New York State Department of
ENVIRONMENTAL CONSERVATION
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Wastewater Infrastructure Needs of New York State

March 2008

Eliot Spitzer, Governor

Pete Grannis, Commissioner

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LIST OF ACRONYMS

BEACH Program	Beach Assessment and Coastal Health Program
CSO	Combined Sewer Overflow
CW/CA BA	Clean Water/Clean Air Bond Act (1996)
CWA	Clean Water Act
CWNS	Clean Watersheds Needs Survey
CWSRF	Clean Water State Revolving Loan Fund
Department	New York State Department of Environmental Conservation
DOH	New York State Department of Health
EFC	New York State Environmental Facilities Corporation
EPA	United States Environmental Protection Agency
EPF	Environmental Protection Fund
EQBA	Environmental Quality Bond Act (1972)
FFY	Federal Fiscal Year
GSP	Gross State Product
HUD	United States Department of Housing and Urban Development
MS4	Municipal Separate Stormwater Sewer System
NYSERDA	New York State Energy Research and Development Authority
PPCP	Pharmaceuticals and Personal Care Products
PWBA	Pure Waters Bond Act (1965)
SFY	State Fiscal Year
SPDES	State Pollutant Discharge Elimination System
SSO	Sanitary Sewer Overflow
TMDLs	Total Maximum Daily Loads
USDA	United States Department of Agriculture

EXECUTIVE SUMMARY

Introduction

The conservative cost estimate of repairing, replacing, and updating New York's municipal wastewater infrastructure is $36.2 billion[1] over the next 20 years. In the past, the federal and state governments have provided significant funding for infrastructure repair and replacement. This is not true today. In the 1990s, the federal grants program shifted to a low-interest loan program, making it harder for many communities to address their infrastructure needs. New York voters approved the 1996 Clean Water/Clean Air Bond Act (CW/CA BA) which provided funding for wastewater infrastructure in certain areas, but these funds have been fully obligated. To date, New York State has invested over $11 billion in wastewater infrastructure.

Across New York State there are over six hundred wastewater treatment facilities that serve 1,610 municipalities. The facilities range in size from New York City's vast system that processes 1.3 billion gallons of wastewater a day through 14 facilities, to small village systems that process less than 100,000 gallons a day. These facilities provide wastewater treatment for more than 15,000,000 people across the state.

With limited federal and state assistance, the burden of maintaining wastewater infrastructure falls on local governments. Many local municipalities have trouble convincing their residents that infrastructure must be managed proactively, including planning for repairs and replacement and charging rates that cover those costs. Fewer than 40 percent of municipalities have a capital improvement plan for their wastewater collection systems. Except for transportation infrastructure, water and wastewater infrastructure are the largest municipal assets. This report is an initial step toward the development of a sustainable infrastructure funding program at the federal, state and local level. Adequate water infrastructure funding is a critical component of urban revitalization, smart economic growth and property tax relief. It is essential for the protection of public health and environment.

Report Overview

The state fiscal year 07-08 (SFY) budget included $300,000 to assist the Department of Environmental Conservation (Department) in assessing statewide wastewater infrastructure improvement needs and to report its findings.[2] This is the Department's report. The Department

[1]The 2003 Drinking Water Needs Survey documented drinking water infrastructure costs in New York of $14.8 billion over the next 20 years. United States Environmental Protection Agency, "Drinking Water Infrastructure Needs Survey and Assessment, Third Report to Congress," p. 58, June 2005. Available at http://www.epa.gov/safewater/needssurvey/pdfs/2003/report_needssurvey_2003.pdf. Presently, the Department of Health is compiling data for a 2007 needs survey. It is expected that this updated information will document needs in New York of at least $20-22 billion for drinking water infrastructure over the next 20 years.

[2] There are also thousands of small privately - owned residential wastewater treatment facilities that have small

plans to use the budget item to further refine the estimates developed in this report to better understand the full scope of infrastructure funding requirements and to present suggested cost-effective solutions.

There are many factors that have caused the cost of New York State's wastewater infrastructure to increase. Many facilities are past their expected useful lives. In addition, new federal standards push the need for enhanced wastewater treatment systems, as well as the sometimes costly programs to address stormwater, combined sewer overflows (CSOs) and separate sanitary overflows. All this is happening in the wake of the federal government's systematic disinvestment in wastewater infrastructure.

New York State is fortunate to have vast water resources. These resources are critical to the 18 million New Yorkers who rely on them for drinking, bathing and recreation. Plentiful waters can form the foundation of economic expansion, as other areas of the nation suffer from chronic shortages. Yet these resources are in peril of being re-contaminated due to declining wastewater infrastructure. Undertreated or raw sewage, street waste and nutrient pollution cause excess algae and weed growth and otherwise impair New York States precious waters including: Long Island Sound; the Hudson River; the Mohawk River; Lake Champlain; Lake Ontario, Lake Erie and the Finger Lakes.

To assess New York's aging infrastructure, the Department and the Environmental Facilities Corporation (EFC) formed a wastewater infrastructure workgroup. As one of the first steps in developing the report, the workgroup reviewed the Clean Watersheds Needs Survey (CWNS) that EFC conducts every four years with the United States Environmental Protection Agency (EPA). The Needs Survey covers a variety of infrastructure costs, is focused on municipal systems and contains high quality data. However, the Needs Survey covers a limited universe of projects for which actual engineering plans have been prepared, and does not include estimates of any anticipated needs that have not undergone this advanced level of project development. Therefore, the Needs Survey provides only a limited and conservative cost estimate. Emerging issues that affect future wastewater infrastructure needs are not included in the Needs Survey. Nor does the Needs Survey include residential septic systems because they are not eligible for Clean Water State Revolving Loan Fund (CWSRF) funding.

The following two charts show the results of the national and New York State specific Needs Surveys from 1974 to 2004 (the most recently completed survey):

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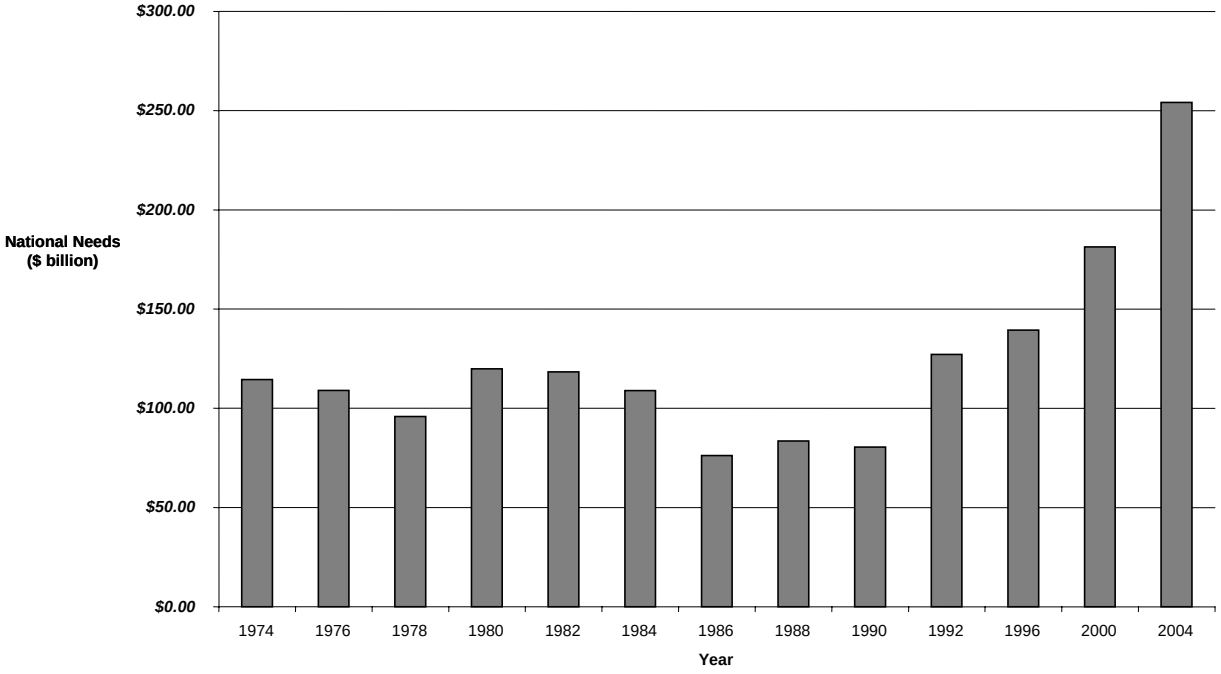
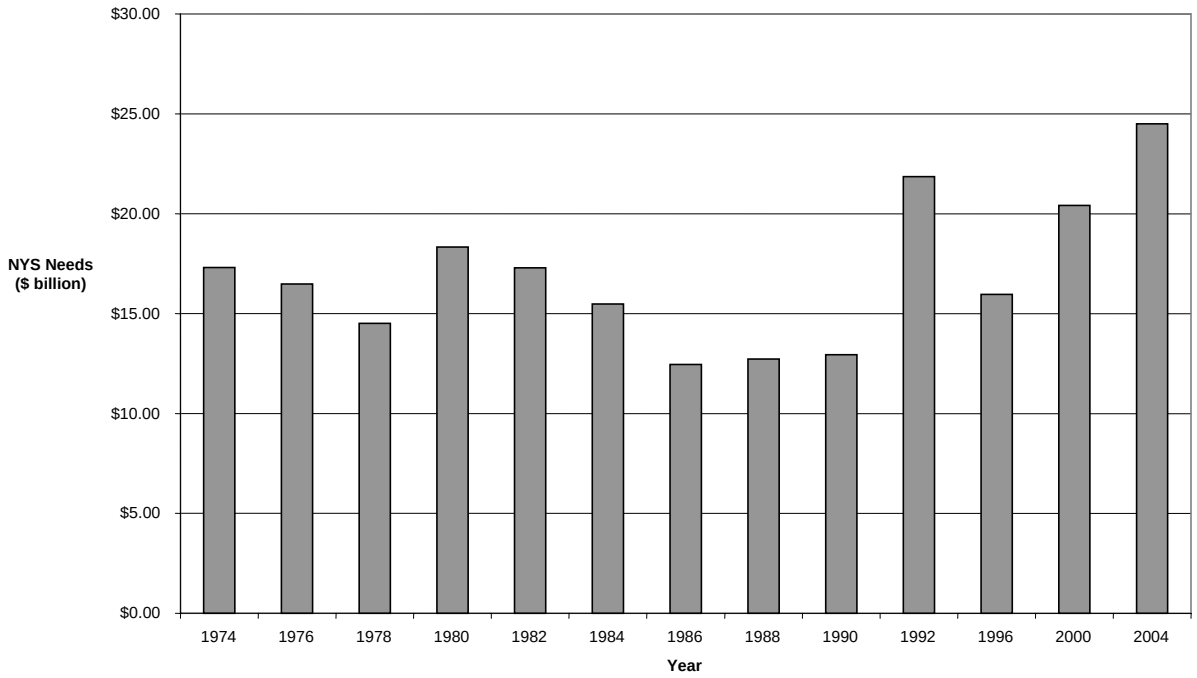
service areas, such as apartment complexes and mobile home parks. An assessment of the needs for these systems is also included in this report. These systems are privately owned and presently not eligible for public funding.

Summary of National Needs Surveys 1974-2004



Summary of NYS Needs Surveys 1974-2004



In addition to EPA's CWNS, the workgroup reviewed other existing data sets held by the Department and its partners, and considered pollutants and standards that wastewater infrastructure may have to address in the future. The data that the workgroup reviewed fell into three categories for municipal wastewater infrastructure needs:

Clean Watersheds Needs Survey Data

- Municipal Wastewater Treatment Facility Upgrades
- Collection and Conveyance Systems
- Combined Sewer Overflow Correction
- Nonpoint Source Pollution Control

Other Existing Data Sets

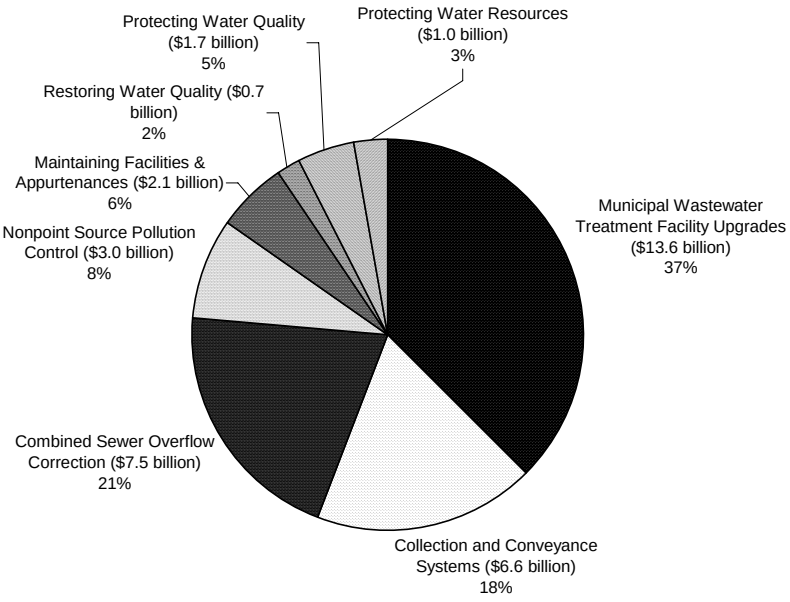
- Maintaining Facilities and Appurtenances
    - Operation and Maintenance
    - Auxiliary Power at Plants
- Restoring Water Quality
    - Unsewered Communities

Future Infrastructure Needs Data

- Protecting Water Quality
    - Municipal Separate Storm Sewer System (MS4) Retrofit
    - New Total Maximum Daily Loads (TMDLs)
    - Enhanced Water Quality Standards
    - Pharmaceuticals and Personal Care Products
- Protecting Water Resources
    - Water Shortages

The following chart shows the proportion of funding projected to be needed for each of these data sets: (More details on how the data was reviewed and a table of the results can be found in the Data Evaluation and Next Steps section of this report. The workgroup plans to refine many of this report's estimates in its continuing work. Further research is likely to identify additional needs.)

20-Year Estimate of Wastewater Infrastructure Needs in NY ($36.2 billion total)



It is unlikely that any one funding source will meet the projected financial needs of wastewater infrastructure that arise under the federal Clean Water Act (CWA) and federal Safe Drinking Water Act. Federal, state and local governments will need to establish stronger partnerships toward a long-term solution. Components for a sustainable funding program could include: a well-funded CWSRF; low-interest loan programs; federal grants; state grants; hardship community grants and adequate local rates sufficient to address current and projected funding requirements. Considerations for developing the program include: asset management; innovative technology; fairness; future infrastructure challenges; the relationship of infrastructure to smart growth and economic development; and local government efficiency. The Department looks forward to working closely with the public and the Legislature on developing this critical funding program.

WASTEWATER INFRASTRUCTURE

Overview

Efforts to protect New York State's waters began in earnest in the early 1900's. A typhoid outbreak in 1903 killed 141,564 people.[3] To this day, 18 percent of all deaths of children under five years of age worldwide are due to a lack of safe water.[4] Nationally, clean water supports a $50 billion per year recreation industry: $300 billion in coastal tourism and $45 billion in commercial fishing and shellfishing industries. Hundreds of billions of dollars a year in basic manufacturing rely on clean water.[5]

The Federal Clean Water Act

In 1972, in recognition of the nation's interest in protecting its vast waters, Congress enacted the CWA which instituted strict requirements to protect the nation's waters. For the past 30 plus years, New York has been required to comply with these mandates. The result has been greatly improved water quality.

> ***What is Wastewater Infrastructure?***
> It is a term used to describe the entire wastewater treatment system. Although the systems vary, they are comprised of two major parts. The first is the collection system, which is the system of pipes and pumps that collects used water and carries it to a treatment facility. The second is the treatment facility itself, where a combination of physical, chemical and biological processes occur to clean water before it is discharged back into our waters.

A fundamental aspect of the CWA is that each wastewater discharger must obtain a permit that limits the amount of pollutants that can be discharged into a waterbody.[6] Permit limits are established by the more stringent of two methods: best available technology standards or water quality based standards.[7] The best available technology limit is established in EPA regulations that identify limits of wastewater effluent from certain categories of dischargers.[8] In the case where EPA has not established a limit, Department engineering staff use best professional judgment to establish limits. Water quality based limits are derived by Department

[3]New York Times, February 27, 1905; p.8.

[4]Unicef, "Facts on Children." [Online] Available www.unicef.org/media/media_36238.html.

[5]Water is Life, "Fact Sheet about the Nation's Water and Wastewater Infrastructure." [Online] Available www.waterislife.net.

[6]33 U.S.C.A. § 1311.

[7]33 U.S.C.A. § 1312.

[8]40 C.F.R. § 125.3, 405-471.

water quality experts who calculate how much of a pollutant a particular waterbody can receive while maintaining water quality standards. For waterbodies that violate state water quality standards, the Department must, in general, prepare a TMDL which is essentially a pollutant budget for the impaired water.[9] A TMDL identifies the amount of a pollutant that must be reduced so its ambient water quality meets water quality standards.[10] It then allocates the amount of reduction needed among direct and indirect dischargers. There are 724 waters on New York's 303(d) list[11] that may be candidates for TMDL standards. Compliance with TMDL requirements often result in the need to design and construct costly, additional, treatment infrastructure to supplement existing wastewater treatment plants.

Aging Infrastructure

Generally, the 610 municipal wastewater plants in New York are meeting baseline technology limits, yet a growing number are slipping away from these limits as their infrastructure ages beyond its expected useful life. The American Society of Civil Engineers rated the nation's wastewater systems as a D- in their 2005 report card.[12] One of the major factors causing this slippage is the deterioration of sewage collection systems. According to a 2004 Department survey of the 1,060 sewage collection systems in New York State, there are 22,000 miles of sewers, more than 30 percent of which are in excess of 60 years old and beyond their expected useful life. This echoes a national trend that shows a marked increase in antiquated sewage collection systems. The following charts[13] show the increasing age of sewer pipes nationwide.

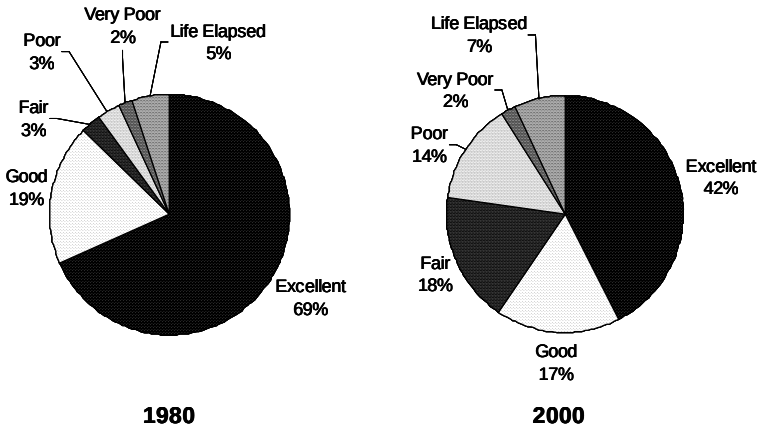
[9] 33 U.S.C.A. § 1313(d).

[10] 40 C.F.R. § 130.7(b).

[11] New York State Department of Environmental Conservation, "2008 DRAFT 303 (d) List." 2008. [Online] Available http://www.dec.ny.gov/docs/water_pdf/303dlistdraft08.pdf. Section 303(d) of the CWA requires states to identify Impaired Waters, where specific designated uses are not fully supported. For these Impaired Waters, states must consider the development of a TMDL or other strategy to reduce the input of the specific pollutant(s) restricting waterbody uses, in order to restore and protect such uses.

[12] American Society of Civil Engineers, "2005 Report Card for America's Infrastructure," 2005. [Online] Available http://www.asce.org/reportcard/2005/index.cfm.

[13] United States Environmental Protection Agency, "The Clean Water and Drinking Water Infrastructure Gap Analysis." September 2002. p. 15.



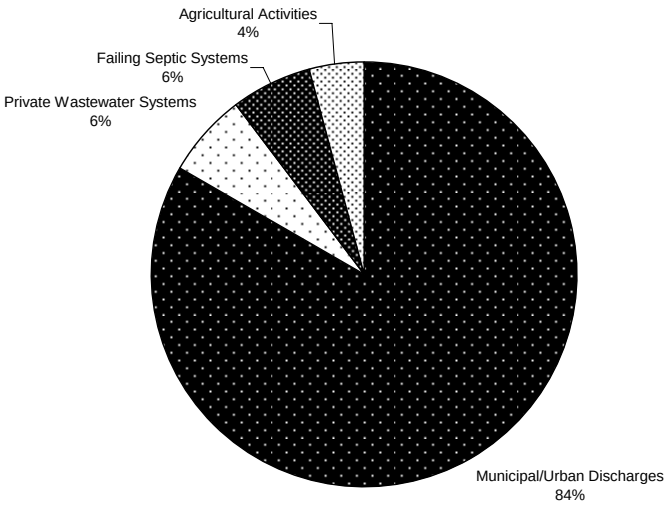
Percentage of Pipe by Classification

Numerous wastewater treatment plants are also operating beyond their expected 30 year useful lives. The Department's database "Descriptive Data of Wastewater Treatment Plants in New York" indicates that 23 percent of municipal wastewater treatment plant equipment is more than 30 years old.

Aging wastewater infrastructure is tied directly to the quality of New York State's waters. A 2004 Department study documented the correlation between wastewater infrastructure and water quality.[14] When wastewater infrastructure is beyond its design life and, thus, operating at reduced levels of efficiency, the receiving water quality declines. The study also shows that water quality declines are often caused by nutrient loading from stormwater runoff. The following chart shows that municipal wastewater treatment plants discharges, CSOs and urban stormwater runoff are the primary sources of impairment for newly identified impaired waters.

[14] New York State Department of Environmental Conservation, "30 Year Trends in Water Quality of Rivers and Streams in New York State." 2004.

Sources of Impairment for Waters Newly Added to 2008 NY List of Impaired Waters



Water Quality Requirements

There has also been a more recent regulatory focus on water quality-based effluent limits. These limits often drive more site specific and costly technologies at New York facilities. For instance, New York City is undertaking upgrades to four of its wastewater treatment plants to apply advanced nitrogen removal technology as part of a multi-state effort to restore Long Island Sound, at a cost of more than $700 million.

The Department anticipates that costs will increase due to additional requirements associated with water quality-based effluent limits to address nutrient pollution from nitrogen and phosphorus, as well as the ongoing adoption of new water quality standards and the ability to detect pollutants of heightened concern at lower levels.

Stormwater

The CWA also mandates pollution reduction permits to address all stormwater discharges from construction sites over one acre, as well as all urbanized municipalities.[15] The control of stormwater is a necessary component of water quality protection. A mix of pollutants, including bacteria, metals, nutrients, oil, grease, pesticides and sediment, are carried into our waterways by the large volumes of stormwater that wash across construction sites and urban areas. According to EPA's Beaches Environmental Assessment and Coastal Health Program (BEACH Program),

[15] 33 U.S.C.A. § 1342.

stormwater was the cause of 21 percent of all swimming beach advisories and closings nationally during the 2002 swimming season.[16] Except for New York City, which has already adopted its stormwater program, there are 430 urbanized municipalities in the state. The cost for compliance with the Phase II stormwater regulation is difficult to determine at this time. Projections range from $3 to $67 per person.[17]

Combined Sewer Overflows

In 1994, EPA adopted a CSO policy requiring that states address wet weather, raw sewage and discharges from municipal sewers.[18] In 2000, Congress amended the CWA to include the Wet Weather Act of 2000 that adopted EPA's policy into law.[19] At the time, Congress recognized that the adoption of a program to address CSOs would be very costly to municipalities. It authorized funding of $1.5 billion for pilot projects and infrastructure design and construction.[20] Yet, to this day, none of this federal funding has been appropriated.

What is a CSO?

Combined sewer systems are wastewater collection systems designed to carry sanitary sewage (consisting of domestic, commercial and industrial waste) and stormwater (surface drainage from rainfall or snow melt) in a single pipe to a treatment facility. During dry weather, these systems convey domestic, commercial and industrial wastewater. In periods of rainfall or snow melt, total wastewater flows can exceed the capacity of the systems. When this occurs, the system is designed to overflow directly to surface waterbodies, such as lakes, rivers, estuaries or coastal waters.

New York State has adopted a CSO control program that includes fifteen best management practices. Key components include the requirement to capture and treat 85 percent of wastewater during wet weather events and the prohibition of any water quality standard violation.

[16] United States Environmental Protection Agency, "Report to Congress: Impacts and Control of CSOs and SSOs." Office of Water, EPA-833-R-04-001, August 2004, pp. 5-11.

[17] Office of Water Programs, California State University, Sacramento, "NPDES Stormwater Cost Survey." January 2005, p. 75.

[18] 59 Federal Register § 18688.

[19] 33 U.S.C.A. § 1342.

[20] 33 U.S.C.A. 1301(f).

CSOs are often found in municipalities with older sewer collection systems. Because CSOs contain untreated domestic, commercial and industrial wastes as well as surface runoff, many different types of contaminants can be present. Contaminants may include pathogens, oxygen-demanding pollutants, suspended solids, nutrients, toxics and floatable matter. Because of these contaminants and the volume of the flows, CSOs can cause a variety of adverse impacts on the physical characteristics of surface water, impair the viability of aquatic habitats, and pose a potential threat to drinking water supplies. CSOs have been shown to be a major contributor to use impairment and aesthetic degradation of many receiving waters and have contributed to shellfish harvesting restrictions, beach closures and occasional fish kills.

CSOs are a major source of water quality impairment for eight percent (247 of 3,180 miles) of river miles impaired by point sources, two percent of total lake acres impaired by point sources (2,990 of 187,620) and 61 percent (124 of 202 square miles) of estuary square miles impaired by point sources.[21]

New York State has approximately 10 percent of the nation's CSOs. As of 2001, New York State had 60 municipalities with CSOs. There are 1098 known CSO outfall points; New York City alone has more than 450. Currently, 27 billion gallons of raw sewage and polluted stormwater discharge into New York Harbor each year. Other areas of particular concern include the Buffalo, Syracuse and Albany areas. The Rochester area has completed a comprehensive abatement program which has almost eliminated CSOs.

CSO Permits

74

Permitted CSO Outfalls

1,098

NPDES Authority/Water Quality Standards Authority

New York State Department of Environmental Conservation (NYSDEC)

Online Resources

www.dec.state.ny.us/
www.dec.state.ny.us/website/dow/index.html

CSOs are difficult and expensive to address. CSO municipalities are required to develop long-term control plans to abate these discharges. For example, New York City is required by an order on consent with the Department to abate its CSOs at an estimated cost of $2.2 billion. Buffalo Sewer Authority's preferred CSO abatement program is estimated to cost $528 million.

[21] New York State Department of Environmental Conservation, "New York State Water Quality 2006."

Sanitary Sewer Overflows

Sanitary sewer overflows (SSOs) are events that occur when the capacity of a collection system (which is designed to collect and convey only sanitary wastewater, not stormwater) is exceeded, flow is blocked, or mechanical failure prevents the system from proper operation. EPA estimates that between 23,000 and 75,000 SSOs occur each year in the United States, resulting in releases of between 3 billion and 10 billion gallons of untreated sewage. Because SSOs contain raw sewage and can occur on land and in public spaces, SSOs can create public health and environmental concerns. SSOs have contributed to beach closures, contamination of drinking water supplies, and other environmental and public health concerns.[22] SSOs are illegal and must be addressed. In New York State, 55 municipal collection systems have overflow pipes or other facilities which allow SSOs to occur.

Closing

As New York State attempts to address the range of problems of infrastructure that is beyond its useful life and incorporates additional federally mandated requirements into its state water quality program, escalating burdens are being placed on the municipalities that own this infrastructure. In fact, the Department has 203 enforcement orders against municipalities for CWA violations. The Department has not yet finished its assessment of the number of urbanized municipalities that have failed to comply with the stormwater requirements and expects the number of orders to increase. In an effort to help local officials better understand their responsibilities to maintain wastewater infrastructure, the Department has been working with the New York Water Environment Association, EPA and the Environmental Finance Center at Syracuse University to develop a series of workshops and a new guide.[23]

[22] United States Environmental Protection Agency, "Report to Congress on the Impacts and Control of CSOs and SSOs," August 2004. [Online] Available http://cfpub.epa.gov/npdes/cso/cpolicy_report2004.cfm.

[23] New York State Department of Environmental Conservation, US EPS Region 2, Environmental Finance Center at Syracuse University and the New York Water Environment Association, "Handbook on Wastewater Management for Local Representatives." February 2007. [Online] Available www.nywea.org/_default.inc/content/DECHandbook/DECHandbk (1-27-07).pdf

OVERVIEW OF INFRASTRUCTURE FUNDING HISTORY[24]

Federal Infrastructure Funding History

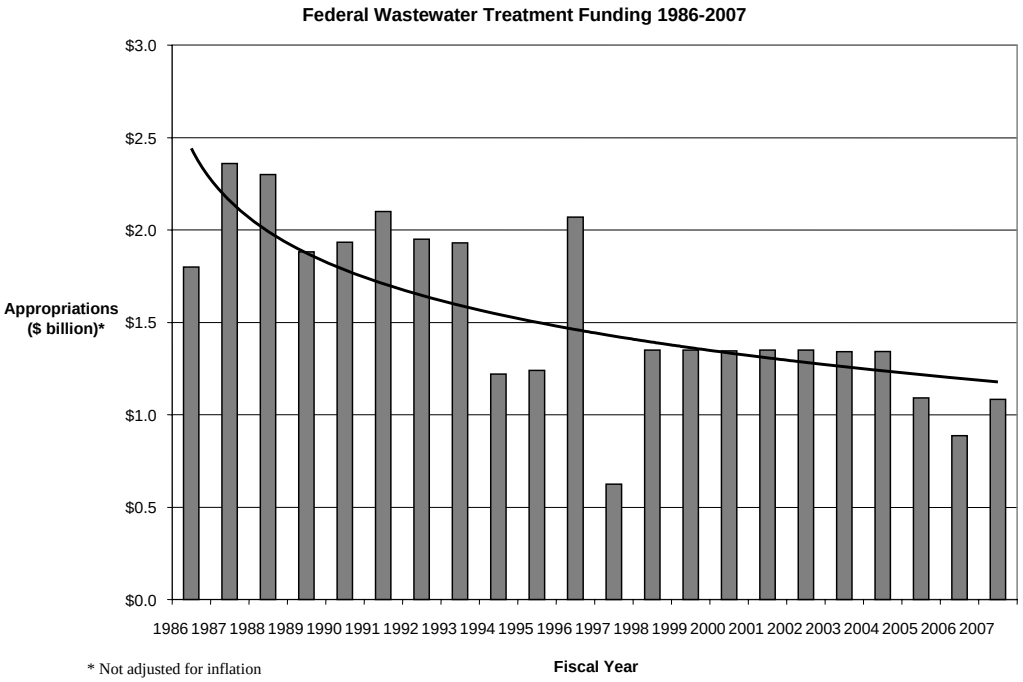
The Water Pollution Control Act of 1948 was the first comprehensive statement of federal interest in clean water programs. While it contained no federally required goals, limits, or even guidelines, it initiated federal aid to municipal wastewater treatment facilities in the form of a grants program. Funding increased with each amendment leading to a federal cost-share of 55 percent. Federal aid was then dramatically increased in 1972 with the passage of the CWA. In accordance with the CWA, Congress strengthened the federal role in clean water and established national standards for treatment. The federal cost-share of treatment works projects increased to 75 percent with the largest annual appropriation of $9 billion. This program was known as the Construction Grants Program. When the program was reauthorized in 1981, there were significant programmatic restrictions due to budgetary pressures and concerns that the program's wide scope was not properly focused on key goals. In a push to reduce federal spending, Congress reduced annual appropriations to $2.4 billion, and reduced the federal project cost-share back to 55 percent.

By the mid-1980s there was considerable debate between Congress and the President over the future of the Construction Grants Program. Through Federal Fiscal Year (FFY) 1984, Congress had appropriated nearly $41 billion, representing the largest nonmilitary public works program since the interstate highway system. Due to budgetary constraints, there was an effort by the President to phase-out the Construction Grants Program by 1990. In response to significant opposition, Congress, in 1987, amended the CWA, authorizing $18 billion over a nine-year period for wastewater treatment facility construction through a combination of the Construction Grants Program and a new CWSRF.

The CWSRF provides grants to states to establish a revolving loan program to pay for wastewater treatment plants. The states are required to provide a 20 percent match. These funds provide low interest loans to municipalities. The CWSRF program was phased in beginning in FFY1989 and was set to entirely replace the Construction Grants Program in FFY1991. Congress' intention was that federal aid would end after FFY1994. CWSRF authorizations expired in 1994, but pressure to extend federal funding has continued, in part because the demonstrated need for funding for water quality projects remains high. Consequently, Congress has continued to appropriate funds. As of FFY2007, Congress appropriated $52.1 billion for the Construction Grants Program and $25.5 billion for the CWSRF.

[24] New York State Environmental Facilities Corporation, "A History of Clean Water Funding 1948 – Present and Future Wastewater Funding Needs." October 9, 2007. pp. 1-2

As the following chart shows, CWSRF appropriations have been declining. The most dramatic decline has been since 2004, when $1.35 billion was appropriated, down to $687 million in 2008. The President's 2009 budget calls for $555 million for CWSRF.



New York State Infrastructure Funding History

New York State has long been a leader in providing funding for wastewater infrastructure. The state's funding history is a mixture of state-funded bond acts and federal funding. The state's first significant commitment for wastewater treatment infrastructure funding came prior to the federal CWA with the passage of the $1 billion Pure Waters Bond Act (PWBA) in 1965. The 1965 Bond Act was credited with increasing pressure for the subsequent federal funding in the CWA for the Construction Grants Program. The 1972 Environmental Quality Bond Act (EQBA) provided an additional $650 million for wastewater treatment infrastructure that was used in conjunction with the federal Construction Grants Program.

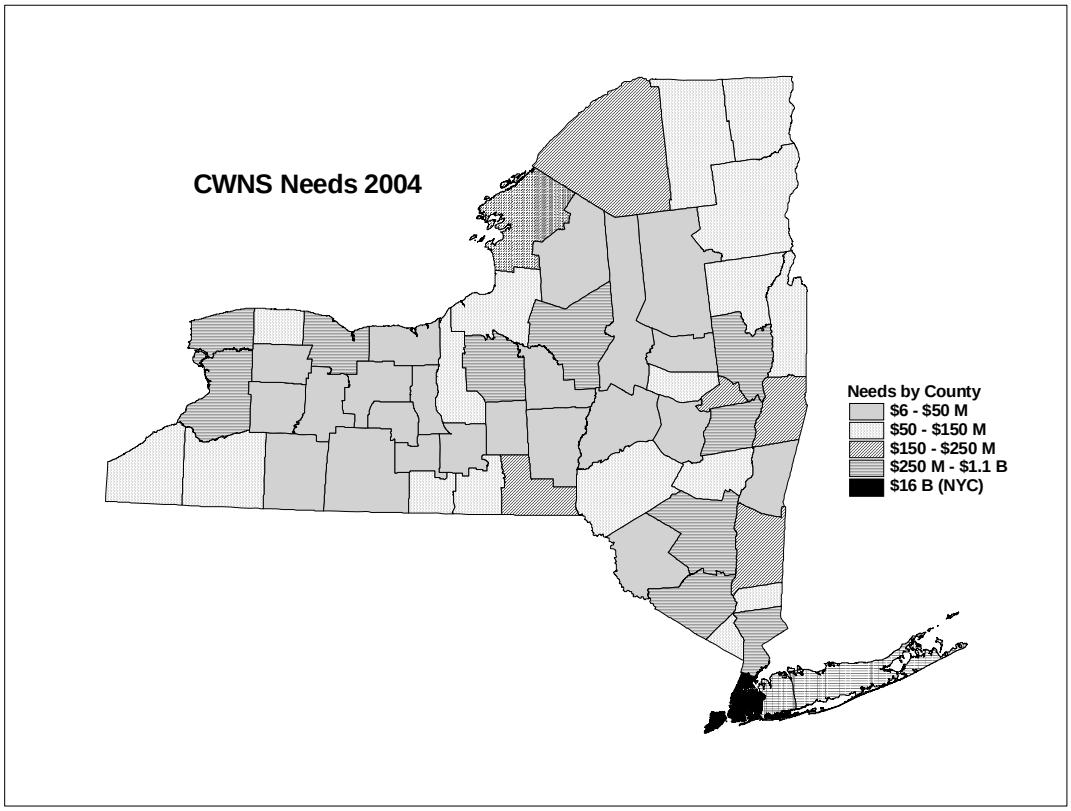
Through the federal Construction Grants Program, New York municipalities received approximately $6.8 billion in direct federal assistance for the design and construction of wastewater treatment infrastructure. The percentage of federal assisted municipalities changed over time. They consisted of 55 or 75 percent federal funding and then either 30 or 12.5 percent New York State match, bringing total state and federal funding under the program to approximately $8.45 billion. Most municipalities were required to pay for the remaining 15 or 12.5 percent of project costs, often with in-kind project contributions.

Since the start of the federal CWSRF program in 1990, the state has received approximately $2.9 billion in CWSRF capitalization grants from the federal government, and contributed an additional $580 million in match dollars. New York State currently receives a statutorily fixed 11.18 percent of the national CWSRF appropriation. These funds capitalize low interest loans and in 2007, the interest rates were between 0 and 2.3 percent with terms up to thirty years. EFC, which administers the CWSRF on behalf of the state, has financed loans of nearly $9.3 billion in eligible water quality projects since 1990.[22]

In 2008, New York State received only $75.1 million from the federal government for the CWSRF program, down from $227 million in 1991. Declines in federal funding are being felt across the state as fewer projects can be funded. Using financial innovations such as the issuance of subordinated debt instruments and offering financial guarantee products, EFC has increased program capacity by $120 million over the past four years, but these innovations can not keep up with ever increasing demands. New York State's required 20 percent match is calculated in the state budget assuming there is a high federal appropriation, yet what is actually paid out each year is only the amount required to match the federal grant. This, in effect, further reduces the amount of funding available. In SFY 2008, EFC has only $700 million in financing capacity available to address $4 billion in immediately requested capital construction needs.

Looking at long-term capital costs, New York's wastewater infrastructure needs continue to rise, as documented in EPA's recently published CWNS.[25] The CWNS is a national survey conducted every four years by the states and the EPA to assess water quality infrastructure costs that are eligible for funding under the CWSRF. EFC is responsible for coordinating the CWNS for New York State. The 2004 CWNS documented approximately $24.5 billion in needs for New York, a 20 percent increase over the 2000 CWNS. EFC has started the 2008 survey and with the participation of the Department is expanding it to collect data that previously has not been available in order to get a more complete financial picture. The need documented in the 2008 survey is expected to be significantly higher than the 2004 CWNS.

[25] United States Environmental Protection Agency, "Clean Watershed Needs Survey 2004 Report to Congress." January 2008. [Online] Available http://www.epa.gov/cwns.



Independent of the CWSRF, New Yorkers passed the 1996 CW/CA BA that provided $790 million dollars in grant funding for water quality projects including wastewater infrastructure improvements for listed watersheds.[26] This funding has been fully committed for projects. In SFY2006-2007, the Water Quality Improvement funding category was added to the Environmental Protection Fund (EPF). This category has been funded every year for a total of $27 million. In the past, this funding was not available for wastewater treatment infrastructure projects. The Governor's current budget (SFY 2008-2009) includes language that allows certain limited wastewater infrastructure projects to be eligible to receive this funding.

[26] New York State Environmental Conservation Law, Article 56.

HOW STATE FINANCIAL NEEDS ESTIMATES WERE DERIVED

The wastewater infrastructure workgroup used existing data to develop the wastewater infrastructure needs identified in this report.

Municipal Wastewater Infrastructure

Step One – Clean Watershed Needs Survey Data

To date, the only sound measure of New York's municipal wastewater treatment infrastructure financial needs has been the federal CWNS. Department staff reviewed the 2004 CWNS and updated the information with 2007 dollar figures. However, as discussed earlier, the CWNS categories do not capture the whole picture, instead presenting a conservative and constrained cost estimate. As a result, the workgroup also developed a list of the types of infrastructure needs that were ineligible to be included on the CWNS or were previously under reported in the CWNS.

Step Two – Other Existing Data Sets

The workgroup looked at readily available existing databases to fill gaps in the CWNS categories. The workgroup and its partners (e.g., Department of Health (DOH)) maintain a number of data sets that contain information about wastewater infrastructure; however, the data sets are not designed for the purpose of determining a system's financial need. To address the lack of financial data in the data sets, staff reviewed resources that had information about the cost of performing the different types of wastewater infrastructure repairs and replacements and matched the resource to the appropriate data set. Staff then calculated an estimate of how much it would cost to address the repair or replacement for that type of infrastructure or that portion of the infrastructure system.

Criteria were developed to identify those data sets that would provide useful information. Those data sets that would provide marginal or insignificant information were documented but not used in this report.

Step Three – Future Infrastructure Needs Data

Emerging issues, such as pharmaceuticals and personal care products in our waters and future water shortages, will influence infrastructure needs in the future. The workgroup identified the possible ways that these emerging issues could impact wastewater infrastructure and the improvement to the infrastructure that will be needed to address these issues. Workgroup members used a variety of methods to develop estimates for these needs, however, since there is limited information on these needs and most infrastructure improvements are not fully understood nor studied yet, the estimates that were developed are considered preliminary.

Residential Wastewater Infrastructure

The workgroup looked at readily available existing databases containing information on residential wastewater infrastructure that the workgroup and its partners (e.g., DOH) maintain. However, because those data sets were not designed for the purpose of determining a system's financial need, staff reviewed resources that had information about the cost of performing the different types of residential wastewater infrastructure repairs and replacements and matched the resource to the appropriate data set.

Climate Change

The possible effects of climate change and the increasing demand to reduce greenhouse gas emissions have a potential to affect wastewater infrastructure. The workgroup identified the possible ways that sea-level rise could impact wastewater infrastructure and the improvements to the infrastructure that may be needed to curb greenhouse gas emissions from wastewater treatment facilities. However, because the effects of climate change on infrastructure costs are not fully understood, estimates have not yet been developed.

DATA EVALUATION AND NEXT STEPS

The findings of the workgroup suggest that there are both substantial wastewater infrastructure needs and emerging issues that have not been captured by the CWNS that will significantly increase infrastructure needs in the future. Specifically, the workgroup found data and information (including 2004 CWNS information) which suggest that the estimated municipal and residential wastewater infrastructure needs in New York State are $36.2 billion and $9.1 billion, respectively, over the next 20 years. The impacts of climate change may also affect wastewater infrastructure needs. Below is a description of how those cost estimates were developed from each individual data set, as well as suggested additional actions that could be taken to better refine the results and improve decision-making.

Municipal Wastewater Infrastructure

Evaluating Clean Watersheds Needs Survey Data

Municipal Wastewater Treatment Facility Upgrades

The 2004 CWNS[27] for New York State presented $11.93 billion for secondary and advanced treatment needs. Considering inflation of 13.92 percent over the 4-year period, the current value of those needs is $13.6 billion.

Collection and Conveyance Systems

The 2004 CWNS for New York State presented $3.3 billion for sewer system (inflow/infiltration correction, major sewer system rehabilitation, new collectors and appurtenances, and new interceptors and appurtenances) needs. Considering inflation of 13.92 percent over the 4-year period, the current value of those needs is $3.8 billion. However, the portion of that need associated with inflow/infiltration correction appears to be dramatically underestimated. A 2004 Department survey of collection systems in New York State showed that approximately one-third of sewers were installed prior to 1950 and are beyond their expected useful life. Assuming that all sewers installed prior to 1925 and half of those installed between 1925 and 1950 need to be replaced and by applying replacement or repair cost estimates and bid results obtained by EFC, the estimated additional need for sewer replacement is $2.8 billion. Adding this amount to the CWNS figure results in a total estimated current need of $6.6 billion.

[27] United States Environmental Protection Agency, "Clean Watersheds Needs Survey 2004, Report to Congress." January 2008 [Online] Available www.epa.gov.cwns.2004rtc.cwns2004rtc.pdf.

Combined Sewer Overflow Correction

The 2004 CWNS for New York State presented $6.6 billion in needs for correction of CSOs. Considering inflation of 13.92 percent over the 4-year period, the current value of those needs is $7.5 billion.

Non-Point Source Pollution

The 2004 CWNS for New York State presented $2.6 billion for non-point source pollution needs. Considering inflation of 13.92 percent over the four-year period, the current value of those needs is $3.0 billion.

Possible Next Steps for Evaluating Clean Watersheds Needs Survey Data

The Department is working closely with EFC to assist in gathering current information for the 2008 CWNS. For the 2008 CWNS, the two agencies are working to capture information that is eligible for inclusion in the CWNS, but not previously reported.

Evaluating Other Existing Data Sets

Maintaining Facilities and Appurtenances

Operation and Maintenance Data from the New York State Office of the State Comptroller[28] shows that the annual revenue of treatment systems across the state totals approximately $1.5 billion. Expenditures roughly total $1.6 billion, resulting in an operation deficit of $100 million per year. Over the 20-year forecasting period for this report, the total need for operation and maintenance is estimated to be $2.0 billion.

> *Possible Next Steps:* The Department has an existing inventory of each municipal wastewater treatment system that includes information about the collection system and the facility's treatment process. The inventory is updated every two years through a survey sent to the facilities. The Department could expand the survey to collect additional information on current and projected replacement needs, estimates of capital expenditures, the age and material of wastewater equipment and sewer pipes, and user rates. In addition, the Department could include both municipal and privately owned wastewater treatment systems in the survey. The information collected from the survey could be used to develop better estimates of the needs for maintenance, repair and replacement of wastewater treatment facilities, collection systems, backup pumps,

[28] New York State Office of the State Comptroller, "Local Government Annual Report Database."

generators and related equipment. This survey is not the same as the CWNS.

Auxiliary Power The Department's 2004 survey identified 67 wastewater treatment facilities and 1,063 sewage pump stations that are without auxiliary or back-up power facilities. Using these results, existing EFC cost information for auxiliary power at recently built or upgraded facilities, and conversations with generator suppliers in the Albany area, a total need of $100 million is estimated for auxiliary power.

Restoring Water Quality

Hamlets and Small Villages (Unsewered Communities) Across the state there are approximately 600 hamlets and small villages where each residence or business has an individual septic system. In about 150 of these municipalities, the individual systems are not functioning correctly and a community wastewater system is needed to correct the problem. These municipalities are so small that often they can not afford to construct a community system. The failing individual systems impact water quality, and in some cases, public health.

Due to soil conditions and other factors, the installation of a community wastewater collection and treatment system is often the desired solution. Installing a wastewater system for each of these communities to meet current regulatory standards would cost at least $693 million using data prepared by EFC.

Possible Next Steps: The Department could work with DOH to gather information to determine the number and location of these communities statewide. The Department could use this information and information about the cost of replacing similar systems from EFC's Intended Use Plan to develop better estimates of the costs of possible treatment alternatives, such as community wastewater treatment facilities, septic systems with a sand filter or leach fields.

Future Infrastructure Needs Data

Protecting Water Quality

Urban Stormwater (MS4 Retrofits) Stormwater is a significant source of pollution. The federal government requires that larger municipalities address stormwater pollution in their communities. There are 430 regulated municipalities in New York State. In many cases these municipalities need to construct or upgrade a system to treat their stormwater.

In five watersheds, excess nitrogen and phosphorus are impacting the water quality of the major waterbody. The anticipated new stormwater permit will

require that municipalities in these five watersheds retrofit their existing infrastructure to remove nutrients from water prior to release to the major waterbody. The Department evaluated the cost of minimizing runoff in one such watershed, the East of Hudson watershed, by retrofitting all impervious areas. The cost of these retrofits was estimated at over $200 million. This value was calculated by multiplying the total impermeable area in the watershed by an estimated retrofit cost of $20,000 per impervious acre based on the values set forth in the Urban Stormwater Retrofit Practices Manual.[29] The East of Hudson estimate was extrapolated to include all five identified MS4 watersheds by simply multiplying the $200 million by five, resulting in a total estimated need of $1.0 billion for MS4s.

Additionally, the Department's State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activity, GP-0-08-001, includes a list of 108 waterbodies from the final New York State "2006 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy," dated May 17, 2007 that are impaired by silt, sediment or nutrients. It is anticipated that a number of municipalities in these smaller watersheds will also need to undertake improvements to their existing infrastructure to remove pollutants from water prior to release to these waterbodies. The cost to undertake these activities is still being developed.

> *Possible Next Steps:* It is anticipated that by December 2008, each municipality within the five watersheds will submit a report describing the infrastructure necessary to address excess nitrogen and phosphorus. The reports will include the costs for each project, which could be compiled by the Department for an improved stormwater infrastructure needs estimate. In addition, the Department could use this data to project the future needs of other municipalities, which may need to retrofit existing infrastructure to address specific stormwater pollutants.

New Total Maximum Daily Loads (TMDLs) The Chesapeake Bay Tributary Strategy[30] identifies the following cost estimates for New York State to reduce nutrient levels in the bay: $240 million for agriculture; $200 million for wastewater treatment facilities, and $25 million for urban stormwater. The estimated wastewater infrastructure upgrade costs are $146 million for the

[29] Center for Watershed Protection, "Urban Subwatershed Restoration Manual No. 3, Urban Stormwater Retrofit Practices." July 2007. Appendix E.

[30] New York State Department of Environmental Conservation, "New York State Tributary Strategy for Chesapeake Bay Restoration." 2006. p. 12-13. [online] Available www.dec.ny.gov/docs/water_pdf/cbaystratfinal.pdf.

anticipated Onondaga Lake TMDL, based on an engineering study conducted by Environmental Engineering Associates, LLP[31] at the Syracuse Metropolitan Wastewater Treatment Plant. Thus, the total estimated infrastructure need is $600 million in order to support the requirements of these TMDLs.

Enhanced Water Quality Standards The most recent water quality standards that are expected to have an impact on wastewater treatment facilities are the standards for Total Residual Chlorine and Marine Ammonia. An evaluation of the regulatory impact statements showed that $58 million is still needed to upgrade wastewater treatment facilities to meet the total residual chlorine standard[32] and at least $30.5 million for the marine ammonia standard.[33] Therefore, the total estimated infrastructure need is $100 million for enhanced water quality standards.

Pharmaceuticals and Personal Care Products Levels (PPCP) Pharmaceuticals and personal care products, as well as other an emerging contaminants (such as brominated flame retardants, PFOA, and perchlorates) are gathering national media and government attention due to their potential effects on water quality and the environment. Acceptable levels of PPCPs in the environment have not yet been defined, and the potential wastewater infrastructure needs have not yet been evaluated at the national, state or local level. Recent studies show that existing wastewater treatment facilities do not provide adequate treatment for many PPCPs. However, while the treatment options to remove PPCPs are limited at this time, there is enough information to know that the cost of the wastewater infrastructure needed to provide any needed treatment for a specific PPCP will be significant.

Possible Next Steps: The Department could work with other state and federal regulatory agencies to conduct additional studies and monitoring necessary to establish acceptable levels of PPCPs in the environment and to determine the appropriate wastewater treatment technologies available to effect some removal of PPCPs. Once available, the Department could use that information to develop cost estimates for the additional wastewater infrastructure needed to provide treatment for PPCPs and other similar contaminants.

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[31] Environmental Engineering Associates, LLP., "Stage III Phosphorus Removal Pilot Project." July 2007. pp. 7-12.

[32] New York State Department of Environmental Conservation, "Draft Combined Supplement Environmental and Regulatory Impact Statement for Proposed Revision of Water Quality Regulations." April 1990. pp. 49-50.

[33] New York State Department of Environmental Conservation, "Compendium of Documents for Amendments to Water Quality Standards Regulations." December 2006. Regulatory Impact Statement. pp. 12-16.

Wastewater Infrastructure and Future Water Shortages

Water shortages are a growing global problem, the severity of which is expected to increase in the future. While New York State is considered to be a water rich state, there are areas within the state where water resources are limited and where demand is either approaching or exceeding the available supply. In some locations water shortages have resulted from the construction of wastewater treatment facilities that convey water to a different watershed. The need to alter or relocate wastewater infrastructure in order to replenish ground water and surface water supplies have not yet been defined. There are known areas in New York (including Rockland County and Long Island) where the export of wastewater has contributed to the depletion of water resources. There are estimates of over $12 million per mile to relocate a sewer outfall for a million gallons per day facility. Assuming 80 miles of outfall would need to be relocated, a rough estimate of $1.0 billion has been used for the purposes of this report.

> *Possible Next Steps:* The Department could evaluate the potential effects of water shortages on wastewater treatment systems and develop estimated costs for those infrastructure needs. In addition, because these environmental issues are not currently being considered as part of the regulatory approval process for wastewater discharges, the Department could develop recommendations for legislative and regulatory initiatives to require consideration of these issues for new or upgraded wastewater infrastructure.

20-Year Estimate of Municipal Wastewater Infrastructure Needs in New York

Data	Estimate of Needs
Clean Watershed Needs Survey Data	
Municipal Wastewater Treatment Facility Upgrades	$13.6 billion
Collection and Conveyance Systems	6.6 billion
Combined Sewer Overflow Correction	7.5 billion
Nonpoint Source Pollution Control	3.0 billion
Other Existing Data Sets	
Maintaining Facilities & Appurtenances Operation & Maintenance; Auxiliary Power	$ 2.1 billion
Restoring Water Quality Unsewered communities	0.7 billion
Future Infrastructure Needs Data	
Protecting Water Quality MS4 Retrofits; New TMDLs; Enhanced Water Quality Standards; Pharmaceuticals & Personal Care Products	1.7 billion
Protecting Water Resources Water Shortages	1.0 billion
Total Preliminary Estimate	***$36.2 billion***

Residential Wastewater Infrastructure

The Department also developed an estimate of needs for residential wastewater infrastructure. These systems are ineligible for public assistance.

Privately-Owned Wastewater Treatment Facilities and Collection Systems (Private/Commercial/Institutional Facilities)

Suffolk County has approximately 160 privately owned wastewater treatment facilities that are serving apartment complexes or small communities of townhouses. Seventy additional wastewater treatment facilities similar to the ones in Suffolk County are located in other parts of the state. They have similar maintenance, repair and replacement needs and can cause the same water quality problems as the larger municipal treatment facilities, however, they are not eligible for current state or federal funding programs. Historically, these private facilities have not been eligible for government assistance, yet if they fail, they do have the potential to significantly impact water quality.

Cost estimates for repair or replacement of these facilities are available only for some of the largest of these systems in Suffolk County. According to information from the Suffolk County Department of Health, the average cost of upgrade or replacement for each wastewater treatment facility in Suffolk County is $3 million. The projected cost in the County alone is $480 million. Using the average cost per facility in Suffolk County, the cost for the 70 additional facilities in other parts of the state is estimated to be $210 million. The total estimated statewide need is $700 million for Private/Commercial/Institutional facilities.

> *Possible Next Steps:* In addition to the systems mentioned above, there are also thousands of smaller private wastewater treatment facilities. No cost estimates are currently available for these smaller systems. The Department could evaluate the existing systems and determine those that need repair or replacement. The Department could gather information about the cost of repairs from DOH and other partners and develop an estimate based on the number of systems needing repairs or replacement and the associated costs.

Septic System Database Development

According to a 2001 report by the Aerobic Wastewater Treatment Association,[34] approximately 1.5 million septic systems exist in New York State. With these systems having a design life of 15-20 years before needing full or partial replacement, almost all septic systems in the state will need replacement over the next 20 years. Assuming that

[34] Aerobic Wastewater Treatment Association, "Analysis of Economic Effects of Proposed Revisions to New York State Regulations Pertaining to Subsurface Disposal of Aerobically Pretreated Effluent." May 2001. p. 2.

80 percent of the systems will need replacement at an average cost of $7,000 per septic system, the total estimated need is approximately $8.4 billion for on-site systems. These are private systems that are not eligible for federal or state funding. However, a large portion of the population depends on these systems and the systems can contribute significant pollution to our waters.

Possible Next Steps: The Department could work with the DOH to determine the feasibility of developing a comprehensive, statewide database of information about all on-site septic systems. The Department would then analyze the data to determine which systems are in need of repairs or replacement. To develop cost estimates for these repairs or replacements, the Department would gather data about repair costs and apply this information to the database.

20-Year Estimate of Residential Wastewater Infrastructure Needs in New York

Data	Estimate of Needs
Residential Wastewater Infrastructure Data Sets	
Private/Commercial/Institutional facilities	$ 0.7 billion
On-Site/Septic System Maintenance & Replacement	8.4 billion
Total Preliminary Estimate	***$9.1 billion***

Climate Change

Sea Level Rise/Flooding

Many wastewater treatment facilities are located near waterbodies and in low-lying areas. If a projected increase in flooding occurs, these facilities will be impacted. The necessary flood protection for wastewater treatment facilities as a result of Climate Change has not yet been defined, though it is expected that the costs will be significant. For instance, in New York City alone, there are fourteen wastewater treatment facilities, 6,000 miles of sewers, 135,000 sewer catch basins and 93 pump stations, which are all located in flood prone areas. The planned upgrades at one of the New York City facilities (Newtown Creek) will cost over a billion dollars. There are no specifics yet about how many plants will need to be modified to respond to the possible impacts for climate change.

> *Possible Next Steps:* The Department could work with the Sea Level Rise Task Force as well as partners and stakeholder organizations to develop reasonable estimates for flooding frequencies and sea-level rise as a result of climate change. The Department could also develop maps of wastewater infrastructure located within floodplains and, by comparing those maps to the climate change projections, could evaluate the extent of possible impacts on wastewater infrastructure. Costs of these impacts could then be developed by evaluating various alternatives ranging from protection to relocation of infrastructure.

Greenhouse Gas Emissions

Estimates suggest that greenhouse gas emissions costs will range from 1 – 8 percent of the world's gross national product.[35] New York State's gross state product is about $1 trillion annually, and EPA advises that emissions from wastewater treatment plants represent about 0.64 percent of greenhouse gas emissions in the country. Presently, there is no more definite information regarding any costs.

> *Possible Next Steps:*
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> > *Greenhouse Gas Emissions of Methane:* The decomposition of the sludge generated in the treatment of wastewater causes significant contributions of methane to the atmosphere. Sludge can be shipped off-site to a landfill or treated on-site by composting, incineration or digestion. Methane emissions generated in these processes are normally lost to the atmosphere, but the process of anaerobic digestion allows the methane to be captured. Due to global interest in reducing greenhouse gas emissions, it is anticipated that there will be a need to install anaerobic digesters to

[35] "Factbox – UK Stern report on climate change costs." Reuters. October 28, 2006. [online] Available www.alertnet.org/thenewsdesk/L28856878.htm.

reduce methane emissions from wastewater treatment facilities. The Department could reach out to the New York State Energy Research and Development Authority (NYSERDA) and other partners to study the potential for installing anaerobic digesters at existing wastewater treatment facilities to capture methane gas emissions. If proven feasible, the Department could use the data gathered from its survey to identify all the facilities that should be outfitted with anaerobic digesters. Once available, the Department could use that information, combined with cost data from EFC, to develop cost estimates for the additional wastewater infrastructure needed to reduce greenhouse gas emissions from wastewater treatment facilities.

Improving Energy Efficiency at Wastewater Treatment Facilities by Replacing Equipment: Wastewater treatment facilities use a great deal of electricity to run the equipment. When burning fossil fuels generates that electricity, carbon dioxide is emitted to the atmosphere. Equipment at wastewater treatment facilities, such as pumps and aerators, could be replaced with more efficient equipment that saves both energy and money. NYSERDA has been working with wastewater treatment plant operators over the past several years to demonstrate the benefits of utilizing energy efficiency technologies at wastewater treatment plants. Both the Department and EFC are partnering with NYSERDA to promote the use of energy efficient technologies at these facilities in an effort to reduce both green house gas emissions and energy use.

Using Methane Generated on Site as an Energy Source: Methane is not only a greenhouse gas; it is also a source of energy when it is burned. As a result, power generators can be installed at wastewater treatment facilities to burn the methane emitted from anaerobic digesters and the electricity can be used to power equipment at the facility. Only a small percentage of wastewater treatment facilities in the state currently use this technology. The Department could reach out to the NYSERDA to research the cost effectiveness of installing power generation equipment at wastewater treatment facilities with anaerobic digesters so that facilities can reduce their energy needs from the power grid. When that research is complete, the Department could use the data gathered from its survey of wastewater treatment facilities and cost data from EFC to develop estimates for the cost of infrastructure needed to reuse methane at wastewater treatment facilities as an energy source.

NEW FUNDING PROGRAM COMPONENTS AND CONSIDERATIONS

New York has diligently leveraged and carefully managed both federal and state funds to build and maintain a healthy wastewater infrastructure across the state. New York State's goals have always revolved around restoring impacted waterbodies and ensuring that the people of the state have adequate clean water for personal and commercial use.

Over the past forty years there have been many changes to the programs used to fund wastewater infrastructure. At one point, the state was successful in getting necessary infrastructure built and maintained. The mechanisms in place today, however, are not adequate to stimulate needed repairs and replacement, causing the potential return to polluted waterways. New funding options for the twenty-first century are needed.

Components of a Sustainable Funding Program

Below are various components of a sustainable program for funding water infrastructure needs. It is envisioned that a sustainable funding program would need to include a mix of low-interest loans, grants and fair user rates. It is clear that the federal government has to be re-engaged in providing appropriate levels of support for this federally mandated program.

Strong CWSRF Loan Program

New York's 15-year-old CWSRF program has been very well-managed and continues to provide necessary funding for municipalities. However, this mechanism also is insufficient to drive municipal reinvestment in infrastructure. For example, in FFY 2008, only approximately 19 percent of the identified needs will be funded. Additional funding to the program in the form of capitalization grants would allow an immediate increase in CWSRF loans. As more loans are issued, repayments would increase each year, allowing the fund to grow further. The CWSRF currently is not available to non-municipal wastewater infrastructure. A change in the federal legislation to remove this restriction would be necessary to fund such projects. In addition, as federal assistance for the CWSRF declines, less state match is needed to get the federal funding. There may be an opportunity to employ budgeted funds not need for a federal match to expand the state fund or for hardship grants.

Other Loans

Other sources of loans are available, though not widely used. The United States Department of Agriculture (USDA) Rural Development Program offers loans, though the interest rate is not competitive with financing through the CWSRF. Also, the sums of money available are sufficient to address only a small portion of the state's wastewater infrastructure concerns.

Federal Grant Awards

No federal CWA grant funding has been available for wastewater treatment since 1991, and the decaying status of the nation's infrastructure reflects this fact. EPA's recently issued 2004 CWNS report identifies New York's need as $24.5 billion, up 20 percent from its 2000 report. A new program similar to the construction grants program, which provided grants for either 55 or 75 percent of eligible project costs, is needed. This was an effective approach in the past and federal participation would again spur infrastructure improvements. Any renewed construction grants program could be layered on a base CWSRF funding.

Other federal funding such as USDA's Rural Development Program and United States Department of Housing and Urban Development's (HUD) Small Cities Community Development Program currently provide grants on a limited basis. These programs cannot provide large sums of funding and have numerous priorities other than water quality projects. Therefore, absent significant amendment these should not be considered primary sources of grants in an expanded program.

State Grant Awards

There is a need for expanded state grants for wastewater infrastructure projects. New York State has a 40-plus year history of providing grant funding through the 1965 PWBA, 1972 EQBA and the 1996 CW/CA BA. State grants for water projects are also available through the EPF, but have not been made available for wastewater infrastructure projects. The Governor's budget language for the SFY2008-09 would allow limited wastewater infrastructure projects to receive EPF funding.

Hardship Community Grants

A portion of wastewater treatment infrastructure grant funding should be set aside for service areas with populations which are subject to unusually high local user charges to support a sewerage system. Under the CWSRF, there is reduced interest or interest-free financing to qualifying hardship communities.

In addition, many New York communities are small, rural communities with many low-income families. In these communities, it is not uncommon for homes to be on small lots where the septic systems and drinking water wells are in close proximity, thus increasing the potential for water quality problems. Older communities tend to have older septic systems that have not been properly maintained, further increasing the potential that septic systems will pollute nearby waterways or drinking water sources. These communities may desire to build collection systems, treatment plants or other alternative systems, but the lack of economy of scale frequently causes homeowners' annual costs to be very high.

Fair Local Rates

There are still a number of municipalities which have neglected to increase sewer rates even though their rates are far below average. While it is understandable that a municipality may not want to further burden its ratepayers, it is fundamentally unfair to provide state or federal grant assistance to these municipalities that fail to demonstrate a commitment to a fair local share.

Considerations of a Sustainable Funding Program

There are several elements that should be considered when developing a sustainable wastewater infrastructure funding program.

Asset Management

Proper asset management promotes planning for adequate maintenance of infrastructure. Asset management forms the foundation of planning for effective use of limited resources, including funds for operation, maintenance, and capital improvement. Properly done, an asset management plan will determine the spending priorities for infrastructure management by focusing on those assets identified as in need of repair or replacement. At present, only 40 percent of municipal wastewater treatment facilities in New York State have developed capital improvement plans. Yet after roads and bridges, wastewater treatment plants are most municipalities' largest asset. An asset management plan can then be used to determine local sewer use charges. It also can extend the longevity of a wastewater treatment plant as it supports regular maintenance. Proper plans can also provide for the maintenance of reserve funds for future needs. Presently, asset management for wastewater treatment plants is voluntary but it should be required if grant funding is provided to the municipality. Another alternative would be to provide grants for municipalities to develop asset management plans.

Innovative Technology

As infrastructure is replaced, there is a need to push for innovative and cost-effective, new technologies. Projects that are more efficient and effective should receive more beneficial funding. For instance, one way to reduce the need and burden on wastewater infrastructure is to reduce the amount of water that comes into the system. This can be achieved through water conservation practices including emerging technologies such as permeable surfaces that allow water to settle into the ground rather than flow into municipal sewers.[36]

[36] "Managing Wet Weather with Green Infrastructure, Action Strategy 2008." American Rivers, et. al., January 2008. [Online] Available http://www.epa.gov/npdes/pubs/gi_action_strategy.pdf.

Other innovations include water reuse for irrigation. An example in New York State is the Riverhead wastewater treatment plant on Long Island, which is currently piloting a project which uses its treated effluent at a source of irrigation water for a nearby golf course.

There is growing interest in "green infrastructure" as a way to reduce the costs and impacts of addressing CSOs. Measures can include tree planting, rain gardens, infiltration systems, rain barrels and pervious parking lots and sidewalks. The concept is that holding stormwater on the urban environment for slow release or infiltration into the ground will reduce the amount of water that goes into a sewer system.

EPA has not updated its best available technology standards for wastewater treatment for over 30 years. Cost effective technologies for new infrastructure should be considered as a requirement for funding. In addition, while security measures for wastewater infrastructure are relatively inexpensive, they should be included in any funded infrastructure.

Finally, electricity is the second largest operating cost at our nation's wastewater treatment plants, making up anywhere from 25 to 40 percent of their total operating budget. More than $6.5 billion is spent by municipal wastewater treatment plants each year. Additional demand for electricity at such plants is expected to increase by 20 percent over the next 15 years. Any new funding program should support energy efficiency and alternatives.

There will be other categories of innovation to be considered in the future. The establishment of an entity similar to NYSERDA that would focus on innovations in wastewater technology could assure that new infrastructure in New York State incorporates the latest technology.

Fairness

There are many municipalities across the state that have vigorously maintained their wastewater facilities and proactively planned for and invested in needed upgrades. Any new funding program must be fair and not penalize these municipalities for being good stewards. If a new sustainable funding program does not recognize good stewardship, it could discourage proper maintenance, management and rate setting. Municipalities should show that they charge fair rates before they could receive any grant funding, and there is a compelling need to maintain consistent enforcement policies to ensure that bad actors are not rewarded.

Future Infrastructure Challenges

As noted above, there are many future challenges for protecting water quality that need to be considered when updating and constructing new wastewater infrastructure. The extent of the impact of these issues is hard to quantify. Any engineering of new infrastructure will have to contemplate whether and to what degree these potential issues should be considered in design. As new information is developed on these issues it must be taken into account in decision-making.

Relationship of Infrastructure to Smart Growth and Economic Development

New York is fortunate to have many historic urban areas and there has been a renewed effort to restore these communities back to their vibrant heydays. Not only can they be attractive and unique neighborhoods and business areas but the re-vitalization of urban areas is a key component of Smart Growth. Wastewater infrastructure is important to overall community planning efforts, and replacement projects should be done in recognition of Smart Growth concepts. Concentrating development to where it already exists protects open space, and should contain the costs of infrastructure. Yet many of our urban areas are financially strapped and struggling to find the resources to address their existing infrastructure needs. In fact, their costs are going up disproportionately which drives residents and businesses to leave. Funding criteria should recognize the importance of supporting Smart Growth and clean development concepts.

Fixing our wastewater infrastructure will also support economic development. A sustainable funding program should include the ability to both upgrade and expand wastewater treatment works which service discreet urbanized areas. This could serve as an inducement for Smart Growth in these areas.

Local Government Efficiency

The Commission on Local Government Efficiency and Competitiveness is part of an effort to streamline government at every level. The Commission is charged with making recommendations in the areas of local government merger, consolidation, shared services, smart growth and regional services. Initiatives to consolidate water/sewer/stormwater systems have been submitted by 10 counties in the state for review by the Commission. It is planned that these projects will receive legal, logistical and technical assistance from state government, including referrals to grant programs and other funding opportunities that may apply.

CLOSING

The importance of modern, reliable, and efficient wastewater treatment systems is self-evident. The health of our communities, the protection of our waterbodies, and the prospects for future economic growth and development, are linked to our ability to maintain, and as necessary, upgrade these facilities. As described in this report, however, aged systems are failing, and municipalities do not have the funds to adequately repair and replace the necessary infrastructure. There is no disputing that the cost of ensuring proper wastewater treatment is larger than what local governments and the state can address on their own. Clearly, there is a compelling need for a sustainable wastewater infrastructure funding program, yet no mechanism presently exists for that funding, and the federal government has largely turned its back on the needs of the states and local governments for this purpose.

This report was intended to provide a comprehensive overview of the state's water infrastructure needs, identify the factors that have led to the current problem, and establish a context for assessing and determining the steps needed to address our wastewater infrastructure needs. This report should serve as a foundation for New York's efforts to attack this issue, and as a first step in the critical process of establishing a sustainable wastewater infrastructure funding program. In the short term the Department, in conjunction with EFC, will continue to develop information to support those efforts. It is clear, however, that this is not only a massive financial problem, but it is also a complex and difficult engineering, planning, and environmental undertaking. The Department looks forward to working with the Governor and the Legislature to continue to address this important issue.