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April 4, 2008

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 2008 Consulting Engineer's Report

Dear Mr. McCoy:

We herewith submit the Fiscal Year 2008 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 2008 and 2009.

It is our opinion that the System continues to be managed in a professional and prudent manner within the available funding. The current budget allocations for Fiscal Year 2008 and Fiscal Year 2009 address all legally mandated projects. However, due to the increased costs for these mandated projects, certain projects identified in the Risk-Based Prioritization Assessment Report as high priority are being deferred in the Preliminary Plan. These projects should be further evaluated to determine how they will be accommodated in the Final Plan.

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. The budgetary planning will continue past the date of this report and 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 Treasure

THE NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY

FISCAL YEAR 2008 CONSULTING ENGINEER'S REPORT

PREPARED BY

METCALF & EDDY OF NEW YORK, INC.

April 4, 2008

Document #3671

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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 2008 capital budget and Fiscal Year 2009 projected capital budget for the System
- Fiscal Year 2008 expense budget and Fiscal Year 2009 projected expense budget relative to operation and maintenance of the System
- overview of the Current Capital Plan for Fiscal Years 2008 to 2012

METHODOLOGY FOR ANALYSIS

The analyses conducted by Metcalf & Eddy were accomplished utilizing the following methods:

- 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

Metcalf & Eddy has served the water and wastewater industry for 100 years and the City as consulting engineer for many decades in the capacities of dealing with water supply, water distribution, sewage collection, and wastewater treatment. Metcalf & 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 a high regard for the level of service afforded to the users within the available funding.

- NYCDEP capital and expense budget projections for Fiscal Year (FY) 2008 satisfy the immediate needs for the System including all legally mandated projects.

- All legally mandated projects, comprising approximately 49% of the NYCDEP capital budget for FY 2009, are satisfied in the Preliminary Plan. A number of high priority projects necessary to reliably meet State Pollutant Discharge Elimination System (SPDES) permit requirements have been identified that are not covered in the Preliminary Plan. These projects should be further evaluated.

- The FY 2009 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 current proper operation and maintenance of the System, however increased staff will be required to support the expanding CIP and new facilities. 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 need to maintain the increased staff to continue addressing environmental, health and safety issues, and will need to increase staff to accommodate new facilities coming on-line that increase operational needs.

CAPITAL PROGRAM OVERVIEW

Capital Improvement Program (CIP)

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 NYCDEP CIP consists of the Ten Year Capital Strategy, and then modified by the Current Capital Plan. The Financial Plan was made available in January 2008 which consisted of the budgets for FY08 and the Preliminary Plan for the four year period from FY 2009 through FY 2012. This review includes the budget for FY 2008 which ends on June 30, 2008 and the budget for FY 2009 which begins on July 1, 2008. The Preliminary Plan modifies FY 2008 through FY 2012 of the Ten Year Capital Strategy, which was released in April 2007 and covers FY 2008 to FY 2017.

The Ten Year Strategy is updated every two years and the four year Current Capital Plan is updated quarterly. The next update for the Ten Year Capital Strategy is planned for January 2009.

Metcalf & Eddy has reviewed the Preliminary Plan, provided in January 2008 and met with key individuals responsible for budgetary planning to provide an independent assessment of its adequacy. The Final Plan will be issued in April 2008. Our findings are summarized in the following paragraphs.

Regarding FY 2008

The Preliminary Plan FY 2008 budget is set at $3.774 billion. Approximately 73% of FY 08 funding supports mandated projects, such as the Cat/Del UV Facility. NYCDEP believes that all legally mandated projects will be fully funded in FY 2008.

Regarding FY 2009

The Preliminary Plan FY 2009 budget is set at $3.157 billion. Approximately 49% of FY 09 funding supports legally mandated projects. NYCDEP believes that all legally mandated projects are fully funded in FY 2009. Notable projects currently in the FY 2009 budget are the Newtown Creek Water Pollution Control Plant South Battery Upgrade.

Regarding the Current Capital Plan for FY 2008 to FY 2012

The updated Capital Plan for FY2008-2012 consists of $13.094 billion in funding. Approximately 43% of the total funding for FY2008-2012 is dedicated to mandated projects. The majority of the funding in the FY2008 and FY2009 covers mandated projects, and then the funding for mandated projects decrease in subsequent years. The CIP for FY2008-2017 consists of $19.68 billion.

Several high priority projects have been identified through the Risk Based Prioritization (RBP) assessment conducted for NYCDEP's wastewater collection and treatment infrastructure. While not included in the Preliminary Plan, these projects should be reviewed further so that they can be properly addressed in the Final Plan. This may involve additional studies to establish capital investment budgets for future implementation or providing additional construction funding for refurbishment of the most critical assets.

The Preliminary Plan focuses on those projects that are improvements to the System that have been legally mandated. They are based on meeting a growing demand for higher levels of public health and environmental protection and for the most part should be considered as betterments of the System. The focus on mandated betterments has resulted in the deferral of projects that are necessary to maintain a "state of good repair" for the System necessary to meet its current level of service.

Many assets of the NYCDEP infrastructure are aging. Therefore, it is necessary to refurbish infrastructure in a planned manner to cost effectively minimize risk of failure of the System. To this end, the NYCDEP conducted a Risk Based Prioritization (RBP) Assessment that sets priorities for the refurbishment of all of their assets so that an orderly progression of capital improvements can be carried out. The RBP also provides a preliminary opinion of capital investment requirements, which should be refined before committing funds. It would be prudent to provide more in-depth studies of the highest priority items with the objective of finding the most cost effective way of implementation.

As the legally mandated improvements are addressed, it is important to provide for refurbishment of existing infrastructure in a planned program that minimizes disruptions to System performance. The RBP conducted by NYCDEP provides an assessment of capital assets throughout the System and provides a uniform methodology for establishing a facility stabilization program.

With this information, the next Ten Year Strategy can be developed to resolve the most critical improvements in the short term and the remainder of the RBP facility improvements over the long term.

Organizational Updates and New Initiatives

The NYCDEP has continued to implement improvements with regard to long term planning, 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. Major initiatives include:

- NYCDEP created a new group within the Department, known as Strategic Projects, to address long-term planning, sustainability issues, and other mayoral initiatives. The Strategic Projects group will address issues that require inter-bureau coordination; this will improve communication and sharing of information across the NYCDEP. In addition, this unit will work closely with other City agencies to address mayoral initiatives and other long-term planning initiatives.

- NYCDEP has commissioned an independent Blue Ribbon Panel of Experts. The panel is comprised of experts from the construction industry who will meet monthly to review construction projects, to determine construction project repackaging opportunities, and to improve implementation of construction projects in the Capital Plan. Other city agencies will also be represented at the meetings.

- The Bureau of Engineering Design & Construction (BEDC) (the bureau responsible for managing the planning, design and construction of major capital projects) has initiated a Market Conditions Expert Panel. The Panel will meet quarterly to evaluate market predictability, labor demand and competition as it relates to construction projects and provide opinions as to the impact of market conditions on the CIP.

- The development of the Program Management Support group, which was established in the last Fiscal Year, continues, with the establishment of the Permitting Group, the creation of the Project Delivery Manual, continuation of Workforce Development and Project Controls. The Project Management Information System [PMIS] development is anticipated to be carried out within the next year. 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.

- 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 fully completed its reorganization to 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) (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) has initiated a program to establish performance benchmarks and Best Practices Model, evaluate organizational design and reorganization, and analyze technological and systems capabilities for the Bureau.

- The Bureau of Wastewater Treatment (BWT) (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) initiated an interceptor inspection program to evaluate the entire Citywide interceptor system.

- The Bureau of Environmental Planning and Analysis (BEPA) recently reorganized to improve efficiencies, with the implementation of a group for City Projects Review.

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

Catskill/Delaware Water Supply System Filtration Avoidance

In July 2007 the Environmental Protection Agency (EPA), in close coordination with New York State Department of Health (NYSDOH), issued the 2007 Filtration Avoidance Determination (FAD) to the NYCDEP for the Catskill/Delaware systems. The 2007 FAD consists of a watershed protection program for the next ten years 2007-2017, consisting of two five-year periods. The current FAD reflects a continuation of a successful program that the City has undertaken, resulting in filtration waivers for the Catskill/Delaware systems. Elements of the overall program include the septic and sewer rehabilitation/replacement program, upstate wastewater treatment upgrade program, stormwater management program, waterfowl management program, land management, watershed agricultural program, and wetlands protection program.

Under the new FAD, the NYCDEP is required to continue a land acquisition program for the ten years covered by the FAD. The other programs detailed in the previous FAD will be evaluated after the first five years to determine the continuation of certain programs for the second five year period. The 2007 FAD also requires implementation of operational modifications for turbidity control in Schoharie Reservoir, and the evaluation of potential modifications at Ashokan Reservoir for turbidity control. An engineering analysis of potential turbidity reduction measures for the Ashokan Reservoir was submitted to the EPA on December 31, 2007. The continuation of the FAD programs is fully funded in the Current Capital Plan at $462 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 contracts for the Catskill/Delaware (Cat/Del) UV disinfection facility were awarded in December 2007 for $1.34 billion, and is fully funded in FY08 of the Current Capital Plan. In December 2007 NYCDEP notified EPA that the notice to proceed (NTP) milestone of December 31, 2007 would be missed. The NTP was issued on January 31, 2008.. Within six

months of the NTP, NYCDEP is required to notify EPA whether the subsequent milestone will be met. The next milestone required by the UV Administrative Consent Order is excavation completion and commencement of installing the underslab steel pipe by October 31, 2008. Operation must commence with completion of the first two quadrants by August 31, 2012, and full operation must commence October 29, 2012 in accordance with the Order. Funding for the pressurization of the Catskill Aqueduct from the Kensico Reservoir to Eastview is also addressed in the Current Capital Plan.

Other major accomplishments associated with the previous and ongoing FAD programs include:

- The NYCDEP has either acquired or secured title or conservation easements to about 83,546 acres in the Catskill and Delaware watersheds at a cumulative value of approximately $244 million.

- The majority of the non-City-owned wastewater treatment plants in the west of the Hudson watershed, consisting of 97% 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 Water Filtration Plant and the Cat/Del UV Disinfection Facility are part of the compliance with these new regulations. In addition, NYCDEP is evaluating alternate disinfection methods for compliance with mandated levels of disinfection byproducts in the System. Additional funding may be required in the outer years of the Capital Budget or in a later planning period.

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 (RWB) Tunnel portion of the Delaware Aqueduct that has showed evidence of some water losses. NYCDEP recently awarded a contract for Shaft No. 6 at a value of approximately $240 million. This contract allows for the first phase of tunnel repairs to initiate. The work and equipment included in this contract is essential as NYCDEP initiates and continues planned managed shutdowns for further investigations of tunnel condition and repairs. This contract also provides the City with the ability to dewater the aqueduct in the event of an emergency. NYCDEP has been conducting Emergency Planning for the RWB tunnel involving NYCDEP, City, State and surrounding County agencies. The Contingency Response Plan requires ongoing communication, training, desktop exercises and planned updates. The long term plan for repair is still under development and additional funding is expected to be added when the full program is identified.

Dependability of Water Supplies

The Dependability Study/Plan focuses on evaluating strategies for improving dependability of water supplies to meet the demands of the system during inspection, repair or rehabilitation, either planned or unplanned. A draft Conceptual Plan is currently under NYCDEP review. NYCDEP has evaluated various alternative projects which could allow for a portion of the water supply system to be taken out of service. Based upon a thorough analysis NYCDEP has selected three water supply dependability projects to advance into the Facility Planning phase. Designs for a parallel tunnel to the RWB tunnel for the Hudson River crossing and increasing groundwater supply in Jamaica Bay are currently funded through 10%

design in the Current Capital Plan. The optimization of the Catskill Aqueduct to increase capacity is currently funded beyond the Current Capital Plan.

Hillview Reservoir

NYCDEP and NYSDOH completed negotiations and entered into a revised Administrative Order for Hillview Reservoir on February 22, 2008, which includes a new schedule for installation of a cover. The Administrative Order includes dates for the start of design modifications, completion of design modifications, notice to proceed for construction of each basin and construction of completion of each basin. The construction completion of the East Basin is required by June 30, 2014 and the construction completion of the West Basin is required by October 31, 2016.

NYCDEP's preferred approach to cover the Hillview Reservoir is to use a concrete cover. NYCDEP convened an expert panel to review the Hillview Cover Alternative Analysis Report in June 2007, which recommended a concrete cover due to operational concerns. However, NYCDEP continues to evaluate alternate cost-effective means to cover the reservoir.

NYCDEP continues to closely monitor the overall coordination of the Hillview cover with other ongoing water supply programs, such as KCT and Croton Water Treatment Plan, to determine operational impacts and schedules. In addition, NYCDEP is seeking a variance for the cover requirement and continues to prepare the necessary water quality data.

The cost of completely covering the Hillview Reservoir with a concrete cover is estimated at approximately $1.6 billion; and funding for construction is currently not included in the Current Capital Plan. It is anticipated that the cover funding will be included in the next Preliminary Ten Year Capital Strategy, in January 2009. Funding of $825 million for the East Basin will be required in FY2011 and funding of $783 million for construction of the West Basin will be required in FY2013.

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 and Supervisory Control and Data Acquisition (SCADA) system, all improving the reliability and performance of the important Hillview Reservoir system. New Chlorination Addition Facility and a new Central Monitoring Building are currently not funded in the plan. The Chlorination Addition Facility will allow the City to disinfect the water supply at Hillview with Sodium Hypochlorite instead of chlorine gas. This is advantageous from health & safety standpoint, as well as in-line with recent concerns from Homeland Security. For these reasons, use of chlorine gas is being phased out of the waterworks industry and supplies might not be readily available in the next 5 to 10 years. Although the schedule for implementation has not been set, it is recommended that inclusion of the Chlorination Addition Facility be considered during the next planning period.

Croton Water Filtration Plant

Due to a six month delay in the NTP for the General (G), Heating, Ventilating and Air Conditioning (HVAC) and Electrical (E) construction contracts, the Croton Water Treatment Plant is scheduled for completion in April 2012. Approximately $375 million is included in the Current Capital Plan in Fiscal Year 2008 and Fiscal Year 2009 for the remaining facilities associated with the Croton Water Treatment Plant, which includes the forcemain from Croton to Hunts Point WPCP, Hunts Point modifications, off-site facilities, plumbing (P) construction contract, Con Edison connections, design change orders, construction management (CM) change order and mitigation and amenities for the plant. Construction contracts associated with the Croton Water Treatment Plant that have been awarded to date value at about $2.1

billion. These contracts include site preparation, tunnels, the water treatment plant construction contracts, and the first phase of the rehabilitation of New Croton Aqueduct.

The NTP for the Croton Water Treatment Plant G, HVAC and E construction contracts were issued on August 21, 2007. The Notice to Proceed for the Croton Water Treatment Plant P contract was issued on December 31, 2007. The first interim milestone for the construction contract, starting placement of structural concrete, was achieved on October 31, 2007, one month ahead of schedule. Site preparation was completed on July 6, 2007 at the Mosholu Park location. The tunneling construction contract is ongoing. Mining for the raw water tunnel is approximately 90% complete while the treated water tunnels are approximately 15% complete. The tunnel boring machine (TBM) has been installed and is mining the Low Service Tunnel first.

Rehabilitation of the New Croton Aqueduct needs to be completed at the time of start-up of the Croton Water Treatment Plant. Funding of almost $143 million for the second phase of the rehabilitation of the New Croton Aqueduct is included in the Current Plan.

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. There is no funding in the Current Capital Plan for FY 2008 through FY 2012 for KCT. Preliminary KCT construction costs are estimated between $4 and $6 billion, depending upon routing, shaft locations and connections. A planning level document recommending routing of the KCT is anticipated to be complete later this year.

City Tunnel No. 3, Stage 2

City Tunnel No. 3, Stage 2 Manhattan leg is currently under construction and is funded at $309.8 million in the Current Capital Plan. The activation and completion of the Manhattan segment of Stage 2 is currently scheduled for 2013.

City Tunnel No. 3, Stage 2 Brooklyn-Queens section requires additional funding for the design and construction of Shafts 17B and 18B. Construction completion for the Brooklyn-Queens section is anticipated in 2015; however, NYCDEP is currently evaluating the schedule for and coordination of the Brooklyn-Queen section activation and shaft construction.

Dam Safety

The full long-term rehabilitation upgrades for the Gilboa Dam are anticipated to bring the dam into compliance with the New York State Department of Environmental Conservation (NYSDEC) safety guidelines for new dams. This rehabilitation is funded at approximately $663 million in the Current Capital Plan. This upgrade is currently in the final design phase. The crest gates work and the site preparation is planned for FY 2009 and main dam reconstruction project is planned for FY 2011.

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 for Biological Nitrogen Removal (BNR) upgrades as required by the Nitrogen Consent Judgment. The full-scale 25-mgd BNR demonstration project is expected to come on-line in Summer 2008; this demonstration project will serve as a testing facility for various operational control and optimization strategies that the City can implement at its other BNR installations. The schedules for the BNR upgrades at some of these plants have been delayed for various site-specific reasons. Some of the construction delays have been caused by unforeseen events (e.g., greater-than-expected necessary concrete tank repair work, legacy contamination[1] issues) that is out of the control of NYCDEP; in these instances, NYCDEP has requested *force majeure* relief from milestone attainment and associated penalties. NYCDEP have notified NYSDEC regarding the force majeure and other schedule delays; negotiations are ongoing.

Regarding Jamaica Bay

NYCDEP and NYSDEC are currently negotiating a phased approach to the BNR upgrades required at the Jamaica and 26th Ward WPCPs in the Jamaica Bay, based upon the submittal of the Comprehensive Jamaica Bay Plan Report. The BNR upgrades at the Jamaica Bay WPCPs are currently not funded. As the recommendations and implementation schedule for Jamaica Bay are finalized, additional funding for the Jamaica WPCPs will be required in the Capital Plan.

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. The HEP was convened as a partnership of federal, state, and local governments; scientists; civic and environmental advocates; the fishing community; business and labor leaders; and educators (called the Management Conference). It involves WPCPs in New Jersey and four NYCDEP WPCPs (Owls Head WPCP, Red Hook WPCP, North River WPCP, and Port Richmond WPCP). NYCDEP submitted a report to EPA last year that evaluated the capital investment cost of upgrading of the Water Pollution Control Plants to provide nitrogen and carbon removal at four different levels of treatment. The water quality impacts on the Harbor Estuary are now being evaluated by EPA for the various levels of treatment. Through this methodology, it is expected that EPA and the Management Conference will determine which treatment upgrades, if any, will be required for NYC WPCPs. Funding is currently not in the Capital Plan for HEP-related upgrades. Upon completion of the HEP studies and based upon negotiations with EPA, funding will most likely be required in a later planning period.

Newtown Creek Water Pollution Control Plant (WPCP) Upgrade Program

NYCDEP opened the bids for NC-47, South Batteries in February 2008, with a low bid of $711 million, which is fully funded in FY09 of the Current Capital Plan. Some of the new facilities at Newtown Creek WPCP are scheduled for start-up in the near future including the Digesters.

NYCDEP and NYSDEC conceptually agreed on a construction acceleration schedule and extension of interim limits at Newtown Creek WPCP; however, negotiations have not been completed due disagreement as to the stipulated penalties. The Newtown Creek WPCP upgrade projects are funded in the Current Capital Plan at a level of approximately $2.34 billion.

Combined Sewer Overflow (CSO) Program

[1] The Legacy Program is a DEP-wide program to address asbestos, lead, mercury, and PCBs contamination at its facilities. These materials were used in paints, light fixtures, and insulation prior to the resultant health effects being identified.

NYCDEP submitted the CSO Long Term Control Plans (LTCP) to NYSDEC in June 2007. NYSDEC continues to review the LTCPs and negotiations are expected to occur upon completion of their review.

NYCDEP and NYSDEC have completed negotiations for a CSO Order Modification Agreement in December 2007. This 2007 CSO Order Modification Agreement modifies the 2005 CSO Order Appendix A schedule and supersedes the Omni IV Order. Approximately $421.2 million is funded in the Current Capital Plan for FY 2008 through 2012; however, additional funding is required in future planning periods. 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.

Risk Based Prioritization (RBP) Assessment

NYCDEP completed a risk based prioritization (RBP) assessment for water and wastewater facilities. The RBP was conducted at all 14 water pollution control plants (WPCPs) in 2005. The program was extended to include all BWS and BWSO facilities in 2006 and further extended to include all wastewater pump stations in 2007. Individual assessments were conducted compiling a list of over 20,000 assets throughout NYCDEP.

The objective of this assessment is to evaluate the condition of all assets and establish priorities for facility refurbishment using a programmatic uniform methodology. The RBP assessment included assessment of all major facilities. The status of major equipment and unit processes were evaluated. A system of prioritization was established that sets a numerical index referred to as the Asset Risk Index (ARI) and three risk category codes; high, medium, and low. The ARI for each asset is assessed based on the probability and severity of a potential failure.

Based on the ARI, asset refurbishment is prioritized as follows:

ARI	Priority	Color Code
1 to 5	Low	Green
6 to 10	Medium	Yellow
11 to 100	High	Red

The RBP assessment provides a means for prioritizing refurbishment of NYCDEP assets and can be a meaningful tool for programming future CIP requirements. Some points about the prioritization system include the following.

- The ARI comprises both severity and probability components. The severity component is based on the impact of an asset failure. The failure of a critical asset may result in a failure to meet SPDES permit requirements or endangerment to the environment or personnel. The probability component is based on the likelihood that an asset will fail. An asset that is reaching the end of its useful will have a high probability of failure while a new asset is less likely to fail.

- It should further be noted that the ARI will change with time as facilities age. Consequently, each asset will progress in priority.

- Currently, there are a high proportionate number of assets that are in the high priority range. This suggests that the focus of the short-term CIP on legally mandated projects has resulted in the deferral of asset refurbishment necessary to maintain a "state of good repair".

- Preliminary construction costs for refurbishing assets have been provided. However, these construction cost estimates, in some instances, are order of magnitude estimates for comparative purposes that are not based on in-depth engineering studies.

Currently, there are many assets that are in the high priority range which should be addressed in an orderly fashion. It would be prudent to conduct engineering studies for the highest priority projects to identify the most cost effective way to complete the work. The engineering studies should include construction cost estimates that are sufficient for CIP budgeting.

The RBP assessment is an excellent tool in maintaining the long-term operability of the water and wastewater systems. By focusing on the highest priority projects, the CIP requirements can be introduced into the 10 Year Strategy in an orderly and cost-effective manner.

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 Capital Plan, and providing for prudent and professional management of the System.

Filtration Avoidance Determination (FAD). EPA issued a new FAD in July 2007 for the 2007-2017 period. The continuation of the FAD is critical in that 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.

Croton Filtration Plant. The treatment plant construction contracts were awarded and construction commenced in August 2007.

Catskill/Delaware UV Plant. The treatment plant construction contracts for Cat/Del UV Disinfection Facility were awarded and construction commenced in January 2008.

Shaft 6. The first stage of RWB Tunnel repairs have initiated with the award of DEL 185/Shaft 6 contract, valued at $240 million. The first critical inspection dive is underway, and future inspections are planned for later this year.

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.

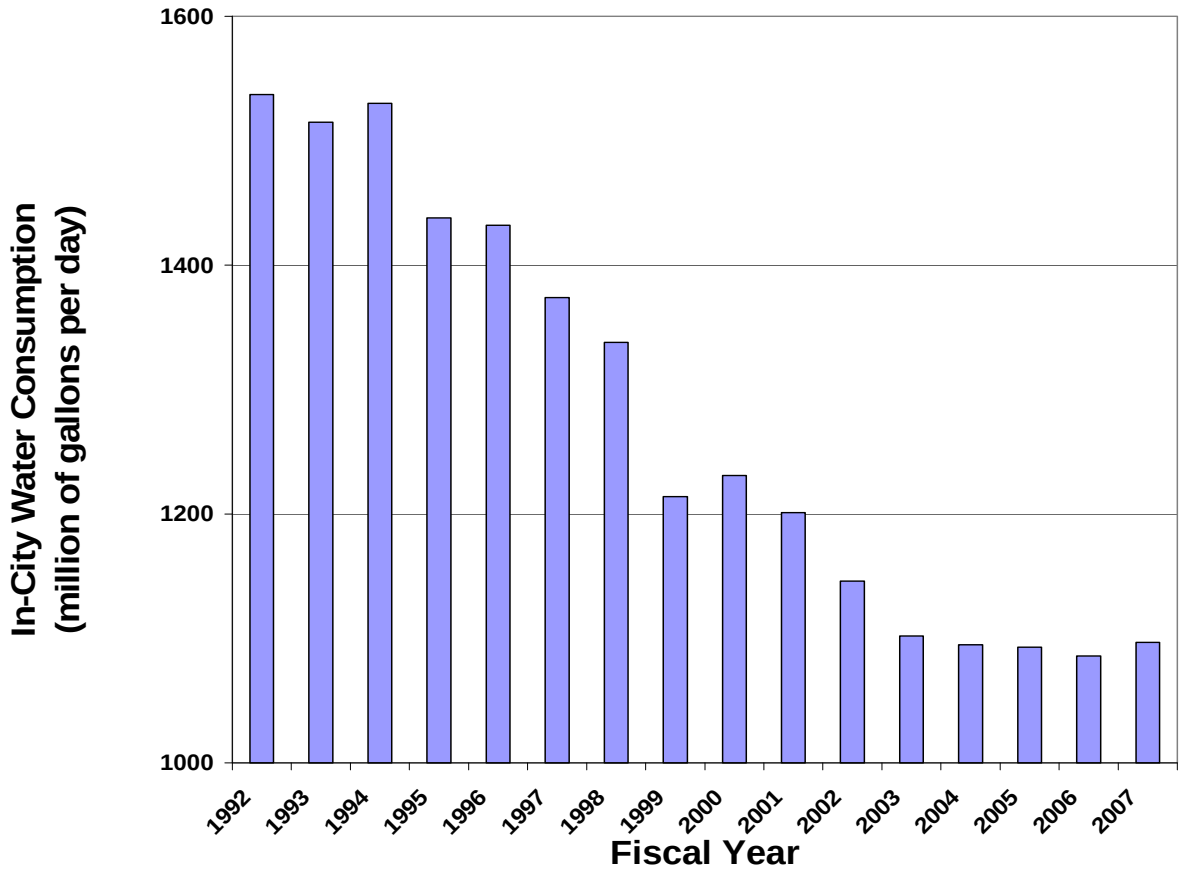
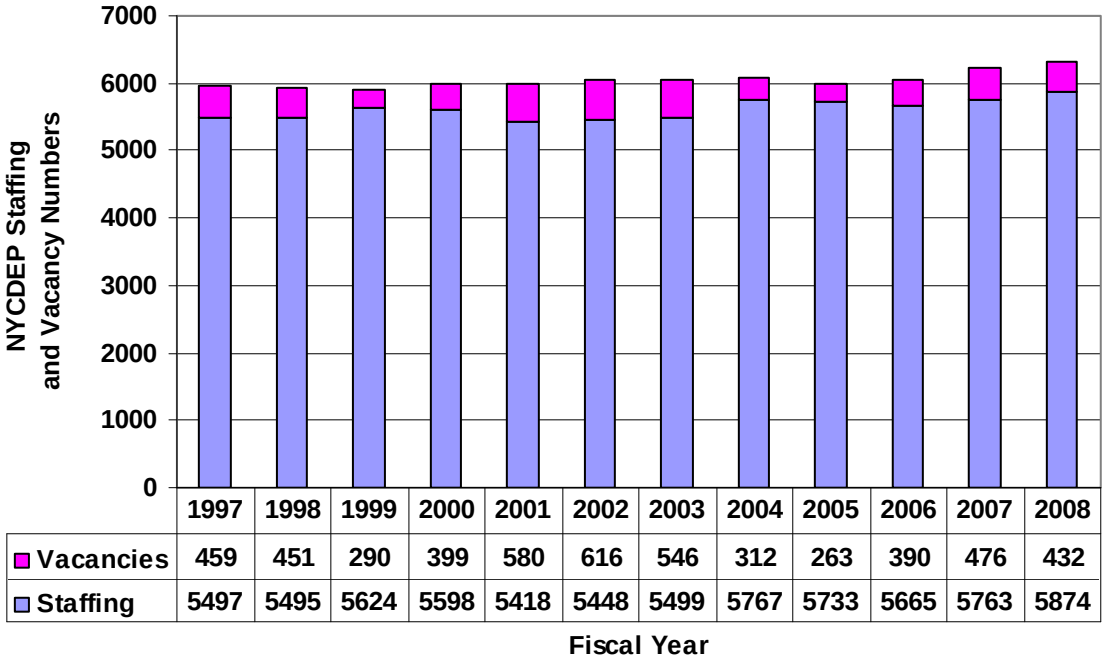


Figure 1: New York City Average Daily Water Demand in Million Gallons per Day (mgd)

System Staffing Levels

Approved positions for the System presently stand at 6,306 for FY 2008. Vacancies currently stand at 432. A positive trend in personnel procurement has been established over the past several years. Increased staffing levels will be required in the future to support the expanding CIP, to address the needs of the system and to operate new facilities coming on-line.



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Vacancies	459	451	290	399	580	616	546	312	263	390	476	432
Staffing	5497	5495	5624	5598	5418	5448	5499	5767	5733	5665	5763	5874

Figure 2: New York City DEP – Staffing and Vacancy Levels 1997-2008

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:

The NYCDEP performed leak detection surveys on 3,850 miles of the City's water mains, which represents approximately 57% of linear feet of the City's water mains. Based upon these leak detection surveys, 159 leaks/breaks were found and repaired resulting in an estimated savings of about 4.6 million gallons per day of water. There 583 water main breaks that were reported in Fiscal Year 2007, which reflects an increase of 133 breaks compared to FY06. The range of water main breaks that NYC has experienced compares well 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, there was an increase in the number of fire hydrants repaired or replaced by NYCDEP, from 15,837 hydrants in FY06 to 17,409 hydrants in FY07.

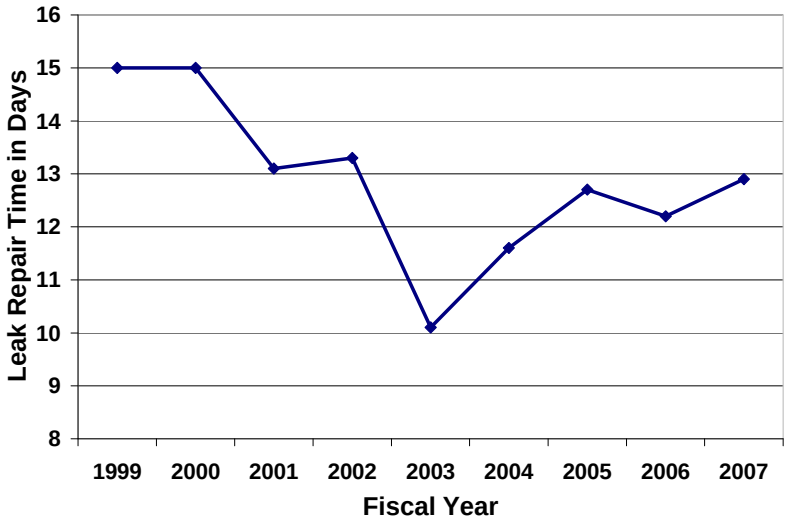


Figure 3: Water Main Leak Repair Time in Days

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.

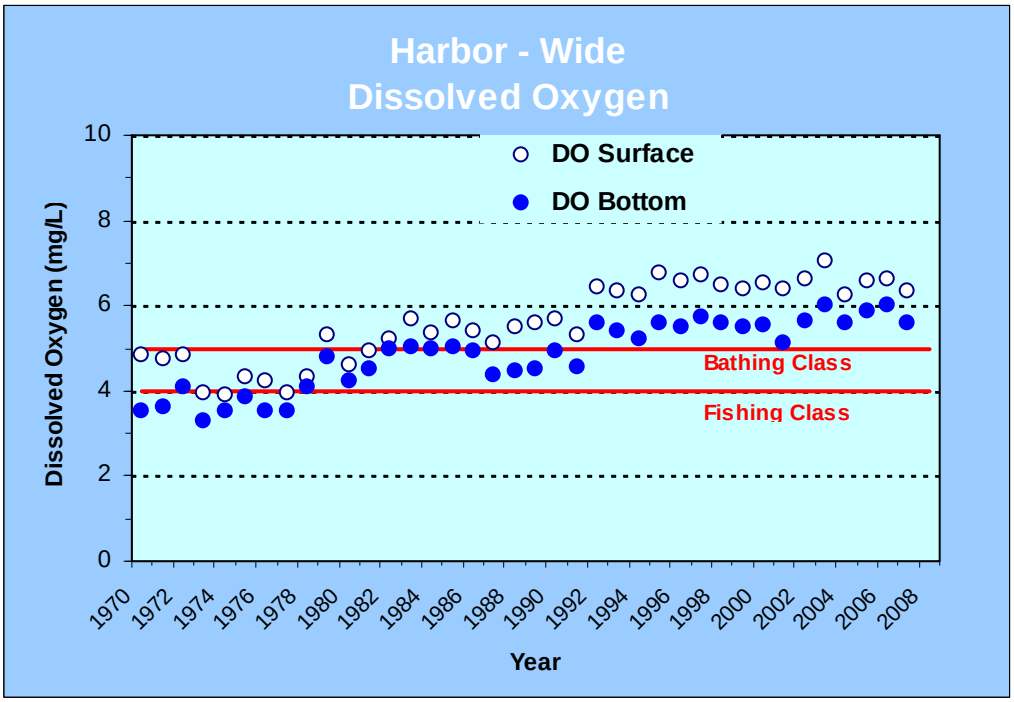


Figure 4: Dissolved Oxygen for the Entire Harbor (1970-2007)

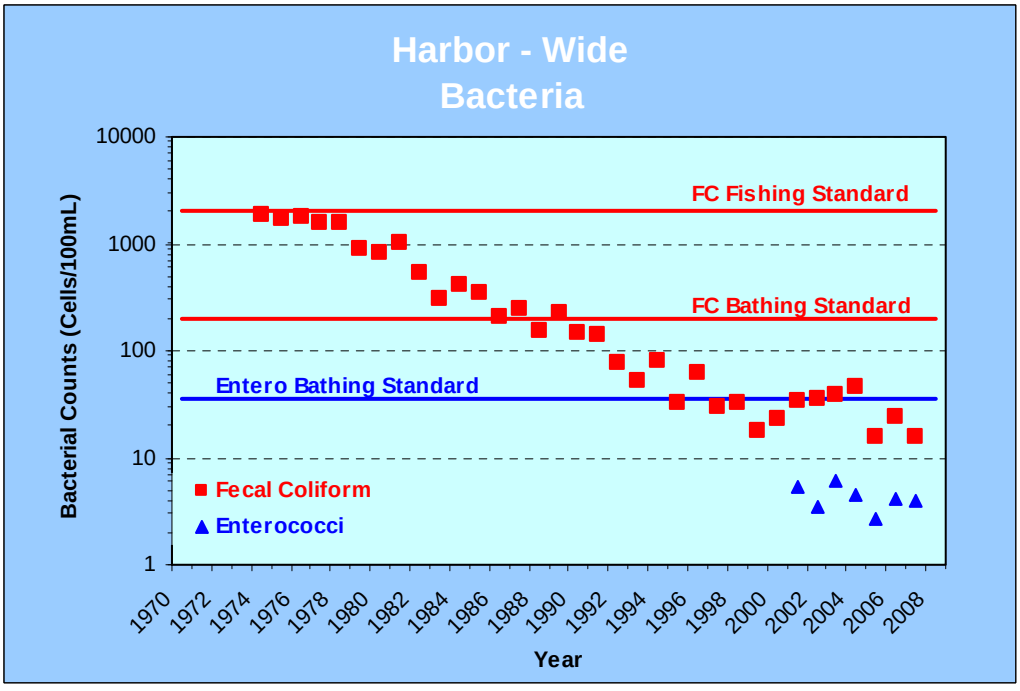


Figure 5: Fecal Coliform Counts for the Entire Harbor (1970-2007)

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 to plan for future staffing increases when the Croton and Cat/Del UV treatment facilities are operational. BWSO will manage/operate the Croton treatment facility and BWS will manage/operate the Cat/Del UV facility. NYCDEP is currently evaluating the potential for partial or full contract operations for the new water treatment plants.

OTHER ISSUES AND COMMENTS

Sustainability

In April 2007 Mayor Bloomberg released a report known as PlaNYC: A Greener, Greater New York, a comprehensive sustainability plan for New York City's future. This plan focuses on five key target areas of the City's environment – air, land, water, energy and transportation. As part of PlaNYC, the City has committed to reducing its municipal greenhouse gas emissions by 30% below 2005 levels by Calendar Year 2017.

The NYCDEP will be participating in this program and must lower their greenhouse gas emissions while introducing several new sources of greenhouse gas emissions. The major facilities of note are the Croton Water Filtration Plant, Cat/Del UV Facility, and those Water Pollution Control Plants which are being upgraded to provide biological nitrogen removal.

Greenhouse Gas Emissions/ Climate Change

NYCDEP has recently completed a comprehensive report on predicted climate change impacts for future infrastructure planning purposes. The report has not yet been released but some of the findings have been released though technical conferences and workshops on climate change and global warming. It is anticipated that global warming will result in accelerated melting of the polar ice caps and rising sea levels. These conditions will result in changes in global weather patterns. It is predicted that global warming will result in sea level rise of one to two feet and more intense storm events in the vicinity of NYC. The results of the NYCDEP Report are expected to form the basis for evaluating two aspects of future capital improvement programs.

- Adaptation Requirements: Adaptation requirements are those actions that must be taken to allow NYCDEP facilities to meet their intended functions when considering increased sea levels and more intense storm events.

- Greenhouse Gas Reduction Requirements: These are the requirements necessary to reduce greenhouse gas emissions as part of a world wide effort to reduce global warming.

While the NYCDEP Report is expected to elaborate the climate change impact in the vicinity of NYC, further studies will be required to determine the impacts on the NYCDEP System and the capital investments necessary to maintain the integrity of the System

Jamaica Bay Watershed Protection Plan

NYCDEP released the Jamaica Bay Watershed Protection Plan in October 2007 which includes six major categories that identify the significant issues that need to be addressed to restore the ecosystem of the Jamaica Bay. These categories include water quality, restoration of the ecology, stormwater management, public education and outreach, public use, and implementation and coordination. The Jamaica Bay Plan also includes recommendations for the implementation of hard and soft infrastructure projects, innovative alternatives, pilot studies, regulatory initiatives and public outreach efforts. NYCDEP is moving forward on pilot projects for Best Management Practices (BMPs).

Cross Connection Prevention Program

The BWSO has improved the Cross Connection Prevention Program during the past year by significantly increasing the number of inspections, updating hazardous facilities database and coordinating closely with other City agencies.

Environmental Health & Safety (EH&S)

The NYCDEP has continued developing and implementing its environmental health and safety compliance program. BWS was released from the monitor's day to day oversight in October 2007. NYCDEP's risk management and process safety management programs at the four NYCDEP facilities where drinking water is chlorinated for disinfection were also released from the monitor's day-to-day supervision in October 2007. BWT Compliance Action Plan (CAP) has been finalized, and the EH&S Program Implementation for BWT is on schedule for completion August, 2008. NYCDEP remains dedicated to a fast-track program for the 30-month probation period, ending February 2009.

Watershed Security

In Fiscal Year 2007, almost 308,000 patrol hours in the watershed were obtained, which reflects a 6.5 % increase from Fiscal Year 2006. This is primarily due to the assignment of two new classes of Environmental Police Officers to patrol duty. In December 2007 NYCDEP police opened a new precinct in Valhalla. The building is the newest and largest of NYCDEP's East of Hudson Patrol Force, Detective Division, Emergency Service Unit, Executive Staff, Communications Center and Alarm Monitoring Center.

Awards

The American Council of Engineering Companies of New York (ACEC NY) recognized the Catskill Turbidity Control Studies and the Gilboa Dam Fast-Track Improvements for engineering excellence by granting both projects a diamond award in the 2007 awards competition.

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.

Regarding the Capital Improvement Program (CIP)

Additional increases in funding may be necessary in the future, depending upon the outcome of ongoing evaluations. The most notable increases are:

- Hillview Reservoir Cover: The cost of completely covering the Hillview Reservoir using a fixed concrete cover is currently estimated at approximately $1.6 billion; funding for construction is currently not included in the CIP. NYCDEP and NYSDOH recently signed a new Order requiring the reservoir to be covered by 2014 and 2016 for the East basin and West basin, respectively. Although NYCDEP is planning to submit a variance application, funding is required by 2011 to initiate construction to comply with the current new Order.

- 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 the near term. 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 negotiations continue and recommendations and implementation schedule for the Jamaica Bay Comprehensive Plan are finalized, additional funding may be required for BNR upgrades at the Jamaica WPCP, 26th Ward WPCP, and Rockaway 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 advancing on three projects. However, additional funding is anticipated to advance these projects beyond 10% design and into construction 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.

- Climate Change Facility Impacts: Once the short-term and long-term needs for the system are identified based upon the green house gas emissions/climate change, additional funding will be required. At this time it is too early to identify the system needs and funds that are required.

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 need to be addressed and 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.