New York City Water Board

Report on the Cost of Supplying Water to Upstate Customers for the 2014 Rate Year

Draft – May 14, 2013

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To the Members of the New York City Water Board:

The Amawalk Consulting Group LLC is pleased to submit its Report on the cost of supplying water to upstate customers of the City of New York's water system. The Report presents our findings on the cost of service and identifies the unit rate for Fiscal Year 2014 that is necessary to recover the anticipated cost of water supply service.

The Report presents the actual cost of water supply service for Fiscal Years 2010 through 2012. The methodology used to develop the cost of service for these years is consistent with that used in previous years. In addition, the anticipated cost of service is presented for Fiscal Years 2013 through 2017 (the "Projection Period").

The Report shows that the cost of water supply service will increase in each year of the Projection Period. The increases are primarily attributable to rising operating expenses, including the property taxes levied on watershed properties, together with capital investments in water supply infrastructure. Significant investments have been made in the Water System in recent years to protect the quality of the water supply, to enhance the integrity of the system and to achieve other water supply objectives. Additional capital investments will be made during the Projection Period. In addition to the projected increases in the cost of service, the unit rate for water supply service is impacted by historical declines in both upstate and in-City consumption and the expectation that system-wide water consumption will continue to decline over the long-term.

We appreciate the opportunity to be of assistance to the Water Board and would be pleased to answer any questions you may have regarding the study methodology or findings. We also wish to acknowledge the assistance provided by representatives of the Office of Management and Budget, the Department of Environmental Protection, the New York City Law Department, the Water Board, and the New York City Municipal Water Finance Authority in the preparation of this Report.

Should you have any questions or comments, please do not hesitate to contact the undersigned at (212) 361-0050.

Very truly yours,

Edward J. Markus
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1.0 Introduction

1.1 Purpose

The purpose of this Report is to summarize the results of the study performed by the Amawalk Consulting Group LLC ("Amawalk") of the cost of providing water supply service to communities north of New York City (hereinafter, "the City"). The Report presents the proposed regulated rate for Fiscal Year 2014 to recover the cost of service. The Report also presents the calculated cost of service and rates for Fiscal Years 2010 through 2012; the anticipated cost of service and rate for 2013, the current year; and the projected cost of service and rates for 2015 through 2017. The proposed regulated rate for Fiscal Year 2014 is $1,496.76 per million gallons ("MG"), which represents an increase of $164.46 per MG from the current Fiscal Year 2013 unit rate of $1,332.30, or a 12.34% increase.

1.2 Scope

The Report presents the findings of Amawalk regarding the revenue requirements for water supply service as well as water consumption by customers and a unit rate for calculating charges to upstate customers. The revenue requirements take into consideration the operation and maintenance expenses, principal and interest on bonds, and other financial needs related to facilities north of the City. The Fiscal Year 2014 cost of service and unit rate are based, in part, on the calculated cost of service for the current fiscal year and prior years, which is presented herein. All years referred to in the Report reflect the fiscal year of the City that begins July 1 and ends June 30.

Amawalk has reviewed, to the extent practicable, the books, records, financial reports, and statistical data of the City, the New York City Water Board (the "Board") and the New York City Municipal Water Finance Authority (the "Authority"), and it has conducted such other investigations and analyses as deemed necessary to assemble and analyze the cost of water supply service and rates. We have performed various financial tests and analyses necessary to support our findings and conclusions.

In analyzing the projection of future operations summarized in this Report, Amawalk has reviewed certain assumptions with respect to conditions, events and circumstances, which may occur in the future. We believe that these assumptions are reasonable and attainable, although actual results may differ from those in the forecast as influenced by the conditions, events and circumstances, which actually occur.

1.3 Background

The City, through its Department of Environmental Protection ("DEP"), is responsible for developing and maintaining dependable sources of water supply and providing drinking water to certain communities north of the City and to in-City consumers. DEP operates and maintains the water supply system (the "Water System" or the "System") and is responsible for planning,

designing and constructing capital improvements to the System. The Capital Improvement Program (the "CIP") of DEP identifies planned commitments for design, construction and construction-related work for the System by category of project in each year of the planning period of 2013 through 2023.

The information presented in this report is as of April 1, 2013. Additional information, changes in the System or events occurring after this date are not reflected in the report. Section 1.3 of this report is intended to provide background information for the reader.

1.3.1 The Water System

Water for the System is derived from three upstate reservoir systems (Croton, Catskill and Delaware) and a system of wells in Queens that were acquired as part of the City's acquisition of the Jamaica Water Supply Company. The three reservoir systems, which benefit customers north of the City, as well as City consumers, include 18 collecting reservoirs, three controlled lakes and two balancing reservoirs with a storage capacity of approximately 581 billion gallons. The water collection systems in each region were designed and built with various interconnections to permit the exchange of water from one system to another, which helps mitigate the effects of localized droughts and takes advantage of excess water in any of the three watersheds.

Figure 1 provides an overview of the Water System.

Figure 1 Map of the Water System

1.3.1.1 The Croton System

The Croton System consists of 12 reservoirs and 3 controlled lakes that are located on the Croton River, its 3 branches and 3 other tributaries. The watershed is divided into three subsystems: the West Branch, Croton Falls, and Muscoot. The watershed that supplies the Croton System has an area of 375 square miles. It lies almost entirely within the State of New York (the "State"), approximately 45 miles north of lower Manhattan. A small portion of the watershed is located in the State of Connecticut. The Croton System, when operating at full capacity, had provided approximately 10% of the City's daily water supply under normal conditions and up to 30% of the daily water supply during drought conditions. The Croton System has not been used since the fall of 2008 when it was briefly placed in service during planned maintenance of the Delaware System.

Absent exigent circumstance, the Croton System will not be used until the start-up of the Croton Filtration Plant (the "Croton Plant") in 2014. Future use of the Croton System will be determined by DEP's operational needs. The costs of the Croton Plant that have been incurred since the selection of the site within the City limits are not included in calculating the cost of water supply service.

1.3.1.2 The Catskill System

The Catskill System occupies sparsely populated areas in the central and eastern portions of the Catskill Mountains and, when the Croton System is being used, normally provides approximately 40% of the City's daily water supply. Water in the Catskill System comes from the Esopus and Schoharie Creek watersheds, located approximately 100 miles north of lower Manhattan and 35 miles west of the Hudson River. The Catskill System is comprised of the Schoharie Reservoir (formed by the Gilboa Dam across Schoharie Creek) and Ashokan Reservoir (formed by the Olivebridge Dam across Esopus Creek) and the Catskill Aqueduct. Schoharie Reservoir water is delivered to the Esopus Creek via the Shandaken Tunnel, from which it then travels to the Ashokan Reservoir.

1.3.1.3 The Delaware System

The Delaware System is located approximately 125 miles north of lower Manhattan and, when the Croton System is being used, typically provides about 50% of the City's daily water supply. Three Delaware System reservoirs collect water from a sparsely populated region on the branches of the Delaware River: Cannonsville Reservoir (formed by the Cannonsville dam on the West Branch of the Delaware River); Pepacton Reservoir (formed by the Downsville Dam across the East Branch of the Delaware River); and Neversink Reservoir (formed by the Neversink Dam across the Neversink River, a tributary to the Delaware River).

The conditions under which the System's Pepacton, Neversink and Cannonsville Reservoirs may be operated are set forth under the terms of a 1954 decree of the Supreme Court of the United States (the "1954 Decree"). It allows the System to divert 800 million gallons per day ("MGD") of water from the Delaware River Basin for use by the Water System. At the same time, an October 2007 agreement with the Delaware River Basin Commission requires the System, under certain circumstances when the reservoirs are full, to release water from the three reservoirs into the tributaries of the Delaware River in accordance with the Flexible Flow Management Program.

1.3.1.4 The Catskill Aqueduct

The Catskill Aqueduct, which conveys water by gravity, is 92 miles long and extends from the Ashokan Reservoir to the Kensico and Hillview Reservoirs. The delivery capacity of the Catskill Aqueduct from the Ashokan Reservoir to the Kensico Reservoir is about 610 MGD. From Kensico Reservoir to the Hillview Reservoir, the Aqueduct has a capacity of approximately 800 MGD. The Catskill Aqueduct passes under the New Croton Reservoir. At this point, it is possible to transfer water from Ashokan Reservoir to New Croton Reservoir.

1.3.1.5 The Delaware Aqueduct

The Delaware Aqueduct is 85 miles long and similarly carries water by gravity from Rondout Reservoir to West Branch Reservoir, in the Croton System, and from West Branch Reservoir to Kensico Reservoir and then on to Hillview Reservoir. Water entering the Aqueduct can be taken from the Rondout, Neversink, Pepacton, and Cannonsville Reservoirs. The capacity of the section that delivers water from Rondout Reservoir to West Branch Reservoir is about 890 MGD. The delivery capacity of the Delaware Aqueduct from West Branch Reservoir to Kensico Reservoir is about 1,045 MGD. The Aqueduct has a capacity of approximately 1,450 MGD from Kensico Reservoir to the Hillview Reservoir.

1.3.1.6 The Queens Groundwater Supply

DEP operates a number of groundwater wells in the Borough of Queens. These wells have been offline since 2007 due to the availability of higher quality water from the Catskill and Delaware Systems. When in use, the wells are capable of providing approximately 1% of the City's daily water supply. The wells could be used to provide more of the daily supply during drought conditions. DEP is currently planning improvements to the groundwater system which will augment the supply of water from underground aquifers.

1.3.1.7 Long-Term System Capacity

Current demand and flow projections show that if conservation programs, including metering, toilet replacement, hydrant locking, leak detection and public information campaigns, remain effective there will be no immediate need for the City to find additional long-term water supply sources to meet normal demand under routine System operating conditions. However, with the construction of the Rondout-West Branch bypass tunnel, there will be a short-term need to undertake certain infrastructure improvements and utilize additional water conservation measures.

DEP continues to evaluate additional strategies and projects for improving the dependability of water supplies, which could entail the development of additional or interim supplies to meet demand during periods of extended facility outages due to planned or unplanned inspection, repair or rehabilitation. DEP has retained various consultants to assist in developing dependability plans. DEP intends to evaluate various alternative projects that, when combined, could allow for any portion of the System to be taken out of service for a period of up to four years. Elements of that plan may include: interconnections with other neighboring jurisdictions; increased use of groundwater supplies; storage and recovery of existing supplies within underground aquifers; increased storage at existing reservoirs; withdrawals and treatment from other surface waters; hydraulic improvements to existing aqueducts; and additional tunnels, such as City Water Tunnel No. 3.

1.3.1.8 System Security

In recent years, DEP has taken a number of steps to enhance and augment its security arrangements to protect the System, including water supply structures and facilities. These steps include, among others, increasing the size of the DEP police force to approximately 240 officers;

purchasing additional police vehicles and surveillance equipment; installing a watershed-wide radio communication system; and further securing facilities through additional locks, fences and other physical barriers to prevent access by unauthorized persons. Increased security requirements have resulted in additional labor costs and related expenses in the System.

1.3.2 Condition of the Water System

The System has reliably served the City since 1842. Many additions and improvements have been made over the years to develop the system that exists today. On an overall basis, the condition of the water and wastewater system of the City has been rated "Adequate", the highest rating of three categories, by AECOM USA, Inc., the consulting engineer to the Authority. Nonetheless, given the age of the system, circumstances that are specific to certain components of the system, and modern perspectives on reliability, security and other matters, DEP is pursuing a number of initiatives in the Water System to enhance the long-term integrity of the system. An overview of several of these initiatives is presented in this part of the Report.

1.3.2.1 Rondout-West Branch Tunnel

The System has evolved over a period of more than 150 years since the Croton supply was first put on line in the 1840s. That evolution had been driven in the past by the need to expand the System to provide more water for the growth of the City. The evolution of the System is now entering the next phase; however, this time it is driven by the need for long-term rehabilitation and enhancement of the System's existing facilities.

The Rondout-West Branch Tunnel carries water 45 miles from the Delaware System under the Hudson River and into West Branch Reservoir. It has a capacity of 890 MGD and normally conveys 50% of the City's water supply. It has the highest pressures and velocities in the Water System. In addition, a portion of the tunnel crosses a fractured rock formation, which is potentially subject to greater stress than the deep rock tunnels located in the City.

DEP regularly assesses the condition and integrity of the System's tunnels and aqueducts to determine the extent and effect of water loss. In particular, since the early 1990s, DEP has monitored the condition of the Rondout-West Branch Tunnel portion of the Delaware Aqueduct. As a result of DEP's flow tests, visual observations and other analyses, it has been determined that approximately 15 MGD to 36 MGD of water is being lost from the tunnel and is surfacing in the form of springs or seeps in the area. The losses amount to approximately 4% of the daily volume of water provided by the tunnel under peak flow conditions. DEP has also determined that the situation in the tunnel and the quantity of water loss is stable. In the opinion of the professional engineering firm retained by DEP in conjunction with that investigation, there is very little immediate risk of failure of the tunnel.

DEP has completed an evaluation of various alternatives to mitigate the leak and has elected to construct an approximately three-mile-long bypass tunnel. Connection of the bypass to the existing tunnel is expected to require that the tunnel be shut down for one 6- to 10-month period or two or three shut downs of shorter duration starting in 2021, during which periods the

activation of at least a portion of the Queens Groundwater Supply is expected to be needed. The estimated cost to complete the design and construction of the shafts and tunnel bypass, as well as implementation of water supply augmentation projects and water conservation measures, is estimated to be $1.5 billion, $1.4 billion of which is included in the CIP.

1.3.2.2 The Gilboa Dam

Gilboa Dam, part of the Catskill Water System, is comprised of an earthen dam and a concrete gravity dam, with the concrete portion also acting as the spillway. The dam impounds the waters of Schoharie Creek, creating Schoharie Reservoir. In 2005, an engineering analysis of the dam showed that the spillway had lost some mass over time and that the dam did not meet New York State Department of Environmental Conservation ("NYSDEC") safety guidelines applicable to the reconstruction of existing dams. In December 2006, DEP completed a series of interim steps to bring the dam into compliance with NYSDEC safety guidelines for the reconstruction of existing dams.

Although there is no evidence that the dam is facing imminent risk of failure, DEP has determined that the rehabilitation of the dam should be advanced. Work on the crest gates, which increased DEP's ability to manage the Schoharie Reservoir and maintain it at proper levels, was completed by July 2011. Site preparation work for the full reconstruction of the dam to bring the dam up to compliance with NYSDEC safety guidelines for new dams began in September 2009 and was completed in Fiscal Year 2011. Damage caused by Hurricane Irene in August 2011 destroyed the site preparation work; however, the reconstruction of the site preparation work is now almost complete. The estimated cost to complete the rehabilitation of the dam once site preparation is completed is $151 million. The cost of both site preparation and rehabilitation of the dam are fully funded in the CIP.

1.3.2.3 The Dam Safety Program

Engineering reports sponsored by the U.S. Army Corps of Engineers indicated that the dams and reservoirs in service in the Catskill, Croton and Delaware Systems are safe but in need of rehabilitation and reconstruction. An ongoing dam reconstruction program has been established for rehabilitation of dams within the Catskill, Croton and Delaware watersheds and the Kensico Dam.

1.3.3 Water Quality and Treatment

Pursuant to the Safe Drinking Water Act (the "SDWA"), the United States Environmental Protection Agency ("USEPA") has promulgated nationwide drinking water regulations, which specify the maximum level of harmful contaminants allowed in drinking water and govern the construction, operation, and maintenance of the System. USEPA has also promulgated filtration treatment regulations, known as the federal Surface Water Treatment Rule ("SWTR"), that prescribe guidelines concerning protection and treatment of surface water for drinking water supplies. Enforcement of many of the related regulations promulgated under the SDWA has been delegated by USEPA to the New York State Department of Health ("NYSDOH").

1.3.3.1 Filtration in the Croton System

As detailed below, since 1993, DEP has operated the Catskill and Delaware water supplies under a Filtration Avoidance Determination pursuant to which DEP is not required to filter water from those two systems. However, pursuant to the terms of a federal court consent decree, DEP is required to filter water from the Croton System. After an extensive study, DEP identified the Mosholu Golf Course in the Bronx as its preferred site for the treatment facility and began work at the site in late 2004. DEP estimates that it will commence testing of the Croton Water Treatment Plant in 2013.

1.3.3.2 Watershed Protection/Filtration Avoidance in the Catskill and Delaware Systems

Since 1993, USEPA has been issuing Filtration Avoidance Determinations ("FADs") pursuant to which the City is not required to filter water from the Catskill and Delaware Systems. If the City were to have to filter water from the Catskill and Delaware Systems, construction costs to provide such filtration are estimated to be greater than $6 billion. To further the City's ability to comply with the FAD, on January 21, 1997, the City entered into the Watershed Memorandum of Agreement (the "MOA") with the State, watershed communities, USEPA, and several environmental groups. The MOA supplemented the City's existing watershed protection program with approximately $400 million in additional funding for economic-environmental partnership programs with upstate communities.

In July 2007, USEPA issued the current FAD (the "2007 FAD"), which superseded previous FADs and has a term of 10 years, divided into two five-year periods. The 2007 FAD requires the City to take certain actions to protect the Catskill and Delaware water supplies. These actions include the continuation of certain environmental and economic partnership programs established under the MOA, with additional enhancements to several programs and the creation of new programs.

Since 1997, the FAD has required that the City solicit property from owners of land in the watershed and acquire (with certain limited exceptions) title to or conservation easements on any solicited land if the owner accepts the City's purchase price. The 2007 FAD requires the City to allocate a total of $300 million for land acquisition during its ten-year term, including approximately $59 million of unspent funds remaining from moneys set aside for land acquisition under the MOA and the previous FAD and $241 million of new funding.

Since 2008, there has been increased interest in natural gas drilling using high volume hydraulic fracturing ("HVHF") in southeastern New York State, including the Catskill/Delaware watershed. In connection with this increased interest, NYSDEC initiated an environmental review, which has provided several opportunities for public comment and which is not yet complete. DEP has been studying the potential impacts that HVHF may have on the System, including any potential impacts on water quality. NYSDEC agreed, in the context of its ongoing environmental review, to support a ban against HVHF in the watershed. In response to the Draft Supplemental Generic Environmental Impact Statement ("dSGEIS"), DEP has also proposed an exclusionary zone around certain DEP infrastructure which would extend outside the watershed.

In September 2012, NYSDEC requested that NYSDOH review the public health risks of HVHF utilizing a panel of outside experts; there is no timeline for completion of the health review. NYSDEC also began the process to promulgate regulations governing HVHF. Because the environmental review process was not complete in time to meet the deadlines for the rulemaking process NYSDEC will need to re-release HVHF regulations for another public review period once the environmental review is complete. To date, no permits have been filed to drill for natural gas in the watershed.

1.3.3.3 Disinfection Requirements

In January, 2006, USEPA issued the Long Term 2 Surface Water Treatment Rule ("LT2"). The purpose of LT2 is to reduce the incidence of waterborne disease by mandating certain levels of inactivation and/or the removal of certain microorganisms from the Water System, including the Catskill and Delaware Systems. DEP anticipates achieving compliance with such levels through the construction and operation of its ultraviolet treatment facility (the "UV Facility"). The UV Facility provides treatment for Catskill and Delaware water. The UV Facility began operation by December 1, 2012, as required under an USEPA administrative order. The order also provides a schedule for validation testing, which is required to be completed by October 29, 2013, to ensure compliance with LT2. The cost to complete the UV Facility, including the validation testing, is fully funded in the CIP.

LT2 also mandates that uncovered finished water storage facilities, which include the Hillview Reservoir, be covered or that water from such facilities be treated. Pursuant to an Administrative Order with USEPA to cover the Hillview Reservoir (the "Federal Hillview Administrative Order"), the City's deadline to begin constructing the cover has been extended to December 31, 2018, with a construction completion date of May 31, 2028. The Federal Hillview Administrative Order also allows the City to seek a schedule modification based on DEP's on-going assessment of water supply facility construction priorities; although, there is no assurance that any such modification would be granted. The Hillview Administrative Order issued by NYSDOH has been modified to mirror the Federal Hillview Administrative Order schedule.

DEP has requested that NYSDOH and USEPA extend the deadline to begin construction of the cover for an additional six years beyond the existing deadline. On February 9, 2011, the City was informed that USEPA referred the Hillview Administrative Consent Order to the U.S. Department of Justice ("USDOJ"). In light of USEPA's announcement that it is reviewing LT2 and its requirement to cover uncovered finished water storage reservoirs such as Hillview Reservoir, USDOJ and the City have agreed to defer negotiations over revised dates until USEPA completes its review.

Currently, the cost of constructing a concrete cover over the Hillview Reservoir, as DEP originally proposed, is expected to be approximately $1.6 billion. Under the schedule set forth in the Federal Hillview Administrative Order, most of the costs related to the cover would be incurred in the years beyond the current CIP, which does not include funding to construct a

cover. DEP is continuing to investigate less costly alternatives to a concrete cover, including a floating cover, which would require the consent of NYSDOH and USEPA.

1.3.4 Water Quality Monitoring

The System has multiple laboratories employing bacteriologists, engineers, chemists, hydrologists and limnologists to monitor water quality. In addition to the monitoring program, DEP watershed inspectors maintain surveillance of the watersheds.

During the 2012 monitoring period, the water system was in compliance with the State's lead and copper rules. To reduce the leaching of metals, DEP adds orthophosphate to the water before it enters the distribution system, which promotes the formation of a protective coating inside pipes and plumbing. DEP is working to identify measures to further reduce lead levels at the tap.

The SDWA requires that utilities prepare and distribute to their consumers a brief annual water quality report, referred to as the Consumer Confidence Report (the "CCR"). The CCR covering calendar year 2012, the most recent such report, demonstrates that the quality of the City's drinking water remains high.

1.3.5 Governmental Regulation

The System is subject to federal, State, interstate and municipal regulation. At the federal level regulatory jurisdiction is vested in USEPA; at the State level in NYSDEC and NYSDOH; at the interstate level in the Delaware River Basin Commission ("DRBC") and the Interstate Environmental Commission and at the municipal level in DEP, the New York City Department of Health and Mental Hygiene ("NYCDOH"), Department of Buildings ("DOB") and the Department of Small Business Services, and to a limited degree, in municipalities and districts located in eight counties directly north of the City. Water quality protection regulations are enforced within the watershed areas north of the City through a network of overlapping governmental jurisdictions. Participating in that network, among others, are NYSDEC and NYSDOH, county, municipal and district police, engineers and inspectors, and DEP. The various jurisdictions maintain physical security, take water samples, monitor construction activities and wastewater treatment in the watershed, and generally oversee the physical condition of, activity on and operation of water supply lands and facilities. Portions of the overall legislative and regulatory framework governing the watersheds may be found in the City's Administrative Code, Health Code and Water Supply Regulations. Regulatory enforcement within City limits is almost exclusively accomplished through City personnel. Provisions incorporating and augmenting the substance of the SDWA, related regulations and the State Sanitary Code, are contained in the Health Code, Water Supply Regulations and the City's Building and Building Construction Codes. These provisions are enforced by personnel from DEP, NYCDOH and DOB.

Water Pollution Control Plants

The System includes six City-owned upstate surface discharging water pollution control plants to prevent untreated sewage from being released into the watersheds. To enhance watershed

protection, DEP recently completed upgrades to these facilities. The system also includes one subsurface discharging water pollution control plant that has not been upgraded. The CIP includes funds to upgrade the facility. DEP also provides some financial assistance to privately-owned water pollution control plants in the watershed.

Shandaken Tunnel SPDES Permit
As a result of federal litigation resulting in a determination that a State Pollution Discharge Elimination System ("SPDES") permit is required for water transfers such as the City's transfer of water through the Shandaken Tunnel, DEP applied for and obtained a SPDES permit for the Shandaken Tunnel. As a result of State court litigation challenging the terms of the SPDES permit, DEP has applied for variances under that permit. This could impact the type and costs of the work that DEP is required to do to achieve compliance with the permit's temperature and turbidity limits.

1.3.6 Drought Management

From time to time the Water System experiences drought conditions caused by significantly below-normal precipitation in the watershed areas. The most recent drought was in 2002. As of May 8, 2013, the System's reservoirs were filled to 97.2% of capacity. Normal levels at this time of year are approximately 100.0% of capacity.

The Water System relies upon a surface water supply and is sensitive to major fluctuations in precipitation. Throughout even the most extreme droughts, the Water System has continued to supply sufficient quantities of water to the City and its water supply customers north of the City. To ensure adequate water supply during drought conditions, DEP, in conjunction with other City, State and interstate agencies, maintains a Drought Management Plan. The Drought Management Plan defines various drought phases that trigger specific management and operational action. Three defined phases are: "Drought Watch", "Drought Warning", and "Drought Emergency". A Drought Emergency is further subdivided in four stages based on the projected severity of the drought and provides increasingly stringent and restrictive measures.

A Drought Watch is declared when there is less than a 50% probability, based on the existing record since 1927, that either the Catskill or Delaware Reservoir System will be filled by the following June 1. This phase initiates the pumping of water from the Croton System. In addition, during this phase, a public awareness program begins, and users, including upstate communities taking water from the System, are requested to initiate conservation measures. NYSDOH, NYSDEC, and the DRBC are advised of the Water System's status, and discussions are held with City agencies concerning their prospective participation in the event of a declaration of a Drought Warning.

A Drought Warning is declared when there is less than a 33% probability that either the Catskill or Delaware reservoir system will fill by June 1. All previous efforts are continued or expanded and additional programs are initiated, including the coordination of specific water saving measures by other City agencies.

A Drought Emergency is declared when it becomes necessary to reduce consumption by imposing even more stringent measures. In addition to the imposition of restrictions, DEP may enhance existing System management and public awareness programs, expand its inspection force and perform additional leak and waste surveys in public and private buildings. DEP may also require communities outside of the City that are served by the System to adopt similar conservation measures.

1.3.7 Pending Litigation

The following paragraphs describe certain legal proceedings and claims against the Water System. No assurances are provided that the following information is complete or identifies all of the potential litigation against the System. The ultimate outcome of these proceedings and other claims is unpredictable and could result in substantial judgments that would have to be borne by all customers of the System.

DEP adds alum to the Catskill aqueduct upstream of Kensico Reservoir when necessary to control turbidity levels. The diversions of water containing alum into Kensico Reservoir are authorized under a SPDES permit for the Catskill Influent Chamber ("Catskill Alum SPDES Permit"). Among other things, the Catskill Alum SPDES permit requires DEP to take measures to reduce reliance on alum. One such measure is the use of the Ashokan Release Channel to release water from the Ashokan Reservoir through a release channel in order to leave capacity in the west basin of the Ashokan Reservoir to capture inflow of turbid water from the upper Esopus Creek. This release of water from the west basin of Ashokan Reservoir helps prevent the transfer of turbid water to the east basin but can result in the flow of turbid water into the lower Esopus Creek. NYSDEC served the City with an administrative complaint in February 2011, alleging a number of violations of the Catskill Alum SPDES Permit. The complaint sought penalties in the amount of $2.6 million relating to the operation of the Ashokan release channel, as well as other relief. The City has negotiated an administrative consent order (the "Catskill Alum Consent Order") with NYSDEC to resolve the allegations in the complaint. DEC accepted public comments on the Catskill Alum Consent Order through July 16, 2012. If not altered in response to public comment, the order requires DEP, among other things, to comply with an interim protocol for operation of the Ashokan release channel; pay a penalty, of which $100,000 is payable and $500,000 is suspended; fund various projects in the total amount of $950,000; apply for a modified SPDES permit; and undertake an environmental impact study in support of such modified SPDES permit.

In addition, in January 2011, Ulster County sent DEP a 60-day notice letter pursuant to the Clean Water Act, notifying DEP, as well as NYSDEC and USEPA, that it intends to sue the City, challenging certain transfers of water out of the Ashokan Reservoir without a SPDES permit. The City does not believe a SPDES permit is required for the releases through the release channel because the lower Esopus Creek would receive flows from the upper Esopus Creek had the Ashokan Reservoir not been built. In December 2011, Riverkeeper and Ulster County both submitted comments on the interim protocol to NYSDEC and also petitioned NYSDEC to issue

a SPDES permit governing the release channel. As noted above, the City does not believe such a permit is required by law. If the City were required to stop using the release channel, or to reduce the turbidity in the releases, the City could incur substantial costs.

1.3.8 Hurricane Sandy

On Monday, October 29, 2012 Hurricane Sandy hit the Mid-Atlantic East Coast as a tropical storm. The storm caused widespread damage to the coastal and other low lying areas of the City and power failures throughout the City, including all of downtown Manhattan, and at many System facilities, including some of the water supply facilities outside of the City. The City, along with the State and federal governments, engaged in a major effort to address the health and safety of its residents affected by the storm and the repair and long-term stabilization of its infrastructure and other storm-damaged property. During and after Hurricane Sandy, DEP communicated with State and Federal regulators concerning water quality standards and other matters. At this time, DEP does not expect to incur any penalties due to Hurricane Sandy. While DEP continued to deliver safe drinking water throughout the storm, the turbidity of the water leaving Kensico Reservoir rose above the maximum regulatory limit for a very brief period. As required in the regulations, DEP notified customers of this event. DEP is still assessing damage and planning for capital repairs. It is anticipated that a large portion of the expenses incurred by DEP to return to normal operations will be reimbursable with Federal Emergency Management Agency funds. The expenses incurred due to Sandy are not included in the cost of service calculation as of the date of this report.

1.3.9 Operational Excellence

Since 2011, DEP has undertaken an extensive review of its operations and maintenance ("O&M") through the Operational Excellence or *OpX* program. The dual goal of *OpX* is to maintain and improve DEP's O&M performance and service to its customers, while enhancing operational efficiencies and controlling costs for the System's ratepayers. As background, through a Request for Proposal (RFP) process, in November 2011, the Water Board retained Veolia Water N.A. to partner with DEP on the *OpX* program. *OpX* has been divided into two phases: a six-month evaluation phase (Phase I) and a four-year implementation phase (Phase II). Veolia issued its report on Phase I findings to the Water Board in June 2012. This report can be found on DEP's website: http://www.nyc.gov/dep/pdf/reports/opx-phase-i-report.pdf.

The Board and DEP committed to proceed to Phase II, which began in July 2012. Through March 2013, fifteen *OpX* initiatives have been implemented that are projected to save $15.7M per year (for the water system and wastewater system of the City, collectively). The initiatives implemented in the Bureau of Water Supply (BWS) include the consolidation of approximately seven East of Hudson reporting locations into two locations, optimization of wastewater treatment plants near the watershed, and a reallocation of labor in BWS's HAZMAT and SCADA functions. Veolia continues to partner with DEP in the implementation of initiatives, and the implemented initiatives are projected to result in recurring annual savings in the cost of supplying water of $5 million starting in 2014.

1.4 Water Conservation

Drought situations have necessitated measures to reduce water use by all customers and, at times, have required the use of the Hudson River as an alternative source of supply. DEP has initiated programs to reduce water use to achieve several goals, including the avoidance of the cost and implementation considerations associated with developing new sources of water supply.

DEP initiated a universal metering program in 1988; presently approximately 95% of customer accounts in the City are billed on a metered basis. Certain other accounts are billed on the basis of a series of flat rate charges, but water consumption is metered and monitored in most of these accounts. DEP also promotes water audits with the objective of identifying opportunities to reduce water consumption. DEP completed a program in the 1990s to replace older toilets in the City using 5 to 7 gallons per flush with low-flow toilets using 1.6 gallons per flush. DEP committed $310 million to this program to reimburse homeowners up to $240 for each toilet they replaced. Over 1.3 million toilets were replaced. Significant long-term reductions in water use have been achieved due to both the metering and toilet retrofit programs.

As indicated previously, DEP is engaged in research to develop alternate conveyance conduits and/or water supplies for the City in order to provide more dependability within the Water System. The alternate water supplies or conveyances could be used during drought situations, to augment the City's daily water supply, or during repairs and inspections of existing aqueducts and tunnels.

Additional information concerning water conservation initiatives is provided in Section 4.8.2 of this Report.

1.5 The Roles of the Authority, the Board and the City in the Water System

Through mid-1985, capital improvements to the water and sewer system of the City were financed through general obligation bonds of the City. In 1984, State law authorized the creation of the Authority and the Board. The Authority's function is to issue revenue bonds, the proceeds of which are used to finance capital improvements to the water and sewer system, including the Water System. The Board sets rates and charges to meet the annual revenue requirements of the water and sewer system. The revenue requirements include debt service (principal and interest) on outstanding bonds of the City and the Authority as well as the operation and maintenance expenses of the City. Under an agreement between the Authority, the Board and the City, the City continues to operate and maintain the water and sewer system and is responsible for implementing capital improvements to the system.

The Authority issued its first revenue bonds in December 1985. As of March 13, 2013, the Authority has approximately $8.2 billion in principal outstanding for its First Resolution revenue bonds and $21.1 billion in principal outstanding for its Second Resolution revenue bonds for the water and sewer system of the City, including $404.4 million in Bond Anticipation Notes issued to the New York State Environmental Facilities Corporation ("NYSEFC"). In addition, the

Authority currently has an $800 million commercial paper program. Included within the Second Resolution debt are loans obtained by the Authority at below market interest rates from the state revolving fund ("SRF"). The SRF program is administered by NYSEFC. Tables 5B and 5C in the Appendix to this report show the original amounts of debt issued by the Authority and NYSEFC, which differ from the amounts noted above as being outstanding.

A portion of the proceeds of the Authority's bonds and the SRF loans has been used to finance capital improvements for water supply projects in upstate regions. Section 4.2.2 of the Report provides information concerning previous capital investments in the Water System. Under the CIP, additional capital improvements are ongoing and planned for the future to preserve the Water System for all customers.

1.6 Additional Information on the Water System, the Board and the Authority

Information on the System and its operations and maintenance is available on DEP's website:
http://www.nyc.gov/dep

Information on the Board and past rate reports are available on the Board's website:
http://www.nyc.gov/nycwaterboard

Information on the Authority and the outstanding debt of the System can be found in the Authority's Bond Official Statements, which are available on the Authority's website:
http://www.nyc.gov/nyw

2.0 The Sale of Water to Customers North of the City

2.1 Background

The New York State Water Supply Act of 1905 ("The Act") and subsequent amendments granted the City permission to develop the Catskill and Delaware watershed systems. In return for these development rights, the City was required, upon request, to furnish supplies of fresh water to municipalities and water districts in eight counties directly north of the City in which City water supply facilities and watersheds are located. The Act limits the quantity of water that may be taken or received to the quantity calculated by multiplying the number of inhabitants in the municipality or water district as shown by the last United States, State or official municipal census by the daily per capita consumption in the City.

Water is supplied to customers north of the City (hereinafter, "upstate customers") on a wholesale basis, i.e., the City delivers water to one or more central locations, and the customers (typically municipalities or water districts) are responsible for distributing the water to individual users such as residential buildings and commercial properties. For the period of 1985 through 2012 inclusive, the City provided an average of 43,509 MG per year of water to upstate customers, or 119.2 MGD. This represented approximately 8.84% of all water supplied to both in-City and upstate customers. The percentage of the water supply being used by upstate customers increased over the long-term as well as in recent years, increasing from 9.87% in 2009 to 9.91% in 2010 and 10.15% in 2011. In 2012 the decline in consumption of upstate customers was greater than the decline in consumption of in-City users, leading to a decrease in the percentage of the water supply being used by upstate customers to 9.71%.

Upstate consumption is affected by the continuing expansion of the areas served by City water as well as other changes occurring within the service area.

2.2 Rates and Charges for Upstate Customers

The regulated rate for water service to upstate municipalities and water districts is determined on the basis of the actual total cost of water to the City less the capital and operating costs incurred within the City limits in connection with the distribution and delivery of water within the City. In no event may the regulated rate exceed the rate charged to customers within the City. The historical water rates charged to upstate customers for the period 2003 through 2013 are provided in the table on the following page. The reconciliation of revenues and costs from prior years was used by the Board for the first time in setting the 2010 rate based on the actual revenues and costs for 2008. Section 4.7 of this report provides information concerning the calculation of the reconciliation.

Historical Billing Rates and Computed Actual Costs Per Million Gallons

Fiscal Year	Adopted Rate Billed to Upstate Customers	Computed Actual Cost to the Board (Excludes the effects of reconciliation & the stipulation in 2012)
2003	485.71	522.99
2004	542.36	529.85
2005	591.21	591.91
2006	617.79	623.47
2007	691.91	691.83
2008	798.62	703.73
2009	900.31	882.91
2010	922.23	973.86
2011	1,149.72	1,121.04
2012	1,213.84	1,284.53
2013 (Current)	1,332.30	N/A

(a) The computed actual cost to the Board as shown above for 2003 and 2004 does not take into consideration the upstate share of the costs of defeasance of certain Authority bonds. The costs of defeasance were not included in the projected cost of service and regulated rate at the time of rate-setting. Including the effects of the costs of defeasance, the computed actual cost to the Board per MG is $549.32 in 2003 and $560.58 in 2004. The basis for these costs is explained in Section 4 of the Report.

(b) The computed actual cost to the Board shown above for 2005, 2006, 2011 and 2012 includes the costs of defeasance in those years. There were no costs for defeasance in 2007 through 2010.

(c) The rate adopted by the Board for 2010 was based on the projected cost and consumption for 2010 and the effects of the reconciliation for 2008. The computed actual cost to the Board in 2010 shown above does not include the effects of the cost reconciliation from 2008. After taking into account the effects of the reconciliation, the computed actual cost to the Board is $869.62 per MG.

(d) The rate adopted by the Board for 2011 was based on the projected cost and consumption for 2011 and the effects of the reconciliation for 2009. The computed actual cost to the Board in 2011 does not include the effects of the cost reconciliation from 2009. After taking into account the effects of the reconciliation, the computed actual cost to the Board is $1,103.65 per MG. The computed actual cost to the Board both with and without the effects of reconciliation differs from the amounts shown in the prior report. Please see Section 4.2.2.2 Debt Service Related to the Water System for an explanation of the change.

(e) The rate adopted by the Board for 2012 was based on the projected cost and consumption for 2012 and the effects of the reconciliation for 2010. The computed actual cost to the Board in 2012 does not include the effects of the cost reconciliation from 2010 and the stipulation credit of $10 million that is applied only to 2012. After taking into account the effects of the reconciliation and stipulation credit, the computed actual cost to the Board is $1,207.15 per MG.

Prior to 2000, the rates adopted by the Board were based on historical costs and did not reflect the increasing actual cost of service. However, in order to develop rates that more appropriately reflected the cost of water supply, the rates adopted by the Board since 2000 have been developed based on the anticipated cost of service in the upcoming fiscal years.

The cost to the Board per MG for 2012, using actual cost of service and excluding the reconciliation and the stipulation credit, is $1,284.53, which is higher than the unit rate that was adopted by the Board effective July 1, 2011 of $1,213.84. After application of the reconciliation and the stipulation credit, the net computed cost to the Board is $1,207.15 per MG. A combination of factors impacted the actual cost per MG:

- Higher than anticipated expenses for other than personnel costs;
- Lower than anticipated debt service payments, offset to a great extent by cash used to defease debt;
- Lower than anticipated personnel expenses; and
- Higher than projected water consumption, which serves to lower the unit cost per MG.

The reconciliation amount for 2010 of about $21.6 million as well as a one-time stipulation credit of $10 million were applied as a credit to the cost of service for 2012. The effects of these credits lowered the actual unit cost to the Board for 2012 so that the unit cost net of the reconciliation and the stipulation credit is slightly lower than the unit rate that was adopted by the Board.

As of the date of this Report, it is estimated that the 2013 computed cost to the Board may be somewhat higher than the unit rate that was adopted by the Board and is currently in effect (again, prior to the effects of reconciliation). Among the factors affecting the estimated costs for 2013 are the following:

- Higher than anticipated personnel expenses due to an increase in the fringe benefit and pension rates to 51% of salaries and wages compared to 48%;
- Higher than anticipated expenses for other than personnel costs;
- Lower than anticipated miscellaneous revenue;
- Lower than anticipated debt service payments, offset by a greater amount of cash used to defease debt.

The Authority has successfully sold bonds and commercial paper in recent years and again in 2013 at average interest rates that are lower than those previously assumed, which serves to reduce the projected debt service.

The estimated unit rate is also affected by projections of total water use. The current estimate of the cost per MG for 2013 is based the estimated annual costs divided by the full-year water consumption estimate that is derived from a 10-year regression analysis. Based on year-to-date water consumption in the City through March 31, 2013, it is anticipated that the actual full-year

water demand will be similar to or slightly higher than the projected usage based on the 10-year regression. If the water demand for the full year is higher than projected, the unit cost per MG will be reduced. The actual cost of service and the actual unit rate for the supply of water for 2013 will not be known until after the fall of 2013.

This report proposes that a credit or "true-up" be applied towards the cost of service in 2014 to reflect the calculated difference between the 2012 computed actual cost of service to the Board and the actual costs recovered through the adopted rates of the Board, which are computed by multiplying the unit rate charged by the Board in 2012 times system-wide water consumption. The calculation of this proposed credit is presented in Section 4.7 of the report.

3.0 Cost of Service Methodology

3.1 Overview

This Section of the Report provides a summary of the steps that were followed to calculate the cost of service for water supply. The cost of service is calculated in accordance with the cash basis methodology used by and approved by NYSDEC in 1972 and 1995. The methodology is also consistent with that used to calculate the regulated rates, which were adopted for 1993 through 2013. Pursuant to the Act, the cost of service methodology excludes all capital and operating costs incurred for transmission and distribution mains, repair yards, tunnels, shafts, and related facilities within the City in connection with the distribution and delivery of water within the City. The cost of service takes into account offsetting revenues from hydropower and permit fees.

3.2 Procedures for Calculating the Cost of Service

Several steps are required to calculate the total cost of providing water to upstate customers and the regulated rate. These steps account for the many types of costs incurred by the City in establishing and maintaining reliable sources of drinking water. The approach that is used in this Report, as required by the 1905 Act, specifically excludes costs incurred within the City that are associated with the transmission and distribution of water in the City.

The six (6) steps that were followed in developing the cost of service and the proposed regulated rate for upstate water supply are outlined herein. The first five steps relate to the computation of the cost of service and regulated rate for 2010 through 2012. The sixth step includes the development of the projected cost of service and regulated rates for 2013 (the current year) and 2014. In addition, this Report includes a preliminary projection of the regulated rate for water supply service for the years 2015 through 2017. The projections are preliminary and subject to change. Reductions in system-wide water consumption as well as assumptions concerning increased costs for property taxes, watershed protection, required capital improvements and other factors have been taken into consideration in developing the projected cost of service and rates. Nonetheless, rising commodity prices and other factors affecting operating expenses and capital costs as well as changes in consumption may result in a larger increase in the cost of water supply in future years than is currently reflected in the 2013 through 2017 projections. The Water System costs, offsetting revenues and related information corresponding to each of the steps can be found in Section 4.0 and the Appendix of this Report.

3.2.1 Step A

The initial step includes the determination of all direct costs and offsetting revenues that relate solely to facilities located north of the City.

The components of this analysis include the following:

1. Other Than Personal Services ("OTPS")
2. Debt Service
3. Judgments and Claims
4. Miscellaneous Revenue
5. Personal Services ("PS"), which include:
    a. Field Worker Personnel
    b. Executive and Administrative Personnel

3.2.2 Step B

The second step includes the calculation of the allocation percentages to be used in Steps C and D. The allocation percentages are based upon personnel headcount, or total salaries or expenses, depending upon which allocation methodology is most appropriate to the costs being allocated. The methodologies used in the allocation process have previously been accepted by the USEPA and NYSDEC in connection with the federal and State grant program for wastewater treatment facilities. The methodology was also accepted by NYSDEC in its 1995 decision and upheld by the Appellate Division of the Third Department concerning the regulated rates for 1993 and 1994.

3.2.3 Step C

The next step in the cost of service process is to determine the costs of DEP support services and other essential functions that must be allocated to the cost of supplying water. These costs fall into two categories:

1. Personal Services
2. Other Than Personal Services

The cost of support services and related functions of DEP must be shared by all customers who benefit from its services. Therefore, the costs must be allocated to facilities located north of the City using the appropriate allocation percentage calculated in Step B.

3.2.4 Step D

The fourth step involves the identification of the City's Central Service costs that must be allocated to the cost of water supply. The City's Central Service costs are those related to general City services (e.g., accounting, budgeting, personnel, legal) that are provided to the Water System as well as to DEP as a whole and to other City agencies. Therefore, these costs are allocated first among all City departments. The DEP share (calculated using an allocation percentage developed in Step B) is then allocated to facilities located north of the City.

3.2.5 Step E

The total cost of supplying water to both in-City and upstate customers, exclusive of in-City distribution costs, is determined by adding the cost of service elements, which are calculated in Steps A, C and D. Dividing the total cost of service by total water consumption determines the unit cost per MG related to the supply of water. The upstate water consumption times the unit cost or regulated rate per MG results in the total costs attributable to upstate customers.

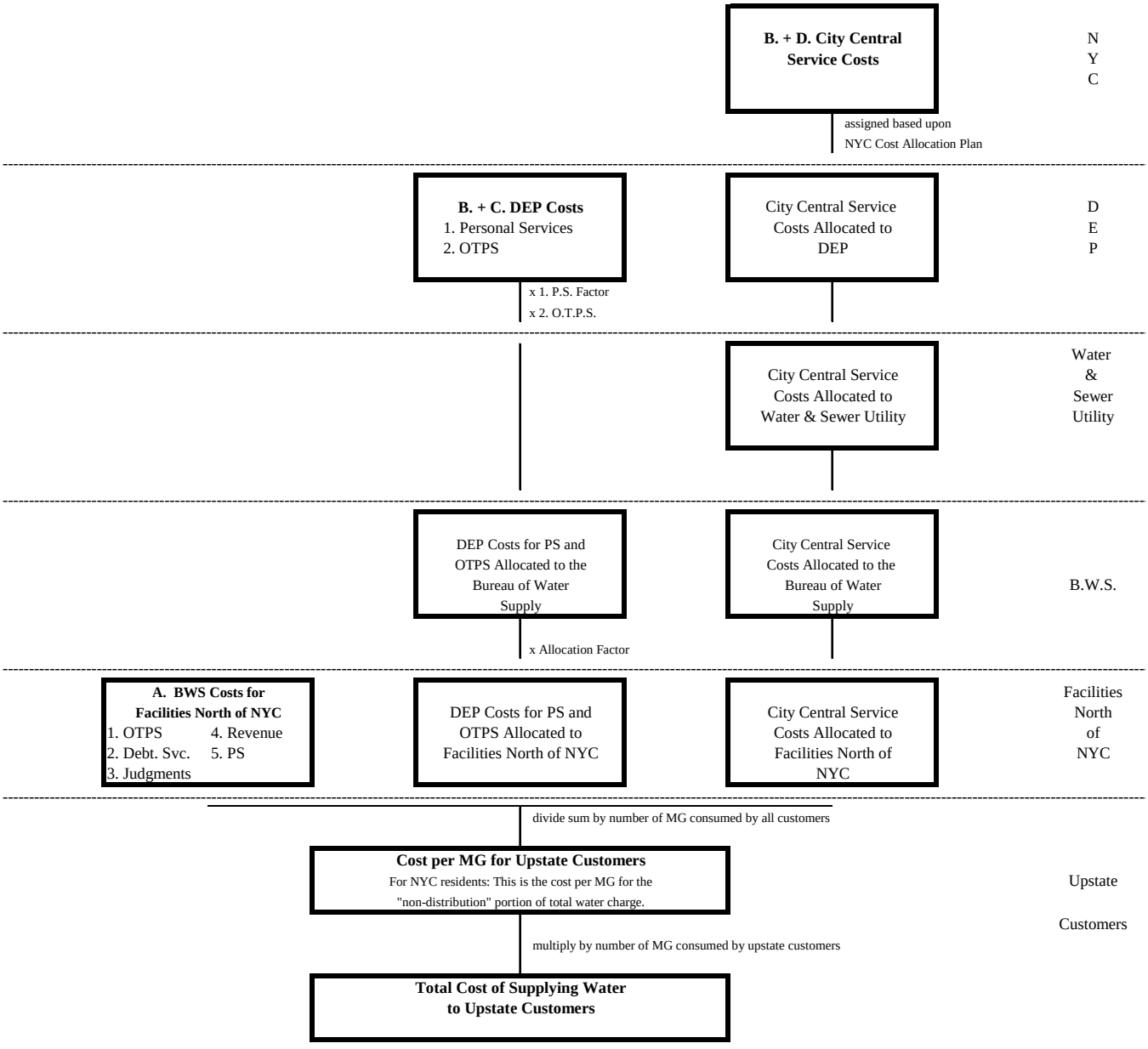
3.2.6 Step F

Steps A through E are primarily used to develop the actual cash basis cost of service for 2010 through 2012. To develop the projected cost of service for 2013 (the current year) and 2014, known debt service costs are added to anticipated future debt service plus anticipated operation and maintenance expenses, less expected offsetting revenues. Projections of future expenses and revenues are based on historical experience as well as known changes in programs and costs that are expected in 2013 and 2014. This is a standard and accepted practice in the industry and is consistent with the methodology used to develop water and sewer rates for in-City customers. The projected cost of service is divided by the estimated water consumption to determine the regulated rate. Step F is carried out simultaneously with the work performed in Steps A through E.

3.2.7 Graphical Overview

Figure 2 on the following page provides a graphical presentation of how various components of the cost of service are allocated in the development of the cost of providing water to upstate customers.

Figure 2 Diagram of Calculation



3.3 Computation of the Regulated Rate

The regulated rate per MG of water use is computed on the basis of the total cost of service divided by the total water consumption:

Total Cost of Service *divided by* Total Water Consumption = Unit Cost of Service or Regulated Rate

The costs, and thus the revenue requirements, attributable to upstate customers are computed on the basis of the total annual quantity of water used by upstate customers multiplied by the unit rate per MG:

Upstate Consumption *multiplied by* Unit Cost of Service or Regulated Rate = Upstate Cost of Service

The total cost of service for water supply, or revenue requirements, would be allocated between upstate and in-City customers as follows:

Upstate: **Total Cost of Water Supply Service *multiplied by*:** $\frac{\text{Upstate Consumption}}{\text{Total System Consumption}}$

In-City: **Total Cost of Water Supply Service *multiplied by:*** $\frac{\text{In-City Consumption}}{\text{Total System Consumption}}$

3.4 Sources of Data and Basis of Presentation

Information presented in this report was obtained from records of the City. The City utilizes a modified accrual basis of accounting for its costs. Operation and maintenance expense information, including cost allocation factors, was provided by DEP. Debt service information was obtained from the Authority. Pension and fringe benefit cost factors were provided by the New York City Office of Management and Budget. Water consumption information was provided by DEP.

4.0 Computation of the Cost of Service and the Regulated Rate

4.1 Introduction

This Section of the Report describes the individual elements of the cost of service and presents the computed cost of service and regulated rate for 2010 through 2012. The most recent fiscal year for which complete information is available is 2012. The anticipated cost of service for 2013 and 2014 is presented using the following components of cost: scheduled debt service payments on outstanding bonds for these years, the anticipated debt service from additional bonds of the Authority that are expected to be issued, the expected payments for cash-financed construction or defeasance and projections of operating expenses and all other components of the cost of service. Additional bonds reflect the expected issuance of debt in 2013 and 2014, the proceeds of which will be used, in part, to fund capital improvements in the Water System. The projected debt service reflects the expected portion of the bond proceeds that will be used for the Water System. The findings of each significant step of the analysis are presented in this Section, and the basis for projecting the cost of service for 2013 and 2014 is also provided. Where appropriate, we have normalized the cost of service to take into consideration one-time or recurring increases or decreases in costs. Supporting tables for each step of the analysis are referenced in this Section and presented in detail in the Appendix to the Report.

4.2 Bureau of Water Supply Costs Related to Facilities Located North of the City - Step A

The Bureau of Water Supply ("BWS") of DEP has the responsibility to operate and maintain the Water System of the City. This responsibility also includes the development and implementation of capital improvements to the system so that a reliable supply of quality water can be maintained for customers both within the City and in upstate communities.

BWS carries out its water supply responsibilities through personnel and equipment located at facilities throughout the watershed. BWS personnel include engineers, laboratory technicians, security personnel, water quality experts, and management and support personnel.

The vast majority of the water supply costs presented in this Report relate solely to facilities located north of the City. In the subsequent parts of this Section, additional DEP and City costs will be allocated to facilities located north of the City.

The following paragraphs in this section discuss the individual categories of costs that relate solely to facilities located north of the City.

4.2.1 Other Than Personal Services Costs

By definition, OTPS costs include all operating expenses other than labor including, but not limited to: supplies, equipment, contracted maintenance and repairs, power, chemicals, real estate taxes paid to upstate communities and other purchased goods and services. Direct OTPS costs have steadily increased over the years, as illustrated in the table shown below.

OTPS expenses in 2012 include certain costs associated with filtration avoidance and environmental health and safety in the watershed. Additional information concerning these expenses is presented in 4.2.1.6 of this report.

Historical OTPS Expenses

Fiscal Year	OTPS Expense ($)	Annual Increase (%)
2003	112,322,431	6.7
2004	104,373,092	-7.1
2005	118,531,353	13.6
2006	133,134,219	12.3
2007	138,068,007	3.7
2008	150,982,178	9.4
2009	171,280,256	13.4
2010	169,955,116	-0.8
2011	191,435,944	12.6
2012	202,764,575	5.9

The average annual increase from 2003 to 2012 is 6.8%. The expenses include the estimated costs associated with Hillview Reservoir, which were approved by NYSDEC for inclusion in the cost of service in April 1997. The fluctuations in expenses from year to year are primarily driven by increases in property taxes, changes in FAD-related costs and the volatility of chemical prices.

Property taxes for existing properties and the UV Facility have increased steadily each year and constituted about 69% of total OTPS costs allocable to the cost of water supply and the unit rate in 2012. Annual increases in property tax rates are the principal cause of increasing property taxes; however, to protect water quality in the watershed, the City is also required to increase significantly the number of acres of land that are either owned by the City or otherwise restricted in terms of land use. Also, it is important to note that property taxes associated with the UV Facility are currently included in a separate line item for UV real estate taxes. Section 4.2.1.7 provides additional information concerning the UV Facility.

Recent expenses and current and ongoing programs were considered in estimating the anticipated 2013 and 2014 OTPS expenses. The findings of the analysis are presented in the following categories:

1. Real Estate Taxes
2. Chemicals
3. Hillview Reservoir
4. Contractual Services

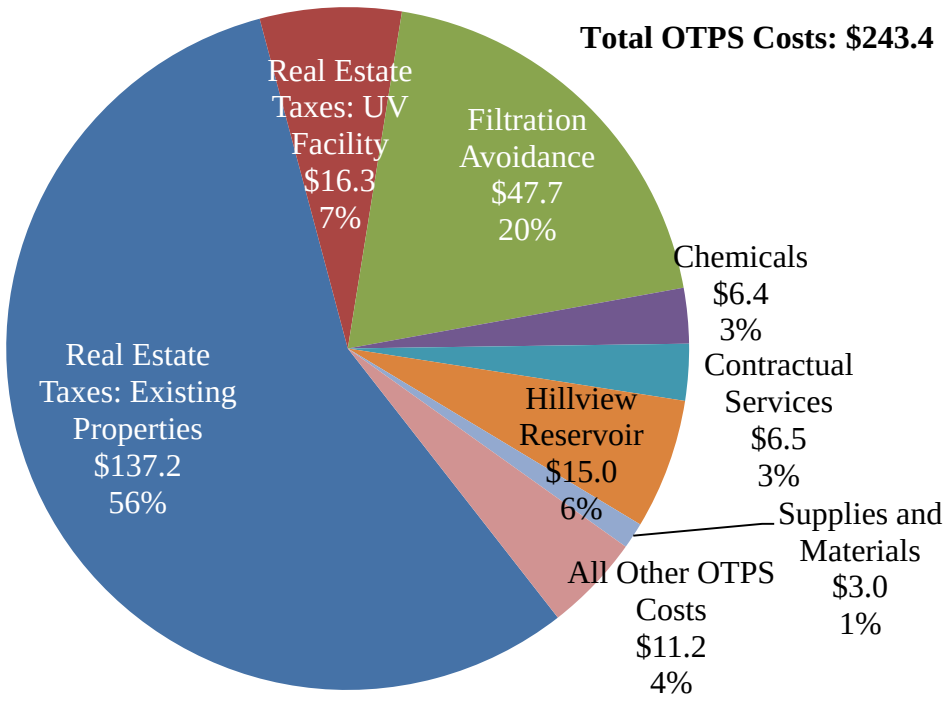
5. Rate Studies
6. Other OTPS Expenses
7. UV Facility

The analysis considered the historical experience in each of these categories together with current and expected future changes so that such costs are normalized, where appropriate, to exclude unusual increases or decreases that may have affected recent experience. Overall, OTPS expenses are expected to increase in future years due to rising property taxes and other cost increases. In 2014 and subsequent years, the classification of certain filtration avoidance costs as operating expenses instead of capital costs contributes significantly to the anticipated increases in the cost of service. The expected 2014 components of OTPS costs are summarized in Figure 3. Table 4B provides a detailed listing of OTPS expenses.

The cost of chemicals used at Hillview Reservoir is included in the total costs for Hillview and is not included in the cost category for chemicals used at all other water supply facilities. The category of Other OTPS Expenses covers non-personnel expenses that are not included in categories 1 through 5 above; e.g., costs for filtration avoidance and water supply environmental health and safety programs.

Figure 3 Projected 2014 Other Than Personal Services Costs

($ in millions)



4.2.1.1 Real Estate Taxes

Real estate taxes for all water supply properties except for the UV Facility have increased at the average annual rate of about 6.7% from 2003 to 2012. Historical property tax payments are shown in the next table. Property taxes for the UV Facility are included in the table beginning in 2010.

Historical Property Tax Payments

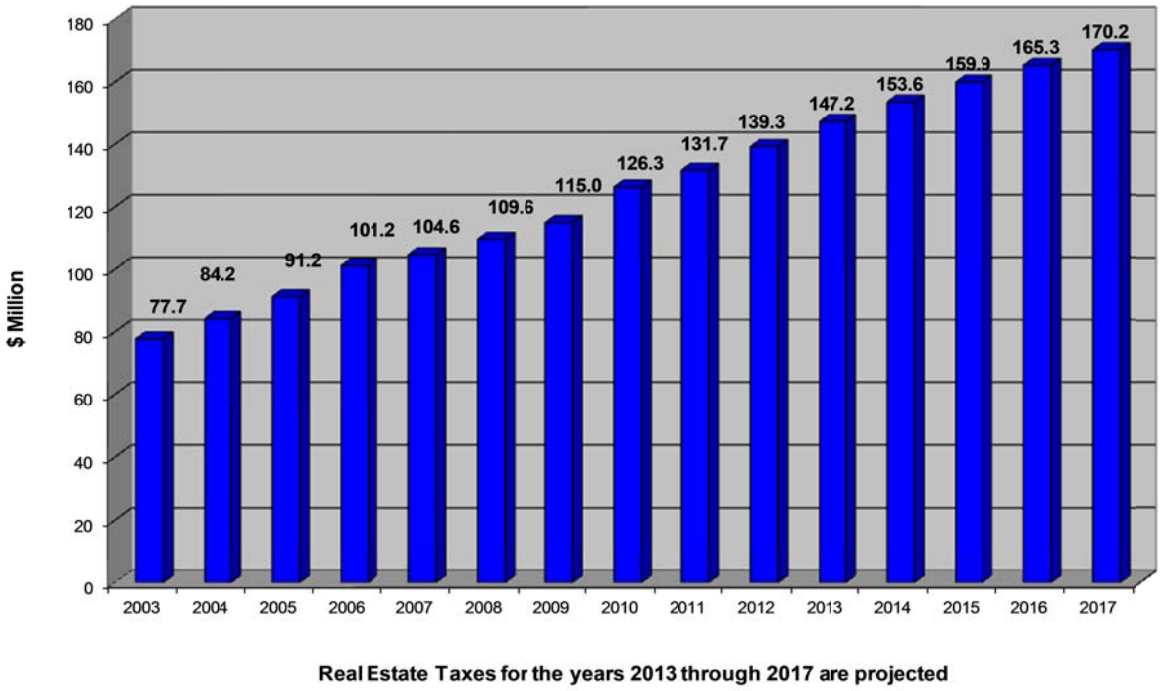
Fiscal Year	Property Tax Expense ($)	Annual Increase (%)
2003	77,703,889	9.9
2004	84,239,835	8.4
2005	91,223,381	8.3
2006	101,209,162	10.9
2007	104,630,050	3.4
2008	109,627,241	4.8
2009	114,958,441	4.9
2010	126,320,846	9.9
2011	131,663,054	4.2
2012	139,263,729	5.8

The increase in recent years reflects a combination of both increases in the local tax rates applied to water supply properties as well as taxes on newly purchased properties in the watershed and the initial taxes on the UV Facility. Excluding the taxes on the UV Facility, property taxes have increased at the average annual rate of 4.0% from 2009 through 2012, including an increase of 3.5% from 2011 to 2012.

The projected real estate taxes for 2013 and 2014 are $147.2 million and $153.6 million, respectively. Both estimates reflect an allowance for the expected increases in property tax rates, the taxes on newly-purchased land as well as taxes on the UV Facility. Given the recent initiatives in the State to reduce the annual rate of increase in property taxes, a 3.0% annual rate of increase in the property taxes is assumed for 2014 through 2017 for all taxes except those for the UV Facility. This assumption reflects a decrease from two years ago when it was assumed that taxes would increase at the rate of 6.0% annually. Based on analyses performed by DEP, property taxes related to the UV Facility are assumed to be $14.0 million in 2013, $16.3 million in 2014, $18.6 million in 2015, and $19.7 million in 2016. It is assumed that property taxes on the UV Facility will then increase at the rate of 3% in 2017. While the current rate adoption by the Board will only address 2014, projections for 2015 through 2017 are shown for illustrative purposes. The actual and estimated real estate taxes payable to upstate communities for watershed properties from 2003 through 2017, including the UV Facility, are summarized in Figure 4.

Figure 4 Real Estate Taxes for the Water System

($ in millions)



4.2.1.2 Chemicals

Several chemicals are used by the City to treat the water supply, including chlorine that is used for disinfection and other purposes. This part of the Report addresses the chemicals used in the watershed, except for those used at the Hillview Reservoir, which are presented separately in 4.2.1.3. As illustrated by the following table, the total cost of chemicals varies from year to year.

Historical Chemical Costs

Fiscal Year	Chemical Costs ($)	Annual Rate of Change (%)	Chemical Costs as a % of Total OTPS
2003	1,716,477	-17.8	1.5
2004	2,047,475	19.3	2.0
2005	2,220,258	8.4	1.9
2006	3,290,291	48.2	2.5
2007	3,462,379	5.2	2.5
2008	5,344,146	54.3	3.5
2009	8,035,776	50.4	4.7
2010	7,813,168	-2.8	4.6
2011	6,744,998	-13.7	3.5
2012	6,008,103	-10.9	3.0

The cost of chemicals for water supply in a given year is dependent upon both the quantities of chemicals that must be used as well as the unit price per ton. There were significant increases in prices for fluoride and other chemicals for the System, excluding Hillview Reservoir, in 2008 and 2009. The quantities of chemicals used and the applicable unit prices in recent years are summarized in the following tables.

Historical Chemical Use

Fiscal Year	Chlorine (Lbs)	Fluoride (Tons)
2003	3,146	1,577
2004	3,109	1,451
2005	2,777	1,892
2006	2,854	1,731
2007	3,149	1,392
2008	3,141	1,940
2009	2,859	2,203
2010	3,170	1,691
2011	3,036	1,393
2012	3,177	1,512

Historical Unit Prices for Chemicals

Fiscal Year	Chlorine ($)/Lb	Fluoride ($)/Ton (1)
2003	298.07	493.71
2004	428.07	493.71
2005	448.07	515.81
2006	695.05	796.16, 934.78
2007	686.30	934.78
2008	667.55	1,673.92
2009	620.05	2,934.78
2010	456.68	3,800.00
2011	474.98	3,797.88
2012	504.84	2,944.14

(1) Fluoride prices for 2006 reflect two different delivery zones within the water supply system.

The assumed rate of increase in chemical costs in 2013 through 2017 is 3% per year. As noted previously, certain chemical costs increased significantly in the northeast U.S. in recent years compared to the costs incurred in 2008 and earlier years. It is not certain at this time whether prices will stay the same, increase or decline in future periods. Chemical addition that solely benefits in-City customers is excluded from this cost of service analysis.

4.2.1.3 Operating Expenses Associated with Hillview Reservoir

The principal expenses incurred in the operation of Hillview Reservoir are associated with chemical addition and security. Caustic soda is added for water quality purposes to adjust the pH of the water entering Hillview. Orthophosphate is added for lead and copper control. In 2012, the costs for caustic soda and orthophosphate were $6.9 million and $5.5 million, respectively. These costs fluctuate due to market prices. The competitively bid unit price for orthophosphate in the recent three years effective June 1st for 2010, 2011, and 2012 has been constant at $3.10 per gallon. The projected unit bid price for orthophosphate effective June 1, 2013 is $3.06 per gallon. The non-labor expenses attributable to Hillview Reservoir in Tables 4A and 4B are exclusive of property taxes, which are included in the Real Estate Taxes – Existing Properties line item (line 18).

All OTPS expenses, including chemical costs at Hillview, are assumed to increase at the rate of 3% per year from 2012 to 2013 and from 2014 through 2017. Market conditions and upcoming bid prices will dictate the actual prices for chemical costs. Future increases in expenses at Hillview could be significantly affected by fluctuations in the price of chemicals and other factors.

Labor costs for Hillview are included in 4.2.5 of this report.

4.2.1.4 Contractual Services

The City was required by the MOA to fund a number of capital projects and operating programs to support the protection of the watershed. Programs to be paid from operating funds began in 1997, and most of the operating expenses were classified under the Contractual Services line item. Beginning in 2004, the expenses related to the MOA declined as the programs it called for ended or were scaled down. The future expenses for MOA-related programs are reflected in the Contractual Services line item of the projected OTPS expenses. Contractual Services expenses are assumed to increase at the rate of 3% annually. Other expenses related to filtration avoidance are addressed in Section 4.2.1.6 of this report.

4.2.1.5 Rate Studies

The annual costs associated with performing rate studies and related work for establishing the regulated rate for upstate customers, including, but not limited to, the distribution of documents, posting of notices and the rate hearing, are estimated at $61,000 per year from 2013 to 2017. The actual payments for rate studies and related work for 2012 were $46,603.

4.2.1.6 Other OTPS Expenses

OTPS expenses in 2011, 2012 and future years include DEP costs associated with filtration avoidance and environmental health and safety programs in the watershed. These are shown in lines 29 through 32 of Tables 4A and 4B. Included within the costs of filtration avoidance are payments for the operation and maintenance of certain wastewater treatment facilities that are not owned by DEP. The operation and maintenance of such facilities is intended to protect the water quality in the watershed. Payments from DEP to watershed communities under the MOA

and the cost of other initiatives that help support the avoidance of filtration are also included within the filtration avoidance line items. In recent years, DEP has undertaken a comprehensive program of environmental health and safety; the water supply-related costs of this program are included in line 32 of Tables 4A and 4B.

Additional program funding associated with filtration avoidance for 2014 to 2017 is shown in line 31 of Table 4B. The categories of costs included in this line item were historically funded through the proceeds of debt and then paid back through debt service on the bonds that were issued. As a result of a recent decision by the New York City Office of the Comptroller, such costs are assumed to be funded as operating expenses in 2014 and future years. It is assumed that the percentage of debt attributable to the water system will be affected in future years as a result of this policy; an adjustment is described in 4.2.2.2 of this report.

With the exception of the amounts shown in line 31 in 2014 and 2015, the expenses associated with O&M and program funding of filtration avoidance and environmental health and safety programs in the watershed and the costs of other categories of expense are assumed to increase at the rate of 3% per year in 2013 through 2017.

As noted in Section 1.3.9 of this report, since 2011, DEP has undertaken an extensive review of its O&M processes and costs through the Operational Excellence or *OpX* program. Estimated annual savings of $5 million for the Water System have been allocated and applied as a recurring credit starting in 2014. This is shown in line 33 of Table 4B.

4.2.1.7 UV Facility

The UV Facility provides treatment for Catskill and Delaware water. The UV Facility began operation by December 1, 2012, as required under a USEPA administrative order. The order also provides a schedule for validation testing, which is required to be completed by October 29, 2013, to ensure compliance with LT2.

DEP began to pay property taxes for the UV Facility in 2010; such taxes are expected to increase substantially when the UV Facility is complete. When fully operational, property taxes are assumed to be more than 50% of the total annual operating expenses for the UV Facility. OTPS expenses other than property taxes were incurred beginning in 2012. The first full year of operation of the UV Facility is expected to be 2014.

4.2.2 Debt Service/Capital Improvement Financing

Capital improvements to the System are financed principally through proceeds from the sale of bonds. A portion of the capital improvements are financed on a cash basis using funds from revenues of the System. This part of the Report describes the methodology that is used to develop the annual debt service requirements (i.e., the principal and interest payments on bonds) of the Water System as well as the annual revenues raised for use in the CIP. Table 5A provides a summary of the debt service/cash-financed construction payments for 2010 through 2012, as well as the projected amounts for 2013 through 2017. The debt service/cash-financed

construction amounts are then reflected in Line 2 of Tables 1A and 1B, which summarize the annual cost of water supply service and the regulated rate. Line 3 of Tables 1A and 1B presents the water supply portion of the amounts used (if any) to defease Authority bonds. The costs and benefits of defeasance are described herein.

4.2.2.1 Historical Investments in the Water System

Prior to the formation of the Authority, the development, expansion and upgrading of the Water System was carried out by the City with funds that were typically provided by the proceeds of General Obligation (G.O.) bonds issued by the City. Since the formation of the Authority, nearly $5 billion in investments have been made throughout the Water System principally through the proceeds of bonds issued by the Authority. These capital costs, which are reflected in debt service on bonds of the Authority issued both to the public ("Authority Bonds") and NYSEFC ("NYSEFC Bonds") (collectively the "Bonds"), are a component of the cost of service and regulated rate.

Investments that are either complete or in progress include improvements to: dams, reservoirs, reservoir roads and bridges, City-owned and non-City wastewater treatment plants, agricultural programs (i.e., pollution prevention for watershed protection), security, the UV Facility, and other capital needs including the Rondout-West Branch Tunnel investigations. Costs for the Croton Plant prior to the approval of the in-City site are included in the water supply cost of service and are allocated to all water supply customers; costs incurred following the approval of the site are not included.

Land purchases, improvements to wastewater treatment plants and other capital investments and operating expenses have been instrumental in maintaining the quality and reliability of the System including the avoidance of filtration for the Catskill and Delaware Systems.

4.2.2.2 Debt Service Related to the Water System

Debt service on the Bonds is computed based on the total net debt service payable for the water and wastewater system of the City in each year times the percentage attributable to the water supply portion of the capital improvements that have been financed with the proceeds of the Bonds. This approach incorporates the savings resulting from refundings of previously-issued bonds. It also includes the impacts of the defeasance of certain future debt service obligations of the Authority. The current methodology for computing debt service on outstanding Bonds was first applied in 2005.

The methodology for allocating debt service to the System begins with the calculation of the percentage of the capital investments beginning in 1986 that are attributable to the System versus other components of the water and sewer system of the City. Since improvements have been financed with the proceeds of Authority Bonds and NYSEFC Bonds, Tables 5B and 5C were prepared to illustrate the proceeds of each bond issue and the upstate portion of such proceeds for Authority Bonds and NYSEFC Bonds, respectively. Since the percentage share for the Water System will change from year to year, a cumulative percentage (beginning with the first bonds

issued in 1986) is computed in each year through the current year-to-date (i.e., 2013). For example, the cumulative percentage to be used in 2012 reflects the sum of all bond proceeds used for water supply projects from 1986 through 2011 divided by the sum of all proceeds from bonds issued from 1986 through 2011. The calculated percentages in 2012 are applied in Table 5D to the appropriate debt service, interest earnings, etc. in 2012. The calculated percentage in 2013 is applied to the appropriate figures for 2013, and the calculated percentage for 2014 through 2017 is applied to the figures for 2014 through 2017. The computed percentages for 2013 through 2017 are preliminary and subject to change since not all proceeds of bonds issued in 2013 have been spent at the time of this report.

The water supply share of debt service and net offsets are computed by multiplying the System-wide totals for each category times the applicable percentage in each year. The three percentages that are shown reflect: 1) water supply capital costs funded through Authority Bond proceeds as a percentage of total capital costs funded through Authority Bond proceeds; 2) water supply capital costs funded through NYSEFC Bond proceeds as a percentage of total capital costs funded through NYSEFC Bond proceeds; and 3) water supply capital costs funded through both Authority Bond proceeds and NYSEFC Bond proceeds as a percentage of total capital costs funded through Authority Bond proceeds and NYSEFC Bond proceeds. In previous reports, the current year percentages were also applied to debt service in future years. In this report, Amawalk has modified the percentage for future years; instead of using the 2013 percentage, we use the average of the calculated percentages for 2011 and 2012. The resulting percentage for 2014 through 2017 is less than if the current year (i.e., 2013) percentage is used, resulting in a lower debt service amount being included in the cost of water supply service for those years. The reasons for the change include: 1) a major capital project, the UV Facility, is nearing completion, so the annual amount of bond proceeds applied to this project will decline over time and then end; and 2) the classification of certain filtration avoidance programs as operating expenses instead of capital projects results in an increase in operating expenses but also a reduction in the amount of bond proceeds that will be needed for filtration avoidance expenses in the water system beginning in 2014.

Table 5D illustrates the current projections of debt service on outstanding bonds and anticipated future Bonds for the Projection Period as of April 1, 2013. The amounts shown are net of all refundings and defeasance of debt that have previously been undertaken by the Authority. The amounts also reflect the anticipated effects of additional defeasance of debt that the Authority expects to complete in 2013. Authority debt service is shown as First Resolution and Second Resolution. The Second Resolution debt is subordinate to the First Resolution debt. Table 5D also presents the estimated interest on Commercial Paper shown as Interest on Short-Term Debt. The Authority initially finances capital improvements through the proceeds of short-term Commercial Paper sales and then redeems the Commercial Paper with the proceeds of long-term bonds. Interest rates on Commercial Paper and the variable rate debt of the Authority have been low in recent periods compared to historical conditions, resulting in actual interest costs that are lower than projections. There is no assurance that such market conditions will continue in future years. As a result, projections of future debt service payments assume that interest rates on

Commercial Paper, variable rate debt and future fixed rate debt will be higher than current market rates. Cash-financed construction is discussed in 4.2.2.3 of this report.

The debt service on Build America Bonds ("BABs") is net of the interest subsidy payments from the U.S. Treasury for those bonds. The bonds were issued on a taxable basis, and beginning in 2010, the U.S. Treasury has provided interest subsidy payments in each year equal to 35% of the interest payable. The figures shown for Authority Debt Service – Second Resolution (line 3) and NYSEFC Outstanding Debt Service (line 6) in Table 5D of this report reflect the application of the BABs subsidy payments. At the time of this report, federal sequestration is reducing somewhat the actual payment of BABs subsidies by the federal government. It is not known at this time how long the sequestration will last, whether reductions in BABs payments will continue or whether any reductions will be made up through payments at a later date. The projected debt service in 2013 and subsequent years assumes that BABs subsidy payments are made in full.

In the previous Report on the Cost of Supplying Water to Upstate Customers for the 2013 Rate Year, the effect of the BABs subsidy was not reflected in the debt service shown for 2011. The Debt Service/Capital Cost Summary in this report (Table 5A) includes the effect of the BABs subsidy in 2011 resulting in a lower debt service amount in 2011 and a corresponding increase in the reconciliation credit (compared to the prior Report) that will be applied against the computed actual cost of service in 2013.

Interest earnings on available funds (the Debt Service Fund, the Debt Service Reserve Fund, the Construction Fund and the Subordinate Debt Service Fund), together with Authority expenses related to debt, collectively form a net offset to a portion of the debt service. Interest earnings have generally declined in recent years due to conditions in the financial markets that have resulted in relatively low rates of interest earnings on secure investments. Authority expenses related to debt include administrative expenses charged by NYSEFC for the low-interest loan program, liquidity fees and other expenses related to variable rate debt, swap payments, arbitrage rebate payments and other expenses.

4.2.2.3 Cash-Financed Construction

Portions of the capital improvements to the Water System may be financed through available cash in lieu of the proceeds of Bonds. The Authority spent $20 million for cash-financed construction needs in 2007. No cash-financed construction deposits were made in 2010 through 2012, and no cash-financed construction deposits are expected to be made in 2013. The annual deposits for cash-financed construction in future years are currently assumed to be $225 million in 2014 through 2017. Line 8 of Table 5D reflects the cash-financed capital assumptions identified above. The projected amounts for each year may increase or decrease in the future. Line 21 of Table 5D shows the upstate water supply share of such costs. The upstate share is based on the total cash-financed construction amount in each year times the Water System capital costs as a percentage of total capital costs funded through the proceeds of both Authority Bonds and NYSEFC Bonds. The Board and the Authority may also decide to modify the amount

of the cash-financed capital contribution or instead use the cash-financed allowance for the defeasance of outstanding bonds with a resulting reduction in future debt service based on the effects of the defeasance. Other System revenues could also be used to defease outstanding debt.

4.2.2.4 Cash Used for the Defeasance of Bonds

In 2003, 2004, 2006, 2011 and 2012, cash from the System was used to defease Bonds by paying future debt service in advance of the years in which such debt service was payable. The debt service on outstanding bonds of the Authority as illustrated in Table 5E is net of any prepayment amounts. Since all water supply customers share in the benefit of lower future debt service due to the defeasance, the costs of the defeasance are apportioned to all water supply customers. In 2011, $260 million was used to defease debt that was due to be paid in 2012 through 2016. In 2012, $239.6 million was used to defease debt that was due to be paid in 2013 through 2018. At the time of this Report, it is estimated that $250 million will be used in 2013 to defease debt that is due in future years. It is currently anticipated that certain bonds that are payable in 2014 through 2019 will be defeased with the proceeds of the 2013 defeasance, recognizing that this is subject to change. The projected debt service of the Authority reflects the impacts of the defeasance of debt that has taken place in prior years as well as the planned defeasance in 2013.

There are no plans as of the date of this report for the defeasance of additional debt during the period of 2014 through 2017. However, as noted in Section 4.2.2.3, the Board and Authority may decide in the future to use part or all of the planned Cash-Financed Construction amounts for the defeasance of debt.

4.2.2.5 Ongoing and Future Capital Improvements

Ongoing capital improvements in the System to be funded through the proceeds of bonds in 2013 through 2017 include: rehabilitation of the Gilboa Dam, the UV Facility, Hillview cover-related work, purchases of land, upgrades to wastewater treatment plants in the watershed, reconstruction of other water supply infrastructure, the development of alternative water supplies to prepare for the Rondout-West Branch Tunnel shutdown, filtration avoidance measures north of the City, and other projects and programs.

4.2.2.6 Capital Cost Summary

Favorable market conditions in 2012 and year-to-date in 2013 have resulted in actual debt service on bonds issued and interest on variable rate debt and commercial paper that is much lower than anticipated. Based on year-to-date experience in the financial markets, preliminary changes for 2013 have been taken into consideration in the projected debt service for this year and subsequent years. There is no assurance that such conditions will continue in the future.

There will be an overall net increase in debt service/capital costs in the upcoming years to reflect the debt service for capital improvements being funded through the proceeds of Authority bonds and cash-financed construction. Table 5A summarizes the historical and expected future annual costs attributable to debt service and cash-financed construction.

4.2.3 Judgments and Claims

Judgments and claims represent the amount of judgments rendered against the System or claims paid by the City for water supply-related matters in upstate areas. Actual and projected judgments and claims are illustrated in Table 6. There are years in which no judgments or claims were paid for the Water System. Except for 2007, payments made in other years have ranged from $1,834 in 1999 to $916,350 in 2011. A payment of about $5.5 million was made in 2007 to settle litigation relating to the Shandaken Tunnel. There may be additional expenses related to this matter. The payment amount in 2012 was $240,320. The cost of service analysis assumes that the fifteen-year (1998 through 2012) average of $514,102 will provide an allowance for judgments and claims in future years.

4.2.4 Miscellaneous Revenue

Miscellaneous revenues received from upstate sources are used to offset the total cost of supplying water to both in-City and upstate customers. As indicated in Table 7, miscellaneous revenues are derived from hydropower generated at upstate dams and from miscellaneous charges for permit use and related services provided in the Water System. In addition, miscellaneous revenues can include tax refunds when such refunds are made. Miscellaneous revenues have been inconsistent over the years, declining in some years and increasing in others.

Hydropower revenues are shown for 2004 through 2012. Hydropower revenues in future years may differ from the historical experience. The City took ownership of the Grahamsville and Neversink hydroelectric facilities in October 2006, which resulted in an overall increase in annual revenues (compared to historical experience) as well as increased costs for capital improvements and operation and maintenance expenses, including property taxes. The City also receives a relatively small amount of revenue from the operator of the West Delaware hydroelectric facility. No revenues are considered in the calculations for the Ashokan and Kensico facilities because no revenues are actually expected to be received by the City.

Hydropower revenues as illustrated in Table 7 represent gross revenues prior to the application of offsetting expenses, which are included in the historical and projected OTPS and personal services expenses shown in the tables of this report. Table 14 shows the anticipated gross hydropower revenues by source. In 2013 and 2014, it is expected that such revenues will be approximately $4.5 million and $4.6 million, respectively, which, together with other miscellaneous revenues, will be applied as a credit towards the cost of water supply service.

For purposes of estimating future miscellaneous revenues during the Projection Period, the fifteen-year average (1998 through 2012) of permit/services revenues has been used. DEP received tax refunds in 2009 but no refunds were received in the previous four years or in 2010 through 2012 as illustrated in Table 7. At this time, the projections assume no refunds in future years. In lieu of tax refunds, DEP has advised that it may instead receive credits against property taxes due in future years.

4.2.5 Personal Service Costs

Personal services expenses directly allocable to water supply services are shown in Tables 8A, 8B, 9A and 9B. These expenses represent salary, pension, and fringe benefit costs associated with all BWS field personnel working in water supply facilities located north of the City as well as support and administrative personnel. Field personnel, for purposes of this report, are defined as DEP personnel with non-supervisory or non-management titles, working directly with the Water System. Field personnel thus do not include personnel classified as management and/or administrative support. Irrespective of the "field" or "administrative support" designation, these costs are all entirely related to water supply. The methodology for classifying personnel between field personnel and support/administrative categories of cost is consistent with the City's indirect cost plan for federal and State grant programs. Prior indirect cost plans of the City that use this methodology have been approved by the federal government. Personal Services costs in Tables 8A, 8B, 9A and 9B are categorized based on location. The categories can vary somewhat from previous year reports as locations have been consolidated or eliminated from a budgetary perspective. This does not necessarily indicate a physical change in location of the associated salaries.

Labor expenses for Hillview Reservoir include day-to-day operations, maintenance, and security. Security costs, in terms of both labor and non-labor expenses, have risen significantly in recent years as initiatives to protect the Water System have been implemented. Pension and fringe benefit rates that are applied to salaries and wages are expected to change in each year as summarized herein.

The source documents for the above referenced costs are DEP records, which identify salary and related costs by employee name and work location. Pension and fringe benefit factors reflect City-wide percentages and were computed at 30% in 2011, 46% in 2012, and 51% of direct salary and wages in 2013. Based on recent analyses prepared by the City, the pension and fringe benefit rate for 2014 is expected to be 51%. The assumed rate for 2015 through 2017 is also 51% of direct salary and wages. Pension and fringe benefit rates, which are applied to salary and wage expenses, are summarized below.

Pension/Fringe Benefit Rates (as a % of Salary & Wage $)

Year	Rate (%)
2011	30
2012	46
2013	51
2014-2017	51

The preceding pension and fringe benefit rates are applied to all projected labor costs related to the supply of water. The projected labor costs for 2013 through 2017 incorporate the projected

and assumed changes in the pension and fringe benefit rate and a 3% per year increase from the current base personal salary and wage costs.

There are currently outstanding collective bargaining agreements between DEP and personnel providing direct and indirect upstate services, including agreements related to the watershed police. When the settlement is reached, there may be retroactive payments for salaries and wages plus pension and fringe benefits that will likely be made in the year in which the settlement occurs and an increase in annual salaries and wages beginning in the year of the settlement. No allowance has been included in the projected cost of service for either retroactive payments or an increase in base personal service expenses.

4.3 Calculation of Allocation Percentages - Step B

The remaining elements of the cost of service, i.e., those not directly or fully allocable to facilities north of the City, must undergo one or a series of allocations before an appropriate assignment of costs can be made. Accordingly, allocation percentages are developed for the purpose of apportioning a fair share of costs incurred by one bureau, unit or location to the benefiting entity. For example, DEP incurs many costs in support of BWS. The DEP cost burden must then be shared by BWS through the use of an allocation percentage. The computation of the allocation percentages used in this report is presented in Table 10. The allocation factors presented in Table 10 specifically exclude employees working within the City in the wastewater system or the water distribution system.

4.4 Allocation of Department of Environmental Protection Costs - Step C

Expenses of DEP that are covered by Step C represent personnel and other expenditures of DEP that are allocable to management, administration and support services needed to operate and maintain the water supply facilities located north of the City. Again, City water distribution system costs are specifically excluded.

Tables 11A and 11B illustrate allocated personal services costs, while Tables 12A and 12B present the allocation of a portion of DEP OTPS costs to facilities north of the City. Examples of the services provided include motor vehicles, garage facilities, data processing and personnel recruiting and management. The total costs to be allocated are multiplied by headcount allocation percentages to obtain the amount that may be attributed to BWS. The amounts attributable to water supply are then subject to an allocation percentage to relate the costs to facilities located north of the City.

Allocated DEP personal services costs in 2013 through 2017 reflect the same assumptions identified in Section 4.2.5. OTPS costs are assumed to increase at an annual rate of 3%.

4.5 Allocation of City Central Service Costs - Step D

The City incurs costs that must be distributed among all of its operating entities. Such costs include planning, budgeting, accounting, purchasing, legal services and other related activities. A cost allocation plan is developed to distribute the City-wide costs. The plan is subject to review by the federal government in connection with federal aid received by the City. After the City-wide allocation process, the DEP portion of the City's costs is divided further between non-utility and water and sewer utility components. The water and sewer utility-related costs are then distributed among the various DEP water and sewer functions using headcount allocation percentages. BWS is one of the functions to which costs are allocated. This cost is then further allocated to relate to facilities located north of the City. The allocated Central Service costs were $1,765,496 in 2012. Overall City support service costs to DEP are expected to be relatively constant in future years. Thus, such costs attributable to water supply are assumed to be $1,765,496 in 2013 and each year thereafter.

4.6 Cost of Service - Step E

The calculations of the total cost of water supply and the cost of water supply attributable to upstate customers are presented for 2010 through 2012 in Table 1A and for 2013 through 2017 in Table 1B. Additional tables are referenced to support the various categories of costs and offsetting revenues. These additional tables provide a detailed breakdown of the components of each step of the cost of service analysis.

The total cost of service is estimated to be $564,235,884 in 2013 and $607,165,016 in 2014. Of these amounts, $452,699,144 in 2013 and $492,262,965 in 2014, or about 80% and 81% (excluding the effects of the reconciliation and stipulation credit), respectively, is for debt service/capital costs, defeasance and direct out-of-pocket expenses (OTPS costs) associated with operating and maintaining the water supply facilities located north of the City. As illustrated in Table 4B, the largest item of OTPS expense for the supply of water is real estate taxes paid to upstate communities for watershed properties. Excluding the reconciliations, upstate taxes (included with OTPS expenses) will represent approximately 26% of all water supply costs in 2013 and 25% in 2014. Direct salary, pension costs and fringe benefits for personnel directly and indirectly related to the water supply facilities located north of the City account for about 19% and 18% of all costs excluding the effects of the reconciliation credits, in 2013 and in 2014, respectively.

After accounting for the reconciliation credits, the net total cost of water supply as presented in Table 1B (line 20) is $544,856,118 for 2013 and $604,428,174 for 2014. These amounts include the effects of the reconciliation for 2011 of $19,379,766 that is credited to 2013 and the proposed reconciliation of $2,736,842 for 2012 that is credited to 2014.

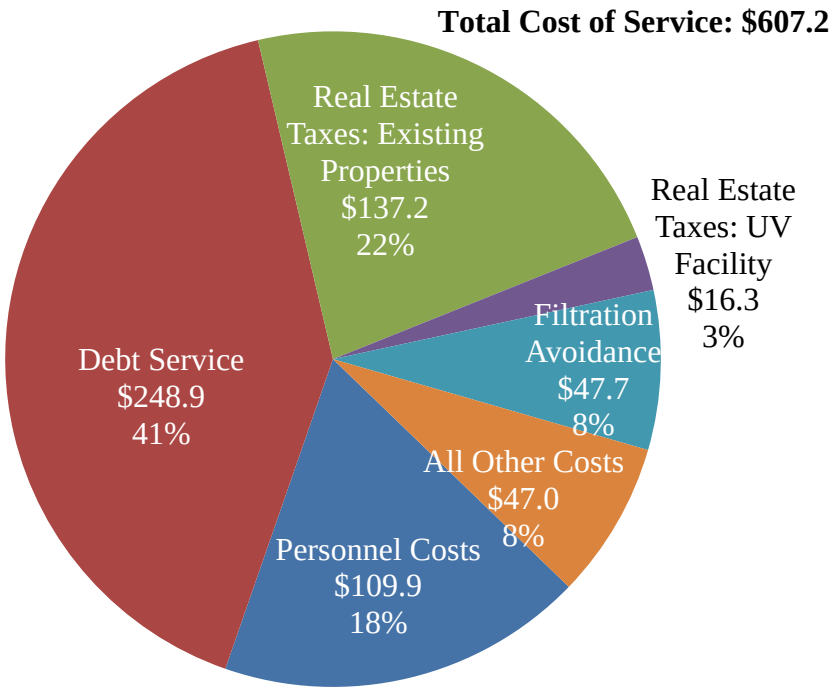
The major factors influencing the increase in the cost of service between 2013 and 2014 are the following:

- The increase in debt service and related capital costs (including cash-financed construction), offset by the current assumption that there will be no defeasance in 2014;
- The additional program costs associated with the filtration avoidance program which are included in OTPS expenses; and
- The first full-year operation and maintenance expenses and the assumed increase in taxes associated with the UV Facility.

The cost of water supply service as presented herein does not take into consideration the need to maintain an operation and maintenance reserve fund, to provide working capital to pay construction costs before being reimbursed through the proceeds of commercial paper, or to ensure liquidity in operating funds. It also assumes that all upstate customers pay their bills for water service on a timely basis, thus avoiding the need to include an allowance in the cost of service for late payments.

The chart below illustrates the breakdown of the total cost of service for the 2014 rate year excluding the effects of the reconciliation of prior year costs.

Figure 5 Projected 2014 Cost of Service Components
($ in millions)



4.7 Calculation of the Regulated Rate - Step F

At the direction of the Board, the calculation of the 2012 cost of service included a credit, which reflected the difference between the cost of service recovered in 2010 (based on the adopted 2010 rate and the actual quantity of water consumed) and the actual 2010 cost of service (based on computed actual costs to the Board). Additionally, the calculation of the 2012 cost of service included a $10 million one-time stipulation credit. Based on an order signed by the Commissioner of NYSDEC dated June 3, 2011, ordering and directing the implementation of a stipulation signed by the Board and the Petitioners Village of Scarsdale, Westchester Joint Water Works, City of White Plains, United Water New Rochelle, and United Water Westchester, the Board agreed to make a one-time adjustment in the form of a $10 million reduction to the cost of water supply service as reflected in the entitlement water rate that was established for the year beginning July 1, 2011 (the 2012 rate).

Table 1A presents both a net cost of service (line 20) and a unit rate net of the reconciliation and the one-time stipulation credit (line 22).

For 2013, the calculation of the projected 2013 cost of service includes a credit, which reflected the difference between the cost of service recovered in 2011 (based on the adopted rate and the actual quantity of water consumed) and the actual 2011 cost of service based on computed actual costs to the Board.

Similarly in this report, a reconciliation of a prior year's projected and actual costs of service, consumption and rates is proposed for 2012 with the resulting credit being applied towards the cost of service for the upcoming rate year of 2014.

Given the recent variations in financing and commodities costs as well as changes in water consumption, this "true-up" approach is intended to ensure that both upstate and in-City customers pay their appropriate shares of the cost of water supply service. In future years, it is possible that such a true-up may show an under-recovery of prior year costs and that the report of the rate consultant will propose the shortfall in prior year cost recovery be added to the cost of service in such upcoming year.

Table 1B summarizes the calculation of the projected 2014 regulated rate and upstate cost of service. The regulated rate per MG of water use is computed by first calculating the total cost of service in Line 13 and then dividing by the total water consumption shown on Line 14. An excerpt from Table 1B is provided below to show the calculation of the proposed rate.

Summary of the Calculation of the Proposed 2014 Rate

13	Total Costs Related to Facilities North of the City	$	607,165,016
14	System Usage	MG	403,825
15	Unit Rate to Recover the Total Costs (line 13 divided by 14)	$/MG	1,503.54
18	Cost Reconciliation for Prior Years	$	(2,736,842)
20	Net Total Costs for Facilities North of the City (line 13+18)	$	604,428,174
22	Unit Rate Net of Reconciliation & Stipulation (line 20 / line 14)	$	1,496.76
23	Upstate New York Usage	MG	40,361
24	Total Upstate Cost Excluding Reconciliation & Stipulation (line 15 times 23)	$	60,684,738

After taking into account the reconciliation, the resulting unit rate, shown on Line 22, is $1,496.76 per MG in 2014.

The cost of service attributable to upstate customers (excluding the cost reconciliation) is calculated by multiplying the unit rate of $1,503.54 shown on Line 15 of Table 1B by the annual upstate water consumption shown on Line 23 of Table 1B. The resulting upstate cost is approximately $60.7 million for 2014. The remaining cost of water supply, approximately $546.5 million would be recoverable from in-City water customers through rates and charges.

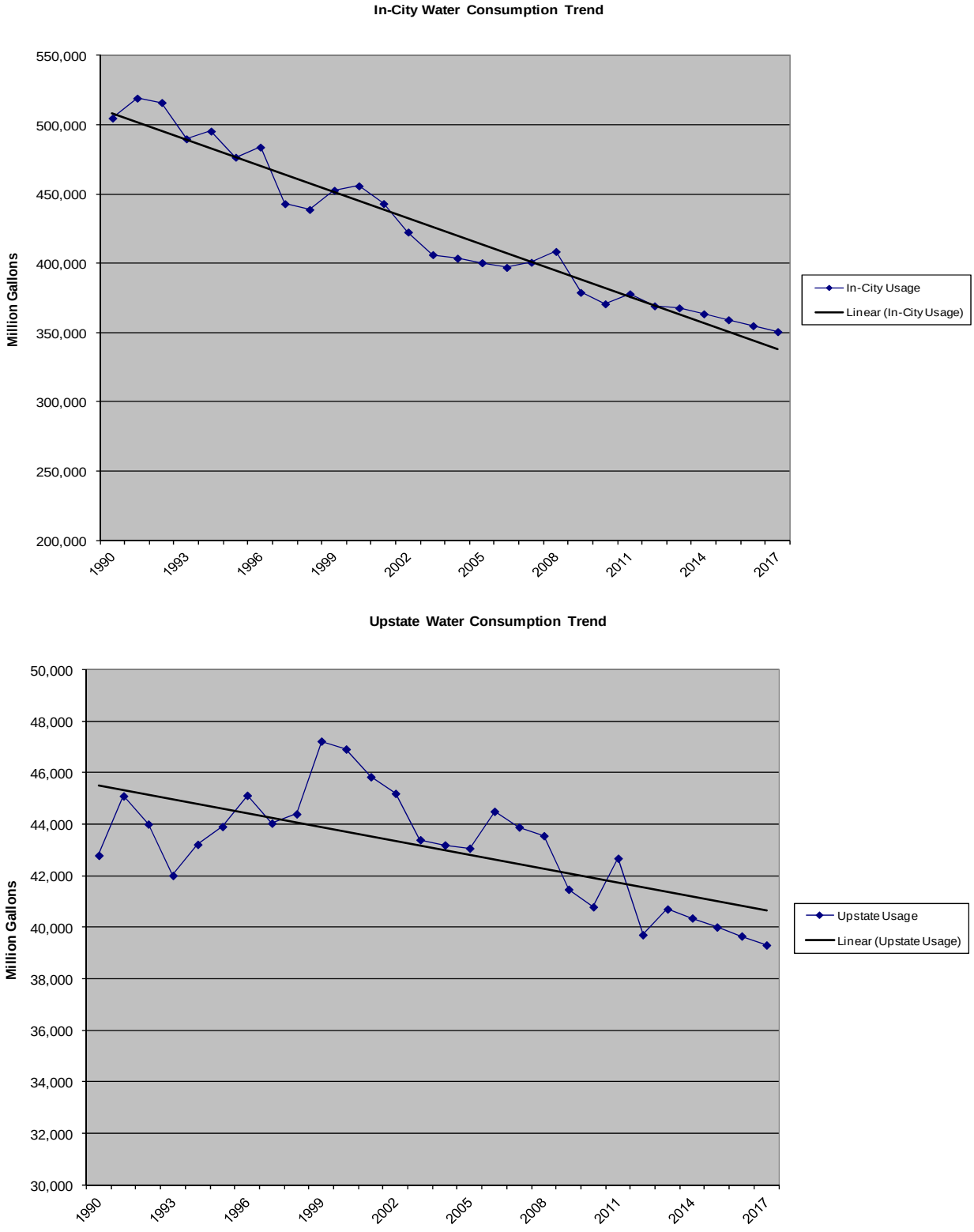
The water consumption used in calculating the regulated rate reflects a calculated decline in demand based on the results of a regression analysis. Water consumption data is presented in Table 13. The table presents water consumption data beginning in 1985. However, given the many changes that have occurred due to metering within the City, the availability of water conserving fixtures and other factors, a 10-year regression analysis is used in estimating future water demand by both in-City and upstate customers. The results of the regression analysis show a gradually declining annual consumption by both in-City and upstate customers. The projected system-wide demand is used in developing the projected unit rate.

The results of the analyses provide an anticipated water consumption of 408,459 MG in 2013 and 403,825 MG in 2014. The upstate share of total water consumption using the regression analysis is estimated to be 40,710 MG in 2013 and 40,361 MG in 2014. In Figure 6, a line graph illustrates the projected consumption for both in-City and upstate customers. Only the total system consumption is used in computing the unit rate.

Water consumption was lower than expected in 2012. The 2013 year-to-date consumption through March 31, 2013 has increased about 0.4% in-City and 2.0% upstate from the usage for the same time period in 2012. Thus, the actual rate for 2013 may change from the preliminary computation in part because of the changes in water consumption.

The use of the regression analysis was previously agreed-to by the City and representatives of upstate customers as a means to estimate future consumption. The regression analysis that is used in computing the projected unit rates for purposes of this report produces somewhat different projections of a decline in consumption than the assumptions currently used for in-City usage and rate projections. The regression results show an annual pace of decline that ranges from 1.1% in 2014 to 1.2% in 2017. Current in-City assumptions are a 1.5% per year rate of decline in 2014 and 2015 followed by a 2.0% per year rate of decline in 2016 and 2017 in anticipation of upcoming work by DEP on the Rondout-West Branch Tunnel.

Figure 6 Comparison of Water System Consumption



4.8 Additional Issues Relating to the Cost of Service and the Regulated Rate

There are other issues relevant to the Board's deliberations on the establishment of a regulated rate for 2014. These issues are summarized herein.

4.8.1 Operating Risks

The cost of service computations are presented on the cash basis methodology as required by NYSDEC. The cost of service analysis and regulated rate proposed for 2014 reflect no allowance for the risks being borne by the City as the owner and operator of the water system. Other large water systems are permitted to earn a premium over the cost of service to provide an allowance for such risks. The cost of service also does not consider the factors presented in Section 4.6 of this report.

4.8.2 Water Conservation Initiatives

DEP has invested and continues to invest substantial amounts of money in water conservation initiatives. In 2013, DEP transitioned approximately 30,000 Tax Class 2 accounts from the in-City "frontage" system of billing to a Multiple-family Conservation Program ("MCP"). DEP is also continuing its universal metering program and has been installing an automated meter reading ("AMR") system that will provide DEP and all metered customers with access to information on daily water use; over 431,000 meters have been installed or replaced and 820,000 AMR devices installed in conjunction with this program. These initiatives will likely provide a significant long-term reduction in water use.

Examples of other programs being used by DEP include the following:

- Sonar Leak Detection Program
- Meter Slippage Testing
- Hydrant Locking Devices
- Residential Water Survey Program
- School Programs on Water Conservation
- Large Meter Management Initiative

The cost of service and regulated rate, as presented herein, do not include the costs of the funds invested in metering in-City customers or any of the other programs listed above.

The conservation investments by the City will help to reduce the need to develop new supplies of water in the future. (See the Rondout-West Branch Tunnel discussion in Section 1.3.2.1).

4.8.3 Upstate Wastewater Treatment Plants

In addition to non-City owned plants, the City owns and operates wastewater treatment plants in the watershed and is responsible for capital improvements in those facilities. Given the absence of a mechanism to recover the operating and capital costs of these facilities directly from the users of these systems, such costs are included within the cost of water supply service and the calculation of the regulated rate.

5.0 Impacts on Customers of the Proposed Regulated Rate

The proposed regulated rate for 2014 is $1,496.76 per MG. The proposed regulated rate represents an increase of $164.46 per MG from the current 2013 unit rate of $1,332.30, or a 12.3% increase. Without the benefit of the reconciliation from 2012, the unit rate for the cost of service would be $1,503.54 per MG, representing a 12.85% increase in the current rate. The impact on a typical single family homeowner of the proposed increase in the unit rate would be modest. The increase in charges attributable to a single family residence using 80,000 gallons of water per year would be $13.16 for the entire year or about three to four cents per day.

The current estimate of the unit cost of service for 2013 is $1,381.38 per MG, which is higher than the projected unit cost of $1,357.29 per MG that was calculated approximately one year ago based on information available at that time. Each of these figures is prior to the effects of the reconciliation. After the effect of the reconciliation is taken into consideration, the calculated net unit cost of service for 2013 at the time of this report is $1,333.93 per MG which is slightly higher than the rate in effect of $1,332.30 per MG. The current estimate of the unit cost of service for 2013 will change by the end of the fiscal year, based on actual costs incurred and actual water consumption by customers.

Figure 7 on the next page outlines the anticipated percentage change in the unit cost of water supply, and the portions of the change that are attributable to increases or decreases in the cost of service and water consumption. If consumption declines at a pace that is faster than expected, the unit rate for water supply will have to increase in order to recover the estimated cost of service.

The potential impact of the proposed revisions to the regulated rate on the actual rate schedules for upstate customers will depend to a large extent on the upstate suppliers' cost of purchased water in relation to the total cost of service experienced by these suppliers. To illustrate the potential effects on the overall charges to customers, Tables 2A and 2B present the rate structures of several upstate communities that purchase water from the City. The annual single family residential water charge is computed for each community using the 80,000 gallon per year allowance. Table 3 illustrates the computed single family charge and the estimated percentage increase in that charge that would occur with the proposed regulated rate for 2014.

Additional rate increases are anticipated in future years based on the need to protect the water supply for all customers and to avoid the costly possibility of having to filter Catskill and Delaware water. Future changes in rates are dependent upon whether or not the overall declining trend in consumption continues as well as changes in debt service for capital improvements and the costs of watershed protection.

Prior to 2008, the rates and charges of the Board that were assessed to upstate customers for water supply service were generally less than the actual cost to the City. Table 15 illustrates the charges to upstate customers versus the computed cost to the City of serving those customers.

The figures shown in Table 15 do not consider the effects of the reconciliation of the cost of service from prior years.

For 2015 through 2017, Figure 7 below illustrates the components of the projected increases in the unit rate; i.e., the portion that is related to the change in consumption and the portion that is related to changes in costs.

Figure 7 Impact of Cost of Service and Consumption on Unit Rate

New York City Water Board
Cost of Supplying Water to Upstate Customers

	Projected		
	2015	***2016***	***2017***
Percentage Change in the Unit Rate due to Increase in Cost of Service	4.6%	6.6%	3.5%
Percentage Change in the Unit Rate due to Fluctuations in Consumption	1.2%	1.3%	1.2%
Percentage Change in the Calculated Unit Rate for Water Supply	5.8%	7.9%	4.7%

* Includes the effects of cost reconciliation for FY 2012 that are credited in FY 2014.

Report on the Cost of Supplying Water to Upstate Customers for the 2014 Rate Year

Appendices

Supporting Calculations for the Cost of Service and the Regulated Rate

Table 1A Historical Cost of Service

TABLE 1A
New York City Water Board
Cost of Supplying Water to Upstate Customers
Historical Cost of Service

No.	Description		FY 2010	FY 2011	FY 2012
	Bureau of Water Supply Direct				
	Costs for Facilities North of the City				
1	Other Than Personal Services	$	169,955,116	191,435,944	202,764,575
2	Debt Service / Capital Costs	$	129,167,819	161,892,525	186,468,100
3	Cash Used for the Defeasance of Debt	$	0	34,091,414	33,812,142
4	Judgment and Claims	$	668,221	916,350	240,320
5	Less Miscellaneous Revenue	$	(6,972,405)	(9,868,057)	(6,410,297)
	Personal Services				
6	Field Personnel	$	72,743,588	60,933,763	72,705,413
7	Support and Administrative Personnel	$	19,296,392	16,560,136	18,169,023
8	Total Costs Directly Related to Facilities North of the City	$	384,858,731	455,962,075	507,749,277
	Upstate Share of NYC DEP Costs				
9	Personal Services	$	7,917,360	7,213,436	7,616,886
10	Other Than Personal Services	$	5,999,662	6,587,143	8,184,254
11	Total NYC DEP Costs Allocated to Facilities North of the City	$	13,917,022	13,800,579	15,801,140
12	***Upstate Share of City Central Service Costs*** [(1)]	$	1,951,178	1,786,731	1,765,496
13	Total Costs Related to Facilities North of the City	$	400,726,931	471,549,385	525,315,913
14	System Usage	MG	411,482	420,635	408,954
15	***Unit Rate to Recover the Total Costs (line 13 divided by 14)***	$/MG	973.86	1,121.04	1,284.53
16	Unit Rate Charged	$	922.23	1,149.72	1,213.84
17	Revenue Raised (line 14 times 16)	$	379,480,873	483,612,685	496,405,035
		$			
18	Cost Reconciliation for Prior Years	$	(42,893,777)	(7,316,465)	(21,647,720)
19	Stipulation Credit	$			(10,000,000)
20	Net Total Costs for Facilities North of the City (line 13+18+19)	$	357,833,154	464,232,919	493,668,193
21	Difference in Revenue Less Net Total Costs (line 17 minus 20)	$	21,647,720	19,379,766	2,736,842
22	***Unit Rate Net of Reconciliation & Stipulation (line 20 / line 14)***	$	869.62	1,103.65	1,207.15
23	Upstate New York Usage	MG	40,797	42,682	39,713
24	Total Upstate Cost Excluding Reconciliations (line 15 x line 23)	$	39,730,509	47,848,489	51,013,055

Notes:
(1) Based on factors allocating a portion of central city service costs.

Table 1B Cost of Service Projections

TABLE 1B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Cost of Service Projections

Line No.	Description		FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
				Projected Years			
	Bureau of Water Supply Direct						
	Costs for Facilities North of the City						
1	Other Than Personal Services	$	216,114,615	243,350,610	252,682,811	260,620,502	268,258,641
2	Debt Service/Capital Costs	$	199,608,896	248,912,355	261,158,508	291,439,081	303,804,175
3	Cash Used for the Defeasance of Debt	$	36,975,632	0	0	0	0
4	Judgment and Claims	$	514,102	514,102	514,102	514,102	514,102
5	Less Miscellaneous Revenue	$	(5,904,073)	(5,993,597)	(6,084,913)	(6,178,054)	(6,273,059)
	Personal Services						
6	Field Personnel	$	79,169,086	81,544,159	83,990,484	86,510,198	89,105,504
7	Support and Administrative Personnel	$	19,448,275	20,031,724	20,632,675	21,251,656	21,889,205
8	Total Costs Directly Related to Facilities North of the City	$	545,926,536	588,359,353	612,893,667	654,157,485	677,298,569
	Upstate Share of NYC DEP Costs						
9	Personal Services	$	8,114,070	8,357,492	8,608,217	8,866,463	9,132,457
10	Other Than Personal Services	$	8,429,782	8,682,676	8,943,156	9,211,450	9,487,794
11	Total NYC DEP Costs Allocated to Facilities North of the City	$	16,543,852	17,040,168	17,551,373	18,077,914	18,620,251
12	***Upstate Share of City Central Service Costs***	$	1,765,496	1,765,496	1,765,496	1,765,496	1,765,496
13	Total Costs Related to Facilities North of the City	$	564,235,884	607,165,016	632,210,536	674,000,895	697,684,316
14	System Usage	MG	408,459	403,825	399,191	394,557	389,923
15	***Unit Rate to Recover the Total Costs (line 13 divided by 14)***	$/MG	1,381.38	1,503.54	1,583.73	1,708.25	1,789.29
16	Unit Rate Charged	$/MG	1,332.30				
17	Revenue Raised (line 14 times 16)	$					
18	Cost Reconciliation for Prior Years	$	(19,379,766)	(2,736,842)			
19	Stipulation Credit	$	N/A	N/A			
20	Net Total Costs for Facilities North of the City (line 13+18+19)	$	544,856,118	604,428,174			
21	Difference in Revenue Less Net Total Costs (line 17 minus 20)	$					
22	***Unit Rate Net of Reconciliation & Stipulation (line 20 / line 14)***	$/MG	1,333.93	1,496.76			
23	Upstate New York Usage	MG	40,710	40,361	40,012	39,663	39,314
24	Total Upstate Cost Excluding Reconciliation & Stipulation (line 15 x line 23)	$	56,236,347	60,684,738	63,368,808	67,754,920	70,344,828

Notes:
* The rate adopted by the Board for FY 2013 is $1,332.30 per million gallons including the effects of the reconciliation from FY 2011.

Table 2A Current Water Rates for Upstate New York Communities

TABLE 2A
New York City Water Board
Cost of Supplying Water to Upstate Customers
Current Water Rates for Upstate New York Communities

	City of White Plains	Village of Scarsdale
Current Water Rates	$1.60/Ccf - 1st 50 Ccf $1.79/Ccf - Next 100 Ccf $2.02/Ccf - Next 200 Ccf $2.92/Ccf - Next 300 Ccf (Rates are semi-annual; additional blocks for greater consumption) Plus fixed charge of $20.10 for residential meters 1" or less, per 6 mths	$1.95/Ccf - 1st 50 Ccf (qtrly accts) or 500 Ccf (monthly accts); $6.48 for consumption greater than those amounts. Plus service charge based on meter size: $6.00/qtr for 5/8"; $9.00/qtr for 3/4"; etc.
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$213	$239

	Village of Mamaroneck	Town of Harrison
Current Water Rates	$5.22/Ccf - 1st 66 Ccf per Qtr $5.87/Ccf - Next 150 Ccf per Qtr Plus service charge based on meter size: $29.03/qtr for 5/8"; $34.64/qtr for 3/4"; etc.	$3.76/Ccf - 1st 66 Ccf per Qtr $4.53/Ccf - Next 150 Ccf per Qtr Plus service charge based on meter size: $35.98/qtr for 5/8"; $39.16/qtr for 3/4"; etc.
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$686	$552

	New Rochelle United Water Company	City of Mount Vernon
Current Water Rates	$5.485 / Ccf Minimum based on usage of 1,200 cf/qtr for 1/2" or 5/8" meter; 1,500 cf/qtr for 3/4" meter; 2,700 cf/qtr for 1" and 1 1/4" meter, etc.	$2.70/Ccf - per quarter Minimum charge based on usage of 15 Ccf/qtr at $40.50
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$587	$289

Notes:
The above rates and charges reflect the rate schedules of each community in January 2013.

Table 2B Current Water Rates for Upstate New York Communities

TABLE 2B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Current Water Rates for Upstate New York Communities

	Town of Carmel	City of Yonkers
Current Water Rates	$60.00 per 1,000 cf (Water District #1) $9.00 per 1,000 cf (Water District #2 before 3/31/2013) $24.38 per 1,000 cf (Water District #2 starting 3/31/2013)	$2.32 / Ccf
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$261 - $640	$248

	City of Newburgh	Village of Cornwall
Current Water Rates	$5.57 per 1,000 Gal Minimum charge based on meter size: $33.42/qtr for 5/8" Minimum Charge up to 6,000 gals $77.98/qtr for 3/4" Minimum Charge up to 14,000 gals	$8.56 per 1,000 Gal
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$446	$685

Notes:
The above rates and charges reflect the rate schedules of each community in January 2013.
Note rates for the Town of Carmel WD #2 increased significantly on 3/31/2013, after the time of this rate survey.
Therefore the increase is not reflected in the average residential water bill shown above.

Table 3 Summary of Impacts on Upstate Customers

TABLE 3
New York City Water Board
Cost of Supplying Water to Upstate Customers
Summary of Impacts on Upstate Customers

Water System Customer	Typical Single Family Charges	Increase Attributable to Proposed 2014 Regulated Rate	% Change to a Homeowner
City of White Plains	$213	$13.16	6.2%
Village of Scarsdale	$239	$13.16	5.5%
City of New Rochelle	$587	$13.16	2.2%
City of Yonkers	$248	$13.16	5.3%
Village of Mamaroneck	$686	$13.16	1.9%
Town of Harrison	$552	$13.16	2.4%
City of Mount Vernon	$289	$13.16	4.6%
Town of Carmel	$261 - $640	$13.16	13.7% to 2.1%
City of Newburgh	$446	$13.16	3.0%
Village of Cornwall	$685	$13.16	1.9%
New York City	$363	$13.16	3.6%

Notes:
(1) The Typical Single Family Charge for selected communities are based on 80,000 gallons of annual water use and the rate schedules of each community in January 2013.
(2) The increase in annual water charges for New York City in FY 2014 as adopted by the New York City Water Board is $20.30 per year or 5.6%. The change within the City reflects increases in the cost of water supply and increases in water costs within the City.

Table 4A Historical Upstate Other Than Personal Services Costs

TABLE 4A
New York City Water Board
Historical Cost of Supplying Water to Upstate Customers
Upstate New York Other Than Personal Services Costs

Line No.	Description	FY 2010 $	FY 2011 $	FY 2012 $
	Budget			
1	Supplies and Materials - General	2,713,164	3,232,900	2,827,269
2	Automotive Supplies and Materials	43,645	54,538	19,474
3	Fuel Oil	2,359,334	2,863,365	2,654,645
4	Equipment - General	685,544	435,813	607,066
5	Telecommunications Equipment	32,735	18,866	40,763
6	Office Equipment	65,111	40,618	50,682
7	Contractual Services - General	5,095,826	5,194,255	6,150,564
8	Telephone and Other Communications	392,454	526,331	311,541
9	Office Services	308,473	313,985	253,694
10	Maintenance and Repairs - Motor Vehicles	97,251	91,140	140,609
11	Maintenance and Repairs - General	1,110,880	1,167,028	830,140
12	Rentals - Miscellaneous Equipment	1,983,616	1,853,681	1,856,959
13	Advertising	10,937	2,205	5,047
14	Security Services	0	0	0
15	Cleaning Services	319,342	597,860	411,124
16	Licenses (1)	0	0	0
17	Chemicals	7,813,168	6,744,998	6,008,103
18	Real Estate Taxes - Existing Properties	122,516,750	124,941,240	129,367,391
19	Real Estate Taxes - UV Facility	3,804,096	6,721,814	9,896,338
20	NYS DEC Permits (1)	0	0	0
21	Motor Maintenance Supplies (1)	0	78,502	29,431
22	Gasoline (1)	0	0	0
23	Lab and Limnology	47,829	53,342	94,939
24	Natural Gas & Electricity	2,158,826	1,912,319	1,990,946
25	Watershed Regulations Consulting	0	0	0
26	Upstate Cost of Service/Rate Studies	33,286	52,107	46,603
27	Hillview Reservoir (2)	18,362,851	12,380,818	14,150,836
28	UV Facility	0	0	341,363
29	Filtration Avoidance - O&M Payments	0	10,427,716	10,757,589
30	Filtration Avoidance - Program Funding	0	9,776,944	12,045,037
31	Filtration Avoidance - Additional Program Funding	0	0	0
32	Water Supply Environmental Health & Safety	0	1,953,558	1,876,423
33	OpX Savings			
34	Totals	169,955,116	191,435,944	202,764,575
				1.8052011
				1.807762088
				0.068

Notes:
(1) Actual costs were not available at the publishing of this report. The City reserves the right to include such expenses at a future date.
(2) Actual costs are shown for 2010 through 2012.

Table 4B Projected Upstate Other Than Personal Services Costs

TABLE 4B
New York City Water Board
Projected Cost of Supplying Water to Upstate Customers
Upstate New York Other Than Personal Services Costs

Line No.	Description	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
			Projected Years			
		$	$	$	$	$
1	Supplies and Materials - General	2,912,087	2,999,449	3,089,433	3,182,116	3,277,579
2	Automotive Supplies and Materials	20,058	20,660	21,280	21,918	22,576
3	Fuel Oil	2,734,284	2,816,312	2,900,802	2,987,826	3,077,461
4	Equipment - General	625,278	644,037	663,358	683,258	703,756
5	Telecommunications Equipment	41,986	43,246	44,543	45,879	47,256
6	Office Equipment	52,202	53,768	55,381	57,043	58,754
7	Contractual Services - General	6,335,081	6,525,134	6,720,888	6,922,514	7,130,190
8	Telephone and Other Communications	320,887	330,514	340,429	350,642	361,162
9	Office Services	261,305	269,144	277,218	285,535	294,101
10	Maintenance and Repairs - Motor Vehicles	144,827	149,172	153,647	158,256	163,004
11	Maintenance and Repairs - General	855,044	880,695	907,116	934,330	962,359
12	Rentals - Miscellaneous Equipment	1,912,668	1,970,048	2,029,149	2,090,023	2,152,724
13	Advertising	5,199	5,355	5,515	5,681	5,851
14	Security Services	0	0	0	0	0
15	Cleaning Services	423,458	436,162	449,247	462,724	476,606
16	Licenses (1)	0	0	0	0	0
17	Chemicals	6,188,346	6,373,997	6,565,216	6,762,173	6,965,038
18	Real Estate Taxes - Existing Properties	133,248,413	137,245,865	141,363,241	145,604,138	149,972,262
19	Real Estate Taxes - UV Facility	13,994,097	16,312,000	18,584,000	19,674,000	20,264,220
20	NYS DEC Permits (1)	0	0	0	0	0
21	Motor Maintenance Supplies (1)	30,314	31,223	32,160	33,125	34,119
22	Gasoline (1)	0	0	0	0	0
23	Lab and Limnology	97,787	100,721	103,743	106,855	110,061
24	Natural Gas & Electricity	2,050,675	2,112,195	2,175,561	2,240,828	2,308,053
26	Upstate Cost of Service/Rate Studies	61,000	61,000	61,000	61,000	61,000
27	Hillview Reservoir	14,575,361	15,012,622	15,463,001	15,926,891	16,404,697
28	UV Facility	3,804,838	4,253,373	4,337,504	4,294,186	4,244,365
29	Filtration Avoidance - O&M Payments	11,080,317	11,412,726	11,755,108	12,107,761	12,470,994
30	Filtration Avoidance - Program Funding	12,406,388	12,778,580	13,161,937	13,556,796	13,963,499
31	Filtration Avoidance - Addtl Program Funding	0	23,521,917	24,521,917	25,257,575	26,015,302
32	Water Supply Environmental Health & Safety	1,932,715	1,990,697	2,050,418	2,111,930	2,175,288
33	OpX Savings		(5,000,000)	(5,150,000)	(5,304,500)	(5,463,635)
34	Totals	216,114,615	243,350,610	252,682,811	260,620,502	268,258,641

Notes:
(1) Actual costs were not available at the publishing of this report. The City reserves the right to include such expenses at a future date.

Table 5A Debt Service Summary

TABLE 5A
New York City Water Board
Cost of Supplying Water to Upstate Customers
Debt Service/Capital Cost Summary

Line No.	Fiscal Year	Authority/NYSEFC Debt Service/Cash-Financed
1	2010	129,167,819
2	2011	161,892,525
3	2012	186,468,100
Projection Years:		
4	2013	199,608,896
5	2014	248,912,355
6	2015	261,158,508
7	2016	291,439,081
8	2017	303,804,175

Notes:
(A) The Upstate allocation of debt service shown in Table 5B of this report is slightly different than what was shown in May 2012, reflecting updated information from the Authority.
(B) Debt service in 2011 is updated from the prior Report to reflect the BABs subsidy.

Table 5B Authority Bond Proceeds

Table 5B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Proceeds of Authority Bonds Used for Upstate Projects

Line	Bond Issue	Total Principal ($)	Total Upstate Allocation	Upstate Principal ($)
1	1986 through 2003	10,042,885,633	10.68%	1,072,589,909
2	FY 2004 Series A	217,000,000	1.75%	3,805,504
3	FY 2004 Series C	297,549,412	12.51%	37,233,002
4	FY 2005 Series A	150,000,000	23.22%	34,836,356
5	FY 2005 Series B	417,570,000	19.77%	82,566,605
6	FY 2005 Series D	509,553,201	13.98%	71,236,597
7	FY 2006 Series A	202,970,000	15.90%	32,275,185
8	FY 2006 Series AA	400,000,000	9.92%	39,682,422
9	FY 2006 Series B BB C	250,000,000	17.70%	44,248,847
10	FY 2006 Series D	355,519,052	7.45%	26,485,735
11	FY 2007 Series AA	199,910,000	25.51%	51,006,584
12	FY 2007 Series CC	210,500,000	15.89%	33,450,077
13	FY 2007 Series A	310,475,000	13.73%	42,629,128
14	FY 2007 Series DD	395,000,000	8.43%	33,314,037
15	**2008 Total**	13,958,932,298	11.50%	1,605,359,990
16	FY 2008 Series AA	400,000,000	27.49%	109,951,398
17	FY 2008 Series BB	401,000,000	15.39%	61,708,489
18	FY 2008 Series A	446,245,000	14.91%	66,527,108
19	FY 2008 Series DD	504,905,000	12.90%	65,126,012
20	**2009 Total**	15,711,082,298	12.15%	1,908,672,996
21	FY 2009 Series BB	200,870,000	63.93%	128,419,355
22	FY 2009 Series CC	150,100,000	9.17%	13,762,275
23	FY 2009 Series A	536,030,000	21.14%	113,326,719
24	FY 2009 Series DD	325,580,000	13.36%	43,512,270
25	FY 2009 Series EE	645,455,000	31.32%	202,147,362
26	FY 2009 Series FF	270,035,000	0.44%	1,185,596
27	FY 2009 Series GG	500,000,000	32.79%	163,938,186
28	**2010 Total**	18,339,152,298	14.04%	2,574,964,758
29	FY 2010 Series AA	504,240,000	17.49%	88,192,237
30	FY 2010 Series BB	218,820,000	0.00%	-
31	FY 2010 Series CC	200,000,000	0.53%	1,060,388
32	FY 2010 Series DD	400,000,000	22.50%	89,999,107
33	FY 2010 Series EE	500,000,000	19.32%	96,596,999
34	FY 2010 Series FF	359,110,000	0.00%	-
35	FY 2010 Series GG	554,045,000	29.31%	162,377,029
36	**2011 Total**	21,075,367,298	14.30%	3,013,190,518
37	FY 2011 Series AA	750,000,000	19.81%	148,540,324
38	FY 2011 Series CC	750,000,000	15.81%	118,541,638
39	FY 2011 Series DD	275,000,000	37.22%	102,354,522
40	FY 2011 Series EE	450,000,000	27.33%	122,965,542
41	FY 2011 Series FF	200,000,000	29.02%	58,039,771
42	FY 2011 Series GG	250,000,000	32.29%	80,714,935
43	**2012 Total**	23,750,367,298	15.34%	3,644,347,248
44	FY 2012 Series A-1, A-2	200,000,000	23.48%	46,960,553
45	FY 2012 Series AA	250,000,000	20.59%	51,480,856
46	FY 2012 Series BB	450,000,000	15.65%	70,435,824
47	FY 2012 Series CC&DD	400,000,000	21.59%	86,353,970
48	FY 2012 Series EE	77,725,000	23.74%	18,450,990
49	FY 2012 Series B1-B4	325,000,000	31.88%	103,600,817
50	FY 2012 Series FF&GG	450,000,000	33.21%	149,452,914
51	**2013 Total**	25,903,092,298	16.10%	4,171,083,172
52	FY 2013 Series AA-1, AA-2	200,000,000	23.69%	47,372,040
53	FY 2013 Series BB	440,510,000	15.99%	70,427,157
		26,543,602,298		4,288,882,369
54	**2014-2017 Total**		14.82%	

Table 5C NYSEFC Bond Proceeds

Table 5C
New York City Water Board
Cost of Supplying Water to Upstate Customers
Proceeds of NYSEFC Bonds Used for Upstate Projects

Line No.	Bond Issue	Total Principal ($)	Upstate Allocation	Upstate Principal ($)
1	FY 1995 Series 1	112,733,019	1.26%	1,420,436
2	FY 1996 Series 1	113,085,000	1.28%	1,447,488
3	FY 1996 Series 2	28,775,000	39.38%	11,331,595
4	FY 1996 Series 3	40,285,000	8.93%	3,597,451
5	FY 1998 Series 1	44,635,000	28.51%	12,725,439
6	FY 1998 Series 2	113,784,841	9.71%	11,048,508
7	FY 1998 Series 4	15,749,040	12.22%	1,924,533
8	FY 1998 Series 5	87,872,535	15.02%	13,198,455
9	FY 1999 Series 1	121,435,485	7.88%	9,569,116
10	FY 1999 Series 2	269,985,000	0.54%	1,462,597
11	FY 2000 Series 1	285,855,884	18.10%	51,746,780
12	FY 2002 Series 1	204,131,705	1.70%	3,478,818
13	FY 2002 Series 2	72,082,983	2.77%	1,999,381
14	FY 2002 Series 3	519,405,711	3.01%	15,624,990
15	FY 2002 Series 5	371,757,628	2.85%	10,609,799
16	FY 2003 Series 1	148,040,809	1.65%	2,438,893
17	FY 2003 Series 5	295,157,120	1.70%	5,003,460
18	FY 2004 Series 1	301,008,574	0.07%	208,972
19	FY 2004 Series 2	257,400,299	1.09%	2,806,140
20	FY 2005 Series 1	230,408,946	4.02%	9,264,567
21	FY 2005 Series 2	390,624,553	0.61%	2,369,434
22	FY 2006 Series 1	229,018,261	3.83%	8,773,410
23	FY 2006 Series 2,3	457,828,498	13.50%	61,821,784
24	FY 2007 Series 1,2	518,427,784	9.58%	49,677,805
25	**2008 Total**	5,229,488,675	5.61%	293,549,848
26	FY 2008 Series 1,2	399,690,401	19.01%	75,989,525
27	**2009 Total**	5,629,179,076	6.56%	369,539,373
28	FY 2009 Series 1,2	448,435,268	27.23%	122,116,226
29	**2010 Total**	6,077,614,344	8.09%	491,655,599
30	FY 2010 Series 2,3,4	406,684,607	26.75%	108,800,028
31	**2011 Total**	6,484,298,951	9.26%	600,455,626
32	FY 2011 Series 1	478,881,733	18.68%	89,466,127
33	**2012-2013 Total**	6,963,180,684	9.91%	689,921,753
34	**2014-2017 Total**		9.58%	

Notes:
(A) Figures for recent bond issues are preliminary; the upstate portion may change after all bond proceeds are spent.

Table 5D Debt Service/Capital Costs

Table 5D
New York City Water Board
Cost of Supplying Water to Upstate Customers
Debt Service

Line No.	Description		Actual FY 2012 $	FY 2013 $	FY 2014 $	Projected FY 2015 $	FY 2016 $	FY 2017 $
	System Totals - Capital-Related Costs							
1	Authority Debt Service - First Resolution	A	442,613,807	341,865,110	344,377,000	358,428,000	356,631,000	392,895,000
2	Anticipated Debt Service - First Resolution	B	-	-	11,000,000	30,000,000	48,000,000	66,000,000
3	Authority Debt Service - Second Resolution	C	526,916,254	655,813,826	772,851,000	743,431,000	867,300,000	832,633,000
4	Anticipated Debt Service - Second Resolution	D	-	-	51,000,000	101,000,000	151,000,000	200,000,000
5	Interest on Short-Term Debt	E	1,391,573	1,615,561	24,000,000	34,000,000	34,000,000	34,000,000
6	NYS EFC Outstanding Debt Service	F	402,810,180	392,080,273	382,122,243	378,715,000	379,531,000	380,403,000
7	NYS EFC Projected Debt Service	G	-	-	22,000,000	39,000,000	56,000,000	73,000,000
8	Cash-Financed Construction	H	-	-	225,000,000	225,000,000	225,000,000	225,000,000
	System Totals - Interest Earnings & Expenses							
9	Debt Service Fund	I	(6,404,866)	-	-	-	-	(1,000,000)
10	Debt Service Reserve Fund	J	(41,867,315)	(37,000,000)	(30,000,000)	(23,000,000)	(22,000,000)	(19,000,000)
11	Construction Fund	K	(199,822)	-	-	-	(1,000,000)	(2,000,000)
12	Subordinated Debt Service Fund	L	1,025,410	-	-	-	(2,000,000)	(5,000,000)
13	Miscellaneous Income & Expenses	M	(47,205)	-	-	-	-	-
14	Less: Authority Debt-Related Expenses	N	34,726,165	39,400,000	43,800,000	48,180,000	52,998,000	58,297,800
	Water Supply - Capital-Related Costs							
15	Authority Debt Service - First Resolution	A x O	67,916,356	55,049,327	51,039,422	53,121,892	52,855,563	58,230,177
16	Anticipated Debt Service - First Resolution	B x O	-	-	1,630,288	4,446,240	7,113,983	9,781,727
17	Authority Debt Service - Second Resolution	C x O	80,852,047	105,603,377	114,542,691	110,182,412	128,540,787	123,402,861
18	Anticipated Debt Service - Second Resolution	D x O	-	-	7,558,607	14,969,007	22,379,406	29,641,597
19	Interest on Short-Term Debt	E x P	196,378	238,946	3,266,879	4,628,079	4,628,079	4,628,079
20	NYS EFC Debt Service	(F+G)xQ	39,911,000	38,847,866	38,731,658	40,034,407	41,741,918	43,454,797
21	Cash-Financed Construction	H x P	-	-	30,626,994	30,626,994	30,626,994	30,626,994
	Water Supply - Interest Earnings							
22	Debt Service Fund	I x O	(982,787)	-	-	-	-	(148,208)
23	Debt Service Reserve Fund	J x O	(6,424,281)	(5,957,979)	(4,446,240)	(3,408,784)	(3,260,576)	(2,815,952)
24	Construction Fund	K x P	(28,199)	-	-	-	(136,120)	(272,240)
25	Subordinated Debt Service Fund	LxOxQ	133,192	-	-	-	(265,041)	(661,152)
26	Miscellaneous Income & Expenses	MxOxQ	(6,131)	-	-	-	-	-
27	Less: Authority Debt-Related Expenses	N x P	4,900,526	5,827,360	5,962,055	6,558,260	7,214,086	7,935,495
28	Net Water Supply Capital-Related Costs		186,468,100	199,608,896	248,912,355	261,158,508	291,439,081	303,804,175

		2012	**2013**	**2014-2017**
Upstate Authority $ as a % of Total Authority CIP $	O	15.34%	16.10%	14.82%
Upstate Total CIP $ as a % of Total CIP $	P	14.11%	14.79%	13.61%
Upstate NYS EFC $ as a % of Total NYS EFC CIP $	Q	9.91%	9.91%	9.58%

Table 5E Cash Used for Defeasance of Debt

TABLE 5E
New York City Water Board
Cost of Supplying Water to Upstate Customers
Cash Used for Defeasance of Debt
All Amounts in $

	FY 2011	FY 2012	FY 2013
Cash Used for the Defeasance of Bonds	260,000,000	239,600,000	250,000,000
Upstate CIP $ as a % of Total Water/Sewer CIP $	13.11%	14.11%	14.79%
Upstate Portion of Defeasance Cash	34,091,414	33,812,142	36,975,632

The amount shown in FY 2013 is preliminary and subject to change.

Table 6 Judgments and Claims

TABLE 6
New York City Water Board
Cost of Supplying Water to Upstate Customers
Judgments and Claims

Year	Historical Costs ($)
1998	151,220
1999	1,834
2000	109,969
2001	75,160
2002	4,480
2003	0
2004	0
2005	0
2006	0
2007	5,513,361
2008	3,695
2009	26,925
2010	668,221
2011	916,350
2012	240,320
Average (1998-2012)	514,102
Projection Years (2013-2017)	514,102

Table 7 Miscellaneous Revenue

TABLE 7
New York City Water Board
Cost of Supplying Water to Upstate Customers
Miscellaneous Revenue

Year	Hydropower	Rents (Permits)	Tax Refunds	Total
1998		753,766	264,560	1,018,326
1999		1,208,738	354,942	1,563,680
2000		944,043	283,436	1,227,479
2001		795,290	189,518	984,808
2002		935,023	50,686	985,709
2003		723,939	0	723,939
2004	1,105,639	1,348,358	50,686	2,504,683
2005	1,396,145	1,788,012	0	3,184,157
2006	1,321,881	2,379,307	0	3,701,188
2007	4,987,041	2,300,515	0	7,287,556
2008	7,239,859	995,209	0	10,017,035
2009	6,086,074	1,800,000	248,145	8,134,219
2010	5,117,222	1,855,183	0	6,972,405
2011	8,299,784	1,568,273	0	9,868,057
2012	4,388,471	2,021,826	0	6,410,297
Average		1,427,832		
Projection Years (2013-2017)				
2013	4,476,240	1,427,832	0	5,904,073
2014	4,565,765	1,427,832	0	5,993,597
2015	4,657,080	1,427,832	0	6,084,913
2016	4,750,222	1,427,832	0	6,178,054
2017	4,845,227	1,427,832	0	6,273,059

Notes:
(1) Certain historical revenues for hydropower and rents have changed from prior reports based on updated information from the City.

Table 8A Historical Upstate Direct Personal Services Costs

TABLE 8A
New York City Water Board
Historical Cost of Supplying Water to Upstate Customers
Upstate New York Field Personnel Costs

Line No.	Description	FY 2010 $	FY 2011 $	FY 2012 $
	Divisional and Sectional Offices			
1	Katonah Resource Protection	109,469	94,245	107,012
2	Carmel Section	4,769,226	3,709,433	4,645,416
3	Prattsville/Schoharie	3,358,557	2,727,998	3,096,196
4	Ashokan	4,593,678	4,052,819	4,325,596
5	Grahamsville	5,989,394	4,867,786	5,399,752
6	Port Jervis	535,053	476,442	671,734
7	E. Division Hudson River P/S	843,844	248,992	619,570
	Laboratories			
8	Kensico	2,114,948	1,892,911	1,629,160
9	Brewster	0	0	641,612
10	Grahamsville	1,100,373	1,096,719	1,153,429
	Other Services			
11	Downsville	3,909,858	3,396,284	3,669,811
12	Sutton Park (1)	8,130,281	6,537,506	7,695,683
13	Kingston	9,391,175	8,005,514	9,332,006
14	Watershed Security (2)	11,453,983	9,733,711	12,026,243
15	Mobile Task Force	324,094	0	0
16	Watershed-East of Hudson	7,283,554	5,538,107	5,577,629
18	Downsville/Water Plan and Protect	333,926	293,669	251,155
19	Mahopac	792,857	836,300	861,958
20	Hillview Reservoir (3)	4,885,057	4,201,692	4,612,797
21	UV Facility	0	1,207,057	3,410,433
22	Direct Personnel Overtime Costs	2,824,259	2,016,580	2,978,220
23	**Total Personal Services Costs**	**72,743,588**	**60,933,763**	**72,705,413**

Notes:
(1) Sutton Park expenses include costs for laboratories.
(2) Hillview, Croton, Ashokan, Schoharie, Kingston, Downsville, Neversink, Beerston & other watershed locations.
(3) Hillview Reservoir costs include overtime expenses, which are not included in Line 22.
(4) Personal service costs include salary and a fringe benefit rate of 49.0% in FY 2010, 30.0% in FY 2011 and 46.0% in FY 2012.
(5) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 8B Projected Upstate Direct Personal Services Costs

TABLE 8B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Upstate New York Field Personnel Costs

Line No.	Description	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
			Projected Years			
		$	$	$	$	$
	Divisional and Sectional Offices					
1	Katonah Resource Protection	113,997	117,417	120,940	124,568	128,305
2	Carmel Section	4,948,641	5,097,100	5,250,013	5,407,514	5,569,739
3	Prattsville/Schoharie	3,298,297	3,397,246	3,499,163	3,604,138	3,712,262
4	Ashokan	4,607,945	4,746,183	4,888,569	5,035,226	5,186,283
5	Grahamsville	5,752,215	5,924,781	6,102,525	6,285,600	6,474,168
6	Port Jervis	715,581	737,049	759,160	781,935	805,393
7	E. Division Hudson River P/S	660,012	679,812	700,206	721,213	742,849
	Laboratories					
8	Kensico	1,735,502	1,787,567	1,841,194	1,896,430	1,953,322
9	Brewster	683,492	703,997	725,117	746,870	769,276
10	Grahamsville	1,228,718	1,265,580	1,303,547	1,342,653	1,382,933
	Other Services					
11	Downsville	3,909,354	4,026,634	4,147,434	4,271,857	4,400,012
12	Sutton Park (1)	8,198,011	8,443,952	8,697,270	8,958,188	9,226,934
13	Kingston	9,941,143	10,239,378	10,546,559	10,862,956	11,188,844
14	Watershed Security (2)	12,811,244	13,195,581	13,591,449	13,999,192	14,419,168
15	Mobile Task Force	0	0	0	0	0
16	Watershed-East of Hudson	5,941,703	6,119,954	6,303,553	6,492,660	6,687,439
17	Capital Construction	0	0	0	0	0
18	Water Plan and Protect	267,549	275,575	283,843	292,358	301,129
19	Mahopac	918,221	945,768	974,141	1,003,365	1,033,466
20	Hillview Reservoir	4,913,893	5,061,310	5,213,149	5,369,544	5,530,630
21	UV Facility	5,350,948	5,511,476	5,676,821	5,847,125	6,022,539
22	Direct Personnel Overtime Costs	3,172,620	3,267,799	3,365,833	3,466,808	3,570,812
23	**Total Personal Services Costs**	**79,169,086**	**81,544,159**	**83,990,484**	**86,510,198**	**89,105,504**

Notes:
(1) Sutton Park expenses include costs for laboratories.
(2) Hillview, Croton, Ashokan, Schoharie, Kingston, Downsville, Neversink, Beerston & other watershed police locations.
(3) Personal service costs include salary and a fringe benefit rate of 51% in FY 2013 - 2017.
(4) It is assumed that the salary & wage components of personal services costs will increase 3.0% per year in FY 2013 - 2017.
(5) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 9A Historical Upstate Indirect Personal Services Costs

TABLE 9A
New York City Water Board
Historical Cost of Supplying Water to Upstate Customers
Upstate New York Support & Administrative Personnel Costs

Line No.	Description	FY 2010 $	FY 2011 $	FY 2012 $
	Divisional and Sectional Offices			
1	Katonah Resource Protection	510,785	536,565	602,640
2	Carmel Section	568,738	350,266	418,681
3	Prattsville/Schoharie	0	130,828	0
4	Ashokan	281,923	239,438	285,580
5	Grahamsville	1,253,412	1,132,728	1,195,248
	Laboratories			
6	Kensico	532,743	357,826	333,638
7	Brewster	0	0	68,697
8	Grahamsville	291,783	251,204	285,573
	Other Services			
9	Downsville	135,494	116,650	131,101
10	Sutton Park	5,485,021	4,190,610	4,748,469
11	Kingston Office	5,967,691	5,454,159	5,901,905
12	Watershed Security (1)	2,042,598	1,771,648	1,949,017
13	Mobile Task Force	72,047	281,366	317,076
14	East of Hudson Fleet	471,562	273,039	306,644
15	Shokan Fleet Admin.	569,169	350,636	393,791
16	Downsville Fleet Admin.	105,715	91,013	102,215
17	Grahmsville Fleet Admin.	211,430	182,026	204,429
18	Watershed-East of Hudson	547,567	263,808	143,525
19	Other	0	0	81,820
20	UV Facility	0	370,365	424,270
21	Indirect Personnel Overtime Costs	248,714	215,962	274,704
22	**Total Personal Services Costs**	**19,296,392**	**16,560,136**	**18,169,023**

Notes:
(1) Hillview, Croton, Ashokan, Schoharie, Kingston, Downsville, Neversink, Beerston & other watershed locations.
(2) Personal service costs include salary and a fringe benefit rate of 49.0% in FY 2010, 30.0% in FY 2011 and 46.0% in FY 2012.
(3) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 9B Projected Upstate Indirect Personal Services Costs

TABLE 9B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Upstate New York Support & Administrative Personnel Costs

Line No.	Description	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
				Projected Years		
		$	$	$	$	$
	Divisional and Sectional Offices					
1	Katonah Resource Protection	641,977	661,236	681,073	701,505	722,550
2	Carmel Section	446,010	459,391	473,172	487,367	501,988
3	Prattsville/Schoharie	0	0	0	0	0
4	Ashokan	304,221	313,348	322,748	332,431	342,404
5	Grahamsville	1,273,267	1,311,465	1,350,808	1,391,333	1,433,073
	Laboratories					
6	Kensico	355,416	366,078	377,060	388,372	400,023
7	Brewster	73,182	75,377	77,638	79,967	82,366
8	Grahamsville	304,214	313,340	322,740	332,422	342,395
	Other Services					
9	Downsville	139,658	143,848	148,163	152,608	157,186
10	Sutton Park	5,058,420	5,210,173	5,366,478	5,527,473	5,693,297
11	Kingston Office	6,287,146	6,475,761	6,670,033	6,870,134	7,076,239
12	Watershed Security (1)	2,076,237	2,138,524	2,202,680	2,268,760	2,336,823
13	Mobile Task Force	337,772	347,905	358,343	369,093	380,166
14	East of Hudson Fleet	326,660	336,459	346,553	356,950	367,658
15	Ashokan Fleet Admin.	419,496	432,080	445,043	458,394	472,146
16	Downsville Fleet Admin.	108,887	112,153	115,518	118,983	122,553
17	Grahmsville Fleet Admin.	217,773	224,306	231,035	237,967	245,106
18	Watershed-East of Hudson	152,894	157,481	162,205	167,071	172,083
19	Other	87,161	89,775	92,469	95,243	98,100
20	UV Facility	545,252	561,609	578,457	595,811	613,685
21	Indirect Personnel Overtime Costs	292,635	301,414	310,457	319,770	329,364
22	**Total Personal Services Costs**	**19,448,275**	**20,031,724**	**20,632,675**	**21,251,656**	**21,889,205**

Notes:
(1) Hillview, Croton, Ashokan, Schoharie, Kingston, Downsville, Neversink, Beerston & other watershed police locations.
(2) Personal service costs include salary and a fringe rate of 51% in FY 2013 - 2017.
(3) It is assumed that the salary & wage components of personal services costs will increase 3.0% per year in FY 2013 - 2017.
(4) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 10 Development of Allocation Factors

TABLE 10
New York City Water Board
Cost of Supplying Water to Upstate Customers
Development of Allocation Factors

Line No.	Description	2010		2011		2012		Projection Years
1	Total Salaries - Employees North of the City	84,081,949		79,665,743		83,008,714		
2		---------- =	49.69%	---------- =	55.76%	---------- =	52.08%	52.08%
3	Total Salaries - All Water Supply Employees	169,224,599		142,862,078		159,381,159		
4	Head Count - Water Supply Employees	1,716		1,676		1,653		
5		---------- =	33.79%	---------- =	33.83%	---------- =	33.94%	33.94%
6	Head Count - All NYC DEP Employees	5,079		4,954		4,870		
7	Number of Vehicles - Water Supply	804		804		753		
8		---------- =	38.70%	---------- =	38.60%	---------- =	36.25%	36.25%
9	Number of Vehicles - All NYC DEP	2,079		2,084		2,078		

Table 11A Historical Allocation of DEP Personal Services Costs

TABLE 11A
New York City Water Board
Cost of Supplying Water to Upstate Customers
Historical Allocation of DEP Personal Services
Costs to Facilities North of the City

Line No.	Description	FY 2010 $	FY 2011 $	FY 2012 $
1	Executive	8,520,749	6,833,531	7,962,243
2	General Counsel	2,862,128	2,330,625	3,957,425
3	Public Affairs	2,283,845	1,912,122	1,690,502
4	Env. Health & Safety	3,438,238	2,615,141	3,267,576
5	Environ. Planning	4,305,375	3,774,610	4,360,093
6	Budget Office	2,673,863	2,352,155	2,625,271
7	Facilities Mgt & Constr	6,159,133	4,575,188	5,497,867
8	Human Res & Labor Rel	14,147,931	11,593,766	11,645,232
9	Chief Contract Office	2,410,945	1,937,929	1,743,208
10	Addt'l Exec & Support	360,861	310,675	337,641
11	Total DEP Executive and Support Personal Services Costs	47,163,068	38,235,742	43,087,057
12	Allocation to Water Supply	33.79%	33.83%	33.94%
13	Personal Services Costs Related to Water Supply	15,934,598	12,935,629	14,624,827
14	Allocation to Facilities North of NYC	49.69%	55.76%	52.08%
15	**Personal Services Costs Related to Facilities North of the City**	**7,917,360**	**7,213,436**	**7,616,886**

Notes:
(1) Personal service costs include salary and a fringe benefit rate of 49.0% in FY 2010, 30.0% in FY 2011, and 46.0% in FY 2012.

Table 11B Projected Allocation of DEP Personal Services Costs

TABLE 11B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Projected Allocation of DEP Personal Services
Costs to Facilities North of the City

Line No.	Description	FY 2013 $	FY 2014 $	FY 2015 $	FY 2016 $	FY 2017 $
			Projected Years			
1	Executive	8,481,970	8,736,429	8,998,522	9,268,478	9,546,532
2	General Counsel	4,215,742	4,342,214	4,472,480	4,606,655	4,744,854
3	Public Affairs	1,800,848	1,854,873	1,910,519	1,967,835	2,026,870
4	Env. Health & Safety	3,480,864	3,585,290	3,692,849	3,803,634	3,917,743
5	Environ. Planning	4,644,693	4,784,034	4,927,555	5,075,382	5,227,643
6	Budget Office	2,796,633	2,880,532	2,966,948	3,055,957	3,147,635
7	Facilities Mgt & Constr	5,856,734	6,032,436	6,213,409	6,399,811	6,591,806
8	Human Res & Labor Rel	12,405,362	12,777,523	13,160,849	13,555,674	13,962,344
9	Chief Contract Office	1,856,994	1,912,704	1,970,085	2,029,187	2,090,063
10	Addt'l Exec & Support	359,680	370,471	381,585	393,032	404,823
11	Total DEP Personal Services Costs	45,899,521	47,276,506	48,694,802	50,155,646	51,660,315
12	Allocation to Water Supply	33.94%	33.94%	33.94%	33.94%	33.94%
13	Personal Services Costs Related to Water Supply	15,579,447	16,046,831	16,528,236	17,024,083	17,534,805
14	Allocation to Facilities North of NYC	52.08%	52.08%	52.08%	52.08%	52.08%
15	**Personal Services Costs - Facilities North of the City**	**8,114,070**	**8,357,492**	**8,608,217**	**8,866,463**	**9,132,457**

Notes:
(1) Personal service costs include salary and a fringe rate of 51% in FY 2013 - 2017.
(2) It is assumed that the salary & wage components of personal services costs will increase 3.0% per year in FY 2013 - 2017.
(3) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 12A Historical Allocation of DEP Other Than Personal Services Costs

TABLE 12A
New York City Water Board
Historical Cost of Supplying Water to Upstate Customers
Allocation of DEP Other Than Personal Services
Costs to Facilities North of the City

Line No.	Description	FY 2010 $	FY 2011 $	FY 2012 $
1	Accounting	142,037	117,991	103,665
2	Executive and Support	75,764	24,878	11,132
3	Fleet Administration	5,139,528	5,631,030	7,282,248
4	Public Affairs	256,373	543,616	203,689
5	Facilities Management and Construction	1,038,827	1,645,292	704,365
6	Management and Budget	1,559,049	1,628,697	6,593,912
7	Management Information Systems	4,787,527	4,068,221	7,173,382
8	Chief Engineer	79,206	42,571	54,697
9	Legal	93,403	50,580	44,932
10	Environmental Assessment	45,794	207,759	793,105
11	Telephone	5,050,848	5,108,537	5,211,912
12	Lefrak Administration Rents	4,260,549	4,437,394	5,345,023
13	Facility Management Rents	374,440	374,440	363,220
14	Management and Budget Environmental Health/Safety	437,117	234,705	417,913
15	Security Services	1,696,492	1,078,269	1,688,671
16	Contractual Services	62,477	70,314	63,653
17	Total OTPS to be Allocated	25,099,431	25,264,292	36,055,518
18	Allocation	33.79%	33.83%	33.94%
19	OTPS Allocation (line 17 X line 18)	8,480,138	8,547,225	12,238,146
20	Rents Other Than Lefrak	1,516,245	1,503,210	1,508,422
21	Lefrak Water Supply Rents	1,533,458	1,269,981	1,507,365
22	Total Rents (line 20 + line 21)	3,049,703	2,773,191	3,015,787
23	Motor Vehicle Operating Rents	1,110,653	1,110,653	1,110,653
24	Allocation	38.70%	38.60%	36.25%
25	Total Motor Vehicle Operating Rents (line 23 X line 24)	429,778	428,731	402,642
26	Motor Vehicle Parking	345,000	345,000	345,000
27	Allocation	19.81%	18.37%	16.70%
28	Total Motor Vehicle Parking (line 26 X line 27)	68,361	63,369	57,630
29	Cafeteria	324,963	0	0
30	Allocation	14.47%	0.00%	0.00%
31	Total Cafeteria (line 29 X line 30)	47,030	0	0
32	Total OTPS Costs Allocated to Water Supply at DEP (1)	12,075,010	11,812,516	15,714,205
33	Allocation to Facilities North of NYC	49.69%	55.76%	52.08%
34	OTPS Costs Related to Facilities North of the City	5,999,662	6,587,143	8,184,254

Notes:
(1) Total OTPS costs allocated to DEP is equal to the sum of lines 19, 22, 25, 28, and 31.

Table 12B Projected Allocation of DEP Other Than Personal Services Costs

TABLE 12B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Allocation of DEP Other Than Personal Services
Costs to Facilities North of the City

Line No.	Description	FY 2013 $	FY 2014 $	Projected FY 2015 $	FY 2016 $	FY 2017 $
1	Accounting	106,774	109,978	113,277	116,675	120,176
2	Executive and Support	11,466	11,809	12,164	12,529	12,905
3	Fleet Administration	7,500,715	7,725,736	7,957,509	8,196,234	8,442,121
4	Public Affairs	209,800	216,094	222,576	229,254	236,131
5	Facilities Management and Construction	725,496	747,261	769,679	792,769	816,553
6	Management and Budget	6,791,730	6,995,482	7,205,346	7,421,507	7,644,152
7	Management Information Systems	7,388,584	7,610,241	7,838,549	8,073,705	8,315,916
8	Chief Engineer	56,338	58,028	59,769	61,562	63,409
9	Legal	46,279	47,668	49,098	50,571	52,088
10	Environmental Assessment	816,898	841,405	866,647	892,647	919,426
11	Telephone	5,368,269	5,529,317	5,695,196	5,866,052	6,042,034
12	Lefrak Administration Rents	5,505,374	5,670,535	5,840,651	6,015,870	6,196,346
13	Facility Management Rents	374,117	385,340	396,900	408,807	421,071
14	Management and Budget Environmental Health/Safety	430,451	443,364	456,665	470,365	484,476
15	Security Services	1,739,331	1,791,511	1,845,257	1,900,614	1,957,633
16	Contractual Services	65,563	67,529	69,555	71,642	73,791
17	Total OTPS to be Allocated	37,137,184	38,251,299	39,398,838	40,580,803	41,798,227
18	Allocation	33.94%	33.94%	33.94%	33.94%	33.94%
19	OTPS Allocation (line 17 X line 18)	12,605,290	12,983,449	13,372,953	13,774,141	14,187,365
20	Rents Other Than Lefrak	1,553,675	1,600,285	1,648,294	1,697,743	1,748,675
21	Lefrak Water Supply Rents	1,552,585	1,599,163	1,647,138	1,696,552	1,747,449
22	Total Rents (line 19 + line 20)	3,106,261	3,199,448	3,295,432	3,394,295	3,496,124
23	Motor Vehicle Operating Rents	1,143,973	1,178,292	1,213,641	1,250,050	1,287,551
24	Allocation	36.25%	36.25%	36.25%	36.25%	36.25%
25	Total Motor Vehicle Operating Rents (line 22 X line 23)	414,721	427,162	439,977	453,177	466,772
26	Motor Vehicle Parking	355,350	366,011	376,991	388,301	399,950
27	Allocation	16.70%	16.70%	16.70%	16.70%	16.70%
28	Total Motor Vehicle Parking (line 25 X line 26)	59,359	61,140	62,974	64,864	66,810
29	Cafeteria/Other Space (1)	0	0	0	0	0
30	Allocation	0.00%	0.00%	0.00%	0.00%	0.00%
31	Total Cafeteria (line 26 X line 27)	0	0	0	0	0
32	Total OTPS Costs Allocated to Water Supply at DEP [(2)]	16,185,631	16,671,200	17,171,336	17,686,476	18,217,071
33	Allocation to Facilities North of NYC	52.08%	52.08%	52.08%	52.08%	52.08%
34	**OTPS Costs Related to Facilities North of the City**	**8,429,782**	**8,682,676**	**8,943,156**	**9,211,450**	**9,487,794**

Notes:
(1) Total OTPS costs allocated to DEP is equal to the sum of lines 19, 22, 25, 28, and 31.
(2) It is assumed that OTPS costs will increase 3% per annum.

Table 13 Annual Water Consumption

TABLE 13
New York City Water Board
Cost of Supplying Water to Upstate Customers
Annual Water Consumption

Line No.	Fiscal Year	(A) System-Wide Consumption mg	(B) Upstate Consumption mg	Upstate as a % of Total [B]/[A]
1	1985	544,025	41,661	7.66%
2	1986	501,019	39,397	7.86%
3	1987	542,870	42,853	7.89%
4	1988	573,679	44,956	7.84%
5	1989	559,669	43,255	7.73%
6	1990	547,522	42,795	7.82%
7	1991	564,234	45,103	7.99%
8	1992	560,014	44,010	7.86%
9	1993	531,796	42,015	7.90%
10	1994	538,558	43,221	8.03%
11	1995	520,410	43,915	8.44%
12	1996	528,938	45,125	8.53%
13	1997	487,012	44,044	9.04%
14	1998	483,182	44,404	9.19%
15	1999	499,849	47,230	9.45%
16	2000	502,758	46,922	9.33%
17	2001	488,909	45,845	9.38%
18	2002	467,705	45,200	9.66%
19	2003	449,606	43,400	9.65%
20	2004	446,822	43,198	9.67%
21	2005	443,445	43,072	9.71%
22	2006	441,477	44,504	10.08%
23	2007	444,553	43,895	9.87%
24	2008	452,048	43,559	9.64%
25	2009	420,438	41,477	9.87%
26	2010	411,482	40,797	9.91%
27	2011	420,635	42,682	10.15%
28	2012	408,954	39,713	9.71%
Projections:				
29	2013	408,459	40,710	9.97%
30	2014	403,825	40,361	9.99%
31	2015	399,191	40,012	10.02%
32	2016	394,557	39,663	10.05%
33	2017	389,923	39,314	10.08%

Notes:

(1) Consumption projections are based on a regression analysis beginning in 2003.

(2) Equation used to calculate System-wide Consumption:
y=m(t)+b. Where (t) is a given year.
m= -4634.034271
b= 9736770

(3) Equation used to calculate Upstate Consumption:
y=m(t)+b. Where (t) is a given year.
m= -348.98
b= 743,212.15

Table 14 Projected Revenues From Hydroelectric Facilities

Table 14

NYC Department of Environmental Protection
Gross Revenue Estimates for Upstate Hydro-Electric Facilities

Revenues	Year 2013	2014	2015	2016	2017
Ashokan & Kensico	$ -	$ -	$ -	$ -	$ -
Neversink	$ 1,387,074	$ 1,414,815	$ 1,443,112	$ 1,471,974	$ 1,501,413
West Delaware	$ 52,738	$ 53,793	$ 54,868	$ 55,966	$ 57,085
East Delaware	$ 3,036,429	$ 3,097,157	$ 3,159,100	$ 3,222,282	$ 3,286,728
Summary	$ 4,476,240	$ 4,565,765	$ 4,657,080	$ 4,750,222	$ 4,845,227

Notes:

(1) All figures for Neversink and East Delaware were prepared by the New York City Office of the Comptroller.

(2) Estimated annual increase in revenues is 2% per year, consistent with the assumptions used by the Office of the Comptroller.

(3) Calendar year revenue data is used to calculate the fiscal year revenue when the fiscal year data is not available at the time of this Report.

Table 15 Comparison of Upstate Customer Billings vs. Cost of Service

TABLE 15
New York City Water Board
Cost of Supplying Water to Upstate Customers
Cost-of-Service Reconciliation

Fiscal Year	Rate ($) per Million Gallons (MG) Billed to Upstate Customers	Computed Cost to the Board	Upstate Consumption (MG)	Total Billed ($)	Actual Cost ($)	Underpayment ($)
1994 (a)	165.23	211.6	43,221	7,141,373	9,145,521	2,004,148
1995 (a)	174.18	229.87	43,915	7,649,115	10,094,741	2,445,626
1996 (a)	174.18	247.28	45,125	7,859,907	11,158,559	3,298,652
1997	227.95	309.55	44,044	10,039,830	13,633,820	3,593,990
1998	274.93	338.79	44,404	12,208,047	15,043,699	2,835,652
1999	342.97	348.31	47,230	16,198,439	16,450,646	252,208
2000	383.78	385.25	46,922	18,007,764	18,076,739	68,975
2001	414.37	414.88	45,845	18,996,834	19,020,215	23,381
2002	448.83	462.24	45,200	20,287,116	20,893,248	606,132
2003 (b)	485.71	522.99	43,400	21,079,814	22,697,766	1,617,952
2004 (b)	542.36	529.85	43,198	23,428,650	22,888,248	-540,402
2005	591.21	591.91	43,072	25,464,774	25,494,925	30,151
2006	617.79	623.47	44,504	27,494,064	27,746,847	252,782
2007	691.91	691.83	43,895	30,371,597	30,368,104	-3,493
2008	798.62	703.73	43,559	34,786,978	30,653,783	-4,133,195
2009	900.31	882.91	41,477	37,342,472	36,620,683	-721,789
2010	922.23	973.86	40,797	37,624,046	39,730,509	2,106,464
2011	1,149.72	1,121.04	42,682	49,072,562	47,848,489	-1,224,073
2012	1,213.84	1,284.53	39,713	48,205,540	51,013,055	2,807,515
				Total Underpayment 1994-2012		15,320,677
				Total Underpayment 2003-2012		191,911

(a)The rates approved by NYSDEC were: $158.31 for 1994 and $175.69 for both 1995 and 1996.
(b)The computed cost to the Board as shown above for 2003 and 2004 does not take into consideration the upstate share of the costs of defeasance of certain Authority bonds. Including the effects of the cost of defeasance, the rate per million gallons is $549.32 in 2003 and $560.58 in 2004.

(c)The rates shown above for 2006, 2011 and 2012 include the costs of defeasance in those years.

(d) The table above does not take into account the application of credits to the cost of service based on prior year reconciliations.