

**The New York City
Municipal Water Finance Authority**

Fiscal Year 2007 Consulting Engineer's Report

March 20, 2007

Prepared by
Metcalf & Eddy of New York, Inc.

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March 20, 2007

Mr. Patrick McCoy
Executive Director
New York City Municipal Water Finance Authority
75 Park Place
New York, NY 10007

Re: New York City Municipal Water
Finance Authority
Fiscal Year 2007 Consulting Engineer's Report

Dear Mr. McCoy:

We herewith submit the Fiscal Year 2007 Consulting Engineer's Report on the operation of the Water and Sewer System of the City of New York. This Report addresses the condition and operation of the System as it presently stands, as well as the adequacy of capital and operating programs for Fiscal Years 2007 and 2008.

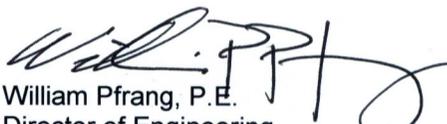
It is our opinion that the System continues to be managed in a professional and prudent manner. We have concluded that the present budget allocations for Fiscal Year 2007 are adequate to assure continued safe and dependable operation of the System. Funding is expected to be available for legally mandated projects. NYCDEP is in the process of evaluating the budgets in its submission for the final Executive Plan to address and adjust the Fiscal Year 2008 deferrals and certain projects identified as high priority in the Risk-Based Prioritization Report.

It is important to note that much of the data utilized for the analyses conducted by Metcalf & Eddy of New York, Inc. has been generated by the on-going budgetary process. We realize that the budgetary planning will continue past the date of this report and that revisions may be made. However, it is our opinion that meaningful observations and conclusions can be made at this time, although they are subject to change based on the outcome of the budgetary process. It is these observations and conclusions that are presented hereinafter.

We have no responsibility to update this report for events and circumstances occurring after the date of this Report.

We look forward to continuing to support the New York City Municipal Water Finance Authority as Consulting Engineer. Thank you for this opportunity.

Very truly yours,


William Pfrang, P.E.
Director of Engineering

cc: Marjorie E. Henning, Secretary
Olga Chernat, Deputy Treasurer



**THE NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY
FISCAL YEAR 2007 CONSULTING ENGINEER'S REPORT**

**PREPARED BY
METCALF & EDDY OF NEW YORK, INC.**

MARCH 20, 2007

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PURPOSE AND SCOPE OF THE REPORT

The purpose of this report is to provide engineering information pertinent to the condition of the Water and Sewer System (System) serving the City of New York (City) and the adequacy of the proposed capital improvement program (CIP). Since 1983, Metcalf & Eddy of New York, Inc. (Metcalf & Eddy) has provided engineering services related to the New York City Water and Wastewater Operations Evaluation Study (Study) and has provided services to the New York City Municipal Water Finance Authority (Authority) since 1985. During this period Metcalf & Eddy has performed ongoing evaluations of the condition of the System, independently reviewed the capital and operating programs pertaining to water and wastewater, reviewed pertinent studies associated with the long-term development of the system, and interviewed key individuals responsible for managing the activities of the New York City Department of Environmental Protection (NYCDEP).

The report addresses the issues listed below:

- present physical condition of the System
- Fiscal Year 2007 capital budget and Fiscal Year 2008 projected capital budget for the System
- Fiscal Year 2007 expense budget and Fiscal Year 2008 projected expense budget relative to operation and maintenance of the System
- overview of the Preliminary Ten Year Capital Strategy for Fiscal Years 2008 to 2017

METHODOLOGY FOR ANALYSIS

The analyses conducted by Metcalf & Eddy were accomplished utilizing the steps listed below:

- discussions with representatives of the Authority, NYCDEP, and the New York City Office of Management and Budget (OMB),
- selected confirmation inspections of operating facilities and major on-going construction programs,
- review of documentation relative to the ongoing budgetary process, and
- evaluation of other comparable water and wastewater systems and industries.

The budgetary process is ongoing and has not been concluded by the date of this report's publication. Observations and conclusions presented herein are therefore based on budget data as it presently stands. It is the opinion of Metcalf & Eddy that these observations and conclusions are meaningful with respect to the System. It should be noted, however, that these observations and conclusions are subject to change based on the outcome of the budgetary process.

THE CONSULTING ENGINEER

Metcalfe & Eddy has served the water and wastewater industry for 100 years and the City as consulting engineers for many decades in the capacities of dealing with water supply, water distribution, sewage collection, and wastewater treatment. Metcalfe & Eddy is one of the largest consulting engineering firms in the United States and is recognized internationally as a leader in providing services to the water and wastewater industry.

THE CONSULTING ENGINEER'S CONCLUSIONS

- The System continues to be managed in a professional and prudent manner with highest regard for the level of service afforded to the users.
- NYCDEP capital and expense budget projections for Fiscal Year 2007 satisfy the needs identified by Metcalfe & Eddy for the System. NYCDEP is in the process of evaluating the budget in its submission for the final Executive Plan. The FY 2008 expense budget projections satisfy the needs identified for the System.
- The physical condition of the System receives an adequate rating.
- Staffing levels in combination with the organization changes are adequate for proper operation and maintenance of the System. NYCDEP has implemented organizational changes to improve overall efficiency in the execution and management of NYCDEP's expanding Capital Improvement Program, to plan for future demands of the system and to deliver high quality projects. In addition, the wastewater operating bureau will be increasing staff to address environmental, health and safety issues and increased operational needs.

CAPITAL PROGRAM OVERVIEW

Capital Improvement Program (CIP) - Fiscal Year 2007 and the Ten Year Capital Strategy for Fiscal Years 2008 to 2017

Budgeting is a lengthy and complex process, especially for an organization operating such a large and complex system as is under the care of NYCDEP. Throughout the fiscal year, the bureaus of NYCDEP identify projects which are then proposed for inclusion in the CIP. Based upon inputs from the individual bureaus, a long list of projects is considered, prioritized, and presented in a Preliminary Plan.

The Preliminary Plan for NYCDEP's Ten Year Capital Strategy was made available in January 2007. The Preliminary Plan now under review includes the budget for FY 2007 which ends on June 30, 2007 and the budget for FY 2008 which begins on July 1, 2007. The Preliminary Plan also includes proposed modifications to the Ten Year Capital Strategy which will cover FY 2008 to FY 2017. NYCDEP is now reviewing the Preliminary Plan and attempting to make modifications to the Executive Plan submission in an effort to identify anomalies and ensure that all immediate needs are met in the short term and that funding is reasonably budgeted for the long term (the Ten Year Capital Strategy). Upon completion of negotiations with OMB, these changes may be reflected in the Final Plan (Executive Plan) which will be issued prior to the beginning of FY 2008. It should be noted that the Ten Year Strategy (FY 2008 - FY 2017) is updated every two years and the Current Capital Plan (FY 2007 – FY 2011) is updated quarterly. The CIP is composed of the Ten Year Strategy, and modified by the Current Capital Plan.

Metcalf & Eddy has reviewed the Preliminary Plan and met with key individuals responsible for budgetary planning to provide an independent assessment of the adequacy of the CIP. Our findings are summarized in the following paragraphs.

Regarding FY 2007

The Preliminary Plan indicates that the FY 2007 budget was increased from \$3.25 to \$3.75 billion. The budget increase of approximately 15% was driven by world-wide market increases in construction costs brought about by construction material shortages in the aftermath of Hurricane Katrina and the war efforts in Iraq and Afghanistan, and labor shortages brought about by the construction industry's focus on these events as well as the high level of construction activity in the New York City area. The budget increase was necessary to cover the rising construction costs for scheduled capital improvements. Notably, this included the construction of the Croton Water Filtration Plant, which was bid during FY 2007 and is funded at this time.

Regarding FY 2008

The Preliminary Plan indicates an increase for FY 2008 from approximately \$2.0 to \$3.5 billion. The magnitude of this increase is being driven by the same market conditions that drove the FY 2007 increases. Previously established budget items have been revised to reflect the recent sharp rise in construction costs and the anticipated continuance of this trend in the near future. NYCDEP believes that all legally mandated projects will be fully funded in FY 2008. Notable projects in the FY 2008 budget are the Newtown Creek Water Pollution Control Plant Upgrade and Catskill/Delaware Ultraviolet Disinfection Facility.

Regarding the Ten Year Capital Strategy for FY 2008 to FY 2017

The Ten Year Capital Strategy for FY 2008 to FY 2017 has been set at \$19.5 billion. This is approximately 20% greater than the previous Ten Year CIP published in September 2006 (\$16.3 billion) covering FY 2006 to FY 2015. Some of the potential funding shortfalls that existed in the previous Ten Year Strategy have been addressed as described under the Water and Wastewater Programs presented

in the following sections of this report. A number of issues have been identified that may impact future planning. These issues are also addressed in the following sections of this report.

Institutional Changes

The NYCDEP has made great strides in the past year in regard to organizational structure and asset management which will position the NYCDEP to better manage and execute its large Capital Improvement Program, as required by the needs of the System.

The Bureau of Engineering Design & Construction (BEDC) is the bureau responsible for managing the planning, design and construction of major capital projects in the Capital Improvement Program. The Bureau has commissioned a program management consultant to provide staffing support to their organization and to assess the Bureau's capabilities. Under this initiative, a comprehensive Capital Program Management Study was carried out to identify means for improving overall efficiency in capital budget and schedule management. As a result of the study, BEDC has made several improvements in their operation. Most noteworthy are:

Adoption of a lifecycle approach to project management: Through this approach, project managers within the BEDC's Division of Facilities Planning and Design will remain responsible for a project from inception to commissioning. Staff from BEDC's other divisions will provide support for the Life Cycle Project Managers in ensuring delivery of high-quality projects.

Creation of the Division of Program Management Support: This new division will be responsible for establishing new units for Program Controls (including Project Management Information System [PMIS] development), Engineering Standards and Guidelines, Permitting, and Workforce Development. The PMIS will allow better monitoring of projects and consequently more timely reaction to critical project issues. This will reduce scheduling risks for the large, complex, mandated projects that NYCDEP is undertaking.

In addition to the positive changes made in BEDC, other institutional changes were made by NYCDEP's operating bureaus.

The Bureau of Water Supply (BWS) is responsible for managing, operating, maintaining and protecting the City's upstate water supply system to ensure delivery of a sufficient quantity of high quality drinking water. BWS has reorganized as a geographic-based organizational structure with greater accountability and a renewed emphasis on commitment to delivery of high quality water and a sustainable culture of compliance with all regulations.

The Bureau of Water and Sewer Operations (BWSO) is responsible for the operation, maintenance and protection of the City's drinking water distribution and wastewater collection systems, and the execution of NYCDEP's capital water and sewer infrastructure program. BWSO has recently reorganized its System Operations to improve resource allocation and to provide a more functional unit.

The Bureau of Wastewater Treatment (BWT) is responsible for the operation and maintenance of fourteen Water Pollution Control Plants (WPCPs), the City's pump stations, interceptor regulators, sludge dewatering facilities, fleet of marine vessels and laboratories, and the control of discharges from Combined Sewer Overflows.

Capital Improvement Program Highlights for Water Supply, Treatment, and Conveyance Programs

Catskill/Delaware Water Supply System Filtration Avoidance

Currently, the NYCDEP is operating under the 2002 Filtration Avoidance Determination (FAD) which remains in effect until a new FAD is put in place. In December 2006, NYCDEP submitted the Long-Term Watershed Protection Program report to the Environmental Protection Agency (EPA). This report forms the basis of the next Filtration Avoidance Determination (FAD) for the years 2007-2012 and is being negotiated with the EPA. Based on these negotiations, NYCDEP anticipates the next FAD to be issued within the next few months. The new FAD will be a continuation of programs that the City has undertaken to ensure continued filtration waivers for the Catskill/Delaware systems, which includes, among others, the land acquisition program, septic rehabilitation and replacement program, waterfowl management program, upstate wastewater treatment upgrade program and stormwater management programs. Once finalized, the 2007 FAD is also anticipated to include implementation of operational modifications for turbidity control in Schoharie Reservoir, and the evaluation of potential modifications at Ashokan Reservoir for turbidity control. The continuation of the FAD programs is fully funded in the Ten Year Capital Plan at a level of about \$172 million.

In addition to the above, the FAD includes the construction of an ultraviolet (UV) disinfection facility to treat water from the Catskill and Delaware watersheds. The Catskill/Delaware (Cat/Del) UV disinfection facility has been advertised for bids, and is funded in the CIP at \$836.6 million. The total cost to complete the UV disinfection facility is estimated at \$839.5 million. A revised UV facility schedule has been incorporated into an Administrative Consent Order between EPA and the City, as well as in the new FAD. An order to commence work at the UV facility is required by October 31, 2007. In addition, operation must commence with completion of the first two quadrants by August 31, 2012, and full operation must commence October 29, 2012. Funding for the pressurization of the Catskill Aqueduct from the Kensico Reservoir to Eastview is also addressed in this Ten Year Strategy.

Other major accomplishments associated with the FAD include:

The NYCDEP has either acquired or secured title or conservation easements to about 76,700 acres in the Catskill and Delaware watersheds at a cumulative value of approximately \$225 million.

The majority of the non-City-owned wastewater treatment plants in the west of the Hudson watershed, consisting of 96% of the wastewater flow, have been upgraded.

New Drinking Water Regulations

NYCDEP is evaluating the impact of compliance with the Long Term 2 Surface Water Treatment Rule (LT2) and the Stage 2 Disinfection By-Products Rule (DBP2), final versions of drinking water supply regulations issued January 2006. Several major projects, such as the Croton Filtration Project and the Cat/Del UV Disinfection Facility are part of the compliance with these new regulations. In addition, NYCDEP is evaluating the use of chloramination for D/DBP Stage 2 compliance. Additional funding may be required in the outer years of the Ten Year Strategy or in a later planning period.

Additional Water Supplies

A new state of the art groundwater treatment facility is currently funded at a level of approximately \$195 million dollars in the CIP. The facility will have the potential to supplement the water supply during drought periods by treating up to 10 million gallons per day (MGD) of groundwater from the Brooklyn Queens Aquifer. This project is currently in preliminary design.

Delaware Aqueduct

NYCDEP continues to perform assessments on the condition of the Delaware Aqueduct. In particular, since the early 1990s, NYCDEP has continued to closely monitor the Rondout-West Branch Tunnel

portion of the Delaware Aqueduct that has showed evidence of some water losses. NYCDEP is planning further investigations of these water losses and the condition of the tunnel. Funding for Shaft No. 6, which provides the City with the ability to dewater the aqueduct in the event of an emergency, is included in the FY 2007 budget. The work and equipment included in this contract will also be used in later years when NYCDEP performs planned managed shutdowns for repairs of the aqueduct. The contract is anticipated to be awarded in the coming months at \$240 million. Funding of almost \$278 million for repairs to the Delaware Aqueduct is included in the later years of the CIP. However, the long term plan for repair is still under development and additional funding is expected to be added when the full program is identified. The Dependability Study, which focuses on evaluating strategies for improving dependability of water supplies, is working towards completing a Conceptual Plan in June 2007.

Hillview Reservoir

NYCDEP is proceeding on parallel tracks with both the design of a cover for Hillview Reservoir and a study to evaluate future operations of Hillview and the overall coordination of the Hillview cover with other ongoing water supply programs such as KCT and Croton Water Treatment Plan which could either eliminate or partially eliminate the need for the Hillview Reservoir. NYCDEP have been evaluating cover options that include a concrete cover and a floating cover. The NYCDEP and the State of New York Department of Health (DOH) are in the final stages of an agreement for a revised Administrative Order, which will address further evaluations for the course of action at Hillview Reservoir and will include a new schedule for installation of a cover. This study is due to DOH in 2009.

Funding is included in the CIP for upgrades and additional facilities currently planned at Hillview Reservoir. Funding is provided for upgrade and modifications to the existing chambers, new Chlorination Addition Facility and new Central Monitoring Building, all improving the reliability and performance of the important Hillview Reservoir system.

The cost of completely covering the Hillview Reservoir with a concrete cover is estimated at approximately \$984 million; and funding for construction is currently not included in the CIP. The need for this funding is dependent on the results of the on-going studies.

Croton Filter Program

The Croton Filtration Plant is scheduled for completion in 2011. Approximately \$1.94 billion is included in the CIP for the Croton Filtration Plant; however, the total estimated cost of the facility is \$1.96 billion. Construction contracts associated with the Croton Filtration Plant that have been awarded to date value about \$377 million. These contracts include site preparation, tunnels and New Croton Aqueduct emergency rehabilitation.

Site preparation is over 80% complete at the Mosholu Park location. The tunneling construction contract was awarded and construction has started in the raw and finished water portals. The construction contracts have been bid and are scheduled for award within the next few months. The low bidder for the main (G) contract is currently under legal investigation for activities unrelated to the Croton Filtration Plant project. NYCDEP is in the process of coordinating with other City agencies and assessing the status of the investigations, prior to awarding the contract. NYCDEP is currently evaluating the schedule slippage due to the delayed Notice to Proceed, which has resulted in a missed Consent Order milestone. The amount of schedule slippage is dependent on the outcome of the investigations and the timing of the contract award. The NYCDEP has made proper notifications related to this issue.

A significant portion of the New Croton Aqueduct needs to be completed at the time of start-up of the Croton Filtration Plant. Funding of almost \$87 million for the rehabilitation of the New Croton Aqueduct is included in FY 2009. NYCDEP is currently evaluating moving this line item to FY 2008. This relatively

small addition to the FY 2008 budget would mitigate scheduling risks associated with a late construction start.

Kensico City Tunnel (KCT)

KCT facility planning continues; however, additional funding for design and construction will be required in the later years of the Capital Strategy or in a future planning period. Approximately \$239 million is included in the CIP for KCT. Preliminary KCT construction costs are estimated between \$4 - \$6 billion, depending upon routing, shafts and connections.

City Tunnel No. 3, Stage 2

City Tunnel No. 3, Stage 2 Manhattan leg is currently under construction and is funded at \$161 million in the CIP. The excavation of the Manhattan leg was completed in 2006 and construction for all shafts work is progressing on schedule, for activation and completion of the Manhattan segment of Stage 2 by 2012.

City Tunnel No. 3, Stage 2 Brooklyn Queens section requires additional funding for the design and construction of Shafts 17 and 18. Construction completion for the Brooklyn Queens section is anticipated in 2015.

Dam Safety

Interim measures to bring the Gilboa Dam into compliance with the New York State Department of Environmental Conservation (NYSDEC) safety guidelines for existing dams were completed in December 2006. The full rehabilitation upgrades are anticipated to bring the dam into compliance with the NYSDEC safety guidelines for new dams. This rehabilitation is funded at \$332 million in the CIP; however, the estimated cost to complete the rehabilitation is \$355 million. Site preparation is planned for FY 2008 and rehabilitation is planned for FY 2009.

Some bridge and dam upgrades have been deferred to later years in the CIP, which may require more maintenance measures to extend the life of the existing infrastructure.

Capital Improvement Program Highlights for Wastewater Treatment

Citywide Nitrogen Removal Program

Regarding the Upper East River and 26th Ward WPCPs

The Upper East River WPCPs (Hunts Point, Bowery Bay, Tallman Island, and Wards Island WPCPs) and the 26th Ward WPCP are fully funded and on schedule to complete construction for Biological Nitrogen Removal (BNR) upgrades as required by the Nitrogen Consent Judgment, however, the schedules are tight.

Regarding Jamaica Bay

NYCDEP submitted a Comprehensive Jamaica Bay Plan Report in October 2006, which addressed recommendations for further improving water quality in Jamaica Bay by filling in Grassy Bay and implementing some BNR upgrades at the Jamaica WPCP. NYSDEC is currently reviewing the Plan. As the recommendations and implementation schedule for Jamaica Bay are finalized, additional funding for the Jamaica WPCP will be required in the CIP.

Regarding the Harbor Estuary

The New York/New Jersey Harbor Estuary Program (HEP) is a National Estuary Program that has been sanctioned by the EPA to restore the waters of the Lower Harbor Estuary and the tidally influenced portions of all rivers and streams that empty into the Estuary. It involves WPCPs in New Jersey and four NYCDEP WPCPs (Owls Head WPCP, Red Hook WPCP, North River WPCP, and Port Richmond WPCP). The Nutrient Work Group (NWG) of HEP is currently developing a computer model of the Harbor Estuary in order to evaluate alternative development programs. As agreed with the USEPA, NYCDEP has undertaken a study to determine the capital investment cost of upgrading of their Water Pollution Control Plants to provide nitrogen and carbon removal at four different levels of treatment: low-level reduction, mid-level reduction, high-level reduction, and limit-of-technology reduction. A draft report is due to EPA May 1, 2007. The water quality impacts on the Harbor Estuary will then be evaluated for the various levels of treatment. The costs associated with each level of treatment will then be assessed based on their impact to water quality. Through this methodology, it is expected that EPA will determine which treatment upgrades, if any, will be required for NYC WPCPs. Funding is currently not in the CIP for HEP-related upgrades. Upon completion of the HEP studies, funding may be required in the outer years of the Ten Year Strategy or in a later planning period.

Newtown Creek Water Pollution Control Plant (WPCP) Upgrade Program

NYCDEP and NYSDEC conceptually agreed on a construction acceleration schedule and extension of interim limits at Newtown Creek WPCP. The construction acceleration schedule is anticipated to provide a cost savings benefit on the order of \$150 million to the City. The Newtown Creek WPCP upgrade project is funded for the work expected in the period covered by the CIP at a level of about \$2.19 billion. NYCDEP is in the process of evaluating the possibility of further construction acceleration and additional cost savings.

Combined Sewer Overflow (CSO) Program

The CSO Program is on schedule for submittal of the CSO Long Term Control Plan (LTCP) in June 2007. Approximately \$1.48 billion is funded in the current CIP; however, the estimated cost of complying with the CSO Consent Order is about \$1.53 billion. NYCDEP and NYSDEC have a conceptual agreement that CSO tanks for Westchester and Hutchinson Creeks are not necessary, which reflects a significant cost savings for the City. NYCDEP continue to explore cost-effective alternative solutions to combined sewer overflow issues that achieves water quality protection. NYCDEP is planning on requesting changes to the milestone schedule in the CSO Consent Order. NYCDEP anticipates that a series of discussions and negotiations on the CSO schedule will take place with DEC.

Risk Based Prioritization (RBP) Assessment

Recently, NYCDEP completed a risk based prioritization (RBP) assessment for water and wastewater facilities operated by BWT and BWS. The objective of the assessment was to evaluate the condition of their assets using a programmatic uniform methodology. The RBP assessment comprised site inspection of all major facilities and interviews with operations staff. The status of major equipment and unit processes were evaluated and were prioritized for repair and/or upgrade using three category codes; high, medium, and low. The categorization is based on a number of evaluation factors which includes importance to the overall facility's function, working condition, years of service, and functional capability. Planning level construction cost estimates were established for each key component evaluated.

This comprehensive assessment has identified critical assets that need immediate attention. The highest priority is the critical assets whose failure would jeopardize the environment, health, safety, or result in a regulatory violation. The line items identified in the assessment are being reviewed by NYCDEP with the intention to include the most critical capital improvements that need immediate attention in the FY 2008 budget. Additional funding is required to deliver construction contracts to address these critical needs.

Additional funding will also be required for the design and construction for other items not in the highest priority category and not currently included in a facility upgrade.

The comprehensive assessment will also be an important factor in maintaining the long-term operability of the water and wastewater systems. The planning level construction cost estimates are adequate for identifying immediate needs and setting priorities, but are not sufficiently detailed for budgetary commitment. It is therefore recommended that more comprehensive assessments be conducted for each major facility in the near future using this initial assessment as a program guideline. This will allow future facility upgrade projects to be entered into the CIP in an orderly fashion.

Capital Program Accomplishments

There are a number of capital program accomplishments during the past year that are noteworthy. These items play an essential role in advancing the CIP, and providing for prudent and professional management of the System.

Filtration Avoidance Determination (FAD). The NYCDEP and EPA have negotiated the components of a FAD extension for the 2007-2012 period. NYCDEP anticipates that EPA will issue the new FAD in the next few months. This is noteworthy as it indicates the City is not required to filter the Catskill and Delaware water systems, which would require substantial funding for design, construction, operating and maintenance costs.

Gilboa Dam Stabilization Project. NYCDEP completed interim repair work at the Gilboa Dam to enhance the stability of the dam, which included the installation of anchoring cables.

City Tunnel No. 3, Stage 2 Manhattan Leg. Excavation was completed for the Manhattan leg of Tunnel No. 3.

Croton Filtration Plant. Site preparation work at the Mosholu Golf Course is over 80% complete and on schedule. The tunnel construction work has begun.

Catskill/Delaware UV Plant. The Cat/Del UV Disinfection Facility was advertised for bid solicitation and construction is expected to commence later this year.

Citywide Nitrogen Program. During the past year, construction has commenced for BNR upgrades at the Tallman Island WPCP, Bowery Bay WPCP, Wards Island WPCP, and the Demonstration Facilities at Wards Island.

PERFORMANCE INDICATORS

Water Conservation

Figure 1 presents the annual water demand for the last 15 years. Water conservation measures taken by NYCDEP have resulted in a steady reduction in the overall water demand.

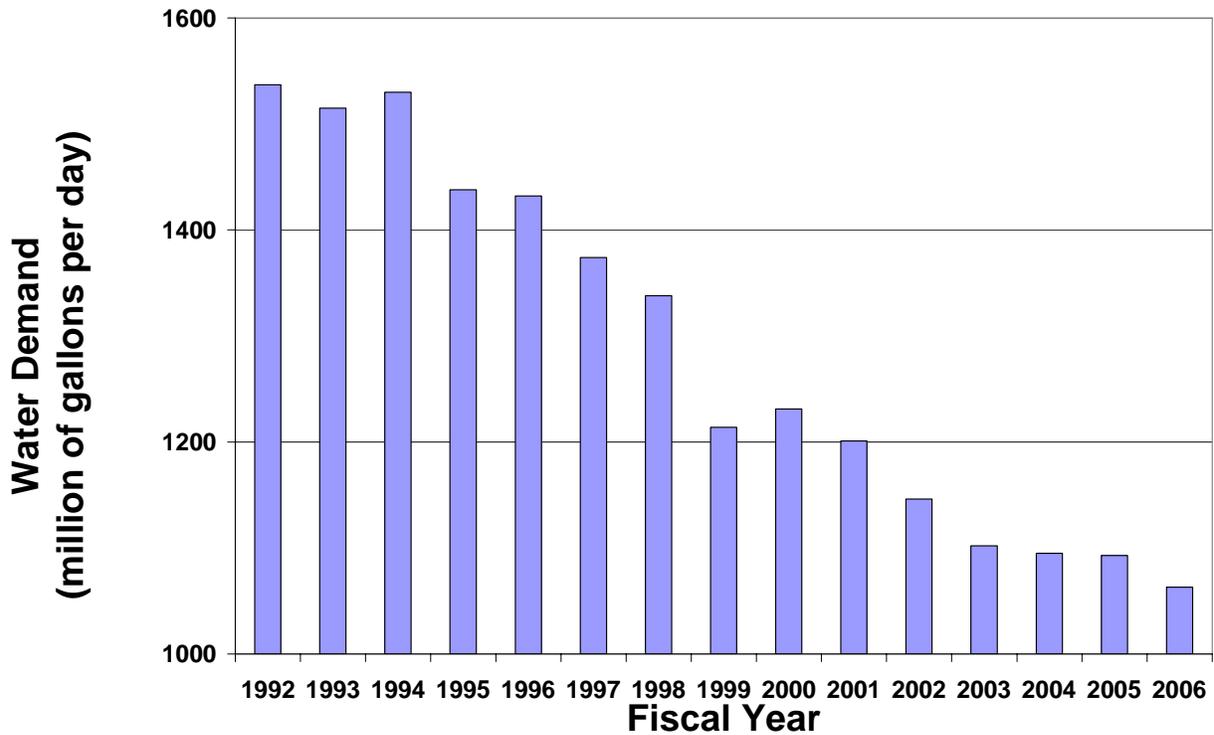


Figure 1: New York City Average Daily Water Demand in Million Gallons per Day (mgd)

System Staffing Levels

Approved positions for the System presently stand at 6239 for FY 2007. Vacancies currently stand at 476. A positive trend in personnel procurement has been established over the past several years. The DEP has recently added the Division of Program Management Support to BEDC, which has a prime objective to strengthen NYCDEP's work force procurement program with BEDC.

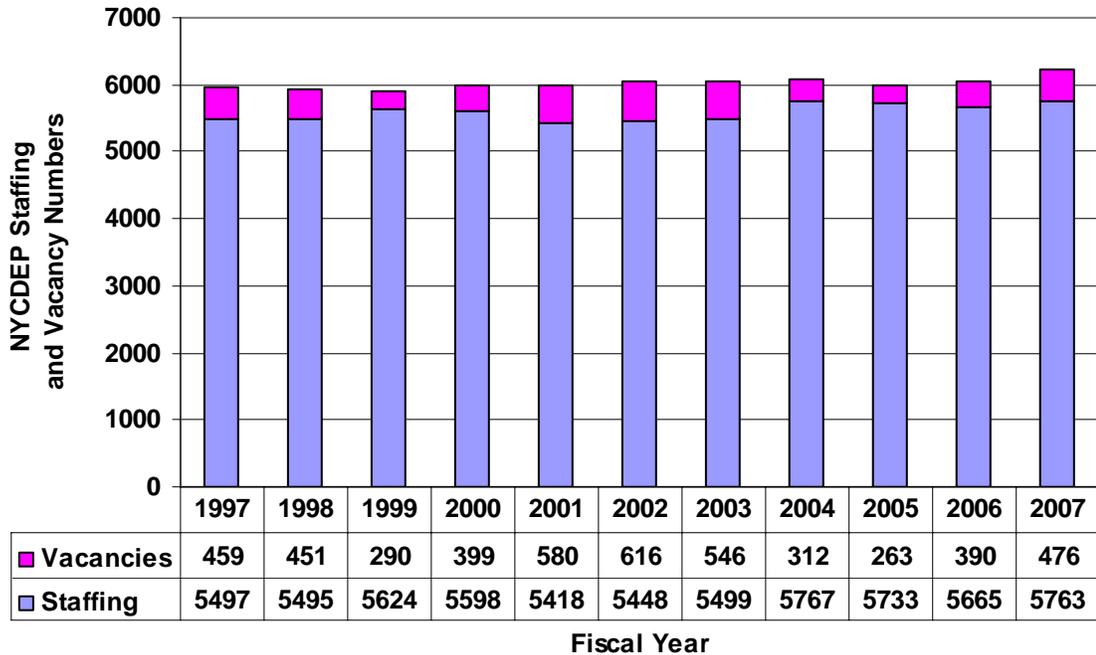


Figure 2: New York City DEP – Staffing and Vacancy Levels 1997-2007

Operational Performance Indicators

There are many operational parameters that can be reviewed to assess the effectiveness of operating programs. Several of these are summarized below:

Only 450 water main breaks were reported in Fiscal Year 2006. That reflects a reduction of 65 breaks from the previous year. This statistic continues to compare most favorably with other municipalities in the United States. Response time for leak repairs continues to remain faster than those experienced seven years ago (see Figure 3). In addition, the NYCDEP performed leak detection surveys on 4,076 miles of the City's water mains, which represents approximately 60% of linear feet of the City's water mains. Based upon these leak detection surveys, 114 leaks were repaired resulting in a savings of about 5.5 million gallons per day of water.

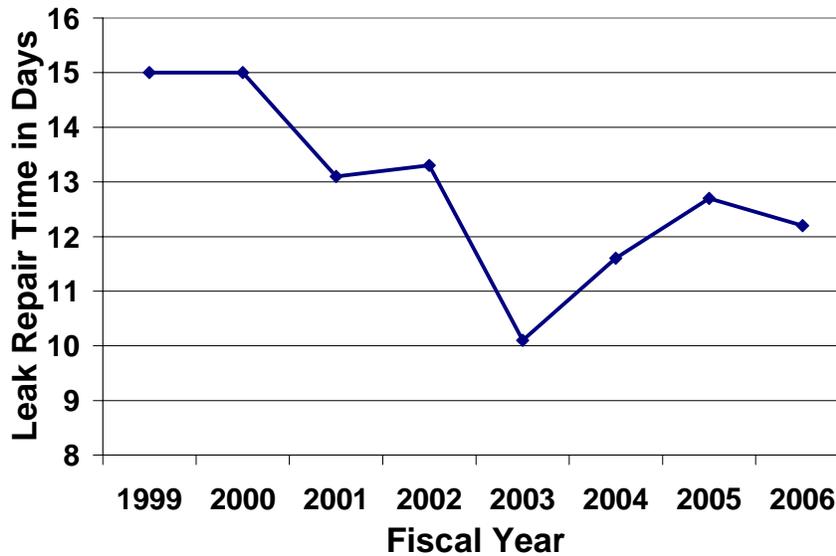


Figure 3: Water Main Leak Repair Time in Days

Operational and Maintenance Program Significant Accomplishments

Water Quality. The water quality in the harbor has continued to improve as a result of the maintenance and operation of the wastewater treatment plants and the combined sewer overflow floatables program. Figures 4 and 5 below demonstrate the improvements in water quality over the past 30 years as indicated by the increased dissolved oxygen concentrations and reduced Fecal Coliform counts. The current information indicates that the harbor waters have achieved the standard set for fishable and swimmable quality.

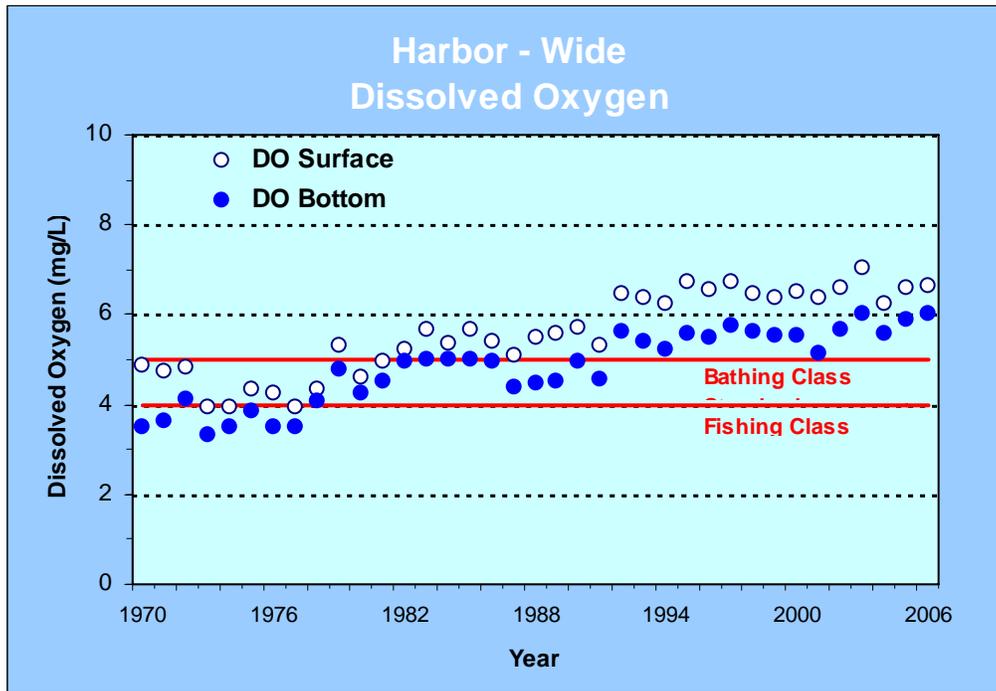


Figure 4: Dissolved Oxygen for the Entire Harbor (1970-2006)

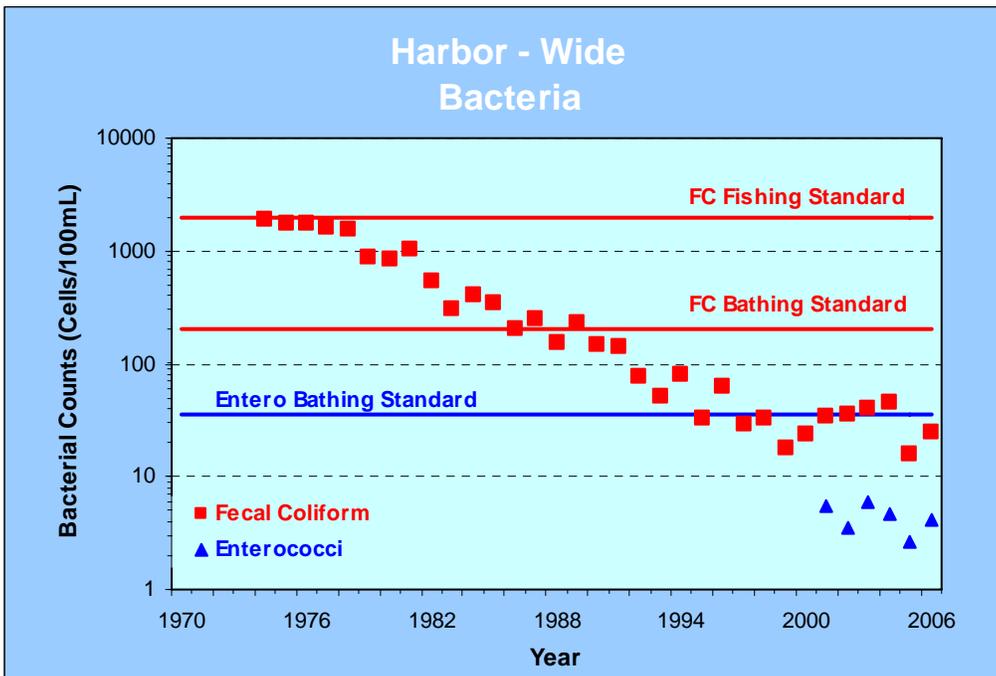


Figure 5: Fecal Coliform Counts for the Entire Harbor (1985-2006)

Operations and Maintenance Program Summary. Staffing levels for the System, when combined with capital and operating programs are sufficient to provide for adequate operation of the current System. NYCDEP has secured some additional staff and has used overtime to address Environmental Health and Safety (EH&S) requirements; however more staff has been requested. BWT has started to phase in additional plant staff at the new upgrade facilities during construction (BNR upgrades, CSO facilities and Newtown Creek WPCP). NYCDEP has started the planning for future staffing increases when the Croton and Cat/Del UV treatment facilities are operational.

OTHER ISSUES AND COMMENTS

Environmental Health & Safety (EH&S)

The NYCDEP has significantly increased the environmental health and safety program department-wide by making personnel changes, additional staffing, additional policy writing, additional employee training and implementation activities. BWSO received provisional release from the Monitor's oversight. NYCDEP anticipates BWS receiving provisional release from oversight within the coming months. BWT Compliance Action Plan (CAP) has been finalized, and the EH&S Program Implementation for BWT is on schedule. NYCDEP remains dedicated to a fast-track program for the 30-month probation period.

Watershed Security

Although there has been a decrease in patrol hours for Environmental Police and watershed protection staff in FY 2006 due to high staff turnover, over the past several years staffing for watershed security has increased. The majority of the increase has come since September 11, 2001. In Fiscal Year 2006, almost 289,000 patrol hours were obtained compared to about 100,000 hours as recently as 1999.

Awards

The American Council of Engineering Companies (ACEC) of New York recognized the Catskill Aqueduct Pressurization Study and the New Croton Dam Spillway Bridge for engineering excellence by granting both projects a gold award in the 2006 awards competition.

Lead and Copper Rule

NYCDEP has been in compliance with the new approved DOH protocol for the Lead and Copper Rule for the past year.

SUMMARY AND RECOMMENDATIONS

Regarding System Management

The System continues to be managed in a professional and prudent manner with highest regard for the level of service afforded to the users. The recently completed Capital Program Management Study Report includes recommendations that will allow BEDC to efficiently manage the growing CIP. Some of the study's recommendations are being implemented and it is anticipated that system management improvements will be recognized in the coming Fiscal Years.

Regarding the Capital Improvement Program (CIP)

The FY 2007 and 2008 budgets have been significantly increased from the previous year's plan and the new Ten Year Strategy covering the Fiscal Year 2008 to 2017 has also been increased substantially. However, additional increases may be necessary in the future, depending upon the outcome of ongoing evaluations. The most notable possible increases are:

- **Hillview Reservoir Cover:** The cost of completely covering the Hillview Reservoir using a fixed concrete cover is currently estimated at approximately \$984 million; and funding for construction is currently not included in the CIP. NYCDEP is conducting studies to determine if the Hillview Reservoir can be eliminated completely or partially from the System. They are also participating in the litigation with Portland, Oregon challenging the LT2 rule. The basis of the litigation is to establish that the Hillview Reservoir is not a conventional reservoir and is not subject to the same surface runoff generated pollution as a conventional reservoir. Based on the results of the ongoing studies and litigation, the capital investment required for the Hillview Reservoir will be established.
- **Risk Based Prioritization (RBP) Assessment:** This assessment provided a comprehensive assessment of all of NYCDEP's operating facilities and established a prioritized list of future project. Of the high priority projects, some are considered to be immediate need projects. Immediate need projects are those projects that present a substantial risk to the environment, health, safety, or failure to meet regulatory requirements. These projects should be completed within FY 2008 and 2009. Other high priority projects are considered immediate concerns. The immediate concerns are those currently operating adequately but subject to failure due to aging equipment. These projects may require short-term attention while long-term solutions are being put in place. While the RBP assessment is seen to be a good starting point, the information available is insufficient for developing specific scopes of work and budgetary cost estimates. Additional focused studies will be required to establish prioritized projects for future budgeting. The RBP assessment represents a first step toward an asset management program for NYCDEP, which will provide valuable input to future capital planning needs.
- **KCT:** KCT facility planning continues; however, additional funding for design and construction will be required in the later years of the Strategy or in a later planning period.
- **Jamaica Bay WPCP:** As the recommendations and implementation schedule for the Jamaica Bay Comprehensive Plan are finalized, additional funding may be required for BNR upgrades at the Jamaica WPCP.
- **Harbor Estuary Program (HEP):** The studies currently being undertaken will inevitably result in Total Maximum Daily Limits (TMDLs) being established for the Harbor Estuary. This will require additional treatment upgrading to those New Jersey and New York WPCPs discharging into the Lower Harbor Estuary. NYCDEP facilities that may be impacted by the anticipated regulatory

action are Owls Head WPCP, Red Hook WPCP, North River WPCP, and Port Richmond WPCP. It is too early in the study phase to quantify the budgetary impact.

- **Dependability Study and Repair of Delaware Aqueduct:** The Dependability Study, which focuses on evaluating strategies for improving dependability of water supplies, is working towards completing a Conceptual Plan in June 2007. Once the alternatives have been identified and evaluated, additional funding is anticipated to improve dependability of the City's water supplies. The long term plan for repair of the Delaware Aqueduct is still under development and additional funding is expected to be added when the full program is identified.

Regarding the Physical Condition of the System

The NYCDEP facilities are considered to be in adequate condition. As indicated, the RBP assessment has identified some immediate needs. These immediate needs are being addressed and should be implemented in the near future. Because of the extensive nature of the NYCDEP facilities, continued diligence and future capital improvements will be necessary to maintain an adequate rating.