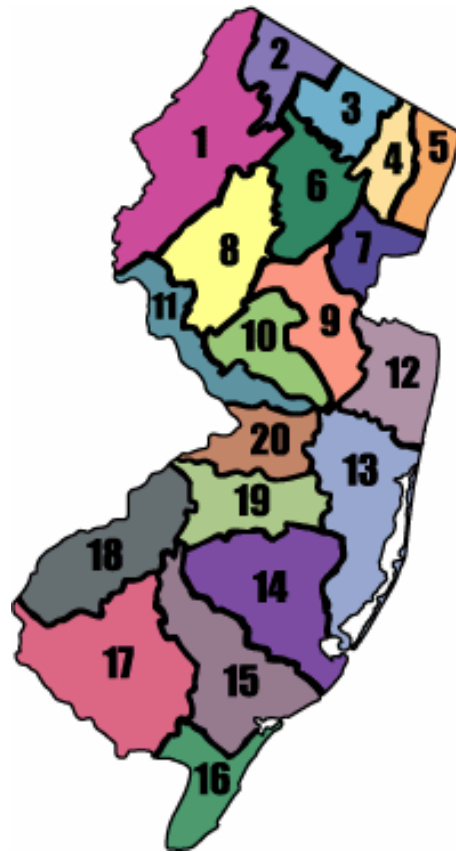


**State of New Jersey
Nonpoint Source Report
2004-2006
April 1, 2006**



New Jersey's 20 Watershed Management Areas

**Jon S. Corzine, Governor
State of New Jersey**

**Lisa P. Jackson, Commissioner
New Jersey Department of Environmental Protection**

State of New Jersey Nonpoint Source Report 2004-2006



State of New Jersey
Jon S. Corzine, Governor

New Jersey Department of Environmental Protection
Lisa P. Jackson, Commissioner

Land Use Management
Mark Mauriello, Assistant Commissioner

Division of Watershed Management
Lawrence J. Baier, Director
Kathleen M. Griffith, Technical Assistant to the Director - Report Editor

**New Jersey Department of Environmental Protection
Land Use Management
Division of Watershed Management
401 East State Street
P.O. Box 418
Trenton, NJ 08625-0418**

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Contributors:

Division of Watershed Management

Lawrence J. Baier, Deborah Bechtel, Sandra Blick, Cathy Bogart, Theresa Bottini, Kimberly Cenno, Danielle Donkersloot, Dana Emerson, Alyse Greenberg, Barbara Greenhalgh-Weidman, Mike Haberland, Thomas Harrington, Barbara Hirst, Kyra Hoffmann, Patricia Ingelido, Steven Jacobus, Kenneth Klipstein, Todd Kratzer, Virginia Loftin, Margaret Matlosz, David Mcpartland, Donna Milligan, Helen Pang, Terry Pilawski, Kerry Kirk Pflugh, Pat Rector, Michelle Ruggiero

Land Use Management

Karen Ward

Coastal Management Program

Tali Engoltz

Division of Water Supply

Meghan Gosselink, Joseph Mattle, Ian Snook

Water Monitoring and Standards

Kevin Berry, Steve Foster, Debra Hammond, Nancy Immesburger, Jack Pflaumer

Green Acres Program

Cecile Murphy

Communications and Legislation

Timothy O'Donovan

New Jersey Department of Agriculture

Tim Fekete, Frank Minch, Monique Purcell , James Sadley, John Showler

New Jersey Farm Service Agency

Nancy Coles

State of New Jersey Nonpoint Source Report 2004-2006

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INTRODUCTION

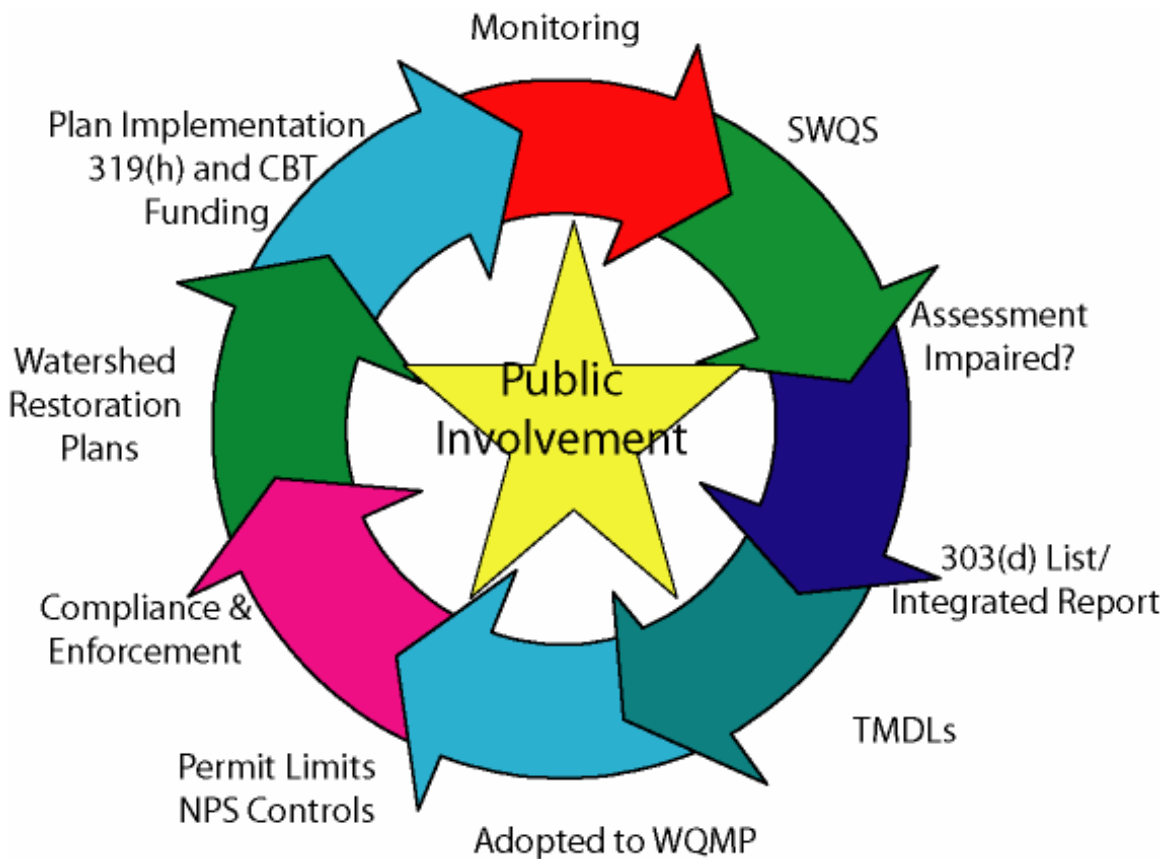
The New Jersey Department of Environmental Protection (NJDEP) is the Executive Branch Agency charged with the formulation of comprehensive policies for the conservation of the natural resources of the state, the promotion of environmental protection and the prevention of pollution of the environment of the state (see N.J.S.A. 13:1D-9). Among the Department of Environmental Protection's water resource goals is the restoration and maintenance of the chemical, biological and physical integrity of New Jersey's surface waters and the attainment of fishable and swimmable water quality in those surface waters. Much progress has been made in controlling point source discharges of pollutants since the enactment of the federal Clean Water Act. However, due to its ubiquitous nature, progress in controlling nonpoint source (NPS) pollution has lagged behind. The NJDEP estimates that between 40 and 70 percent of pollutant loads emanate from nonpoint sources.

Point source pollution is that which is discharged at a defined point, usually the end of a pipe or "outfall," such as from sewage treatment plants and industrial treatment works. The locations of these outfalls are known and the effluent can be sampled for pollutant concentrations. In New Jersey, these outfalls are regulated by the New Jersey Pollutant Discharge Elimination System (NJPDES) Permits, which set limits on the quality and quantity of effluent that is discharged. In contrast, nonpoint source pollution cannot be traced back to a single point: it is diffuse in origin, can emanate from anywhere in the watershed (the total land area that contributes water to a lake, pond, river or stream is its "watershed") and is most often the result of human activity and behavior. Nonpoint source pollution may include chemicals and pathogens carried into streams by rainfall, such as oil and grease from roadways and parking lots; fertilizers from lawns, golf courses and agricultural fields; and bacteria from improperly maintained septic systems, pet waste and large congregations of water fowl. However, nonpoint source pollution can also include impacts not typically thought of as pollution, such as increased water temperature resulting from the clearing of streamside vegetation, or significant changes in the hydrology of the stream resulting from either increased stormwater runoff, which can erode the stream bed and banks, or the loss of water in the stream during dry weather resulting from both the loss of recharge in a watershed under development or due to increased water withdrawals within a watershed for water supply. Because of the diffuse and intermittent nature of these nonpoint sources of pollution, they do not lend themselves to traditional monitoring and permitting. Addressing nonpoint source pollution requires a more comprehensive control strategy that includes source identification, establishment of best management practices, public education and cooperation among many levels of government and the local community.

The Division of Watershed Management within the New Jersey Department of Environmental Protection plays the central role in New Jersey's comprehensive nonpoint source pollution control strategy. The Division develops and implements total maximum

daily loads (TMDLs)¹ and watershed restoration plans for New Jersey's impaired waters, implements water quality restoration projects through administration of the Environmental Protection Agency (EPA) 319(h) nonpoint source control grants program and the Corporate Business Tax (CBT) Watershed Management Fund, and adopts and implements areawide Water Quality Management Plans (WQMPs) and Wastewater Management Plans (WMPs). Each of these functions is described in greater detail in this report.

NPS pollution control does not begin nor end with the Division of Watershed Management. The NJDEP Water Quality Monitoring and Assessment Program performs water quality sampling and analysis throughout New Jersey and compares that data to the New Jersey Surface Water Quality Standards (SWQS) (N.J.A.C. 7:9B).



Based on that comparison the Program biennially prepares the Integrated Water Quality Monitoring and Assessment Report, which identifies those surface waters that are impaired. This list of impaired waters forms the workplan for the Division of Watershed

¹ A TMDL is calculation of the maximum amount of a pollutant a water body can receive and still meet water quality standards.

Management. The Water Quality Monitoring and Assessment Program also assists the Division of Watershed Management in tracking the sources of nonpoint source pollution through targeted water quality monitoring. The NJDEP Division of Water Quality, through the municipal separate storm sewer system (MS4) New Jersey Pollutant Discharge Elimination System permit program, is also engaged in the effort through stormwater permitting. Permits have been issued to all 566 municipalities in the state and other agencies and institutions that own and maintain separate storm sewer systems. Each permit describes in detail what management measures must be implemented to improve the quality of stormwater collected and discharged through these systems. In addition to NJDEP's work, the Department of Agriculture's Natural Resource Conservation Service (NRCS) seeks to implement best management practices using Federal Farm Bill Programs such as the Environmental Quality Incentive Program (EQIP) and Conservation Reserve Enhancement Program (CREP). This work is supplemented by the activities of numerous watershed associations, volunteer groups, and watershed partners all actively engaged in the battle of NPS pollution control. Public involvement is key to a successful NPS program.

It is the intent of the New Jersey Nonpoint Source 2006 Report to articulate New Jersey's NPS pollution control strategy and document our progress over the past three years. The rest of the annual report has been divided into three main categories for organizational purposes and ease of reading: Restoration, Education and Protection. The Restoration Section highlights the schedule and development of TMDLs for impaired water bodies, New Jersey's case studies in implementing on-the-ground restoration projects, the projects funded through the federal 319(h) and 604(b) grant programs, updates to the coastal NPS 6217 Program, and the partnership with the Department of Agriculture/NRCS to reduce agricultural NPS loads. The Education Section is placed in between the Restoration and Protection Sections because education and outreach efforts are utilized in both the restorative and protective aspects of watershed management. The Protection Section outlines the groundbreaking legislation & regulations that have been enacted in New Jersey to protect the state's waters, unique water supply issues that challenge us to be innovative and creative in our solutions, and vital land acquisitions through the Green Acres Program.

Division of Watershed Management Update

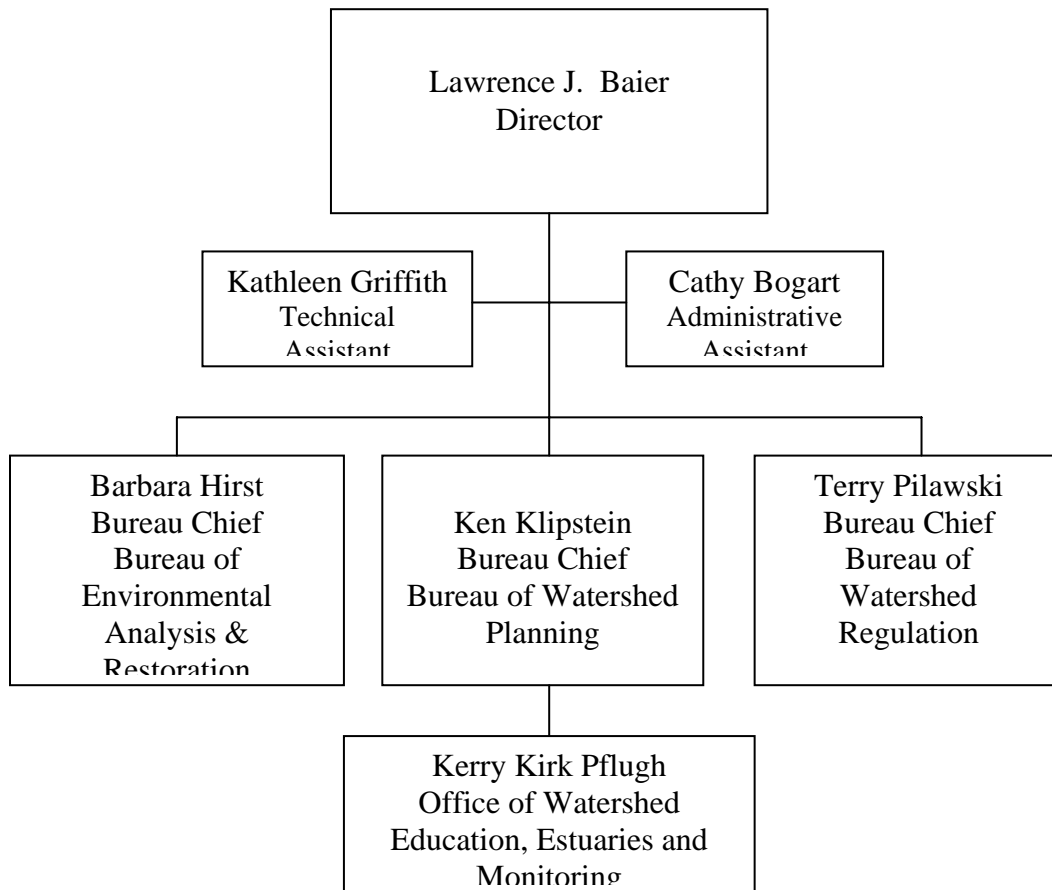
Reorganization

On November 1, 2004 the Division of Watershed Management completed its reorganization. The reorganization solidifies the Division's move away from the generalist approach to watershed management, wherein each of the 20 watershed management areas (WMAs) had an individual area manager that was tasked with completing any and all of the Division's work within that geographic area. This arrangement continually placed Division staff in the position of having to deal with

shifting priorities, thus hampering our ability to accomplish any one of those tasks with efficiency and consistency.

The new Division structure organizes internal staff and work assignments according to function, rather than geography. This is accomplished through the realignment of the Division's bureaus/office staff and responsibilities. The functional reorganization of the Division enhances and facilitates our water resource management strategy of focusing on watershed restoration project implementation rather than on watershed restoration planning. We remain firmly committed to the watershed approach to water resource management from both a quantity and quality perspective. The allocation of staff resources along functional lines has enabled the Division to act more quickly and decisively, thus further aiding in the protection and restoration of the state's water resources.

Division of Watershed Management Organizational Structure



Bureaus/ Office

The three bureaus and one office within the Division of Watershed Management are the Bureau of Environmental Analysis and Restoration; the Bureau of Watershed Planning, which includes the Office of Watershed Education, Estuaries and Monitoring; and the Bureau of Watershed Regulation. Nonpoint source pollution control is the responsibility of all the bureaus within the Division of Watershed Management and each plays a role in New Jersey's NPS strategy throughout the state's 20 Watershed Management Areas (WMAs). (For a detailed description of each of New Jersey's WMAs, visit www.nj.gov/dep/watershedmgt and click on the WMAs on the New Jersey map.) A brief description of the major duties of each of the bureaus/office follows.

Bureau of Environmental Analysis and Restoration

The Bureau of Environmental Analysis and Restoration (BEAR) was created during the initial phase of the reorganization. This bureau is primarily tasked with the development of technical “tools” for the use of the Division and its partners in watershed planning, protection and restoration. Among those responsibilities are the development of Total Maximum Daily Loads; the development of rules and regulations including the Stormwater Management Rules (N.J.A.C. 7:8), Water Quality Management Planning Rules (N.J.A.C. 7:15) and portions of the Highlands Water Protection and Planning Act rules (N.J.A.C. 7:38); and the development of model ordinances and guidance concerning rule implementation. The success of BEAR in meeting the Department’s TMDL and rule obligations largely influenced the decision to complete the functional organization. Among the goals of this Bureau are the continued compliance with the TMDL development schedule; the adoption of new Water Quality Management Planning Rules to improve the consistency between water quality planning and the State Development and Redevelopment Plan and advance the principles of Smart Growth; the adoption of developed rules required by the Highlands Act; and the development of tools to assist in the implementation of the Stormwater Management Rules such as updates to the Stormwater Best Management Practices (BMP) Manual, updating the Frequently Asked Questions section of the Stormwater website and guidance for determining compliance with the required use of non-structural stormwater management practices.

Bureau of Watershed Planning

The Bureau of Watershed Planning consolidates the voluntary watershed partnerships work of the Division of Watershed Management. The functions of this bureau include the provision of technical support to independent watershed organizations, associations and local and county government units; the administration of federal pass-through grant programs; the development and implementation of watershed restoration plans that build upon and augment the TMDLs through visual assessment and targeted monitoring to track down NPS pollution and develop specific BMPs for its control; and promotion of voluntary implementation of NJDEP initiatives such as TMDLs, source water protection, and septic management plans. One of the greatest challenges facing this bureau is making the transition from global planning to watershed restoration plans that provide a specific blueprint for the restoration and protection of a waterbody. This watershed protection and restoration plan must identify the specific sources of pollution, the actions required to remedy those sources, estimate the cost of implementing the remedy and

identify partnerships between the public and private sectors required for implementation. Among the goals of this bureau for the coming year are the development of watershed restoration and protection plans for one stream segment in each of the 20 WMAs; management of federal pass-through grant funds to accomplish the implementation of watershed restoration plans; and implementation of TMDLs where studies have been completed and provide the required degree of specificity.

Office of Watershed Education, Estuaries and Monitoring

Under the Bureau of Watershed Planning, the Office of Watershed Education, Estuaries and Monitoring continues to be responsible for the development and coordination of educational tools, press releases, and outreach plans in support of the Division's mission, including administration of the volunteer monitoring program, the AmeriCorps program, the urban fishing program and the fish consumption advisory program. Each of these programs has enjoyed much success. Under the reorganization a broader range of responsibilities has been assigned to this bureau. Among the new responsibilities are the coordination of the NJDEP's participation in the three National Estuary Programs (Barnegat Bay, Delaware, and New York/ New Jersey Harbor Estuary Programs), the coordination and administration of the Cooperative Coastal Monitoring Program (CCMP) (bathing beach monitoring), and coordination and administration of the Clean Shores Program. Among the goals for the Office of Watershed Education, Estuaries and Monitoring are the successful integration of the coastal monitoring program with the national database required by the federal BEACH Act, consistent representation by the Division on the management committees of the three National Estuary Programs, and the development of a communications plan for the Division centered around watershed restoration, TMDLs, the Highlands Act, Water Quality Management Planning, Wastewater Management Planning, and stormwater management.

Bureau of Watershed Regulation

The Bureau of Watershed Regulation consolidates the Division's regulatory functions in one arena, including water quality and wastewater management planning, stormwater management reviews, and applicability determinations under the Highlands Water Protection and Planning Act (N.J.A.C. 7:38). Under the former Division organization, the Division's regulatory responsibilities often competed for limited resources with other aspects of watershed management. The new Bureau of Watershed Regulation will place the Division's regulatory obligation in a position of prominence and ensure that the Division does not lose focus on this important management tool and maintains the continuing planning process whose goal is integration of Water Quality Management Planning with federal, state and local land use planning. In particular this bureau will use the Division's regulatory authority to implement NJDEP policy including TMDLs, source water protection, critical habitat protection and water supply planning. Among the goals of this Bureau are the elimination of the backlog of Water Quality Management Plan amendment applications, expediting regulatory decisions in smart growth areas, implementation of Highlands applicability and Water Quality Management Plan consistency determinations and the digitalization of the adopted sewer service areas, which is needed to make this information more readily accessible and easily updated.

Water Quality

New Jersey, the fifth smallest state in the nation, contains a wide variety of water resources, geologic characteristics and natural biota and fauna. Within the state's 7840 square miles are 127 miles of coastline; 15,000 miles of rivers and streams; and 69,920 acres of lakes and ponds that are larger than 2 acres. In addition, there are 1482 square miles of fresh and saline marshes and wetlands, and 1069 square miles of coastal waters. New Jersey has adopted Surface Water Quality Standards (SWQS, N.J.A.C. 7:9B) to protect these water resources.



Surface Water Quality Standards

The Surface Water Quality Standards (SWQS) establish the designated uses to be achieved and specify the water quality criteria necessary to protect the state's waters. Designated uses are reflected in use classifications assigned to specific waters. Designated uses include potable water, propagation of fish and wildlife, recreation, agricultural and industrial supplies, and navigation. The criteria applicable to different use classifications are numerical estimates of constituent concentrations, including toxic pollutants that are protective of the uses. Narrative criteria describe in-stream conditions to be attained/maintained or avoided. Waters of the state include, but are not limited to, rivers, lakes, streams, wetlands, estuaries and near shore coastal waters. The SWQS also contain technical and general policies to ensure that the water quality necessary to allow designated uses is adequately protected.

The SWQS operate in conformance with the Federal Water Pollution Control Act (33 U.S.C. 1313(c)), commonly known as the Clean Water Act (CWA), and the Federal Water Quality Standards Regulation at 40 CFR 131. Under the statutory authority granted by N.J.S.A. 13:1D-1 seq., 58:10A-1 et seq., and 58:11A-1 et seq., the SWQS are codified in the state's regulations as N.J.A.C. 7:9B. The SWQS form the basis for monitoring the degree of impairment of water bodies and for calculating TMDLs, which represent the assimilative capacity of surface water for a given parameter of concern. The development of TMDLs includes assessing the contribution of pollution from point sources, nonpoint sources and balancing it against natural background characteristics. TMDLs are developed on a watershed basis to aid watershed management planning efforts. The state develops a list of impaired waters (303(d)), as part of its surface water quality inventory report (305(b)), every two years.

The SWQS are used by various NJDEP programs such as the New Jersey Pollutant Discharge Elimination System (NJPDES), Site Remediation, Stream Encroachment, and Land Use Regulation programs. The Department has designated a special level of

protection for a number of waterways in New Jersey. This protection, known as Category One, targets waterbodies that provide drinking water, habitat for endangered and threatened species, and popular recreational and/or commercial species, such as trout or shellfish. Waterways can be designated Category One because of exceptional ecological significance, exceptional water supply significance, exceptional recreational significance, exceptional shellfish resource, or exceptional fisheries resource. The Category One designation provides additional protections to waterbodies, which help prevent water quality degradation and discourage development where it would impair or destroy natural resources and environmental quality. To view New Jersey's Surface Water Quality Standards, go to www.state.nj.us/dep/wmm/sgwqt/sgwqt.html

Integrated Report

The federal Clean Water Act under Section 303(d) requires states to identify “Impaired Waters” where specific designated uses are not fully supported (known as the 303(d) list). This list identifies the name of the water body and the pollutant or pollutants causing the water body to be listed as impaired. Section 305(b) of the Clean Water Act also requires states to periodically assess and report on the overall quality of their waters. Historically, the Department has summarized the water quality of the state in a biennial report entitled New Jersey’s Water Quality Inventory Report (also known as the 305(b) Report). The close association between the 305(b) report and the 303(d) list prompted EPA to issue guidance in July, 2003 for the 2004 list that encouraged states to integrate the 305(b) Report and the 303(d) list into one report.

Water quality is monitored by the NJDEP, along with the U.S. Geological Service (USGS), the U.S. Environmental Protection Agency (USEPA), local governments, and environmental groups. The NJDEP/ USGS monitoring network consists of 115 stations that are sampled for metals, pesticides/volatile organic chemicals, sediments and other contaminants. Biological assessments are also conducted at more than 800 locations by studying indicator species like insects, worms and clams. This information is used to assess the health of New Jersey’s surface waters and prepare the New Jersey Water Quality Inventory Report, which describes status and trends in water quality in the state’s rivers, lakes, estuaries, and oceans. The report includes progress made towards attainment of designated uses specified in New Jersey's Surface Water Quality Standards. These designated uses include aquatic life, recreation, industrial, agricultural and consumption of fish and shellfish. The quantity of New Jersey's wetlands and an overview of ground water resources are also provided. The water quality results contained in these reports are used by water program managers to inform decisions regarding program direction and strategies. The USEPA compiles reports from state and interstate agencies to prepare the National Water Quality Inventory Report to Congress, also published every two years. This national report is used by Congress to inform national program direction and funding priorities. The information contained in the Water Quality Inventory Reports is also useful at the local level to inform citizens about the status and trends of the state's waters, progress toward water resources goals and remaining concerns. To view the 2000 New Jersey Water Quality Inventory Report go to www.state.nj.us/dep/wmm/sgwqt/wat/305b/305b.htm.

In 2002, the NJDEP combined the 303(d) and 305(b) reports into one report titled the New Jersey Water Quality Monitoring and Assessment Report. The Department last updated the Integrated Water Quality Monitoring and Assessment Report in 2004. The next edition of the report is due to be released later this year. The Integrated List consists of five assessment categories or sublists. Waterbodies on Sublist 1 are attaining the water quality standard and no use is threatened. Waterbodies on Sublist 2 are attaining some of the designated uses, no use is threatened and insufficient or no data is available to determine if the remaining uses are threatened. Waterbodies on Sublist 3 have insufficient or no data to determine if any designated use is attained. Sublist 4 waterbodies are impaired or threatened for one or more designated uses but do not require the development of a TMDL. This sublist includes waters where a TMDL has already been completed, other pollution control requirements are expected to attain the standard, or the impairment is not caused by a pollutant but rather due to factors such as habitat degradation, stream channeling, etc. In Sublist 5 waterbodies, the water quality standard is not attained. The waterbody is impaired or threatened for one or more designated uses by one or more pollutants and requires a TMDL. To view the Integrated Report, go to www.state.nj.us/dep/wmm/sqwqt/wat/integratedlist/integratedlist2004.html.

Trends

NJDEP expects the number of listed water bodies and the pollutant-water body combinations will remain steady over the next few years or even increase as the assessment of more waters occurs. This should not be interpreted to mean the quality of New Jersey's waters are degrading. Rather, it reflects increased information, which allows us to more accurately characterize water quality. In fact, yearly shellfish water classifications have indicted that water quality is improving and has been for some time.

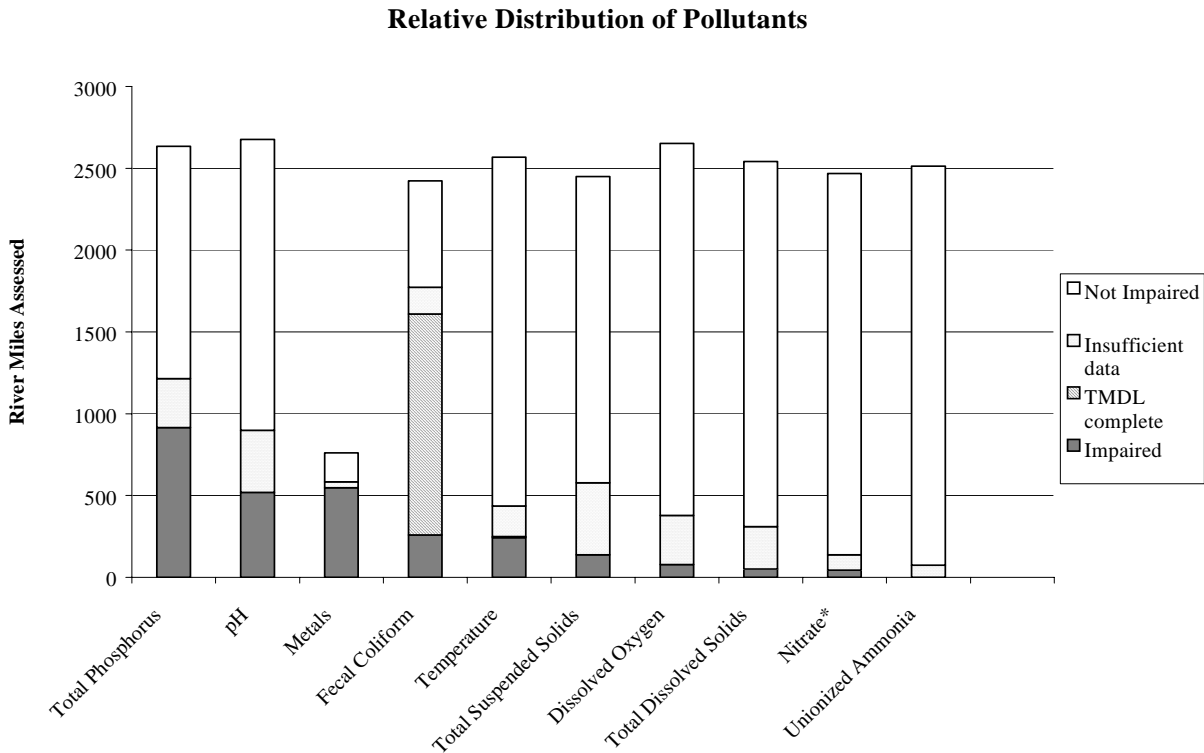
Shellfish

Shellfish are filter feeders, which means they pump water through their gills for both respiration and feeding. As they pump this water, the gills filter out particulates, removing suspended particulates from the water. Because of this, shellfish tend to accumulate whatever pollutants are in the water, which can contaminate the shellfish, resulting in the closing of an area to shellfish harvesting. Most frequently, this is due to bacterial contamination from sources such as wastewater discharges, marina and boating activity, and nonpoint sources such as stormwater discharges and runoff from agricultural lands. According to shellfish water classifications, New Jersey's water quality has continually improved since 1975. NJDEP had established a target of having 90% of its classified shellfish waters safe for shellfish harvesting by 2005. The state reached this target in 2003. Much of this improvement is the result of \$5 billion spent since 1972 to improve sewage treatment.

Nontidal rivers

Nontidal river monitoring has also shown an improvement in New Jersey's water quality. A total of 2,870 nontidal river miles were assessed in 2004 using 457 monitoring stations for at least one of the following parameters: total phosphorus, pH, dissolved oxygen, temperature, fecal coliform, nitrate, total suspended solids, total dissolved solids, unionized ammonia, metals, and toxics. The figure below represents the relative

distribution of pollutants in nontidal rivers. Of these assessed miles 2,187 river miles (76%) did not meet the SWQS for at least one parameter. This is down from 83% of assessed river miles that did not meet the SWQS in 2002.



Tidal rivers

New Jersey has 1,510 tidal river miles, of which 95% were assessed in 2004 for at least one of the above parameters. Of the miles assessed only 28 river miles met all criteria. In addition to the parameters assessed for nontidal rivers above, finfish and shellfish tissue were also sampled for the purpose of issuing fish consumption advisories. Fish consumption advisories were responsible for the highest number of impaired miles in tidal rivers: 1,073 miles. Of these, 310 miles had an advisory only, with no other violations.

Of the 441 miles of tidal rivers assessed in 2004 for 'aquatic life use attainment', 378 miles, or 86%, were in full attainment and 52 miles, or 12%, were in non-attainment. This shows an improvement over 2002 assessments, which showed 80% in full attainment for 'aquatic life use attainment'.

Of the 192 miles of tidal rivers assessed for 'support of recreational uses based upon sanitary quality', 112 miles, or 59%, were assessed to be in full attainment and 58 miles, or 30%, were in non-attainment. These assessments also illustrate an improvement over

2002 assessments, which showed 55% in full attainment for 'support of recreational uses based upon sanitary quality'.

Lakes

One hundred and eight (108) lakes (14,547 acres) in New Jersey were assessed in 2004 for 'aquatic life designated use support'. A total of 61 lakes fully support the use and 21 lakes do not support the use. Twenty-six (26) lakes were classified as not being able to be assessed. All of these are Pinelands Lakes and clear thresholds for biological status have not been established for Pinelands Lakes. In 2002, 40 lakes had been assessed and of those 34 fully supported the use, 1 lake was fully supporting but threatened, 4 lakes partially supported the use and 1 lake did not support the use.

Lake bathing beaches are monitored for sanitary quality by county and local health departments. Two hundred and eleven (211) lakes, or 75% of 2002-assessed lakes, representing 12,531 acres, provided bathing beaches of excellent recreational and swimming quality, or full attainment of the primary contact use. Seventy (70) lakes, or 25%, of assessed lakes representing 6,400 acres, showed non-attainment of the use. This shows a slight improvement over 2002's figures in which 73% were in full attainment, 26% were in non-attainment, and 1% had insufficient data to make an assessment.

Estuaries²

Of the 616 square miles of open estuarine waters assessed in 2004 from Newark Bay south to Cape May and around to those portions of the Delaware Bay under New Jersey's jurisdiction, 48% had sufficient dissolved oxygen levels to support healthy marine life. The remaining 52% were assessed as being in non-attainment due to periodic drops in dissolved oxygen to unacceptable levels. These violations occurred around the Shark River, Lower Manasquan River and Great Egg Harbor. In 2002, of the 258 square miles of open estuarine waters assessed, 67% had sufficient dissolved oxygen levels to support healthy marine life, and 33% were in non-attainment. This apparent degradation of estuarine water quality from 2002 to 2004 could be due in part to the dramatic increase in the square miles of open estuarine waters assessed in 2004 (616 square miles assessed compared to only 258 square miles in 2002).

Other trends in water quality are reported in the Performance Assessment Measures section of this report.

New Jersey Water Monitoring and Assessment Strategy 2005-2014 Publication

EPA has required all states to develop a comprehensive 10-year long-term water quality monitoring and assessment strategy. To learn about New Jersey's 10-year strategy, visit www.state.nj.us/dep/wmm/longtermstrategyreport.pdf

² The wide lower course of a river where the tide flows in, causing fresh and salt water to mix

RESTORATION

New Jersey's efforts to restore its watersheds is evident in the case studies on page 32, which implement on-the-ground restoration projects, the on-schedule development of TMDLs for impaired water bodies, the projects funded through the federal 319(h) and 604(b) Grant Programs, the success of the 6217 Coastal Management Program, and the ongoing partnership and leveraging of resources with the New Jersey Department of Agriculture, the Natural Resources Conservation Service and the State Soil Conservation Committee.

TMDLs

The state is required to establish total maximum daily loads (TMDLs) for all impaired waters (303(d) listed or 305(b) sublist 5) in accordance with a priority ranking. To ensure New Jersey meets its obligation to restore water quality to impaired water bodies, EPA established a deadline of March 31, 2011 to address all impairments listed on the 1998 list.

Since 2000, New Jersey has established 282 TMDLs, 279 of which were for impairments where nonpoint sources are the predominant problem. For the purposes of this discussion, nonpoint sources include those stormwater sources that are now regulated as point sources under the municipal stormwater permitting requirements for MS4s. This is because the implementation strategies for stormwater sources are largely the same, regardless of whether the stormwater source is regulated as a point source or not.

The table below summarizes TMDLs that have been approved by EPA. Significant load reductions from nonpoint sources are needed in order to attain water quality criteria and designated uses. Each TMDL includes an implementation plan, which identifies a suite of completed, on-going and planned activities needed to achieve the identified load reductions. In many cases, the completed and on-going projects have been made possible through EPA 319(h) grant awards. This funding is used in conjunction with state funds, other federal funds (EQIP, CRP and CREP), and local funds to address nonpoint sources of pollutants. New Jersey will continue to rely on 319(h) funding as a key element for accomplishing NPS reductions through TMDL implementation and thereby restoring water quality and designated uses.

The Division of Watershed Management is also currently developing Stormwater and Stormwater Pollutant TMDLs, which will address biologically impaired sites listed on Sublist 5 of the biennial Water Quality Inventory Report (formerly referred to as the 303(d) list). Nonpoint source pollutant loadings and the stormwater runoff that transports them are believed to be a driving force in the degradation of aquatic communities and

their habitats. Recently developed and innovative modeling applications will be used to identify a suite of hydrologic indicators that most strongly correlate with these impairments, in order to promote the most effective remediation plans (e.g., stormwater management BMPs) to reduce runoff and minimize nonpoint source pollution.

NEW JERSEY TMDLS APPROVED BY EPA						
Federal Fiscal Year	Waterbody or Water Region	Parameter	Current Load (kg/yr unless indicated)	Target Load (kg/yr unless indicated)	% Reduction Required from Reducible Sources	Predominant Source: PS/NPS
2000	Delaware River	VOCs (2 parameters)				PS
2000	Strawbridge Lake	TP	2162	787	67	NPS
2000	Sylvan Lake	TP	137.6	65.8	58	NPS
2000	Whippany River	FC			58	NPS
2000	*Hackensack River	Ni	13.86 lb/day	4.88 lb/day		PS
2003	Atlantic Coastal Water Region: 31 Streams	FC			51-98	NPS
2003	Northwest Water Region 4 Eutrophic Lakes					
	Cranberry Lake	TP		400	85	NPS
	<i>Ghost Lake</i>	<i>TP</i>		33	0 (<i>protective TMDL</i>)	<i>NPS</i>
	Lake Hopatcong	TP		4800	42	NPS
	Lake Musconetcong	TP		2200	41	NPS
2003	Northeast Water Region 3 Eutrophic Lakes					
	Lincoln Park Lake	TP		33	86	NPS
	Overpeck Lake	TP		850	90	NPS
	Verona Park Lake	TP		190	85	NPS
2003	Northeast	FC			37-98	NPS

	Water Region 32 Streams (34 Segments)					
2003	Lower Delaware Water Region 13 Eutrophic Lakes					
	Memorial Lake	TP		930	88	NPS
	Sunset Lake	TP		2500	92	NPS
	Bell Lake	TP		17	94	NPS
	Burnt Mill Lake	TP		290	91	NPS
	Giampietro Lake	TP		300	90	NPS
	Mary Elmer Lake	TP		380	91	NPS
	Bethel Lake	TP		540	85	NPS
	Blackwood Lake	TP		1200	88	NPS
	Harrisonville Lake	TP		500	92	NPS
	Kirkwood Lake	TP		380	84	NPS
	Woodbury Lake	TP		350	85	NPS
	<i>Imlaystown Lake</i>	<i>TP</i>		<i>390</i>	<i>0 (protective TMDL)</i>	<i>NPS</i>
	<i>Spring Lake</i>	<i>TP</i>		<i>11</i>	<i>0 (protective TMDL)</i>	<i>NPS</i>
2003	Raritan Water Region 6 Eutrophic Lakes					
	Echo Lake	TP		140	93	NPS
	Davidson Mill Pond	TP		690	92	NPS
	Devoe Lake	TP		200	75	NPS
	Lake Manalapan	TP		1100	93	NPS
	Lake Topanemus	TP		110	82	NPS
	Round Valley Recreation Area	TP		64	46	NPS
2003	Northwest Water Region: 28 Streams	FC			47-99	NPS
2003	Atlantic Coastal Water Region 9 Eutrophic Lakes					
	Deal Lake	TP		580	81	NPS

	Franklin Lake	TP		59	90	NPS
	<i>Hooks Creek Lake</i>	<i>TP</i>		<i>12</i>	<i>0 (protective TMDL)</i>	<i>NPS</i>
	Pohatcong Lake	TP		910	49	NPS
	Lake Absegami	TP		210	54	NPS
	Hammonton Lake	TP		210	81	NPS
	New Brooklyn Lake	TP		900	96	NPS
	Dennisville Lake	TP		240	83	NPS
	Lily Lake	TP		77	28	NPS
2003	Lower Delaware Region: 27 Streams	FC			86-99	NPS
2003	Raritan Water Region: 48 Streams	FC			69-97	NPS
2004	*Delaware River: Zones 2-5	PCBs				PS/NPS
2004	Atlantic Water Region: 3 Streams	FC			32-89	
2004	Clove Acres Lake and Papakating Creek					
	Clove Acres Lake	TP		2675.9	77	NPS
	Papakating Creek	TP		7190.9	31	NPS
2004	Cooper River Watershed: 4 Streams and 2 Lakes					
	<i>Kirkwood Lake (from 2003 TMDL)</i>	<i>TP</i>		<i>380</i>	<i>84</i>	<i>NPS</i>
	Evans Pond and Wallworth Lake	TP		532	92.9	NPS
	Cooper River Lake	TP		2110	89	NPS
	North Branch Cooper River	TP		693	88	NPS

	Cooper River Mainstem	TP		505	88	NPS
2004	Greenwood Lake	TP		3895	43	NPS
2004	Pequannock River: 9 Segments	Temperature		Passing flow, reservoir release temperatures and riparian restoration specified		NPS
2004	Wallkill River and Papakating Creek					
	WAL 1	Arsenic	7.3	0.030		NPS
	WAL 2	Arsenic	8.3	0.035		NPS
	WAL 3	Arsenic	3.4	0.041		NPS
	WAL 4	Arsenic	6.2	0.053		NPS
	WAL 5	Arsenic	10.8	0.126		NPS
	PAP	Arsenic	2.0	0.033		NPS
2005	Atlantic Coastal Water Region: 2 Streams	FC			89-91	NPS
2005	Northwest Water Region: 10 Streams	FC			69-95	NPS
2005	Northeast Water Region: 2 Streams	FC			92-96	NPS
2005	Lower Delaware Water Region: 3 Streams	FC			80-98	NPS
2005	Raritan Water Region: 4 Streams	FC			46-98	NPS
2005	Swartwood Lake	TP		1461	57	NPS
	Swartwood Lake	Fish Community				
2005	Manasquan River Watershed: 2 Streams					
	Long Brook	TP		207.6	57.1	NPS
	Manasquan	TP		4392	61.3	NPS
2005	Atlantic Coastal Water Region: 3 Streams					
	Shark River-Tinton Falls	TP		244.4	54.1	NPS
	Shark River-Neptune	TP		464.3	73.7	NPS
	Metedeconk River	TP		358.4	84.9	NPS

2005	Northeast Water Region: 3 Streams					
	Coles Brook	TP		2566.41	46	NPS
	Pascack and Musquapsink	TP		5871.02	21.43	NPS
2005	Northwest Water Region: 7 Streams					
	Black Creek (2 segments) and Wallkill	TP		1795	50	NPS
	Wawayanda	TP		5170	73	NPS
	Lockatong Creek	TP		1114	86.9	NPS
	Wickecheoke Creek (2 segments)	TP		3409	56	NPS
2005	Lower Delaware Water Region: 5 Streams					
	Barrett Run	TP		380	91	NPS
	Cohansey River (defer to Sunset Lake reductions)	TP		2500	92	NPS
	Big Timber Creek (defer to Blackwood Lake reductions)	TP		1200	88	NPS
	Oldmans Creek	TP		1874.5	80	NPS
	Blacks Creek	TP		1489.8	67.4	NPS

*TMDLs established by EPA

Nonpoint Source Program Activity Measures

The EPA has created Program Activity Measures (PAMs) for all states to report progress and document the success of their nonpoint source pollution control programs. PAMs 1-5 below articulate the federal reporting requirements and New Jersey's progress to date for the reporting period.

PAM 1: Waterbodies identified by the State of New Jersey (in 2000 or subsequent years) as being primarily nonpoint source-impaired that will be partially or fully restored (cumulative).

Although there is much more work to be done, New Jersey continues to be a leader in environmental protection through ground-breaking legislation; partnerships with other

state agencies, watershed associations, volunteer monitoring groups, and local government agencies; and on-the-ground implementation of watershed restoration plans and TMDL implementation plans. But because the nature of stream restoration is a long-term process with tangible results demonstrated through monitoring taking possibly many years to manifest, we can not yet provide for EPA a hard number of waterbodies identified by the State of New Jersey as being partially or fully restored as a direct result of 319(h) project implementation. What we can provide is the number of delistings in 2004 as a whole: 362; and the number of waterbodies delisted that were previously impaired due to pollutants commonly associated with nonpoint source pollution such as temperature, phosphorus, pH, dissolved oxygen and pathogens that are now fully restored: 49. The latter 49 delistings are outlined in the chart below.

2004 303(d) LIST DELISTINGS				
Region	WMA	Station Name/Waterbody	Site ID #	Parameters Delisted
Northeast	06	Whippany River near Pine Brook	01381800, 6-WHI-2	Dissolved Oxygen
Atlantic Coast	15	Skulls Bay	Skulls Bay-1 thru 5	Dissolved Oxygen
Atlantic Coast	15	Reeds Bay	Reeds Bay-1 thru 8	Dissolved Oxygen
Northeast	06	Passaic River near Millington	01379000, EWQ0224, 6-SITE-2, 6-PAS-1	Dissolved Oxygen
Atlantic Coast	14	Mullica River Estuary	2005, 2002A	Dissolved Oxygen
Atlantic Coast	13	Manahawkin Bay	Manahawkin Bay-1 thru 10	Dissolved Oxygen
Atlantic Coast	13	Little Egg Harbor	Little Egg Harbor-1 thru 4	Dissolved Oxygen
Atlantic Coast	14	Little Bay	Little Bay-1, 2	Dissolved Oxygen
Atlantic Coast	14	Great Bay	Great Bay-1 thru 6	Dissolved Oxygen
Lower Delaware	18	Cooper River at Haddonfield	01467150, 01467140, 18-CO-4 (included in 01467150, 01467140, 18-CO-4 in 2004)	Dissolved Oxygen
Atlantic Coast	15	Absecon Bay	Absecon Bay-1 thru 15	Dissolved Oxygen
Atlantic Coast	14	Bass River E Br near New Gretna	01410150, 14-EBR-1	Dissolved Solids
Northwest	01	Upper Mohawk Lake-01	Upper Mohawk Lake	Fecal Coliform

Northwest	01	Tomahawk Lake-01	Tomahawk Lake (Kiddie Lake Area) and (Large Lake Area)	Fecal Coliform
Northwest	02	Summit Lake-02	Summit Lake	Fecal Coliform
Northwest	01	Seneca Lake-01	Seneca Lake	Fecal Coliform
Raritan	08	Round Valley Reservoir-08	Round Valley Reservoir	Fecal Coliform
Northeast	06	Rickabear Lake-06	Lake Rickabear Beach	Fecal Coliform
Lower Delaware	19	Presidential Lakes-19	Presidential Lake, GBIPRESU	Fecal Coliform
Northeast	03	Pines Lake-03	Pines Lake South and West	Fecal Coliform
Lower Delaware	19	Pine Lake-19	Main Lake Pine Colony Club	Fecal Coliform
Northeast	03	Packanack Lake-03	Packanack Lake East and West	Fecal Coliform
Lower Delaware	17	Old Cedar Lake-17	Old Cedar Lake	Fecal Coliform
Northeast	03	Morse Lake-03	Morse Lake POA, Morse Lake	Fecal Coliform
Northeast	03	Montclair YMCA Near Beach and Far Beach	Montclair YMCA Near Beach and Far Beach	Fecal Coliform
Northeast	03	Lindy Lake-03	Lindy Lake Association	Fecal Coliform
Atlantic Coast	15	Lenape Lake -15	Lenape Lake	Fecal Coliform
Lower Delaware	19	Lakeside	Lakeside	Fecal Coliform
Atlantic Coast	16	Lake Nummy-16	Lake Nummy, Belleplain SF, Lake Nummy-Center, Left, and Right	Fecal Coliform
Atlantic Coast	14	Lake Mo-Li-Th-Ma-14	Camp Haluwasa, NPUHALUW	Fecal Coliform
Northwest	02	Heaters Pond-02	Heaters Pond	Fecal Coliform
Northwest	02	Glen Lake	Glen Lake	Fecal Coliform
Lower Delaware	17	Garrison Lake-17	Lake Garrison North and South	Fecal Coliform
Raritan	09	Carroll's Garden Lake	Carroll's Garden Lake	Fecal Coliform
Raritan	08	Camp Bernie	Camp Bernie	Fecal Coliform
Atlantic Coast	16	Big Timber Lake-16	Big Timber Lake	Fecal Coliform
Northwest	11	Wickecheoke Creek at Stockton	01461300, DRBCNJ0012	pH
Raritan	08	Rockaway Creek at Whitehouse	01399700, EWQ0369, 8-RO-1	pH

Raritan	09	Raritan River at Manville	01400500	pH
Raritan	08	Neshanic River at Reaville	01398000, 8-NE-1	pH
Atlantic Coast	12	Whale Pond Brook at Route 35 in Eatontown	01407617, 31	Phosphorus
Northwest	02	Wallkill River near Franklin	01367700, Wallkill C, 2-WAL-1	Phosphorus
Northwest	02	Wallkill River at Sparta	01367625, Wallkill A	Phosphorus
Raritan	08	Raritan River N Br near Raritan	01400000	Phosphorus
Atlantic Coast	12	Marsh Bog Brook at Squankum	01407997 (included in 01407997, 24 in 2004)	Phosphorus
Raritan	09	Manalapan Brook near Spotswood	01405440, EWQ0440, 9-MAN-2	Phosphorus
Northwest	01	Flat Brook near Flatbrookville	01440000, DRBC/NPS32	Temperature
Atlantic Coast	16	Corson Sound	Corson Sound-5	Total Coliform
Atlantic Ocean	Atlantic Ocean	Atlantic Ocean	Asbury Park Offshore-4, 8, 75, 83, 96, 109, 110, 116	Total Coliform

For a complete list of the total waterbodies delisted in 2004 go to:

www.state.nj.us/dep/wmm/sgwqt/wat/integratedlist/docs/Appendix%201D.pdf

The recent EPA guidance that municipal separate storm sewer systems (MS4's) are not to be considered nonpoint sources for the purposes of determining those waterbodies being primarily non-point source impaired makes it virtually impossible to conclude that any stream in New Jersey is impacted solely or dominantly by "nonpoint pollution sources". New Jersey is the most densely populated state in the nation and due to the state's urban and suburban character, nearly every impaired stream in the state has some form of stormwater outfall. As a result, this guidance from EPA doesn't fit New Jersey's NPS model. Many of these "stormwater" impacts respond equally well to BMPs typically employed in NPS control. To accommodate EPA's information requirements, our future strategy for reporting purposes is to assume that impaired waters in Tier A³

³ Tier A municipalities are defined as one of the following: 1.) are located entirely or partially within an urbanized area as determined by the 2000 census and have a population of at least 1,000; 2.) have a population density of at least 1,000 per square mile, and a population of at least 10,000 as determined by the 2000 census; or 3.) have a stormwater sewer system discharging directly into the salt waters of Monmouth, Atlantic, Ocean or Cape May Counties.

municipalities are point source dominated and those in Tier B⁴ municipalities without other NJPDES regulated discharges are primarily nonpoint source impacted.

Following is a list of TMDLs that were developed on impaired segments in New Jersey's Tier B municipalities.

TMDLS DEVELOPED ON IMPAIRED SEGMENTS IN NEW JERSEY TIER B MUNICIPALITIES						
W M A	Site/ Segment ID	Stream Segment	Municipalities in Streamshed	County	TMDL Name	WQMP
1	01443370	Dry Brook at Rt 519 near Branchville	Branchville Boro, Frankford Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
1	01443440	Paulins Kill at Balesville	Franklin Township, Fredon Township, Hampton Township, Lafayette Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
1	01443500	Paulins Kill at Blairstown	Blairstown Township, Franklin Township, Fredon Township, Frelinghuysen Township, Hampton Township, Hardwick Township, Knowlton Township, Stillwater Township	Warren	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Upper Delaware
1	01443600	Jacksonburg Creek near Blairstown	Blairstown Township	Warren	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Upper Delaware
1	01445500	Pequest River at Pequest	Allamuchy Township, Liberty Township, Oxford Township, White Township,	Warren	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Upper Delaware
1	01445900	Honey Run near Hope	Blairstown Township, Hope Township, Knowlton Township	Warren	TMDL for Fecal Coliform to address 10 streams in the Northwest Water Region	Upper Delaware
1	01446400	Pequest River at Belvidere	Belvidere Township, White Township,	Warren	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Upper Delaware
1	01455200	Pohatcong Creek at New Village	Franklin Township, Harmony Township, Washington Township, White Township,	Warren	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Upper Delaware
1	01457000	Musconetcong River near Bloomsbury	Hampton Boro, Bethlehem Township, Bloomsbury Boro, Franklin Township, Washington Township	Hunterdon	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Upper Raritan/ Upper Delaware
2	01367715	Wall Kill River at Scott Rd. at Franklin	Franklin Boro, Hamburg Boro, Hardyston Township, Lafayette Township, Vernon Township, Wantage Township,	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County

⁴ Every municipality not assigned to Tier A is assigned to Tier B.

2	01367715, Wallkill D, 2- WAL-2	Wallkill River at Scott Road in Franklin	Franklin Boro, Hamburg Boro, Hardyston Township, Lafayette Township,	Sussex	TMDL to Address Arsenic in the Walkill River and Papakating Creek in the Northwest Water Region	Sussex County
2	01367770	Wallkill River near Sussex	Hardyston Township, Vernon Township, Wantage Township,	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
2	01367770, 2-WAL-4	Wallkill River near Sussex	Hardyston Township, Vernon Township, Wantage Township,	Sussex	TMDL to Address Arsenic in the Walkill River and Papakating Creek in the Northwest Water Region	Sussex County
2	01367800	Papakating Creek at Pelletown	Frankford Township, Lafayette Township, Wantage Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
2	01367850	WB Papakating at McCoys Corner	Wantage Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
2	01367860	Papakating Creek near Sussex	Wantage Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
2	01367910	Papakating Creek at Sussex	Frankford Township, Lafayette Boro, Sussex Township, Wantage Township	Sussex	TMDL to address phosphorus in the Clove Acres Lake and Papakating Creek in the Northwest Water Region	Sussex County
2	01367910	Papakating Creek at Sussex	Sussex Boro, Wantage Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
2	01367910, 01367909, 2-PAP-1	Papakating Creek at Sussex	Frankford Township, Lafayette Boro, Sussex Boro, Sussex Township, Wantage Township	Sussex	TMDL to Address Arsenic in the Walkill River and Papakating Creek in the Northwest Water Region	Sussex County
2	01368000	Wallkill River near Unionville	Vernon Township, Wantage Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
2	01368000, Wallkill E, 2- WAL-5	Wallkill near Unionville	Franklin Boro, Hardyston Township, Ogdensburg Boro	Sussex	TMDL to Address Arsenic in the Walkill River and Papakating Creek in the Northwest Water Region	Sussex County
2	01368900	Wawayanda/Po- chuck River at Alt Rt. 515 in Maple Grange	Vernon Township	Sussex	TMDL for Total Phosphorus to address 7 stream segments in the Northwest Water Region	Sussex County
2	01368950	Black Creek near Vernon	Hardyston Township, Vernon Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
2	01368950, 01367620, Wallkill H	Black Creek near Vernon	Vernon Township	Sussex	TMDL for Total Phosphorus to address 7 stream segments in the Northwest Water Region	Sussex County
2	01667780	Papakating Creek near Wykertown	Frankford Township	Sussex	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Sussex County
2	Wallkill F	Black Creek at Rt. 94 and Rt. 517 in Vernon	Hardyston Township, Vernon Township	Sussex	TMDL for Total Phosphorus to address 7 stream segments in the Northwest Water Region	Sussex County
2	Wallkill G	Black Creek at	Vernon Township	Sussex	TMDL for Total Phosphorus to	Sussex

		Sand Hill Road in Vernon			address 7 stream segments in the Northwest Water Region	County
3	PQ1	Pequannock River above Pacock	Hardyston Township, Vernon Township	Sussex	TMDL to address temperature in the Pequannock River in the Northeast Water Region	Sussex County
8	01396550	Spruce Run At Newport	Glan Gardner Boro, Hampton Boro, Bethlehem Township	Hunterdon	TMDL for fecal coliform to address 48 streams in the Raritan Water Region	Upper Raritan
8	01396588	Spruce Run Near Glen Gardner	Union Township	Hunterdon	TMDL for fecal coliform to address 48 streams in the Raritan Water Region	Upper Raritan
8	01396660	Mulhockaway Creek At Van Syckel	Bethlehem Township, Union Township	Hunterdon	TMDL for fecal coliform to address 48 streams in the Raritan Water Region	Upper Raritan/ Upper Delaware
11	01458570	Nishisakawick Creek near Frenchtown	Franklin Township, Frenchtown Township, Alexandria Township, Kingwood Township	Hunterdon	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Upper Raritan/ Upper Delaware
11	01458710	Copper Creek near Frenchtown	Kingwood Township	Hunterdon	TMDL for fecal coliform to address 28 streams in the Northwest Water Region	Upper Delaware
11	01461282	Wickecheoke Creek near Sergenstville	Franklin Township, Delaware Township, Kingwood Township	Hunterdon	TMDL for Fecal Coliform to address 10 streams in the Northwest Water Region	Upper Raritan/ Upper Delaware
11	01461282	Wickecheoke Creek near Sergentsville	Delaware Township, Kingwood Township	Hunterdon	TMDL for Total Phosphorus to address 7 stream segments in the Northwest Water Region	Upper Raritan/ Upper Delaware
11	01461300 & DRBCNJ 0012	Wickecheoke Creek at Stockton	Franklin Township, Delaware Township, Kingwood Township, Delaware Township, Stockton Boro	Hunterdon	TMDL for Fecal Coliform to address 10 streams in the Northwest Water Region	Upper Raritan/ Upper Delaware
11	DRBC001 3	Lokatong Creek at Rosemont-Raven Rock Rd Bridge	Franklin Township	Hunterdon	TMDL for Total Phosphorus to address 7 stream segments in the Northwest Water Region	Upper Raritan/ Upper Delaware
11	DRBCNJ 0023	Hakihokake Creek at Bridge St Bridge in Milford	Alexandria Township, Bethlehem Township, Holland Township, Milford Boro, Union Township	Hunterdon	TMDL for Fecal Coliform to address 10 streams in the Northwest Water Region	Upper Raritan/ Upper Delaware
12	DRBC001 3	Lokatong Creek at Rosemont-Raven Rock Rd Bridge	Kingwood Township, Delaware Township	Hunterdon	TMDL for Total Phosphorus to address 7 stream segments in the Northwest Water Region	Upper Delaware
14	01409416	Hammonton Creek at Westcoatville	Hammonton Township, Mullica Township	Atlantic	TMDL for fecal coliform to address 31 streams in the Atlantic Coastal Water Region	Atlantic County
17	01412800	Cohansey River at Seeley	Shiloh Boro, Stow Creek Township, Upper Deerfield Township, Alloway Township, Hopewell Township, Upper Pittsgrove Township	Cumberland	TMDL for Total Phosphorus to address 5 stream segments in the Lower Delaware Water Region	Lower Delaware

17	01412800	Cohansey River at Seeley	Stow Creek Township, Upper Deerfield Township, Alloway Township, Hopewell Township, Upper Pittsgrove Township	Cumberland	TMDL for fecal coliform to address 27 streams in the Lower Delaware Water Region	Lower Delaware
17	01482500	Salem River at Woodstown	Pilesgrove Township, Upper Pittsgrove Township, Woodstown Boro	Salem	TMDL for fecal coliform to address 27 streams in the Lower Delaware Water Region	Lower Delaware
17	01482537	Salem River at Courses Landing	Mannington Township, Pilesgrove Township	Salem	TMDL for fecal coliform to address 27 streams in the Lower Delaware Water Region	Lower Delaware
18	01477440	Oldmans Creek at Jessups Mill	Elk Township, South Harrison Township, Pilesgrove Township, Upper Pittsgrove Township, Elk Township	Gloucester	TMDL for fecal coliform to address 27 streams in the Lower Delaware Water Region	Tri-County
18	01477510	Oldmans Creek at Porches Mill	South Harrison Township, Woolwich Township, Pilesgrove Township, Upper Pittsgrove Township	Gloucester	TMDL for Total Phosphorus to address 5 stream segments in the Lower Delaware Water Region	Tri-County
18	01477510	Oldmans Creek at Porches Mill	South Harrison Township, Woolwich Township, Pilesgrove Township	Gloucester	TMDL for fecal coliform to address 27 streams in the Lower Delaware Water Region	Tri-County
20	01464380	North Run at Cookstown	New Hanover, North Hanover	Burlington	TMDL for Fecal Coliform to address 3 streams in the Lower Delaware Water Region	Tri-County
20	01464504	Crosswicks Creek at Groveville Road	Chesterfield Township, North Hanover Township, Upper Freehold Township, Plumsted Township	Burlington	TMDL for fecal coliform to address 27 streams in the Lower Delaware Water Region	Tri-County
20	01464527	Blacks Creek at Chesterfield - Georgetown Rd	Chesterfield Township, North Hanover Township	Burlington	TMDL for Total Phosphorus to address 5 stream segments in the Lower Delaware Water Region	Tri-County

Below is a list of impaired segments in New Jersey's Tier B municipalities that have watershed restoration plans developed:

WATERSHED RESTORATION PLANS DEVELOPED FOR IMPAIRED SEGMENTS IN NEW JERSEY TIER B MUNICIPALITIES		
WMA	HUC	PLAN NAME
1	02040105160050, 40	Watershed Restoration and Protection Plan for the Musconetcong Watershed- Hampton to Bloomsbury
1	02040105030020	Swartwood Lake Regional Stormwater Management Plan

2	02020007020010, 20, 30, 40, 50, 70	Watershed Restoration Plan for the Papakating Creek and the Surrounding Watershed
2	02020007020060	Watershed Restoration Plan for Clove Acres Lake and the Surrounding Lakeshed
2	02020007040020, 10	Black Creek Watershed Restoration, Protection, and Regional Stormwater Management Plan
8	02030105020070	Development of a Watershed Protection Plan for the Sidney Brook Watershed
8	02030105030010, 20, 30, 40, 60	Neshanic River Watershed Restoration Plan
11	02040105210010, 20	Watershed Protection Plan for the Alexauken Creek Watershed
11	02040105200010, 20, 30, 40, 50, 60	Watershed Restoration and Protection Plan for the Lockatong and Wickecheoke Creek Watersheds
17	02040206030010	Watershed Restoration Plan for the Upper Salem River (Phases 1 and 2)
17	02040206080010, 20	Watershed Restoration Plan for the Upper Cohansey River Watershed
18	02040202150010, 20, 30, 40	Development of a Regional Stormwater Management Plan for the Raccoon Creek
20	02040201100010, 40	Assiscunk Creek Headwater Restoration and Protection Plan

Given the work described above, and the progress reported in the sections below, we fully expect to achieve water quality improvements short-term and ultimately restored water bodies in the long-term future as we continue to implement watershed restoration and protection plans and TMDLs through the MS4 program, Wastewater Management Planning program, the 604(b) grant program, and 319(h) and Corporate Business Tax (CBT) watershed funding programs. Restoration and protection also depend on continued enforcement of the Stormwater Management and Water Quality Management Planning rules; work with stakeholder groups and other partners, and outreach and education across the State of New Jersey.

PAM 2: Reduction in amount of total sediment loadings (in tons)

Grants Reporting and Tracking System (GRTS) entries for the projects that performed implementation work during calendar year 2004 and/or federal fiscal year 2005 represent a total cumulative load reduction of 86.1 tons/yr of sediment. See table below.

PAM 3: Reduction in amount of total nitrogen loadings (in pounds)

GRTS entries for the projects that performed implementation work during calendar year 2004 and/or federal fiscal year 2005 represent a total cumulative load reduction of 455.1 lbs/yr of nitrogen. See table below.

PAM 4: Reduction in amount of total phosphorus loadings (in pounds)

GRTS entries for the projects that performed implementation work during calendar year 2004 and/or federal fiscal year 2005 represent a total cumulative load reduction of 85.3 lbs/yr of phosphorus. See table below.

A breakdown by project of the reductions reported in PAMs 2-4 above is included in the table below.

GRITS NPS REDUCTIONS							
Project Number	Waterbody	Location	BMP	N Reduction lbs/yr	P Reduction lbs/yr	Sediment Reduction tons/yr	Funding Source
RP01-071	Cole's Brook	Hackensack	Riparian Buffers	5.7	2.9	3.4	319(h)
RP01-087	Cooper River Lake	Collingswood	Wetland Creation	30	9	-	319(h)
RP01-100	Woodbury Creek		Streambank & Shoreline Protection	12.8	6.4	7.5	319(h)
RP01-101	Dennis Creek Brook		Streambank & Shoreline Protection	0.1	0.1	0.1	319(h)
RP03-009	Rancocas Creek Tributaries	Moorestown	Urban Grassed Swale	23	8	-	319(h)
RP03-039	Powder Mill Pond	Franklin Township	Streambank & Shoreline Protection	21.9	11	11	319(h)
RP04-013	Lake Alberta	Neptune	Oil & Grit Separator	285	23	-	319(h)
RP04-003	Pequannock River		Riparian Buffers -Vegetative	15.3	7.7	9	319(h)
RP03-010	Pompeston Creek		Streambank & Shoreline Protection	45.4	10.2	4.9	319(h)
RP02-083	Van Saun Mill Brook		Riparian Herbaceous	0.2	0.1	0.1	319(h)

			Cover				
RP02-082	Van Saun Mill Brook		Urban Vegetated Filter	0.2	0.1	0.1	319(h)
RP03-017	Wallkill		Riparian Buffers - Streambank Protection	13.5	6.8	5.9	319(h)
RP02-075	Whippany River Watershed	Mendham Township	Water & Sediment Control Basin	0	0	0	319(h)

PAM 5: Number of watershed-based plans supported under State Nonpoint Source Management Programs since the beginning of FY '02 that have been substantially implemented.

None of New Jersey's watershed-based plans have been substantially implemented due to significant funding limitations. Some watershed-based plans are not even completed yet. However, there are several plans on which implementation has been initiated and they are outlined in the chart below.

Please also see the section entitled "Case Studies" beginning on page 32 for more detailed information highlighting the Wreck Pond, Lake Hopatcong and Rockaway River Plans and the projects that have begun to implement those plans.

WATERSHED-BASED PLANS DEVELOPED 2002-2006					
RP #	SFY	Project Title	Anticipated Completion Date*	Grantee	Amount (\$)
RP02-074	2002	Beaver Brook/Hibernia Brook Stormwater Management Plan	January 2006	Morris County Planning	74,840
RP02-085	2002	Delaware and Raritan Canal Tributary Assessment and NPS Management	Completed July 2005	New Jersey Water Supply Authority	61,215
RP04-001	2003	Swartwood Lake Regional Stormwater Management Plan	July 2007	Swartwood Lake and Watershed Association	65,000
RP04-005	2003	Regional Stormwater Management Plan for Troy Brook	March 2006	Rutgers Cooperative Extension	213,400
RP04-008	2003	Development of a Regional Stormwater Management Plan for	December 2006	Camden and Gloucester	637,174

		the Raccoon Creek		County Soil Conservation Districts	
RP04-010	2003	Regional Stormwater Management Plan for Robinson's Branch	March 2006	Rutgers Cooperative Extension	291,124
RP04-011	2003	Stormwater Management Plan for the Cedar Grove (Al's) Brook Watershed	March 2006	Franklin Township	150,000
RP04-016	2003	Watershed Restoration Plan for the Upper Salem River - Phase I	March 2006	Salem County Soil Conservation District	63,220
RP04-081	2004	Lake Characterization and Restoration Plan for Greenwood Lake, Passaic County, New Jersey	November 2006	West Milford Township	152,330
RP04-082	2004	Regional Stormwater Management Plan for the Deal Lake Watershed for the Purpose of Managing Existing and Future Stormwater Impact	July 2006	Deal Lake Commission c/o Borough of Allenhurst	99,400
RP04-083	2004	Many Mind Creek Regional Stormwater Management Plan	October 2006	Atlantic Highlands Envrmntl. Commission	87,833
RP04-084	2004	A Proposal to Prepare a Regional Stormwater Management Plan for the Sourland Mountain Watershed	November 2006	East Amwell Township	92,470
RP04-085	2004	A Regional Stormwater Management Plan for the Devils, Shallow, Cedar and Cranbury Brooks Watershed	July 2008	Middlesex Planning Department	286,200
RP04-086	2004	Posts Brook Regional Stormwater Management Plan	March 2006	West Milford Township	144,872
RP04-087	2004	Regional Stormwater Management Plan for Pompeston Creek, Burlington County, New Jersey	February 2007	Rutgers, The State University of New Jersey	249,570
RP04-088	2004	A Regional Stormwater Management Plan for the Pleasant Run Watershed	October 2006	Readington Township	52,560
RP04-089	2004	Development of a Regional Stormwater Management Plan for the Upper Mantua Creek	July 2007	Camden County SCD	503,065

RP05-079	2005	Watershed Restoration Plan for the Upper Cohansey River Watershed	February 2008	Rutgers, The State University of New Jersey	310,640
RP05-081	2005	Budd Lake Watershed Restoration, Protection and Regional Stormwater Management Plan	September 2007	Mount Olive Township	393,994
RP05-082	2005	Watershed Restoration and Protection Plan for Lockatong and Wickecheoke Creek Watersheds, Hunterdon County, New Jersey	February 2008	New Jersey Water Supply Authority	237,290
RP05-083	2005	Black Creek Watershed Restoration, Protection, and Regional Stormwater Management Plan (including the 9 minimum components)		Vernon Township Department of Health & Human Services	385,674
RP05-084	2005	Watershed Protection Plan for the Alexauken Creek Watershed (including the 9 minimum components)		West Amwell Environmental Commission	239,300
RP05-086	2005	Preakness Brook Restoration, Protection and Regional Stormwater Management Plan (including the 9 minimum components)		William Patterson University	408,586
RP05-088	2005	Watershed Restoration Plan for the Papakating Creek and the Surrounding Watershed (including the 9 minimum components)		Wallkill River Watershed Management Group	168,850
RP05-090	2005	Watershed Restoration Plan for Clove Acres Lake and the Surrounding Lakeshed (including the 9 minimum components)		Wallkill River Watershed Mngmnt. Group	138,050
RP05-101	2005	Watershed Restoration Plan for the Upper Salem River Watershed (including the 9 minimum components)		Cumberland/Salem County SCD	313,400
	2006	Assiscunk Creek Headwater Restoration and Protection Plan (including the 9 minimum components)		Burlington County Bridge Commission	362,230
	2006	Neshanic River Watershed Restoration Plan (including the 9 minimum components)		NJIT	435,715

	2006	Mingamahone and Marsh Bog Brook Watershed Restoration and Protection Plan (including the 9 minimum components)		Manasquan River Watershed Association	178,500
	2006	Development of a Watershed Protection Plan for the Sidney Brook Watershed (including the 9 minimum components)		Union Township Envrnmntl. Commission	237,362
	2006	Tenakill Brook Watershed Restoration Plan (including the 9 minimum components)		Rutgers Cooperative Extension Water Resources Program	303,200
	2006	Musquapsink Brook Watershed Restoration Plan (including the 9 minimum components)		Rutgers Cooperative Extension Water Resources Program	317,955
	2006	Watershed Restoration and Protection Plan for the Musconetcong Watershed - Hampton to Bloomsbury (including the 9 minimum components)		North Jersey Resource Conservation and Development Council, Inc.	297,191
N/A		Refined Phosphorus TMDL and Restoration Plan for Lake Hopatcong and Lake Musconetcong (CBT-funded)	October 2006	Princeton Hydro, LLC.	\$94,000
N/A		Upper Rockaway River Priority Stream Segment Plan	January 2006	Rockaway River Watershed Cabinet	25,000
N/A		Wreck Pond CBT-funded Regional Stormwater Management Plan	December 2006	Monmouth County	350,000
N/A		Pequannock Priority Stream Segment Plan	December 2004	Pequannock River Coalition	25,000

* Some newer plans do not have estimated completion dates yet.

NJDEP's recent priority for regional stormwater management plans was to implement the New Jersey 2000 Statewide NPS Strategy.



Harrow Run Biofilter Installaion, Cumberland County
Funding - National Fish & Wildlife Foundation
Years 2004 - 2006

Partners: DEP, Rutgers Cooperative Extentsion, Lowes Nursery,
Cumberland/Salem Soil Conservation District

PROJECT IMPLEMENTATION INITIATED FOR THE WATERSHED-BASED PLANS

RP #	SFY	Project Title	Grantee	Amount (\$)
RP05-087	2004	Hurd Park Goose Management and Shoreline Restoration Project (goose management plan and implementation, approximately 3,000 linear feet of shoreline stabilized, approximately 1.5 acres of buffer installed)	Rockaway River Watershed Cabinet	210,000
RP05-080	2005	*Implementation of Nonpoint Source Management Measures to Reduce the Phosphorus and Sediment Loads Entering Lake Hopatcong (installation of stormwater BMPs in Hopatcong and Jefferson) (Lake Hopatcong)	Lake Hopatcong Commission	844,500
	2006	Implementation of Golf Course Best Management Practices at Bey Lea Municipal Golf Course (construction of vegetative buffers along four in-line ponds) (Barnegat Bay National Estuary Program)	Dover Township	290,490

	2006	Wetland Enhancement and Riparian Corridor Restoration at the Ocean County Vocational Technical School, Dover Township Campus (reestablishment of vegetative buffer and enhancement of previously disturbed wetland) (Barnegat Bay National Estuary Program)	Dover Township	144,843
	2006	Swartswood State Park Implementation Project (parking lot retrofit to reduce runoff, including stormwater BMPs such as biofiltration islands)	Division of Parks and Forestry - Swartswood State Park	255,000
	2006	**Demonstration Project to Support TMDL Implementation for the Pequannock River (bypass of impoundment at Westbrook, project to address temperature impairment) (Pequannock River Temperature TMDL)	Pequannock River Coalition	24,500
N/A	2006	Wreck Pond CBT-funded Stormwater Retrofit Project	Monmouth County	1,000,000***

* The expansion of the sewer service area in Lake Hopatcong was halted due to treatment plant capacity and cost issues, pending finding a more feasible and cost-effective solution to the failing septic systems, which were identified as major sources in the TMDL.

** Regulatory implementation was also initiated by placing Pequannock River temperature and passing flow requirements recommended by the TMDL in the allocation permit.

*** Funding is anticipated to be available in the summer of 2006, subject to Joint Budget Oversight Committee approval.

Case Studies

Wreck Pond

Wreck Pond is an approximately 0.72 mile long tidal impoundment, encompassing approximately 50 acres with an additional 20 acres of impoundment extending into the Black Creek. It is located along the Atlantic Ocean between the Borough of Spring Lake and the Borough of Sea Girt, Monmouth County, New Jersey. Wreck Pond is an important resource for the aesthetic and recreational value that it provides or potentially could provide the residents of New Jersey.

In recent years, the pond has been seriously affected by sedimentation, nutrient loading, fecal bacteria contamination, and algae and weed growth, all of which impair the use of

the pond. Also, very importantly, the Wreck Pond outfall to the Atlantic Ocean negatively affects water quality along the ocean beachfront in the vicinity of the discharge. Due to the long history of elevated pathogen concentrations near the outfall during and after rainfall events, the Monmouth County Health Department has instituted precautionary beach closings immediately adjacent to the discharge when 0.1 inch of rainfall occurs in a 24-hour period. Wreck Pond's discharge is the source of most of New Jersey's ocean beach closings accounting for 45 of the 52 ocean beach closings during the 2005 summer bathing season.



Wreck Pond, Watershed Management Area 12

In 2004, the NJDEP developed a preliminary water quality restoration plan for Wreck Pond centered around four strategies: 1) extension of the Wreck Pond outfall structure, 2) management of wildlife in and around Wreck Pond, 3) implementation of a regional stormwater management plan in the Wreck Pond watershed, and 4) dredging of Wreck Pond and Black Creek. Each of these measures is described more fully below.

1) Extension of the Wreck Pond outfall is required for two reasons. First, the extension would reduce the amount of sand that is imported into the pond from the ocean during flood tides. The import of sand into the pond results in the formation of a sand bar that blocks the pond outfall, thereby reducing circulation in the pond and increasing sedimentation and the concentration of pollutants. The NJDEP has periodically dredged the sand bar to promote circulation and reduce stagnation within the pond. Secondly, the extension of the outfall will result in immediate water quality improvement in the near shore beach area because of increased mixing and dilution of the pond's discharge. Extension of the Wreck Pond outfall was completed in 2005 at a cost of \$6,200,000. The water quality effects of the outfall extension on the beach areas will be monitored during the 2006 summer beach bathing season.



Outfall from Wreck Pond Into the Atlantic Ocean

2) Wreck Pond hosts a large congregation of mute swans and Canada Geese. Historically these flocks have been encouraged to remain at the pond by the well-intentioned, but misinformed, residents and visitors that feed them. These resident waterfowl contribute significant pathogen and nutrient loads to the pond. In 2003 and 2004 the NJDEP funded a non-lethal waterfowl harassment program intended to dissuade the waterfowl from congregating at the pond and egg-addling programs aimed at reducing the waterfowl population. The harassment program, however, was discontinued for extended periods during the bathing season to protect least tern (an endangered species) nesting. Another concern with the harassment program is that it probably doesn't actually solve the water quality problems associated with the waterfowl, but merely temporarily transfers the problem to other nearby impoundments.

The long-term plan for managing the waterfowl population includes strict enforcement of a wildlife feeding ordinance, as required by the NJPDES Municipal Separate Storm Sewer System Permit and habitat alteration, including margin plantings, which will make the pond less attractive to waterfowl. Habitat alteration is estimated to cost between \$250,000 and \$500,000 but cannot be completed until pond-dredging plans are finalized (see discussion below).

3) To ensure the durability of the Wreck Pond restoration efforts, it is necessary to address all potential pathogen, nutrient and sediment sources in the watershed. Wreck Pond is fed primarily by two streams: Black Creek to the northwest and Wreck Pond Creek to the southwest. The total Wreck Pond watershed consists of approximately 9,900 acres. Stormwater runoff reaching the lake is an important factor affecting water quality.

There are a variety of land uses in the watershed. Overall, the predominant land use is residential (especially in the downstream portion of the watershed). However, there are other uses. In the headwaters area, there is a commercial sand, gravel and mulch business adjacent to Monmouth County Airport along Route 34; a golf course opposite the airport off Route 34; industrial/ shipping/ receiving businesses along Route 34; ballfields; a school (Wall Township High School); a second golf course (along the headwaters of Black Creek); commercial/ business facilities along Route 71 and Route 35; and a cemetery.

The first step in the process of controlling all of these potential non-point sources is the development of a watershed protection and restoration plan that meets EPA's nine minimum elements, which in this case is called a regional stormwater management plan. The membership of the regional stormwater management plan committee is comprised of local officials from four municipalities that make up the watershed and representatives from Monmouth County, the Department of Environmental Protection and various community and environmental groups. To support plan development, a weather station has been installed in Wall Township and nine monitoring locations have been established at strategic locations throughout the watershed. Flow data is continuously collected at these stations as well as weekly water samples which are analyzed for Total Suspended Solids, Fecal Coliform and Enterococci. In addition, all streams within the watershed are being walked to evaluate conditions. This work will provide information for calibrated hydrologic, hydraulic and pollutant models, which are essential for proper planning. Ongoing work also includes additional nutrient sampling and a survey of farming practices being performed by the New Jersey Agricultural Experiment Station at Rutgers. This work is being done in close coordination with Najarian Associates who received the contract from Spring Lake Borough to study Spring Lake and Black Creek.

As the committee has been developing a long-term regional stormwater management plan, it was also asked to identify early implementation projects. To date the committee has identified nine projects, including riparian buffer replacements and stormwater best management practice retrofits, with a total estimated cost of over \$13,000,000. The Wreck Pond regional stormwater management plan is being funded by the NJDEP with \$350,000 from the Corporate Business Tax (CBT) Watershed Fund. The final regional stormwater management plan is expected to be completed by the end of 2006. During 2006, the Department also expects to contract for an additional \$1,020,000 of work to begin construction of the identified early implementation projects.

4) Wreck Pond is the recipient of sediment, pathogen and nutrient loads from its 9,900-acre watershed. Over time poor circulation and the accumulation of sediment have reduced the pond's depth from eight feet to eighteen inches or less. Pathogen analysis of the sediment in 1999 revealed that there were high internal loads of fecal coliform ranging from 300 to 1.6 million colonies per 100 milliliters. During rainfall events, some of this sediment and this internal pathogen load, as well as stormwater from the watershed, is carried out of the pond and into the surf in the vicinity of recreational bathing beaches. Restoration of the pond to its original depth will require the dredging

and disposal of some 500,000 cubic yards of sediment. In 2004, the sediment in the pond was tested for other pollutants of concern. The sediment test results indicate low levels of contamination typically observed in impoundments receiving urban and suburban runoff. However, the dredged material is not of appropriate grain size or quality to be used as typical beach fill. Two factors complicate dredging the pond: the lack of land around the pond for staging and dredged material handling and the lack of nearby suitable disposal options. Several alternatives for dredged material disposal are being evaluated, including beneficial reuse as daily cover or grading material at landfills in Monmouth and Ocean Counties. The current estimated cost for dredging, transport and disposal is \$13,200,000. However, dredging of the pond absent the completion of the regional stormwater management plan and an implementation schedule for that plan would only yield temporary water quality benefits.

As demonstrated by this case study, water quality restoration requires not only a partnership among various government agencies and interest groups, but also will require a large commitment of capital: \$33,000,000 in this one 9,900-acre watershed alone, and that number could increase based on the final regional stormwater management plan recommendations.

Lake Hopatcong

Lake Hopatcong and its associated tributaries, Lake Shawnee and its sub-watersheds, form the headwaters of the Upper Musconetcong River and its watershed. The river enters Lake Musconetcong approximately 1.28 miles from the Lake Hopatcong dam. At nearly 2,700 acres in size, Lake Hopatcong is New Jersey's largest inland (non-tidal) lake, with 38 miles of shoreline.

Not only is the lake a major year-round recreational center for 500,000 annual visitors, but its watershed also hosts a resident population of over 65,000 people in 2 counties (Sussex and Morris) and four municipalities (the Boroughs of Hopatcong and Mt. Arlington and the Townships of Jefferson and Roxbury). The recreational use, water quality and the ecological condition of the lake are impaired by excessive aquatic weed growth and algal blooms. These conditions are the result of high phosphorus loads entering the lake from surrounding land uses. The lake is also on the Department's 2004 Integrated Water Quality Monitoring and Assessment Report for failing to achieve NJ Surface Water Quality Standards (SWQS) for fecal coliform and fishery community health and for the mercury concentrations in its fish.

The Lake Hopatcong Commission (LHC) was created in 2001 by the Lake Hopatcong Protection Act (N.J.S.A. C58:4B). The LHC works cooperatively with governmental bodies and the public in the Lake Hopatcong watershed to monitor, protect and restore the lake and to educate the community on lake restoration efforts. Four towns (Hopatcong and Mt. Arlington Boroughs, and Roxbury and Jefferson Townships) in two counties (Sussex and Morris) surround the lake. All four local towns and both counties are represented on the LHC along with a representative from the Department of Environmental Protection. All members are dedicated to improving the water quality in

the lake and are working toward the common goal of restoring the water quality in Lake Hopatcong through the reduction of phosphorus. There are several projects and initiatives underway to achieve this goal.



Aerial View of Lake Hopatcong

In 2003, the NJDEP completed a total maximum daily load (TMDL) for total phosphorus (TP) in Lake Hopatcong. As identified in the TMDL, the major sources of phosphorus loading to Lake Hopatcong are stormwater surface runoff, failing septic systems and the established internal load accounting for 38 percent, 33 percent and 12 percent of the phosphorus load respectively. The TMDL establishes a target phosphorus load for Lake Hopatcong, which will require a 41% reduction in phosphorus loading to the lake. To further refine the TMDL, stormwater outfalls around the Lake were mapped and targeted monitoring was performed to assess the relative contribution of various sub-drainage areas. As part of the refined TMDL, a municipal-based Restoration Plan was developed

for the Lake Hopatcong watershed, which outlined best management practices to be implemented in those sub-drainage areas with the highest phosphorus loads.

In State Fiscal Year (SFY) 2006, the NJDEP provided a federal 319(h) grant under the Clean Water Act Section 319(h) to the Lake Hopatcong Commission to address the highest priority stormwater “hot spots” as identified in the refined TMDL and Restoration Plan. The funding (\$844,500) was provided to implement stormwater Best Management Practices (BMPs) and to install retrofits in the two municipalities contributing the largest stormwater load (Borough of Hopatcong and Jefferson Township). The BMPs to be implemented are estimated to reduce a minimum of 18.4 kgTP/yr and achieve a 2.4% reduction in the phosphorus originating from stormwater. There will be monitoring conducted prior to installation to provide background concentrations and calculated loads, and a post-installation monitoring program to provide details in the reduction achieved through this implementation project. The Lake Hopatcong Commission and represented municipalities are also undertaking additional stormwater controls to help reduce the phosphorus load associated with their individual stormwater loads. Several of the municipalities have incorporated specific sites for BMPs in their Municipal Stormwater Management Plans required under N.J.A.C. 7:14, Phase II Stormwater Rules. Other measures that the LHC and the municipalities have undertaken include shared services agreements to provide maintenance on municipal-owned drainage basins and inlets. Jefferson Township has also begun to install Vortex© stormwater treatment units at Prospect Point Road (near Woodport Avenue), New Jersey Avenue (near Chincopee) and West Shawnee Trail, areas identified in the Restoration Plan.

The Lake Hopatcong Commission also received a USEPA Targeted Watershed Initiative Grant (TWIG) for \$744,500 in 2006. This grant will fund several strategies to help address the phosphorus impairments in Lake Hopatcong, including: stormwater retrofits and BMPs for the next highest priority sub-basins within the watershed and documentation of the effectiveness and costs associated with installation and maintenance of the BMPs; an educational component that will enhance the success of behavioral and grassroots measures, especially those related to the application of lawn fertilizer; training of the Lake Hopatcong Commission staff for chemical and biological monitoring; and a pilot study on the phosphorus-removal capacity of an alternative on-site wastewater treatment system. The results of this study will be used to assess its phosphorus removal benefits relative to other locations within the watershed.

One educational initiative began in the summer of 2005 under the direction of volunteer commissioners and public. This initiative was a true grassroots push to inform people about the impacts of using fertilizer that contains phosphorus. Although all four municipalities have had no-phosphorus fertilizer ordinances for several years now the regulation by itself was not sufficient to curtail use. For a nominal amount of money to produce signs that coordinated with the website information on non-phosphorus fertilizer, there was a dramatic change in behavior as evidenced by the amount of non-phosphorus fertilizer sold at various local garden centers. A study conducted in Minnesota indicated that the change from phosphorus to non-phosphorus fertilizer reduced phosphorus-laden stormwater contributions by 20%.



Lake Hopatcong Before Weed Harvesting



Lake Hopatcong After Weed Harvesting

It is important to note the importance of working with local partnerships. The stormwater improvements are quite costly, especially since the lake shoreline area is predominately built out. If the outreach for non-phosphorus fertilizer, which is partially funded under the TWIG, continues to be successful and expands and if reductions are estimated at an order of magnitude less than the Minnesota achievements, this one educational initiative based on great partnerships would be very cost-effective.

Of the four municipalities surrounding the lake, the Township of Roxbury and the Borough of Mt. Arlington are sewered within the Lake Hopatcong watershed area. The septic contribution estimated in the TMDL and the Refined TMDL and Restoration Plan excludes the sewerage that has been undertaken in the Borough of Hopatcong, as the reports preceded the completion of the sewerage project. The Borough of Hopatcong has undertaken a three phased approach to sewerage. Phase I is complete and Phase II is expected to be completed by the end of the summer 2006. Phase I included Hopatcong Heights, Hopatcong Hills South, Point Pleasant, and much of Hopatcong Center. These areas drain to the Point Pleasant and Ingram Cove areas. The Phase I sewerage project has provided sewer service for 1,881 Equivalent Dwelling Units (EDU - service unit equal to a flow of 200 gallons per day) at a cost of \$21 million dollars. Phase II will encompass 160 EDUs and is scheduled to be completed by late 2006. Costs for Phase I and Phase II total \$54,600,000. The present capacity of the Musconetcong Sewerage Authority (MSA) sewage treatment plant is 4.31 million gallons per day (MGD), of which 2.64 MGD is already used or committed.

Based on stream studies in the receiving Musconetcong River, an increase in the authorized discharge is unlikely, therefore this leaves 1.67 MGD of available capacity at the plant. Completing the sewerage project around Lake Hopatcong in Jefferson Township will require 1.62 MGD. Over the past several years repeated applications have been filed to expand the sewer service area for the MSA sewage treatment plant to serve new development. Given the capacity constraints at the MSA treatment plant and the need to correct existing water quality impairment resulting from failing septic systems, the NJDEP is using the Water Quality Management Planning Process and the component Wastewater Management Planning process to ensure that the remaining capacity at the treatment plant is not allocated to serving new development outside of the existing adopted sewer service area.

The Township of Jefferson completed a Sewer Feasibility Study for the Lake Hopatcong Drainage Basin in 2001. The study indicated that the costs of sewerage would be approximately \$61,000,000. At this time, Jefferson Township has received funding through Clean Water Act Section 604(b) in the amount of \$84,265 for septic management for Lake Shawnee residents. Lake Shawnee is located completely within the New Jersey Highlands Preservation Area, is regulated under the Highlands Water Protection and Planning Act, and, as such, is not eligible to put sewers in the area, except for preservation of water quality.



Lake Hopatcong Weed Harvester

The funding will provide for education to homeowners; development of a septic ordinance; establishment of an Onsite Wastewater Management Entity (OWTE) (i.e. created by an ordinance of the Municipal Board of Health), which would administer the local management program with full authorization; an inventory/tracking process to document the location, age, current level of performance, and inspection and maintenance history of OWTS in the planning area; and monitoring to provide data quantifying water quality improvements.

A reduction of at least 35-40% of the existing phosphorus load entering Lake Hopatcong is anticipated as a result of the stormwater retrofit / Best Management Practices (BMP) projects funded through the TWIG and an existing 319(h) NPS grant, and the current sewerage of a large portion of the Borough of Hopatcong. The Borough of Hopatcong phased sewerage in conjunction with the 319(h) grant is expected to reduce phosphorus loadings from the Borough of Hopatcong by 95%. The Lake Hopatcong Commission, NJDEP representatives, and municipal and county representatives are meeting bi-annually to coordinate and track efforts on all levels to achieve the TMDL. However, it will take perseverance and commitment by the counties, municipalities, MSA, LHC, citizens groups and the NJDEP along with several years and millions of dollars to restore Lake Hopatcong to unimpaired status.

Rockaway River Priority Stream Segment Study

The Rockaway River Watershed Cabinet (RRWC), in partnership with TRC Omni Environmental Corporation (TRC Omni), were contracted through NJDEP to complete the Rockaway River Priority Stream Segment Study. This project focused on identifying nonpoint source pollutant sources to address TMDL requirements for fecal coliform in the Rockaway River. The partners were charged by NJDEP with evaluating nonpoint pollution sources, stormwater runoff issues, and potential sources of fecal coliform. Additionally, partners were to identify and specify future projects to achieve the required water quality improvements in the Rockaway River. Over the course of the project, three key documents were prepared:

- *Rockaway River Priority Stream Segment Study* (August 2004),
- *Quality Assurance Sampling Plan for Rockaway River Watershed Priority Stream Segment Assessment & Stormwater Impact Study* (May 2005), and
- *Pathogenic Indicator and Pollutant Track Down Evaluations for The Rockaway River Watershed Priority Stream Segment Assessment & Stormwater Impact Study* (January 2006).

For the *Rockaway River Priority Stream Segment Study*, partners first undertook an extensive literature and data review of previous studies for the Rockaway River. After reviewing available reports, partners evaluated and analyzed water quality data for the segment of Rockaway River in question. Available data was limited to four sampling events completed by NJDEP in 1998 in support of the 2002 *Integrated List of Waterbodies*. This data was supplemented with Stream Visual Assessment Protocol (SVAP) data collected by RRWC volunteers and TRC Omni staff. Partners compiled all data and characterized the portion of Rockaway River in question as a critical reach due to its transition from a relatively undeveloped forested drainage area to a developed urbanized corridor. Once defined as critical, partners identified gaps in data and pointed out preliminary relationships between fecal coliform levels and flow in the river.

In order to confirm initial concerns with stormwater, nonpoint pollution sources, and fecal coliform, partners prepared and implemented the *Quality Assurance Sampling Plan for Rockaway River Watershed Priority Stream Segment Assessment & Stormwater Impact Study* which resulted in the *Pathogenic Indicator and Pollutant Track Down Evaluations for The Rockaway River Watershed Priority Stream Segment Assessment & Stormwater Impact Study*. The project partners completed seven months of water quality sampling consisting of six ambient sampling events, three low flow events, two baseline storm events, one intensive storm event and one high flow event. In total, approximately 200 samples were collected and analyzed for fecal coliform and other key water quality parameters including total suspended solids (TSS), total dissolved solids (TDS), phosphorus, fecal streptococci, temperature, and pH.

The data from these sampling events was analyzed and showed distinctive trends. Data clearly indicates that during low flow and ambient conditions in the Rockaway River fecal coliform concentrations were not exceeding the water quality criteria except at the

most downstream sampling location. However, stormwater events showed drastic increases in fecal coliform, which regularly exceed 400 colonies/100ml SWQS criterion.

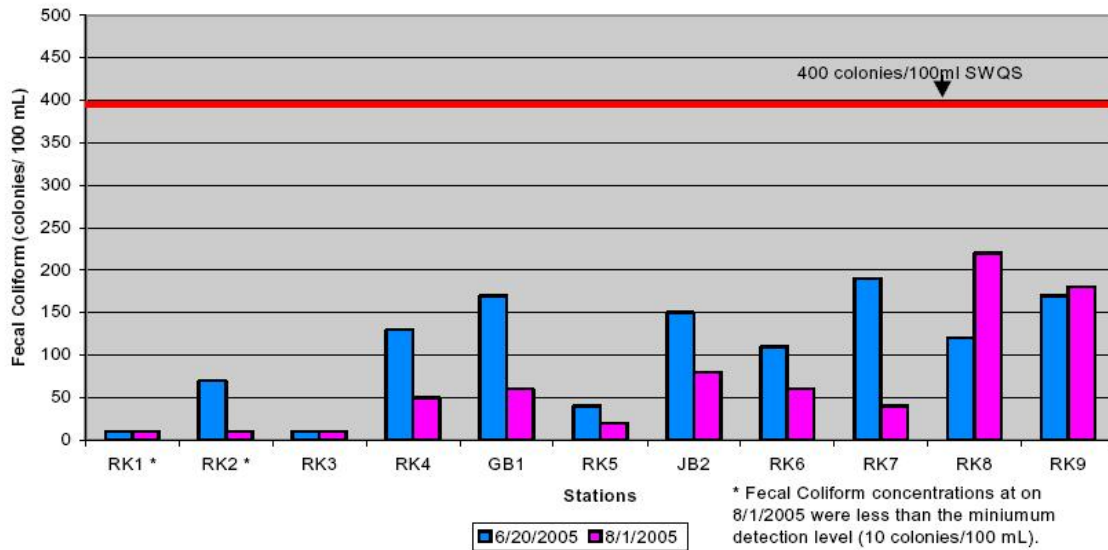


The Rockaway River transitions from a relatively undeveloped forested drainage area to a developed urbanized corridor

During these stormwater sampling events, it was noted that rarely did fecal coliform concentrations exceed criteria at the most upstream station. The primary sources of bacteria contributing to the water quality impairment were coming from the immediately surrounding lands and drainage areas within this 1-mile segment of the Rockaway River. This intensive analysis clearly identified high flow stormwater events, where runoff from areas immediately adjacent to the river is flowing directly into the river, as the primary sources of the fecal coliform impairment in this segment of the Rockaway River.

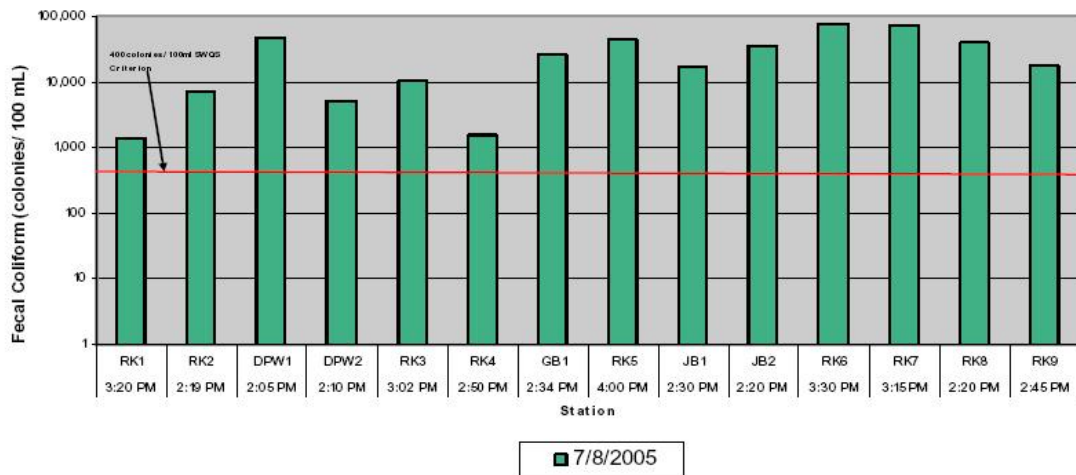
The results of the priority stream segment study provided detailed scientific data isolating areas where concentrations of nonpoint source pollutants are greatest in this reach of the Rockaway River.

**Fecal Coliform Concentration:
Low Flow Sample Events**



Graph illustrating fecal coliform concentrations during low flow sampling events. Sample locations presented upstream to downstream.

**Fecal Coliform Concentration:
Base Storm 1, Sample Period 3**



Graph illustrating fecal coliform concentrations during third sample period collected in the first stormwater event. The graph is a logarithmic scale. Sample locations presented upstream to downstream.

To address the identified problem of fecal coliform contamination, partners recommended several management strategies and implementation projects for consideration.

- Active implementation and enforcement of the requirements for street sweeping, pet waste cleanup, and a ban on waterfowl feeding in the communities of Dover and Wharton as set forth in New Jersey's Municipal Separate Storm Sewer System NJPDES Permit.
- Implementation of several stormwater BMP and restoration projects including:
 - Bowlby Pond and McKeel Brook drainage areas in Dover and Rockaway Township: These drainage areas have been disturbed by construction of the Rockaway Town Square Mall. Specifically, drainages that previously flowed through the area have been culverted and/or diverted. Restoration activities could include reconnecting the natural drainages, and/or day lighting (bringing a piped stream to the surface) or improving the outfall channel connection. These actions would enhance the system by reducing velocities and sediment entering the Rockaway River, restoring natural hydrology to Bowlby Pond and McKeel Brook, and greatly enhancing fish and wildlife populations in the area.
 - Treatment Wetland Construction and Floodplain Restoration along Green Pond Brook: This site is an approximately 3.9 acre parcel of land located on an active power line right-of-way in Wharton, near the intersection of Mount Pleasant Avenue and West Clinton (Route 15). The site is bordered on the northeast by the West Clinton Bridge, on the east by Green Pond Brook, on the south by the Rockaway River and a large forested wetland, and on the northwest by the roller rink parking lot. Currently, the area receives surface water runoff from the adjacent roller rink parking lot and the surrounding roads. It is assumed that the site historically was a forested floodplain associated with Green Pond Brook. The proposed restoration action at this site will include removal and off-site disposal of invasive species; excavation and removal of the root mat; installation of slope stabilizing, biodegradable filter fabric; and excavation of a series of wetland treatment ponds connected by one meandering channel. Native emergent vegetation would be planted in the restored floodplain to enhance fish and wildlife habitat and to reduce sedimentation of the downstream reaches. Similarly, the area between the restored emergent and open water wetlands and existing parking lot will be graded and planted with scrub-shrub vegetation.
- Prepare a regional stormwater management plan: The stormwater regulations provide for and encourage municipalities and interconnected urban regions to work together in planning for stormwater control through preparation of a Regional Stormwater Management Plan (RSWMP) (NJAC 7:8-3). A RSWMP can provide a better understanding of the impacts of surface runoff and stormwater flows that affect this reach of the Rockaway River. The RSWMP will be designed to comply with the NJDEP Stormwater Regulations and permitting requirements to be met by each

municipality. The plan would need to include Dover Town, Wharton Borough, Rockaway Township, Randolph Township, Mine Hill Township, Roxbury Township, and Jefferson Township.

Seaside Heights Stormwater Drainage System Nonpoint Source Pollution Elimination Project

In September 1999 sampling conducted by the NJDEP's Bureau of Marine Water Monitoring's Shellfish Program identified significant amounts of wet weather fecal coliform contamination in areas surrounding Barnegat Bay stormwater outfalls that originated from Seaside Heights. Preliminary investigations discovered that the source of the contamination was a storm drainage system located on Bay Avenue. In 2000 the Division of Watershed Management awarded a \$75,000 Clean Shores grant to the Borough of Seaside Heights to fund a Stormwater Drainage System Nonpoint Source Pollution Elimination Project. The grant provided for the mapping, camera inspection, testing and cleaning of the suspect stormwater drainage system with the ultimate goal of locating the source of the contamination.

From 2000 to late 2003 the borough engineer remapped, tested and negotiated a schedule for cleaning by the Ocean County Authority. The cleaning work began in late 2003 at the farthest reaches of the system and progressed toward the bay outfall. In late spring of 2004, while cleaning the 15" storm sewer on Blaine Avenue, several large blockages were found, which prevented the work from continuing. In October 2004 the line was inspected by camera and a number of sanitary sewer laterals (estimated to be 9) were found to cross directly through the storm sewer. The borough immediately began an investigation aimed at eliminating the potential cross connections. By August 2005 design work was completed and in October repair work was begun. By January 2006 the contractor had replaced approximately half of the sanitary laterals. Most were leaking and poorly built and were constructed to pass directly through the storm sewer. Elimination of the cross sections should be completed this year. The final phase of the grant project will be a resampling of the wet weather flow from the storm sewer.

Long Brook TMDL Update

Total phosphorus data collected from Long Brook at the Howell Road Bridge showed a direct relationship between increased flows and increased loadings. A site visit revealed a direct-runoff discharge channel emanating from an agricultural area to the sampling site. This represented the primary contribution of total phosphorus to the Long Brook at this location.

When notified, the Monmouth County Health Department contacted the Rutgers Cooperative Research & Extension whose agents did a follow-up to initiate remediation of the agricultural loading.

The Rutgers Extension agents contacted the farmer who complied with suggestions to:

- slightly regrade the fields and berm up the edge, and use staked hay bales to reduce run-off flow and the associated erosion potential to the stream;
- plant a buffer crop to intercept such flow, reduce velocity, and filter sediment and nutrients;
- conduct soil tests for fertility, especially phosphorus levels;
- switch from a 10-10-10 fertilizer to a 10-1-10 type blend (minimal phosphorus); and
- apply and incorporate fertilizer during periods of good weather to prevent fertilizer runoff.

The Rutgers Cooperative Research & Extension is optimistic that these practices will continue, and that all of the stream-side residents will also reduce their phosphorus applications to ensure that total phosphorus levels in Long Brook are in compliance.

Floatables Control

Clean Shores Program

The Clean Shores Program is responsible for the removal of wood, garbage and medical waste from tidal shorelines utilizing inmate labor. In 2005 the program removed 4.7 million pounds of floatables from 119 miles of shoreline bringing the total amount of wastes removed since 1989 to 109.4 million pounds. Cleaning up these wastes helps prevent the deleterious effects of marine debris upon recreational ocean bathing beaches and the coastal environment. The program is also responsible for building dune fencing and planting dune grass in several oceanfront communities and one state park. In an average year, cleanups are carried out in cooperation with 45 municipalities, seven county agencies, five private contractors, two correctional facilities, two state parks, one federal park and the Department of Corrections. The program is funded entirely from the sale of shore protection motor vehicle registration plates.



The sponsoring municipalities and state/federal parks provide support to the program and up-fronts the cost of the cleanup. The program in turn reimburses the sponsors for the cost of waste disposal and contracted services incurred during cleanup activities.

The Clean Shores Program is also responsible for data collection, analysis and documentation for the Recreational Bathing Lakes program.

Like the Cooperative Coastal Monitoring Program (CCMP) (the CCMP program, with the participation of local environmental health agencies, assesses coastal water quality and investigates sources of water pollution), the Clean Shores Program is responsible for collecting bacteriological sampling data from statewide bathing lakes. Data from this program is analyzed and compiled into a report for the Department of Health and Senior Services and submitted to the 305(b) report. Annually, the program coordinates with 28 local health agencies and 12 state parks.⁵



Adopt-a-Beach Program

Since 1993, Adopt-a-Beach volunteers have been cleaning up litter and debris from about 60 beaches, in the spring and in the fall of each year. The goal of this program is to foster a sense of stewardship of the state's coastal beaches. The twice a year activity encourages citizens to adopt a beach and become responsible for cleaning up debris and floatables which can become harmful to marine life. During the spring and fall cleanups conducted in 2003, over 1,000 volunteers from 60 groups collected more than 58,000 items of trash that would otherwise have become pollution to our coastal waters.

During the spring and fall cleanups in 2005, over 1,000 volunteers from 60 groups collected more than 30,000 items of trash. The amount of trash collected was a reduction from previous years due to rainy weather during the cleanup days.

⁵ Additional floatables controls are being implemented through the state's Combined Sewer Overflow (CSO) Long Term Control Plans and the NJPDES Phase 2 municipal separate storm sewer system (MS4) programs. CSOs are combined sanitary and storm sewer systems. Under dry conditions all effluent is conveyed to a sewage treatment plant. However, under certain wet weather conditions, such as during heavy rain, there is too much water to be treated by the sewage treatment plants resulting in sewer overflows. There are approximately 280 CSO outfalls in New Jersey, in 30 municipalities located primarily in the New York metropolitan, Camden and Trenton areas. As part of the long term control strategy for these CSOs, solids and floatables controls have been designed and are being installed at each CSO discharge, thus reducing the amount of floatable material entering the state's surface waters. Under the NJPDES Phase 2 MS4 permits, a systematic replacement of catch basin grates with smaller openings will reduce the amount of floatable materials conveyed by storm drains to surface waters.

604(b) Grant Program

NJDEP receives federal funds to be passed through to county and regional planning entities for water quality management related planning. In the past, these grants have been to counties for the purposes of preparing Water Quality Management Plans (WQMPs). In State Fiscal Year (SFY) 2004, New Jersey's 604(b) Pass-Through Grant Program was expanded to include Smart Growth implementation since that has become an integral part of our statewide Water Quality Management Planning Program. In SFY 2005, the program has shifted its emphasis to on-site wastewater treatment system (OWTS) management plans. The two tables below detail New Jersey's 604(b) projects funded from 2004 to 2006.

FFY 2004/SFY 2005 604(b) Water Quality Planning Pass-Through Grant Program Budget*		
<u>Entity</u>	<u>Project Title</u>	<u>Amount Funded</u>
Middlesex County Planning Department	The Comprehensive Review and Revision of the Lower Raritan- Middlesex County Wastewater Management Plan as an Element of the Lower Raritan- Middlesex County Water Quality Management Plan	\$88,600
Township of North Bergen	Wastewater Management Planning Infiltration and Inflow Study	\$299,768
Sussex County Department of Engineering and Planning	Amendment to the Sussex County-Wide Wastewater Management Plan as an Element of the Sussex County Water Quality Management Plan	\$24,565
Township of Jefferson	Development of an Onsite Wastewater Treatment System Management Plan for the Township of Jefferson- Phase 1	\$24,565
Total		\$437,498*

*Note: Funds for these projects are coming from both SFY 2004 and SFY 2005 604(b) funds (\$218,683 from SFY 2004 and \$218,815 from SFY 2005).

FFY 2005/SFY 2006 604(b) Water Quality Planning Pass-Through Grant Program Budget		
<u>Entity</u>	<u>Project Title</u>	<u>Amount Funded</u>
Township of West Milford, Environmental Commission	Development of an Onsite Wastewater Treatment (OWTS) Management Plan for the New Jersey End of the Greenwood Lake Watershed, Passaic County, New Jersey	\$108,217
Township of Bass River	Bass River Township Wastewater Management Plan	\$10,000
Township of Jefferson	Development of an Onsite Wastewater Treatment System Management Plan for the Township of Jefferson- Phase 2	\$59,700
Total Allocated		\$177,917
Total Available for SFY06		\$177,917

Coastal Nonpoint Source Pollution Control (6217) Program Update

The Coastal Nonpoint Source Pollution Control Program (Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990- CZARA) addresses nonpoint pollution problems in coastal waters. Section 6217 requires the 29 states and territories with approved Coastal Zone Management Programs to develop Coastal Nonpoint Pollution Control Programs. In its program, a state or territory describes how it will implement nonpoint source pollution controls, known as management measures, to reduce pollution associated with several sources such as forestry practices, urban development, marinas and boating activities, hydromodification, and others. This program is administered jointly by the US Environmental Protection Agency (USEPA) and the National Oceanic and Atmospheric Administration (NOAA).

Recognizing that, in New Jersey, all land-use activities can have impacts on the state's estuaries, beaches and marina resources, it was determined that the entire state should be included in the 6217 management area. When the New Jersey Coastal Nonpoint Pollution Control Program (CNPCP) was created in 1995, it was found that a vast majority of the management measures were already addressed through existing programs, rules, regulations, and enforceable policies within and outside of the NJDEP. Some

management measures were met through voluntary programs. In 1997 the CNPCP was conditionally approved by NOAA and the EPA.

In June of 2004, the National Oceanic and Atmospheric Administration (NOAA) and the USEPA Region 2 concluded that New Jersey had met eight of the nine conditions for the agencies' approval of New Jersey's Coastal Nonpoint Pollution Control Program.

The conditions addressed include:

Agriculture; new development and site development; watershed protection and existing development; roads, highways and bridges; marinas; hydromodification; wetlands, riparian areas, and vegetated treatment systems; and monitoring.



NOAA and EPA also found that New Jersey met the nitrogen limited waters aspect of the new and operating onsite disposal systems (OSDS) condition, but did not completely meet the inspection portion of this condition. The Coastal Management Program continues to coordinate with the EPA and NOAA to meet the condition regarding inspections of OSDS. It is expected that 604(b) funds allocated to the Townships of Jefferson and West Milford will result in an acceptable OSDS management strategy, which could be used as a model for other municipalities.

At this time, the Coastal Management Program is in the process of developing a website for the CNPCP to communicate program updates and information for the general public.

Agriculture



The NJDEP continues to foster a partnership with the New Jersey Department of Agriculture (NJDA) and other agricultural organizations to achieve New Jersey's water

quality goals. In some of New Jersey's more rural watersheds, agricultural land uses have been identified as a major nonpoint source of pathogens (fecal coliform) and nutrients (phosphorus). Therefore, implementing best management and conservation practices on agricultural lands, which will improve water quality, conserve water and energy, prevent soil erosion and reduce the use of nutrients and pesticides, is an important component of New Jersey's nonpoint source pollution control strategy.

Farm Bill Conservation Program Enrollment

The United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) provides technical and financial assistance to private landowners to improve natural resources and the environment. Much of the NRCS technical assistance is provided in cooperation with New Jersey's 21 counties and 15 Soil Conservation Districts. NRCS also administers the conservation programs made available under the 2002 Farm Bill.

Below is a brief description of each of the Farm Bill conservation programs followed by program implementation data.

- **Agricultural Management Assistance (AMA)**

AMA reduces the economic risk of adopting conservation measures for limited resource, small scale and beginning farmers.

- **Conservation Reserve Program (CRP)**

CRP allows producers to retire highly erodible or marginal cropland or pasture, and receive rental payments as well as financial assistance to convert the land to grass or trees.

- **Conservation Security Program (CSP)**

CSP rewards producers who are actively protecting soil and water resources on their farm. In 2005, the Cohansey-Maurice watershed in Salem and Cumberland Counties was selected for participation in the national program. Successful applicants received a total of \$59,648 in first-year payments, with a total of more than 300,000 to be paid over the life of their 5 or 10 year contracts.

- **Environmental Quality Incentives Program (EQIP)**

EQIP provides financial assistance to producers to install permanent measures or to adopt management strategies that address existing resource concerns. In addition to funding used for technical and financial assistance, in FY 2005 New Jersey also provided funding to two cooperating entities through Conservation Innovation Grants. This competitive grant program was offered through a Request for Proposals for the first time in FY 2005. New Jersey was one of 15 states to pilot this effort. The grants will provide a recognition system for exceptional conservation work in the Neshanic River watershed, and also create a showcase equine farm demonstrating innovative grazing practices.

- **Farm and Ranch Lands Protection Program (FRPP)**

FRPP provides matching funds to help purchase development rights to keep productive farmland operating in agricultural areas. Over the next two years, almost 4,000 acres will be protected from development through these agreements.

- Grassland Reserve Program (GRP)

GRP offers private landowners the opportunity to protect, restore, and enhance grasslands on their property. In FY 2005, in addition to several 10-year contracts signed, New Jersey began work to develop a permanent easement on 20 acres in Salem County.

- Wildlife Habitat Incentives Program (WHIP)

WHIP provides financial assistance to develop or improve wildlife habitat in six priority areas on nonfederal lands. About half of the FY 2005 funds was obligated to individual landowners. New Jersey signed nine Contribution Agreements with cooperating partners for the remaining funds. These agreements provide habitat improvements on nearly 3,000 acres.

- Wetlands Reserve Program (WRP)

WRP provides technical and financial assistance in exchange for retiring marginal land from agriculture in order to enhance wetlands. For FY 2005, New Jersey received a supplemental allocation for a 2,200-acre project originally funded in FY 2004 in Burlington County and will allow restoration measures to move forward.

In FY 2005, New Jersey received \$11,705,050 authorized by the 2002 Farm Bill for eligible New Jersey landowners and agricultural producers. The funds were administered through six USDA voluntary programs. The FY 2005 program funds have been used as follows:

Statewide Program Implementation - FY 2005				
Program	Funded Projects		Unfunded (backlog) Projects	
	Contracts (Acres)	Amount	Applications	Estimated Cost
AMA	16 (225.9)	\$349,164	47	\$1,131,750
CSP	5 (808.9)	\$307,107	N/A	N/A
EQIP	65 (6,606.6)	\$3,565,040	145	\$6,650,910
GRP	5 (157.6)	\$184,824	12	\$606,093
FRPP	55 (3,902)	\$6,153,175	150	\$20,000,000
WHIP	35 (923.3)	\$345,812	49	\$480,450
WRP	Supplemented 1	\$470,000	2875 acres	\$2,746,700

Statewide Accomplishments - FY 2005			
Accomplishment	Planned	Applied	Estimated Annual Need
Conservation Planning on Cropland (Acres)	21,862	21,862	47,551
Nutrient Management (Acres)	24,514	6,081	23,724
Wildlife Habitat (Acres)	14,009	813	4,662

Wetland Restoration (Acres)	62	110	375
Grazing Lands (Acres)	2,579	1,060	8,645
Comprehensive Nutrient Management Plan (#)	30	22	108

In FY 2004, New Jersey received \$15,690,050 authorized by the 2002 Farm Bill for eligible New Jersey landowners and agricultural producers. The funds were administered through five USDA voluntary programs. This was more than double the FY 2003 funding allocated for New Jersey. The FY 2004 program funds have been used as follows:

Statewide Program Implementation - FY 2004				
Program	Funded Projects		Unfunded (backlog) Projects	
	Contracts (Acres)	Amount	Applications	Estimated Cost
AMA	27 (876)	\$396,566	41	\$584,177
EQIP	144 (3,579)	\$4,486,786	99	\$2,382,316
GRP	11 (755.5)	\$226,348	0	0
FRPP	31 (2,677)	\$5,293,780	150	\$20,000,000
WHIP	32 (866.1)	\$342,038	21	\$192,600
WRP	1 (2,200)	\$5,000,000	2605 acres	\$2,718,000

Statewide Accomplishments - FY 2004			
Accomplishment	Planned	Applied	Estimated Annual Need
Conservation Planning on Cropland (Acres)	14,526	10,039	47,551
Nutrient Management (Acres)	15,641	5,058	23,724
Wildlife Habitat (Acres)	4,995	1,778	4,662
Wetland Restoration (Acres)	14	78	375
Grazing Lands (Acres)	4,068	2,109	8,645
Comprehensive Nutrient Management Plan (#)	46	12	108

Conservation Reserve Enhancement Program

The New Jersey Department of Environmental Protection, the New Jersey Department of Agriculture and the United States Department of Agriculture's Farm Service Agency jointly developed a Conservation Reserve Enhancement Program (CREP) proposal for New Jersey. The New Jersey CREP is designed to help farmers reduce nonpoint source pollution caused by agricultural runoff in an effort to improve water quality in New Jersey. Under NJ CREP, farmers receive financial incentives from the USDA's Farm Service Agency and the New Jersey Department of Agriculture to voluntarily remove marginal pastureland or cropland from agricultural production and convert the land to native grasses, trees and other vegetation. The vegetation can then serve as a buffer to

filter or contain agricultural runoff and prevent polluted stormwater runoff generated by farms from reaching neighboring water bodies.

New Jersey seeks to enroll 30,000 acres of agricultural lands into the program. The four NJ CREP practices will improve the quality of runoff from these lands. NJ CREP encourages farm owners and operators to voluntarily implement one or more of these conservation practices on their land by offering financial incentives. The program provides a 10-year enrollment period and targets the installation of riparian buffers, filter strips, contour buffer strips and grass waterways. Farmers will be able to enroll their land into NJ CREP by installing conservation practices under 10-15 year rental agreements and/or permanent easement contracts.



Multiple rows of trees and shrubs, as well as native grass strips, combine in a riparian buffer to protect the creek that flows through it from nutrient runoff loads, temperature extremes, and also provides habitat.

As of February 2006, seven NJ CREP contracts have been approved enrolling 16 acres into the program. Total Conservation Reserve Program (CRP) figures, including general signup CRP contracts (which fund cool and warm season grasses, trees and wildlife habitat), continuous CRP contracts (which are dedicated small, environmentally sensitive acreage), and NJ CREP, equal 141 approved contracts statewide with 2,336 acres enrolled. Even though NJ CREP is still in its infancy and is sharing the same slow start that other state CREPs experienced, it is expected to enjoy the same successful outcome

that other state CREPs have had. In fact, interest is growing in Salem County where the first NJ CREP contract was signed.

Soil Erosion and Sediment Control Act Implementation

Over the past few decades, a rapid shift in land use has been occurring in New Jersey. Land that was traditionally agriculture and rural was developed into non-agricultural and urban uses. With the construction of houses, industrial facilities and commercial sites came major land disturbance. The extensive development of land in the State of New Jersey has often been accompanied by damage to our natural resources. One of the most serious of the problems is the erosion of soil by both wind and water. When soil is displaced unintentionally in this manner, problems are created in the area where the soil comes from and in the area where it is deposited. In the area where the erosion originates, topsoil is lost, along with all the vegetation that may have been growing in it. Where soil is deposited, silting of the downstream water body or drainage facility increases the potential for flooding. Suspended soil particles lower the dissolved oxygen levels in receiving waters and block out sunlight, choking aquatic life and burying benthic habitat. All of these effects lower water quality, or have the potential to do so. The cost of correcting the resulting physical damage and pollution is much greater than the cost of preventing soil erosion.

To help address this problem the State of New Jersey adopted the Soil Erosion and Sediment Control (SESC) Act, Chapter 251 Program on January 1, 1976, to be administered by the state's 15 Soil Conservation Districts (SCDs) as a means to prevent soil erosion from construction sites, reduce nonpoint source pollution from sediment, and enhance water quality and stormwater quality. The SCDs review development and site plans to ensure that they are in compliance with SESC standards. Once the plans satisfy the standards, they are certified by the district. When work begins on a project, staff routinely inspect the site to make sure the soil erosion and sediment control measures in the plan are carried out in the correct construction sequence on the site. When construction is finished, inspectors perform a final site inspection to ensure that the site has been properly permanently stabilized.

The technology for preventing soil erosion is well established and planners, engineers, developers, contractors and others are able to utilize this technology. Conservation practices such as stormwater inlet protection, silt fencing, stabilized construction access, and temporary soil stabilization are just a few of the many measures that help reduce soil erosion on active construction sites.

It is the mission of the SCDs to conserve the natural resources in New Jersey and provide technical assistance to private landowners, conservation education, watershed planning and effective regulatory enforcement.

The table below shows the number of plan applications received, and, of those, the number of plans that were certified by the districts and the number of acres represented in all of the certified plans for all of New Jersey's 15 Soil Conservation Districts in each State Fiscal Year.

SESC PLAN APPLICATIONS			
SFY	# of Applications Received	Certifications Issued	Acres Under Development
2003	4,478	4,360	33,843
2004	4,752	4,686	32,378
2005	5,225	4,832	36,372

Since the inception of the SESC Program on January 1, 1976 through June 30, 2005 97,477 applications were received, 94,214 certifications were issued on projects involving more than 734,714 acres of land. Utilizing the USDA Revised Soil Loss Equation computer model, it is estimated that through implementation of the State Soil Conservation Committee Standards for Soil Erosion and Sediment Control in New Jersey on all projects in the Chapter 251 Program since 1976, nearly 23 million tons of soil were prevented from causing damage to streams, lakes and downstream properties. This represents an estimated 95% reduction in potential soil loss. It is important to acknowledge the vital role of the Chapter 251 Program in New Jersey's NPS pollution control strategy to protect water quality.

Resource Conservation and Development

The North Jersey, South Jersey and Liberty Resource Conservation and Development (RC&D) Councils work with local and regional partners to address issues related to: water quality and water resource protection, sustainable farming and farm communities, and managing natural hazards.

Examples of services provided by New Jersey RC&D Councils include:

- Coordination and implementation of riparian buffer programs, watershed management activities and conservation projects
- Technical assistance to farmers to manage their agricultural chemicals to protect water quality through Integrated Crop Management & Pasture Management services
- Grant writing and review support
- Assistance to local communities with project start-up, coordination and training for regional initiatives
- Development and maintenance of resource technology information systems

NORTH JERSEY RC&D (NJRC&D)

Serving Hunterdon, Morris, Somerset, Sussex, Union, and Warren Counties
NJRC&D received \$540,000 in FY 2006, and \$250,000 in FY 2007 from the CBT Watershed Fund for conservation assistance.

Accomplishments in 2005:

- Completed seven riparian restoration projects through various funding sources
- Conducted 3 full-day stream ecology workshops for educators
- Sponsored two community resource protection workshops attended by over 100 community members
- Through the Integrated Crop Management and Pasture Management Programs, nutrient and pest management plans were developed for over 4,300 acres of cropland

Accomplishments in 2004:

- Expanded service to the ongoing Integrated Crop Management Programs, which cover nutrient and pest management, rendered to 16 farmers on 6,500 acres in 2003
- Riparian buffers were created at 2 locations in Warren County
- Coordinated natural resources management in the Upper Delaware and the Walkill Watersheds

Accomplishments prior to 2004:

- The Integrated Crop Management in the Raritan and Upper Delaware River Watersheds Project provided resources to help farmers better balance their fertilizer and pesticide usage to meet their crop needs. This was a cooperative effort between North Jersey RC&D Council, NRCS, Rutgers Cooperative Extension, Warren, Hunterdon, Somerset and Sussex County SCDs, the NJ Department of Agriculture and NJDEP.
- The Musconetcong Watershed Management of Agriculture NPS Project helped farmers in the Musconetcong River adopt best management practices that allow them to better manage their agricultural chemicals. This project continues efforts to recruit more farmers in this high water quality, trout production watershed. One new project goal is to help educate local and regional governments, school children and the public at large about the effort these farmers are making to protect the environment. This project is a collaborative effort of North Jersey RC&D Council; USDA-NRCS; Warren, Hunterdon, Morris and Sussex County SCDs; and NJDEP.

SOUTH JERSEY RC&D (SJRC&D)

Serving Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Middlesex, Monmouth, Ocean and Salem Counties

Accomplishments in 2005:

- Responded to the concerns about dike and levee safety following Hurricane Katrina by coordinating an investigation by flood plain managers into the need for maintenance and upgrades on more than 35 existing structures in South Jersey
- Promoted cleaner air and less dependency on foreign oil by advancing the sale and distribution of E85, a mix of 85% ethanol, which is derived from corn, and 15% gasoline
- Assisted in the development of Regional Stormwater Management Plans in Camden, Cape-Atlantic, Gloucester and Freehold SCDs

Accomplishments in 2004:

- Created 500 acres of habitat for grass land birds in Cumberland County's Buckshutem Watershed Management Area
- Conducted stormwater modeling in small watersheds in Camden, Gloucester and Freehold SCDs

LIBERTY RC&D (LRC&D)

Serving Bergen, Essex, Hudson and Passaic Counties

Accomplishments in 2005:

- Assisted Weequahic Park in improving their wildlife habitat and applying for NRCS cost share under the WHIP program
- Completed a six-year grant project in Rahway River Park to stabilize eroding pond banks with vegetation that repels geese and attracts desirable species

Accomplishments in 2004:

- Improved water quality in four Union County parks by creating riparian buffers

Memorandum of Agreement with NJDA

A Memorandum of Agreement (MOA) entitled "Agricultural Point and Nonpoint Source Pollution Prevention and Abatement" was signed between the New Jersey Department of Environmental Protection (NJDEP) and the New Jersey Department of Agriculture (NJDA) on July 27, 2005, which stated that \$175,000 in Corporate Business Tax (CBT) funds will be transferred from NJDEP to NJDA for the express purpose of targeted education to landowners whose operations are possible sources of nonpoint source pollution.

As part of the work under this MOA, some funds were allocated to educate producers throughout the Raritan Watershed, the Federally-chosen 2006 CSP Priority Watershed for New Jersey, about the CSP and all the federal Farm Bill programs administered through NRCS. The Raritan River is phosphorus impaired, and a phosphorus TMDL is being developed for the Raritan. Significant agricultural acreage may be contributing to the total phosphorus load. Program enrollment in the Raritan Watershed would go a long way toward implementing the TMDL and reducing water quality impairments caused by phosphorus.

Official Agriculture Liaison Appointed

An agriculture liaison has been assigned from the Division of Watershed Management's Director's Office to coordinate with NJDA on issues that affect both departments or that require coordination between the two departments; to facilitate the partnership, which has resulted in better management of natural resources on agricultural lands; and to communicate and ensure adherence to reporting requirements under the MOA. This liaison has initiated quarterly coordination meetings between the two departments to provide a forum for discussion and coordination on a regular and frequent basis.

EDUCATION

Whether they know it or not, every citizen of New Jersey may contribute to nonpoint source pollution through his or her daily activities such as fertilizing the lawn, throwing litter down storm drains or not cleaning up pet waste. As a result of this behavior, stormwater runoff becomes polluted as it flows through the surrounding watershed, affecting our ponds, creeks, lakes, wells, streams, rivers, bays, ground water and the ocean. Simple behavioral changes can make a tremendous difference in the quality of New Jersey's water resources, but they will only occur through effective education and outreach.

The Division of Watershed Management has many programs and tools for stormwater, nonpoint source pollution and watershed education. These include newsletters and brochures for the community at large as well teacher workshops, free classroom presentations through our New Jersey Watershed Ambassadors Program, the Watershed Watch Volunteer Monitoring Program, and free publications for students and teachers.

New Jersey Watershed Ambassadors Program

The NJ Watershed Ambassadors Program is a community-oriented AmeriCorps program designed to raise awareness about water issues in New Jersey. Through this program, AmeriCorps members are placed across the state to serve their local communities. Watershed Ambassadors monitor the rivers of New Jersey through Visual Assessment and Biological Assessment volunteer monitoring protocols. In 2004-2005, the Ambassadors monitored 2,272 stream segments. In many instances the data collected were used to develop TMDLs. Ambassadors also conducted 227 monitoring training workshops for 1,165 people and made 1,990 presentations to community organizations and schools. These activities provide information about water and watershed issues in New Jersey. The Ambassadors also worked with community organizations on 64 watershed partnership projects such as stream clean-ups, water festivals and storm drain marking. The Ambassadors generated over 23,000 volunteer hours through these partnership projects and other community service events.



Watershed Watch Volunteer Monitoring Program

The NJDEP has created a highly acclaimed four-tiered approach to volunteer water quality monitoring. The tiers are defined by the purpose of monitoring, the intended data use and the intended data users. The four-tiered approach allows for volunteers to pick their level of involvement and know up front what they need to do to produce reliable data, which NJDEP can utilize. It also assures the department's data users of the quality of the data. The program recognizes the different reasons (tiers) for collecting volunteer data: Education, Stewardship, Community Assessment and Indicators/Regulatory Response. Each of the tiers has a progressively higher level of scientific rigor associated with them.



The tiers (purposes for monitoring) are:

TIER A: ENVIRONMENTAL EDUCATION

<u>Data Users</u>	<u>Data Use</u>	<u>Quality Needed</u>
Participants, Students, Watershed residents	Promote stewardship, Raise participants' level of understanding of watershed ecology	Low level of rigor but use of sound science, Variety of study designs are acceptable, Quality Assurance (QA) optional

TIER B: STEWARDSHIP

<u>Data Users</u>	<u>Data Use</u>	<u>Quality Needed</u>
Participants, Watershed residents, Landowners, Local decision makers (optional)	Gain understanding of existing conditions and any changes over time, Screen for and ID problems and positive attributes	Low to medium rigor, Variety of study designs acceptable, Quality Assurance Project Plan (QAPP) desirable

TIER C: COMMUNITY ASSESSMENT

<u>Data Users</u>	<u>Data Use</u>	<u>Quality Needed</u>
Local decision makers, Watershed associations, Environmental organizations, Possibly NJDEP	Assess current conditions, track trends, Source trackdown of nonpoint source pollution	Medium level of rigor, Data needs to reliably detect changes over time and space, focused on sources, QAPP required

TIER D: INDICATORS/ REGULATORY RESPONSE

<u>Data Users</u>	<u>Data Use</u>	<u>Quality Needed</u>
NJDEP, Local decision makers, Watershed associations, Environmental organizations	Assess current conditions and impairments, Supplement agency data collection, Research, Evaluate BMP measures	Medium to high rigor, Study designs and methods must be equivalent and recognized by agencies using data, Training required, QAPP required



Watershed Watch Network (WWN), Training on Rapid Bioassessment Collection Methods,
2004, South Branch of The Raritan River

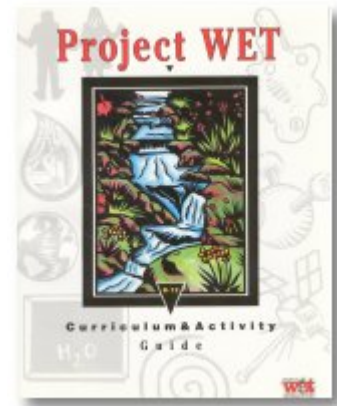
The goal of this innovative new four-tiered approach is to provide acceptable protocols and quality assurance/ quality control (QA/QC) requirements for volunteers who choose to submit their data to the NJDEP; to assist volunteers in designing and building upon their existing programs; and to assist data users in gathering sound data for their uses.

The Division works with approximately 34 organizations conducting river monitoring activities and 58 organizations conducting lake monitoring activities. There are approximately 17 parameters for which data are collected including, but not limited to, benthic macroinvertebrates, velocity, nitrate--nitrogen, temperature, ortho phosphates, visual/habitat, coliform bacteria, dissolved oxygen (DO), alkalinity, pH, and total suspended solids (TSS)/ total dissolved solids (TDS).

With the assistance of the Watershed Watch Network Advisory Committee, the Division is working to better coordinate volunteer water monitoring programs across the state and to provide a forum for discussion of pertinent topics. The program held numerous training workshops, which are described in the table below.

Project WET (Water Education for Teachers)

Project WET (Water Education for Teachers) is a nationally renowned program that offers teachers a better understanding of the world's water resources through hands-on, multi-disciplinary lessons. NJ Project WET is a well-rounded program, which focuses on water supply, water quality, water conservation, watershed management, land use planning and wetlands. Project WET provides educators with insight into critical water issues while offering a large selection of creative teaching strategies. In 2004-2005, 41 Project WET teacher training workshops reached 547 teachers and non-formal educators.



Through the NJ Project WET Water Festival Mini-Grant Program, ten schools held water festivals in 2004-2005. Through these one-day celebrations of water, students participate in a series of learning stations, which examine different water issues and involve the local community.

NJ Project WET offers a unique learning opportunity for high school students and teachers through its Watershed Stewards Program. After weekend leadership workshops in 2004-2005, seven high school teams engaged in watershed service projects in cooperation with three community organizations and local volunteers. The projects included stream restoration, creation of water conservation gardens, and waterway clean-ups.

Training Workshops

The Division offered a number of training workshops on watershed and nonpoint source related topics for NJDEP employees, volunteer monitoring groups, and watershed educators in 2004-2005.

Course Name	Date	Audience	Attendees
Landscape Integrated Pest Management	January 2004 (5 days)	Landscapers	23
Lake Mgmt	February 6 & 7, 2004	Lake associations	26
Stormwater BMPs for DWM	March 17, 2004	DEP staff	48
Stroud Watershed Stream School	April 1 & 2, 2004	Volunteer monitors	15
Lake Mgmt for DEP Parks	April 5 & 6, 2004	DEP natural resources managers	42
Get the Grant – 319h Workshop	April 8, 2004	Non-profits, local government	49
Watershed Educators Conference	June 29 & 30, 2004	Teachers & non-formal educators	100
Regional Stormwater Workshops – 3 locations	July 13, 20, 29, 2004	Stormwater permittees	336
Volunteer Monitoring Summit II	October 1 & 2, 2004	Volunteer monitors, data users	98
Clean Water Council Hearing: Meeting the Challenges of Stormwater Management	October 14, 2004	Public	131
Lakes Management Training for DEP	October 28 & 29, 2004	DEP natural resource managers	64
Stream Restoration	November 16-19, 2004	Local officials, environmental groups	26
Landscape Integrated Pest Management	January 2005 (5 days)	Landscapers	36
Delaware Watershed Stream School	March 17 & 18, 2005	Volunteer monitors	25
Building A Buffer	April 6 & 7, 2005	DEP natural resource managers	21
Watershed Educators Conference	June 28 & 29, 2005	Teachers and non-formal educators	113
Watershed Stream School	September 14 & 15, 2005	Volunteer monitors	21
Volunteer Monitoring Summit	November 4 & 5, 2005	Volunteer monitors, data users	116

Harbor Watershed Urban Fishing Program

The Harbor Watershed Urban Fishing Program is designed to educate young students living in the Newark Bay Complex and other urban areas about the hazards of eating contaminated fish and help them to discover the beauty of this great natural resource. Students who participate in the program enjoy recreational opportunities that the bay has to offer while learning how to be responsible citizens within the estuary. The students experience four days of intense and enjoyable instruction related to the local watersheds. In 2004-2005, 18 four-day programs involved 495 students in Newark and other urban areas.



Clean Water Raingers Program

The Clean Water Raingers Program offers educators a number of teaching materials for elementary school students, as well as background information on watersheds and nonpoint source pollution. Educators who participate in the Clean Water Raingers program are provided with free booklets, stickers and associated materials for their students. The booklets and stickers are also popular at family-oriented events and festivals. In 2004-2005, 23,000 Clean Water Raingers Activity Books, 30,000 Clean Water Raingers Coloring Books and 30,000 Clean Water Raingers Stickers were distributed.

DWM Publications



DWM publications are available at no cost for distribution by municipalities, watershed associations, environmental groups and other organizations. In 2004-2005, 21,000 copies of *What's A Watershed?* Brochure; 2,000 copies of the Water Photography Contest/Earth Day Poster; and 500 copies of *Storm Drain Labeling Guidelines for New Jersey* were distributed. The Division also publishes a free newsletter entitled *Watershed Focus*, which includes articles on watershed management, stormwater,

nonpoint source pollution and water education. In 2004-2005, six issues of the newsletter were distributed to a mailing list of over 3,500 recipients.

Additionally, the Stormwater Management rules, N.J.A.C. 7:8 specify stormwater management standards that are mandatory for new major development. The New Jersey Stormwater Best Management Practices Manual (BMP manual) has been developed to provide guidance to review agencies and the regulated community on complying with the standards in the Stormwater Management rules. The BMP manual is electronically available through www.njstormwater.org or through the NJDEP Office of Maps and Publications.

PROTECTION

This section serves to highlight New Jersey's water quality protection measures through first-in-the-nation legislation and regulations designed to protect the state's declining water supply and to ensure water quality for all New Jersey's residents and wildlife. Among the initiatives described are innovative water reuse pilot projects and the state's open space preservation program.

Legislation & Regulation

Highlands Water Protection and Planning Act (N.J.S.A. 13:20-1 et seq.)

The historic Highlands Water Protection and Planning Act (Highlands Act) was signed into law on August 10, 2004. The purpose of the Highlands Act is to preserve New Jersey's dwindling open space and protect the state's great diversity of natural resources, particularly precious water resources, which supply water to more than half of New Jersey's families (over 5.4 million people), approximately 379 million gallons of drinking water daily. In addition to water resources, the northern New Jersey 800,000-acre Highlands Region contains exceptional natural resources such as contiguous forest lands, wetlands, pristine watersheds and plant and wildlife species habitats. The region contains many sites of historic significance and provides abundant recreational opportunities.

The Highlands Act documents the geographical boundary of the Highlands Region in New Jersey and establishes a Highlands Preservation Area (Preservation Area) and a Highlands Planning Area (Planning Area), each of roughly 400,000-acres. Additionally, the Highlands Act required the NJDEP to establish regulations in the Preservation Area and created a Highlands Water Protection and Planning Council to govern the Planning Area and to develop a regional master plan for the entire Highlands Region.

The Highlands Act sets forth requirements for major Highlands development projects in the Preservation Area to be implemented by the NJDEP. The NJDEP is charged with issuing a "Highlands Preservation Area Approval" to ensure compliance with all of NJDEP's regulatory programs including: Freshwater Wetlands Protection Act, Flood Hazard Area Control Act, The Endangered and Non-Game Species Conservation Act, Water Supply Management Act, Water Pollution Control Act, The Realty Improvement Sewerage and Facilities Act (1954), Water Quality Planning Act, and Safe Drinking Water Act. In addition, the Highlands legislation required the NJDEP to prepare rules and regulations that established the following environmental standards for new development in the Preservation Area:

- 300-foot buffer from all surface water features for new major Highlands development
- Any new or expanded point source discharge to Highlands Waters (surface or ground water) shall not degrade existing water quality

- Water allocation threshold reduced to 50,000 gallons per day; existing unused allocations and allocations for nonpotable uses may be revoked if conservation measures are not maximized; new or increased diversions for nonpotable purposes that are more than 50% consumptive require equivalent reductions in water demand within the same drainage basin
- A septic system density standard established at a level to prevent the degradation of water quality
- 0% net fill in flood hazard areas
- Antidegradation provisions of the NJ Surface Water Quality Standards, N.J.A.C. 7:9B, applicable to category one waters to apply to all Highlands surface waters
- Impervious cover not to exceed 3%
- A limitation or prohibition on the construction of new public water systems or extension of public water systems to serve development in the Preservation Area
- No development, other than linear development, on slopes of 20% or greater
- A prohibition on development that disturbs upland forest areas

In addition, the Highlands Act immediately withdrew approved sewer service area designations in the Preservation Area where wastewater collection systems were not installed by August 10, 2004, except that this withdrawal did not affect any project specifically exempt from the requirements of the Highlands Act. The NJDEP was also required to amend any areawide Water Quality Management Plan as necessary to reflect the withdrawal of sewer service area designations.

Highlands Water Protection and Planning Act rules (N.J.A.C. 7:38)

On May 9, 2005 there was a special adoption of immediately effective new rules, the Highlands Water Protection and Planning Act rules at N.J.A.C. 7:38, to implement the enhanced environmental standards established in the Highlands Act and listed above. The rules incorporated the requisite standards of various land use, water resource and environmental protection statutes and established a consolidated Highlands permitting review and approval process for activities constituting major Highland development. The rules include the above standards and the following additional provisions:

- Establishing a 88-acre (wooded) lot and 25-acre (non-wooded) lot septic density to prevent the degradation of water quality in consideration of deep aquifer recharge
- Special standards for development on slopes between 10 and 20 %
- Waiver provisions that may allow flexibility in any one of the standards as necessary to avoid taking of property, allow for redevelopment, or as necessary to protect the public health and safety
- Forest clearing is limited to within 20 feet of structures and 10 feet of driveways

The NJDEP proposed to readopt these rules with amendments on December 19, 2005 (See 37N.J.R. 4767(a)). The Highlands Water Protection and Planning Act rules remain effective until November 2, 2006 unless or until the proposal for readoption and/or the proposed amendments are adopted.

As a prerequisite for NJDEP permit applications for Highlands Preservation Area development proposals, the Division of Watershed Management makes Highlands

Applicability determinations (including project exemption status) and Water Quality Management Plan consistency determinations. These determinations determine the course of permitting for the NJDEP under the Highlands Act.

New Jersey Sewage Infrastructure Improvement Act (N.J.S.A. 58:25-23 et seq.)

The New Jersey Sewage Infrastructure Improvement Act (SIIA) became effective in August 1988. The SIIA was passed in response to numerous beach closings and ocean water quality problems experienced along the Jersey shore in the mid-1980s. At the time, there was suspicion that, among other things, there were numerous interconnections between sanitary sewer lines and storm sewers, which were contributing to beach water quality problems. Among the provisions in the SIIA was a requirement that dry weather flows and floatables from combined sewer overflows (CSOs) be controlled. Other provisions in the SIIA required that 94 coastal municipalities map and investigate their stormwater and sanitary sewer systems including ocean and tidal water outfalls and provide bacterial monitoring at priority outfalls four times per year. The SIIA also required the creation of planning and design grant programs to assist governmental units with their combined sewer overflow or interconnection/cross-connection abatement needs. The SIIA appropriated \$33.5 million to carry out its purposes.

Sewage Infrastructure Improvement Act Grant rules (N.J.A.C. 7:22A)

The Sewage Infrastructure Improvement Act Grant rules, N.J.A.C. 7:22A, effective February 5, 1990, implement the SIIA and establish the procedures by which the NJDEP provides grant funds for various stormwater management and combined sewer overflow abatement planning and design activities. Under these rules, of the appropriated SIIA allocation, \$6 million was used for storm sewer mapping in the form of grants to the 94 coastal municipalities ranging from \$26,000 to \$183,000. To date all but four municipalities have completed the required mapping. The NJDEP will take enforcement action in 2006 for those noncompliant municipalities.

Thus far, 150 ocean outfalls have been mapped and approximately 7,700 estuarine outfalls have been mapped under the SIIA program.

Given the nature of stormwater runoff and the variability of fecal coliform contamination, the results of the bacterial monitoring conducted by coastal municipalities as required by the SIIA were not comprehensive. The major findings are as follows:

- Only one interconnection was identified by the monitoring and that interconnection was subsequently corrected.
- The frequency of monitoring and the type of monitoring being conducted did not help identify sources, nor was it reliable in terms of documenting the severity of a problem. However, the source of the majority of fecal coliform contamination was considered not likely to be human.
- Waste from pets, Canadian geese, domesticated livestock, and wildlife all contribute to the problem. To be successful in reducing fecal coliform loads, all of these sources must be addressed.

The monitoring required by the SIIA is considered supplemental at the present time due to the following:

- Sensitive resources, such as bathing beaches and shellfish areas, are routinely monitored by the NJDEP to protect the public health.
- The NJPDES Phase II municipal stormwater rule, N.J.A.C. 7:14A, adopted effective on February 2, 2004 (See 36 N.J.R. 813(a)) addresses many of these sources. The Phase II program requires pet waste ordinances, wildlife feeding ordinances and a public education campaign all aimed at reducing non-point fecal coliform loads.
- The NJDEP continues to identify animal feeding operations where domesticated animal waste may be running off into streams. These sources are being addressed through the Department of Agriculture's Environmental Quality Incentives Program and Conservation Reserve Enhancement Program, both of which make grants and technical assistance available to farmers for the implementation of best management practices designed to reduce or eliminate contamination in agricultural runoff. Where this intervention is unsuccessful, the Department retains the right to designate such operations as Concentrated Animal Feeding Operations (CAFOs) and require a NJPDES discharge permit.
- The Division of Watershed Management and the Division of Water Monitoring and Standards continue to target areas where high fecal coliform levels are affecting existing and designated uses, including swimming and shellfish harvesting, for more intensive and sophisticated fecal coliform source track-down such as Coliphage testing (using virus information to separate human from animal sources), Multiple Antibiotic Resistance Screening (MARS) (using antibiotic resistance to distinguish between domestic and wild animal contamination) and DNA testing to identify specific sources of contamination. Once identified, the NJDEP targets those sources for corrective action.
- The Department of Health has changed the bathing beach monitoring protocol to monitor enterococci levels rather than fecal coliform levels, as per the Federal BEACH Act. Enterococci are a better indicator of human pathogens and human health risk.

The NJDEP may seek changes to the monitoring requirements of the SIIA to augment these efforts.

Stormwater Management Rules (N.J.A.C. 7:8)

The new Stormwater Management rules became effective on February 2, 2004 and significantly changed the stormwater management requirements for municipalities and the NJDEP. Rule highlights include a mandated 80% reduction of post-construction total suspended solids (TSS), required maintenance of ground water recharge equal to the predevelopment condition, and reductions in peak stormwater runoff resulting from the 2, 10 and 100 year storms of 50, 75 and 80 percent respectively. Among the more innovative requirements of the rule are a Special Water Resource Protection Area

(SWRPA), which mandates a 300-foot buffer adjacent to all Category 1 Waters⁶ and their tributaries and a requirement to incorporate nonstructural stormwater management strategies in site design.

The recharge, quality, and quantity requirements are all based on achieving an articulated numerical standard. However, nonstructural stormwater management strategies are to be implemented to the maximum extent practicable. Nonstructural strategies include: the preservation of natural vegetation, minimization of impervious surfaces, minimization of compaction, using natural drainage features etc. There is no empirical threshold in the regulation that can be used to determine compliance, resulting in inconsistent implementation of nonstructural strategies. To address this issue, the Division of Watershed Management developed a computational tool, the New Jersey Nonstructural Stormwater Management Strategies Point System (the Point System), to assess compliance with the nonstructural strategies requirement.



Extended Detention Basin, Princeton Township, Mercer County

The Point System is an Excel spreadsheet that computes a pre-development nonstructural score for a proposed development site based on existing soil and vegetation types. The spreadsheet then computes a post-development nonstructural score based on the proposed

⁶ Category One Waters are adopted into the New Jersey Surface Water Quality Standards (N.J.A.C. 7:9B) due to their clarity, color, scenic setting, aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance or exceptional fisheries resources. Category One Waters are afforded additional protection from measurable changes (including predicted or calculable changes) in water quality under the antidegradation provisions of the Surface Water Quality Standards.

development. The loss of points in the scoring due to the development of the site then must be offset through the incorporation of nonstructural strategies into the site design. The percentage of points that must be retained is determined by the size of the site and the State Development and Redevelopment Plan State Planning Area where the site is located. Larger sites have greater opportunity to incorporate nonstructural strategies into site design than smaller sites and thus are held to a higher threshold. Nonstructural strategies often reduce the intensity of development that can be accommodated onsite. Therefore a smaller percentage of points must be retained in centers, and planning areas 1 (urban) and 2 (suburban) and a higher percentage is required in planning areas 4 (rural) and 5 (environmentally sensitive). The points system is intended to be a “pass only” measuring tool such that, projects that achieve passing values using this tool are presumed to have implemented appropriate nonstructural strategies in the project design. Projects that do not achieve passing values will be required to do a rigorous alternatives analysis to demonstrate that nonstructural stormwater management techniques have been incorporated into the site design to the maximum extent practicable.

The Point System was sent to the public Stormwater Best Management Practices Manual Technical Committee on January 31, 2006, where it has been tested and calibrated based on site and subdivision plans brought in by the Committee and the Department. The Point System was subsequently posted on the Web at www.njstormwater.org on February 1, 2006. Both the Division of Land Use Regulation and the Division of Watershed Management are currently using this tool in reviewing applications. Also, we will continue to evaluate and adjust the Point System based on additional experience and comments from the public.

New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.)

The New Jersey Water Quality Planning Act (Act), N.J.S.A. 58:11A-1 et seq., was adopted in 1977 and provided the authority needed for New Jersey to implement sections 201, 208 and 303 of the Federal Clean Water Act. The purpose of this Act is to restore, maintain and preserve the quality of the waters of the state, including both surface and ground water, for the protection and preservation of the public health and welfare, food supplies, public water supplies, propagation of fish and wildlife, agricultural and industrial uses, aesthetic satisfaction, recreation and other beneficial uses. The Act endeavors to achieve this purpose by instituting a continuing planning process through the adoption of areawide Water Quality Management Plans (WQMPs), also known as 208 plans, which integrate water quality and wastewater management plans with related, federal, state, regional and local land use plans.

The New Jersey Water Quality Planning Act requires areawide WQMPs to identify all necessary wastewater collection and treatment works for at least a twenty-year horizon. In addition, the areawide WQMPs are required to include a regulatory program to provide control or treatment of all point and nonpoint sources of pollution to the extent practicable; to regulate the location, modification and construction of any facilities that would result in any discharge; and to ensure pretreatment of industrial or commercial wastewater, and to address the impacts of water supply withdrawals.

Water Quality Management Planning Rules (N.J.A.C. 7:15)

The Department, primarily through the Division of Watershed Management, administers the Water Quality Management Planning rules, N.J.A.C. 7:15. The current rules became effective on October 2, 1989. These rules serve two basic functions: they establish the Department's general regulatory framework for water quality planning and supplement other Department rules pertaining to wastewater management.



An integral component of areawide WQMPs are Wastewater Management Plans (WMPs). WMPs are the vehicle through which the continuing planning process integrates local and regional planning into the areawide WQMPs. The intended purpose of the WMPs is to project future development and estimate the wastewater management needs associated with that development. These plans could also provide the vehicle to ensure that sewer service was not extended into areas inconsistent with State

Development and Redevelopment Plan State Planning Area designations and environmentally sensitive areas. Lastly, because WMPs project future land use and shape the pattern and density of development through the wastewater management alternatives selected within given areas, these plans are instrumental in quantifying existing and future nonpoint source pollution loads and in implementing best management practices to reduce those pollutant loads. To accomplish these objectives, WMPs were to be prepared for the entire state by 1995 and were to have been updated every six years similar to the requirement for municipal master planning in the Municipal Land Use Law.

A shortcoming identified in the Water Quality Management Planning rules is that the rules are entirely process driven and include no real standards for the approval of WMPs or areawide WQMP amendments. This deficiency was acknowledged in January 2000 through the Governor of New Jersey's Executive Order No. 109 (EO 109). EO 109 required future applications for WQMP amendments to include environmental build-out and pollutant loading analyses, to demonstrate the appropriateness of the selected wastewater management alternative, and assess alternatives designed to address consumptive and depletive water uses. The NJDEP has used this authority to secure stormwater management and riparian zone protection to address nonpoint source pollution, and has used the wastewater management analysis as a means to prevent the extension of public sewers into sensitive environmental areas. Over the past year, three more towns have adopted NJDEP-approved Riparian Ordinances: Mount Olive, Morris Township and East Windsor. These ordinances result in 75 or 150-foot riparian buffers on those waterways that are not subject to the 300-foot Category One Water Special Water Resource Protection Area under the stormwater management rules. The NJDEP is also aware that there are several municipalities within the State of New Jersey that adopted septic management ordinances. These ordinances will become part of the WQMP review process.

In implementing EO 109, the NJDEP has also been evaluating new or expanded discharges to surface water with respect to the antidegradation requirements of the Surface Water Quality Standards, N.J.A.C. 7:9B. The NJDEP's actions under EO 109 have resulted in benefits to water quality, water quantity and ecosystem health. However, there is still much more that can and should be done. For instance, relatively few proposals have been subject to EO 109 since the EO 109 analyses were limited to WMPs and to projects or activities that would trigger development or update of a WMP. Even in situations requiring environmental impact assessment under EO 109, inconsistent preparation and updating of WMPs has limited the environmental benefits of the Executive Order. Implementation of EO 109 has been complicated and implementation could be improved by providing clearer standards upon which to base a decision on an amendment application. Finally, because proposed WQM plan amendments must be appraised on a case-by-case basis, the cumulative impacts of multiple amendments within a watershed are not adequately considered under EO 109. EO 109 recognized these deficiencies and contemplated that the NJDEP would adopt a comprehensive new Water Quality Management Planning rule to address these deficiencies.

During 2006, the NJDEP plans to propose changes to the Water Quality Management Planning rules that would:

- Include clear environmental standards
- Improve consistency with the State Development and Redevelopment Plan
- Set forth clear standards for appropriate wastewater management alternatives, nonpoint source pollution control, water supply considerations, and sensitive environmental resource protection.

Water Supply

New Jersey State Water Supply Plan

The next New Jersey State Water Supply Plan (Plan) is scheduled to be completed by January of 2007. The Plan provides a framework to guide the management, conservation, and uses of the state's water resources. It attempts to balance potable, industrial, recreational, and ecological uses to ensure that a safe and adequate water supply of acceptable quality will be available to New Jersey into the foreseeable future, including during drought. The Plan will identify and address the current and future status of the water resources of the state, regulatory issues that affect water supply, water-supply alternatives, strategies to insure that the state has an adequate water supply during drought, and the relationship between land use patterns and water supply needs of the state.

The Plan will quantify current water use geographically and by use category, as well as identify and track the transfer of water from place of withdrawal, to place of use, to place of discharge. It will quantify the amount of water available in each of the watershed planning areas during an average year and during drought and factor in the effects of planning limits; safe yields and water allocations; water quality limitations; land use impacts; and infrastructure limitations to estimate the amount of water available in each planning area. It will combine current and projected water demand data with the available water in each water-supply planning area to determine if and when a watershed will approach a threshold of concern. It is the NJDEP's intent, through the Plan, to enable the state to coordinate water supply planning with land use development.



Wanaque Reservoir
View from Treatment Plant

Two major aspects of the 2007 New Jersey State Water Supply Plan will be the development of

water budgets for all HUC-11⁷-based water supply planning areas, including regional confined aquifers and the initiation of the ecological flow goals project. The water budgets will rely on available data on climate, ground water recharge, stream flow and the water-tracking model to quantify water supply inputs and outputs to the natural hydrologic system on a HUC 11 watershed basis. Budgets are being developed to address high-stress periods, coincident with the annual growing season, when stream flow is marginal. Budgets for regional confined aquifers rely on outputs from regional hydrogeologic models developed and simulated for these systems. Ultimately water budgets will quantify the amount of water that would be available naturally (without human diversions) and how much water is currently being lost to the system as a result of consumptive⁸ and depletive uses⁹.

The NJDEP initiated the ecological flow goals project because it has become increasingly evident that, in order to protect the entire aquatic ecosystem, the essential components of the entire hydrograph must be preserved, high flows as well as low flows. Currently, the NJDEP utilizes a passing flow methodology to prevent diversions and other uses from lowering streamflow below acceptable levels (10-year drought levels). New research indicates this method is not effective in protecting the natural ecology. The ecological flow goals project seeks to develop a methodology appropriate to New Jersey to calculate stream flows needed to protect aquatic communities.

A joint USGS/NJDEP research project developed a tool to analyze streamflow variability. The New Jersey Hydrologic Assessment Tool (NJHAT) quantifies streamflow characteristics and variability in five categories: (1) magnitude of low, high and average flows; (2) frequency of low and high flows; (3) duration of flows; (4) timing of flow events; and (5) rate of change of flow events. The result is a numerical parameter and expected normal range for each streamflow characteristic. The NJHAT will be applied first to a daily streamflow hydrograph from a baseline period. In order to analyze the impacts of a proposed project, the change in daily flows due to that project will be applied and an 'impacted' hydrograph created. The impacted hydrograph will then be analyzed with the NJHAT and the new, impacted parameters will be compared to the range associated with each of the baseline parameters. If any of the impacted parameters are outside of the baseline range, the project will be judged to have an unacceptable impact on streamflow. The NJDEP hopes to start applying this new method in 2006 on a case-by-case basis.

⁷ A hydrologic unit code (HUC) is a hierarchical classification of hydrologic drainage basins in the United States. Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to fourteen digits based on the levels of classification (scale) in the hydrologic unit system. A HUC-11 drainage basin has eleven digits in its code. There are 150 HUC 11's in New Jersey.

⁸ Consumptive water use is the use of water in such a way that a portion of the water is lost to evaporation and transpiration or is not discharged to any location. An example of consumptive water use is water used for irrigation purposes.

⁹ Depletive water use is the withdrawal of water from a supply source (ground or surface water) where the water, once used, is not discharged to the same water supply source and is therefore not usable within the same watershed, thus depleting the supply. An example of this is when water is supplied to a community and the sewer discharge is in another basin or watershed, therefore taking that water out of the hydrogeologic system of the source area.

Information provided by the ecological flow goals outputs and the water budgets will allow the NJDEP to determine the amount of water that may be withdrawn (surplus) for future consumptive and depletive uses. This will then inform land use and watershed management planning decisions ensuring that future water supplies are sustainable for all designated uses.

Status of the Water Supply of Southeastern New Jersey

Executive Order 32 and subsequent actions required the New Jersey Department of Environmental Protection (NJDEP) to “assess the adequacy of the water supply in relation to approved and anticipated growth in Egg Harbor, Galloway and Hamilton Townships” in consultation with Atlantic County, the Pinelands Commission, the New Jersey Department of Community Affairs, Rutgers The State University, the State Climatologist and the United States Geological Survey. This Executive Order was issued due to uncertainties regarding the adequacy of the water supply of the region to support the substantial growth occurring in these municipalities. A report entitled, “Status of the Water Supply of Southeastern New Jersey” was as a result.

Based on this report, NJDEP has concluded that the region will experience both immediate and long-term problems associated with its water supply. Among the more immediate problems are streamflow depletion as a result of surface water withdrawals and ground water withdrawals from the water table aquifer. The long-term problem is the migration of saltwater into the deep aquifer systems toward wells in Cape May County, and, possibly, Ocean County. Consequently, NJDEP will require that a comprehensive alternative water supply feasibility study be developed to begin a process to mitigate the effects discussed above and to meet the future water supply needs in southeastern New Jersey. The feasibility study will be integrated into a holistic “Smart Growth” strategy to effectively protect and sustain the natural resources of the region. NJDEP will initiate the water supply planning process in the very near future. Affected stakeholders will be invited to participate in the development of this long-term plan. It is anticipated that the plan will take three to five years to be completed and at least the same amount of time to implement.

Recommendation for Interim Action

Since the long-term "Southeastern New Jersey Water Supply Feasibility Study" will take several years to be completed and implemented, the NJDEP will coordinate with the stakeholders of the region to implement an interim water supply management plan. The primary objective of the interim plan is to conserve surface and ground water for essential potable uses. The interim plan will sustain and protect the region's potable supplies by:

1. Requiring most new or expanded non-potable (including the irrigation of non-edible crops) water uses to use treated wastewater and other sources of lower quality water when these sources are available and economically feasible;
2. Implementing potable and non-potable water conservation strategies;
3. Requiring the use of water supply alternatives that minimize quantity risks to natural resources and other users of the water resource; and

4. Implementing source water protection strategies in partnership with local stakeholders in an effort to protect drinking water supplies.

This interim plan does not apply to new or existing withdrawals of less than 100,000 gallons per day (GPD), which do not require water allocation permits or agricultural water use certifications except in the Highlands Preservation Area. These uses will have to be addressed through appropriate land use and wastewater management planning. To demonstrate the efficiency of beneficial reuse of reclaimed water, the NJDEP is funding the following demonstration projects in Atlantic County.

Atlantic City Marina Reuse Water Supply Demonstration Project

One of the NJDEP's priority Water Supply Demonstration Projects is the Atlantic City Marina Reuse Project. Atlantic County Utilities Authority (ACUA) is moving forward with a project that proposes to reuse treated wastewater effluent (reuse) from its regional wastewater treatment facility to supply the Marina Thermal (DCO Energy, LLC) facility in Atlantic City. Marina Thermal is an off-site central utility plant, which serves the expanding casino industry in Atlantic City, NJ. Chilled water, hot water, and emergency power generated by Marina Thermal is delivered to casino buildings for cooling, heating, domestic hot water, and back-up power requirements.

Approximately 400,000 gallons per day (gpd) of reuse will be utilized by Marina Thermal as process water for cooling tower or distribution system make-up. The total project cost is estimated to be \$6,472,000. The Department will be providing \$4,876,400 from the 1981 Water Supply Bond Fund and \$1,260,000 from the Wastewater Treatment Bond Act of 1985. The remaining cost, to be incurred by ACUA, is \$1,163,600, which will be financed through New Jersey Environmental Infrastructure Trust (NJEIT).

Marina Thermal and ACUA have discussed increasing the amount of reuse to 600,000 gpd as Marina Thermal is expanding their operations to provide for the Harrah's Hotel & Casino Tower expansion.

Four Seasons Water Supply Demonstration Project

K. Hovnanian is developing several age-restricted communities in Galloway Township. The development project includes 459 residential and will require large amounts of water for irrigation, which would usually come from a potable source (New Jersey American). However, K. Hovnanian is instead going to utilize reclaimed water for beneficial reuse to irrigate the property, which would free up the potable supply for other demands. The total project cost is estimated to be \$4.2 million. The NJDEP will fund \$2,805,600 from the 1981 Water Supply Bond Fund. Of the remaining \$1,394,400, K. Hovnanian will finance \$654,068 with a NJEIT Loan and contribute an additional \$740,332.

Green Acres Program

The Green Acres Program was created in 1961 to meet New Jersey's growing recreation and conservation needs. From 1961 through 1995 New Jersey's voters overwhelmingly approved nine bond issues, earmarking over \$1.4 billion for land acquisition and park development.

Since 1999, the Program has also been supported by Constitutionally dedicated open space funds administered by the Garden State Preservation Trust.



On April 17, 2003, the 303-acre September Farm, LLC, property in Lebanon Township, Hunterdon County, was added to New Jersey's open space inventory. The property was preserved through the cooperative efforts of Hunterdon County, the New Jersey Water Supply Authority, Lebanon Township and the Green Acres Program.

Lands that are acquired or developed with Green Acres funds must be used solely for recreation and conservation purposes. In addition, all lands that a county or municipality holds for recreation and conservation purposes at the time that it accepts Green Acres funds are similarly restricted. No part of the property can be used or conveyed for a non-recreation, non-conservation use unless the use or conveyance would achieve a public purpose, no feasible alternative exists, the lands are replaced with lands of at least equal

monetary value and recreation/conservation utility, and the conveyance is approved by the Commissioner of the NJDEP and the State House Commission.

As of January 31, 2006, Green Acres has preserved 599,495 acres since its inception. This includes open space lands the state directly purchased through Green Acres' State Land Acquisition Program as well as properties for which the program provided cost share funding through its Local and Nonprofit Assistance Program.

Open space preservation and conservation is of inestimable value in preventing and abating nonpoint source pollution and the Green Acres Program plays a pivotal role in New Jersey's nonpoint source control strategy.

Additional Information

New Jersey Department of Environmental Protection
Division of Watershed Management
401 East State Street
P.O. Box 418
Trenton, NJ 08625-0418
(609) 984-0058
www.state.nj.us/dep/watershedmgt