

**Environmental Protection Agency  
2005 Annual Performance Plan and Congressional Justification**

**Table of Contents**

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<b>Goal 2: Clean and Safe Water</b> .....	II-1
Protect Human Health .....	II-12
Protect Water Quality .....	II-50
Enhance Science and Research .....	II-86
Subject Index .....	II-98



## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Clean and Safe Water

**STRATEGIC GOAL:** Ensure drinking water is safe. Restore and maintain oceans, watersheds, and their aquatic ecosystems to protect human health, support economic and recreational activities, and provide healthy habitat for fish, plants, and wildlife.

#### Resource Summary (Dollars in thousands)

	FY 2003	FY 2004	FY 2005	FY 2005 Req. v.
	Actuals	Pres. Bud.	Pres. Bud.	FY 2004 Pres Bud
<b>Clean and Safe Water</b>	<b>\$3,725,201.9</b>	<b>\$2,959,731.8</b>	<b>\$2,936,968.6</b>	<b>(\$22,763.3)</b>
Protect Human Health	\$1,259,787.6	\$1,192,187.1	\$1,170,339.6	(\$21,847.5)
Protect Water Quality	\$2,346,144.8	\$1,647,043.1	\$1,645,669.9	(\$1,373.3)
Enhance Science and Research	\$119,269.5	\$120,501.6	\$120,959.1	\$457.5
Total Workyears	2,941.4	3,053.6	3,041.4	-12.3

#### **BACKGROUND AND CONTEXT**

Over the 30 years since enactment of the Clean Water and Safe Drinking Water Acts (CWA and SDWA), government, citizens, and the private sector have worked together to make dramatic progress in improving the quality of surface waters and drinking water.

Thirty years ago, much of the nation's tap water had either very limited treatment (usually disinfection) or no treatment at all. About two-thirds of the surface waters assessed by states were not attaining basic water quality goals and were considered polluted.<sup>1</sup> Some of the Nation's waters were open sewers posing health risks and many water bodies were so polluted that traditional uses, such as swimming, fishing, and recreation, were impossible.

Today, drinking water systems monitor and treat water to assure compliance with drinking water standards covering a wide range of contaminants. In addition, we now protect sources of drinking water through activities such as regulating injection of wastes to ground waters. A massive investment of federal, state, and local funds resulted in a new generation of wastewater treatment facilities able to provide "secondary" treatment or better. Over 50 categories of industry now comply with nationally consistent discharge regulations. In addition, sustained efforts to implement "best management practices" have helped reduce runoff of pollutants from diffuse or "nonpoint" sources.

Cleaner, safer water has renewed recreational, ecological, and economic interests in communities across the nation. The recreation, tourism, and travel industry is one of the largest

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<sup>1</sup> United States Environmental Protection Agency Office of Water. 1998. *Clean Water Action Plan: Restoring and Protecting America's Water*. Washington, DC: Government Printing Office.

employers in the nation, and a significant portion of recreational spending comes from swimming, boating, sport fishing, and hunting.<sup>2</sup> Each year, more than 180 million people visit the shore for recreation.<sup>3</sup> In 2001, sportspeople spent a total of \$70 billion— \$35.6 billion on fishing, \$20.6 billion on hunting, and \$13.8 billion on items used for both hunting and fishing. Wildlife watchers spent an additional \$38.4 billion on their activities around the home and on trips away from home.<sup>4</sup> The commercial fishing industry, which also requires clean water and healthy wetlands, contributed \$28.6 billion to the economy in 2001.<sup>5</sup> The Cuyahoga River, which once caught fire, is now busy with boats and harbor businesses that generate substantial revenue for the City of Cleveland. The Willamette River in Oregon has been restored to provide swimming, fishing, and water sports. Even Lake Erie, once infamous for its dead fish, now supports a \$600 million per year fishing industry.<sup>6</sup>

Much of the dramatic progress in improving the nation's water quality over the past 30 years is directly attributable to our improvements in water infrastructure. Entering the 21<sup>st</sup> century, however, the job is far from over. Despite the gains made since the passage of the CWA and the SDWA, approximately 40% of the nation's waters assessed by states still do not meet basic water quality standards.<sup>7</sup> Remaining water quality problems are not easily remedied: they come not just from discharge from pipes, but from diffuse sources – farming and forestry, construction sites, urban streets, automobiles, atmospheric deposition, even suburban homes and yards. They are no longer just chemical in nature. There are biological threats to our nation's waters that we must address as well if we are to truly achieve the stated goal of the CWA to “restore and maintain the chemical, physical, and biological integrity of the nation's waters.”

States have identified more than 25,000 waterways as being impaired and have listed a group of principal causes of impairment to the waterways.<sup>8</sup> One of these impairments is pesticides. The U.S. Geological Survey (USGS) has synthesized contaminant and nutrient data from its 1992-1998 National Water Quality Assessment (NAWQA) program. This assessment found that detectable concentrations of pesticides are widespread in urban, agricultural and mixed-use area streams. Interestingly, streams in urban areas generally have higher concentrations of insecticides than streams in agricultural areas, however incidences are generally lower. Recent trends toward low-density development (sprawl) will increase waterways' overall exposure to pesticides because it leaves fewer pristine natural areas and fewer trees and exposes more land to pesticides.

Reductions of pesticide concentrations in streams and groundwater require management strategies that focus on reducing chemical use. This means local and regional management strategies are needed to account for geographic patterns in chemical use and natural factors. One of the primary concerns for water quality in the U.S. is the role of small, dispersed sources of

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<sup>2</sup> Travel Industry Association of America. *Tourism for America, 11<sup>th</sup> Edition*. Washington, DC: Travel Industry of America.

<sup>3</sup> Pew Oceans Commission. 2002. *America's Living Oceans Charting a Course for Sea Change*. Arlington, VA: Pew Oceans Commission.

<sup>4</sup> U.S. Fish and Wildlife Service. 2002. *2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation*. Washington, DC: Government Printing Office.

<sup>5</sup> National Marine Fisheries Service. 2002. *Fisheries of the U.S. 2001*. Washington, DC: Government Printing Office.

<sup>6</sup> United States Environmental Protection Agency Office of Water. 1998. *Clean Water Action Plan: Restoring and Protecting America's Water*. Washington, DC: Government Printing Office.

<sup>7</sup> 303(d) information comes from: U.S. Environmental Protection Agency. *States' Listing of Impaired Waters as Required by Clean Water Act Section 303(d)*. Washington, DC. Available online at [http://oaspub.epa.gov/waters/national\\_rept.control](http://oaspub.epa.gov/waters/national_rept.control).

<sup>8</sup> 303(d) information comes from: U.S. Environmental Protection Agency. *States' Listing of Impaired Waters as Required by Clean Water Act Section 303(d)*. Washington, DC. Available online at [http://oaspub.epa.gov/waters/national\\_rept.control](http://oaspub.epa.gov/waters/national_rept.control).

non-point source pollution. The major factors that contribute to the increasing levels of pesticides found in streams and groundwater include the application pattern of pesticides, the soil condition and the amount of rainfall or irrigation, which can increase pesticide run-off into streams and rivers.

Communities are challenged to find the fiscal resources to sustain the gains of the past 30 years, while providing clean and safe water for the future. They must find ways to replace aging infrastructure, to meet growing infrastructure demands fueled by population growth, and to secure their water and wastewater infrastructure against threats. To further our progress toward clean waters and safer drinking water, we must both maintain our commitment to the core measures we have already established and look for new ways to improve water quality and protect human health.

## **MEANS AND STRATEGY**

EPA will focus on four key strategies to accelerate progress toward achieving the Nation's clean and safe water goals. To better address the complexity of the remaining water quality challenges, EPA will promote local watershed approaches to achieving the best and most cost effective solutions to local and regional water problems. To protect and build on the gains of the past, EPA will focus on its core water programs. To maximize the impact of each dollar, EPA will continue to strengthen our vital partnerships with States, Tribes, local governments, and other parties that are also working toward the common goal of improving the Nation's waters. To leverage progress through innovation, EPA will promote water quality trading, water efficiency, and other market based approaches.

To achieve the Nation's clean and safe water goals, EPA will operate under an overarching watershed approach in carrying out its statutory authorities under both the SDWA Amendments of 1996 and the CWA. EPA is committed to helping local governments meet the challenges of water management in the 21<sup>st</sup> century in fiscally responsible and sustainable ways. We want to maintain the improvements in water quality, while enabling communities to grow and prosper.

EPA's core water programs are the fundamental underpinning for protecting and building on the gains of the past. This approach calls for setting watershed goals, assessing conditions, determining sources of concern, addressing them using regulatory and voluntary tools, and then re-evaluating and adapting plans as new information becomes available. By focusing and integrating the work of EPA with sister agencies, States, Tribes, local governments, industry, and nonprofit organizations in watersheds, we are able to pool information, resources, and authorities and focus our collective energies on our common environmental objectives. In watersheds, we can better understand the cumulative impact of activities, determine the most critical problems, better allocate limited financial and human resources, engage stakeholders, win public support, and make real improvements in the environment.

Maintaining high environmental standards and sustaining a healthy economy requires that we work with States, Tribes, local governments, and other partners to optimize costs and conserve our natural resources. Innovative programs like water quality trading are based on a broad environmental perspective, looking at entire watersheds. Trading can capitalize on

economies of scale and control cost differentials among and between sources. Trading is a valuable tool to more cost-effectively implement TMDLs, and to enable communities to grow and prosper while maintaining their commitment to water quality. Trading can also be an appropriate mechanism in a pre-TMDL context.

As a result of mounting evidence that pesticide use can lead to contamination of groundwater, the Agency has developed a groundwater strategy. This strategy is designed to protect our groundwater resources from pesticide contamination. The Agency is working with the States and Tribes to implement local aspects of the strategy which includes providing assistance in the development of Pesticide Management Plans for both generic aspects of pesticide use, as well as more specific plans for a particular pesticide. The plans provide a roadmap to managing pesticides through preventive and corrective measures. In addition, EPA has an extensive scientific review process for data on new pesticides prior to granting registration, and on older pesticides under the reregistration program. One of the assessment areas for pesticides is the impact on ecosystems, including the likelihood of the chemical or product to leach into groundwater, or to persist in surface water after it leaves the field as runoff. Restrictions on use of the pesticide can be added to the registration (or reregistration), if warranted.

## **Research**

EPA's water research program supports the Agency's Clean and Safe Water Goal by providing the scientific basis essential for protecting human health and the environment. Implementation of the research provisions in the 1996 Safe Drinking Water Act (SDWA) amendments and the Clean Water Act will provide improved tools (e.g., methods, models, risk assessments, management strategies, and new data) to better evaluate the risks posed by chemical and microbial contaminants that persist in the environment and threaten wildlife and, potentially, human health.

The drinking water research program will focus on filling key data gaps and developing analytical detection methods for measuring the occurrence of chemical and microbial contaminants on the Contaminant Candidate List (CCL) and developing and evaluating cost-effective treatment technologies for removing pathogens from water supplies while minimizing disinfection by-product (DBP) formation. The water quality research program will provide approaches and methods the Agency and its partners need to develop and apply criteria to support designated uses, tools to diagnose and assess impairment in aquatic systems, and tools to restore and protect aquatic systems. Water quality research will address a wide spectrum of aquatic ecosystem stressors, with particular attention accorded to stressors that the Agency most often cites as causing water body impairment, including pathogens/indicators of fecal contamination, nutrients, and suspended and bedded sediments.

Several mechanisms are in place to ensure a high-quality water research program at EPA. EPA's Science Advisory Board (SAB), an independently chartered Federal Advisory Committee Act (FACA) committee, meets annually to conduct an in-depth review and analysis of EPA's Science and Technology account. The SAB provides its findings to the House Science Committee and sends a written report on the findings to EPA's Administrator after every annual review. EPA's Board of Scientific Counselors (BOSC) provides counsel to the Assistant Administrator for the Office of Research and Development (ORD) on the operation of ORD's

research program. Also, under the Science to Achieve Results (STAR) program all research projects are selected for funding through a rigorous competitive external peer review process designed to ensure that only the highest quality efforts receive funding support. EPA's scientific and technical work products must also undergo either internal or external peer review, with major or significant products requiring external peer review. The Agency's Peer Review Handbook (2<sup>nd</sup> Edition) codifies procedures and guidance for conducting peer review.

## **STRATEGIC OBJECTIVES AND FY 2005 ANNUAL PERFORMANCE GOALS**

### **Protect Human Health**

- In 2005 93% of the population served by community water systems will receive drinking water that meets all applicable health-based drinking water standards through effective treatment and source water protection.
- In 2005 94% of the population served by community water systems will receive drinking water that meets health-based standards with which systems need to comply as of December 2001.
- In 2005 75% of the population served by community water systems will receive drinking water that meets health-based standards with a compliance date of January 2002 or later.
- In 2005 94% of community water systems will provide drinking water that meets health-based standards with which systems need to comply as of December 2001.
- In 2005 75% of community water systems will provide drinking water that meets health-based standards with a compliance date of January 2002 or later.
- In 2005 90% of the population served by community water systems in Indian country will receive drinking water that meets all applicable health-based drinking water standards.
- In 2005 20% of source water areas for community water systems will achieve minimized risk to public health.
- In 2005 80% of the shellfish growing acres monitored by states are approved or conditionally approved for use.
- In 2005 At least 1% of the water miles/acres identified by states or tribes as having a fish consumption advisory in 2002 will have improved water and sediment quality so that increased consumption of fish and shellfish is allowed.
- In 2005 Coastal and Great Lakes beaches monitored by State beach safety programs will be open and safe for swimming in over 94% of the days of the beach season.
- In 2005 Restore water quality to allow swimming in not less than 2% of the stream miles and lake acres identified by states in 2000 as having water quality unsafe for swimming.

## **Protect Water Quality**

- In 2005 500 of the Nation's watersheds have water quality standards met in at least 80% of the assessed water segments.
- In 2005 Water quality standards are fully attained in over 25% of miles/acres of waters by 2012, with an interim milestone of restoring 2% of these waters - identified in 2000 as not attaining standards - by 2005.
- In 2005 Improve ratings reported on the national "good/fair/poor" scale of the National Coastal Condition Report for: coastal wetlands loss by at least 0.1 point; contamination of sediments in coastal waters by at least 0.1 point; benthic quality by at least 0.1 point; & eutrophic condition by at least 0.1 point
- In 2005 Scores for overall aquatic system health of coastal waters nationally, and in each coastal region, is improved on the "good/fair/poor" scale of the National Coastal Condition Report by at least 0.1 point
- In 2005 In coordination with other federal partners reduce, by 11%, households on tribal lands lacking access to basic sanitation.
- In 2005 Water quality in Indian country will be improved at not less than 35 monitoring stations in tribal waters for which baseline data are available (i.e., show at least a 10% improvement for each of four key parameters: total nitrogen, total phosphorus, dissolved oxygen, and fecal coliforms.)

## **Enhance Science and Research**

- In 2005 By 2005, provide methods for developing water quality criteria so that, by 2008, approaches and methods are available to States and Tribes for their use in developing and applying criteria for habitat alteration, nutrients, suspended and bedded sediments, pathogens and toxic chemicals that will support designated uses for aquatic ecosystems and increase the scientific basis for listing and delisting impaired water bodies under Section 303(d) of the Clean Water Act.

## **HIGHLIGHTS**

### **Surface Water Protection**

Water Quality Monitoring: EPA's fiscal year 2005 request will be the first step toward solving the well-documented shortcomings of the Nation's water quality monitoring. The most cost-efficient, practical means of making the most of scarce resources is information-based management that uses tools such as prevention, source water protection, watershed trading, and permitting on watershed basis. Monitoring is the foundation for information-based environmental management. It is imperative that we close data and information gaps as quickly as possible: they lead to market and regulatory failures, thwart our ability to document progress,



and limit our ability to effectively target limited resources. Without adequate monitoring data, the managers of water programs cannot inform the public about the condition of the Nation's waters; make wise management decisions; demonstrate the success or failure of those programs; and verify that resources are being used cost-effectively. Federal, State, and local monitoring data are essential for States to carry out their responsibilities for Clean Water Act requirements. Strengthening our monitoring program for both surface and ground water will allow for special emphasis on drinking water sources to support expeditious actions to protect or clean up these critical resources.

High quality, current monitoring data is critical for states and others to: make watershed-based decisions, target water quality criteria development, develop necessary standards and total maximum daily loads (TMDLs), and accurately and consistently portray conditions and trends. To support these efforts, the President's Budget proposes \$20 million to implement improved state monitoring efforts that will:

- Describe the condition of aquatic resources at multiple scales using scientifically defensible methods that are statistically valid and compatible;
- Apply predictive tools to target waters that need more intensive monitoring;
- Implement data management systems to facilitate exchange and use of data of documented quality;
- Determine site-specific water quality impacts, appropriate protection levels and cost-effective management actions;
- Monitor performance to determine effectiveness of management actions and support adaptive management, if needed; and
- Utilize monitoring councils/partnerships to improve collaboration among entities collection, analysis, and use of monitoring data and information.

This approach will result in social costs savings by maximizing the efficiency of monitoring and assessment resources and, more importantly, by ensuring that resources invested in environmental protection activities are directed most efficiently and are achieving performance objectives.

Concentrated Animal Feeding Operations and Storm Water: As evidenced by recent newspaper articles, withdrawal petitions, and the permit backlog, some States are struggling with implementation of their NPDES permitting programs. In addition, the universe of facilities is increasing due to new program requirements to permit concentrated animal feeding operations (CAFOs) and additional sources of storm water. Without timely issuance of high quality permits, necessary improvements in water quality will be delayed. To help States with this workload, we are requesting an increase of \$5 million for Section 106 Grants. This increase would be used by States to support implementation of NPDES CAFO programs, which should result in pollutant reductions of over 2 billion pounds annually,<sup>9</sup> and to support State issuance of storm water permits, resulting in long term annual reductions of approximately 100 billion pounds of sediment.<sup>10</sup>

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<sup>9</sup> United States Environmental Protection Agency Office of Water. (January 2001). Development Document for the Proposed Revisions to the National Pollutant Discharge Elimination System Regulation and the Effluent Guidelines for Concentrated Animal Feeding Operations. (EPA-821-R-01-003). Washington, D.C. [On-line] Available: <http://epa.gov/waterscience/guide/>

<sup>10</sup> U.S. EPA, Office of Water. "Economic Analysis of the Final Phase II Storm Water Rule," EPA 833-R-99-002, October 1999.

Water Quality Trading: Water quality trading is a watershed approach based on voluntary partnerships at the local level. It capitalizes on economies of scale and control cost differences among sources, by allowing one source to meet its regulatory obligation by using pollutant reductions created by another source that has lower pollution control costs. Trading provides incentives for voluntary pollutant reductions, especially from sources that are not regulated. It encourages early reductions and more cost effective programs for restoring impaired waters. Trading also provides incentives for innovative solutions to complex and diverse water quality problems across the nation.

A current example of a successful trading effort between point sources can be found on Long Island Sound, where nitrogen trading among publicly owned treatment works in Connecticut is expected to save over \$200 million in control costs. A March 2003, report by the World Resources Institute, states that market mechanisms such as nutrient trading provide the greatest overall environmental benefits and a cost-effective strategy for reducing the Mississippi River Basin's contribution to the Dead Zone in the Gulf of Mexico. The report highlights the fact that trading provides a real opportunity for farmers to play a role in reducing nutrient pollution.<sup>11</sup>

In FY 2005, we plan to redirect \$4 million for this effort, to be set-aside within the Targeted Watershed Grants.

Water Efficiency: At the end of 2002, nearly half the continental U.S. was in drought.<sup>12</sup> In addition to reduced rainfall, most of our water systems also face a growing population and a growing economy. In the future, our waters are going to be even more stretched across competing demands. The Agency is committed to helping States and local governments address a multi-billion dollar gap between water and wastewater infrastructure needs and available capital financing over the next 20 years.

One way to reduce national water and wastewater infrastructure needs is by reducing water demand and wastewater flows, allowing for deferral or downsizing of capital projects. In addition to reduced infrastructure needs, less water demand may result in many environmental benefits including maintaining stream flows, protecting aquatic habitats, avoiding overdrawn aquifers, conserving sources of supply, and mitigating drought effects. In anticipation of these benefits, we are proposing to develop and implement a water efficiency market enhancement program that would promote recognition of water-efficient products based on the highly successful Energy Star Program. The Budget includes nearly \$1 million for this new program.

## **Surface Water Protection & Drinking Water Programs**

Sustainable Infrastructure: Closing the infrastructure gap requires actions and innovations to reduce the demand for infrastructure, including better management, conservation (or smart water use), and intergovernmental cooperation through the watershed approach.

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U.S. EPA, Office of Water. "Construction and Development Effluent Guideline Proposed Rule," *Federal Register* Notice (June 24, 2002). Accessed December 29, 2003. Available on the internet at: <http://www.epa.gov/waterscience/guide/construction/rule.html>

<sup>11</sup> Greenhalgh, Suzie and Amanda Sauer. 2003. "Awakening the 'Dead Zone': An Investment for Agriculture, Water Quality, and Climate Change." World Resources Institute.

<sup>12</sup> The Drought Monitor; National Drought Mitigation Center; Website: [www.drought.unl.edu/dm/about.html](http://www.drought.unl.edu/dm/about.html)

The touchstone of a long-term strategy to manage and maintain the Nation's infrastructure is fiscal sustainability. An important component of this strategy is promoting sustainable water and wastewater treatment systems. This includes ensuring the technical, financial, and managerial capacity of water and wastewater systems; helping service providers avoid future gaps and expanding watershed approaches that engage stakeholders in broad-based action-oriented partnerships to identify efficient and effective local infrastructure solutions by adopting sustainable management systems to improve efficiency and economies of scale; and reducing the average cost of service. Through a \$2.5 million sustainable infrastructure initiative, we will work in partnership with States, the utility industry, and other stakeholders to enhance the operating efficiencies of water and wastewater systems. These efficiencies can help systems make the infrastructure investments needed to meet growing consumer demand, and help to sustain the human health and environmental gains we have achieved over the past three decades.

In FY 2005, the Agency will continue to coordinate with States and Tribes providing guidance and assistance in the development of generic and specific Pesticide Management Plans in order to protect our ground water resources. EPA will coordinate pesticide water issues and assist our partners in identifying and implementing effective ground water protection programs through these plans. The Agency will continue to support efforts on identifying the adverse effects of pesticides in ground and surface water at the State, Tribal and Regional levels. Additionally, we will continue to assist States and Tribes in identifying, developing and implementing measures to prevent or reduce water contamination. Key to this effort will be tailoring preventive and recovery measures to localities and specific pesticides.

## **Research**

In FY 2005, EPA's drinking water research program will continue to conduct research to reduce the uncertainties of risk associated with exposure to microbial contaminants in drinking water and improve analytical methods to control risks posed by drinking water contamination. The drinking water research program will continue to focus on chemical and microbial contaminants on current and future CCLs. Significant data gaps still exist on the occurrence of harmful microbes in source and distribution system water, linkages between water exposure and infection, and the effectiveness of candidate treatment technologies to remove and inactivate these contaminants. Efforts will also continue to support arsenic-specific research and development of more cost-effective treatment technologies for the removal of arsenic from small community drinking water systems.

EPA is working to develop biological and landscape indicators of ecosystem condition, sources of impairment, stressor response/fate and transport models, and options for managing stressors and their sources. Through the development of a framework for diagnosing adverse effects of chemical pollutants in surface waters, EPA will be able to evaluate the risks posed by chemicals that persist in the environment and accumulate in the food chain, threatening wildlife and potentially human health. The Agency will also develop and evaluate more cost-effective technologies and approaches for managing sediments, and evaluate management options for watershed restoration of TMDLs for other significant stressors (e.g., nutrients, pathogens and toxic compounds). Finally, research to address uncertainties associated with determining and reducing the risks to human health of the production and application of treated wastewater sludge

(biosolids) to land for use as fertilizers and soil conditioners is emerging as an area of renewed importance for the Agency.

Another area of research will focus on growing evidence of the risk of infectious diseases resulting from exposure to microbes in recreational waters. Exposure to these diseases is of particular concern after major rainfall events that cause discharges from both point and non-point sources. These events may pose risks to human and ecological health through the uncontrolled release of pathogenic bacteria, protozoans, and viruses, as well as a number of potentially toxic, bioaccumulative contaminants. EPA will develop and validate effective watershed management strategies and tools for controlling wet weather flows (WWFs), which will enable EPA to provide states with consistent monitoring methods, standardized indicators of contamination, and standardized definitions of what constitutes a risk to public health.

## **EXTERNAL FACTORS**

EPA's strategies for achieving clean and safe water depend on substantial contributions and investments by many public and private entities.

States are primary partners in implementation of both clean water and safe drinking water programs. Many states, however, are facing budget problems and even deficits. EPA recognizes that state budget shortfalls are an external factor that may limit progress toward clean and safe water goals.

Consistent with the federal government's unique trust responsibility to federally recognized tribes, EPA implements programs in Indian country, helps build tribal capacity to administer clean and safe water programs, and works with authorized tribes as co-regulators. Unlike states, many tribes are still developing programs to administer clean and safe water programs.

Local governments play a critical role in implementing clean and safe water programs, and the continued participation of local government in these programs is critical to cleaner, safer water. Municipalities and other local entities have proven to be strong partners with states and the federal government in the financing of wastewater treatment and drinking water systems, and continued partnership in financing these systems is essential to meeting water goals. Municipalities are taking on additional responsibilities for addressing storm water and combined sewer overflows and they are adopting sustainable management practices to extend the useful lives of their wastewater infrastructure. Approximately 78 percent of wastewater treatment plants are operated by small communities, thousands of which have had past operational difficulties.<sup>13</sup> Continued assistance to these small treatment plants, through the Wastewater Operator Training Program, is important to keeping the nation's waters clean. In the case of the drinking water program, effective local management of drinking water systems, including protection of source waters, is essential to maintaining high rates of compliance with drinking water standards. Ninety-five percent of the 160,000 or more public water systems responsible for meeting drinking water safety standards are small systems that face challenges in sustaining

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<sup>13</sup> U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assistance; Permit Compliance System; Website: [www.epa.gov/oeca/planning/data/water/pcssys.html](http://www.epa.gov/oeca/planning/data/water/pcssys.html)

their capacity to provide safe drinking water.<sup>14</sup> Strong partnerships with local governments are critical to achieving clean and safe water goals.

Several key components of the national water program, including nonpoint source control, source water protection, and watershed management, as well as the core water quality and drinking water standards, monitoring, TMDLs and NPDES permitting programs require broad partnerships among many federal, state, and local agencies. Over the next several years, building partnerships, particularly with the agricultural community (such as USDA, state agricultural agencies, and local conservation districts) is a top priority for meeting clean water goals. We must continue to provide EPA water quality data and work with USDA to help target runoff control programs' resources.

States lead the effort in water quality monitoring. However, EPA relies on many other agencies to provide monitoring data to measure progress toward its goal of clean and safe water, such as the U.S Geological Survey, which maintains water monitoring stations throughout the nation, and NOAA, which provides information on coastal waters. EPA relies on the continued collection of data by these agencies.

Additionally, all of the EPA's coastal and oceans activities are carried out in partnership with other federal agencies, and, in some cases, international, state, local and private entities as well. EPA relies on its work with the Department of Defense, Coast Guard, Alaska and other states, and a number of cruise ship and environmental and non-governmental organizations regarding regulatory and non-regulatory approaches to managing wastewater discharges from vessels. Meeting ocean and coastal goals will also depend on the extent to which the growth in coastal areas is directed in ways that minimize effects on water quality.

West Nile Virus cases increased dramatically in 2002, spreading across 38 states and the District of Columbia. In areas with new West Nile virus detections, EPA regional offices have reported heightened concern about the pesticides used for mosquito control and the adverse affect it might have in contaminating groundwater. Pesticides are applied to areas where groundwater is prevalent due to the fact that mosquitoes need stagnant or standing water to lay their eggs. The possibility of the West Nile Virus expanding into new areas of the United States in the future will require the application of more pesticides onto the new breeding areas.

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<sup>14</sup> U.S. Environmental Protection Agency Safe Drinking Water Information System (SDWIS/FED), <http://www.epa.gov/safewater/data/getdata.html>

## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Clean and Safe Water

**OBJECTIVE:** Protect Human Health

Protect human health by reducing exposure to contaminants in drinking water (including protecting source waters), in fish and shellfish, and in recreational waters.

#### Resource Summary (Dollars in Thousands)

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	<b>FY 2005 Req. v. FY 2004 Pres Bud</b>
<b>Protect Human Health</b>	<b>\$1,259,787.6</b>	<b>\$1,192,187.1</b>	<b>\$1,170,339.6</b>	<b>(\$21,847.5)</b>
Environmental Program & Management	\$159,996.8	\$161,414.6	\$164,157.1	\$2,742.5
Science & Technology	\$18,362.0	\$27,926.9	\$6,709.8	(\$21,217.1)
Building & Facilities	\$1,361.4	\$1,480.2	\$1,595.3	\$115.1
State and Tribal Assistance Grants	\$1,085,448.9	\$1,008,640.4	\$1,004,412.2	(\$4,228.2)
Inspector General	\$6,871.9	\$7,701.4	\$7,594.4	(\$107.0)
Total Workyears	859.7	916.8	910.9	-5.8

#### Program Project (Dollars in Thousands)

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	<b>FY 2005 Req. v. FY 2004 Pres Bud</b>
Children and other Sensitive Populations	\$246.6	\$135.0	\$77.2	(\$57.8)
Categorical Grant: Public Water System Supervision (PWSS)	\$92,694.2	\$105,100.0	\$105,100.0	\$0.0
Categorical Grant: Underground Injection Control (UIC)	\$10,465.7	\$11,000.0	\$11,000.0	\$0.0
Categorical Grant: Pesticides Program Implementation	\$4,672.6	\$4,564.0	\$4,433.0	(\$131.0)
Categorical Grant: Beaches Protection	\$7,473.3	\$10,000.0	\$10,000.0	\$0.0
Beach / Fish Programs	\$3,197.3	\$3,689.5	\$3,237.6	(\$451.9)
Drinking Water Programs	\$86,119.7	\$99,085.5	\$100,947.6	\$1,862.1
Infrastructure Assistance: Drinking Water SRF	\$866,607.7	\$850,000.0	\$850,000.0	\$0.0
Infrastructure Assistance: Puerto Rico	\$0.0	\$8,000.0	\$4,000.0	(\$4,000.0)
Pesticides: Field Programs	\$2,001.2	\$2,510.8	\$2,482.7	(\$28.1)
Categorical Grant: Water Quality Cooperative Agreements	\$0.0	\$0.0	\$750.0	\$750.0
Congressionally Mandated Projects	\$111,719.6	\$0.0	\$0.0	\$0.0
International Capacity Building	\$3,419.4	\$1,611.2	\$2,181.0	\$569.8

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	<b>FY 2005 Req. v. FY 2004 Pres Bud</b>
Children and other Sensitive Populations	\$246.6	\$135.0	\$77.2	(\$57.8)
Categorical Grant: Homeland Security	\$4,508.5	\$5,000.0	\$5,000.0	\$0.0
Homeland Security: Critical Infrastructure Protection	\$14,186.4	\$27,389.1	\$6,125.8	(\$21,263.3)
Administrative Projects	\$52,475.4	\$64,102.0	\$65,004.7	\$902.7
<b>TOTAL</b>	<b>\$1,259,787.6</b>	<b>\$1,192,187.1</b>	<b>\$1,170,339.6</b>	<b>(\$21,847.5)</b>

## **FY 2005 REQUEST**

### *Results to be Achieved under this Objective*

Protecting and Improving Drinking Water: Safe drinking water and clean surface waters are critical to protecting human health. Over 260 million Americans rely on the safety of tap water provided by water systems that are subject to national drinking water standards.<sup>15</sup> EPA's strategy for helping systems provide safe drinking water over the next several years focuses on five major elements: (1) developing or revising drinking water standards; (2) supporting states, tribes, and water systems in implementing standards; (3) promoting sustainable management of drinking water infrastructure; (4) protecting sources of drinking water from contamination; and (5) providing information, tools and assistance to drinking water and wastewater utilities to protect critical water infrastructure from terrorist and other intentional acts. Collectively, these and other interrelated elements of the national safe drinking water program form a balanced, integrated framework that comprise a multiple barrier approach to protecting public health from unsafe drinking water. Under this approach, by the end of FY 2005 the Agency and its partners will have ensured that 94 percent of the population served by community water systems receives drinking water that meets all health based standards with compliance dates of December 2001 or earlier. Also as a result of these efforts, EPA expects that 75 percent of the population served by community water systems will receive drinking water that meets the next generation of chemical and microbial drinking water standards with compliance dates of January 2002 or later.

Protecting human health also entails the defense of the nation's water infrastructure in the event of a terrorist attack. Water systems need to contend with three primary security concerns, physical disruption, contamination with chemical, biological and radiological agents, and cyber intrusion. In FY 2005, EPA will provide limited tools and assistance to the water sector that address vulnerabilities identified in their completed assessments, including the identification of the most up-to-date security enhancements, threat and contaminant information sharing, and emergency response training.

Fish/Beach Programs: By 2008, the quality of water and sediments will be improved to allow increased consumption of fish in not less than 3 percent of the water miles/acres identified by states or tribes as having a fish consumption advisory in 2002. In 2002, over 400,000 river miles and over 11 million lake acres were identified by states or tribes as having fish with

<sup>15</sup> U.S. Environmental Protection Agency Safe Drinking Water Information System (SDWIS/FED), <http://www.epa.gov/safewater/data/getdata.html>

chemical contamination levels resulting in an advisory of potential human health risk from consumption.<sup>16</sup>

Pesticide Management: The Agency remains committed to working with the States and Tribes to continue implementation of the Groundwater Strategy. This includes providing assistance in the development of Pesticide Management Plans (PMP) for both generic aspects of pesticide use as well as more specific plans for a particular pesticide. The plans provide a roadmap to managing pesticides from contaminating ground water resources through preventive and corrective measures. The Agency also reviews pesticides for potential adverse impacts to both ground and surface water resources, and takes action to restrict use as warranted.

International Capacity: EPA's international capacity programs provide developing countries with the tools and training necessary to achieve long-term environmental change. These programs complement technical assistance EPA and other organizations provide by ensuring that the recipient country or region is able to sustain and replicate environmental improvements. They also help protect human health and the environment in the U.S. by introducing innovative practices for environmental management.

### **Drinking Water Programs, Drinking Water State Revolving Fund, Puerto Rico, and Categorical Grants: Public Water System Supervision, Underground Injection Control**

Develop Drinking Water Standards: The Safe Drinking Water Act directs EPA to set legal limits on levels of contaminants in our drinking water supplies. Over the past 30 years, EPA has established national protective standards for 91 contaminants (see U.S. Environmental Protection Agency List of Contaminants and their MCLs, <http://www.epa.gov/safewater/mcl.html#mcls>). In FY 2005, the Agency will promulgate the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2) and Stage 2 Disinfectant and Disinfection Byproducts Rule (Stage 2). Until states assume primacy (primary enforcement authority) for these two rules, EPA will, as required, manage the collection and analysis for risk-based monitoring by large drinking water systems. EPA also will continue to assess the need for new or revised drinking water standards based on available data on health effects, occurrence, risks of exposure, analytical (detection) methods, as well as information on technologies to prevent, detect, or remove specific contaminants. Additionally, EPA's Drinking Water Laboratory Certification Program evaluates whether Agency, state, and privately-owned laboratories are analyzing drinking water samples accurately using approved laboratory methods and procedures, and whether they are properly implementing quality assurance plans.

As required under the Safe Drinking Water Act, if there are adequate scientific data and risk assessment information, EPA must determine whether to regulate an unregulated contaminant on the Contaminant Candidate List (CCL), and must ascertain, through the Six-Year Review of existing regulations, whether a revision to an existing standard is warranted. In 2003, the Agency announced in the Federal Register that it had completed its review of the 69 drinking water regulations in place as of 1997 and had decided not to revise 68 of these regulations.<sup>17</sup> In

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<sup>16</sup> US EPA. Office of Water. 2003. Factsheet, "Update: National Listing of Fish and Wildlife Advisories," EPA-823-F-03-003, May 23, 2003.

<sup>17</sup> U.S. Environmental Protection Agency. "National Primary Drinking Water Regulations; Announcement of Completion of EPA's Review of Existing Drinking Water Standards," *Federal Register* v68, No 138. 18 July 2003. <http://www.epa.gov/fedrgstr/EPA-WATER/2003/July/Day-18/w18152.pdf>



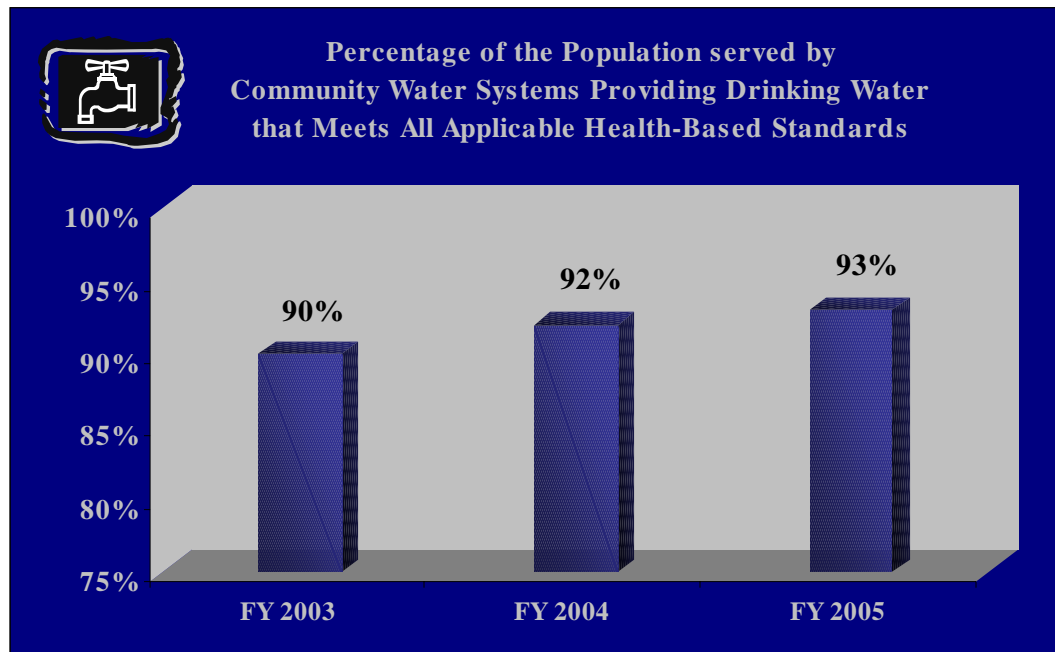
FY 2005, the Agency will continue its analysis of National Primary Drinking Water Regulations for the second Six-Year Review, and develop proposed revisions to the Total Coliform Rule (TCR), as well as consider additional protections for drinking water distribution systems. EPA will continue to review and evaluate scientific and occurrence data on contaminants listed on the second CCL, issued in 2004, to make regulatory determinations. If necessary, EPA is prepared to act in advance of the next regulatory determination cycle to address an urgent threat to human health. In addition to making regulatory decisions, the Agency will work to develop the third CCL.

A key to the Agency's approach to assessing the need for new or revised standards is ensuring EPA has the most recent scientific research, risk assessment information and occurrence data for potentially high-risk contaminants. Some specific activities to accomplish this are: 1) tracking research conducted on contaminants, 2) establishing a systematic approach for the identification of those contaminants that pose the highest risk to human health, 3) ensuring that monitoring data on such contaminants are reliable (QA/QC), 4) developing a full range of analytical methods to determine the occurrence of these contaminants in source waters, 5) enhancing the tools to estimate the cost and benefits of drinking water regulations, and 6) continuing to expand EPA's initiative to optimize treatment techniques and treatment technologies as an effective alternative to regulations. To help maintain the strong scientific underpinnings of its regulatory decisions, the Agency will implement an on-line system in 2005 that will include a wide range of information gathered from both U.S. and international drinking water programs. This system will strengthen EPA's efforts to screen and evaluate over 100,000 chemical and microbial contaminants for possible listing on the third CCL, and directly reflects recommendations to the Agency from the National Academy of Science's National Research Council (NRC) and the National Drinking Water Advisory Council (NDWAC).

Finally, where the source of the contamination affects surface water, the Agency has committed to identifying critical drinking water contaminants of concern in surface waters and issuing new or revised criteria using the authorities of section 304(a) of the Clean Water Act to protect public health. For example, EPA will use the section 304(a) authority to establish criteria for *Cryptosporidium*, a widespread microbial contaminant that is resistant to chlorine disinfection. These criteria, once adopted by states and authorized tribes, will form the basis for regulatory limits on discharges of the contaminants to surface waters and guide programs designed to reduce runoff of pollutants into our lakes, rivers and streams.

Implement Drinking Water Regulations: EPA works closely with states, tribes, and water systems to implement multiple program barriers that protect public health from contaminants in water supplies. Special emphasis will be focused on helping states identify and target their efforts to those systems not providing their customers with safe drinking water. In FY 2005 and future years, EPA's implementation support for primacy states and tribes will become increasingly important given the growing number of systems that will need to comply with new, more flexible drinking water regulations that can be tailored to the needs of individual utilities. In FY 2005, EPA will continue to provide guidance, training and technical assistance on the implementation of drinking water regulations to states, tribes and systems; ensure proper certification of water system operators; develop new, easily accessible tools (e.g. Web-based) to assist states and water systems; ensure on-site reviews of the operating condition and management of public water systems as required by regulations; and promote consumer awareness of the safety of drinking water supplies. The Agency estimates that as a result of its

implementation support for state and tribal drinking water programs, 93 percent of the population served by community water systems, and 90 percent of the population served by community water systems in Indian Country, will receive drinking water that meets all applicable health-based standards by the end of FY 2005.



Source: FY 2003 national data from U.S. EPA's Safe Drinking Water Information System (SDWIS). FY2004 and FY2005 data are national goals.

Consistent with the Agency's longstanding implementation support for drinking water systems, in FY 2005 EPA will continue to provide training and assistance to systems in many areas. The Agency will focus its training and assistance on the use of cost-effective treatment technologies, proper waste disposal, and compliance with high priority contaminant requirements, including initial monitoring under the revised arsenic rule, and risk-based monitoring under the LT2 and Stage 2. In FY 2005, the Agency will continue to support small systems efforts to optimize their treatment technology under the Area-Wide Optimization Program (AWOP). AWOP is a highly successful technical assistance and training program that enhances the ability of small systems to meet existing and future microbial, disinfectant and disinfection byproducts (M-DBP) standards. By the end of 2003, 20 states were implementing AWOP and this initiative is continuing to expand throughout the country.<sup>18</sup>

High quality information is needed to support the effective implementation of drinking water programs. The Safe Drinking Water Information System (SDWIS) serves as the primary source of national information on compliance with all SDWA requirements, and is a critical database for program management. In FY 2005, EPA will continue its work to update SDWIS to ensure that new drinking water program requirements are incorporated into the data system to help states and authorized Tribes monitor and report drinking water data.

<sup>18</sup> U.S. Environmental Protection Agency Office of Water. *Implementing AWOPs through the Capacity Development and DWSRF Programs (EPA 816-F-03-019)*. July 2003. <http://www.epa.gov/safewater/smallsys/pdfs/awop-capdev-dwsrf.pdf>.

EPA's efforts related to the President's Management Agenda, specifically the focus on results oriented e-government, will build on pilot projects with states utilization of the central data exchange (CDX). The CDX is a mechanism by which states electronically report end-to-end drinking water data, and it has the consequent benefit of simplifying data exchange and reducing transaction costs. EPA also will continue its work with States to improve data completeness, accuracy, timeliness, and consistency through: 1) training on data entry, error correction, and regulatory reporting; 2) conducting data verifications and analyses; and 3) implementing quality assurance and quality control procedures to identify missing, incomplete or conflicting data under the data reliability action plan.

Support Sustainable Drinking Water Infrastructure: Currently EPA utilizes a variety of approaches to help drinking water systems sustain their technical, financial and managerial capacity to provide safe drinking water, including tool development, technical assistance and training. Providing drinking water that meets safe standards often requires an investment in the construction or maintenance of drinking water infrastructure. The Drinking Water State Revolving Fund (DWSRF) program, described in a May 2003 Report to Congress, has made available \$6.4 billion to finance more than 3,000 infrastructure improvement projects nationwide.<sup>19</sup> In FY 2005, the DWSRF program will provide several hundred more loans to public water systems for infrastructure improvement projects. In response to the Program Assessment Rating Tool (PART) reevaluation, the Agency will continue to work on revising its measures to better demonstrate the impact water treatment facility improvements have on public health and will develop a long-term outcome efficiency measure.

Even with affordable, flexible financial assistance through the DWSRF, however, the Agency's September 2002 Clean Water and Drinking Water Infrastructure "Gap" Analysis projects a multi-billion dollar gap in capital infrastructure financing over the next 20 years.<sup>20</sup> To help states and municipalities address this gap, the Agency will implement in FY 2005 a Sustainable Infrastructure Leadership initiative in partnership with drinking water utilities. Through this initiative, EPA and its partners will identify leaders in the utility industry who have established best practices in drinking water asset management, innovations, and efficiency, and who are interested in employing watershed-based approaches to managing water resources. EPA also will work closely with states, utilities, and other stakeholders to develop a strategy to facilitate the voluntary adoption of these best practices by 800 utilities, each serving 50,000 or more consumers. The initiative will support sustainable drinking water utilities that are able to maximize the value of safe drinking water by improving system performance at the lowest possible cost.

Targeting a specific system, Puerto Rico's inadequate drinking water infrastructure has created a significant daily health risk to consumers. Less than 30 percent of the population receives drinking water that meets all health-based standards.<sup>21</sup> Puerto Rico's compliance problem is a major challenge in the national effort to ensure that 94 percent of the population served by community water systems receives drinking water that meets all health-based

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<sup>19</sup> U.S. Environmental Protection Agency Office of Water. *The Drinking Water State Revolving Fund Program: Financing America's Drinking Water from the Source to the Tap - A Report to Congress (EPA 918-R-03-009)*. May 2003. [http://www.epa.gov/safewater/dwsrf/pdfs/dwsrf\\_congressreport-main.pdf](http://www.epa.gov/safewater/dwsrf/pdfs/dwsrf_congressreport-main.pdf)

<sup>20</sup> U.S. Environmental Protection Agency. 2002. *The Clean Water and Drinking Water Infrastructure Gap Analysis*. Washington, DC: Government Printing Office.

<sup>21</sup> U.S. Environmental Protection Agency Safe Drinking Water Information System (SDWIS/FED), <http://www.epa.gov/safewater/data/getdata.html>

standards by FY 2008. To improve the public health protection in Puerto Rico, the Agency will support the first phase of the design of necessary infrastructure improvements. When all upgrades are complete, EPA estimates that about 1.5 million people will benefit from safer, cleaner drinking water<sup>22</sup> and that risks of cancer, and gastroenteritis and other waterborne diseases will be reduced.

EPA will work with other federal agencies to develop a coordinated approach to improving Indian Tribes' access to safe drinking water. At the 2002 World Summit in Johannesburg, the U.S. committed itself to the goal of reducing the number of people lacking access to safe drinking water by 50 percent by 2015.<sup>23</sup> In FY 2005, EPA will contribute to this goal through its ongoing financial support for infrastructure improvement projects at drinking water facilities in Indian country and Alaskan native villages. Other federal agencies, such as the Department of Interior (DOI), the U.S. Department of Agriculture (USDA), and the Department of Health and Human Services (DHHS), also play key roles in addressing this problem. As a result, by the end of FY 2005 EPA and other federal agencies will have developed an inter-agency strategy that identifies how each agency will contribute to the Johannesburg commitment to increase tribes' access to safe drinking water.

Protect Source Water Contamination: There is growing recognition that ensuring the quality of surface and groundwater sources of drinking water is a critical element of public health protection. In FY 2005, EPA will continue to support state and local efforts to protect source water through the identification of actual and potential sources of contamination. By the end of FY 2005, the Agency expects that all EPA-approved state source water assessment programs will have completed high-quality baseline assessments for 52,000 community water systems nationwide.

States already have completed thousands of assessments and are working with community water systems to take voluntary measures to prevent, reduce or eliminate threats of contamination to source water areas. EPA will continue to support these source water protection efforts by providing training, technical assistance, and technology transfer capabilities to states and localities; and by facilitating the adoption of geographic information system (GIS) databases to support local decision-making. The Agency will work with national, state and local stakeholder organizations to manage any significant sources of contamination identified in the source water assessments through broad-based efforts. EPA will continue to work with other Federal programs to help states and localities update source water assessments and manage sources of contamination. By the end of FY 2005, the Agency anticipates that states and communities will have minimized the risk of contamination in 20 percent of source water areas for community water systems by substantially implementing voluntary source water protection strategies.<sup>24</sup>

State water quality standards play an important role in protecting the Nation's drinking water sources. The Agency's 2003 Strategic Plan emphasizes continued use of Clean Water Act

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<sup>22</sup> U.S. Environmental Protection Agency Safe Drinking Water Information System (SDWIS/FED), <http://www.epa.gov/safewater/data/getdata.html>

<sup>23</sup> United Nations. 2002. *Report of the World Summit on Sustainable Development: Johannesburg, South Africa, 26 August – 4 September, 2002*. New York, NY: United Nations.

<sup>24</sup> Note: "Minimized risk" and "substantial implementation" of voluntary implementation of source water protection strategies, will be determined at the state level by state source water protection programs.

authorities to protect waters that serve as public water supplies. By the end of FY 2005, the agency will complete, in coordination with states and tribes, a review of water quality standards for surface waters that are source waters for public water supplies.

Ensuring safe underground injection of waste materials is also a fundamental component of a comprehensive source water protection program. Management or closure of the approximately 700,000 shallow injection wells (Class V) nationwide remains a top priority for the Agency's Underground Injection Control (UIC) program. Through the UIC categorical grant program, EPA and the states will, by the end of 2005, have completed a survey of Class V wells for 20 percent of source water areas for community water systems and have closed or permitted 20 percent of all motor vehicle waste disposal wells, one of two types of high-risk shallow wells for which the Agency has established additional protective measures. In addition, EPA will continue working with states and tribes to educate and assist underground injection control well operators of all classes of UIC wells; working with industry and stakeholders to collect and evaluate data on endangering Class V wells; and exploring best management practices for protecting ground sources of drinking water.

### ***Homeland Security: Critical Infrastructure Protection and Categorical Grant***

Defending the nation's critical infrastructure is essential to protecting the public in the event of a terrorist attack on the United States. An attack on water infrastructure could compromise the public health of a community. Under Homeland Security Presidential Directive (HSPD) 7, EPA is assigned lead Federal responsibility to work with the water sector to ensure that water utilities (drinking water and wastewater) are developing and implementing actions to protect against physical, chemical/microbial, and cyber attacks. For the past three years, the Agency has provided technical and financial assistance to water utilities, especially the approximately 9,000 drinking water systems subject to the requirements of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act), to assess the vulnerabilities of their infrastructure and to prepare or revise their emergency response plans.

In FY 2005, the Agency is focusing its resources on provisions of the Bioterrorism Act that require EPA to: (1) identify the chemical, biological, and radiological contaminants that could be intentionally introduced into drinking water systems, and (2) review the means by which terrorists could disrupt the supply of safe drinking water. EPA will support, prototypes, field-testing, training, and guidance. All of these activities will be targeted to high priority contaminants and threats identified through basic research. Examples of specific projects include support for the water sector's development of voluntary best practices for security. This will include methods to select effective security enhancements, innovative financing mechanisms, and design standards that incorporate security measures in new construction, reconstruction, and retrofitting. In addition, the Agency will provide some funds to develop response protocols for both water utilities and others that assist the water sector in an emergency, such as local law enforcement officials, hazardous material teams, health care providers, environmental laboratories, other infrastructure, and public health officials. This activity has the broader benefit of improving the efficacy and timeliness of response to all emergencies (e.g., blackouts, accidental contamination, hurricanes, and earthquakes) not just those related to homeland security.

EPA's efforts in water security will extend beyond drinking water systems to include wastewater utilities. EPA will continue in FY 2005 to provide some training and other critical assistance tools to wastewater utilities. FY 2005 funding will also support the implementation of information sharing tools and mechanisms to provide timely information on contaminant properties, water treatment effectiveness, detection technologies, analytical protocols, and laboratory capabilities for use in responding to a water contamination event. This effort includes the continued support for the secure Information Sharing and Analysis Center (WaterISAC) to disseminate threat and incident information and to serve as a clearinghouse for sensitive information. Water security categorical grants will continue to maintain the states' efforts in coordinating their critical water infrastructure protection activities with other homeland security responsibilities.

### ***Beach/Fish Programs and Beaches Grants***

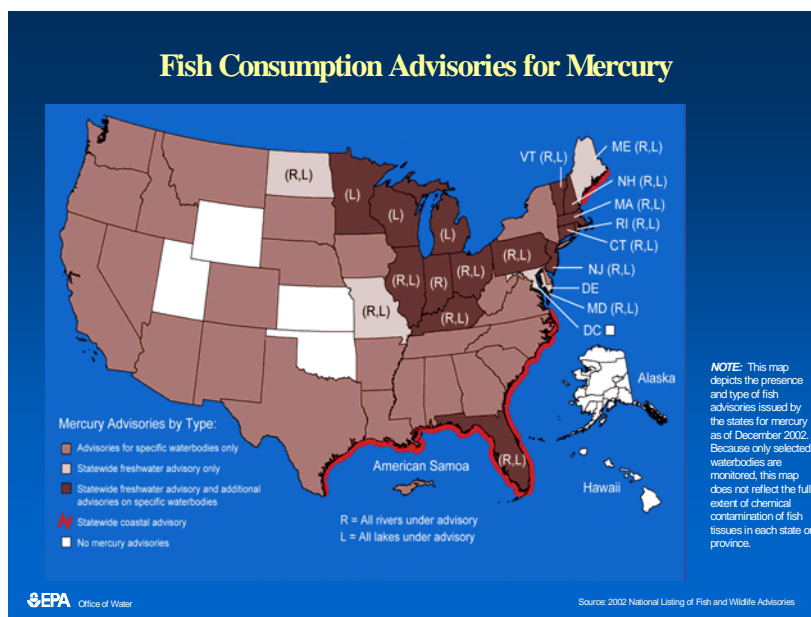
Safe Fish and Shellfish: Some toxic contaminants that enter waterbodies can move up the food chain and build up to levels that make fish unsafe to eat. In 2002, states and tribes report they issued fish consumption advisories for about 15 percent of river miles and 33 percent of lake acres.<sup>25</sup> Shellfish also can accumulate disease-causing microorganisms and toxic algae. In 1995, shellfishing was prohibited in 11 percent of the approximately 25 million acres that support shellfishing.<sup>26</sup> EPA is working with states, tribes, and other federal agencies to improve water and sediment quality so all fish and shellfish are safe to eat and to protect the public from consuming fish and shellfish that pose unacceptable health risks. EPA is also working with these groups and the shellfish industry to evaluate the use of more modern techniques to measure fecal contamination in shellfish growing waters.

Fish Safe to Eat: Most fish consumption advisories today are issued because of unhealthy levels of mercury in fish. Although small amounts of mercury are discharged to waters, most mercury in fish originates from combustion sources, such as coal-fired power plants and incinerators, which release it into the air. The mercury is then deposited by rainfall onto land and water, where it is concentrated in waterbodies and moves up the food chain through fish to people. EPA is working to reduce releases of mercury to the air through controls on combustion sources. For example, EPA expects that by 2010, federal market-based and other air regulatory programs will reduce electric generating unit emissions of mercury by 22 tons from their 2000 level of 48 tons (see Goal 1 of this Strategy).

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<sup>25</sup> U.S. EPA. Office of Water. "2002 National Listing of Fish & Wildlife Advisories." Fact Sheet. EPA-823-F-005. Washington, DC: EPA, May 2003. Available at <http://www.epa.gov/waterscience/fish/advisorie>.

<sup>26</sup> Alexander, C.E. "Classified Shellfish Growing Waters," in NOAA. "State of the Coast Report." Silver Spring, MD: NOAA, 1998.



Improving water and sediment quality is another key element of the strategy for making more fish safe to eat. Implementation of Clean Water Act programs will improve water quality by: establishing water quality baselines, identifying emerging contaminant problems, impaired waters and sources of contaminants; developing total maximum daily loads and source controls for impaired waters; reducing discharges from storm water systems, combined sewer overflows, and other permitted facilities, and reducing runoff from nonpoint sources.

These water quality programs rely on sound scientific information concerning individual contaminants in fish. EPA recently issued a criteria document under the Clean Water Act identifying the safe levels of mercury in fish tissue and will help states and tribes adopt the criterion into water quality standards. EPA expects that states and authorized tribes will adopt the new mercury fish tissue criterion by 2008. In 2000, EPA revised the methodology for calculation of “human health criteria” for contaminants found in surface waters. This new methodology reflects recent research on the health effects of contaminants and the potential for contaminants in water to be concentrated in the food chain and pose a greater risk to people who consume fish. EPA partially recalculated the criteria for 83 pollutants and will be revising these criteria and additional criteria more completely over the next several years.

EPA is also working to restore the quality of aquatic sediment in critical waterbodies, with special emphasis in the Great Lakes under the Great Lakes Legacy Act.<sup>27</sup> Toxic contaminants in sediment accumulate in fish and wildlife to levels that pose health risks. Through its National Sediment Quality Survey<sup>28</sup>, EPA will continue to identify watersheds where sediment contamination is severe and widespread. Further studies of these watersheds will help determine source control and remediation measures that are needed to reduce human health and ecological risks resulting from contaminated sediment.

<sup>27</sup> Great Lakes Legacy Act of 2002, Public Law 107-303, November 27, 2002.

<sup>28</sup> U.S. EPA. Office of Water. “The Incidence and Severity of Sediment Contamination In Surface Waters of the United States. Volume 1: National Sediment Quality Survey.” 2<sup>nd</sup> ed. Draft. EPA-823-R-01-01. Washington, DC: EPA, December 2001. Available at <http://www.epa.gov/waterscience/cs>.

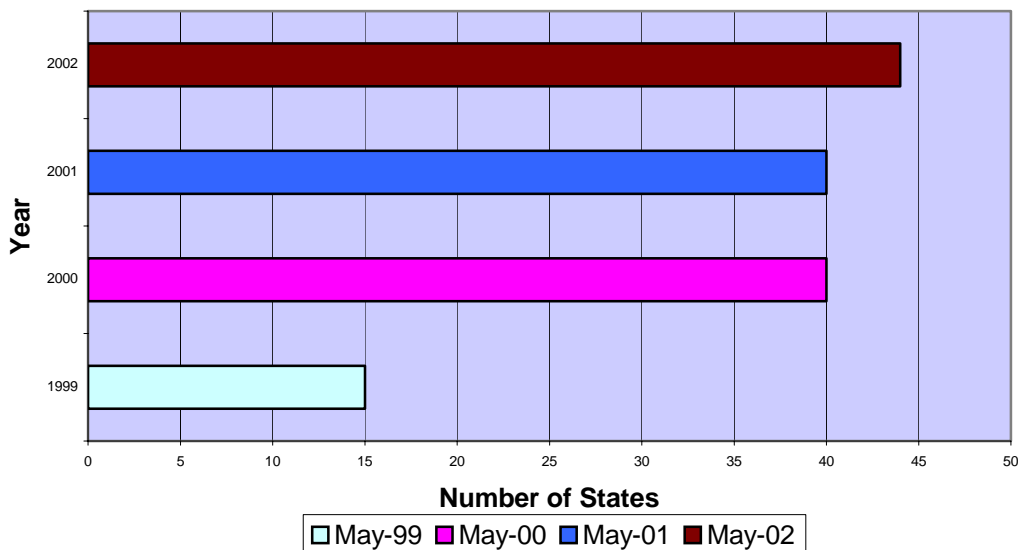




EPA is also conducting an ongoing nationwide survey of contaminants in fish. In FY 2004, the analyses on mercury, PCBs, organochlorine pesticides, and dioxins/furans/co-planer PCBs will be completed and the statistical analyses of the analyzed samples will be conducted. During FY 2005, EPA will analyze the findings of the survey and will make them available in FY 2006 on the Agency's waterscience website (<http://www.epa.gov/waterscience>). In addition, the Agency will identify emerging contaminants of public health and ecological concern in fish (e.g., flame retardants, fuel additives) and initiate analyses from archived fish tissues of a narrower list of contaminants that pose particular concern.

A key public information tool is the internet-based National Listing of Fish and Wildlife Consumption Advisories<sup>29</sup>. This website allows states and tribes to enter their advisories and provides the public with information about the location of advisories, the fish that are affected, and the number of meals or amount of fish that a person can safely eat. In addition, the listing identifies the method that states use to issue their advisories. Over the years, EPA has urged states to use a risk-based approach in issuing their advisories. As shown in the following figure, states are increasing their use of EPA's risk-based guidance or a risk-based approach consistent with EPA's guidance. The Agency continues to track state methods of issuing advisories as an indicator in the 2003 Strategic Plan.

### States Using EPA's Risk-based Guidance



Source: US EPA, Office of Water. 2003. Summary of Responses to the 2002 National Survey of Fish Advisory Programs. EPA-823-R-03-007. August 2003.

Another tool is EPA's national advisory for mercury in fish. This advisory provides information to the public about the number of meals or amount of fish that a person can eat from waters that states or tribes have yet to assess. EPA issued its first mercury advisory in January

<sup>29</sup> U.S. EPA. Office of Water. "Fish Sampling and Analysis." Volume 1 of "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. 3<sup>rd</sup> ed. EPA-823-B-00-007. Washington, DC: EPA, 2000. Available at <http://www.epa.gov/waterscience/fishadvice/volume1>.

2001<sup>30</sup> and will revise it in FY 2004 by issuing a joint federal advisory with FDA. This joint advisory will help clarify the fish consumption advice both agencies provide to the public. In FY 2005, EPA will work with public health agencies to develop and distribute outreach materials and with the advertising industry to provide the fish consuming public with consistent, easily understood information. EPA will strengthen its support to states in their monitoring of mercury in fish. Also in FY 2005, EPA will work with USGS and states to integrate fish tissue mercury data into STORET making it accessible to all. This will support studies to enhance the mercury advice by aligning it with the advisories for PCBs and other contaminants to reflect the most current science and to clarify for the public the differences in the fish covered and the consumption advice based on where and how these contaminants concentrate in fish.

Shellfish Safe to Eat: The safety of shellfish is managed through a partnership of the U.S. Food and Drug Administration (FDA), the Interstate Shellfish Sanitation Conference (ISSC), and coastal states. States monitor shellfishing waters and restrict harvesting if shellfish taken from the waters are considered unsafe.

EPA is working with states, FDA, ISSC, and the National Oceanic and Atmospheric Administration (NOAA) to increase the percentage of shellfishing acres where harvesting is permitted from the estimated FY 1995 level of 77 percent to 85 percent in FY 2008. In FY 2005, EPA will partner with federal, state, and other entities to improve water quality criteria for shellfish growing waters using indicators that are better, more protective indicators of fecal contamination and the sources of the contamination.

Over the past several years, the ISSC, working with states and federal agencies, has developed a new information system that uses state monitoring data to pinpoint areas where shellfishing has been restricted. Using this information system, EPA and states will more readily be able to identify possible sources of pollutants restricting the use of shellfishing waters. This information can be used to strengthen water pollution control activities, including development of watershed plans, implementation of National Estuary Program plans, issuance or reissuance of NPDES permits to point sources, enforcement of existing NPDES permits, and implementation of controls over diffuse sources of polluted runoff. EPA also supports these actions by identifying and evaluating technology-based controls that reduce the discharge of pollutants close to shellfish beds and direct the discharged pollutants away from shellfish beds.

Safe Swimming Waters: Recreational waters, especially beaches in coastal areas and the Great Lakes, provide outstanding recreational opportunities for many Americans. Swimming in some recreational waters, however, can pose a serious risk of illness as a result of exposure to microbial pathogens. In some cases, these pathogens can be traced to sources such as wastewater treatment plants, malfunctioning septic systems, and discharges from storm water systems. Swimming advisories and beach closures to protect the public from harmful levels of pathogens can have significant economic impacts. Since 1997, EPA has sent out an annual questionnaire to states, tribes, local governments and other agencies that maintain swimming beaches. Over the years participation has steadily increased even though participation is entirely voluntary. In 1997, 159 agencies reported on 1,021 beaches. In FY 2003 the number had grown to 227 agencies reporting on 2,823 beaches. In addition, EPA has improved the questionnaire

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<sup>30</sup> U.S. EPA. Office of Water. Federal Advisories. Washington, DC: EPA. Accessed January 2001. Available only on the internet at <http://map1.epa.gov/html/federaladv>

enabling the Agency to track the percentage of days beaches are open during a particular beach's recreational season and determine if the FY 2008 strategic target that monitored coastal and Great Lakes beaches are open and safe for swimming 96 percent of the days during the beach season is attained. In FY 2001, beaches reporting were open 94 percent of the days during the beach season and in FY 2002, the percentage increased to 95 percent.

EPA is implementing a three-part strategy to protect the quality of the Nation's recreational waters. The Agency will work to protect recreational water generally, control combined sewer overflows, and protect the quality of waters adjacent to beaches used by the public for recreation along the coasts and Great Lakes.

Protect Recreational Waters: The first element of the strategy is broadly focused on all recreational waters. To protect and restore these waters, EPA works with state, tribal, and local governments to implement the core programs of the Clean Water Act. For example, development and implementation of total maximum daily loads (TMDLs) will generally benefit recreational waters that are impaired. In FY 2005, EPA will expand the tools to estimate benefits for recreation water protection and support states, tribes and local entities as they evaluate policy options for reducing beach closures through cost-effectiveness analysis and better estimates of economic impacts. The continuing implementation of the discharge permit program, urban storm water controls, and nonpoint pollution control programs will also reduce pollution to recreational waters, helping to ensure that the Agency meets its recreational water targets by 2008. EPA also supports pollution control programs by developing test protocols that can distinguish human from other fecal contamination and by identifying and evaluating technology-based controls that reduce the discharge of pathogens.

Control Combined Sewer Overflows: Full implementation of controls for overflows from combined storm and sanitary sewers, or "CSOs," is another key step in protecting recreational waters. During wet weather, these overflows may release untreated sewage containing high levels of pathogens. CSOs, which occur in about 770 communities around the country, can have a significant impact on the quality of recreational waters. EPA, states, and local governments are making steady progress toward the reduction of overflows under the "CSO Policy." Most communities with CSOs have now implemented basic control measures. Approximately 275 communities have submitted long-term control plans to their NPDES authority. Approximately 180 have received formal approval from the appropriate NPDES authority. Approximately 85 communities have substantially completed implementation of their long-term control plans or other CSO control programs.<sup>31</sup>

Protect Coastal and Great Lakes Beaches: The third element of the strategy to protect and restore recreational waters is focused on beaches used by the public for swimming and other recreational activities in coastal areas and the Great Lakes. Under the recently enacted Beaches Environmental Assessment and Coastal Health (BEACH) Act,<sup>32</sup> EPA provides guidance, grants and support to state, tribal, and local governments for programs to monitor beach water quality

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<sup>31</sup> U.S. Environmental Protection Agency, Office of Water, Report to Congress – Implementation and Enforcement of the Combined Sewer Overflow Control Policy; December 2001; EPA833-R-01-003.

<sup>32</sup> Beaches Environmental Assessment and Coastal Health Act of 2000. Public Law 106-284 (October 10, 2000), 114 U.S. Stat. 870.

and notify the public when bacterial contamination poses a risk to swimmers.<sup>33</sup> EPA expects that 100 percent of significant public beaches identified by States and Territories will be managed under BEACH Act programs by 2008.

The BEACH Act requires that coastal and Great Lakes states adopt scientifically sound water quality criteria for bacteria. EPA expects to meet its target of all 35 coastal and Great Lakes states and territories adopting scientifically sound bacteria criteria for recreation waters by 2008. As a result of related efforts, Agency-approved rapid analytic methods (<2 hours) will be available for pathogen indicators of concern in recreation waters.

Finally, EPA will continue to expand public access to internet-based beach information on its website.<sup>34</sup> Governments receiving BEACH Act grants and communities responding to EPA's annual National Beach Health Protection Survey provide EPA information on water quality, beach monitoring and advisory programs, and beach closures. In 2005, EPA will continue to develop data management systems to facilitate the transmittal of information to the Agency electronically through the Central Data Exchange (CDX) web portal, a cornerstone of EPA's e-government initiative.<sup>35</sup> eBeaches<sup>36</sup> will provide rapid, easy and secure electronic transmittal of beach water quality and swimming advisory information by state and local entities through the CDX web portal. The system will reduce the reporting burden and cost of sending beach water quality and swimming advisory information to EPA, a condition for continued receipt of BEACH grants for monitoring and public notification programs.<sup>37</sup> The eBeaches system will also assist EPA meet its public reporting requirements under the BEACH Act. In addition, the system will enable beach advisory information to be immediately available to the public and displayed on maps for easy understanding. EPA's new program tracking database (Program tracking, beach Advisories, Water quality standards and Nutrients or "PRAWN")<sup>38</sup> will archive the beach program, advisory, and closure information enabling EPA to track progress toward the target of coastal and Great Lakes beaches open and safe for swimming in over 96 percent of the days during the beach season. The information is available to the public on the internet at <http://www.epa.gov/waterscience/beaches>.

### ***Categorical Grant: Pesticides Program Implementation***

In FY 2005, the Agency will continue to coordinate with States and Tribes providing guidance and assistance in the development of generic and specific Pesticide Management Plans in order to protect our ground water resources. EPA will coordinate pesticide water issues and assist our partners in identifying and implementing effective ground water protection programs through these plans. The Agency will continue to support efforts for identifying the adverse effects of pesticides in ground and surface water at the State, Tribal and Regional levels. Additionally, we will continue to assist States and Tribes in identifying, developing and

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<sup>33</sup> U.S. EPA. Office of Water. "National Beach Guidance and Required Performance Criteria for Grants." EPA-823-B-02-004. Washington DC: EPA, June 2002. Available at <http://www.epa.gov/waterscience/beaches/guidance/all>.

<sup>34</sup> U.S. EPA, Office of Water. Available online at <http://www.epa.gov/waterscience/beaches>.

<sup>35</sup> U.S. EPA, Office of Water. Available online at <http://www.epa.gov/cdx/>

<sup>36</sup> U.S. EPA. Office of Water. "eBeaches Enables Fast and Secure Transmission of Beach Water Quality and Swimming Advisory Information." Fact Sheet. EPA-823-F-03-009. Washington, DC: EPA, July 2003. Available at <http://www.epa.gov/waterscience/beaches>.

<sup>37</sup> U.S. EPA. Office of Water. "National Beach Guidance and Required Performance Criteria for Grants." EPA-823-B-02-004. Washington, DC: EPA, June 2002. Available at <http://www.epa.gov/waterscience/beaches/guidance/all>.

<sup>38</sup> U.S. EPA. Office of Water. "Beach Notification Data User Guide." EPA-823-R-03-005. Washington, DC: EPA, January 2003. Available at <http://www.epa.gov/waterscience/beaches/grants/2003/>

implementing measures to prevent or reduce water contamination. Key to this effort will be tailoring preventive and recovery measures to localities and specific pesticides. Pesticide registration and reregistration reviews will continue to include consideration of the potential impacts to ground or surface waters. Risk management actions could include changes to use patterns, modifications in application techniques, buffer zones, and working with the manufacturer to alter the product formulation. EPA provides funds to the states to implement these programs, and offers national training courses as well. States and tribes also offer training, and outreach, often in multiple languages to ensure understanding of non-native speakers, in addition to operating state laboratories for testing to ensure compliance with use requirements.

### ***International Capacity Building***

There are 2.2 million deaths annually worldwide - mostly children - from waterborne diseases, and billions of cases of severe illness. This lack of clean water contributes to inabilities of developing countries in particular to pull themselves out of poverty. Poor economic growth due to the disease burden can be tied to lost work days, the overburdening of already weak healthcare systems, and poor children's health which leads to a diminished workforce for the future. A World Health Organization (WHO) report<sup>39</sup> on Macroeconomics and Health indicates that adequate investment in water infrastructure and other health related services could make immense contributions to long-term economic growth in developing countries.

In FY 2005, the international safe drinking water program will continue its focus on applying cleaner and more cost-effective environmental practices and technologies in order to improve drinking water quality in partner countries. On-going projects in Central America, Africa and China will be used as models to promote urban drinking water quality improvement throughout these regions, with expansion into Asia, including India. With the number of medium-sized cities (100,000 to 1 million inhabitants) and large cities (greater than 1 million inhabitants) expected to rise dramatically over the next 20 years, these projects will help alleviate the enormous stress on an already compromised water and wastewater infrastructure in urban and peri-urban areas.

In Latin America, EPA will work with partners such as the Pan American Health Organization's technical center – CEPIS – to strengthen their abilities to improve water quality in the region. EPA implemented several drinking water projects in Africa during FY 2003, with projects focused on nations in the southern and eastern parts of the continent. In cooperation with other Federal agencies and departments, EPA will expand these urban/peri-urban drinking water programs during 2004. Raising awareness of the cost-effectiveness of protecting safe water resources (versus treatment of contaminated sources) will be an important component of each project. EPA will work with in-country partners to emphasize the health impacts and societal costs, such as infant mortality or lost work force productivity, which can result from unsafe drinking water. EPA will also consider environmental finance options for small-scale infrastructure improvements in urban communities.

In China, a program to improve the quality of drinking water derived from the Hai River Basin, has an initial focus on watershed management and source water protection. In India, EPA

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<sup>39</sup> WHO: Macroeconomics and Health: Investing in Health for Economic Development. Report of the Commission on Macroeconomics and Health. 2001. ISBN 92 4 154550.

will build capacity within municipalities to improve laboratory capacity, optimize treatment plants and address standard setting as part of an overall program to address water quality in an urban setting.

### **FY 2005 CHANGE FROM FY 2004**

#### **EPM**

- +\$500,000 redirected from effluent guidelines for a sustainable infrastructure initiative to support partnerships with States, the utility industry, and other stakeholders to enhance the operating efficiencies of drinking water and wastewater utilities.
- -\$400,000 from the nationwide survey of containments in fish. In FY 2004, EPA will complete the analyses for mercury, PCBs, dioxins/furans/co-planer PCBs and organochlorine pesticides from the fish tissues collected and conduct statistical analyses of these samples. During FY 2005, the Agency will document the findings of the survey and make them available to the public. In addition, during FY 2005, the Agency will identify emerging containments of public health and environmental concern in fish (e.g., flame retardants, fuel additives) and initiate analyses from archived fish tissues of the narrower set of contaminants that pose particular concern. These FY 2005 activities will not require the same level of resources as in previous years.
- (+\$700,000, +0 FTE) This represents a redirection of resources from the U.S.-Mexico Border Program to target water issues in Latin America.
- There are increases for payroll, cost of living and enrichment for existing FTE.

#### **S&T**

- -\$21,300,000 from critical water infrastructure protection, reflecting a shift in priorities from assistance and training on vulnerability assessments.
- There are increases for payroll, cost of living and enrichment for existing FTE.

#### **STAG**

- -\$4,000,000 specifically targeted to begin designing the necessary drinking water infrastructure improvements to Metropolitan, Puerto Rico's large community water system. This makes the total request for FY2005 \$4,000,000.

### **ANNUAL PERFORMANCE GOALS AND PERFORMANCE MEASURES**

**GOAL: CLEAN AND SAFE WATER**

**OBJECTIVE: PROTECT HUMAN HEALTH**

## Annual Performance Goals and Measures

### Safe Drinking Water

- In 2005 93% of the population served by community water systems will receive drinking water that meets all applicable health-based drinking water standards through effective treatment and source water protection.
- In 2005 94% of the population served by community water systems will receive drinking water that meets health-based standards with which systems need to comply as of December 2001.
- In 2005 75% of the population served by community water systems will receive drinking water that meets health-based standards with a compliance date of January 2002 or later.
- In 2005 94% of community water systems will provide drinking water that meets health-based standards with which systems need to comply as of December 2001.
- In 2005 75% of community water systems will provide drinking water that meets health-based standards with a compliance date of January 2002 or later.
- In 2005 90% of the population served by community water systems in Indian country will receive drinking water that meets all applicable health-based drinking water standards.
- In 2004 85 percent of the population served by community water systems will receive drinking water meeting health-based standards promulgated in or after 1998.
- In 2004 92% of the population served by community water systems will receive drinking water meeting all health-based standards in effect as of 1994, up from 83% in 1994.
- In 2003 End of year FY 2003 data will be available in 2004 to verify 85 percent of the population served by community water systems received drinking water meeting health-based standards promulgated in or after 1998.
- In 2003 End of year FY 2003 data will be available in 2004 to verify 92% of the population served by community water systems received drinking water meeting all health-based standards in effect as of 1994, up from 83% in 1994.

<b>Performance Measures:</b>	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
Percent of population served by community drinking water systems with no violations during the year of any Federally enforceable health-based standards that were in place by 1994.	91	92		% Population
Population served by community water systems providing drinking water meeting health-based standards promulgated in or after 1998.	96	85		% Population
Population served by community water systems that receive drinking water that meets health-based standards with which systems need to comply as of December 2001			94	% Population
Population served by community water systems that receive drinking water that meets health-based standards with a compliance date of January 2002 or later			75	% Population
Percentage of community water systems that			94	% CWSs

**Performance Measures:**

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
provide drinking water that meets health-based standards with which systems need to comply as of December 2001				
Percentage of community water systems that provide drinking water that meets health-based standards with a compliance date of January 2002 or later			75	% CWSs
Percent of the population served by community water systems in Indian country that receive drinking water that meets all applicable health-based drinking water standards			90	% Population
% of population served by community water systems that receive drinking water that meets all applicable health-based drinking water standards through effective treatment and source water protection			93	% population

Baseline: In 1998, 85% of the population that was served by community water systems and 96% of the population served by non-community, non-transient drinking water systems received drinking water for which no violations of Federally enforceable health standards had occurred during the year. Year-to-year performance is expected to change as new standards take effect. Covered standards include: Stage 1 disinfection by-products/interim enhanced surface water treatment rule/long-term enhanced surface water treatment rule/arsenic.

**Source Water Protection**

- In 2005 20% of source water areas for community water systems will achieve minimized risk to public health.
- In 2004 Advance States' efforts with community water systems to protect their surface and ground water resources that are sources of drinking water supplies.
- In 2003 End of year FY 2003 data will be available in 2004 to verify 39,000 community water systems (75% of the nation's service population) will have completed source water assessments and 2,600 of these (10% of the nation's service population) will be implementing source water protection programs.

**Performance Measures:**

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
Number of community water systems and percent of population served by those CWSs that are implementing source water protection programs.	Data Lag	25% / 7,500		% pop/systems
Percent of source water areas for community water systems that achieve minimized risk to public health			20	% Areas

Baseline: EPA defines "achieve minimized risk" as substantial implementation of source water protection actions, as determined by a State's source water protection strategy. Approximately 268 million people are estimated to be served by Community Water Systems (CWSs) in 2002.



**River/Lake Assessments for Fish Consumption**

- In 2005 80% of the shellfish growing acres monitored by states are approved or conditionally approved for use.
- In 2005 At least 1% of the water miles/acres identified by states or tribes as having a fish consumption advisory in 2002 will have improved water and sediment quality so that increased consumption of fish and shellfish is allowed.
- In 2004 Reduce consumption of contaminated fish by increasing the information available to States, Tribes, local governments, citizens, and decision-makers.
- In 2003 Reduced consumption of contaminated fish by increasing the information available to States, Tribes, local governments, citizens, and decision-makers.

**Performance Measures:**

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
Lake acres assessed for the need for fish advisories and compilation of state-issued fish consumption advisory methodologies. (cumulative)	33	35		% Lake acres
River miles assessed for the need for fish consumption advisories & compilation of state-issued fish consumption advisory methodologies. (cumulative)	15	16%		% River miles
Percent of water miles/acres, identified by states or tribes as having fish consumption advisories in 2002, where increased consumption of fish is allowed.			1	% Miles/Acres
Percent of the shellfish growing acres monitored by states that are approved or conditionally approved for use			80	% Areas

Baseline: In 1999, 7% of the Nation's rivers and 15% of the Nation's lakes were assessed to determine if they contained fish that should not be eaten or should be eaten in only limited quantities. In September 1999, 25 states/tribes are monitoring and conducting assessments based on the national guidance to establish nationally consistent fish advisories. In the 2000 Report to Congress on the National Water Quality Inventory, 69% of assessed river and stream miles; 63% of assessed lake, reservoir, and pond acres; and 53% of assessed estuarie square miles supported their designated use for fish consumption. For shell fish consumption, 77% of assessed estuarie square miles met this designated use.

**Increase Information on Beaches**

- In 2005 Coastal and Great Lakes beaches monitored by State beach safety programs will be open and safe for swimming in over 94% of the days of the beach season.
- In 2005 Restore water quality to allow swimming in not less than 2% of the stream miles and lake acres identified by states in 2000 as having water quality unsafe for swimming.
- In 2004 Reduce human exposure to contaminated recreation waters by increasing the information available to the public and decision-makers.
- In 2003 Reduced human exposure to contaminated recreation waters by increasing the information available to the public and decision-makers.

<b>Performance Measures:</b>	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
Beaches for which monitoring and closure data is available to the public at <a href="http://www.epa.gov/waterscience/beaches/">http://www.epa.gov/waterscience/beaches/</a> . (cumulative)	2,823	2,823		Beaches
Restore water quality to allow swimming in stream miles and lake acres identified by states			2	% Miles/Acres
Days (of beach season) that coastal and Great Lakes beaches monitored by State beach safety programs are open and safe for swimming.			94	% Days/Season
Baseline: By the end of FY 1999, 33 states had responded to EPA's first annual survey on state and local beach monitoring and closure practices and EPA made available to the public via the internet. An average of 9 recreational contact waterborne disease outbreaks reported per year by the Centers for Disease Control for the years 1994-1998, based on data housed in EPA/ORD internal database. In 2002, monitored beaches were opened 94% of the days during the beach season.				

## **VERIFICATION AND VALIDATION OF PERFORMANCE MEASURES**

**FY 2005 Performance Measures:** The percentage of the population served by community water systems that receive drinking water that meets health-based standards with which systems need to comply as of December 2001.

**The percentage of the population served by community water systems that receive drinking water that meets health-based standards with a compliance date of January 2002 or later. (Covered standards include: Stage I disinfection by-products/interim enhanced surface water treatment rule/long-term enhanced surface water treatment rule/arsenic.)**

**The percentage of community water systems that provide drinking water that meets health-based standards with which systems need to comply as of December 2001.**

**The percentage of community water systems that provide drinking water that meets health-based standards with a compliance date of January 2002 or later.**

**The percentage of population served by community water systems in Indian country that receive drinking water that meets all applicable health-based drinking water standards.**

**Performance Database:** Safe Drinking Water Information System- Federal Version (SDWIS or SDWIS-FED). SDWIS contains basic inventory information, including an individual public water system's activity status, type of water system (i.e., community, non-community, and non-transient non-community), and the population served by that system. SDWIS also contains violations

records that detail violations of the Safe Drinking Water Act and the statute's implementing regulations. The performance measure is based on the population served by community water systems that were active during any part of the performance year and did not have any violations designated as "health based." Exceedances of a maximum contaminant level and violations of a treatment technique are health-based violations; monitoring and reporting, record keeping, and public notification violations are not "health based."

**Data Source:** Agencies with primacy (primary enforcement authority) for the Public Water Supply Supervision (PWSS) program including states and EPA Regional Offices with direct implementation (DI) responsibility for states and Indian tribes. The Navajo Nation Indian tribe, the only tribe with primacy, is expected to begin reporting directly to EPA in FY 2004. Primacy agencies collect the data from the regulated water systems, determine compliance, and report a subset of the data to EPA (primarily inventory and violations).

**Methods, Assumptions and Suitability:** The analytical methods that drinking water systems use to collect violations data are specified in the technical guidance associated with each drinking water regulation. Laboratories must be certified by the primacy agencies to analyze drinking water samples and are subject to periodic performance audits by the states and EPA as the direct implementers. Performance measures are based on data reported by individual systems to states, which, in turn, supply the information to EPA through SDWIS. EPA then verifies and validates the data for 10 to 12 states per year, according to a protocol, which is updated annually. To measure program performance, EPA aggregates the SDWIS data into a national statistic on overall compliance with health-based drinking water standards. This statistic compares the total population served by community water systems meeting all health-based standards to the total population served by all community water systems.

**QA/QC Procedures:** SDWIS-FED has numerous edit checks built into the software to reject erroneous data. There are quality assurance manuals for states and Regions to follow to ensure data quality. The manuals provide standard operating procedures for conducting routine assessments of the quality of the data, communication and follow-up actions to be conducted with the state to achieve timely corrective action(s). EPA offers training to states on reporting requirements, data entry, data retrieval, and error correction. User and system documentation is produced with each software release and is maintained on EPA's web site. SDWIS-FED documentation includes data entry instructions, data element dictionary (on-line data dictionary - electronic documentation), entity relationship diagrams, a user's manual, and regulation-specific reporting requirements documents. System, user, and reporting requirements documents can be found on the EPA web site, <http://www.epa.gov/safewater/>. System and user documents are accessed via the database link <http://www.epa.gov/safewater/databases.html>, and specific rule reporting requirements documents are accessed via the regulations, guidance, and policy documents link <http://www.epa.gov/safewater/regs.html>. In addition, EPA provides specific error correction and reconciliation support through a troubleshooter's guide, a system-generated summary with detailed reports documenting the results of each data submission, and an error code database for states to use when they have questions on how to enter or correct data. A user support hotline is available 5 days a week to answer questions and provide technical assistance. At least one EPA staff person in each EPA regional office serves as the SDWIS-FED Regional data management coordinator to provide technical assistance and training to the states on all aspects of information management and required reporting to EPA. Primacy agencies' information systems are audited on an average schedule of once every 3 years.

SDWIS-FED does not have a quality assurance project plan - it is a legacy system which has “evolved” since the early 1980s prior to the requirement for a plan. The SDWIS-FED equivalent is the data reliability action plan<sup>40</sup> (DRAP). The DRAP contains the processes and procedures and major activities to be employed and undertaken for assuring the data in SDWIS meet required data quality standards. There are three major components of this plan: assurance, assessment, and control. The assurance component includes management of the plan, development and/or maintenance of tools used to support the implementation processes and procedures, and standard operating procedures. It also includes provision of training, technical assistance vehicles, coordination with other program areas that use the data or impact its quality. The second major component of the plan is assessment. Quality assurance assessments include all types of review, audit, and assessment of the DRAP, data, and information needs. The third major component of the plan is control. Quality assurance controls include software edit checks, processing controls, security controls, and other procedural controls that limit or prevent incomplete, inaccurate, or unauthorized updates or modifications to the data. The data verification protocol, and its use in on-site audits of states’ files, is the final measure of data quality control. Thirty-one state data verification audits were conducted over the period from 1999 to 2001.

**Data Quality Review:** SDWIS data quality was identified as an Agency weakness in 1999 and has a corrective action completion target date in 2005. SDWIS’ weaknesses center around five major issues: 1) completeness of the data (e.g., the inventory of public water systems, violations of maximum contaminant levels, enforcement actions) submitted by the states, 2) timeliness of the data sent by the states, i.e., if states do not report at specified times, then enforcement and oversight actions suffer, 3) difficulty receiving data from the states, 4) both cost and difficulty processing and storing data in SDWIS after it has been received, and 5) difficulty getting SDWIS data for reporting and analysis. The DRAP focuses on the first three issues, and an information strategic plan<sup>41</sup> (ISP) has been developed and is being implemented to address the last two issues, which deal primarily with technology (hardware and software) concerns. For instance, the ISP is examining ways to improve tools and processes for creating and transferring data to EPA, such as incorporating newer technologies and adapting the Agency’s Enterprise Architecture Plan to integrate data and the flow of data from reporting entities to EPA via a secure central data exchange (CDX) environment. Detailed activities and implementation schedules are included in these two documents, and to date the Agency expects to correct these weaknesses by the end of 2005.

Routine data quality assurance and quality control (QA/QC) analyses of the Safe Drinking Water Information System (SDWIS) by the Office Water (OW) have revealed a degree of nonreporting of violations of health-based drinking water standards, and of violations of regulatory monitoring and reporting requirements. As a result of these data quality problems, the baseline statistic of national compliance with health-based drinking water standards likely is lower than previously reported. The Agency is currently engaged in a rigorous statistical analysis and in discussions with states to more accurately quantify the impact of these data quality problems on the estimate

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<sup>40</sup> *Data Reliability Action Plan*. U.S. EPA, October 2002. Office of Ground Water and Drinking Water internal work plan document.

<sup>41</sup> U.S. EPA, Office of Water, *Office of Ground Water and Drinking Water Information Strategy* (under revision). See *Options for OGWDW Information Strategy (Working Draft)*, EPA 816-P-01-001. Washington, DC, February 2001. Available on the Internet at <http://www.epa.gov/safewater/data/informationstrategy.html>

of national compliance with health-based drinking water standards. This analysis could result in statistically based adjustments to the baseline that will lower the 5-year (2008) performance targets for our SDWIS-based subobjective and strategic measures. Ongoing EPA and state efforts to improve data quality in SDWIS already have resulted in significant improvements in data accuracy and completeness, however. Even as these improvements are made, SDWIS serves as the best source of national information on compliance with Safe Drinking Water Act requirements, and is a critical database for program management, the development of drinking water regulations, trends analyses, and public information.

Management System Reviews (MSRs) of quality assurance/quality control (QA/QC) systems for SDWIS are carried out by the Quality Assurance Division of the Office of Environmental Information. An MSR of SDWIS data quality was completed in 1999 and the final report contained favorable comments on the level of detail in EPA's plans and actions to improve data quality. EPA also completed a data reliability assessment (QA audit) of the 1996–1998 SDWIS-FED data in FY 2000, which, in turn, led to the development and issuance of the 2002 DRAP. A second data reliability assessment is expected to be released in January 2004 and is based on 1998-2001 data in SDWIS/FED. Also, the 2002 DRAP will be revised and expanded in 2004 to include the findings of the second data reliability assessment.

- The basic findings from the second data reliability assessment were that the data in SDWIS are accurate but incomplete. Improvements were observed in all areas except timeliness of violations reporting. Core inventory data are highly complete and accurate. The quality of violations data is improving, with high accuracy but still low in completeness. Monitoring and reporting violations continue to be the major problem area. Health-based violation data quality is highly accurate with higher levels of completeness than monitoring violations data.

Finally, EPA and its contracted auditors of primacy agencies' information systems conduct individual data quality reviews. The frequency of these audits is every 2 to 4 years depending on the resources available and programmatic need in the region. Continuous data quality reviews include data quality estimates based on the results of data verifications, timeliness and completeness of violation reporting, completeness of various required inventory data elements, and completeness of reporting for specific rules.

**Data Limitations:** Currently SDWIS-FED is an “exceptions” database that focuses exclusively on public water systems noncompliance with drinking water regulations (health-based and program). Primacy states implement drinking water regulations with the support of the Public Water System Supervision (PWSS) grant program and determine whether public water systems have violated: maximum contaminant levels (MCL); treatment technique requirements; consumer notification requirements; or monitoring-and-reporting requirements. These violations are reported through SDWIS.

Recent state data verification and other quality assurance analyses indicate that the most significant data quality problem is under-reporting to EPA of monitoring and health-based standards violations and inventory characteristics, such as water sources and/or latitude/longitude for all sources. The most significant under-reporting occurs in monitoring violations. Even though those are not covered in the health based violation category, which is covered by the performance measure, failures to monitor could mask treatment technique and MCL violations.

Such under-reporting of violations limits EPA's ability to: 1) accurately quantify the number of sources and treatments applied, 2) undertake geo-spatial analysis, and 3) integrate and share data with other data systems. The under-reporting limits EPA's ability to precisely quantify the population served by systems, which are meeting the health-based standards. As described in the Data Quality Review section above, currently the program office is assessing the percentage of unreported health-based violations and calculating possible adjustments to the performance data that might be required for future reports. The SDWIS inventory of public water systems is highly complete and the quality of population data has been determined to be of high quality.

In addition to the DRAP and the information strategy, other options under consideration to improve data in SDWIS include:

1. Increase the focus on state compliance determinations and reporting of complete, accurate and timely violations data. This is the single most significant factor for data quality improvement.
2. Develop incentives to improve the accuracy, completeness, and timeliness of state reporting.
3. Enhance and ease the flow of data from providers to EPA via a secure environment (Central Data Exchange - CDX), utilizing modern technologies (e.g., extensible markup language - XML) and standardized procedures and processes.
4. Continue to analyze the quality of the data.
5. Obtain parametric data (analytical results used to evaluate compliance with monitoring regulations and compliance with treatment techniques and maximum contaminant levels) from states through an agreement on voluntarily reporting these data to EPA, monitoring schedules, and waiver information assigned to water systems by the state primacy agency. This information would allow EPA to have more direct access to the data used for compliance determinations for quality assurance and state oversight purposes. Potential violation under reporting could be identified through the availability of this information and appropriate corrective actions implemented.

**Error Estimate:** Analyses are under way to determine the impact of data quality on the performance measures, and are scheduled for completion by early 2004. The analysis will include data from an additional round of audits to provide a more accurate error estimate compared to the results of earlier baseline audits.

**New/Improved Data or Systems:** Several approaches are underway.

First, EPA will continue to work with states to implement the DRAP and ISP, which have already improved the completeness, accuracy, timeliness, and consistency of the data in SDWIS-FED through: 1) training courses for SDWIS-FED data entry, error correction, and regulation specific compliance determination and reporting requirements, 2) specific DRAP analyses, follow-up activities and state-specific technical assistance, 3) increased number of data verifications conducted each year, and 4) creation of various quality assurance reports to assist regions and states in the identification and reconciliation of missing, incomplete, or conflicting data.

Second, more states will use SDWIS-STATE,<sup>42</sup> a software information system jointly designed by states and EPA, to support states as they implement the drinking water program. SDWIS-STATE is the counterpart to SDWIS-FED and uses many of the same edit criteria and enforces many of the mandatory data elements. If the SDWIS-STATE system is fully utilized by a state, the information it holds would meet EPA's minimum data requirements. SDWIS-STATE links directly to SDWIS-FED, which aids in easing the states' reporting burden to EPA and in the process minimizes data conversion errors and improves data quality and accuracy. In addition, a Web-enabled version of SDWIS-STATE and a data migration application that can be used by all states to process data for upload to SDWIS-FED are being developed. EPA estimates that 40 states will be using SDWIS-STATE for data collections by the end of FY 2004.

Third, EPA is modifying SDWIS-FED to (1) streamline its table structure, which simplifies updates and retrievals, (2) minimize data entry options that result in complex software and prevent meaningful edit criteria, (3) enforce compliance with permitted values and Agency data standards through software edits, and (4) ease the flow of data to EPA through a secure data exchange environment incorporating modern technologies, all of which will improve the accuracy of the data.

Fourth, EPA has developed a data warehouse system that is optimized for analysis, data retrieval, and data integration from other data sources like information from data verifications, sample (parametric) data, source water quality data (e.g., U.S. Geological Survey [USGS] data), and indicators from inspections conducted at the water systems. It will improve the program's ability to more efficiently use information to support decision-making and effectively manage the program.

Finally, EPA, in partnership with the states, is developing information modules on other drinking water programs: the Source Water Protection Program, the Underground Injection Control Program (UIC), and the Drinking Water State Revolving Fund. These modules will be integrated with SDWIS to provide a more comprehensive data set with which to assess the nation's drinking water supplies, a key component of the goal. In 2003, agreement was reached on the data elements for reporting source water and UIC data. In 2004, plans will be developed for design of systems to address these data flows. Developing the systems to receive the data is scheduled for 2005.

## References:

### Plans\*

- SDWIS-FED does not have a Quality Assurance Project Plan - it is a legacy system which has "evolved" since the early 80s prior to the requirement for a Plan. The SDWIS-FED equivalent is the Data Reliability Action Plan.
- Information Strategy Plan - SDWIS-FED (see footnote 2 )
- Office of Water Quality Management Plan, available at <http://www.epa.gov/water/info.html>

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<sup>42</sup> SDWIS/STATE (Version 8.1) is an optional Oracle data base application available for use by states and EPA regions to support implementation of their drinking water programs. U.S. EPA, Office of Ground Water and Drinking Water. Data and Databases. Drinking Water Data & Databases – SDWIS/STATE, July 2002. Information available on the Internet: <[http://www.epa.gov/safewater/sdwis\\_st/current.html](http://www.epa.gov/safewater/sdwis_st/current.html)>

- Enterprise Architecture Plan

### Reports\*

- 1999 SDWIS/FED Data Reliability
- 2003 SDWIS/FED Data Reliability Report - contains the Data Reliability Action Plan and status report
- PWSS Management Report (quarterly)
- 1999 Management Plan Review Report
- 2003 Management Plan Review Report

### Guidance Manuals, and Tools

- PWSS SDWIS/FED Quality Assurance Manual
- Various SDWIS-FED User and System Guidance Manuals (includes data entry instructions, data On-line Data Element Dictionary-a database application, Error Code Data Base (ECDB) - a database application, users guide, release notes, etc.) Available on the Internet at <<http://www.epa.gov/safewater/sdwisfed/sdwis.htm>>
- Regulation-Specific Reporting Requirements Guidance. Available on the Internet at <<http://www.epa.gov/safewater/regs.html>>

### Web site addresses

- OGWDW Internet Site <<http://www.epa.gov/safewater/databases.html>> and contains access to the information systems and various guidance, manuals, tools, and reports.
- Sites of particular interest are:  
<<http://www.epa.gov/safewater/data/getdata.html>> contains information for users to better analyze the data, and  
<<http://www.epa.gov/safewater/sdwisfed/sdwis.htm>> contains reporting guidance, system and user documentation and reporting tools for the SDWIS-FED system.

### **FY 2005 Performance Measure: Percentage of source water areas for community water systems that achieve minimized risk to public health.**

**Performance Database:** The source water assessment and protection programs are authorized under Sections 1453, 1428, and relevant subsections of 1452 of the Safe Drinking Water Act (SDWA).<sup>43</sup> EPA issued guidance to implement these programs in 1997, *State Source Water Assessment and Protection Programs Guidance*.<sup>44</sup> EPA will issue supplemental reporting guidance - - *Source Water Assessment and Protection Measures: Initial Guidance* - - in 2004. Starting in FY 2003, and updated annually thereafter, states will report to EPA on the results of their source water assessment programs' (SWAPs) progress in implementing source water

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\* These are internal documents maintained by EPA's Office of Ground Water and Drinking Water. Please call 202-564-3751 for further information.

<sup>43</sup> *Safe Drinking Water Act Amendments of 1996*. P.L. 104-182. (Washington: 6 August 1996). Available on the Internet at <<http://www.epa.gov/safewater/sdwa/sdwa.html>>

<sup>44</sup> U.S. EPA, Office of Water. *State Source Water Assessment and Protection Programs Guidance*. EPA 816-R-97-009 (Washington: US EPA, August 1997). Available on the Internet at <<http://www.epa.gov/safewater/swp/swappg.html>>



protection (SWP) strategies, and whether such strategy implementation is affecting public health protection. To assess *progress in completing the SWAPs*, state reporting will include five elements: (1) the delineated source water areas around each well and intake, (2) whether the assessments are complete, (3) and (4) most prevalent and most threatening sources of contamination, and (5) relative susceptibility ratings across source water areas, i.e., high, medium, or low susceptibility. To assess *progress in implementing the SWP strategies*, state reporting will include three elements: (1) whether a prevention strategy covering source water areas has been adopted, (2) whether that strategy is being implemented, and (3) whether such strategy implementation has reached a substantial level. To assess *whether the program is affecting public health protection*, states will report change in the number of source water areas with substantially implemented source water protection strategies. The Agency will develop a national summary of data on the progress of states' source water protection programs using these data elements.

In FY 2003, EPA maintained state-level summary data for each of these elements in an Excel database. Beginning in FY 2004, states may, at their option, make available to EPA public water system-level data for each of these elements to be maintained in a set of data tables in the drinking water warehouse (for tabular data) and in event tables in the Office of Water's Reach Address Database (RAD)<sup>45</sup> (GIS data). These data will be compatible with the inventory data States are currently reporting to the Safe Drinking Water Information System (SDWIS).<sup>46</sup> [Not publicly available. Contact the Drinking Water Protection Division at 202-564-3797.]

**Data Source:** See section "New/Improved Data or Systems."

**Methods, Assumptions and Suitability:** For this measure, the states' reporting of progress in implementing their source water assessment and protection programs will be based on EPA's 2004 guidance, *Source Water Assessment and Protection Measures: Initial Guidance*. States will only report state-level summary information that may be: (1) directly related to specific community water systems in a database; (2) directly related to the community water systems sampled in a statewide statistical sample; or (3) estimated using best professional judgment. Because state reporting will be based on consistent definitions and procedures found in the *Source Water Assessment and Protection Measures: Initial Guidance*, EPA assumes that these data are reliable for use in making management decisions.

**QA/QC Procedures:** QA/QC procedures will be included in the 2004 *Source Water Assessment and Protection Measures: Initial Guidance*. Additionally, a series of data checks will be built into the Excel-based data collection procedures given to each Region for their work with states. States will be required to identify whether their reported summary-level data are based on a system-level database or on aggregate-level estimates. EPA's Regions also will work with individual states to obtain a description of their methods of collecting and verifying information.

**Data Quality Reviews:** EPA Regions will conduct data quality reviews of state data using the QA/QC procedures included with the Excel-based data system, and work with states to resolve

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<sup>45</sup> Watershed Assessment, Tracking & Environmental Results (WATERS). Available only on the Internet at <<http://www.epa.gov/waters/>>

<sup>46</sup> Safe Drinking Water Information System (SDWIS). Information available on the Internet at <<http://www.epa.gov/safewater/databases.html>>

data exceptions. As a result, EPA expects the quality of data on assessments and source water protection activities to improve over time.

**Data Limitations:** Because the initial reporting provides only state-level summary information, there is no standard protocol for EPA to verify and validate the data to system-level information contained in state databases. In addition, much of the data reported by states is voluntary and based on working agreements with EPA because SDWA only requires states to complete source water assessments. The only source water information that states are required to report to EPA under SDWA is whether the assessments are completed. Although EPA's 2004 *Source Water Assessment and Protection Measures: Initial Guidance* will set standard data definitions and procedures, it also provides for considerable flexibility in states' data collection protocols and analytical methods to evaluate their data. For example, some states may require each public water system (PWS) to report data, while others may institute a voluntary process. Further, those states that use statistical surveys may choose samples differently. Because much of the data reporting is voluntary and the individual state protocols may vary, state data may be incomplete and inconsistent across states.

**Error Estimate:** There is no basis for making an error estimate for this performance measure given the data limitations of state-level summary reporting described above.

**New/Improved Data or Systems:** EPA is developing a new source water data module to collect, store, and use public water system-level data received from states. The source water module is being developed as a joint initiative between EPA, the Association of State Drinking Water Administrators (ASDWA), and the Ground Water Protection Council (GWPC). It will give EPA the ability to access the data directly from states through a data exchange agreement using an electronic data transfer capability. A state may choose, at its option, to provide EPA more detailed data in lieu of state-level summary reporting. The new source water data module will be integrated into the drinking water data warehouse and be compatible with Safe Drinking Water Information System (SDWIS) data already reported by states. Geospatial data (i.e., the intake and well point locations and the source water area polygons) will be maintained in EPA's Office of Water's Reach Access Database (RAD). The source water assessment and protection indicator data and other attribute data will be maintained in data tables in the drinking water warehouse. The source water data module should be operational in FY 2004. A number of states are expected to report this detailed data in 2004 as part of the EPA/ASDWA/GWPC initiative.

## **References:**

### Guidance Manuals

- U.S. EPA, Office of Water. *State Source Water Assessment and Protection Programs Guidance*. EPA 816-R-97-009 (Washington: US EPA, August 1997). Available on the Internet at <<http://www.epa.gov/safewater/swp/swappg.html>>
- *Source Water Assessment and Protection Measures: Initial Guidance* (to be released late summer 2003)

## Web site addresses

- US EPA Office of Ground Water and Drinking Water. <<http://www.epa.gov/safewater>>
- For more detailed information on Source Water topics, US EPA Office of Ground Water and Drinking Water, Source Water site. <<http://www.epa.gov/safewater/protect.html>>
- US EPA Office of Water (OW) Reach Access Database (RAD). Watershed Assessment, Tracking & Environmental Results (WATERS). <<http://www.epa.gov/waters/>>
- Safe Drinking Water Information System (SDWIS).  
<http://www.epa.gov/safewater/databases.html>

**FY 2005 Performance Measure: Percent of the population and the number of community water systems - - serving more than 3,300 but less than 50,000 people - - that have certified the completion of the development or revision of their emergency response plan.**

**Performance Database:** No formal EPA database. Performance is tracked against a master list of small systems (each of which serves between 3,301 and 49,999 people) that has been compiled specifically for this performance measure.

**Data Source:** The Safe Drinking Water Information System (SDWIS) is the source of drinking water system descriptive information, including system size. The master list of small drinking water systems was compiled by determining which systems, based on size, are required to develop/revise emergency response plans and submit a certification of completion of this activity to EPA in accordance with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act).

**Methods, Assumptions and Suitability:** The method for determining the number of small community water systems subject to the requirements of the Bioterrorism Act was to compile the number of community water systems listed in SDWIS in July 2002. This listing was sent to Regional drinking water program staff who, in turn, worked with each state in that Region to review and categorize these systems by size as defined in the Bioterrorism Act. However, because the number of community water systems changes often - - due to acquisitions, mergers, closures, etc. - - all major stakeholders in this effort, i.e., EPA, state, drinking water systems, states-related organizations, and environmental groups agreed that these numbers should be considered estimates and that EPA should count the number of certifications of completion of emergency response plans submitted to the Agency. Each state serves as the final arbiter of issues related to system size. As each system submits this document, its name is checked. Any system on the list that has not submitted its certification of emergency response plan completion by the statutory deadline set forth in the Bioterrorism Act is contacted and a determination is made at that time if the system is still in operation and when it will submit the required material.

**QA/QC Procedures:** Other than what is described above, there is no QA/QC procedure for this activity and performance measure.

**Data Quality Review:** EPA works with the states on a regular basis to identify the drinking water systems in that state and to assure that these systems are reporting data to SDWIS.

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** With a newly-developed information strategy developed by EPA in partnership with the states and major stakeholders, several improvements to SDWIS are underway.

**References:** N/A

**FY 2005 Performance Measure:** The quality of water and sediments will be improved to allow increased consumption of fish in not less than 3% of the water miles/acres identified by states or tribes as having a fish consumption advisory in 2002.

**Performance Database:** National Listing of Fish and Wildlife Advisories.<sup>1</sup> The database includes fields identifying the waters for which fish consumption advisories have been issued. The fields also identify the date upon which the advisory was issued, thus allowing an assessment of trends. The National Hydrographic Data (NHD) are used to calculate the spatial extent of the fish advisory. This information is updated continually as states and tribes issue or revise advisories. The National Listing of Fish and Wildlife Advisories database includes records showing that 485,205 river miles and 11,277,276 lake acres were identified by states or tribes in calendar year 2002 (calendar year 2003 data will be available in May 2004) as having fish with chemical contamination levels resulting in an advisory of potential human health risk from consumption. States and tribes report data on a calendar year basis. The calendar year data are then used to support the fiscal year commitments (e.g. calendar year 2002 data support the FY 2003 commitments). Metadata are also available describing methodologies used by states and tribes for establishing advisories.

**Data Source:** State and Tribal Governments. These entities collect the information and enter it directly into the National Listing of Fish and Wildlife Advisories database. EPA reviews advisory entries, including the states' or tribes' responses to an on-line survey, which support the advisory decision. The Agency follows-up with the state or local government to obtain additional information where it is incomplete.

**Methods, Assumptions and Suitability:** The database comprises advisories that reporting states and tribes have in effect each year. The advisories are specific to a waterbody, and thus are not aggregated. The percentage of lake acres and river miles assessed is the ratio of the surface area of lakes and/or rivers for which states submit data to the National Listing of Fish & Wildlife Advisories database and the total water surface area in the United States. It is a simple mathematical calculation. The database reflects the actual number of advisories that states and tribes issued, and are thus specific to the performance measure.

**QA/QC Procedures:** A standard survey, which has been approved by OMB, is available on the Internet for electronic submission. A password is issued to ensure the appropriate party is completing the survey. EPA has national guidance<sup>2,3</sup> for states and tribes on developing and implementing quality assurance practices for the collection of environmental information related to fish advisories. This guidance helps assure data quality of the information that states and tribes use to decide whether to issue an advisory. The Office of Water's "Quality Management Plan," approved in September 2001 and published in July 2002<sup>4</sup>, is the guidance that applies to this information collection.

**Data Quality Reviews:** EPA reviews advisory entries and responses to the survey to ensure the information is complete, then follows-up with the state or local government to obtain additional information where needed. However, the Agency cannot verify the accuracy of the voluntary information that state and local governments provide. There have been no external party reviews of this information.

**Data Limitations:** Participation in this survey and collection of data is voluntary. While the voluntary response rate has been high, it does not capture the complete universe of advisories. Two states, Puerto Rico, the Virgin Islands, and Guam do not report in the survey. In addition, states have not assessed all waters for the need for advisories, so the information reported reflects a subset of waterbodies in the state.

**Error Estimate:** Because submitting data to the National Listing of Fish & Wildlife Advisories database is voluntary, the Agency cannot be certain that the database contains information on 100% of the assessed waters in the United States. Therefore, we may be understating the total amount of waters assessed, the magnitude of which is not known. The error value cannot be quantified.

**New/Improved Data or Systems:** EPA will use grants to encourage states to investigate more waters for the need for advisories. This will increase the number of waterbodies assessed, and lead to a more complete characterization of the nation's fish safety.

#### **References:**

1. U.S. EPA. Office of Water. "National Listing of Fish and Wildlife Advisories." Washington, DC: EPA Accessed May 1, 2003. Available only on the internet at <http://map1.epa.gov/>
2. U.S. EPA. Office of Water. "Fish Sampling and Analysis." Volume 1 of AGuidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. 3<sup>rd</sup> ed. EPA-823-B-00-007. Washington DC: EPA, 2000. Available at <http://www.epa.gov/waterscience/fishadvice/volume1/> .
3. U.S. EPA. Office of Water. "Risk Assessment and Fish Consumption Limits." Volume 2 of AGuidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. 3<sup>rd</sup> ed. EPA-823-B-00-008. Washington DC: EPA, 2000. <http://www.epa.gov/waterscience/fishadvice/volume2/>.
4. U.S. EPA. Office of Water. "Quality Management Plan." EPA 821-X-02-001. Washington, DC: EPA, July 2002. Available at [http://www.epa.gov/ow/programs/qmp\\_july2](http://www.epa.gov/ow/programs/qmp_july2).

**FY 2005 Performance Measure:** Percentage of the shellfish-growing acres monitored by states that will be approved for use.

**Performance Database:** The Shellfish Information Management System (SIMS). The database is being developed and implemented by the National Oceanographic and Atmospheric Administration (NOAA) on behalf of the Interstate Shellfish Sanitation Conference (ISSC), a Cooperative Program chartered by the Food and Drug Administration (FDA). The database will include relevant information that is collected by State Shellfish Control Authorities. Historically, NOAA collected shellfish-growing area data in 5-year intervals, 1985, 1990, and

1995. These data were not stored in a database. Once operational, SIMS will be the first national shellfish growing area database and will include NOAA's 1995 data and new data, available in September, 2003. State summary information can then be used to track trends relevant to the performance measure, with the 1995 data as baseline. The SIMS database is designed as a real time database. The ISSC plans to request data updates annually, but states may update their data any time. These data may be accessed at any time so timely status reports can be generated.

**Data Source:** EPA is a member of the ISSC SIMS steering committee, along with FDA and NOAA. The SIMS architecture is compatible with other databases using the National Hydrographic Dataset (NHD). The steering committee is confident that the procedures used to collect, analyze, and report the data will result in accurate and reliable data.

**Methods, Assumptions and Suitability:** SIMS is a real time database and, therefore, will provide up-to-date information.

**QA/QC Procedures:** States will be responsible for the internal QA/QC of their data. SIMS is designed to use state data to produce nationwide reports.

**Data Quality Reviews:** The ISSC is developing its SIMS processes to review data submitted by states.

**Data Limitations:** Based on NOAA's previous surveys and the voluntary nature of the effort, potential data limitations may include incomplete coverage of shellfish growing areas.

**Error Estimate:** No estimates are available.

**New/Improved Data or Systems:** SIMS, initiated in September 2003, will be evaluated on a periodic basis to identify and implement improvements.

**References:** None at this time.

**FY 2005 Performance Measure: Restore water quality to allow swimming in stream miles and lake acres identified by states in 2000 as having water quality unsafe for recreation.**

[The data narrative for this measure is under Goal 2, Objective 2 -- FY 2005 Performance Measure: Water quality standards are fully attained in miles/acres of waters identified in 2000 as not attaining standards.]

**FY 2005 Performance Measure: Percentage of days of the beach season that coastal and Great Lakes beaches monitored by State beach safety programs will be open and safe for swimming.**

**Performance Database:** The data are stored in PRAWN (Program tracking, beach Advisories, Water quality standards, and Nutrients)<sup>1</sup>, an new internal database that feeds into the National Health Protection Survey of Beaches Information Management System.<sup>2</sup> The database includes fields identifying the beaches for which monitoring and notification information are available and the date upon which the advisory or closure was issued, thus enabling trend assessments to

be made. Beginning in FY 2003, the database will identify those states that have received a BEACH (Beaches Environmental Assessment and Coastal Health) Act [P.L. 106-284] grant. EPA reports the information annually, on a calendar year basis, each May.

**Data Source:** Since 1997, EPA has surveyed state and local governments for information on their monitoring programs and on their advisories or closures. State and local governmental response to the survey is voluntary. The number of records on beaches has grown from 1,021 beaches in calendar year 1997 to 2,823 beaches in calendar year 2002. States and local entities collect and report data on a calendar year basis. The calendar year data are then used to support fiscal year commitments (e.g. 2002 calendar year data are used to support the FY 2003 commitments). Starting in calendar year 2003, data for beaches along the coast and Great Lakes must be reported to EPA as a condition of grants awarded under the BEACH Act<sup>3</sup>. EPA reviews the advisory entries and responses to the survey to ensure the information is complete, then follows-up with the state or local government to obtain additional information where needed.

**Methods, Assumptions and Suitability:** The data are a census of beach-specific advisories or closures issued by the reporting state or local governments during the year. Performance against the target is tracked using a simple count of the number of beaches responding to the survey and the advisory or closure actions taken. Thus the data are suitable for the performance measure.

**QA/QC Procedures:** Since 1997, EPA has distributed a standard survey form, approved by OMB, to coastal and Great Lake state and county environmental and public health beach program officials in hard copy by mail. The form is also available on the Internet for electronic submission. In calendar year 2002, voluntary survey responses included 30 percent from counties, 32 percent from cities, 20 percent from states, 10 percent from regional or districts, and 2 percent from federal entities. When a state or local official enters data over the Internet, a password is issued to ensure the appropriate party is completing the survey. EPA reviews the survey responses to ensure the information is complete, then follows up with the state or local government to obtain additional information where needed. Currently the Agency has procedures for information collection (see Office of Water's "Quality Management Plan," approved September 2001 and published July 2002<sup>4</sup>). However, because state and local officials submitted the data voluntarily, the Agency cannot verify the accuracy of the information provided. Starting in 2003, coastal and Great Lakes states receiving a BEACH Act grant are subject to the Agency's grant regulations under 40 CFR 31.45. These regulations require states and tribes to develop and implement quality assurance practices for the collection of environmental information.

**Data Quality Review:** EPA reviews the survey responses to ensure the information is complete, following up with the state or local government to obtain additional information where needed. The Agency cannot verify the accuracy of the voluntary information state and local governments provide. There have been no external party reviews of this information.

**Data Limitations:** From calendar year 1997 to calendar year 2002, participation in the survey and submission of data has been voluntary. While the voluntary response rate has been high, it has not captured the complete universe of beaches. The voluntary response rate was 92% in calendar year 2002 (240 out of 261 contacted agencies responded). The number of beaches for which information was collected increased from 1,021 in calendar year 1997 to 2,823 in calendar year 2002. Starting in calendar year 2003 participation in the survey will become a mandatory

condition for grants awarded under the BEACH Act program to coastal and Great Lakes states. However, coastal and Great Lakes states and local governments are not required to apply for a grant. Those coastal and Great Lakes states receiving a BEACH Act grant and subject to the Agency's grant regulations under 40 CFR 31.45 are required to develop and implement quality assurance practices for the collection of environmental information, helping to assure data quality.

**Error Estimate:** Because submitting data has been voluntary, the database does not contain information on 100% of beaches in the United States. No error estimate is available for this data because the total number of beaches in the U.S. is unknown.

**New/Improved Data or Systems:** With the passage of the BEACH Act of 2000, the Agency is authorized to award grants to states to develop and implement monitoring and notification programs consistent with federal requirements. As the Agency awards these implementation grants, it will require standard program procedures, sampling and assessment methods, and data elements for reporting. To the extent that state governments apply for and receive these grants, the amount, quality, and consistency of available data will improve. In FY 2005, EPA expects the 35 coastal and Great Lakes states to apply for grants to implement monitoring and notification programs. The BEACH Act also requires the Agency to maintain a database of national coastal recreation water pollution occurrences. The Agency has fulfilled this requirement by creating a new PRAWN database that includes this information. EPA has also developed eBeaches<sup>5</sup>, a new Internet-based system for secure transmittal of beach advisory and water quality data into PRAWN. This system will make it easier for states to accurately transmit this information to EPA using the Internet.

## References

1. U.S. EPA. Office of Waters. "Beach Notification Data User Guide." EPA-823-R-03-005. Washington, DC: EPA, January 2003. Available at <http://www.epa.gov/waterscience/beaches/grants/2003/>
2. U.S. EPA. Office of Water. "National Health Protection Survey of Beaches". Washington, DC: EPA. Accessed May 23, 2003. Available only on the internet at <http://www.epa.gov/waterscience/beaches/>
3. U.S. EPA. Office of Water. "National Beach Guidance and Required Performance Criteria for Grants." EPA-823-B-02-004. Washington DC: EPA, June 2002. Available at <http://www.epa.gov/waterscience/beaches/guidance/all>.
4. U.S. EPA. Office of Water. "Quality Management Plan." EPA 821-X-02-001. Washington, DC: EPA, July 2002. Available at [http://www.epa.gov/ow/programs/qmp\\_july2002](http://www.epa.gov/ow/programs/qmp_july2002).
5. U. S. EPA. Office of Water. "eBeaches." Fact Sheet. EPA-823-F-03-009. Washington, DC, July 2003. Available at <http://www.epa.gov/waterscience/beaches/>



## **EFFICIENCY MEASURES\MEASUREMENT DEVELOPMENT PLANS**

### ***Drinking Water State Revolving Fund***

As a measure of output efficiency, the Agency tracks each fund's utilization rate, which is the ratio of the cumulative loan agreement dollars to cumulative funds available for projects. EPA will develop an outcome efficiency measure for the DWSRF. Development of measures is referenced in the program assessment Rating Tool (PART) summary in the Special Analysis section.

### ***Population in Indian Country Receiving Safe Drinking Water***

EPA is working to develop a measure for drinking water on Tribal lands. The Agency is committing, in the 2003 Strategic Plan, to being able to measure and achieve: "by 2015, in coordination with other federal agency partners, reduce by 50% the number of households on Tribal lands lacking access to safe drinking water." In order to measure progress toward that target, in FY 2005 EPA will lead the development and issuance of an interagency strategy, coordinating with other federal partners. The Agency will begin to collect data to establish an accurate and complete baseline consistent with an interagency definition developed previously. (EPA plans to begin reporting annual national progress in FY 2006.) Due to the large number of other agencies that play key roles in directly or indirectly providing Tribal households with access to safe drinking water, achieving measurable progress under this strategic measure will depend heavily on long-term inter-agency coordination and support.

### ***Public Water System Supervision Grants***

EPA plans to develop an outcome efficiency measure for the Public Water System Supervision Grants program as part of the FY 06 PART process.

## **COORDINATION WITH OTHER AGENCIES**

The 1996 SDWA amendments include a provision that mandates a joint EPA/Centers for Disease Control (CDC) study of waterborne diseases and occurrence studies in public water supplies. CDC is involved in assisting EPA in training health care providers (doctors, nurses, public health officials, etc.) on public health issues related to drinking water contamination and there is close CDC/EPA coordination on research on microbial contaminants in drinking water. EPA has in place a Memorandum of Understanding (MOU) and Interagency Agreement (IAG) with the CDC in the Department of Health and Human Services (DHHS) to implement this provision.

In implementing its source water assessment and protection efforts, the Agency coordinates many of its activities with other Federal agencies. There are three major areas of relationships with other agencies concerning source water assessments and protection.

Public Water Systems (PWSs). Some Federal agencies, i.e., USDA (Forest Service), DOD, Department of Energy, DOI (National Park Service), and USPS, own and operate public water systems. EPA's coordination with these agencies focuses primarily on ensuring that they cooperate

with the states in which their systems are located, and that they are accounted for in the states' source water assessment programs as mandated in the 1996 amendments to the SDWA.

Data Availability, Outreach and Technical Assistance. EPA coordinates with USGS (US Geological Survey), USDA (Forest Service, Natural Resources Conservation Service, Cooperative State Research, Education, and Extension Service (CSREES), Rural Utilities Service); DOT, DOD, DOE, DOI (National Park Service and Bureaus of Indian Affairs, Land Management, and Reclamation); DHHS (Indian Health Service) and the Tennessee Valley Authority.

Collaboration with USGS. EPA and USGS have identified the need to engage in joint, collaborative field activities, research and testing, data exchange, and analyses, in areas such as the occurrence of unregulated contaminants, the environmental relationships affecting contaminant occurrence, evaluation of currently regulated contaminants, improved protection area delineation methods, laboratory methods, and test methods evaluation. EPA has an IAG with USGS to accomplish such activities. This collaborative effort has improved the quality of information to support risk management decision-making at all levels of government, generated valuable new data, and eliminated potential redundancies.

Collaboration with Public and Private Partners on Critical Water Infrastructure Protection. EPA coordinates with other federal agencies, especially the newly-established Department of Homeland Security as well as the Centers for Disease Control and Prevention, the Food and Drug Administration, and the Department of Defense on biological, chemical, and radiological contaminants, and how to respond to their presence in drinking water and wastewater systems. A close linkage with the FBI, particularly with respect to ensuring the effectiveness of the ISAC, will be continued. The Agency is strengthening its working relationships with the American Water Works Association Research Foundation, the Water Environment Research Federation and other research institutions to increase our knowledge on technologies to detect contaminants, monitoring protocols and techniques, and treatment effectiveness.

Collaboration with FDA. EPA and FDA have issued national fish consumption advisories to protect the public from exposure to mercury in commercially and recreationally caught fish, as well as fish caught for subsistence. EPA's advisory covers the recreational and subsistence fisheries in fresh waters where states and tribes have not assessed the waters for the need for an advisory.<sup>47</sup> FDA's advisory covers commercially caught fish, and fish caught in marine waters.<sup>48</sup> EPA is working closely with FDA to ensure that the national fish consumption advisories issued by both agencies, for mercury or other contaminants, provide consistent and the most current scientifically sound advice to the public, and to ensure that these advisories support and augment advisories issued by states and tribes.

### ***Collaboration with Other Federal Agencies on Beach Monitoring and Public Notification***

The BEACH Act requires that all federal agencies with jurisdiction over coastal and Great Lakes recreation waters adjacent to beaches used by the public implement beach monitoring and public notification programs. These programs must be consistent with guidance published by

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<sup>47</sup>. Ibid. <http://map1.epa.gov/html/federaladv>

<sup>48</sup>. Ibid. <http://map1.epa.gov/html/federaladv>

EPA<sup>49</sup>. EPA will continue to work with the U.S. Park Service and other federal agencies to ensure that their beach water quality monitoring and notification programs are technically sound and consistent with program performance criteria published by EPA.

### ***Collaboration with States on Pesticides Management***

States provide essential activities in developing and implementing the Groundwater Strategy.

### ***Collaboration with Other Federal Agencies on International Safe Drinking Water***

EPA's environmental mandate and expertise make it uniquely qualified to represent the nation's environmental interests abroad. While the Department of State (DOS) is responsible for the conduct of overall U.S. foreign policy, implementation of particular programs, projects, and agreements is often the responsibility of other agencies with specific technical expertise and resources. Relations between EPA and DOS cut across several offices and/or bureaus in both organizations.

EPA works closely with a number of other Federal agencies with environmental, health, or safety mandates. These include the Department of State, Department of Labor, Department of Transportation, Department of Agriculture, Department of the Interior, Department of Health and Human Services, and the Food and Drug Administration

## **STATUTORY AUTHORITIES**

Beaches Environmental Assessment and Coastal Health Act of 2000 (BEACH)  
Clean Water Act (CWA)  
Emergency Planning and Community Right to Know Act (EPCRA) section 313 (42 U.S.C. 11023)  
EPCRA section 313 (42 U.S.C. 11023)  
Federal Food, Drug and Cosmetic Act (FFDCA)  
Federal Fungicide, Insecticide and Rodenticide Act (FIFRA)  
Food Quality Protection Act (FQPA) of 1996  
National Environmental Policy Act, Section 102  
Pollution Prevention Act (42 U.S.C. 13101-13109)  
PPA (42 U.S.C. 13101-13109)  
Safe Drinking Water Act (SDWA)  
Water Resources Development Act (WRDA)

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<sup>49</sup>. *ibid.* "National Beach Guidance and Required Performance Criteria for Grants."

## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Clean and Safe Water

**OBJECTIVE:** Protect Water Quality

Protect the quality of rivers, lakes, and streams on a watershed basis and protect coastal and ocean waters.

#### Resource Summary (Dollars in Thousands)

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	<b>FY 2005 Req. v. FY 2004 Pres Bud</b>
<b>Protect Water Quality</b>	<b>\$2,346,144.8</b>	<b>\$1,647,043.1</b>	<b>\$1,645,669.9</b>	<b>(\$1,373.2)</b>
Environmental Program & Management	\$274,428.9	\$286,677.0	\$290,271.3	\$3,594.3
Science & Technology	\$3,541.2	\$0.0	\$0.0	\$0.0
Building and Facilities	\$1,932.9	\$1,887.0	\$2,025.1	\$138.2
Inspector General	\$12,836.2	\$10,579.2	\$10,623.5	\$44.3
State and Tribal Assistance Grants	\$2,053,405.6	\$1,347,900.0	\$1,342,750.0	(\$5,150.0)
Total Workyears	1,546.0	1,610.2	1,603.9	-6.3

#### Program Project (Dollars in Thousands)

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	<b>FY 2005 Req. v. FY 2004 Pres Bud</b>
Categorical Grant: Wastewater Operator Training	\$0.0	\$0.0	\$1,500.0	\$1,500.0
Categorical Grant: Nonpoint Source (Sec. 319)	\$228,776.9	\$238,500.0	\$209,100.0	(\$29,400.0)
Categorical Grant: Water Quality Cooperative Agreements	\$18,155.7	\$19,000.0	\$19,750.0	\$750.0
Categorical Grant: Pollution Control (Sec. 106)	\$193,648.9	\$200,400.0	\$222,400.0	\$22,000.0
Infrastructure Assistance: Alaska Native Villages	\$41,810.6	\$40,000.0	\$40,000.0	\$0.0
Infrastructure Assistance: Clean Water SRF	\$1,386,537.4	\$850,000.0	\$850,000.0	\$0.0
Marine Pollution	\$7,070.0	\$12,049.9	\$12,296.0	\$246.1
Surface Water Protection	\$169,317.7	\$189,230.1	\$190,785.3	\$1,555.2
Congressionally Mandated Projects	\$208,639.3	\$0.0	\$0.0	\$0.0
International Capacity Building	\$1,214.1	\$431.7	\$372.0	(\$59.7)
Administrative Projects	\$90,974.2	\$97,431.4	\$99,466.6	\$2,035.1
<b>TOTAL</b>	<b>\$2,346,144.8</b>	<b>\$1,647,043.1</b>	<b>\$1,645,669.9</b>	<b>(\$1,373.3)</b>

## **FY 2005 REQUEST**

### ***Results to be Achieved under this Objective***

#### ***Improving Water Quality on a Watershed Basis***

Protecting Surface Water: In order to protect and improve water quality on a watershed basis, EPA will focus its work with states, interstate agencies, tribes, and others in six key areas: (1) strengthen the water quality standards program; (2) improve water quality monitoring; (3) develop effective watershed plans and Total Maximum Daily Loads (TMDLs); (4) implement effective nonpoint source pollution control programs; (5) strengthen the National Pollutant Discharge Elimination System (NPDES) permit program; and (6) effectively manage infrastructure assistance programs.

EPA expects to work with states, interstate agencies, and tribes in each of these areas, but progress toward water quality improvements will largely depend on success in integrating programs on a watershed basis, engaging diverse stakeholders in solving problems, and applying innovative ideas, such as water quality trading, to deliver cost-effective water pollution control. The Clean Watersheds Needs Survey will be a valuable tool to support integrated pollution control problem-solving and cost-effective improvements.

Through an effective combination of these activities, the agency will progress toward our 2008 objectives of improving water quality such that standards are met in at least 600 of the nation's watersheds, and the overall aquatic system health of coastal waters is improved.

International Capacity: Our objective to protect the environmental quality of U.S. waters involves efforts to protect freshwater lakes, rivers, and estuarine environments as well as coastal and ocean waters. U.S. waters are subject to international sources of pollution and EPA's international efforts in this area are focused on the development and implementation of international standards necessary to address transboundary sources of pollution, pollution affecting shared ecosystems, and the introduction of non-indigenous nuisance (invasive) species introduced through maritime shipping. To reach these ends we are seeking to reduce the successful introduction of invasive species to U.S. waters through the negotiation of effective international standards addressing ballast water discharges, the use of harmful anti-foulants, and air emissions from ships. In addition, we are isolating high-level radioactive wastes in Northwest Russia that threaten the health of shared natural resources in the Arctic ecosystem. Achievement of the objective and strategic targets will enhance U.S. water quality, human health, and help stabilize aquatic ecosystems in North America.

#### ***Surface Water Programs and Clean Water State Revolving Fund***

Strengthen the Water Quality Standards Program: State and authorized tribal water quality standards provide the regulatory and scientific foundation for all water quality programs. EPA derives the scientific baselines for contaminants in the form of "water quality criteria" guidance and identifies recommended approaches to support state and tribal adoption and implementation of water quality standards that protect water for uses such as swimming, public water supply, and fish and wildlife. EPA also has a statutory obligation to review and approve

state and tribal water quality standards, and to promulgate federal replacement standards, where necessary.

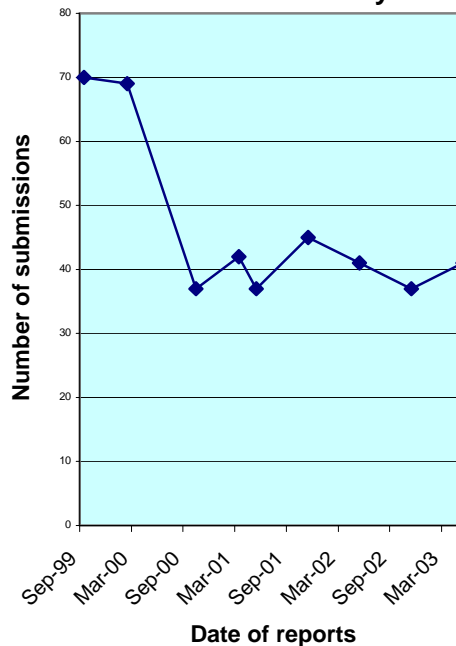
The Strategy for Water Quality Standards and Criteria<sup>50</sup>, developed in cooperation with states and published in August 2003, reflects a wide-ranging review of the water quality standards program with federal, state, tribal and other partners. The Strategy identifies the ten highest priority actions EPA must take to strengthen the regulatory and scientific foundation of state and tribal water quality standards to improve water quality and address the most significant new and emerging environmental problems.

In FY 2005, EPA will focus the water quality standards and criteria program on directly supporting Regional Offices, states and tribes to: (1) reduce the backlog of water quality standards actions; (2) establish the highest attainable uses in water quality standards; and (3) strengthen the scientific foundation on which to manage the water quality standards program.

EPA's first priority is to reduce the current backlog and avoid future backlogs of final EPA action on water quality standards. Timely EPA action on water quality standards submissions will assure the most current standards are available for development of TMDLs and permit limits, and the evaluation of monitoring data to determine whether standards are being attained consistent with the Agency's strategic target. As shown in the following graph, improvement is needed.

By providing direct technical and administrative assistance to regional offices, states and tribes, EPA will strive to take final action on state and tribal water quality standards submissions within the 90-day statutory deadline. Completing EPA's national consultation with the Fish and Wildlife Service and the National Marine Fishery Service on existing aquatic life criteria under the Endangered Species Act<sup>51</sup> should facilitate meeting this target.

**Water Quality Standards Submissions without EPA action in 90 days**



Source: U.S. EPA, Office of Water, Office of Science and Technology "May 2003 Water Quality Standards Backlog Report

<sup>50</sup> U.S. EPA. Office of Water. "Strategy for Water Quality Standards and Criteria." EPA-823-R-03-010. Washington, DC: EPA, August 2003. Available at <http://www.epa.gov/waterscience/standards/>

<sup>51</sup> Endangered Species Act, 16 U.S.C. 1531-1544.

Second, to address criticisms by the General Accounting Office<sup>52</sup> and the National Academy of Sciences<sup>53</sup>, EPA will provide clear, consistent technical outreach and support to states and tribes in revising their standards, where necessary, to reflect the highest attainable uses. These refined standards, based on sound science, technology and water quality-based control evaluations, demonstrated benefits, and implementation strategies will enable states and tribes to target the right waters for restoration.

Finally, EPA will strengthen scientific and policy tools that states, tribes and regional offices require to better manage the water quality standards and criteria program. These tools include new and revised water quality criteria for high priority chemicals identified by a systematic process in FY 2004; a sedimentation criteria strategy to address sediment and siltation problems that account for more water quality impairments than any other pollutant<sup>54</sup>; implementation guidance and direct technical support to assist 25 states in adopting nutrient criteria for fresh waters and to 45 states in adopting numeric biological criteria or implementation methods for small rivers and streams by 2008. Excess nutrients are one of the top four leading causes of water quality impairments<sup>55</sup> and biological criteria advance the scientific basis of designating aquatic life uses and measuring the success of cleanup efforts.<sup>56</sup>

In a complementary effort, EPA will review risk assessment methodologies applied to chemical pollutants and pathogens in biosolids generated by wastewater treatment plants and assess the need for new or revised standards to protect public health and the environment. This effort will respond to the highest priority recommendations in the National Research Council's 2002 report, "Biosolids Applied to Land: Advancing Standards and Practices."

Improve Water Quality Monitoring: Scientifically defensible data and information are essential tools in the Information Age. Water quality monitoring and assessment programs, the essential underpinning of all aspects of the watershed approach, must be strengthened and upgraded across the country.

In FY 2005, EPA requests funds for states to enhance existing monitoring programs so that they can answer basic questions about the condition of all state waters, contribute to a valid assessment of national water quality, and make good decisions about water quality management at appropriate scales. Implementation of this proposal requires a flexible approach that recognizes the different stages of development and the different monitoring frameworks of state programs.

Increased performance is the most critical component of our FY 2005 request. EPA expects to achieve the results detailed in the chart below. In addition, this monitoring initiative

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<sup>52</sup> General Accounting Office. "Water Quality: Improved EPA Guidance and Support Can Help States Develop Standards That Better Target Cleanup Efforts." GAO-03-308. Washington, DC: GAO, February 2003.

<sup>53</sup> National Research Council. "Assessing the TMDL Approach to Water Quality Management." Washington, DC: National Academy Press, 2001.

<sup>54</sup> U.S. EPA. Office of Water. [http://oaspub.epa.gov/waters/national\\_rept.control](http://oaspub.epa.gov/waters/national_rept.control)

<sup>55</sup> Ibid. [http://oaspub.epa.gov/waters/national\\_rept.control](http://oaspub.epa.gov/waters/national_rept.control)

<sup>56</sup> U.S. EPA. Office of Water. "Biological Assessment and Criteria: Crucial Components of Water Quality Programs." EPA-822-F-02-006. Washington, DC: EPA, Summer, 2002. Available at <http://www.epa.gov/waterscience/biocriteria/technical>

will enable EPA, by the time the Agency revises the Strategic Plan again in 2006, to write Strategic Objectives that are scientifically defensible and measurable.

### Monitoring Initiative – Results-oriented Government Long-Term Vision

	Current Status	Goal	
	2003	Establish Baseline	Report on Trends
<b>National picture of water quality condition:</b>			
Estuaries			
Streams and small rivers			
Lakes			
Large rivers			
Near-shore coastline			
Wetlands			
Off-shore Marine			
All states begin implementing a comprehensive monitoring strategy			
All states submit comprehensive integrated reports including both probability-based results and site-specific information			
Full integration of Federal Information Systems to maximize the use of existing and new data in management decisions			
USGS, NOAA, and EPA research produces tools to improve prediction, targeting, restoration decisions at multiple scales			
Red     Yellow     Green			

The proposal includes two components: A state grants component targeted specifically to enhance state monitoring programs and support and enhance of state data management systems to support cost-effective management decisions at the state level.

The largest component of the proposal is the state grants program. Grants under this component of the proposal will be targeted specifically to support states' implementation of monitoring strategies to most efficiently support the full range of decision needs. The state monitoring strategies include the use of the following tools:

- Refinement of biological assessment methods and probability-based designs for different water resource types. These activities are key to generating comparable assessments of water resources at local, state and national scales.
- Landscape models and other predictive tools. These tools are used to indicate where problems should be expected based on land use, discharges and non-point sources and help to indicate the level of vulnerability, likelihood of impairment and target priority actions.
- Remote sensing and innovative indicators of water quality to help to streamline where additional monitoring is needed to identify site-specific water quality conditions.
- Targeted monitoring to provide data to implement local management actions like NPDES permits and TMDLs. These existing targeted networks will be enhanced and refined by the contributions of other monitoring and assessment tools.



Effective data management is essential for successful state and national water monitoring programs. The second component of the proposal includes funds to support improvement of state data management systems to ensure that that water quality-monitoring data are understandable and available to decision-makers, stakeholders, and public audiences. The proposal will target funds to support development of efficient mechanisms for data sharing to enhance collaboration and promote more informed decision making at the local, state and national levels. Critical system management needs also include upgrades to Storage and Retrieval System (STORET), the primary tool for storing and analyzing water quality data, to improve system navigation and operation and to enhance analysis and presentation applications. Other important activities include developing the capability to exchange data with states and other partners, and providing essential training and implementation support for users.

Develop Effective Watershed Plans and TMDLs: EPA is working with states, interstate agencies, and tribes to foster a “watershed approach” as the guiding principle of clean water programs. At the watershed level, local managers can better understand the cumulative impact of their activities, determine the most critical problems, better allocate limited financial and human resources, engage stakeholders, win public support, and make real improvements in the environment. EPA is encouraging states to develop watershed plans with a comprehensive approach to assessing water quality, defining problems, integrating management of diverse pollution control, and financing projects. States have successfully adopted watershed approaches that use a “rotating basin” approach (e.g., a cycle in which watersheds of the state are assessed every five years) as well as other methods. Where necessary, states will upgrade their continuing planning process to assure development of a watershed approach. EPA is also working with tribes to support development of watershed approaches to protecting tribal waters.

In watersheds where water quality standards are not attained, states will be developing TMDLs. Some impaired waters are isolated segments that can be addressed individually. The vast majority of impaired waters, however, are clustered on a watershed basis. EPA is encouraging states to develop TMDLs for these waters on a watershed basis. Watershed-based TMDLs are less expensive to develop and create the opportunity for innovations such as water quality trading and watershed-based permitting. While supporting state watershed plans, EPA will continue work with states to develop TMDLs consistent with state TMDL development schedules and court-ordered deadlines. States and EPA have made significant progress in the development and approval of TMDLs and expect to maintain the current pace of about 3,000 TMDLs per year.

EPA will continue to provide the modeling tools that states need to develop TMDLs by incorporating technical improvements and new science into Better Assessment Science Integrating Point and Nonpoint Source (BASINS), a multipurpose environmental analysis system for performing watershed and water quality based studies. EPA will also provide technical support and training to states for the use of BASINS to develop TMDLs.

Water Quality Trading: In FY 2005, EPA will support, through a \$4 million set-aside within the existing Targeted Watershed Grants program, pilot projects designed to demonstrate the effectiveness of market-based approaches. Each pilot project will be required to establish goals and document progress against a variety of criteria:

- What progress is made toward water quality standards?

- How does this progress compare to estimated progress using traditional approaches?
- What cost savings were achieved, as compared to the estimated cost of traditional approaches (e.g., for TMDL implementation)?
- What ancillary environmental benefits are realized beyond required reductions in specific pollutant loads, such as wetlands restoration?

Pilot projects will offer the opportunity to establish new criteria by which to judge the effectiveness of various approaches. A key area for investigation will be that of cost savings. Anecdotal information suggests that cost savings provided by trading programs can be significant. Trading among point sources in Connecticut is expected to save over \$200 million dollars in reducing nitrogen loads to Long Island Sound over a 14-year period. After its first year, the Connecticut program has achieved more nitrogen reductions than expected and cut nearly six years off the projected timeline for meeting water quality standards.

Control Nonpoint Source Pollution: Watershed plans and TMDLs will focus pollution control efforts for impaired waters on a range of pollution sources, including runoff from nonpoint sources. EPA will also support efforts of states, interstate agencies, tribes, and other federal agencies to implement management practices that will reduce levels of nonpoint source pollution in both impaired waters and in surface waters and ground waters nationwide.

A critical step in this effort is for EPA to forge strategic partnerships with a broad range of agricultural interests at all levels. EPA will work with USDA to ensure that Federal resources, including grants under section 319 of the Clean Water Act and Farm Bill funds, are managed in a coordinated way. As part of this effort, EPA will work with States to encourage the development and implementation of watershed based plans, focusing on watersheds with water quality impairments caused by nonpoint sources. These watershed plans are a mechanism to coordinate monitoring and planning on a watershed basis and will build a foundation for effective implementation actions using federal and other funding. EPA will also work cooperatively with USDA to develop voluntary nutrient management plans for animal feeding operations (small operations not covered by regulations) and to implement riparian and stream bank protection measures over the next 5 years.

We will continue to track the steady increases in the cumulative dollar value and number of projects financed with Clean Water SRF loans to prevent polluted runoff. Properly managed onsite/decentralized systems are an important part of the Nation's wastewater infrastructure, and EPA will encourage state, tribal, and local governments to adopt voluntary guidelines for the effective management of these systems and use Clean Water Revolving Loan Funds to finance systems where appropriate.

OMB conducted an assessment of the nonpoint source grants program using the Administration's Program Assessment Rating Tool (PART). The program received adequate scores for "purpose and design" and "program management," but was deemed deficient in "strategic planning" and "program results/accountability," largely due to the unavailability of adequate measures of program efficiency.

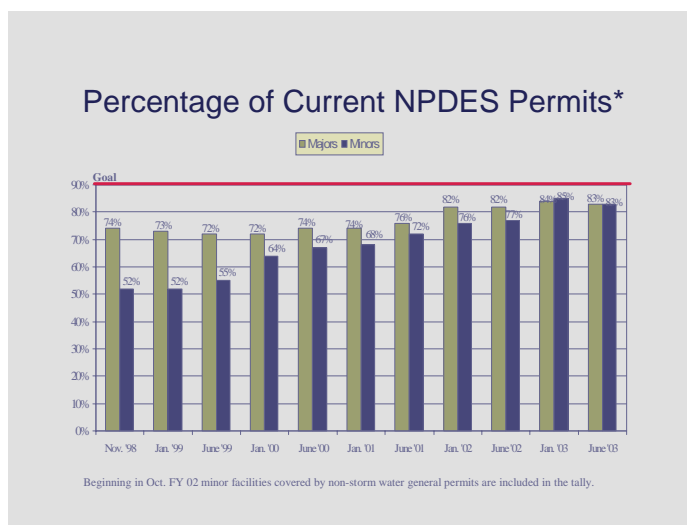
Strengthen NPDES Permit Program and Implement National Industrial Regulation Strategy: The NPDES requires point source dischargers to be permitted and pretreatment programs to control discharges from industrial facilities to the Nation's wastewater treatment

plants. This program provides a management framework for protection of the Nation’s waters through the control of billions of pounds of pollutants. EPA has five key strategic objectives for the program over the next five years: (1) assure effective management of the permit program and focus on permits that have the greatest benefit for water quality; (2) implement wet weather point source controls, including the storm water program; (3) implement the newly developed program for permits at Concentrated Animal Feeding Operations (CAFO); (4) advance program innovations, such as watershed permitting and trading; and (5) develop national industrial regulations for industries where the risk to waterbodies supports a national regulation.

In 2003, EPA began developing the “Permitting for Environmental Results Strategy” to address concern for the workload in permit issuance and the health of state NPDES programs. The Strategy focuses limited resources on the most critical environmental problems by targeting three key areas: developing and strengthening systems to ensure the integrity of the program; focusing headquarters, Regions and States on environmental results in the permitting program; and fostering efficiency in permitting program operations. Underpinning all three areas is the need for increased quality and quantity of data, including modernization of the Permits Compliance System (PCS) and integration of PCS with other environmental databases. Program performance will be assessed by this data, which will include permit issuance information, compliance and enforcement information, and other related water quality program measures. Beginning in FY 2004, EPA will make comprehensive assessments of NPDES program integrity and track the implementation of follow-up actions.

EPA is working with states, tribes, and other interested parties to strengthen the permit program in several other key areas that will have significant water quality benefits. EPA recently finalized new rules for discharges from CAFOs and EPA will work with states to assure that permits cover most CAFOs by 2008. In addition, over the next five years, EPA expects that 100% of NPDES programs will have issued general permits requiring storm water management programs for Phase II municipalities (MS4s) and requiring storm water pollution prevention plans for construction sites covered by Phase II of the storm water program. Finally, EPA and states will monitor the percentage of control mechanisms that establish pretreatment requirements for significant industrial users that discharge to publicly owned treatment works and for categorical industrial users of non-pretreatment treatment works.

Recent articles in The Washington Post and The New York Times, withdrawal petitions, and the permit backlogs indicate that States are struggling with NPDES program implementation. In addition, the universe of facilities is increasing ten-fold due to new program requirements to permit CAFOs and additional sources of storm water. To assist States with the increasing workload, we are requesting a \$5 million increase for Section 106 Grants.



\*Each year, 90% of all NPDES permits are considered current and, beginning in 2005, 95% of high priority permits are also current, achieving loading reductions of approximately 130 billion pounds. Source: U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assistance; Permit Compliance System; Web-site: [www.epa.gov/oeca/planning/data/water/pcssys.html](http://www.epa.gov/oeca/planning/data/water/pcssys.html)

Most industrial facilities discharging directly to waterbodies or to wastewater treatment plants have permit limits or pretreatment controls based on national regulations. In FY 2005, EPA will implement the next round of setting priorities, consistent with the final plan published by EPA, as required by section 304(m) of the CWA, for technology-based water quality improvements.<sup>57</sup> In consultation with the public, EPA will also establish program priorities based on sound science and the potential for cost-effective risk reduction. In addition to evaluation of regulatory options, EPA will consider other approaches (including clarifying guidance, commitments to voluntary reductions, environmental management systems, promotion of innovative technology, and permit writer support).

Support Sustainable Wastewater Infrastructure: Much of the dramatic progress in improving water quality is directly attributable to investment in wastewater infrastructure—the pipes and facilities that treat the Nation’s wastewater. But the job is far from over. Communities are challenged to find the fiscal resources to maintain and replace aging infrastructure, to meet growing infrastructure demands fueled by population growth, and to secure their infrastructure against threats. The Clean Watersheds Needs Survey 2000 documents many of these needs and provides the foundation for much of the agency’s wastewater infrastructure work. Work is underway on the next survey, which is planned for release in late-2005.

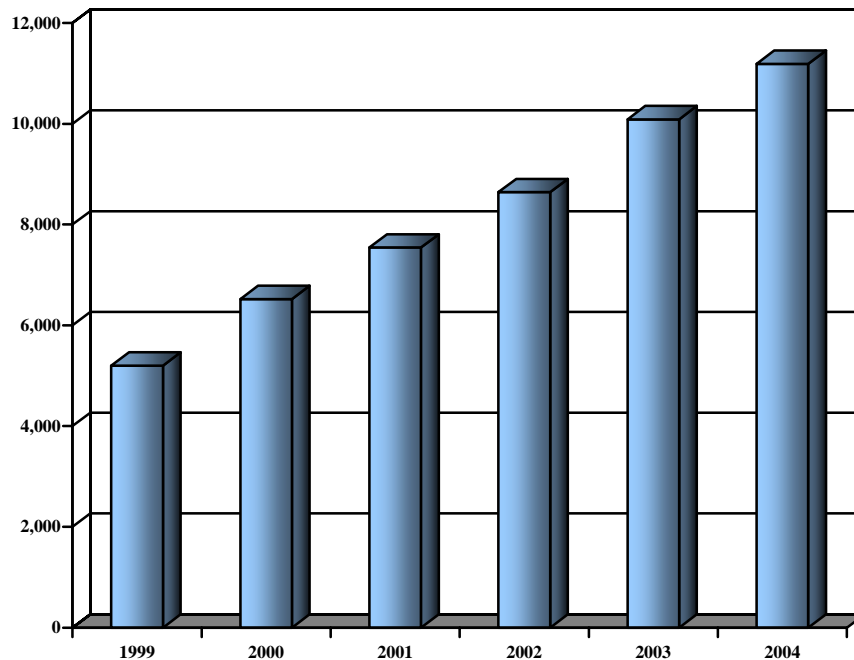
Clean Water State Revolving Funds (CWSRFs) provide low interest loans to help finance wastewater treatment facilities and other water quality projects. These projects are critical to the continuation of the public health and water quality gains of the past 30 years. As of early 2004, the federal government had invested almost \$21 billion in the CWSRFs. The revolving nature of the funds and substantial additions from states have magnified that investment so that \$47 billion has been available for loans.<sup>58</sup> The CWSRF program measures and tracks the average national rate at which available funds are loaned, assuring that the fund is working hard to support water quality infrastructure. Recognizing the substantial remaining need for wastewater infrastructure, EPA expects to continue to provide significant annual capitalization to the CWSRFs through 2011. This continued federal investment in SRFs along with other traditional sources of financing (including increased local revenues) will result in significant progress toward addressing the Nation’s wastewater treatment needs.

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<sup>57</sup> U.S. EPA. “Effluent Guidelines Planning Process Draft Strategy for National Industrial Regulation” 67 FR 71165 (Nov. 29, 2002)

<sup>58</sup> Clean Water State Revolving fund National Information Management System. US EPA, Office of Water, National Information Management System Reports: Clean Water Waters Revolving Fund (CWSRF). Washington, DC. Available at <http://www.epa.gov/r5water/cwsrf/pdf>.

**Number of Clean Water State Revolving Fund Projects that  
have Initiated Operations**



Source: U.S. EPA, Office of Water, Spreadsheet Maintained by the Office of Water,  
January 2004.

Over the next five years, EPA will work with CWSRFs to meet several key objectives: fund projects designed as part of an integrated watershed approach; link projects to environmental results through the use of scientifically-sound water quality and public health data; maintain the CWSRFs' excellent fiduciary condition; and continue to track the increasing numbers of states that have developed integrated priority lists addressing nonpoint source pollution and estuaries protection projects in addition to wastewater projects, to make CWSRF funding decisions.

Another important approach to closing the gap between the need for clean water projects and available funding is to use sustainable infrastructure management to assure that water and wastewater infrastructure investments are tailored to the needs of the watershed, well capitalized, and well maintained. Sustainable Management Systems, such as asset management and environmental management systems, prolong the lives of existing treatment systems. EPA will work to promote and institutionalize Sustainable Management Systems. EPA also intends to work toward recognizing and promoting sustainable infrastructure management through our awards and recognition programs and our outreach programs, including the clearinghouses and industry information sources we help to support. Further, we will support efforts to explore new sustainable techniques through Water Quality Cooperative Agreements-funded demonstration projects.

To meet the challenges posed by the infrastructure gap, EPA proposes two initiatives to help lower infrastructure costs – sustainable infrastructure initiative and water efficiency market enhancement program.

Even with affordable, flexible financial assistance through the CWSRF, the Agency's September 2002 Clean Water and Drinking Water Infrastructure "Gap" Analysis projects a multi-billion dollar gap in capital infrastructure financing over the next 20 years.<sup>59</sup> Successfully closing this gap will require more than federal financial assistance: it will require a broader, sustained and more focused effort from the Agency to enhance the sustainability of wastewater treatment systems. As a result, in FY 2005 the Agency will implement a Sustainable Infrastructure Leadership initiative in partnership with wastewater utilities. Through this initiative, EPA and its partners will identify leaders in the utility industry who have established best practices in wastewater asset management, innovations, and efficiency, and who are interested in employing watershed-based approaches to managing water resources. EPA also will work closely with States, utilities and other stakeholders to develop a strategy to facilitate the voluntary adoption of these best practices by approximately 1,000 utilities. The initiative will be designed to support sustainable wastewater utilities that are able to maximize the value of clean water by improving system performance at the lowest possible cost.

The proposed water labeling program, which will be based on the highly successful Energy Star Products Program, will promote recognition of water-efficient products. This program will give consumers a reference tool to identify and select water-efficient products, such as faucets, showerheads, and landscape irrigation devices. The purpose of the program is to reduce national water and wastewater infrastructure needs by reducing projected water demand and wastewater flows allowing deferral or downsizing of capital projects. In addition to reduced infrastructure needs, the Agency can anticipate many environmental benefits that assist in meeting clean and safe water goals, such as maintaining stream flows, protecting aquatic habitats, avoiding overdrawn aquifers, conserving sources of supply, and mitigating drought impacts. This program could help to reduce energy usage associated with water savings.

The 2002 World Summit in Johannesburg adopted the goal of reducing the number of people lacking access to safe drinking water and basic sanitation by 50 percent by 2015. EPA will contribute to this work through its support for development of sanitation facilities in Indian country and Alaskan native villages using funds set aside from the CWSRF. Other federal agencies, such as DOI and USDA, also play key roles in addressing this problem. In addition, Mexico Border infrastructure projects, described under Goal 4: Healthy Communities and Ecosystems, will improve access to basic sanitation.

The Clean Water SRF PART review conducted in 2003 found that the program purpose is clear and designed to have a significant impact on a well-identified need. It also found the program to be a very competent national financial resource for State infrastructure projects targeted at compliance with water quality standards and rated the Federal management of that program as excellent. The review, however, did challenge the Agency to develop performance measures that demonstrate more directly the impact of the program on water quality improvement.

Provide Sustainable Communities Assistance: EPA works to provide rural and small communities and special populations with the information and tools they need to sustain themselves as healthy and successful communities.

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<sup>59</sup> U.S. Environmental Protection Agency. 2002. The Clean Water and Drinking Water Infrastructure Gap Analysis. Washington, DC: Government Printing Office.

Onsite/Decentralized wastewater treatment systems, generally referred to as septic systems, are widely used in rural and small communities, serving approximately 25% of the U.S. population and used in about one-third of all new housing and commercial development.<sup>60</sup> They are important elements of the nation's sustainable water quality infrastructure. However, onsite/decentralized systems that are improperly sited, designed, installed, operated and maintained threaten human health and water quality. This problem affects, directly or indirectly, the success of all major EPA water quality programs. EPA will provide national direction and support to improve the performance of decentralized systems through upgrading professional standards of practice and institutionalizing the concept of sustainable management. In March 2003 the agency published Voluntary National Guidelines for Management of Onsite/Decentralized Wastewater Treatment Systems, and EPA will encourage states to adopt and abide by these guidelines.

Of the more than 16,000 Publicly Owned Treatment Works (POTWs) in the U.S., 12,500 discharge less than 1 million gallons per day of wastewater.<sup>61</sup> The Wastewater Operator Training Program has compiled an enviable record of success in assisting these small POTWs on the verge of, or recently in, noncompliance with their wastewater discharge permits. The program's only requirement is the facilities' willingness to work with a trainer to correct its problems. To date the program has helped more than 7,000 POTWs, and 9 of 10 assisted have achieved permit compliance, resulting in improved water quality and reduced need for enforcement actions.<sup>62</sup>

The Agency works to manage grant assistance to 1,570 Congressional special appropriations water and wastewater projects with total appropriations of more than \$4.1 billion through FY 2003.<sup>63</sup>

#### ***Infrastructure Assistance: Alaskan Native Villages***

EPA also provides direct grants to help address the water and wastewater infrastructure needs of Alaska Native Villages, and works closely with the Indian Health Service to identify priority projects for funding in Indian Country. This work is authorized under the Indian set-aside grant program under Title VI of the Clean Water Act.

#### ***Categorical Grants: Section 106 Grants and Water Quality Cooperative Agreements***

Section 106 of the Clean Water Act authorizes the Agency to provide grants to states, tribes and interstate agencies to help fund key programs for the prevention, reduction, and elimination of surface and ground water pollution from point and nonpoint sources (NPS) and for enhancing the ecological health of the Nation's water. These grants support State efforts to restore impaired watersheds (TMDLs) including all facets of this program, i.e., pre-TMDL needs such as monitoring and assessment and standards development, development of TMDLs and

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<sup>60</sup> U.S. Department of Commerce; U.S. Census Bureau; 1990 Census and U.S. Department of Commerce; U.S. Census Bureau; American Housing Survey for the U.S.-1995; issued September 1997.

<sup>61</sup> U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assistance; Permit Compliance System; Web-site: [www.epa.gov/oeca/planning/data/water/pcssys.html](http://www.epa.gov/oeca/planning/data/water/pcssys.html).

<sup>62</sup> U.S. Environmental Protection Agency, Office of Wastewater Management; National Operator Training and Technical Assistance Program Tracking System.

<sup>63</sup> U.S. Environmental Protection Agency; Office of Wastewater Management, Special Appropriations Act Projects and Programs Tracking System.

post-TMDL implementation and restoration; implementing integrated wet weather strategies in coordination with the NPS programs; and developing source water protection programs. Tribes will continue to conduct watershed assessments and will maintain and improve their capacity to implement water quality programs through monitoring, assessments, planning, and standards development.

Through the Water Quality Cooperative Agreement Program, the Agency continues to support the creation of unique and innovative approaches to address requirements of the NPDES program, with special emphasis on wet weather activities. In addition, this grant program has long supported other programmatic activities such as sustainable management systems for water pollution control and various other program innovations.

### ***Marine Pollution***

Improving Coastal and Ocean Waters: Coastal and ocean waters are environmentally and economically valuable to the Nation. Key programs focused on coastal waters and critical to improving these waters are: assessing coastal conditions; reducing vessel discharges; controlling coastal nonpoint pollution; managing dredged material; managing non-indigenous invasive species; and supporting international marine pollution control. By 2013, EPA, in cooperation with other Nations, other Federal agencies, and state and local governments, will reduce the rate of increase in the number of invasions by non-native invertebrate and algae species of marine and estuarine waters.

In addition, coordinating our efforts with those of other federal agencies, states, tribes, and public and private parties is essential. Improving coastal waters will depend on successful implementation of pollution controls in inland watersheds. Progress in protecting and restoring coastal waters is also directly tied to geographically focused projects, such as the Chesapeake Bay Program, the Gulf of Mexico Program, and the National Estuary Program. These programs are described under Goal 4: Healthy Communities and Ecosystems.

Assessing Coastal Conditions: Progress in meeting these strategic targets will be tracked through the National Coastal Condition Report, created in 2002 as a cooperative project of EPA, NOAA, USDA, and DOI. The Report describes the ecological and environmental condition of U.S. coastal waters according to a number of key parameters. EPA and other federal agencies will review changing conditions and periodically issue updated assessments of the health of coastal waters. In support of assessment of coastal waters, EPA is also working on indices for measuring the health of coral reefs, providing information that would assist states, tribes and local governments in anticipating and responding to harmful algal blooms, and improving the monitoring network for air deposition. EPA also supports a national marine debris monitoring program, which is developing statistically sound information on the sources of marine debris in order to better address this environmental and human health hazard.

Reducing Vessel Discharges: A focus of EPA's efforts to improve the health of the Nation's ocean and coastal waters will be to enhance regulation of discharges of pollution from vessels. Key work includes development of discharge standards for cruise ships operating in Alaskan waters; cooperation with the Department of Defense to develop discharge standards for certain armed forces vessels; and assessing the effectiveness of current regulations for marine



sanitation devices and promoting technological advancement in those devices to reduce sewage discharges from vessels.

Implementing Coastal Nonpoint Source Pollution Programs: Rapid population growth in coastal areas can result in significant increases in pollution from both point and nonpoint sources. For the past 10 years, EPA and NOAA have been working with coastal and Great Lakes states to improve and expand programs to reduce nonpoint source pollution in the “coastal zone” identified by states. Most states have used federal grant funds to develop coastal nonpoint programs, and EPA and National Oceans and Atmospheric Administration (NOAA) are working with the remaining states to complete the program by providing continued support and assistance. These nonpoint control programs, focused on the critical coastal zone areas, will play an important role in accomplishing the environmental improvements sought for coastal waters by 2008.

Managing Dredged Material: Several hundred million cubic yards of sediment are dredged from waterways, ports, and harbors each year to maintain the Nation’s navigation system for commercial, national defense, and recreational purposes. All of this sediment must be disposed of safely. EPA and the U.S. Army Corps of Engineers (COE) share responsibility for regulating how and where it is done. EPA and COE will focus additional resources on improving the way disposal of dredged material is managed, including evaluating disposal sites, designating and monitoring the sites, and reviewing and concurring on the disposal permits issued by COE.

EPA is also working with its state partners and other federal agencies, including COE, the Fish and Wildlife Service, and the Coast Guard, to ensure that comprehensive dredged material management plans, which include provisions for the beneficial re-use of dredged material, are developed and implemented in major ports and harbors.

Managing Invasive Species: One of the greatest threats to U.S. waters and ecosystems is the uncontrolled spread of invasive species. Invasive species commonly enter U.S. waters through the discharge of ballast water from ships. Although the majority of these organisms never become established in a new ecosystem, an increasing number of invasive species are adversely impacting the environment and local economies and posing risks to human health. In response, EPA is assisting the U.S. Coast Guard in its efforts to develop ballast water exchange requirements and ballast water discharge standards to control aquatic invasive species and is addressing this issue at the international level. Negotiations are currently underway for a global treaty designed to reduce or prevent further introductions of invasive aquatic species through ballast water.

### ***Supporting International Marine Pollution Control***

EPA works closely with the Coast Guard, NOAA, and the Department of State to address environmental threats to U.S. waters that require international cooperation. Recognizing the effect of international shipping on the quality of the U.S. waters, EPA is heavily involved in the negotiation of international standards at the International Maritime Organization. These international standards are one of the principal mechanisms EPA is using to address invasive aquatic species, tributyltin and other harmful antifoulants, and marine debris. EPA is also

engaged in cooperative efforts to reduce other sources of pollution affecting the Gulf of Mexico, Great Lakes, Arctic Ocean, Straits of Florida, and the Wider Caribbean Basin.

### ***International Capacity Building***

To achieve our objective of preventing further degradation of the marine environment, EPA leads and supports specific multilateral treaty negotiations through the International Maritime Organization and other fora aimed at mitigating marine pollution at the global and regional level. Regional and global efforts are specifically designed to enhance the effectiveness of existing domestic environmental controls to reduce pollution of U.S. waters resulting from international shipping and other transboundary vectors and thereby protect important natural resources as well as the public health of the U.S. population.

Specific measures for FY 2005 will help advance our longer-term efforts to prevent or reduce environmental damage associated with tributyltin, vessel emissions and discharges, invasive species, and ocean dumping. Projects aimed at protection of the Arctic ecosystem are focused on preventing and reducing environmental contamination from spent nuclear fuel in Northwest Russia. In this context, we expect to achieve a 25 percent reduction of high-level sources of radioactive waste by 2005.<sup>64</sup> In addition, on-going efforts to address vessel and land-based sources of marine pollution in the Wider Caribbean will result in Regional water quality and marine habitat improvements that include economic benefits. Finally, our involvement in global negotiations is critical to maintain needed flexibility in domestic rulemaking and other environmental policy mechanisms.

### **FY 2005 CHANGE FROM FY 2004**

#### **EPM**

- +\$3,000,000 to support the monitoring initiative. Also funded through increases to the STAG account, this initiative will support improvements to the nation's water quality monitoring capability. These resources will provide technical support to states and tribes as they adopt new comprehensive monitoring strategies, as well as improvements to water quality data systems, including enhancements to data-sharing capabilities.
- +\$500,000 for a sustainable infrastructure initiative to support partnerships with States, the utility industry, and other stakeholders to enhance the operating efficiencies of drinking water and wastewater utilities.
- +\$800,000 for the Water Labeling Program. These resources will be used for the development and implementation of a market enhancement program that will promote recognition of water-efficient products.
- -\$3,500,000 from the development of effluent guidelines. By the end of FY 2004, the Agency is scheduled to complete the last of nearly 20 effluent guidelines that had been

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<sup>64</sup> 4000 high-level fuel assemblies to be removed from a total of 16,000 assemblies in Northwest Russia (2001 baseline): Bellona Report (Volumes 1-3), The Bellona Foundation, 1994, 1996, and 2001.

subject to court-ordered deadlines. In FY 2005, the Agency does not anticipate the same number of rulemaking starts as previously experienced under the consent decree and will therefore shift 9 FTE to support high priority work such as water quality monitoring, permitting, and coastal activities.

- -\$1,500,000 for wastewater operator training grants which reflects a change in the appropriation for this program.
- There are increases for payroll, cost of living and enrichment for existing FTE.

### STAG

- +\$17,000,000 will fund grants to states and tribes under the water quality monitoring initiative to support adoption of new comprehensive monitoring strategies and the development of statistically valid monitoring networks to help target activities and determine of water quality status and trends. These funds will be awarded under CWA S.106, and will be explicitly earmarked for monitoring work.
- +\$5,000,000 for Section 106 Grants. These resources will assist States in implementing the CAFO and Stormwater rules.
- +\$1,500,000 for wastewater operator training grants which reflects a change in the appropriation for this program.
- +\$1,500,000 for the water infrastructure management initiative to support demonstration grants to promote innovative ways for municipalities to manage water infrastructure.
- -\$29,400,000 from Section 319 Nonpoint Source Grants in recognition of increased resources for USDA conservation programs. The Administration supports focusing the Section 319 program to provide a basis for implementation of agricultural nonpoint source controls using USDA program funding.

## **ANNUAL PERFORMANCE GOALS AND MEASURES**

### **Watershed Protection**

- |         |  |
|---------|--|
| In 2005 | 500 of the Nation's watersheds have water quality standards met in at least 80% of the assessed water segments.  |
| In 2005 | Water quality standards are fully attained in over 25% of miles/acres of waters by 2012, with an interim milestone of restoring 2% of these waters - identified in 2000 as not attaining standards - by 2005.                        |
| In 2004 | By FY 2005, Water quality will improve on a watershed basis such that 625 of the Nation's 2,262 watersheds will have greater than 80 percent of assessed waters meeting all water quality standards, up from 500 watersheds in 1998. |

<b>Performance Measures:</b>	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
Watersheds that have greater than 80% of assessed waters meeting all water quality standards.		500 (FY 05)	500	8-digit HUCs
Waterbodies (river miles and lake acres) identified in 2000 as not attaining Water quality standards, are fully attained.			2	% Miles/Acres

Baseline: As of 2002 state reports 453 watersheds had met the criteria that greater than 80% of assessed waters met all water quality standards. For a watershed to be counted toward this goal, at least 25% of the segments in the watershed must be assessed within the past 4 years consistent with assessment guidelines developed pursuant to section 305(b) of the Clean Water Act. In 2002, 0% of the 255,408 miles/and 6,803,419 acres of waters identified on 1998/2000 lists of impaired waters developed by States and approved by EPA under section 303(d) of the Clean Water Act.

### **Dredged Material/Ocean Disposal**

- In 2005 Improve ratings reported on the national "good/fair/poor" scale of the National Coastal Condition Report for: coastal wetlands loss by at least 0.1 point; contamination of sediments in coastal waters by at least 0.1 point; benthic quality by at least 0.1 point; & eutrophic condition by at least 0.1 point
- In 2005 Scores for overall aquatic system health of coastal waters nationally, and in each coastal region, is improved on the "good/fair/poor" scale of the National Coastal Condition Report by at least 0.1 point

<b>Performance Measures:</b>	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
Score for overall aquatic system health of coastal waters nationally, and in each coastal region, is improved (cumulative).			2.5	Scale score
Maintain water clarity and dissolved oxygen in coastal waters at the national levels reported in the 2002 National Coastal Condition Report			4.3 / 4.5	Scale score
Improve ratings reported on the national "good/fair/poor" scale of the National Coastal Condition Report for coastal wetlands loss			1.5	Scale score
Improve ratings reported on the national "good/fair/poor" scale of the National Coastal Condition Report for contamination of sediments in coastal waters			1.4	Scale score
Improve ratings reported on the national "good/fair/poor" scale of the National Coastal Condition Report for benthic quality			1.5	Scale score
Improve ratings reported on the national "good/fair/poor" scale of the National Coastal Condition Report for eutrophic condition			1.8	Scale score

Baseline: National rating of "fair/poor" or 2.4 where the rating is based on a 5-point system where 1 is poor and 5 is good and is expressed as an aerially weighted mean of regional scores using the National Coastal Condition Report indicators [i.e., water clarity, dissolved oxygen, coastal wetlands loss, eutrophic conditions, sediment contamination, benthic health, and fish tissue contamination]. The 2002 National Coastal Condition Report indicated 4.3 for water clarity and 4.5 for dissolved oxygen, 1.4 for coastal

wetlands loss; 1.3 for contamination of sediments in coastal waters; 1.4 for benthic quality; & 1.7 for eutrophic condition.

### State/Tribal Water Quality Standards

- In 2005 In coordination with other federal partners reduce, by 11%, households on tribal lands lacking access to basic sanitation.
- In 2005 Water quality in Indian country will be improved at not less than 35 monitoring stations in tribal waters for which baseline data are available (i.e., show at least a 10% improvement for each of four key parameters: total nitrogen, total phosphorus, dissolved oxygen, and fecal coliforms.)
- In 2004 Assure that States and Tribes have effective, up-to-date water quality standards programs adopted in accordance with the Water Quality Standards regulation and the Water Quality Standards program priorities.

<b>Performance Measures:</b>	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
States with new or revised water quality standards that EPA has reviewed and approved or disapproved and promulgated federal replacement standards.		20		States
Tribes with water quality standards adopted and approved (cumulative).		33		Tribes
Number of monitoring stations (for which baseline data on 4 key parameters are available) where water quality is improved.			35	Stations
Number of households on tribal lands lacking access to basic sanitation.			11	% Households

Baseline: The performance measure of state submissions (above) thus represents a "rolling annual total" of updated standards acted upon by EPA, and so are neither cumulative nor strictly incremental. EPA must review and approve or disapprove state revisions to water quality standards within 60-90 days after receiving the state's package. In 2002, there will be four key parameters available at 900 sampling stations in Indian country. In 2002, Indian Health Service indicates that 71,000 households on Tribal lands lack access to basic sanitation.

### VERIFICATION AND VALIDATION OF PERFORMANCE MEASURES

**FY 2005 Performance Measure: Watersheds in which at least 80% of the assessed water segments meet water quality standards.**

**Performance Database:** The Watershed Assessment Tracking Environmental Results System (WATERS) (1) is used to summarize water quality information at the watershed level. For purposes of this national summary, Watersheds " are equivalent to 8-digit hydrologic unit codes (HUCs), of which there are 2,262 nationwide. WATERS is a geographic information system that integrates many existing data management tools including the STORage and RETrieval (STORET) database (2), the Assessment Database (3) and the Water Quality Standards database (4). Water quality information available through WATERS includes data submitted by the states under Clean Water Act (CWA) Section 305(b). These data are submitted

to EPA every two years, with annual electronic updates. The U.S.EPA summarizes these data in the *National Water Quality Inventory Report*. (5)

**Data Source:** State CWA Section 305(b) reporting. The data used by the states to assess water quality and prepare CWA Section 305(b) reports come from multiple sources (state monitoring networks, United States Geological Survey (USGS), local governments, volunteer monitors, academic institutions, etc.) as well as predictive tools such as water quality models. Raw data may be entered by states and other sources into STORET. States compare available ambient monitoring data to their water quality standards to arrive at assessment results. Assessment results are then entered into the Assessment Database. EPA uses the assessment results to present a snap-shot of water quality as reported by the states (the *National Water Quality Inventory Report*), but because state methods and water quality standards vary widely, does not use the assessment results to report trends in water quality.

Information on each state's assessment methodology can be obtained from its 305(b) report, and raw data entered into STORET must meet metadata standards.

**Methods, Assumptions and Suitability:** States employ various methods of ambient water data collection, including: 1) Direct sampling of chemical, physical, and biological parameters using targeted site selection (usually, where problems are most likely or where water is heavily used); 2) Predictive models of water quality standards attainment; 3) Direct sampling at statistically-valid, probability-based sampling networks (in its early stages in a number of states); 4) Compilation of data from outside sources such as volunteer monitors, academic institutions, and others. EPA-supported models include BASINS, QUAL2E, AQUATOX, and CORMIX. Descriptions of these models and instructions for their use can be found at [www.epa.gov/OST/wqm/](http://www.epa.gov/OST/wqm/).

The standard operating procedures and deviations from these methods for data sampling and prediction processes are stored by states in the STORET database. EPA aggregates state assessment information by watershed (as described above) to generate the national performance measure. State assessment results describe attainment of designated uses in accordance with state water quality standards and thus represent a direct measure of performance. State CWA Section 305(b) data are suitable for providing a snapshot of the ambient water quality conditions that exist across the nation, in that subset of waters that are assessed. However, nationally aggregated data are currently not suitable for year- to-year comparisons. As states update their monitoring programs to include probabilistic monitoring, EPA will be able to conduct nationally aggregated, year-to year comparisons.

**QA/QC Procedures:** QA/QC of data provided by states in their individual assessments (under CWA Section 305(b)) and accessed through WATERS is dependent on individual state procedures. Numerous system level checks are built into the data sources in WATERS, based upon the business rules associated with the water quality assessment database. States are given the opportunity to review the information to ensure it accurately reflects the data they submitted. Detailed data exchange guidance and training are also provided to the states. Sufficiency threshold for inclusion in this measure requires that 20% of stream miles in an 8-digit HUC be assessed. The Office of Water Quality Management Plan (QMP), renewed every five years, was approved in July 2002 (6). It describes the quality system used by the Office of Water and

applies to all environmental programs within the Office of Water and to any activity within those programs that involves the collection or use of environmental data.

**Data Quality Review:** Numerous independent reports have cited that weaknesses in water quality monitoring and reporting undermine EPA's ability to depict the condition of the Nation's waters, to make trend assessments, and to support scientifically-sound water program decisions. The most recent reports include the 1998 *Report of the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program* (7), the March 15, 2000 General Accounting Office report *Water Quality: Key Decisions Limited by Inconsistent and Incomplete Data* (8), the 2001 National Academy of Sciences Report, *Assessing the TMDL Approach to Water Quality Management* (9), a 2002 National Academy of Public Administration Report, *Understanding What States Need to Protect Water Quality* (10), and EPA's *Draft Report on the Environment* (11). Water quality reporting under Section 305(b) has been identified as an Agency-Level weakness under the Federal Managers Financial Integrity Act.

In response to these evaluations, EPA has been working with states and other stakeholders to improve: 1) data coverage, so that state reports reflect the condition of all waters of the state; 2) data consistency, to facilitate comparison and aggregation of state data to the national level; and 3) documentation, so that data limitations and discrepancies are fully understood by data users.

The Office of Water has issued several recent guidance documents designed to increase consistency and coverage in state monitoring, assessment and reporting. In November 2001, EPA issued its Integrated Reporting guidance (12) which calls on states to integrate the development and submission of 305(b) water quality reports and Section 303(d) lists of impaired waters. The Integrated Report will enhance the ability of water quality managers to display, access, and integrate environmental data and information from all components of the water quality program. In July 2002, EPA released the *Consolidated Assessment and Listing Methodology - a Compendium of Best Practices* (13), intended to facilitate increased consistency in monitoring program design and in the data and decision criteria used to support water quality assessments. And in March 2003, EPA issued *Elements of a State Water Monitoring and Assessment Program* (14) which describes ten elements that each state water quality-monitoring program should contain and a ten-year time frame for implementing all elements. As part of each state's monitoring strategy, state data will be accompanied by quality assurance plans.

EPA has enhanced two existing data management tools (STORET and the Assessment Database) so that they include documentation of data quality information. EPA's WATERS tool integrates many databases including STORET, the Assessment Database, and the Water Quality Standards Database. These integrated databases facilitate comparison and understanding of differences among state standards, monitoring activities, and assessment results.

**Data Limitations:** Data are not representative of comprehensive national water quality assessments because most states do not yet employ a monitoring design that characterizes all waters in each reporting cycle. States, territories, and tribes collect data and information on only a portion of their water bodies because it is prohibitively expensive to monitor all water bodies. Furthermore, states do not use a consistent suite of water quality indicators to assess attainment with water quality standards. For example, indicators of aquatic life use support range from biological community condition to levels of dissolved oxygen to concentrations of toxic

pollutants. State water quality standards themselves vary from state to state. State assessments of water quality may include uncertainties associated with derived or modeled data. These variations in state practices and standards limit how the assessment reports they provide can be used to describe water quality at the national level and prevent the agency from aggregating water quality assessments at the national level with known statistical confidence.

**Error Estimate:** No error estimate is available for this data.

**New/Improved Data or Systems:** The Office of Water is currently working with states, tribes and other Federal agencies to improve the database that supports this management measure by addressing the underlying methods of monitoring water quality and assessing the data. Also, the Office of Water is working with partners to enhance monitoring networks to achieve comprehensive coverage of all waters, use a consistent suite of core water quality indicators (supplemented with additional indicators for specific water quality questions), and document key data elements, decision criteria and assessment methodologies in electronic data systems. The Office of Water is using a variety of mechanisms to implement these improvements including data management systems, guidance, stakeholder meetings, training and technical assistance, program reviews and negotiations.

EPA is working with states to enhance their monitoring and assessment programs, with a particular emphasis on the probabilistic approach. These enhancements, along with improving the quality and timeliness of data for making watershed-based decisions, will greatly improve EPA's ability to use state assessments in consistently portraying national conditions and trends. Specific state refinements include developing rigorous biological criteria to measure the health of aquatic communities (and attainment with the aquatic life use) and designing probability-based monitoring designs to support statistically-valid inferences about water quality. The EPA Environmental Monitoring and Assessment Program (EMAP) design team has been instrumental in helping states design the monitoring networks and analyze the data. Initial efforts have focused on streams, lakes and coastal waters. Wetlands and large rivers will be targeted next. States are implementing these changes incrementally and in conjunction with traditional targeted monitoring. At last count, 16 states have adopted probability-based monitoring designs, several more are evaluating them, and all but 10 are collaborating in an EMAP study.

The Agency's FY2005 budget request includes a significant increase to support water quality monitoring improvements. A state grants component will support states' implementation of monitoring strategies, including refinement of biological assessment methods and probability-based designs for different water resource types, landscape models and other predictive tools, remote sensing and innovative indicators of water quality to help streamline where additional monitoring is needed, and targeted monitoring to provide data to implement local management actions such as National Pollution Discharge Elimination Program (NPDES) permits and Total Maximum Daily Loads (TMDLs). The initiative will also support improvement of data management systems to ensure that water quality monitoring data are understandable and available to all who need it. Included here are upgrades to STORET, to improve system navigation and operation and to enhance analysis and presentation applications. Funds will also support enhancing the capability to exchange water quality data with states.



## References:

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**FY 2005 Performance Measure: Water quality standards are fully attained in miles/acres of waters identified in 2000 as not attaining standards.**

**Performance Database:** The Watershed Assessment Tracking Environmental Results System (WATERS– found at <http://www.epa.gov/waters/>) is the overarching Agency tool that is used to store water quality information related to this measure. Within WATERS, resides a section entitled “303(d) Information,” compiled from the comprehensive data set we refer to as *States’ Listings of Impaired Waters as Required by Clean Water Act Section 303(d)* (referred to here in brief as “303(d) lists”). This tool (found at <http://www.epa.gov/owow/tmdl/status.html>) is used to generate reports that identify individual impaired waters as well as an aggregation of impaired waters that is the total impaired river-miles and lake-acres. This information, combined with

information and comment from EPA Regions and states, yields the baseline data for this measure— river-miles and lake-acres of impaired waters in 2000. As Total Maximum Daily Loads (TMDL) are developed, updated and entered into the National TMDL Tracking System (NTTS), and water bodies are no longer counted as impaired, the associated restored river-miles and lake-acres are removed from the year 2000 impaired totals. Changes will be recorded in reports, scheduled every 6 years (e.g. future reporting years 2006 and 2012), as percentage improvements to water body impairment.

**Data Source:** The underlying data source for this measure is State 303(d) lists of their impaired water bodies. Each state is required to submit this list to EPA every two years. States prepare the lists using actual water quality monitoring data, probability-based monitoring information, and other information and knowledge the state has, in order to make comprehensive determinations addressing the total extent of the state's water body impairments. Once EPA approves a state's 303(d) list, EPA enters the information into WATERS, as described above.

**Methods, Assumptions, and Suitability:** States employ various analytical methods of data collection, compilation, and reporting including: 1) Direct water samples of chemical, physical, and biological parameters; 2) Predictive models of water quality standards attainment; 3) Probabilistic models of pollutant sources; and 4) Compilation of data from volunteer groups, academic interests and others. EPA supported models include BASINS, QUAL2E, AQUATOX, and CORMIX. Descriptions of these models and instructions for their use can be found at [www.epa.gov/OST/wqm/](http://www.epa.gov/OST/wqm/). The standard operating procedures and deviations from these methods for data sampling and prediction processes are stored by states in the STORET database. EPA aggregates state data by watershed (as described above) to generate the national performance measure. State provided data describe attainment of designated uses in accordance with state water quality standards and thus represent a direct measure of performance. State CWA Section 305(b) data are suitable for providing a snapshot of the ambient water quality conditions that exist across the nation; however, nationally aggregated ambient water quality data are currently not suitable for year-to-year comparisons. As states update their monitoring programs to include probabilistic monitoring, we will be able to do nationally aggregated, year-to-year comparisons.

**QA/QC Procedures:** QA/QC of data provided by states pursuant to individual state 303(d) lists (under CWA Section 303(d)) is dependent on individual state procedures. EPA Regional staff interact with the states during the process of approval of the lists and before the information is entered into the database to ensure the integrity of the data. The Office of Water Quality Management Plan (QMP), renewed every five years, was approved in July 2001. EPA requires that each organization prepare a document called a quality management plan (QMP) that: documents the organization's quality policy; describes its quality system; and identifies the environmental programs to which the quality system applies (e.g., those programs involved in the collection or use of environmental data).

**Data Quality Review:** Numerous independent reports have cited that weaknesses in monitoring and reporting of monitoring data undermine EPA's ability to depict the condition of the Nation's waters and to support scientifically-sound water program decisions. The most recent reports include the 1998 *Report of the Federal Advisory Committee on the Total Maximum Daily Load*

(TMDL) Program<sup>65</sup>, the March 15, 2000 General Accounting Office report *Water Quality: Key Decisions Limited by Inconsistent and Incomplete Data*<sup>66</sup>, the 2001 National Academy of Sciences Report *Assessing the TMDL Approach to Water Quality Management*<sup>67</sup> and EPA's *Draft Report on the Environment*.<sup>68</sup>

In response to these evaluations, EPA has been working with states and other stakeholders to improve: 1) data coverage, so that state reports reflect the condition of all waters of the state; 2) data consistency to facilitate comparison and aggregation of state data to the national level; and 3) documentation so that data limitations and discrepancies are fully understood by data users.

First, EPA enhanced two existing data management tools (STORET and the Assessment Database) so that they include documentation of data quality information.

Second, EPA has developed a GIS tool called WATERS that integrates many databases including STORET, the Assessment database, and a new water quality standards database. These integrated databases facilitate comparison and understanding of differences among state standards, monitoring activities, and assessment results.

Third, EPA and states have developed a guidance document: Consolidated Assessment and Listing Methodology - a Compendium of Best Practices<sup>69</sup> (released on the Web July 31, 2002 at [www.epa.gov/owow/monitoring/calm.html](http://www.epa.gov/owow/monitoring/calm.html)) intended to facilitate increased consistency in monitoring program design and the data and decision criteria used to support water quality assessments.

Fourth, the Office of Water (OW) and EPA's regional offices have developed the *Elements of a State Water Monitoring and Assessment Program*, (August 2002) which is currently under review by our state partners. This guidance describes ten elements that each state water quality-monitoring program should contain and proposes time-frames for implementing all ten elements.

**Data Limitations:** Data may not precisely represent the extent of impaired waters because states do not yet employ a monitoring design that monitors all waters in each 303(d) listing cycle. States also do not use a consistent suite of water quality indicators to assess attainment with water quality standards. For example, indicators of aquatic life use support range from biological community assessments to levels of dissolved oxygen to concentrations of toxic pollutants. These variations in state practices limit how the 303(d) lists provided by states can be used to describe water quality at the national level. States, territories and tribes collect data and information on only a portion of their water bodies. There are differences among their programs, sampling techniques, and standards.

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<sup>65</sup> Report of the Federal Advisory Committee on the Total Maximum Daily Load Program. 1998. National Advisory Council for Environmental Policy and Technology. EPA Number 100R98006. National Center for Environmental Publications]

<sup>66</sup> *Water Quality: Key EPA and State Decisions Limited by Inconsistent and Incomplete Data*. March 15, 2000. RCED-00-54 and *Water Quality: Inconsistent State Approaches Complicate Nation's Efforts to Identify Its Most Polluted Waters*. January 11, 2002

<sup>67</sup> *Assessing the TMDL Approach to Water Quality Management*. 2001. Committee to Assess the Scientific Basis of the Total Maximum Daily Load Approach to Water Pollution Reduction, Water Science and Technology Board, National Research Council

<sup>68</sup> US EPA. *Draft Report on the Environment 2003*. July 2003. EPA 260-R-02-006. Available at <http://www.epa.gov/indicators/roe/index.htm>

<sup>69</sup> U.S. EPA. (July 31, 2002). Consolidated Assessment and Listing Methodology. Toward a Compendium of Best Practices. (First Edition). Washington, DC: Office of Wetlands, Oceans, and Watersheds. Available on the Internet: Monitoring and Assessing Water Quality [www.epa.gov/owow/monitoring/calm.html](http://www.epa.gov/owow/monitoring/calm.html)

State assessments of water quality may include uncertainties associated with derived or modeled data. Differences in monitoring designs among and within states prevent the agency from aggregating water quality assessments at the national level with known statistical confidence. States, territories, and authorized tribes monitor to identify problems and typically lag times between data collection and reporting can vary by state.

**Error Estimate:** No error estimate is available for this data.

**New/Improved Data Systems:** The Office of Water has been working with states to improve the guidance under which 303(d) lists are prepared. EPA issued new listing Guidance on July 21, 2003 entitled *Guidance for 2004 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act* (Guidance). The Guidance may be found at: <http://www.epa.gov/owow/tmdl/tmdl0103/index.html>. The Guidance addresses a number of issues that states and EPA identified during the 2002 listing cycle. Among these issues are minimum data requirements and sample size requirements in making listing determinations, use of probability-based sampling in the state's monitoring program, improved year-to-year consistency in a choice of a geo-referencing scheme, and use of a consistent method of segmenting water bodies and denoting changes to the segmentation between listing cycles.

**References:** Cited in body of text above.

### **FY 2005 Performance Measure: Water quality in Indian country**

**Performance Database:** National Water Information System (NWIS), the USGS water monitoring database will be used to report on this measure (<http://waterdata.usgs.gov/nwis/usa>). Although NWIS has not yet adopted the EPA Tribal Identifier Data Standard (see [http://oaspub.epa.gov/edr/epastd\\$.startup](http://oaspub.epa.gov/edr/epastd$.startup)), the AIEO Tribal Information Management System (<https://oasint.rtpnc.epa.gov/TIMS/>) (phone 202-564-0303 for password access) can extract records from NWIS on the basis of reservation boundaries, enabling both data systems to provide tribal water quality data for this performance measure. NWIS records monitoring dates, so time series analysis will be a key feature of the Indian country water quality performance measure.

**Data Sources:** NWIS merges of all USGS district offices, and consists primarily of data collected by USGS field staff, either on a regular basis or for special projects.

**QA/QC Procedures:** Quality assurance for the Indian country water quality performance measure depends on the quality of the USGS NWIS data system. Documentation for NWIS quality assurance may be found at: ([http://water.usgs.gov/pubs/dds/\\_wqn96cd/html/wqn/qasure/qasure.htm](http://water.usgs.gov/pubs/dds/_wqn96cd/html/wqn/qasure/qasure.htm)).

**Data Quality Reviews:** Two quality reviews are envisioned. The first will be a comparison of the federal data, in aggregate, and the water quality data reported by the tribes in CWA §106 water quality assessment reports. The review will be conducted for five tribal reservations. The second is a comparison of Storage and Retrieval System (STORET) data, EPA's repository of water quality monitoring data reported by states, tribes, other grantees, and other federal agencies, and NWIS water quality data for similar tribal geographic areas; this review is

dependant upon future increased STORET use by tribes. The results of these two data quality reviews will allow AIEO to estimate a range of variation for the data used in the water quality assessments.

**Data Limitations:** The data collected for the tribal water quality performance measure are limited by the accuracy of the reservation boundary files used by AIEO. The files, IND-3, are distributed by the Bureau of Indian Affairs Geographic Data Service Center, (Internet site disabled). There are minor variations between the files provided by BIA and other sources of tribal boundary files. In an analysis of selected reservation boundaries, AIEO has determined that there is an approximately a 5% variation between the files from the BIA IND-3 dataset, and the Census Tiger files of reservation boundaries ([http://www.census.gov/geo/www/cob/bdy\\_files.html](http://www.census.gov/geo/www/cob/bdy_files.html)).

**Error Estimate:** AIEO estimates an approximately 5% error in the identification of water monitoring sites that fall inside reservation boundaries because of errors in tribal boundaries and latitude and longitude of monitoring sites, resulting in errors in the extraction of geographic records from NWIS. The overall error of the performance measure is expected to be the percent variation in the water quality data from different sources (STORET, water quality assessment reports from tribes, NWIS) compounded by the error introduced by inaccuracies in boundary files. AIEO expects a 5% or greater error in the analysis, depending on the magnitude of the variation of the data from the different sources used.

**New/Improved Data or Systems:** As NWIS adopts a tribal identifier code, AIEO will no longer have to rely on geographic extraction of data records and that source of error will be eliminated. To date, USGS has not announced plans to tribally index their water quality data systems.

A key improvement in EPA's ability to assess tribal water quality will be the enhancement of tribes' usage of STORET. Plans are in place to improve outreach and technical assistance to tribes and states to encourage greater use of the system, and to use STORET's capabilities to upload local information to the national data warehouse. This will facilitate determinations of water quality status and trends nationwide and in Indian country in particular. EPA will also work to incorporate into STORET the agency's new Tribal Identifier Data Standard to further facilitate assessing tribal water quality information.

#### References:

1. U.S. Environmental Protection Agency. STORET Database. <http://www.epa.gov/STORET/>.
2. U.S. Environmental Protection Agency. American Indian Environmental Office. TIMS Database <https://oasint.rtpnc.epa.gov/TIMS/>
3. U.S. Geological Survey. Water Resources Division. NWIS Database <http://waterdata.usgs.gov/nwis/usa>.
4. Bureau of Indian Affairs. (2000). IND-3 Indian Reservations. Geographic Data Service Center, Lakewood, CO. (internet site disabled).
5. U.S. Census Bureau. Geographic Division. 2000 Census Tiger Files of American Indian Areas [http://www.census.gov/geo/www/cob/bdy\\_files.html](http://www.census.gov/geo/www/cob/bdy_files.html)

**FY 2005 Performance Measure: In coordination with other federal partners, reduce the number of households on tribal lands lacking access to basic sanitation.**

**Performance Database:** The American Indian Environmental Office (AIEO) has been in the forefront of working with multiple agencies on a federal interagency Tribal Enterprise Architecture. Much of the work falls under the auspices of OMB Circular A-16 on coordination of federal geographic data across federal agencies (OMB 2003). The Tribal Enterprise Architecture includes access to a wide variety of data and information from several agencies and numerous sources within those agencies. It also includes several AIEO and jointly- developed applications to determine environmental performance in Indian country for a variety of specific purposes, including strategic planning and annual reporting under the Government Performance and Results Act. The components of the Tribal Enterprise Architecture create a broad, multi-variant view of the environmental conditions and programs in Indian country. EPA will track the status of federal and other basic sanitation infrastructure projects being undertaken in Indian country.

**Data Sources:** AIEO Tribal Enterprise Architecture will be linked to the Indian Health Service (IHS) Sanitation Tracking and Reporting System (STARS) database, which will be used to measure tribal access to basic sanitation in real-time. IHS STARS database, Level 4 (unsafe water or sanitation) and Level 5 (unsafe water and sanitation) information will be analyzed.

While the information from the STARS database is reported in the aggregate to Congress on an annual basis, the real-time data allow EPA to link IHS codes with EPA tribal codes on a project-by-project basis. It is anticipated that a significant percentage of other federal activity, besides EPA and IHS,— which provides tribes access to basic sanitation is captured in the IHS STARS system. AIEO will make the appropriate interagency inquiries to verify that all data are captured.

**QA/QC Procedures:** All the data used in the Tribal Enterprise Architecture project have quality assurance and metadata documentation prepared by the originating agency. AIEO works to standardize data and use metadata standards as established by the Federal Geographic Data Committee.

**Data Quality Reviews:** A unique feature of the Tribal Enterprise Architecture is the direct incorporation of a data center for documentation of errors and correction of text in the various data systems. This system, called the TIMS Data Center, provides for the systematic review and submission of corrections for 1) numeric and factual data from the national data systems used, and 2) qualitative statements made in a textual context. In the case of corrections to national databases, AIEO monitors submissions, and forwards them to appropriate systems administrators who make decisions on changes based on their criteria

**Data Limitations:** AIEO uses new geographic data mining technologies to extract records based on the geographical coordinates of the data points. For example, if a regulated facility has latitude and longitude coordinates that place it in the boundaries of the Wind River Reservation, then it is assigned to the Arapaho and Shoshone Tribes of the Wind River Reservation. This technique is extremely powerful, because it “tribally enables” large numbers of information systems which were previously incapable of identifying tribes. This will be applied to all the EPA databases. There are limitations, however. When database records are not geographically identified with latitude and longitude, the technique does not work and the record is lost to the

system. Likewise, the accuracy of the method depends on the accuracy of the reservation boundary files. EPA continues to request up-to-date and accurate coverage of reservation boundaries and land status designations from other agencies

**Error Estimate:** In an analysis of selected reservation boundaries, AIEO has determined that there is a 5% variation between the Bureau of Indian Affairs' IND-3 reservation boundaries and those from the United States Census Bureau (e.g., U.S. Census Tiger file of reservation boundaries). Another source of error comes from records that are not sufficiently described geographically to be assigned to specific tribes. For some agencies, such as USGS, the geographic record is complete, so there are no errors from these sources. It is estimated that 20% of the regulated facilities in EPA regulatory databases are not geographically described, and thus will not be recognized by the AIEO methodology.

**New/Improved Data or Systems:** The technologies used by the Tribal Enterprise Architecture are all new and state-of-the art. Everything is delivered securely on the Internet with no need for special software or desktop data disks. The geographic interface is an ESRI product called ARC/IMS, which is a web-based application, with a fully functional GIS system that is fully scalable. In FY 2003, the entire system will be rendered in 3D. The Tribal Enterprise Architecture uses XML protocols to attach to and display information seamlessly and in real-time from cooperating agency data systems without ever having to download the data to an intermediate server.

#### **References:**

1. Office of Management and Budget (2003). Circular A-16 Revised. [http://www.whitehouse.gov/omb/circulars/a016/a016\\_rev.html](http://www.whitehouse.gov/omb/circulars/a016/a016_rev.html)
2. U.S. Environmental Protection Agency (1998). Office of Water Indian Strategic Plan.
3. GAP Grant Tracking System. <http://gap.tetrattech-ffx.com> (password available upon request)
4. Tribal Enterprise Architecture <http://everest.sdc-moses.com/TRIBAL/index3.html> (password available upon request)
5. Indian Health Service. Sanitation Tracking and Reporting System. <http://wstars.geonorth.com> (password available upon request)
6. TIMS Data Center. <http://it-tetrattech-ffx.com/tribal/> (password available upon request)
7. U.S. Environmental Protection Agency. 2003. Implementing EPA's Information Quality Guidelines: Guidance on Information Products Developed by the Office of the Chief Financial Officer.

**FY 2005 Performance Measures: Prevent water pollution and protect aquatic systems so that overall aquatic system health of coastal waters nationally, and in each coastal region, is improved on the "good/fair/poor" scale of the National Coastal Condition Report.**

Maintain water clarity and dissolved oxygen in coastal waters at the national levels reported in the 2002 National Coastal Condition Report.

Improve ratings reported on the national "good/fair/poor" scale of the National Coastal Condition Report for: coastal wetlands loss by at least .1 points; contamination of sediments in

coastal waters by at least .1 points; benthic quality by at least .1 points; & eutrophic condition by at least .1 points

**Performance Database:** EMAP/NCA [Environmental Monitoring and Assessment Program/National Coastal Assessment] database (housed EPA/ORD/NHEERL/AED, Narragansett, RI)(Environmental Protection Agency/Office of Research and Development/National Health and Environmental Effects Research Laboratory/Gulf Ecology Division); pre-database information housed in ORD/NHEERL facility in Gulf Breeze, FL (Gulf Ecology Division) (pre-database refers to a temporary storage site for data where it is examined for QA purposes, has appropriate metadata attached to it and undergoes initial statistical analyses); data upon QA acceptance and metadata completion is transferred to EMAP/NCA database and is web available at [www.epa.gov/emap/nca](http://www.epa.gov/emap/nca).

**Data Source:** Probabilistic surveys of ecological condition completed throughout the Mid-Atlantic and Gulf of Mexico by EPA's Office of Research and Development (ORD) in 1991-1994, in southern Florida in 1995, in the Southeast in 1995-1997, in the Mid-Atlantic in 1997-1998, in each coastal state in 2000-2004 (except Alaska and Hawaii), in Alaska in 2002 and 2004, in Hawaii in 2002 and 2004, and in Puerto Rico in 2000 and 2004, and in other island territories (Guam, American Samoa and U.S.> Virgin Islands in 2004). Surveys collect condition information regarding water quality, sediment quality and biotic condition at 70-100 sites/region (e.g., mid-Atlantic) each year of collection prior to 1999 and at 35-150 sites in each state or territory/year (site number dependent upon state) after 1999. Additional sampling was completed in the National Estuary Programs, including all individual national estuaries. Additional NEP sampling included sufficient sites to increase total sites within NEP boundaries to 30 for a two-year period between 2000-2003.

This "third party" data is collected through a joint EPA-State cooperative agreement and the States follow a rigid sampling and collection protocol following intensive training by EPA personnel. Laboratory processing is completed at either a state laboratory or through a national EPA contract. Both entities are subject to the development of a QAPP (either the National Coastal QAPP or one of their developments based on this QAPP) and QA testing and auditing by EPA.

**Methods, Assumptions and Suitability:** The surveys are conducted using a probabilistic survey design comprised to permit extrapolation of results to the entire target population (in this case - all estuarine resources of the specific state) The design maximizes the spatial spread of the sites and locating each site based on a specific latitude-longitude combination. The survey utilizes an index sampling period (generally late summer) to maximize encountering water quality, sediment quality and biotic condition problems, if they exist. Based on the QAPP and the field collection manual, a site in a specific state is located by sampling vessel via Global Positioning System (GPS) and water quality is measured on board at multiple depths. Water samples are taken for chemistry; sediment samples are taken for chemistry, toxicity testing and benthic community assessment; and fish trawls are conducted to collect community fish data and provide selected fish (target species) for analysis of whole body and/or fillet contaminant concentrations. Samples are stored in accordance with field manual and shipped to the processing laboratory. Laboratories follow QA plans and complete analyses and provide electronic information to state or EPA. For data not directly provided to EPA from laboratories, state forward data to EPA. For data not provided directly to states, EPA forwards data to states.



EPA analyzes data to assess regional condition and states analyze data to assess condition of state-specific waters. Results of analyses on a national and regional basis are reported as chapters in the National Coastal Condition Report series. The overall regional condition index is the mean of the rating scores of the indicators used in successive versions of the Coastal Condition Report (see last section). An improvement for one of the indicators by a full category unit over the eight year period will be necessary for the regional estimate to meet the performance measure goal (+0.2 over an eight year period).

*Assumptions:* (1) The underlying target population (estuarine resources of the United States) has been correctly identified; (2) GPS operation is successfully located; (3) QAPP and field collection manuals are followed; (4) all samples can be successfully collected; (5) all analyses are completed in accordance with QAPP; and (6) all combinations of data into indices are completed in a statistically rigorous manner.

*Suitability:* By design all data are suitable to be aggregated to the state and regional level to characterize water quality, sediment quality, and biotic condition. Samples represent “reasonable”, site-specific point-in-time data (not primary intention of data use) and an excellent population representation of the entire resource (extrapolation to entire resource supportable). The intended use of the data is the characterization of populations and subpopulations of estuarine resources through time. The data meets this expectation and the sampling design, response design, analysis approach and reporting approach have been peer reviewed successfully multiple times. The data are suitable for individual year characterization of condition, comparison of condition across years, and assessment of long-term trends once sufficient data are collected (7-10 years). Data are suitable for use in National Coastal Condition calculations for the United States and its regions as necessary to provide performance measurement information.

**QA/QC Procedures:** The sampling collection and analysis of samples are controlled by a Quality Assurance Project Plan (QAPP) [EPA 2001] and the National Coastal Assessment Information Management Plan (IMP)[EPA 2001]. These plans are followed by all twenty-three coastal states and 5 island territories. Adherence to the plans are determined by field training (conducted by EPA ORD), field audits (conducted by EPA/ORD), round robin testing of chemistry laboratories (conducted by EPA/ORD), overall systems audits of state programs and national laboratory practices (conducted by EPA), sample splits (sent to reference laboratories), blind samples (using reference materials) and overall information systems audits (conducted by EPA/ORD). All states are subject to audits at least once every two years these controls at least once every two years for audits, training in year 2000 and retraining sessions every two years, and batch sample processing (including QA samples in each batch) for laboratory analyses.

**Data Quality Reviews:** Data quality reviews have been completed in-house by EPA ORD at the regional and national level in 2000-2003 (National Coastal Assessment 2000-2003) and by the Office of Environmental Information (OEI) in 2003 (assessment completed in June, 2003 and written report not yet available; oral debriefing revealed no deficiencies). No deficiencies were found in the program. A national laboratory used in the program (University of Connecticut) for nutrient chemistry, sediment chemistry and fish tissue chemistry is being evaluated by the Inspector General’s Office for inappropriate behavior and potential falsification of laboratory results in connection with other programs not related to NCA. A full investigation has not been completed by the IG and in the interim has not determined any wrongdoing by the personnel

associated with NCA. Our program has conducted an internal audit assessment and investigation and could determine only one finding, which was an incorrect use of a chemical digestion method for inorganic chemistry samples (metals). This finding has been corrected and all samples "digested" incorrectly have been reanalyzed at no cost.

**Data Limitations:** Data limitations are few. Because the data are collected in a manner to permit calculation of uncertainty and designed to meet a specific Data Quality Objective (DQO) (<10% error in spatial calculation for each state estimate annually), the results at the regional level (appropriate for this performance measure) are within about 2- 4% of true values dependent upon the specific sample type. Other limitations as follows: (a) even though methodology errors are minimized by audits, in the first year of the NCA program (2000) some errors occurred resulting in loss of some data. These problems were corrected in 2001 and no problems have been observed since then. (b) In some instances, (<5%) of sample results, a QA finding is determined regarding the precision of a measurement (control mortality toxicity testing exceeds limit detection limit for a chemistry batch exceeds limit, etc.). In these cases, the data are "flagged" in the database so that users are aware of the potential limitations. (c) Because of the sampling/ analysis design, the loss of data at a small scale (~ 10%) does not result in a significant increase in uncertainty in the estimate of condition. Wholesale data losses of multiple indicators throughout the U.S. coastal states and territories would be necessary to invalidate the performance measure. (d) The only source of external variability in year-to-year climatic variation (drought vs. wet, etc.) and the only source of internal variation is modification of reporting indicators (e.g., new indices, not a change in sample indicators collected and analyzed). This internal reporting modification required a re-analysis of earlier information to permit direct comparison (e). There is generally a 2-3 year lag from the time of collection until reporting. Sample analysis generally takes 1 year and analysis takes 1 year. Report production and peer review generally take an additional year. (F) Data collections are completed annually; however, the EPA/ORD program for this collection will occur through 2004. After 2004, ORD will assist OW as requested to provide expertise but the conduct of the surveys after 2004 will no longer be supported (financially) by EPA ORD.

**Error Estimate:** The estimate of condition (upon which the performance measure is determined has an annual uncertainty rate of about 2-3% for national condition, about 5-7% for individual regional indicators (composite of all five states data into a regional estimate), and about 9-10% for individual state indicators.

#### **New/Improved Data or Systems:**

- (1) Changes have occurred in the data underlying the performance measure based on scientific review and development. A change in some reporting indicators has occurred in order to more accurately represent the intended ecological process or function. For example, a new eutrophication index was determined for the 2000 data. In order to compare this new index to the 1991-1994 data, the earlier data results must be recomputed using the new technique. This recalculation is possible because the underlying data collection procedures have not changed.
- (2) New national contract laboratories have been added every year based on competition. QA requirements are met by new facilities and rigorous testing at these facilities is completed before sample analysis is initiated. QA adherence and cross-laboratory sample

analysis has minimized data variability resulting from new laboratories entering the program.

- (3) The only reason for the discontinuance of the National performance goal would be the elimination of the surveys after 2004.

In order to continue to utilize the 2001 National Coastal Condition report as the baseline for this performance measure, the original scores reported in 2001 have been re-calculated in the pending 2004 report using the index modifications described above (#1). These “new” results for the baseline (re-calculated scores) are reported in Appendix C of the pending report scheduled for release in fall 2004.

#### **References:**

1. Environmental Monitoring and Assessment Database (1990-1998) and National Coastal Assessment Database (2000- 2004) websites: [www.epa.gov/emap](http://www.epa.gov/emap) and [www.epa.gov/emap/nca](http://www.epa.gov/emap/nca) (NCA data for 2000 is only data available at present)
2. National Coastal Assessment. 2000-2003. Various internal memoranda regarding results of QA audits. (Available through John Macauley, National QA Coordinator NCA, USEPA, ORD/NHEERL/GED, 1 Sabine Island, Gulf Breeze, FL 32561)
3. National Coastal Assessment. 2001. Quality Assurance Project Plan. EPA/620/R-01/002.(Available through John Macauley above)
4. National Coastal Assessment. 2001. Information Management Plan. EPA/620/R-01/003 (Available through Stephen Hale, NCA IM Coordinator, ORD/NHEERL/AED, 27 Tarzwell Drive, Narragansett, RI)
5. U.S. Environmental Protection Agency. 2001. National Coastal Condition Report. EPA-620/R- 01/005.
6. U.S. Environmental Protection Agency. 2004. National Coastal Condition Report II. In review Assigned Report Number EPA-620/R-04/001 (expected release date - fall 2004).

### **EFFICIENCY MEASURES/MEASUREMENT DEVELOPMENT PLANS**

#### ***Clean Water State Revolving Fund***

As a measure of efficiency, the Agency tracks each fund's utilization rate, which is the ratio of the cumulative loan agreement dollars to cumulative funds available for projects.

#### ***Non-point Source***

Efficiency measures are under development. Development of measures is referenced in the Program Assessment Rating Tool (PART) summary in the Special Analysis section.

#### ***Nutrient Levels in Rivers and Streams***

Measure development is underway for phosphorus concentration trends. EPA is committed to reduce phosphorus levels in major rivers, urban and farmland streams by 2008, measuring progress via the percentage of USGS test sites for major rivers, urban streams, and

farmland streams at which phosphorus levels are below levels of concern established by USGS. USGS is conducting additional monitoring from 2002 - 2005 within study areas in order to identify trends in phosphorus concentrations. However, the results of analysis of this second round of data will not be available until approximately 2007, preventing its use as an annual performance measure for FY2005.

### *Alaska Native Villages*

EPA plans to develop an efficiency measure for the Alaska Native Villages program as part of the FY 06 PART process.

## **COORDINATION WITH OTHER AGENCIES**

### *Watersheds*

Protecting and restoring watersheds will depend largely on the direct involvement of many Federal agencies and state, Tribal and local governments who manage the multitude of programs necessary to address water quality on a watershed basis. Federal agency involvement will include USDA (Natural Resources Conservation Service, Forest Service, Agriculture Research Service), Department of the Interior (Bureau of Land Management, Office of Surface Mining, United States Geological Survey (USGS), Fish and Wildlife, and the Bureau of Indian Affairs), National Oceanographic and Atmospheric Administration (NOAA), Department of Transportation, and the Department of Defense (Navy, Army Corps of Engineers). At the state level, agencies involved in watershed management typically include departments of natural resources or the environment, public health agencies, and forestry and recreation agencies. Locally, numerous agencies are involved, including Regional planning entities such as councils of governments, as well as local departments of environment, health and recreation who frequently have strong interests in watershed projects.

### *National Pollutant Discharge Elimination System Program (NPDES)*

Since inception of the NPDES program under Section 402 of the CWA, EPA and the authorized states have developed expanded relationships with various Federal agencies to implement pollution controls for point sources. EPA works closely with the Fish and Wildlife Service and the National Marine Fisheries Service on consultation for protection of endangered species through a Memorandum of Agreement. EPA works with the Advisory Council on Historic Preservation on National Historic Preservation Act implementation. EPA and the states rely on monitoring data from the U.S. Geological Survey (USGS) to help confirm pollution control decisions. The Agency also works closely with the Small Business Administration and the Office of Management and Budget to ensure that regulatory programs are fair and reasonable. The Agency coordinates with the National Oceanic and Atmospheric Administration (NOAA) on efforts to ensure that NPDES programs support coastal and national estuary efforts; and with the Department of Interior on mining issues.

### ***Joint Strategy for Animal Feeding Operations***

The Agency is working closely with the USDA to implement the Unified National Strategy for Animal Feeding Operations finalized on March 9, 1999. The Strategy sets forth a framework of actions that USDA and EPA will take to minimize water quality and public health impacts from improperly managed animal wastes in a manner designed to preserve and enhance the long-term sustainability of livestock production. EPA's recent revisions to the CAFO Regulations (effluent guidelines and NPDES permit regulations) will be a key element of EPA and USDA's plan to address water pollution from CAFOs. EPA and USDA senior management meet routinely to ensure effective coordination across the two agencies.

### ***Clean Water State Revolving Fund (CWSRF)***

Representatives from EPA's SRF program, Housing and Urban Development's (HUD's) Community Development Block Grant program, and USDA's Rural Utility Service have signed a Memorandum of Understanding committing to assisting state or Federal implementers in: (1) coordination of the funding cycles of the three Federal agencies; (2) consolidation of plans of action (operating plans, intended use plans, strategic plans, etc.); and (3) preparation of one environmental review document, when possible, to satisfy the requirements of all participating Federal agencies. A coordination group at the Federal level has been formed to further these efforts and maintain lines of communication. In many states, coordination committees have been established with representatives from the three programs.

In implementation of the Indian set-aside grant program under Title VI of the CWA, EPA works closely with the Indian Health Service to administer grant funds to the various Indian tribes, including determination of the priority ranking system for the various wastewater needs in Indian Country.

In 1998, EPA and the Rural Utilities Service of the USDA formalized a partnership between the two agencies to provide coordinated financial and technical assistance to Indian tribes.

### ***Construction Grants Program - US Army Corps of Engineers***

Throughout the history of the construction grants program under Title II of the CWA, EPA and the delegated states have made broad use of the construction expertise of the Corps of Engineers to provide varied assistance in construction oversight and administrative matters. EPA works with the Corps to provide oversight for construction of the special projects that Congress has designated. The mechanism for this expertise has been and continues to be an Interagency Agreement between the two agencies.

### ***Nonpoint Sources***

EPA will continue to work closely with its Federal partners to achieve the ambitious strategic objective of reducing pollutant discharges, including at least 20 percent from 1992 erosion levels. Most significantly, EPA will continue to work with the USDA, which has a key role in reducing sediment loadings through its continued implementation of the Environmental

Quality Incentives Program, Conservation Reserve Program, and other conservation programs. USDA also plays a major role in reducing nutrient discharges through these same programs and through activities related to the AFO Strategy. EPA will also continue to work closely with the Forest Service and Bureau of Land Management, whose programs can contribute significantly to reduced pollutant loadings of sediment, especially on the vast public lands that comprise 29 percent of all land in the United States. EPA will work with these agencies, USGS, and the states to document improvements in land management and water quality.

EPA will also work with other Federal agencies to advance a watershed approach to Federal land and resource management to help ensure that Federal land management agencies serve as a model for water quality stewardship in the prevention of water pollution and the restoration of degraded water resources. Implementation of a watershed approach will require coordination among Federal agencies at a watershed scale and collaboration with states, tribes and other interested stakeholders.

### ***Vessel Discharges***

Regarding vessel discharges, EPA will continue working closely with the Coast Guard on addressing ballast water discharges domestically, and with the interagency work group and U.S. delegation to Marine Environmental Protection Committee (MEPC) on international controls. EPA will continue to work closely with the Coast Guard, Alaska and other states, and the International Council of Cruise Lines regarding regulatory and non-regulatory approaches to managing wastewater discharges from cruise ships. EPA will also continue to work with the Coast Guard on updating vessel sewage discharge standards, and with the Navy on developing Uniform National Discharge Standards for Armed Forces vessels. Regarding dredged material management, EPA will continue to work closely with the Corps of Engineers on standards for permit review, as well as site selection/designation and monitoring.

### ***International Capacity***

EPA works with the Department of State, NOAA, Coast Guard, Navy, and other Federal agencies in developing the technical basis and policy decisions necessary for negotiating global treaties concerning marine antifouling systems, invasive species, and air pollution from ships. EPA also works with the same Agencies in addressing land-based sources of marine pollution in the Gulf of Mexico and Wider Caribbean Basin.

## **STATUTORY AUTHORITIES**

Annual Appropriations Acts  
Certain Alaskan Cruise Ship Operations Act (PL 106-554)  
Clean Vessel Act  
Clean Water Act (CWA)  
Coastal Zone Act Reauthorization Amendments of 1990  
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)  
Marine Plastic Pollution, Research and Control Act (MPPRCA) of 1987  
Marine Protection, Research and Sanctuaries Act (MPRSA)  
National Environmental Policy Act, Section 102

National Invasive Species Act of 1996  
North American Free Trade Agreement (NAFTA)  
Ocean Dumping Ban Act of 1988  
Organotin Antifouling Paint Control Act (OAPCA)  
Pollution Prevention Act (PPA)  
Resource Conservation and Recovery Act (RCRA)  
Safe Drinking Water Act (SDWA)  
Shore Protection Act of 1988  
Toxic Substance Control Act (TSCA)  
Water Resources Development Act (WRDA)  
Wet Weather Water Quality Act of 2000

## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Clean and Safe Water

**OBJECTIVE:** Enhance Science and Research

Provide and apply a sound scientific foundation to EPA's goal of clean and safe water by conducting leading-edge research and developing a better understanding and characterization of the environmental outcomes under Goal 2.

#### Resource Summary (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
<b>Enhance Science and Research</b>	<b>\$119,269.5</b>	<b>\$120,501.6</b>	<b>\$120,959.1</b>	<b>\$457.5</b>
Environmental Program & Management	\$18,346.3	\$21,640.6	\$22,084.0	\$443.3
Science & Technology	\$97,900.4	\$95,708.8	\$95,527.1	(\$181.7)
Building and Facilities	\$2,481.7	\$2,508.8	\$2,702.6	\$193.8
Inspector General	\$540.9	\$643.3	\$645.4	\$2.1
Total Workyears	535.7	526.7	526.5	-0.1

#### Program Project (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
Surface Water Protection	\$520.9	\$1,004.4	\$1,011.3	\$6.9
Congressionally Mandated Projects	\$4,328.9	\$0.0	\$0.0	\$0.0
Research: Drinking Water	\$43,253.7	\$46,053.4	\$46,118.1	\$64.7
Research: Water Quality	\$46,934.1	\$47,178.5	\$46,809.8	(\$368.7)
Administrative Projects	\$24,231.9	\$26,265.3	\$27,019.9	\$754.6
<b>TOTAL</b>	<b>\$119,269.5</b>	<b>\$120,501.6</b>	<b>\$120,959.1</b>	<b>\$457.5</b>

### **FY 2005 REQUEST**

#### *Results To Be Achieved Under the Objective*

#### *Clean and Safe Water Science*

Meeting the goal of clean and safe water requires that EPA effectively apply basic research findings to the specific needs of water programs. The Agency will draw on the results of basic research to prove and refine existing conclusions about the drinking water safety and water quality. Critical, scientific aspects of water program research include development of analytic test methods to support programs' scientific integrity; laboratory certification; and



analysis of questions more commonly thought of as “social science,” such as the costs and benefits of safe drinking water and healthy aquatic ecosystems.

### ***Surface Water Protection***

Develop Analytic Test Methods: EPA establishes analytic test methods that describe laboratory procedures for measuring contaminant levels in drinking and surface waters. In some cases, EPA itself develops methods; in other cases, the Agency approves alternative test procedures. Approximately 550 EPA-approved analytical methods exist for nearly 300 contaminants. These test methods support the development of drinking water standards, surface water quality criteria and standards, industrial discharge regulations, water monitoring, discharge permitting, pretreatment, and compliance.<sup>70</sup>

EPA has several goals for improving the analytic methods program over the next five years. These include reducing the backlog of applications for approval of alternative test procedures, many involving new technology; developing new analytic methods that support the more stringent levels of protection that have been established for some contaminants and are more cost-effective to use; and making analytic methods readily available to the public through a new web-based system.

Develop Methods for Valuing Ecological and Recreation Benefits: A related scientific effort is developing improved methods to assess and value ecological and recreational benefits that result from improvements in water quality. EPA is supporting studies of the monetary value of cleaner water for aquatic life and other ecological and recreational benefits, such as boating, and will use this information to develop more precise estimates of the benefits of water pollution control programs and requirements.

### ***Research: Drinking Water***

EPA’s drinking water and water quality research programs conduct leading edge, problem-driven research to provide a sound scientific foundation for Federal regulatory decision-making. These efforts will result in strengthened public health and aquatic ecosystem protection by providing methods, models, assessments, and risk management options for EPA program and regional offices. Important research under this objective will: 1) provide stressor-response relationship models linking loss and alteration of habitat to selected fish, shellfish, and wildlife endpoints; 2) update models for stormwater management, suspended solids, sediments, and nutrients; 3) provide data on contaminant occurrence, treatment and application process cost-effectiveness, and contaminant transport and fate for selected biosolids contaminants; 4) report on the treatability of selected endocrine disrupting chemicals; and 5) report on occurrence data for newly identified disinfection by-products (DBPs) to help assess risk from alternative disinfectants.

Although the U.S. has made considerable progress in supplying safe drinking water to its citizens, and waterborne threats such as typhoid and cholera have been virtually eliminated,

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<sup>70</sup> See <http://www.epa.gov/waterscience/methods>

some public health concerns remain.<sup>71</sup> These concerns are supported by the continued occurrence of waterborne disease outbreaks, the presence of chemical contaminants in drinking water supplies, and the contamination of surface water and ground water sources. These events may compromise the safety of drinking water if treatment is inadequate or if the quality of the water in distribution systems is compromised. Strengthening EPA's ability to characterize and manage risks to human health posed by exposure to waterborne pathogens and chemicals in drinking water yields public health benefits. Furthermore, it will improve our understanding of potential health risks to vulnerable subpopulations, such as infants and children or those with weakened immune systems.

The research provisions of the 1996 Safe Drinking Water Act (SDWA) Amendments<sup>72</sup> highlight the importance of EPA's drinking water research program for providing a strong scientific foundation for regulatory decision-making (Criteria: Relevance). The Amendments also contain specific requirements for research on waterborne pathogens (e.g., *Cryptosporidium* and Norwalk virus), disinfection by-products, arsenic, and other harmful substances in drinking water. The SDWA and amendments also mandate EPA to conduct studies to identify and characterize groups that may be at greater risk than the general population following exposure to contaminants in drinking water. EPA is directed to use a risk-based standard-setting process and sound science in fulfilling the requirements of the Act. In response to these requirements, EPA has established an integrated, multi-disciplinary research program that is closely linked to the Agency's regulatory activities and timelines.

The FY 2005 drinking water research program, through its leading edge, problem-driven research, directly supports the EPA's Strategic Plan<sup>73</sup> through development or revision of standards for contaminants of concern, effective implementation of these standards, and protection of drinking water sources. To help guide the drinking water research program, EPA developed research plans for Microbial Pathogens and DBPs in Drinking Water<sup>74</sup> and Arsenic in Drinking Water,<sup>75</sup> and has developed a draft research plan for drinking water contaminants on the Contaminant Candidate List (CCL). These plans were subject to rigorous peer review and address those problems deemed most pressing in the area of drinking water quality (R&D Criteria: Quality, Relevance).

In addition, the Drinking Water Research Multi-Year Plan (MYP) provides a framework for integrating research throughout EPA's Office of Research and Development and ensures that the research planned is relevant to EPA and state needs and addresses priority science needs for drinking water research (Criteria: Relevance).<sup>76</sup> The MYP articulates the long-term goals, purpose, and priorities of the program, and includes a scheduled timeline of research activities and expected products of the research program. To ensure quality, all scientific and technical

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<sup>71</sup> U.S. EPA, Office of Research and Development. "1999-2001 Research Accomplishments: Drinking Water." Updated on: June 2, 2003. Date of Access: January 14, 2004. Available only through the Internet: <http://www.epa.gov/ord/archives/2002/august/>

<sup>72</sup> Safe Drinking Water Act Amendments of 1996, Public Law 104-182. Updated on: February 26, 2003. Date of Access: January 14, 2004. Available through the internet: <http://www.epa.gov/safewater/sdwa/sdwa.html>

<sup>73</sup> U.S. EPA, Office of the Chief Financial Officer. "2003 - 2008 EPA Strategic Plan: Direction for the Future." Date of Access: January 14, 2004. Available only through the internet: <http://www.epa.gov/ocfo/plan/2003sp.pdf>

<sup>74</sup> U.S. EPA, Office of Research and Development. *Research Plan for Microbial Pathogens and Disinfection By-Products in Drinking Water*. Washington, D.C.: U.S. Government Printing Office. EPA 600-R-97-122. (1997).

<sup>75</sup> U.S. EPA, Office of Research and Development. *Research Plan for Arsenic in Drinking Water*. Washington, D.C.: U.S. Government Printing Office. EPA 600-R-98-042. (1998).

<sup>76</sup> U.S. EPA, Office of Research and Development. *Drinking Water Research Program Multi Year Plan*. Available only through the internet at: <http://www.epa.gov/osp/myp/dw.pdf>

work products undergo internal and/or external peer review, with major or significant products requiring both internal and external peer review (Criteria: Quality).

The broad scope of EPA's research includes the development of new scientific data, innovative methods, and cost-effective technologies for improving the scientific understanding and control of drinking water risks. The research products and technical assistance provided by EPA's drinking water research program support regulatory decision making and the implementation of EPA rules and guidance by states, local authorities and water utilities.

In FY 2005, EPA's drinking water research program will continue to focus on laboratory, clinical, and field studies of contaminants on the CCL, selected high priority DBPs, and arsenic. Studies of chemical contaminants on the CCL will seek to provide either screening level or more detailed information to support CCL regulatory determinations. Research support through EPA's Science to Achieve Results (STAR) program will evaluate the infectivity, illness, and immune response to *Cryptosporidium* that will enable development of improved risk assessment models.<sup>77</sup> The STAR program, which requires all research proposals to undergo rigorous competitive peer review, is an integral part of EPA's drinking water research program. The primary purpose of such peer review is to ensure that only high-quality research receives funding support. EPA will conduct research to characterize health effects, especially adverse reproductive outcomes, from the highest priority by-products and DBP mixtures. Studies will also examine potential carcinogenicity of DBPs, as well as other toxic endpoints of possible concern. Research will include studies to establish dose-response relationships for priority contaminants, characterize pathogen virulence, evaluate the impact of host factors (e.g., immune status) on infection and disease, and identify the causative agents responsible for waterborne diseases.

In FY 2005, research will continue to focus on the development of improved analytical detection methods for measuring the occurrence of chemicals and microbes on the CCL. Field-testing of new methods will be conducted to gain performance information and preliminary occurrence data. Pathogen classification schemes (i.e., virulence factor activity relationships), suggested by the National Research Council, will be investigated and evaluated for potential incorporation into future CCL listing and priority setting activities. Emphasis will be placed on identifying new DBPs (e.g., iodinated DBPs) resulting from various disinfection processes, determining the factors affecting formation, fate and transport of priority halonitromethane DBPs, and development of improved analytical methods to detect and measure both DBPs and CCL-listed chemicals. To help design and interpret animal toxicity and human epidemiology studies, arsenic exposure research will improve methods for measuring different forms of arsenic in foods and will establish a preliminary database of levels of arsenic species in target foods.

In FY 2005, drinking water risk management research will study the characterization and fate of DBPs in distribution systems. This work will address how to adapt conventional treatment systems to new contaminants so that safe drinking water is cost effectively produced, as well as development of treatment optimization strategies and innovative treatment technologies. Desired outcomes of this research include improving EPA's ability to minimize the risks from DBPs while controlling microbial pathogens. In addition to addressing regulated contaminants, this research plays an important role in assessing the need and feasibility of

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<sup>77</sup> For more information about EPA's Science to Achieve Results Program, see <http://es.epa.gov/ncer/>

controlling new contaminants under the CCL program. To support decisions on whether or not new contaminants on the CCL should be regulated, research will continue to identify cost-effective contaminant control techniques. Other efforts will also address the special needs of small systems for arsenic removal and pathogen control in order to develop and demonstrate small-scale, cost-effective treatment technologies that are easily installed and automated. Research will continue epidemiological investigations to evaluate the risk attributable to pathogens introduced in distribution systems, and will evaluate the effectiveness of bank filtration for removing pathogens. Bank filtration is a water treatment process that uses surface water that has naturally infiltrated ground water via the riverbed or banks and is recovered via a pumping well.

Creating multiple barriers that prevent human exposure to contaminated waters is a major element of EPA's drinking water research program. Source water protection research will continue to focus on identifying and controlling significant sources of surface and ground water contamination, as well as monitoring source water contaminants, wet weather flow and non-point source impacts on water quality, and developing techniques for improved source water quality and source load allocation. Research on distribution systems will address effective contaminant detection techniques, processes in systems that result in changes in chemical and pathogen contaminant concentrations, and options to prevent those of greatest concern.

#### *Research: Water Quality*

Although the quality of the Nation's waters has shown improvements, water pollution problems remain. The adoption and implementation of statewide watershed approaches by states and tribes require strong standards, monitoring, Total Maximum Daily Loads (TMDLs) determinations, and implementation programs (e.g., National Pollutant Discharge Elimination System (NPDES) permit) (Criteria: Relevance). In order to support these programs, water quality research will improve risk management strategies to help EPA and other Federal, state, and local agencies develop better baseline assessments of water quality, and implement strategies for cost-effective improvements in water quality. Advances in understanding the fate and transport of water quality pollutants, aquatic ecosystem responses, and treatment technologies for point sources have led to the dramatic restoration of some of the Nation's most polluted waters. The Agency's water quality research program will provide approaches and methods the EPA and its partners need to develop and apply criteria to support designated uses, tools to diagnose impairment in aquatic systems, and tools to restore and protect aquatic systems. For example EPA is developing CADDIS (Casual Analysis Diagnosis Decision Information System), a database which provides guidance, data, and models for integrating information on stressor response relationships for use by states, regions and tribes in environmental decisions-making.

Research to support the development of ecological criteria includes evaluating the exposures and effects of nutrients, suspended and bedded sediments, pathogens, toxic chemicals, and habitat alteration stressors on aquatic systems and understanding the structure and function of aquatic systems. This research provides the scientific foundation to support TMDLs. EPA developed the Ecological Research Strategy<sup>78</sup> to provide focus to its research on the effects of stressors on ecosystems, habitat alteration, diagnostic methods, landscape modeling, and best

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<sup>78</sup> U.S. EPA, Office of Research and Development. *Ecological Research Strategy*. Washington, D.C.: U.S. Government Printing Office. EPA 600-R-98-086. (1998).

management and restoration practices. This strategy was subjected to rigorous external peer review and addresses those problems that pose the greatest risks to the environment. In addition, the Water Quality Research Program Multi-Year Plan (MYP)<sup>79</sup> provides a framework for integrating water quality research across EPA. To ensure quality, all scientific and technical work products resulting from the research must undergo either internal or external peer review, with major or significant products requiring external peer review. Research outlined in the Water Quality MYP will demonstrate integrated and stakeholder driven approaches to achieving water quality goals, as well as focus on the development of watershed diagnostic methods, understanding the importance of critical habitats, and the impacts of habitat alteration on aquatic communities (Criteria: Quality).

EPA is developing stressor response models to understand and predict the relationship between stressors such as nutrients, eutrophication, and hypoxia on aquatic ecosystems including wetlands, riparian zones, sediments, and freshwater and marine ecosystems. EPA is also developing an ecological risk assessment for nutrients, initially focusing on nitrogen, as part of its program to develop common methodologies for integrating ecological and human health assessments. Research on the ecology and oceanography of harmful algal blooms (HABs) is funded as part of a joint effort with other Federal agencies including the National Oceanic and Atmospheric Administration (NOAA) and the National Science Foundation (NSF).

In FY 2005 the Agency will continue to address uncertainties associated with characterizing, managing, and reducing the risks to human health and the environment from the production and application of treated wastewater sludge (biosolids) to land for use as fertilizers and soil conditioners, in response to the research recommendations of the National Academy of Science report on this topic.<sup>80</sup> The technical basis for current regulations was largely developed in the mid-1970s to early 1980s. The composition of biosolids has changed markedly since then and technical advances allow for better characterization, assessment, and management of sewage sludge, and citizens in communities near biosolids application sites have expressed concerns about their health risks. Research will focus on exposure and analytical methods development, reviewing available data from past field studies, tracking ongoing studies, conducting field studies, and improving existing treatment techniques for pathogen destruction through enhanced support of the Pathogen Equivalency Committee (PEC).

Although suspended and bedded sediments are a natural part of aquatic ecosystems critical to the energy cycle of the water body and the provision of microhabitats, they have become stressors associated with human activity that adversely affect aquatic habitats. In the 2000 *Water Quality Report*, suspended solids and sediments were identified among the leading causes of water quality impairment for streams and rivers.<sup>81</sup> To maintain natural background levels of suspended and bedded sediments, water resource managers need scientific tools to determine their impacts on aquatic communities. In collaboration with EPA laboratories, risk management strategies will be developed to help reduce the impact of human activities on sedimentation and to maintain sediments at background levels.

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<sup>79</sup> U.S. EPA, Office of Research and Development. *Water Quality Research Program Multi Year Plan*. Available only through the internet at: <http://www.epa.gov/osp/myp/wq.pdf>

<sup>80</sup> NRC, 2002. *Biosolids Applied to Land; Advancing Standards and Practices*, National Research Council of the National Academies. The National Academies Press. Available through the internet: <http://www.epa.gov/ost/biosolids/nas/complete.pdf>

<sup>81</sup> U.S. EPA, Office of Water. *2000 National Water Quality Inventory*. Available through the internet: <http://www.epa.gov/305b/2000report/>

Chemical stressors also impact aquatic life, the benthic community (e.g., clams, crabs, lobsters, and other tiny organisms that live in or on the bottom of the ocean floor), wildlife, and human health. Research in this area focuses on developing scientifically defensible methods to better describe the risks of toxic chemicals to aquatic and aquatic-dependent populations and communities. Specific goals are to: 1) demonstrate methods for water quality criteria for bioaccumulative and non-bioaccumulative chemicals based on more complete and accurate risk characterization of toxic chemicals to aquatic organisms; 2) provide methods for water quality criteria based on population-level risk characterization of toxic chemicals to aquatic life and aquatic-dependent wildlife; and 3) provide methods for extrapolating chemical toxicity data across exposure conditions and across endpoints, life stages, and species that can support assessment of risks to aquatic life and aquatic-dependent wildlife for chemicals with limited data.

The main focus of habitat alteration research is to provide the scientific basis for assessing the role of essential habitat in maintaining healthy populations of fish, shellfish, and wildlife, assisting the Agency and states in understanding interactions among pollutant effects and other effects related to habitat changes. This research will identify the relationships between habitat alteration and biological response and extrapolation schemes needed to develop broad-scale habitat criteria for streams and coastal systems. The results of this research, combined with biocriteria and monitoring research conducted in Goal 4 can be used to determine biocriteria, evaluate combined effects of habitat alteration and other stressors (such as chemicals), and assist ecosystem restoration decisions.

In FY 2005, EPA research on diagnostic methods will continue to focus on the causes and sources of biological and aquatic ecosystem impairment. This work will be useful in implementing criteria to protect and strengthen the biological basis for designated uses in state and tribal water quality standards, improving the scientific foundation for addressing point and non-point source water quality impairment, and determining appropriate and effective watershed management alternatives. Specifically, this research will provide: 1) the scientific foundation and information management scheme for the 303(d) listing process, including a classification framework for surface waters, watersheds, and regions to guide problem formulation; 2) first generation diagnostic methods to distinguish among major classes of individual aquatic stressors and/or suggest causal mechanisms that contribute to impairment of marine and freshwater systems; and 3) refinements in diagnostic methods and technical support documents<sup>82</sup> for determining the relative significance of multiple stressors in 303(d) listed waters.

Modeling and landscape characterization research will provide the tools to inform and support monitoring, assessment, diagnoses, restoration and protection of aquatic systems and to forecast the ecological, economic, and human health outcomes of alternative management solutions. The water quality research program will also address the uncertainties of effectiveness of management options (e.g., best management practices) to control nutrients, suspended solids, sediments, pathogens, toxic chemicals, and flow variations. The goals are to develop decision support tools to assist watershed managers in analyzing problems associated with these stressors, identify cost effective solutions, and conduct benefits analysis with a focus on mixed land-use watersheds and watersheds in transition from development pressures. This program is designed to promote community-based decisions by developing decision support tools and alternative

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<sup>82</sup> U.S. EPA, Office of Research and Development, Office of Water. *Stressor Identification Guidance Document*. Washington, D.C.: U.S. Government Printing Office. EPA 822-B-00-025. (2000).

control technologies and strategies for use by local decision makers involved in watershed management and pollution control. In FY 2005 studies will be conducted on the transport and control of contaminants from agricultural operations that reach the environment through air emissions, surface runoff, or leaching to ground water. In addition, research on wetlands will compare natural and constructed wetlands to determine how seasonal changes in hydrologic regime, stressor load, and upland land use affect the functioning of these systems. The results of this research, along with the restoration technology and tool development activities described in Goal 4, will equip Federal, state, and local managers with scientifically defensible methods for protecting and restoring ecosystems.

Wet weather flow (WWF) drainage from urban and rural non-point sources during and after rainfalls is one of the primary causes of water pollution. This degradation of water quality poses significant risks to human and ecological health through the uncontrolled release of silts, pathogenic bacteria, protozoans, and viruses, as well as a number of potentially toxic, bioaccumulative contaminants. EPA has developed the Risk Management Research Plan for Wet Weather Flows<sup>83</sup> that provides a framework for integrating WWF research across EPA. To minimize the public health risks from swimming and other recreational water activities, research will specifically focus on both developing techniques to reduce WWF impacts and to provide data to support the development of scientifically sound criteria for protecting recreational waters. This program is designed to promote community-based decisions by developing decision support tools and alternative WWF control technologies and strategies for use by local decision makers involved in watershed management and pollution control. Effective watershed management strategies and guidance for WWF discharges, improved recreational water quality, and better risk communication programs are all necessary to ensure clean and safe water for drinking, recreation, and wildlife habitat.

EPA will also develop and provide effective evaluation tools necessary to make timely and informed decisions on beach advisories and closures and strengthen beach programs and water quality criteria for recreational water use. As part of this effort, EPA has developed the EPA Action Plan for Beaches and Recreational Waters.<sup>84</sup> Research guided by the “EPA Action Plan for Beaches and Recreational Waters” and the Beaches Act of 2000 will in FY 2005 continue to focus on better understanding the effects of microbial pathogens on human health. Significant uncertainty exists in determining the level of illness corresponding to the actual exposure (ingestion, inhalation, and skin contact) to contaminated recreational waters. Research is needed to provide decision makers with the necessary tools for making defensible science-based decisions that ensure public health and safety, including evaluating and selecting appropriate indicators of fecal contamination and determining relationships between indicators and risk levels for disease. EPA is performing a suite of epidemiological studies needed to establish a stronger, more defensible link between water quality indicators and disease which will provide reliable information about the relationship between recreational water quality and swimming-associated health effects. This will enable EPA to provide states with more consistent monitoring methods, standardized indicators of contamination, and standardized definitions of what constitutes a risk to public health. Local public health officials can use the results of this

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<sup>83</sup> U.S. EPA, Office of Research and Development. *Risk Management Research Plan for Wet Weather Flows*. Available through the internet: [http://www.epa.gov/ednnrml/repository/wwfplan/wwf\\_plan.pdf](http://www.epa.gov/ednnrml/repository/wwfplan/wwf_plan.pdf)

<sup>84</sup> U.S. EPA, Office of Research and Development, Office of Water. *EPA Action Plan for Beaches and Recreational Waters*. Washington, D.C.: U.S. Government Printing Office. EPA 600-R-98-079. (1999). Available through the internet: <http://www.epa.gov/ord/WebPubs/beaches/600r98079.pdf>

research to provide the public with “real-time” information on potential exposure to pathogenic microbes and make timely beach closure decisions.

**FY 2005 CHANGE FROM FY 2004**

**S&T**

- (-\$433,400) These resources represent savings that will result from consolidation of many information technology (IT) services, including call center and service desk, server management, hardware and software acquisition, and IT equipment standardization. This will result in enhanced security and uniform maintenance requirements. Since these resources represent an efficiency savings, there is no negative programmatic impact.
- (-\$200,000) This represents a minor reduction to water quality research under the Science to Achieve Results (STAR) grants program. There will not be any programmatic or performance impacts.
- There are additional increases for payroll, cost of living, and enrichment for new and existing FTE.

**EPM**

- There are additional increases for payroll, cost of living, and enrichment for new and existing FTE.

**ANNUAL PERFORMANCE GOALS AND MEASURES**

*Research*

**Scientific Rationale for Surface Water Criteria**

In 2005 Provide methods for developing water quality criteria so that, by 2008, approaches and methods are available to States and Tribes for their use in developing and applying criteria for habitat alteration, nutrients, suspended and bedded sediments, pathogens and toxic chemicals that will support designated uses for aquatic ecosystems and increase the scientific basis for listing and delisting impaired water bodies under Section 303(d) of the Clean Water Act.

**Performance Measures:**

	<b>FY 2003 Actuals</b>	<b>FY 2004 Pres. Bud.</b>	<b>FY 2005 Pres. Bud.</b>	
Methods for developing water quality criteria based on population-level risks of multiple stressors to aquatic life and aquatic-dependent wildlife.			09/30/05	methods

Baseline: State, Tribal, and EPA programs that assess, maintain, and restore water quality are all dependent upon the ability to define water quality standards that, when met, are protective of the designated and desired use of streams, lakes, and estuaries. The scientific bases for such standards are water quality criteria



that relate biological outcomes (e.g., fish populations, aquatic wildlife communities, threatened and endangered species) to measurable water quality parameters (e.g., nutrients, suspended and embedded sediments, chemical concentrations). Relatively recent and Congressionally-mandated studies by the National Research Council call for continued and more targeted scientific studies on water quality criteria that reflect observed environmental variations and that reflect the multiple influence of habitat alteration, regional and watershed conditions, and appropriate designated uses. Accordingly, EPA has modified its longstanding research on water quality criteria to address these issues. Scientific outputs from this research can be integrated into EPA technical guidance to the States and Tribes. Adoption and deployment of new criteria developed with the assistance of the new methods and approaches will improve the cost-effectiveness of TMDL's and related restoration efforts. Beginning in FY 2005, regular evaluations by independent and external panels will provide reviews of EPA research programs' relevance, quality, and successful performance to date, in accordance with OMB's Investment Criteria for Research and Development. Reviewers will also qualitatively determine whether EPA has been successful in meeting its annual and long-term commitments for research. Recommendations and results from these reviews will improve the design and management of EPA research programs and help to measure their progress under the Government Performance and Results Act (GPRA).

## **VERIFICATION AND VALIDATION OF PERFORMANCE MEASURES**

**FY 2005 Performance Measure:** Methods for developing water quality criteria based on population-level risks of multiple stressors to aquatic life and aquatic-dependent wildlife.

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

## **COORDINATION WITH OTHER AGENCIES**

While EPA is the Federal agency mandated to ensure safe drinking water, other Federal and non-Federal entities are conducting research that complements EPA's research program on priority contaminants in drinking water. For example, the Centers for Disease Control and Prevention (CDC) and the National Institute of Environmental Health Sciences (NIEHS) conduct health effects and exposure research. The Food and Drug Administration (FDA) also performs

research on children's risks. Many of these research activities are being conducted in collaboration with EPA scientists. The private sector, particularly the water treatment industry, is conducting research in such areas as analytical methods, treatment technologies, and the development and maintenance of water resources. Cooperative research efforts have been ongoing with the American Water Works Association Research Foundation and other stakeholders to coordinate drinking water research. EPA is also working with the U.S. Geological Survey (USGS) to evaluate performance of newly developed methods for measuring microbes in potential drinking water sources.

Interactions with external stakeholder groups have been initiated that will help determine EPA's future regulatory priorities and research needs for drinking water. Interactions with the Science Advisory Board's Drinking Water Committee and the National Drinking Water Advisory Committee will also help EPA refine its drinking water research agenda.

EPA has developed joint research initiatives with the National Oceanic and Atmospheric Administration (NOAA) and the United States Geological Survey (USGS) for linking monitoring data and field studies information with available toxicity data and assessment models for developing sediment criteria.

Under the Endangered Species Act, EPA is required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) on actions that may affect endangered species. EPA has developed a draft strategy for research and development of criteria for endangered species that is now being reviewed. As part of implementation of this strategy, EPA is coordinating its research with the Biological Research Division of the USGS.

The issue of eutrophication, hypoxia, and harmful algal blooms (HABs) is a priority with the Committee on Environment and Natural Resources (CENR). An interagency research strategy for pfiesteria and other harmful algal species was developed in 1998, and EPA is continuing to implement that strategy. EPA is working closely with NOAA on the issue of nutrients and risks posed by HABs. This CENR is also coordinating the research efforts among Federal agencies to assess the impacts of nutrients and hypoxia in the Gulf of Mexico.

Implementation of EPA's Wet Weather Flows work is guided by the "Risk Management Research Plan for Wet Weather Flows." This research plan was peer-reviewed by the Urban Water Resources Research Council of the American Society of Civil Engineers (ASCE) and the Water Environment Research Foundation of the Water Environment Federation. Projects under the WWF research plan are being coordinated with projects under Section 104(b)(3) of the Clean Water Act (CWA). This plan is also being used to coordinate relevant work being conducted by others such as the Water Environment Research Foundation's Wet Weather Advisory Panel, the ASCE Urban Water Resources Research Council, the U.S. Department of Agriculture, the U.S. Centers for Disease Control and Prevention (CDC), the U.S. Army Corps of Engineers (USACE), the U.S. Geological Survey (USGS), the Sanitary Sewer Overflow (SSO) Advisory Committee and Urban WWF Subcommittee, and other national and international organizations that work to improve coordination and minimize duplication of WWF research.

EPA is partnering with numerous other Federal and state agencies on WWF research projects. For example, the Agency signed a three-year interagency agreement (IAG) with USACE at the Waterways Experiment Station in Vicksburg, Mississippi, to develop a numerical watershed model that will predict change in stream channels from land use change. Both organizations have an inherent interest in developing tools to predict such geomorphologic changes. Land use changes alter storm water runoff patterns, which upset the established equilibrium between the flow, shape, and course of the streambed (stream geomorphology). Under this IAG the USACE will modify an existing river model to account for erosion in small streams.

Also, EPA is pursuing collaborative research projects with the USGS to utilize water quality data from urban areas obtained through their National Ambient Water Quality Assessment (NAWQA) program. The USGS data for urban streams show levels of pesticides that are even higher than in many agricultural area streams. These data have potential uses for identifying sources of urban pesticides, and EPA will evaluate how the USGS data could be integrated into the GIS database system.

Finally, EPA is initiating collaboration with the USDA, CDC, and other Agencies to develop a better understanding of the sources of pathogenic stressors and potential strategies for their control.

## **STATUTORY AUTHORITIES**

Clean Air Act (CAA)

Clean Vessel Act

Clean Water Act (CWA)

Coastal Wetlands Planning, Protection, and Restoration Act of 1990

Coastal Zone Act Reauthorization Amendments of 1990

Endangered Species Act

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)

Marine Plastic Pollution, Research and Control Act (MPPRCA) of 1987

Marine Protection, Research and Sanctuaries Act (MPRSA)

National Invasive Species Act of 1996

North American Wetlands Conservation Act

Ocean Dumping Ban Act of 1988

Safe Drinking Water Act (SDWA)

Shore Protection Act of 1988

Toxic Substances Control Act (TSCA)

Water Resource Development Act (WRDA)

## **Environmental Protection Agency**

### **FY 2005 Annual Performance Plan and Congressional Justification**

#### **CLEAN AND SAFE WATER**

Beach / Fish Programs, II-12

Categorical Grant

Beaches Protection, II-12

Homeland Security, II-13

Nonpoint Source (Sec. 319), II-50

Pesticides Program Implementation, II-12, II-26

Pollution Control (Sec. 106), II-50

Public Water System Supervision (PWSS), II-12

Underground Injection Control (UIC), II-12

Wastewater Operator Training, II-50

Water Quality Cooperative Agreements, II-12, II-50

Children and other Sensitive Populations, II-12

Congressionally Mandated Projects, II-12, II-50, II-86

Drinking Water Programs, II-8, II-12, II-14

Great Lakes Legacy Act, II-21

Homeland Security

Critical Infrastructure Protection, II-13

Infrastructure Assistance

Alaska Native Villages, II-50

Clean Water SRF, II-50

Drinking Water SRF, II-12

Puerto Rico, II-12

International Capacity Building, II-12, II-27, II-50, II-64

Marine Pollution, II-50, II-62, II-63

Pesticides

Field Programs, II-12

Research

Drinking Water, II-86

Water Quality, II-86

Science Advisory Board, II-4, II-96

Surface Water Protection, II-6, II-8, II-50, II-86, II-87

Wetlands, II-70, II-73, II-97