge and additional background material are contained in Appendix IV.

Specifically, in May 2006, EPA requested that NACEPT:

*“(I) Identify ways that the EPA can better advance sustainable approaches to water resource management and infrastructure to meet watershed goals, and
(II) Analyze the primary and secondary benefits of non-traditional, or alternative, approaches to water infrastructure management.”*

The report *NACEPT’s Initial Findings and Recommendations on EPA’s Sustainable Infrastructure Watershed Pillar* (July 2007), also known as Phase I of the charge, was submitted to EPA Administrator Johnson offering a large set of recommendations that fall within four categories of specific steps EPA should take. These steps include:

- Lead by example
- Educate, communicate, and provide information
- Encourage, facilitate, and fund collaboration
- Develop, use, and fund specific tools

In October 2007, EPA amended the charge to NACEPT, requesting that the group focus on the current issue. Specific recommendations include:

“(II) Recommend to EPA changes in policy, outreach, internal operations, and/or incentives and disincentives to foster collaborative partnerships in the water utility sector.”

This is in direct support of a recommendation in the first NACEPT report:

“Another opportunity is for EPA to build upon and leverage its existing partnerships and alliances to promote collaboration among water, wastewater, and storm water utilities, and industries in a given watershed area. This would give them a more effective voice with local decision makers and stakeholders. EPA, tribes, states, and utilities should elucidate the benefits of working together to the many different types of organizations that might participate in the watershed approach.”

This report deals specifically with this amended charge. However, this current effort recommends that EPA prepare a progress report regarding actions taken in response to the Phase I report and other actions taken or underway to move these approaches forward within the Agency. Moreover, periodic reporting of measures of collaborative effort success would help focus EPA headquarters and regional efforts to support collaboration at all levels.

Approach Used for this Investigation

The NACEPT Sustainable Water Infrastructure Workgroup held a number of meetings and conference calls to gain an initial understanding of the charge from EPA, as well as to understand current approaches and activities within the Agency. It also met with stakeholders from professional water organizations, private consultants, and utility managers to learn about perceptions, activities, and plans. In addition, one-on-one interviews were held with various state, tribal, local, non-profit, and private groups from around the country. Significant reference resources became available to the group from various sources. This information was used to inform the Workgroup during its reflections, deliberations, and writing of these recommendations. Appendix II lists the experts brought in to speak with the Workgroup and Appendix V provides the list of references.

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II. KEY QUESTIONS ANSWERED

This section uses a question and answer format to address some of the issues raised during the NACEPT Sustainable Water Infrastructure Workgroup investigation on regional collaboration and the role EPA plays.

A. What is meant by regional collaborations and partnerships?

NACEPT met with experts involved with inter-organizational partnership, utility management, and regulatory compliance and reviewed many case studies and examples of successful regional utility collaborations.

In its most simplistic form, regional collaborations are a partnership between two or more utilities to form cost-sharing agreements in order to more effectively provide services. Many utilities today utilize some form of these partnerships or agreements. Examples include:

- Purchase equipment, chemicals, office supplies, etc.
- Contract services for engineering, operations, billing, call center management, meter reading, training, etc.
- Provide mutual aid in case of drought, flood, terrorism, or other emergencies
- Consolidate infrastructure by constructing physical interconnects
- Consolidate and centralize management

These cost-sharing agreements can be very effective tools, especially for small water sector utilities. However, this form of partnership does not address the structural sustainability issues described earlier. That is, for water sector utilities to become sustainable, they must operate within the context of a sustainable system. This can only be accomplished when the collaborative approach is used within the context of Integrated Water Resource Planning or a watershed management approach. Under this definition of regional collaboration, water sector utilities would be working with regional stakeholders to:

- Develop comprehensive, regional assessments and plans to tackle the infrastructure, ecological, and economic needs within the watershed or region
- Address regional issues of water resources, environmental regulations, and community sustainability
- Influence policy, legislation, regulation, and financial aid on federal, state, tribal, and regional levels
- Provide broad education, communication, and/or outreach efforts
- Prioritize environmental projects on a regional basis

Conclusion: EPA should restructure and align its programs to more effectively promote Integrated Water Resource Planning and watershed management as the key building blocks that communities can use to ensure the sustainability of the nation's water infrastructure.

B. Are there indicators that would help EPA identify the types of utilities that would benefit from such collaborations?

NACEPT was asked if there were any specific utility characteristics or indicators that would help EPA identify utilities that could benefit from collaborative, regional efforts. In particular, it was hypothesized that small systems would be especially good candidates for regionalization for demographic, resource, and financial reasons. While results indicate that small systems represent an important subset of utilities that would benefit from the regional collaborative approach, NACEPT found the applicability of this approach to be significantly broader.

NACEPT also found that there are many reasons why a utility may want to consider a collaborative, regional approach to watershed management, and that multiple categories of utilities may be well served by a partnering relationship. Characteristics of utilities that would particularly benefit from collaborative approaches include:

- **Customer Demographics**
 - Water systems serving small customer bases
 - Systems anticipating or experiencing significant growth/decline in population
 - Affordability, driven by a low per capita income
- **System Revenues**
 - Systems with revenues unable to support adequate staffing
 - Utilities unable to recover operations, maintenance, and capital expenditures
- **Regulatory Program Burdens**
 - Combined Sewer Overflow/Sanitary Sewer Overflow (CSO/SSO) communities limited by affordability considerations
 - Phase II Municipal Separate Storm Sewer System (MS4) (i.e., a separate storm sewer system) without sufficient resource capacity for its management structure or revenue base
 - Wastewater systems experiencing compliance concerns due to permit or consent order restrictions; or that are discharging to impaired water bodies where Total Maximum Daily Loads (TMDLs) are required
 - Water systems experiencing compliance concerns such as:
 - Arsenic, trihalomethanes (THMs), chlorination, lead, cryptosporidium
- **Resource Limitations**
 - Insufficient water supply, resources, or impairments
 - Repeated or prolonged droughts, system reliability, water quality, vulnerable supplies, competition, environmental restrictions, climate change, increased flooding, or significant population shifts
 - Growing communities with septic systems or other decentralized systems without sufficient infrastructure or management support

- **Jurisdictional and Geographic Constraints**

- Systems that are limited by political, geographic, or infrastructure constraints may be great candidates for collaborative efforts if these limitations can be addressed and overcome
- Systems that are impacted by out-of-jurisdiction upstream activities/development/ water withdrawals

Conclusion: By creating a positive environment for regionally linked water sector utilities to work more collaboratively, EPA can help utilities and their communities create efficiencies and integrated systems that are more sustainable and benefit the community in multiple ways.

C. What do successful regional collaborations have in common?

NACEPT found that successful regional collaborations typically exhibit four common attributes:

- There is a leader who recognizes that some critical needs, issues, or challenges are beyond the community's or utility's ability to control or resolve independently.
 - Typical drivers include utility-specific problems or larger regional problems such as population growth, growing infrastructure costs, transportation needs, environmental protection, education, or community development.
 - Awareness of these issues may have been generated within the utility (by management or board members) or externally (by local government officials or policy makers).
 - In rural watersheds, with smaller utilities and limited staff, an outside agent (e.g., local, regional, or non-profit) was often instrumental in initiating awareness and organizing partnerships.
- There is some motivating factor—such as a financial incentive, compliance penalty, drought, or flood—that encourages the utility to consider solutions outside its traditional boundaries.
 - Existing funding sources are unable to meet system needs and new increases in revenues are unacceptable or unaffordable to the community.
 - There are new incentives in the form of federal, state, tribal, and local grants, matching funds, new revenues, profits, or other monetary incentives that reward the collaborative approach.
 - Even relatively small dollar amounts available for planning beyond immediate system needs help encourage collaborative efforts.
 - Regulatory requirements or enforcement actions, when used with innovative direction, can encourage regional collaboration. However, if not used carefully, they can also inhibit broader discussions and regional solutions.
 - Drought, other natural or manmade resource challenges, or other crises, provide a short-term opportunity to open discussions among regional players.
 - Longer-term issues that are on the minds of citizens such as climate change, water security, aging infrastructure, sprawl, energy, population growth, or affordability concerns can help motivate localities to consider collaborative options.

- There is a safe, neutral venue where regional stakeholders can congregate, discuss shared regional visions and goals, and explore solutions that address all potential issues, costs, and benefits.
 - There is typically a strong leading partner, whether a utility manager or board member, an elected local policymaker or administrator, or community leader who can champion regional solutions among the stakeholders.
 - There is typically recognition among the stakeholders that they share a common resource and that the use of this resource affects others.
 - There is either a history of, or a desire for, working across political jurisdictions, between government, business, and non-profits, and across a wide range of issues.
- The collaboration process should ultimately result in a written agreement.
 - For the collaborative process to work it must ultimately result in a written agreement, which can take time.
 - If there are EPA or state impending enforcement actions, inflexible regulatory timeframes, or mounting penalties, water sector systems typically make quick, bad investment decisions to reduce overall costs and risks. This may inhibit innovation and outside-the-box thinking that could result in better and more cost effective solutions.

Conclusion: EPA can encourage the collaborative process by: (1) helping utility and community leaders recognize their long-term local needs; (2) providing incentives to motivate groups to work together; (3) creating a safe, neutral venue where EPA can act as a credible convener of stakeholders; and (4) allowing some regulatory flexibility in schedules and penalties to accommodate collaborative partnerships that lead to better or equivalent environmental results.

D. What are the barriers to collaboration?

NACEPT identified several significant barriers at the federal, state, tribal, local, and utility level that may inhibit or prevent water sector systems from moving forward with collaborative partnerships.

- **Individual and Organizational Barriers**
 - **Unaware of potential advantages.** In the absence of a perceived benefit, collaborative opportunities are not pursued.
 - **No perceived need for change.** Operations, reliability, and costs may present no current issues; longer-term capacity and sustainability concerns may be left unaddressed. Alternatively, line management may be so intently focused on current issues and operational problems, that there may be little capacity to consider utility sustainability.
 - **Budget cycles.** Budget cycles and planning horizons may inhibit or discourage collaborative approaches which often are time consuming and on different timeframes than local government political and budgetary cycles.
 - **Concerns over loss of local control.** Unknown risks, costs, and a perceived (or real) loss of independence, influence, oversight, or control over policies, budgeting, hiring, decision making, risk management, and rates

may deter utility managers or the local community from considering collaborative options.

■ **Regional and Jurisdictional Issues**

- **Water rights.** There may be concern that collaborative partnerships may lead to a forced sharing of water rights and potential shortfalls of available water for one system to the benefit of another.
- **States' Board of Public Utilities.** Many states have utility boards that regulate pricing for non-municipal water sector utilities. The political, technical, and economic complexities of some collaborative agreements can make bringing such matters before a state utilities board daunting. The state board may become a barrier to even exploring the idea of collaboration without a clear understanding of the process and a clear concept of the benefits that might result.
- **Regional dynamics.** Neighboring jurisdictions—whether they are states, counties, municipalities, or school districts—often have political, demographic, historical, economic, or community-based rivalries (i.e., sports) that make it difficult to develop trust and equity among parties.
- **Using water as a regional planning tool.** The availability of water to promote or limit growth is an unfortunate reality in many communities. Without the availability of alternate community planning mechanisms, water is often a political tool that inhibits the formation of regional collaborations due to competing local interests and the lack of clear understanding of the benefits of collaborative approaches.

■ **Lack of Enterprise Funding**

- The true cost of water service is a fundamental component of sustainable water resource systems. Many communities rely on a portion of water sector revenues as financial support for other municipal services, or for their general fund. In other instances, such as storm water management, the cost of water sector services is hidden in the general real estate tax base. Lack of an enterprise fund based on the true cost of service confounds collaborations that involve cost or revenue sharing. In addition, potable water is heavily subsidized and consumers do not pay the full costs of supply and delivery, which reduces revenues and in some cases negatively affects management approaches and potential collaborative efforts to promote conservation and efficient management approaches.
- Similarly, apprehension about agreements with existing bondholders and solutions for handling unequal debt, particularly if the debt is municipal, may hinder the exploration of collaboration.

■ **Limited Ability of Regional Stakeholders to Take a Holistic View**

- Success in establishing collaborative partnerships depends on individuals who can imagine the advantages of regional sharing of service responsibilities and the benefits reaped because of the partnership.

Conclusion: Many barriers to regional collaboration are outside the boundaries of traditional EPA approaches to resolution. For EPA to be effective in this arena, the Agency will need to consider significant new organizational directions such as those described in the NACEPT Report, *Everyone's Business: Working Towards Sustainability Through Environmental Stewardship and Collaboration*⁵. Key recommendations include that EPA should: (1) reframe its mission with

⁵ <http://www.epa.gov/ocem/nacept/reports/pdf/2008-0328-everyones-business-final.pdf>

stewardship as the unifying theme and ethic; (2) strive to become the world's premier stewardship model and catalyst by integrating regulatory programs, grants, voluntary partnerships, information, in-house operations, and other tools into a common framework; (3) foster stewardship by providing leadership in collaborative governance and participating in partnerships organized by others; (4) systematically invest in the skills and competencies necessary for the Agency's domestic and global leadership in environmental stewardship; and (5) drive the ethic and practice of stewardship deep into the culture of the Agency.

E. What can EPA do to promote, encourage, and support water integrated resource planning, watershed management, regional collaboration, and a sustainable water sector?

EPA needs to take a broader perspective on how water sector utilities are planned, managed, and regulated. EPA needs to connect and, in many cases, reconnect with grassroots organizations to support collaborative efforts by communities to consolidate resources and thereby improve the benefits and cost effectiveness of integrated approaches to managing drinking water, wastewater, and storm water resources. To accomplish this collaboration, EPA should take advantage of the opportunities provided by other federal, state, tribal, regional, and local agencies, as well as non-governmental organizations (NGOs), to break down parochial barriers and build consensus within neighboring communities.

Conclusion: EPA needs to be a leader, visionary, motivator, catalyst, mentor, partner, financier, peer, supporter, and facilitator in strong support for the water sector and other stakeholders to use an integrated, watershed-based approach that explores regional collaborative opportunities to develop sustainable, water resource management solutions. EPA needs to assist with guidance, encouragement, and education; recognizing and rewarding those who are successful, and help to move forward regional partnerships.



III. RECOMMENDATIONS

The National Advisory Council for Environmental Policy and Technology (NACEPT) recommends the following.

Recommendation #1: Integrated Water Resource Management

Action: EPA needs to more fully adopt Integrated Water Resource Planning and Watershed Management as the governing framework for Office of Water (OW) regulations and policy. Increased demands on the nation's water resources—whether due to population growth, pollution, regulations, recreational and fish and wildlife concerns, competing water needs from energy, agriculture or industry, or climate change—will continue to place pressure on the water sector to find new, more sustainable business strategies. Since most of these issues involve stakeholders and resources outside the control of the local water sector utility and its local pipe network, a collaborative, watershed-based approach to problem solving will be necessary.

This situation is complicated by a community of water systems not well configured to address multi-media environmental concerns, or even issues involving the entire water cycle within its jurisdiction.

In order for EPA to support the sustainability of the water infrastructure system, whether through regional collaboration or other methods, the Agency will need to move fully and quickly to a new water resource management strategy. This resource management strategy should endorse, encourage, and ultimately require water sector stakeholders to take advantage of all opportunities for coordinated regional or watershed-based collaboration, planning, operations, and management.

Action: The EPA Office of Water should revisit opportunities to integrate across its programs. There are tremendous opportunities for the water sector to begin to work across its four segments – drinking water, water resources, wastewater management, and storm water management. Examples include:

- Integrating drinking water source protection rules for contaminants such as cryptosporidium with water quality standards and controls under the Clean Water Act.
- Expanding the “green infrastructure” strategy, which has great potential and enormous support for storm water management, into other aspects of water resources management such as wastewater, CSOs, Storm water Phase I and II programs and Capacity, Management, Operations, and Maintenance (CMOM).
- Reintroducing Section 208 of the Clean Water Act, redesigning the program for watershed-based Integrated Water Resource Planning, and creating financial (e.g., SRF) incentives for collaborative watershed based planning and infrastructure funding.

Action: EPA should ensure that federal agencies provide a coordinated effort when addressing major regional water issues. EPA should work to ensure clear communication and coordination with other federal agencies that have programmatic responsibilities that may impact the water sector (e.g., the US Forest Service, US Army Corps of Engineers, Bureau of Land Management, National Park Service, Fish and Wildlife, Federal Highways, Department of Defense, and Natural Resources Conservation Service). Where possible, the Agency should assume a leadership role.

Action: Regional EPA offices should expand their watershed-based programs and resources to support local dialogue. Each of the ten regional offices should increase its capacity to support local and regional dialogue and facilitation, thereby encouraging stakeholders to meet, discuss, and solve common environmental and infrastructure sustainability issues. Where this is not immediately possible due to resource or political concerns, EPA should enlist the support of local foundations or non-profit organizations to fill this void.

EPA needs to return to its original central tenet for water sector policy: Comprehensive Planning for Total Water Management. During the 1970s and 1980s, EPA focused many of its efforts on improving the water environment by requiring the development of Clean Water Act Section 208 Regional Water Quality Management Plans. These plans encouraged citizen-group participation and comprehensive watershed planning to assist federal, state, tribal, regional, and local decision makers to focus on priority water quality issues, and provide local input and guidance to overall water quality programs.

At that time, the Section 208 process had three significant shortcomings: (1) it was developed prior to the emergence of citizen-based watershed groups and therefore generally did not include significant stakeholder input; (2) although the process allowed for the identification of all sources of pollution, the process was generally limited to EPA's primary concerns – point source dischargers; and (3) there was neither a mandate nor long-term funding for implementation of the Section 208 plans.

Today, the stakeholder partnerships imagined decades ago under Section 208 have come to fruition in the form of hundreds of watershed groups across the nation. In addition, the total water management concepts of Section 208 fit well with today's focus on a collaborative watershed approach to comprehensive total water management. Section 208 deserves serious consideration as a viable mechanism that could be reinvigorated based on today's challenges to foster collaborative watershed-based infrastructure planning.

Recommendation #2: Encourage the collaborative process

Action: EPA needs to offer more support to local and regional collaborative efforts. Often, the best role for EPA is supportive, not directive. EPA needs to get more involved in regional planning issues, especially identifying where there is crossover between community issues and water sector needs.

In Southeastern Pennsylvania, the Resource Conservation and Development Council (RC&D) is seeking funds from EPA and others to assist six municipalities with a pilot cooperative program to develop economically feasible options for dealing with storm water management issues, including current MS4 and upcoming TMDL requirements. These municipalities are highly urbanized, and relatively small. They have severe technical and economic constraints when

dealing with storm water related regulatory requirements and other activities identified in regional watershed plans. The total cost for this project is \$2 million dollars. Clearly, federal support from EPA is needed to implement technical transfer and provide regulatory flexibility. This pilot program provides significant examples of collaborative strategies for communities in similar circumstances.

Action: EPA regional offices should offer local groups support with identifying and procuring safe, neutral venues where stakeholders can meet. Strong collaborative efforts often start at the grassroots level. These individuals or organizations require a safe, attractive, and neutral venue that encourages stakeholders to attend meetings and hold open and honest dialogue. EPA should recognize and embrace this basic requirement of collaboration by facilitating logistical and other resource support for states, tribes, NGOs, and local groups to meet.

Action: EPA regional offices should offer local groups support for identifying and training effective, respected leaders. Every collaborative effort requires effective, respected leadership. Identifying an individual or organization that is highly regarded in the community who can broker, facilitate, organize, and direct the collaborative process is critical when building successful collaborations. EPA should recognize and embrace this basic requirement of collaboration, and provide the capacity and resources to reach out to local groups as well as provide leadership training using effective practices gleaned from successful partnering examples.

Action: EPA should help water sector utilities and leaders to recognize their long-term sustainability interests and needs. Strong leadership is required to ensure that EPA program managers are encouraged to maintain a collaborative facilitator role. Good recent examples of water sector utilities and stakeholders working together for long-term sustainability include the Chesapeake Bay Program⁶ (Region 3), the Schuylkill Action Network⁷ (Region 3), and the Mystic River Workshop⁸ (Region 1).

For example, a major effort is underway to improve the [Schuylkill River](#) and its tributaries by the Schuylkill Action Network (SAN), a national leader in collaborative watershed protection. The SAN is a group of more than 60 government, business, and non-profit partners convened by EPA to tackle the challenges in restoring the river. With guidance from EPA Region 3 and the Philadelphia Water Department, the SAN has grown from four members in 2003 to over 200 members today – representing government agencies, local watershed organizations and land conservation organizations, businesses, universities, water suppliers, and citizens. SAN members use the network to coordinate activities, pool resources, promote policy changes, and implement priority projects that protect and improve the water resources of the Schuylkill River – a source of drinking water for over 1.5 million people in Southeastern Pennsylvania.

⁶ <http://www.chesapeakebay.net>

⁷ <http://www.schuylkillactionnetwork.org>

⁸ <http://www.epa.gov/region1/mysticriver/basicinformation.html>

The SAN provides an effective means of exchanging new information among a diverse and large audience. It promotes efficient implementation of measures intended to protect and improve the Schuylkill watershed. For these reasons, the SAN is good model of how EPA can support water utilities and other leaders in recognizing, and addressing, their long-term sustainability interests and needs.

EPA should strengthen its position as a partnering agency for purposes of enhancing all of its programs, both regulatory and non-regulatory. More effective partnering is particularly important for non-regulatory programs where voluntary action, based on trust, assistance, and persuasion is fundamental. This recommendation is from the National Academy of Public Administration for EPA, April, 2007: Taking Environmental Protection to the Next Level⁹.

Action: EPA should establish a Sustainable Water Resources Stakeholder Advisory Group to assist EPA in the planning and the implementation of the recommendations in this report. This could be done through NACEPT. EPA would benefit from a forum of stakeholders that would be able to provide perspective and feedback about the recommendations contained in this report and others. An important activity that could be carried out with the assistance of such a group would be the development of an action plan and a schedule of implementation. Participation by respected stakeholders in this level of planning could be expected to enhance credibility and acceptability to the activities that emerge from the process, thereby increasing the probability of widespread participation. The impacts of implementation of the recommendations will increase significantly with the support of key stakeholders, such as business and environmental leaders and government officials who are integrally involved in land-use policies and programs. The nature and longevity of the advisory group would depend on EPA procedures and the confirmed value of the advice provided.

Recommendation #3: Provide new economic incentives

Action: EPA needs to strengthen its public message on the need for additional federal funding for water sector initiatives, whether under the banner of the infrastructure crisis, water system security, research and development, water resource planning, or water quality. In an effort to reverse the trend of declining federal financial support for the water environment, EPA needs to work with the water sector professional organizations to explain the coming crisis in water infrastructure sustainability.

Financial incentives are on the decline. In the past decade, Community Based Environmental Protection Watershed Teams have been eliminated from EPA regional offices. Smaller funding programs and other incentives used by local groups such as the Regional Geographic Initiatives and 104(b)(3) grants have also been eliminated. Larger Targeted Watershed Grants have replaced smaller watershed programs better suited for local collaborative efforts with watershed groups. In 2007, ten Targeted Watershed grants were awarded, but only two last year.

⁹ http://www.napawash.org/pc_management_studies/EPA_Summary_Report_5-17-07.pdf

Action: EPA should work to identify and establish new financial incentives to encourage water sector systems to investigate regional collaboration opportunities.

Although there are very limited funds available for existing financial incentive programs such as the Drinking Water State Revolving Fund (DWSRF) and the Clean Watersheds State Revolving Fund (CWSRF), there may still be opportunities to leverage these funds to encourage collaboration. Opportunities include:

- Provide technical assistance to states and tribes based on accessing the 15 percent DWSRF or tribal set-asides to support regional collaboration efforts. For the CWSRF regional facility planning grants, EPA should work to provide a similar dedicated funding stream.
- Encourage states to use a system similar to the Texas Intended Use Plan (IUP) Program to create collaborative incentives.

Texas uses the EPA IUP ranking process to award infrastructure projects additional “ranking points” for regionalization and consolidation. This can be a very powerful incentive, especially since the CWSRF and DWSRF are currently oversubscribed and underfunded. However, these projects are typically offered to the SRF boards for ranking near the completion of the design process and not during the concept/planning period.

Action: EPA should renew Section 208 grant funding. The Section 208 process appears particularly well-suited to re-join the EPA toolbox of financial and regulatory incentives to encourage the watershed approach.

Section 208 Plans. EPA should reinvest in comprehensive watershed management planning and foster collaborative partnerships between utilities and all other stakeholder groups in the watershed as initially envisioned by Section 208. Non-profit citizen watershed groups in partnerships with utilities have demonstrated a greater potential to leverage dollars from a multitude of sources and use the watershed planning process as a means to develop wide consensus within communities. The implementation of these plans will result in healthier watersheds and lower costs for water and wastewater utilities over the long term.

Recommendation #4: Provide new regulatory and policy incentives

The use of consent orders, penalties, and other enforcement actions often shuts down communication and collaboration. As a result, reactive investment decisions can be made by water sector system administrators that are not sustainable in the long run. Care must be taken by EPA to provide the time to engage the regional stakeholders and determine if alternative watershed-based solutions exist.

Action: EPA should work to identify and establish regulatory and policy flexibility, which would encourage water sector systems to explore integrated watershed management and regional collaborative opportunities.

- An excellent example of EPA following this approach is the March 5, 2007 memorandum from Ben Grumbles to EPA Regional Administrators on using Green Infrastructure to Protect Water Quality in Storm Water, CSO, Non-point Source, and other water programs.
- Provide regulatory flexibility and relief to utilities that provide a mentorship program to other systems in the same watershed.

Colorado proposes a utility mentorship program. Colorado is proposing an Environmental Results Program (ERP) for the National Pollution Discharge Elimination System (NPDES) municipal wastewater dischargers. In exchange for a less expensive and less difficult permitting, compliance, and inspection process, a large utility system can establish a mentorship program with a small system. The ERP elements require that: (1) the state develops baseline compliance and establishes performance metrics; (2) the facility self-certifies compliance; (3) the enforcement agency conducts statistically-based, random audits/inspections to evaluate overall compliance for the sector, and takes enforcement actions as necessary to address compliance issues; and (4) the large facility provides mentoring to at least one NPDES minor wastewater discharger to help it improve compliance.

Action: Use enforcement tools to encourage collaboration. EPA should explore regulatory and policy changes that can “legitimize” integrated watershed programs. EPA should create an opportunity for utilities to gain deference—or primacy—from regulatory programs in both permitting and enforcement activities if they are pursuing a strong, collaborative, watershed approach to regional problem solving.

EPA should investigate the creation of a certification process which gives the Agency “reasonable confidence” that a utility’s planning and investment objectives are recognized as delivering multiple environmental and community benefits. These benefits transcend narrow compliance objectives over limited timeframes.

Action: Provide flexibility in enforcement and permitting schedules. EPA should reward rather than inhibit communities that are moving forward with regional collaborative solutions.

- Provide the time and support necessary for communities to achieve their broad environmental and sustainability goals.
- Recognize that the standard 5-year permit cycles, 15-year consent orders, and drinking water Maximum Contaminant Level (MCL) schedules may not provide sufficient time to invest fully in collaborative approaches to problem solving.
- Pursue regulatory and voluntary approaches that use adaptive management principles coupled with the necessary evaluation and assessment processes to ensure that progress is occurring.
- Provide flexibility for municipalities facing storm water Phase II regulations to form regional storm water utilities (perhaps in collaboration with local water and/or wastewater utilities) in order to share costs and implement comprehensive storm water management planning.
- Synchronize monitoring, reporting, and permitting schedules to facilitate a watershed-based program delivery. Many states have already moved in this direction. EPA should convene a workgroup to assess how these programs are working, how to institutionalize watershed-based practices, and how to develop incentives for state and tribal participation.

Recommendation #5: Reduce internal barriers

Action: Re-visit EPA's organizational structure to reduce internal barriers. EPA is to be commended for the significant strides it has already made in support of watershed management and system collaboration, but much more is needed. Part of the challenge for EPA has been that its legislative and regulatory mandates inhibit its organizational, resource, and bureaucratic abilities to focus on its broader environmental, public health, and sustainability goals.

Action: Focus policies, activities, and resources away from single-media, single-issue programmatic goals. Instead, use the broader, more collaborative watershed approach as the unifying theme and ethic.

- Reaffirm, to staff and the public, the Agency's top-down policy commitment to collaborative watershed management through memos, speeches, policy statements, directives, activities, resource allocations, and actions.
- Regularly and systematically grow collaborative partnership activities and programs. As a benchmark, each regional office should initiate five new collaborative processes each year.
- Re-direct human and financial resources to encourage and support regional collaborations. Such collaborations should become the Agency standard rather than an exception.
- Replicate existing models and programs that have successfully integrated regulatory programs, grants, voluntary partnerships, information, technology, and other tools.
- Create new pilot programs that integrate various EPA programs and encourage watershed stakeholders to work together to solve environmental, ecological, and sustainability goals.

Action: Detail enforcement staff to work in collaborative settings. Assign additional Office of Enforcement and Compliance Assurance (OECA) staff to a non-enforcement role in regional collaboration initiatives. EPA can increase the cross training of staff in this vital activity. Enforcement personnel have a lot of knowledge and experience to offer stakeholders.

Recommendation #6: Provide better technical guidance, education, and outreach

Action: Review the existing body of literature and programs. Update, consolidate, and streamline the information. If necessary, conduct research and gather new information. There appears to be no significant level of effort, within EPA, to summarize, publicize, or promote existing information on regional collaboration approaches to water sustainability even though there is an abundance of information and educational tools (i.e., reference documents, training materials, webcasts, etc.). Many of the existing collateral tools were developed through funding or participation by EPA. NACEPT recommends that any necessary research focus on determining the energy-related benefits of integrated

water resource planning, watershed, regional, and green infrastructure approaches, including the energy related benefits of regional and integrated approaches as they relate to infrastructure design, the use of decentralized systems, regional water supply management, materials selection, operation and maintenance and pollution prevention strategies.

Action: Partner with water sector professional organizations to create new, utility-focused initiatives in education, communication, and outreach.

- Develop peer-based water sector utility workshops that promote the use of tools currently available that demonstrate regional collaborative solutions and provide detailed examples of successes in regionalization.
- Develop a utility decision-making “toolbox” to evaluate the opportunities and challenges of regional solutions.
- Create new tools specifically designed for small systems, including model agreements/arrangements to spur discussion and illustrate the possibilities.

Action: Partner with watershed stakeholder organizations to create a new “sustainable watershed” initiative through education, communication, and outreach. Like the water sector utility, in order for other stakeholders to get involved in regional collaborative discussions and agreements, local politicians, homeowners, institutions, planners, farmers, industry, and other stakeholders need to understand, “What is in it for me?” EPA should educate and demonstrate to these stakeholders that the political, economic, and social barriers are worth overcoming in order to create a more financially and environmentally sustainable community.

Action: EPA should revise its Web site to align with the watershed and regional collaboration approach. EPA should revise its Web site to align with the watershed and regional collaboration approach. During this revision, the Web site design needs to be more user-friendly and easier to navigate.

Action: Create an accessible, centralized, Web-based repository of tools and resources. EPA should cross-reference available tools (including the incorporation of the aforementioned “toolbox”) and categorize them by media type, file format, interactive functionality, etc. Access needs to be simple and flexible to maximize its use. EPA should incorporate links to external sites that provide additional tools from other key stakeholders.

Action: EPA should train and educate its regional offices, states, and tribes on these tools and methods so that a clear and consistent message is communicated to the water sector and other stakeholders from policy makers and regulators.

Action: EPA should re-deploy staff to increase dialogue and face-to-face meetings to determine how to promote the long-term sustainability of systems effectively on a local level.



APPENDIX I: SUSTAINABLE WATER INFRASTRUCTURE WORKGROUP MEMBERS AND ACKNOWLEDGEMENTS

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APPENDIX II: EXPERT PRESENTERS

Name	Organization	Web site
Ralph Jones	The Cadmus Group	www.cadmusgroup.com
Bruce Tobey	Massachusetts Municipal Association	www.mma.org
Dominick DiGangi	Greater New Haven Water Pollution Control Authority	www.gnhwpca.org
Normand Labbe	Southern Maine Regional Water Council	
Jackie LeClair	EPA Region 1	www.epa.gov/region01/
Peter Shanaghan	EPA Office of Ground Water and Drinking Water	www.epa.gov/safewater/
John Cromwell	Stratus Consulting	www.stratusconsulting.com
Ken Kirk	National Association of Clean Water Agencies (NACWA)	www.amsa-cleanwater.org/
Tom Curtis	American Water Works Association (AWWA)	www.awwa.org/
Dave Clark	Rural Community Assistance Partnership (RCAP)	www.rcap.org/

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APPENDIX III: LIST OF ACRONYMS

AWWA	American Water Works Association
CMOM	Capacity, Management, Operations and Maintenance
CSO/SSO	Combined Sewer Overflow / Sanitary Sewer Overflow
CUPSS	Check Up Program for Small Systems
CWA	Clean Water Act
CWSRF	Clean Water State Revolving Fund
DWSRF	Drinking Water State Revolving Fund
EPA	US Environmental Protection Agency
ERP	Environmental Results Program
IUP	Intended Use Plan
MCL	Maximum Contaminant Level
MS4	Municipal Separate Storm Sewer System
NACEPT	National Advisory Council for Environmental Policy and Technology
NACWA	National Association of Clean Water Agencies
NEPA	National Environmental Protection Act
NGO	Non-Governmental Organization
NPDES	National Pollution Discharge Elimination System
OECA	Office of Enforcement and Compliance Assurance
OW	EPA Office of Water
RC&D	Resource Conservation and Development Council
RCAP	Rural Community Assistance Partnership
SDWA	Safe Drinking Water Act
SI	Sustainable Water Infrastructure
THMs	Trihalomethanes
TMDL	Total Maximum Daily Load
WRDA	Water Resources and Development Act

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APPENDIX IV: CHARGE TO NACEPT

National Advisory Council for Environmental Policy and Technology Charge for Developing Recommendations on U.S. EPA's Sustainable Infrastructure Watershed Pillar

Background

The EPA Administrator has identified Sustainable Water Infrastructure (hereafter referred to as Sustainable Infrastructure (SI)) as one of the Agency's highest priority initiatives. In January 2003, the Administrator convened a Forum – *Closing the Gap: Innovative Responses for Sustainable Water*. At this Forum, the Assistant Administrator for Water highlighted the "Four Pillars of Sustainable Infrastructure" -- Better Management, Full-Cost Pricing, Water Efficiency, and Watershed Approaches to Protection (hereafter referred as the Watershed Pillar). The SI initiative aims to decrease the gap between growing infrastructure (drinking water plants, piping, etc.) needs and spending, by promoting sustainable infrastructure through the four Pillars.

This charge is being developed to address the challenges specific to the Sustainable Infrastructure (SI) Watershed Pillar. The goal of the Watershed Pillar is to enable utilities (i.e., drinking water and wastewater) and other stakeholders (e.g., local and State agencies, Tribal Governments, local planning and ordinance organizations, environmental advocacy groups, watershed decision makers) to take advantage of opportunities offered by watershed approaches to minimize infrastructure cost and/or operating and maintenance expenses to achieve water quality and quantity and human health protection goals.

One of the most critical challenges facing the Nation is how to sustain our water and wastewater infrastructure to ensure that the public can continue to enjoy the environmental, health, social, and economic benefits that clean and safe water provide.

Our wastewater and drinking water systems are aging, with some system components older than 100 years. Our growing and shifting population requires investment for new infrastructure and maintenance of existing infrastructure. Current treatment strategies and technologies may not be adequate to address emerging issues, investment in research and development has declined, and the prospects for continued large federal investment are limited.

EPA's *Clean Water and Drinking Water Infrastructure Gap Analysis* (2002) estimated that if capital investment and operations and maintenance remained at current levels, the potential gap in funding between 2000 and 2019 would be approximately \$270 billion for wastewater infrastructure and \$263 billion for drinking water infrastructure.

Meeting these challenges requires a multi-faceted approach to managing and sustaining our infrastructure assets. The Nation must change the way we manage, view, value, and invest in our water infrastructure. This can only come about if all parties embrace a collaborative approach that encourages new and innovative solutions to the challenges we all face. All levels of government and the private sector have a shared responsibility for seeking effective, efficient, and fair solutions for sustaining our precious water infrastructure.

Through collaboration with all key stakeholders, the use of effective and innovative approaches and technologies, and a commitment to long-term stewardship of our water infrastructure, we can make better use of our resources, potentially reduce the funding gap and move the Nation's water infrastructure down a pathway toward sustainability over the next fifteen years. For example, more than 4,000 local watershed organizations are at work in the United States. They are advocating watershed restoration, source water protection, improved site design, erosion control, land conservation, and storm water management -- to name just a few activities.

The watershed approach is generally invoked to mean broad stakeholder involvement, hydrologically defined boundaries, and coordinated management across all aspects of policy that affect water. "Source water protection" is the watershed approach's analog under the Safe Drinking Water Act. The watershed approach and source water protection are grounded in science and allow for prioritization and cost-effective interventions, as appropriate.

The EPA Office of Water's 2003 guidance on watershed-based permitting and water quality trading allow for strategic, cost-effective actions to meet water quality standards. Watershed goals and the impact of multiple pollutant sources and stressors, including nonpoint sources, are considered when National Pollutant Discharge Elimination System (NPDES) permits are written for multiple sources in a watershed. The goal of this approach is to issue permits that take into account the conditions of the entire watershed and address diverse pollution sources, not just individual point sources. Often, such permits carry a trading component. A current example of a successful watershed-based permit with trading can be found along Long Island Sound, where nitrogen trading among dozens of publicly owned treatment works in Connecticut is expected to save more than \$200 million in control costs.

Source water protection, targeted to protect current and future sources of drinking water, also holds the promise of substantial benefits. EPA has determined that preventing contamination can be up to 40 times more cost effective than remediation of a drinking water source or finding a new one.

Development decisions are another important approach to the watershed paradigm. Development decisions are generally made at the local level. While local governments have direct authority over land use and development decisions, many states play important roles in setting statewide approaches to planning for growth.

The EPA cannot and should not be a national or regional development board, but the federal government can help states, Tribes and municipalities better understand the impacts of development patterns. The Source Water Collaborative's¹⁰ recent Vision Statement notes that drinking water protection should be integrated into land-use planning and stewardship; road, sewer and water projects; farming, industry and development practices; waste disposal methods; watershed planning, protection and clean-up; and the routine decisions Americans make every day. EPA is working to help states and communities (and should be working to help Tribes) realize the economic, community, and environmental benefits of smart growth by: 1) providing information, model programs, and analytical tools to inform communities about growth and development; 2) working to remove federal barriers that may hinder smarter community growth; and 3) creating new resources and incentives for states and communities pursuing smart growth.

A key objective the Agency wishes to advance under the sustainable infrastructure effort is the merger of watershed management principles into utility management, so that key decision makers consider the watershed approach alongside the traditional treatment technology investments. As part of this effort, the Agency needs information regarding whether: 1) a bias exists in favor of technological investments due to existing governmental policies, institutional structures, scientific uncertainties, or problems in valuing the benefits of using a watershed approach; and 2) if such a bias exists, how can this bias be eliminated?

The SI now seeks to develop more robust information, data, case studies, and lessons-learned with respect to the use of watershed approaches to avoid or reduce current or future infrastructure costs and/or operating and maintenance expenses. EPA is specifically interested in gathering data on the cost savings and ecological and public health benefits that the use of such an approach may accrue while still achieving compliance with the requirements of the Clean Water Act and Safe Drinking Water Act.

Charge to the NACEPT Water Infrastructure Workgroup

The Water Infrastructure Workgroup of the National Advisory Council for Environmental Policy and Technology (NACEPT) is asked to assist the Agency in advancing cost-effective and sustainable approaches to water resource management and infrastructure to meet watershed goals. It is the Agency's position that the watershed approach is critical to protecting and restoring the nation's waters. The Agency furthermore suspects that in order for the benefits of the watershed approach to be fully realized it must be integrated into the comprehensive planning processes at the state, regional and local levels.

¹⁰ The *Source Water Collaborative* consists of a broad set of constituencies that include the U.S. EPA and 13 national premier organizations (representing state agencies, water utilities and environmental groups) that have agreed to combine their efforts to protect drinking water sources.

There are several areas where NACEPT can assist the Agency in determining how to best use its expertise and resources to promote the watershed approach, as it specifically applies to Sustainable Infrastructure, and its integration into state, regional and local comprehensive planning processes.

Overall Goals:

- A. Promote the development of sustainable infrastructure by elevating water resource and infrastructure protection and management as a state, regional and local government priority in the comprehensive planning process on a par with transportation planning, public safety and schools.
- B. Encourage widespread adoption of an integrated planning approach focused on water resource and infrastructure protection and management.
- C. Provide information, data, tools and tools necessary for state and local governments and their communities to adopt these approaches.

Research and Recommendations

The Charge encompasses two distinct focus areas. Consequently, the Office of Water is proposing that NACEPT adopt a phased approach for addressing the charge over a two-year period.

A. Phase 1: Comprehensive Planning and Decision-Making

No later than May, 2007 NACEPT would identify incentives, drivers, barriers, and other factors that encourage or inhibit the prioritization of water resource infrastructure and management into the comprehensive state, regional and municipal planning frameworks and decision making processes.

Also no later than May, 2007 NACEPT would provide recommendations to the Agency on:

1. Actions the Agency can take to help states and local governments overcome the barriers and impediments that prevent the full integration of water resource management as a priority in their respective planning and decision making processes. For example:
 - a. How can the Agency more effectively promote increased collaboration among drinking water, wastewater and storm water utilities, local governments, planning boards and other stakeholders that result in collective water infrastructure priority setting under a watershed management context through education and other means?
 - b. How can municipalities and other local government/regional planning entities build support for promoting a watershed approach to water infrastructure planning?
 - c. Using relevant examples from the recent Cooperation Conservation Conference, what are the ways in which “cooperative conservation” or “coordinated resource management” has been or can be used to overcome barriers to promoting a watershed approach to water infrastructure planning?

- d. How can EPA, States, or others influence various community stakeholders to adopt and promote such an approach?
- e. What are the specific barriers embodied in existing EPA and state policies or practices that need to be remedied to help EPA and states further encourage and assist entities to consider and implement alternative and integrated approaches for water infrastructure planning and management?

Phase 2: Benefits of Traditional versus Alternative Approaches to Water Resource Infrastructure and Management

No later than May, 2008 NACEPT would identify, analyze and report on the *actual or potential benefits* that accrue to local governments and utilities that use alternative and integrated approaches to manage wastewater, drinking water, and storm water, and the factors that affect whether alternative or traditional approaches are more cost-effective. Examples of these alternative approaches include centralized management of decentralized technologies and systems, soft path technologies, conservation designs, smart growth strategies, water conservation and reuse policies and low impact development approaches.

In doing so, NACEPT would examine specific examples and associated factors from communities where centralized approaches are predominant and those where alternative approaches have been used, along with the key factors that caused these communities to adopt these approaches.

In addition, NACEPT would identify, analyze and report on the *actual or potential incentives* for local governments and utilities to use alternative and integrated approaches to manage wastewater, drinking water, and storm water.

Also no later than May, 2008 NACEPT would provide recommendations to the Agency on:

1. Specific actions (e.g., policy, guidance, technical and programmatic tools, research) that the Agency can take to encourage and promote the investigation of alternative approaches that could meet water quality and service objectives at lower life-cycle cost than traditional approaches. For example, assist EPA in identifying mechanisms for promoting consideration of centralized management and oversight of decentralized systems as a cost-effective alternative to physical consolidation of infrastructure.

Potential Future Work

EPA would be open to identifying additional research areas, upon completion of the current charge, to further improve the understanding of sustainable infrastructure issues. The additional research topics may include new areas or may build upon the results of the current research charge.

NACEPT Charge Addendum (Phase II): August 15, 2007

This Addendum is intended to clarify and refine Part II of the charge. Part II deals primarily with the benefits and cost effectiveness of integrated approaches to managing drinking water, wastewater and storm water. With the progress achieved in some areas since the charge was written, EPA believes it would receive the greatest benefit from the workgroup focusing on collaborative opportunities or partnerships (COoP) between utilities (water, wastewater and/or storm water) and/or other stakeholders within a watershed or region.

EPA would like to better understand the barriers and incentives to achieving cost efficiencies and economies of scale that result from COoPs and reduce the infrastructure gap and enhance sustainability.


Examples include outsourcing of certain functions; circuit rider programs; pooled purchasing arrangements; central management of decentralized water and wastewater systems; physical connection and merging of systems; watershed partnerships, etc.

NACEPT will talk with experts in the field and study key examples to determine what COoPs are most effective in achieving efficiencies.

NACEPT will consider whether there are characteristics (e.g. size, growth rates etc.) that prevent a utility from being cost effective without entering into some form of COoP.

NACEPT would consider barriers and actual or potential incentives that exist (at the Federal, State, Tribal and Local level) to foster successful COoP.

NACEPT would identify specific stakeholder (utilities, States, tribal and local governments, citizen groups, etc) actions that could be taken and recommend to EPA changes in policy, outreach, internal operations, and/or incentives and disincentives to foster COoPs.



APPENDIX V: REFERENCES

- Theriault, B. [March 21, 2005] "Small and Large Water Utilities Will Benefit from a Bill that Creates Regional Councils." Column in *Portland Press Herald*. [Southern Maine Regional Water Coalition]
- Southern Maine Regional Water Council. [October 25, 2006] Mutual Aid Agreement for the Southern Maine Regional Water Council.
- U.S. Environmental Protection Agency, Office of Water. 2008. "Factoids: Drinking Water and Ground Water Statistics for 2007." EPA document 816-K-07-004. March 2008. Online at: www.epa.gov/safewater/data.
- Massachusetts Coalition for Water Resources Stewardship. 2007. "The Case for Environmental Regulatory Reform: Clean Water Act NPDES Permitting." White paper, November 14, 2007.
- Raucher, B. 2007. "Sustainability: What Does it Really Mean and How Do Water Utilities Get There?" PowerPoint presentation. Prepared for the American Water Works Association, Annual Conference and Exhibition, Toronto, Ontario. June 27, 2007.
- U.S. Environmental Protection Agency, Office of Water. 2002. *System partnership solutions to improve public health protection*. EPA Document 816-R-02-022. September 2002.
- U.S. Environmental Protection Agency, Office of Water. *System partnership solutions to improve public health protection: Volume 2*. EPA Document 816-R-06-005.
- U.S. Environmental Protection Agency, Office of Water. 2001. "Building water system capacity: A guide for tribal administrators." EPA document 816-K-01-08. July 2001.
- [Water Environment Federation] 2007. "Case studies addressing innovative utility approaches to watershed management." August 8, 2007. Draft #5.
- Yeager, T., R. Ehrhard, and J. Murphy. 2006. Business attributes of successful responsible management entities.
- Western Governors' Association. 2006. "Water needs and strategies for a sustainable future." June 2006.
- U.S. Environmental Protection Agency, Office of Water. 2007. Restructuring and consolidation of small drinking water systems: A compendium of state authorities, statutes, and regulations. EPA Document 816-B-07-001. October 2007.

- U.S. Environmental Protection Agency, Office of Water. 2008. *National capacity development strategic plan*. EPA Document 816-K-07-003. January 2008.
- U.S. Environmental Protection Agency, Office of Water. 2000. Report of the National Drinking Water Advisory Council, Small Systems Implementation Working Group. EPA Document 816-R-00-012.
- Raucher, R.S. et al. 2006. *Regional solutions to water supply provision*. Report prepared for: AWWA Research Foundation and U.S. Environmental Protection Agency. Under Cooperative Agreement R829679-01. Document 1P-3.5C-91146-10/06-NH.
- NACEPT. 2008. "Everyone's Business: Working Towards Sustainability Through Environmental Stewardship and Collaboration." EPA Document 130-K-08-001. March 2008.
- Cadmus Group et al. 2002. Selections from: A study of best practices in the water and wastewater sector for the Ontario Superbuild Corporation. Final report. April 1, 2002.

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