Application of Clean Water Act Tools to Restore and Protect Watersheds

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1. Introduction

Surface water quality in the United States is governed by the terms, conditions, requirements and programs of the Clean Water Act. Since 1972 this statute has provided the foundation upon which water quality programs across the nation are built. This presentation discusses current efforts by the US Environmental Protection Agency (EPA) to use the foundation of the Clean Water Act and current tools to protect and restore watersheds across the United States.

2. Overview

The stated objective of the 1972 Clean Water Act (CWA) is to protect and restore the physical, chemical and biological integrity of our Nations waters. In 1972 that was a lofty goal recognizing the Cuyahoga River in Cleveland, Ohio occasionally caught on fire; Lake Erie, one of the Great Lakes, was declared dead; and the Potomac River in Washington, DC was often called an open sewer. These were symptoms of a wider and deeper set of problems affecting water resources across the United States.

The water quality management program established by the CWA, beginning with designated uses and numeric and narrative standards; monitoring; assessment and impaired water listings; total maximum daily load (TMDL) calculations that include point source and non-point source allocations to meet standards; a point source permitting program (National Pollutant Discharge Elimination System – NPDES), along with compliance monitoring and enforcement has been the foundation of efforts in the U. S. for the last 34 years. Implementation has been consistent and methodical. In the early years, grant programs funded billions of dollars in municipal infrastructure, the NPDES program focused on issuing over 50,000 permits to municipal and industrial point source dischargers, first focusing on technology based minimum levels of treatment and then additional treatment to meet water quality objectivities. Toxic limits in permits and a focus on wet weather sources of pollution from separate and combined sewer overflows and municipal, industrial and construction stormwater were priority areas in the late 1980's and thru the 1990's. In the mid-1990's a focus on total maximum daily loads (TMDL's) and the assessment of what combination of point and non-point source loads watersheds could sustain, were completed in many areas for the first time. In the past five years thousands of TMDL's have been completed.

The above abbreviated history, as it unfolded, was largely completed thru separate, focused initiatives that individually made significant progress in assessing, designing, building, permitting, or enforcing to meet a single parameter objective. Loadings were reduced, but in many cases, systematic restoration of water quality did not result. Beginning with the focus on TMDL's and thru the related assessment of the effect of point and non-point sources, land use patterns, hydrologic and atmospheric impacts, the concept of watersheds management has evolved.

Over the last ten years, the focus of EPA efforts in the National Water Program has been on the watershed. The objective is to use the available tools, ever improving through better science and technology, and apply them in a systematic method to protect and restore watersheds across the country.

In the United States, EPA has the nationwide responsibility to establish a framework using regulation, policy, guidance and funding to facilitate the implementation of the CWA. Most of the implementation occurs at the State or local level. There are thousands of watershed groups across the country, working with local government, universities, and business and citizens groups to improve their watershed.

This presentation focuses on one approach being taken by the water program in EPA Region 4, located in Atlanta, Georgia, and having EPA jurisdiction in eight southeastern States. They are leaders in the implementation of the watershed approach.

The national water program at EPA is committed to the protection and restoration of watersheds. The 2006-2011 EPA Strategic Plan, dated September 2006, includes numeric targets for the improvement of impaired watersheds and for the improvement of waterbody segments within watersheds. Through the application of sound science and focused public policy, improvements will happen. Lake Erie today supports a multi-million dollar boating and sport fishing industry and the Potomac River hosts national bass fishing tournaments. Watersheds across the nation await this progress.

Implementing a Watershed Approach

Jim Hanlon, Director
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"The object of this Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters."

Section 101(a), Public Law 92-500
October 18, 1972
"The Clean Water Act"

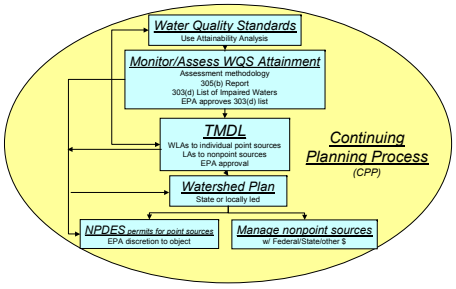
Program Evolution

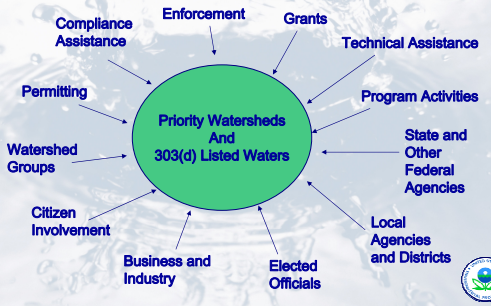
Construction Grants	(1970's – 1980's)
Point Source Permits	(1970's – 1990's)
Technology-based Limitations	(1980's – 1990's)
Total Maximum Daily Loads (TMDLs)	(1990's – present)

Key Elements of the Watershed Approach

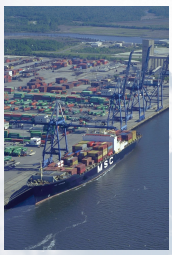
- Geographic Focus
- Continuous Improvement Based on Sound Science
- Partnerships and Stakeholder Involvement

CWA Watershed Framework





Great Challenges



Great Expectations

- Integrate EPA programs to achieve results for water quality
- Remove waters from the impaired waters list by restoring designated uses
- Partner with our states and tribes to focus our activities and resources
- Encourage innovations
- Seek efficiencies
- Utilize a watershed approach

"Apply a watershed approach to restoring polluted waters across the country, including developing Total Maximum Daily Loads, implementing clean-up plans on a watershed basis, and promoting innovative, cost-effective practices like water quality trading and watershed permitting to restore and protect water quality."

Benjamin H. Grumbles
Assistant Administrator
Office of Water, U.S. EPA
September 29, 2006

EPA Involvement in the Watershed Approach

- Programmatic Support
- Technical Support
- Direct Involvement

Programmatic Tools

- Training and Education
- Funding
- Regulatory Analysis
- Capacity Building
- Water Quality Trading
- Watershed Permitting

Technical Tools

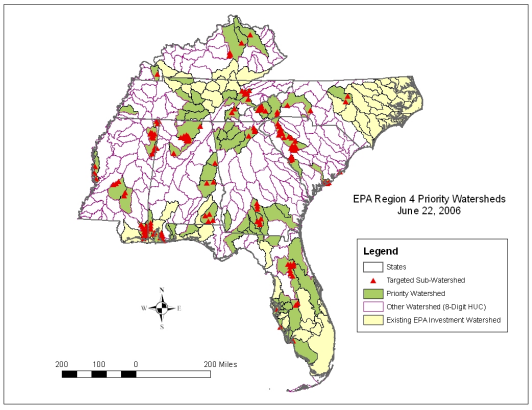
- Restoration project management (wetlands, streams, lakes)
- Problem solving (technical)
- Landscape level assessments, mapping and analysis
- Modeling and technology transfer
- Planning Assistance (Watershed Plans, Source Water Assessment and Protection Planning, TMDL Implementation, Wetlands Advanced Identification)
- Analytical Methods

Direct Involvement

- Leadership/sponsorship role
- Broker/Facilitator role
- Influencing the Federal Community
- Leverage Funding
- Implementing the Watershed Approach by overseeing its various phases.

EPA Watershed Selection Criteria

- Value of resource at risk or seriousness of threat
- Likelihood of achieving positive environmental outcomes
- Evidence of strong public and local/state government support
- Existence of scientific studies or data about the watershed
- Existence of an entity with a proven track record to promote and coordinate partnerships
- Benefits associated with EPA leadership and addition of EPA's significant expertise in this area



Phase-Objective Alignment

	Phase I: Explore	Phase II: Build/Prepare	Phase III: Implement	Phase IV: Trans. To Maint.
Stressor/Source	●	●		
Ability to Act	●	●		
Communication	●	●	●	●
Funding	●	●	●	●
Action Plan		●	●	●
Exit Strategy				●

● Criteria Available

Phase I Example Criteria: EXPLORE

- **Stressor/Source Identification**
  - Collect, map and perform cluster analysis on impaired waters
  - Collect and review pertinent TMDLS and NPDES permits
  - Collect information gathered at the watershed by locals where relevant
- **Ability to Act**
  - Check with the state for acceptability and synergies
  - Check with workgroup for programmatic priority overlaps
  - Do the locals want EPA involved in the watershed?

Phase II: BUILD/PREPARE

- **Stressor/Source Identification**
  - Have data needed to perform a detailed assessment been identified?
  - Has the group identified who can best collect and/or analyze the needed data?
  - Has the spatial distribution of pollutant loading been sufficiently defined to establish areas of concern within the watershed?
- **Ability to Act**
  - Have all identified skill/role gaps been filled?
  - Does the coalition have a legal structure for acquiring/administering funds or a clearly identified mechanism for accomplishing this function through a partner?

Priority: Achieving Results

- Between FY02-FY05, Twenty four 8-Digit HUC watersheds moved into the "restored" category in Region 4

TRADING ASSOCIATIONS

- **Neuse River, North Carolina**
  - Nitrogen trading agreement
  - 23 members, primarily large municipalities
  - Single, general permit for nitrogen
  - If the association exceeds it allocation, it is subject to enforcement action
    - Any member exceeding its allocation is then subject to enforcement

Neuse River Results

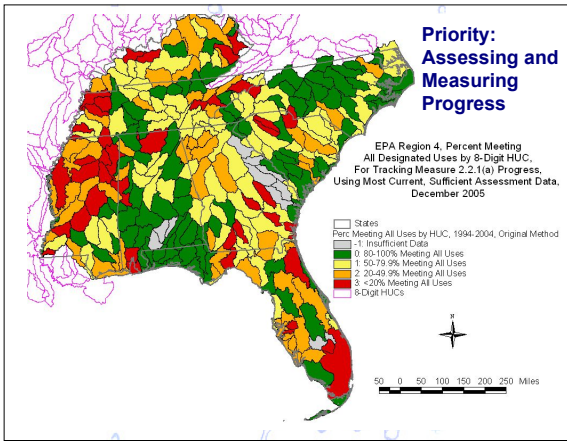
- Achieved Goal
- Greater than 30% reduction in nitrogen loading between 1997 and 2003

Watershed Management Office - Initiative "Pipeline"

USEPA, Region 4 - Water Management Division
Watershed Management Office

Initiative	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Alabama																					
Mulberry - 03160109																					
Eight Mile Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Black Branch							1	2	3	3	4	4	4	4	4						
Long Branch									1	2	3	3	4	4	4	4	4				
Duck Creek									1	2	3	3	4	4	4	4					
Wheeler Lake Watershed - 06030002																					
West Fork Cotaco				1	2	3	3	3	3	3	3	4	4	4	4	4	4	4			
Mack Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Robinson Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Crowdabout Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Herrin Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
First Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Piney Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Second Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Beaverdam Creek								1	2	3	3	4	4	4	4	4	4				
Brier Fork								1	2	3	3	4	4	4	4	4					
Guess Creek								1	2	3	3	4	4	4	4	4					
Little Paint Rock								1	2	3	3	4	4	4	4	4					
Flint River								1	2	3	3	4	4	4	4	4					
Indian Creek								1	2	3	3	4	4	4	4	4					
Cole Spring Branch								1	2	3	3	4	4	4	4	4					
Lower Tallapoosa Watershed - 03160110																					
Saugahatchee Creek								1	2	3	3	4	4	4	4	4					
Pickwick Lake - 06030005 (Monitor Measure Lands)																					
Big Nance Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Guntersville Lake - 06030001 (Monitor Measure Lands)																					
Town Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
South Sauty Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Short Creek			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Bratram Creeks			1	2	3	3	3	3	3	3	4	4	4	4	4	4	4				
Explore (1)	0	0	13	1	0	0	1	8	2	0	0	0	0	0	0	0	0	0	0	0	0
Build/Prepare (2)	0	0	0	13	1	0	0	1	8	2	0	0	0	0	0	0	0	0	0	0	0
Implement (3)	0	0	0	0	13	14	14	15	23	11	2	0	0	0	0	0	0	0	0	0	0
Transition to Maintenance (4)	0	0	0	0	0	0	0	0	0	14	23	25	25	25	24	16	1	0	0	0	0
Total	**0**	**0**	**13**	**14**	**14**	**14**	**15**	**23**	**25**	**25**	**25**	**25**	**25**	**25**	**24**	**16**	**1**	**0**	**0**	**0**	**0**

On-the-ground restoration activities will begin in Crowdabout, Herrin, Goose, Thacker, and Yellowbank watersheds during the spring of 2006.



Watershed Goals

EPA 2006-2011 Strategic Plan

By 2012:

- Attain standards for all pollutants and impairments in more than 2,250 waterbodies by 2012 (baseline 39,798)
- Remove at least 5,600 of the specific causes of water body impairment identified in 2002 (baseline 69,677)
- Improve water quality conditions in 250 impaired watersheds nationwide using the watershed approach

Acknowledgements

- Jim Giattina and EPA Region 4 Water Program
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