FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE CROTON WATER TREATMENT PLANT

1. INTRODUCTION & PROJECT BACKGROUND

1.1. INTRODUCTION

1.2. NEW YORK CITY WATER SUPPLY SYSTEM

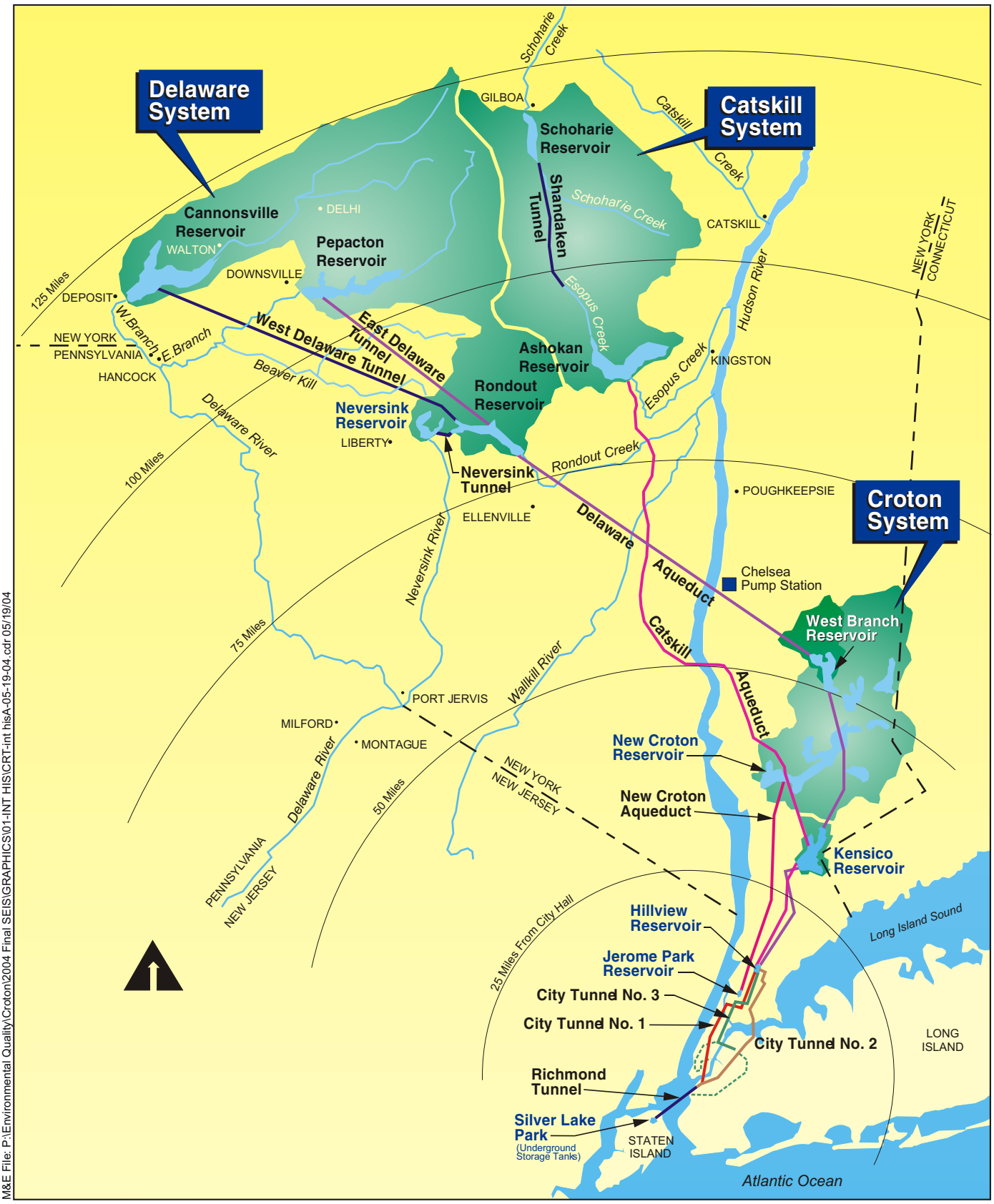
New York City (the City) supplies water to its consumers from three primary sources: the Croton, the Catskill and the Delaware Water Supply Systems. Water flows by gravity from upland storage reservoirs to balancing reservoirs in Westchester County (Hillview Reservoir; Catskill/Delaware System) and in the City (Jerome Park Reservoir; Croton System) and then to the distribution system. The majority of the flow from the distribution reservoirs to consumers is also by gravity under normal conditions (Figure 1-1).

Currently, the City Water Supply System provides approximately 1.4 billion gallons per day (bgd) of potable water to its nine million consumers (eight million within the City of New York and one million to upstate consumers). Of the 200 million gallons per day (mgd) of City water supplied to upstate consumers, approximately 114 mgd is supplied to Westchester County. The Croton Water Supply System provides approximately eight percent of the water demand of upstate consumers that use City water; the Catskill and Delaware Water Supplies meet the remainder of the upstate demand.

1.2.1. Croton System

The Croton Water Supply System is the oldest (1890) and smallest system supplying water to the City. The Croton watershed consists of a series of interconnected reservoirs and lakes on the Croton River, with tributaries and branches extending into Westchester, Putnam, and Dutchess Counties in New York State and into Fairfield County in Connecticut (Figure 1-1). The Croton watershed encompasses a total of 375 square miles. The New Croton Reservoir is the southernmost of the 12 reservoirs and three controlled lakes in the Croton System that intercepts overland flow within the Croton watershed.

Jerome Park Reservoir, a distribution reservoir, is located at the downstream end of the system and is the point at which water from the Croton System enters the City's distribution system. Croton water is conveyed 31 miles from the New Croton Reservoir to Shaft No. 33 in Manhattan by the New Croton Aqueduct (NCA), with Jerome Park Reservoir located approximately 25 miles from the New Croton Reservoir. With a total storage capacity of 94.6 billion gallons and a safe yield of 240 mgd, the Croton System provides approximately ten percent of the City's average daily water supply. During periods of drought the system supplies up to 30 percent of the in-City consumption. Croton water is primarily used in low-lying areas in the Bronx and Manhattan, but can also be pumped to the Intermediate and High Level Service areas normally serviced by the City Catskill/Delaware System.



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Not To Scale

New York City Water Supply System

Croton Water Treatment Plant

Figure 1-1

1.2.2. Catskill System

The Catskill System is located approximately 100 to 125 miles north of lower Manhattan, with a watershed area of 571 square miles. This system was constructed in two stages. The first stage, completed in 1917, included the Ashokan Reservoir, the Catskill Aqueduct, the Kensico Reservoir, the Hillview Reservoir, City Tunnel No. 1, and the terminal Silver Lake Reservoir in Staten Island (which was replaced by the Silver Lake Tanks in 1971). The second stage was completed in 1927 and included Schoharie Reservoir and the Shandaken Tunnel (Figure 1-1).

Water from the Catskill System flows from the Schoharie Creek into the Schoharie Reservoir. From Schoharie Reservoir, the water proceeds through the 18 mile-long Shandaken Tunnel and through a stone-lined channel that leads to the Esopus Creek. The Esopus Creek then conveys the water to Ashokan Reservoir, where the Catskill Aqueduct begins. From the Ashokan Reservoir, the Catskill Aqueduct conveys water 92 miles to the Kensico Reservoir, which is located east of the Hudson River in Westchester County (Figure 1-1). From the Kensico Reservoir, water returns to the Catskill Aqueduct and is conveyed to the Hillview Reservoir. With a total storage capacity of 178 billion gallons and a safe yield of 470 mgd, the Catskill System accommodates approximately 35 percent of the City's average day demand for drinking water.

1.2.3. Delaware System

Planned in the 1920's and constructed between 1936 and 1964, the Delaware System extends between 85 and 125 miles northwest of lower Manhattan. The 1,010 square mile Delaware watershed is located west of the Catskill watershed (Figure 1-1). Three of the system's reservoirs (Cannonsville, Pepacton, and the Neversink) collect water from the region surrounding the branches of the Delaware River. These reservoirs then feed the water eastward to the West Delaware, East Delaware, and the Neversink Tunnels. The water is then conveyed by the tunnels to the Rondout Reservoir, where the Delaware Aqueduct begins.

From the Rondout Reservoir, the water is conveyed 70 miles by the Delaware Aqueduct to the West Branch Reservoir, located east of the Hudson River in Putnam County. From the West Branch Reservoir[1], the Delaware Aqueduct proceeds south to Kensico Reservoir and finally to Hillview Reservoir. With a total storage capacity of 326 billion gallons and a safe yield of about 580 mgd, the Delaware System accommodates approximately 55 percent of the City's average day demand for drinking water.

1.2.4. Catskill/Delaware Distribution System

The Kensico Reservoir is situated approximately 30 miles north of Manhattan in the Towns of Mount Pleasant, North Castle, and Harrison. The reservoir has a maximum storage capacity of about 31 billion gallons. Placed in service in 1915, its major function during normal operations is to receive water from all six Catskill and Delaware System reservoirs, and to make those water supplies available for the fluctuating daily demands of the City consumers. Catskill and

[1] The West Branch and Boyd's Corner Reservoirs are located east of the Hudson in the Croton watershed, but are operated as part of the Delaware System.

Delaware water supplies are typically held in Kensico Reservoir for approximately 15 to 25 days before proceeding to the City's distribution system, allowing additional time for settling out of impurities, including solids and microorganisms. As the water leaves Kensico Reservoir at Shaft No. 18, which is located on the southwestern shore of the reservoir, it is chlorinated for primary disinfection and fluoridated to reduce tooth decay. The water supply is then returned to the Catskill and Delaware Aqueducts and conveyed to Hillview Reservoir.

The Hillview Reservoir is situated approximately 15 miles north of Manhattan in the City of Yonkers. It has a maximum storage capacity of approximately 929 million gallons (mg), of which about 210 mg is considered usable in normal operations. The Hillview Reservoir supplies water to the City distribution system through City Tunnels Nos. 1, 2, and 3 (Figure 1-1). Hillview Reservoir serves to balance the inflows and outflows of water from the Kensico Reservoir with the hour-by-hour needs of the City.

1.3. BACKGROUND TO THE PROJECT

In 1832 the water distribution system of the growing City was facing a critical time in the City's history. At that time the City encountered increasing population growth, which resulted in increased water demands, fires consuming entire blocks, and water-borne diseases that were a consequence of poor sanitation, plagued the City. The water distribution system, which at the time consisted of public wells, pumps, and ponds, was deficient in many ways. The system used hollow logs instead of iron pipes, served only areas where service was profitable, and did not provide water for fire fighting and street cleaning.[2]

In response to this situation, construction began on the Old Croton Aqueduct in 1837 and went into service in 1842. Rapid population growth in the second half of the nineteen-century prompted the need for a new water supply by the late 1870's that would meet the increasing demand of the City. Construction on the NCA began in 1885 and it went into service in 1890. In addition to the construction of the NCA a new (1890) Croton Lake Gate House was constructed to replace the 1840 Croton Lake Gate House; that conveyed water through the Old Croton Aqueduct. The 1890 Croton Lake Gate House was used to convey water from the New Croton Reservoir into the New Croton Aqueduct.

1.3.1. Early Plans for a Water Treatment Plant

In the second half of the 19th century, Croton Water Supply System plans included a facility for storage and treatment of the Croton System. Therefore, in addition to the facilities constructed near the New Croton Reservoir, land around what is now Jerome Park Reservoir was acquired for the construction of storage facilities and as an optimal location for treatment facilities, if needed in the future. Originally, a two basin concept was envisioned. The west basin, what is Jerome Park Reservoir, was completed in 1905. Plans for the east basin were officially abandoned in 1912.

[2] Kroessler, J.A. 1992. Water for the City, The Old Croton Aqueduct: Rural Resources Meet Urban Needs. The Hudson Museum of Westchester. Westchester, NY

The City of New York anticipated that filtration might some day be necessary to ensure that good quality water could be delivered to consumers. The possibility of erecting a filtration plant in the east basin was studied and funds ($8,690,000) were tentatively appropriated for construction; however, the funding was rescinded and the City did not act on the proposal due to the introduction of chlorination as a disinfection process.[3] The excavated area of the east basin was eventually filled and graded. The east basin site was turned over to the City for other uses. Today Lehman College, Harris Park, an MTA subway yard, Bronx High School of Science, De Witt Clinton High School, and residential buildings occupy this land.

In the late 1960s, episodes of insect larvae in the Croton distribution system provided the impetus to begin new, active planning for a Croton treatment facility. In 1970, the City of New York completed an engineering feasibility study[4] of the future treatment of the Croton Water Supply System. The study concluded that the Jerome Park Reservoir was the best site for construction of a water treatment plant for treating the Croton Water Supply System, based on economic, functional and operational considerations.

A pilot plant was constructed at Gate House No. 5 at the Jerome Park Reservoir. This plant, which operated from 1974 to 1976, was intended to determine the best treatment method for the Croton Water Supply System. As a result, the recommendation was made to use a combination of ozonation and diatomaceous earth (DE) filtration, for treatment of prechlorinated Croton Water at the Jerome Park Reservoir Site. A demonstration water treatment plant was subsequently constructed in 1989 and operated until 1992 to prove the selected process on a larger scale than was available at the pilot plant, as well as to assist in the development of design criteria for the full scale Croton Water Treatment Plant. This demonstration program, confirmed the use of ozone-DE filtration as the most advantageous process. To comply with the anticipated requirements of the Disinfectants/Disinfection By-Product Rule (D/DBPR) and improve the biological stability of the treated water, biologically activated carbon (BAC) contactors were tested and added to the recommended DE process.

To accommodate the construction of a water treatment plant at the Jerome Park Reservoir, a dividing wall was constructed to partition the reservoir into a raw water basin and an area for the treatment plant. Numerous pipe connections to the city water tunnels and distribution mains were made in the 1980s.

In 1993, with the identification of the preferred project site and following the completion of pilot testing for a treatment process, the New York City Department of Environmental Protection (NYCDEP) initiated the State Environmental Quality Review Act (SEQRA)/ City Environmental Quality Review (CEQR) procedures. A public scoping document was issued in December 1993 for the preparation of an Environmental Impact Statement (EIS) to address potential impacts associated with the construction and operation of the proposed Croton Water Treatment Plant (WTP). The Draft EIS analyzed a 450 million gallons per day (mgd) water treatment plant, with a 250 mgd pump station, and an administration building/laboratory, all to be allocated in the Jerome Park Reservoir. During public review of the Draft EIS, community opposition argued

[3] DWSG&E. 1913. Department of Water Supply, Gas, and Electric - Annual Report. New York, NY.

[4] NYCDEP. 1970. Report to the Board of Water Supply of the City of New York on Future Treatment of Croton Water Supply – October 1970. New York City Department of Environmental Protection. New York, NY.

against the lack of alternative sites and non-filtration options presented in the environmental review. Following the procedures outlined in the SEQRA/CEQR, the City of New York opted to re-evaluate the Jerome Park Reservoir site and conduct additional studies concerning the need for filtration and to identify the City's options (see Section 1.5.1, Site Screening discussion below).

1.3.2. 1995 Croton Water Treatment Plant

City officials, NYCDEP and the public recognized in 1994 and 1995 that many issues relating to the Croton Water Supply System had changed, and that re-evaluation of threshold issues was warranted. These threshold issues were defined as fundamental decisions on the future of the Croton System that needed to be re-examined before planning, permitting and design of a proposed Croton WTP should proceed. Therefore, in 1995 an Extended Special Study Program[5] was undertaken to evaluate the following specific questions:

- Given the success of NYCDEP's water conservation programs in reducing water consumption in the City, and recognizing that on average the Croton System only supplies 10 percent of the City's water, is the Croton System still needed? If the Croton System is still needed, how much capacity should be provided to bring Croton water to the City?

- Given the success of the City's efforts to protect the Catskill and Delaware watersheds and to obtain Filtration Avoidance of those supplies, is filtration necessary?

- In light of changing regulatory emphasis regarding microbiological control, disinfection byproducts, and distribution system re-growth, is the proposed treatment process the best for the City or should a different process be used?

- Where should the proposed Croton WTP and its off-site facilities be located? Are there feasible alternatives to the Jerome Park Reservoir?

- Is treated water storage necessary for reliable system operation? If it is necessary, how much is needed?

- The EIS process for the 1995 water treatment plant design was not completed and additional siting and engineering alternatives were evaluated.

The Extended Special Study determined that NYCDEP water quality goals might be possibly met through a combination of technologies and practices in the Croton watershed. The combination of processes that could meet water quality standards required the use of alum addition to the New Croton Reservoir and the large-scale introduction of aeration units into the deeper water of the reservoir. However, the New York State Department of Environmental Conservation (NYSDEC) denied NYCDEP's request to pilot test alum. This effectively rendered efforts to test the critical component of filtration avoidance futile. In addition, pilot

[5] NYCDEP. 1997. Croton Water Supply System Extended Special Study Program Report. – November 1997. New York City Department of Environmental Protection. New York, NY.

testing of the aeration system demonstrated negligible improvements in water quality and posed operational difficulties. Therefore, none of the non-filtration options were found to be viable, and as such, the necessary legislative or regulatory changes to allow a non-filtration alternative could not be obtained. See Section 2.3 for a review of alternatives to filtration that have been explored by NYCDEP.

1.3.3. Consent Decree

The Surface Water Treatment Rule (SWTR) was promulgated in 1989 under the authority of the U.S. Safe Drinking Water Act. This rule required public water suppliers to filter raw water sources or file a plan that showed equivalent protection by 1991. The City did not apply for Filtration Avoidance in 1991 under the SWTR for the Croton System because it was decided, due to water quality issues previously mentioned, that the best course of action was to filter the Croton Water Supply System. In 1992 the City entered into a Stipulation Agreement with New York State Department of Health (NYSDOH) requiring filtration of the Croton System. Subsequently in 1993, USEPA issued a determination pursuant to SWTR, requiring the City to filter the Croton Water Supply System.

In 1997, the United States Department of Justice brought an action against the City of New York and the NYCDEP pursuant to Section 1414(b) of the Safe Drinking Water Act, 42 U.S.C. 100g-3(b), for alleged violation of the Surface Water Treatment Rule, 40 C.F.R. 141.70-141.75, promulgated under Section 1412 of the Safe Drinking Water Act, 42 U.S.C. 300g-1. The State of New York joined the suit, as plaintiff-intervener, alleging that the City was not in compliance with provisions of the State Sanitary Code, 10 Official Compilation of Codes, Rules, and Regulations of the State of New York (NYCRR) Part 5, by virtue of its failure to install filtration treatment for its Croton Water Supply System. As settlement of the action against the City of New York and the NYCDEP, the City of New York and the NYCDEP negotiated a Consent Decree with the United States of America and the State of New York. This Consent Decree required the NYCDEP, among other things to prepare an EIS and to site, design, construct and place into operation a water treatment plant to provide filtration and disinfection of the water supplied to the City from the Croton Water Supply System.

1.3.4. 1999 Croton Water Treatment Plant

In compliance with the Consent Decree, public scoping hearings began in February 1998 to present the treatment process and identify the potential project sites. Public comments were received and taken into consideration in developing the conceptual designs and preparation of the EIS. A final scope of work was issued in July 1998.

In the 1999 EIS efforts, eight new project sites were evaluated in addition to the Jerome Park Reservoir Site. In response to the recommendations obtained by the Extended Special Study Program, specifications for the Croton WTP were reevaluated and modified. Therefore, a treatment process consisting of dissolved air flotation – ozonation – biologically active carbon filtration (DAF–Filtration) was developed for each of the project sites that resulted in sixteen engineering alternatives. In addition, the maximum capacity of the treatment plant was reduced from 450 to 290 mgd, the minimum usable volume of the treated water reservoir was determined

to be 20 million gallons, the capacity of the pumping station was reduced from 250 mgd to 150 mgd, and three alternative sites were selected for the treated water reservoir and for the pumping station.

Five of the project sites were located in the Bronx, and four were located in Westchester County. The nine site alternatives were the following:

- Cove Site Alternative at the New Croton Reservoir, Town of Yorktown, Westchester County
- Mount Pleasant Site Alternative, Town of Mount Pleasant, Westchester County
- Greenburgh Site Alternative, Town of Greenburgh, Westchester County
- Yonkers raceway Site Alternative, City of Yonkers, Westchester County
- Croton Woods Site Alternative, Van Cortlandt Park, Borough of the Bronx, New York City
- Mosholu Golf Course Site Alternative, Van Cortlandt Park, Borough of the Bronx, New York City
- Shandler Recreation Area, Van Cortlandt Park, Borough of the Bronx, New York City
- Jerome Park Reservoir, Borough of the Bronx, New York City
- Harris Park, Borough of the Bronx, New York City (pump station and treated water reservoir only)

The EIS for the 1999 Croton WTP equally addressed the different site alternatives, and analyzed the potential environmental impacts of each site in accordance with the SEQRA/CEQR procedures. The timetable for the completion of the EIS was set by the Consent Decree milestone schedule.

Based on these sites, the proposed project and sixteen project engineering alternatives were developed and analyzed in the Final EIS. NYCDEP determined that the preferred site for the proposed plant and related facilities was the Mosholu Golf Course Site. The City Planning Commission approved the proposal on June 30, 1999 and the New York City Council approved the siting recommendation on July 21, 1999.

One of the Consent Decree milestones required the City to apply for any necessary state legislative approval and home rule messages by July 31, 1999. The City determined that no legislative approval was required, but a lawsuit brought by community groups and joined by the State of New York challenged this opinion. The U.S. District Court granted the City's motion and concluded that legislative approval was not necessary. Meanwhile, final design of the Croton WTP progressed and construction documents were in preparation while the U.S. District Court opinion was appealed to the Federal Court of Appeals. This court, in turn, referred the question to the New York State Court of Appeals. The New York State Court of Appeals determined on February 8, 2001, that state legislative approval was required to use the Mosholu Golf Course Site. In the light of these developments, the parties have negotiated a Supplement to the Federal Consent Decree revising the schedule for the construction of the Croton WTP.

1.3.5. Supplement to the Consent Decree

All parties signed a Supplement to the Consent Decree on December 12, 2001. In accordance with this Supplement to the Consent Decree, two other site alternatives were evaluated on a parallel track.

- Eastview Site, Town of Mount Pleasant, Westchester County
- Harlem River Site, Borough of the Bronx, New York City

The Mosholu Site was a third alternative if State Legislative Approval could be received by April 15, 2003. The Supplement to the Consent Decree replaced the old schedule with a new timetable for the Eastview and the Harlem River Sites.

The Supplement to the Consent Decree required design work to proceed at both the Eastview and Harlem River Sites simultaneously. The submission of an application for site plan approval was to commence by April 30, 2003 in the Town of Mount Pleasant, if the Eastview Site was preferred, or the Uniform Land Use Review Procedure (ULURP) was to begin in New York City if the Harlem River Site was preferred. A local Site Approval application for the Town of Mount Pleasant was filed on April 30, 2003 and a ULURP application for the City of New York was filed on April 21, 2003. The City also initiated action to secure the necessary State Legislative approval for use of the Mosholu Site. Since this was underway, the Draft EIS that was released on April 17, 2003 did not select a preferred site. Design of the proposed project proceeds for both sites, as well as for the Mosholu Site.

1.3.6. 2003 Croton Water Treatment Plant Design

The Eastview and Harlem River Sites are both smaller than the sites considered in the 1999 EIS. In order to make these new sites feasible, modifications to the 1999 designs have eliminated the need for pre- or intermediate ozonation and have stacked the dissolved air flotation (DAF) process above the Filtration process. In place of the ozonation process, the City of New York has selected Ultraviolet Light (UV) disinfection as the primary disinfectant step. UV was approved by the USEPA via an agreement-in-principle in 2000, after the 1999 design was complete, so this alternative was not available for the previous designs. These treatment technologies offer lower costs and help to create a smaller footprint.

1.3.7. Legislative Approval of Park Alienation

Following the February 8, 2001 determination that legislative approval was required for the City to build the Croton WTP at the Mosholu Site, the City made a request for the necessary legislative approval. A home rule message was passed by the New York City Council on June 13, 2003. On June 20, 2003 the State Legislature passed a bill authorizing park alienation of certain land within Van Cortlandt Park and such legislation was signed into law by Governor Pataki on July 22, 2003. The legislation provides for temporary alienation of portions of Van Cortlandt Park during construction of the Croton WTP and permanent alienation of portions of the Park to operate and maintain the Croton WTP and related facilities.

This legislation has allowed the reconsideration of the Mosholu Golf Course and Driving Range as a possible site for the Croton WTP. In light of these developments, the parties are negotiating new milestones under the Supplement to the Consent Decree. A new design for the Mosholu Site takes advantage of the design advances developed for the Eastview and Harlem River Sites (stacked Dissolved Air Flotation and Filtration, UV disinfection, and off-site dewatering of residuals). This has allowed a design that is smaller and is consistent with existing grade at the site. In addition, the smaller site allows the golf course operation to remain in service during construction. An updated evaluation of the Mosholu Site, along with the Eastview and the Harlem River Sites, which were under consideration in the April 2003 Draft EIS, was released as a Draft Supplemental Environmental Impact Statement (SEIS) December 31, 2003, consistent with the terms of the aforementioned Home Rule message and provisions of the legislation.

The anticipated project completion date is 2010 if the Eastview Site is selected and 2011 if either the Mosholu or Harlem River Sites are selected. Work to alter and upgrade connections to the distribution system at Jerome Park Reservoir would be required for all site alternatives. If the Eastview Site alternative was selected and the NCA was chosen to convey the treated water, extensive alterations to the NCA and its shafts would be required.

1.3.8. Draft Supplemental Environmental Impact Statement

A Draft Scope of Work for a Draft Supplemental Environmental Impact Statement (DSEIS) that considered the Eastview Site, the Mosholu Site, and the Harlem River Site was released August 22, 2003. Public meetings were held September 22, 2003 in the Town of Mount Pleasant and September 29, 2003 in the Borough of the Bronx to receive comments on the Draft Scope. A Final Scope of Work was released November 4, 2003, and the DSEIS was published December 31, 2003. Public Hearings were held February 25, 2004 in the Town of Mount Pleasant and March 3, 2004 in the Borough of the Bronx to receive public comments on the DSEIS. The public comment period remained open until March 19, 2004. This Final Supplemental Environmental Impact Statement includes information requested by the public and updates to information presented in the Draft SEIS to the extent that this information is available. A separate document, *Response to Public Comments on the Draft SEIS for the Croton Water Treatment Plant*, is being released as an attachment to this document.

1.4. NEW YORK CITY WATER SYSTEM USERS

1.4.1. Introduction

This section provides a description of existing New York City Water Supply System users, and addresses the potential users after the construction of the proposed Croton Water Treatment Plant at the Eastview, Mosholu and Harlem River Sites. This section is divided into three subsections: existing City water supply users, existing Croton water supply users, and potential future Croton water supply users. Two subgroups are relevant to this section, the upstate users in Westchester County and New York City users; therefore the following analysis addresses each.

The Croton Water Supply System originally supplied Manhattan and Bronx residents. As a result of the region's increasing water demand, the Catskill and Delaware Systems and then the Bronx-Kensico Pipeline were developed. Today, the Croton Water Supply System provides 10 percent

of the water demand and eight percent of the water demand in Westchester County during non-drought conditions. During drought conditions, the Croton Water Supply System can provide up to 30 percent of the in-City demand.

1.4.2. Existing New York City Water Supply Users

1.4.2.1. Upstate Users

The New York City Water Supply System has the potential and the resources to serve not only City residents, but also a number of communities in upstate New York. Under the terms of the Water Supply Act of 1905, which permitted the City to expand its water supply system west of the Hudson River and develop the Catskill System, the City is required (upon request) to provide a water connection to municipalities and water districts within counties in which the City's water supply facilities are located. Currently, the City Supply System serves as a regional supply for Greene, Delaware, Schoharie, Sullivan, Ulster, Orange, Putnam, and Westchester Counties.

Westchester County is the primary user of the City Water Supply System in upstate New York. Between 1997 and 1998, the average day demand by Westchester County users ranged between 114 mgd and 115 mgd, with 99 mgd consumed by southern Westchester users.[6] Since 1994, there has not been a significant change in the average day demand on the City's supply by Westchester users. Therefore, the 1994 estimated maximum day demand of 200 mgd for all upstate users is similar to recent maximum day demands.

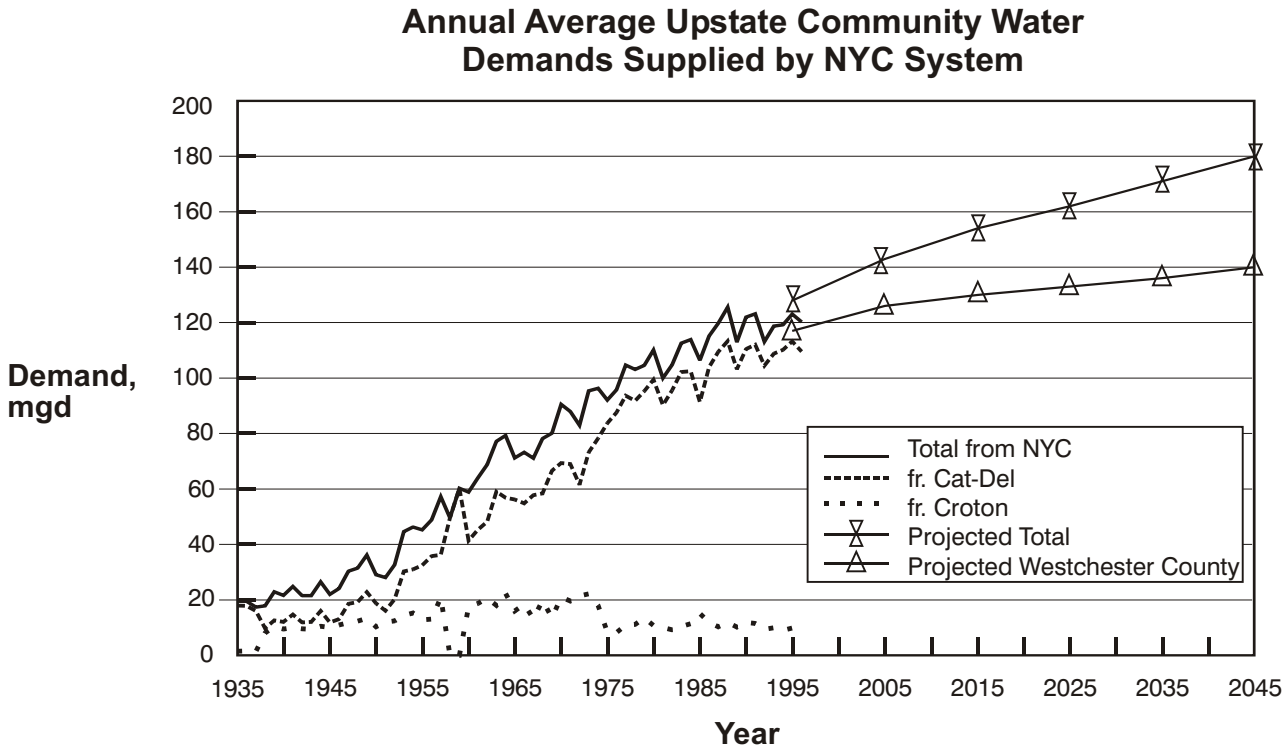
Table 1-1 presents demographic and socioeconomic profiles for Westchester County residents. Since the 1990 U.S. Census, Westchester's population has increased 5.6 percent, representing an increase of almost 50,000 persons. This growth has not been uniform around the County; the central and north regions have grown at a greater rate than the southern region. The Hispanic community and other immigrants were the major contributors to the population increase. For the first time in the history of the U.S. Census, Hispanics were the largest minority group for the County. By contrast, the County witnessed a decline in Non-Hispanic Whites. The minority population indicated in Table 1-1 includes the Black/African American, Hispanic origin, Asian, and Native American populations.

1.4.2.1.1. Upstate Demands

Over the last few decades, the dependence of upstate users on the City water supply facilities has increased due to a number of factors: population growth, extension of public supply areas, and confidence in City-owned sources due to stricter water quality regulations, such as the Surface Water Treatment Rule (Figure 1-2). The Catskill and Delaware Water Supply Systems, due to better water quality and higher hydraulic gradient, have met most of this increased demand.

Average demands from all upstate communities are projected to increase 58 mgd from 1995 to 2045, for a total of 180 mgd (Figure 1-2). Communities west of the Hudson River are

[6] NYCDEP BWQP, 1997 & 1998 Annual Consumption, November 29, 1999.



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Upstate Community Water Demands Supplied by NYC System

Croton Water Treatment Plant

Figure 1-2

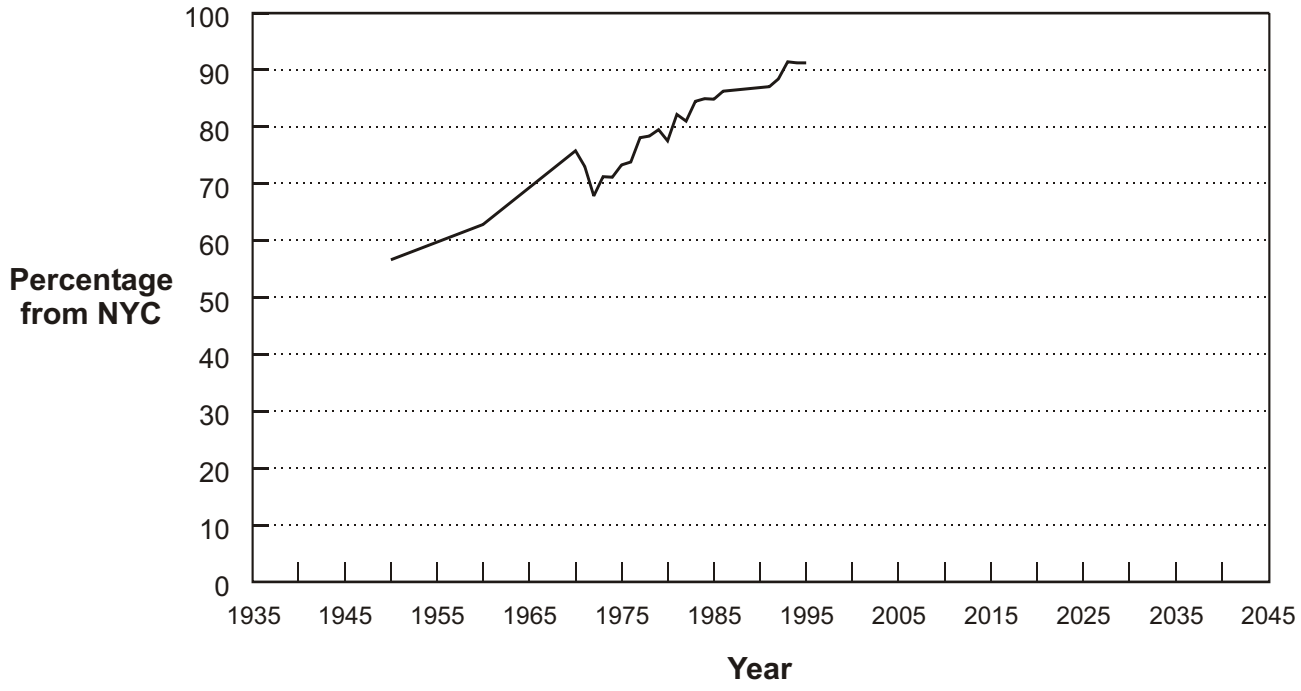
anticipated to be the main contributors of the increase in water demands; these demands would have to be met by the City's Catskill and Delaware Systems. Westchester County's reliance on the City water sources has increased from approximately 57 percent in 1950 to over 90 percent in 1995 (Figure 1-3).

Table 1-2 provides information on the demand of existing non-New York City water suppliers ("Upstate Suppliers") of City water south of New Croton Reservoir. These are the suppliers who could potentially be serviced by the Croton Supply. Actual users of the Croton System are shown in Figure 1-2, and 1-3. The communities that currently use the Croton System are described in Section 1.4.3.

TABLE 1-1. PROFILES FOR WESTCHESTER COUNTY AND NEW YORK CITY RESIDENTS

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Total New York City	Westchester County
Demographic Profile							
Total Population	1,332,650	2,465,326	1,537,195	2,229,379	443,728	8,008,278	923,459
Percentage 0-9 years	17.2	15.1	9.7	12.9	14.1	13.8	14.4
Percentage 10-19 years	15.7	14.6	9.4	12.4	13.9	13.1	12.8
Percentage 20-34 years	23.1	23.2	29.4	23.9	20.4	24.5	18.5
Percentage 35-54 years	26.1	27.4	30.1	29.2	30.8	28.4	31.1
Percentage 55-64 years	7.7	8.2	9.2	8.8	9.2	8.5	9.4
Percentage 65+ years	10.2	11.5	12.1	12.7	11.6	11.6	13.9
Percentage White Non-Hispanic	14.5	34.7	45.8	32.9	71.3	35	64.1
Percentage Black/African American Non Hispanic	31.2	34.4	15.3	19	8.9	24.5	13.6
Percentage Asian and Pacific Islander Non-Hispanic	2.9	7.5	9.4	17.5	5.6	9.8	4.5
Percentage American Indian and Alaska American Non-Hispanic	0.3	0.2	0.2	0.3	0.1	0.2	0.1
Percentage Other Race Non-Hispanic	0.6	0.7	0.4	1.3	0.2	0.7	0.3
Percentage Non-Hispanic of Two or More Races	2	2.8	1.9	4.1	1.8	2.8	1.8
Percentage of Hispanic Origin	48.4	19.8	27.2	25	12.1	27	15.6
Percentage Minority	82.8	61.9	52.1	61.8	26.7	61.5	33.7
Socioeconomic Profile							
Per Capita Income	$13,959	$16,775	$ 42,922	$ 19,222	$ 23,905	$ 22,402	$ 36,726
Percentage Below Poverty	28.7	25.1	20	14.6	10	19.3	8.8

Source: U.S. Department of Commerce, Bureau of Census, 2000



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Percentage of Westchester County Demand Supplied from NYC Sources

Croton Water Treatment Plant

Figure 1-3

TABLE 1-2. EXISTING NEW YORK CITY WATER USERS CUSTOMERS SOUTH OF NEW CROTON RESERVOIR

User	Location In Relation To Eastview Site (North Or South)	2002 Average Demand (mgd)	Projected 2045 Average Demand (mgd)	Potable Water Source		
				Catskill/ Delaware	Croton	Other
Village of Briarcliff Manor	North	1.3	1.5		X	
Hawthorne Improvement District[1]	North	0.7	0.9	X		
Village of Mount Kisco[1]	North	2.1	3.0			X
New Castle/Stanwood Water District[2]	North	2.1	7.5	X	X	
Village of Sleepy Hollow	North	1.0	1.8	X	X	
Village of Ossining[3]	North	3.7	4.6		X	X
Thornwood Water District[1]	North	0.7	0.9	X		
Village of Elmsford[1]	South	0.8	0.8	X		
Greenburgh Consolidated Water District[2]	South	6.8	9.3	X		
Village of Irvington	South	0.9	1.1	X	X	
Village of Larchmont[1]	South	0.0	1.4	X		
City of Mount Vernon	South	9.4	12.8	X		
New Rochelle Water Co. (United Water)	South	20.0	26.6	X	X	
Village of Scarsdale	South	3.4	4.0	X		
Village of Tarrytown	South	2.2	2.4	X	X	
Valhalla Water District No. 1[1]	South	0.8	1.0	X		
Westchester County Water District No. 3	South	0.8	1.2	X		
Westchester Joint Water Works	South	12.2	23.0	X		
City of White Plains	South	8.8	10.1	X		X
City of Yonkers	South	29.3	37.1	X		
Total[4]		**107.0**	**151.0**			

TABLE 1-2. EXISTING NEW YORK CITY WATER USERS CUSTOMERS SOUTH OF NEW CROTON RESERVOIR

User	Location In Relation To Eastview Site (North Or South)	2002 Average Demand (mgd)	Projected 2045 Average Demand (mgd)	Potable Water Source		
				Catskill/ Delaware	Croton	Other

Notes:
1. The following communities presented 2001 data in their most recent reports: Village of Elmsford, Hawthorne Improvement District, Village of Larchmont, Village of Mount Kisco, Thornwood Water District, and Valhalla Water District No. 1.
2. Average demand represents net district consumption.
3. The Village of Ossining has the capacity to withdraw water from the NCA from its connection to Shaft No. 4 and from the Croton Reservoir through the Old Croton Aqueduct. Its NCA connection is used as backup only. Information provided by Frank Sylvester, Chief Operator, Ossining Pumping Station, October 30, 2002.
4. Includes water usage from other potable water sources.
Source: Data obtained from 2001 and 2002 Annual Drinking and Annual Water Quality Reports.

The most recent demands (2002) were obtained from the Annual Drinking Water Quality Reports for each user. The 2045 projections have been determined based on a NYCDEP-derived growth factor of approximately 1.2 percent. The users have a total current average demand of 106.7 mgd and a future projected demand of 149.6 mgd in 2045. Some of these users have connections to more than one aqueduct. In 2002, six of these users obtained water from the New Croton Aqueduct, for a total demand of 2.6 mgd. Eighteen users obtained water from the Catskill/Delaware System and other potable water sources accounting for the remainder of the total average demand.

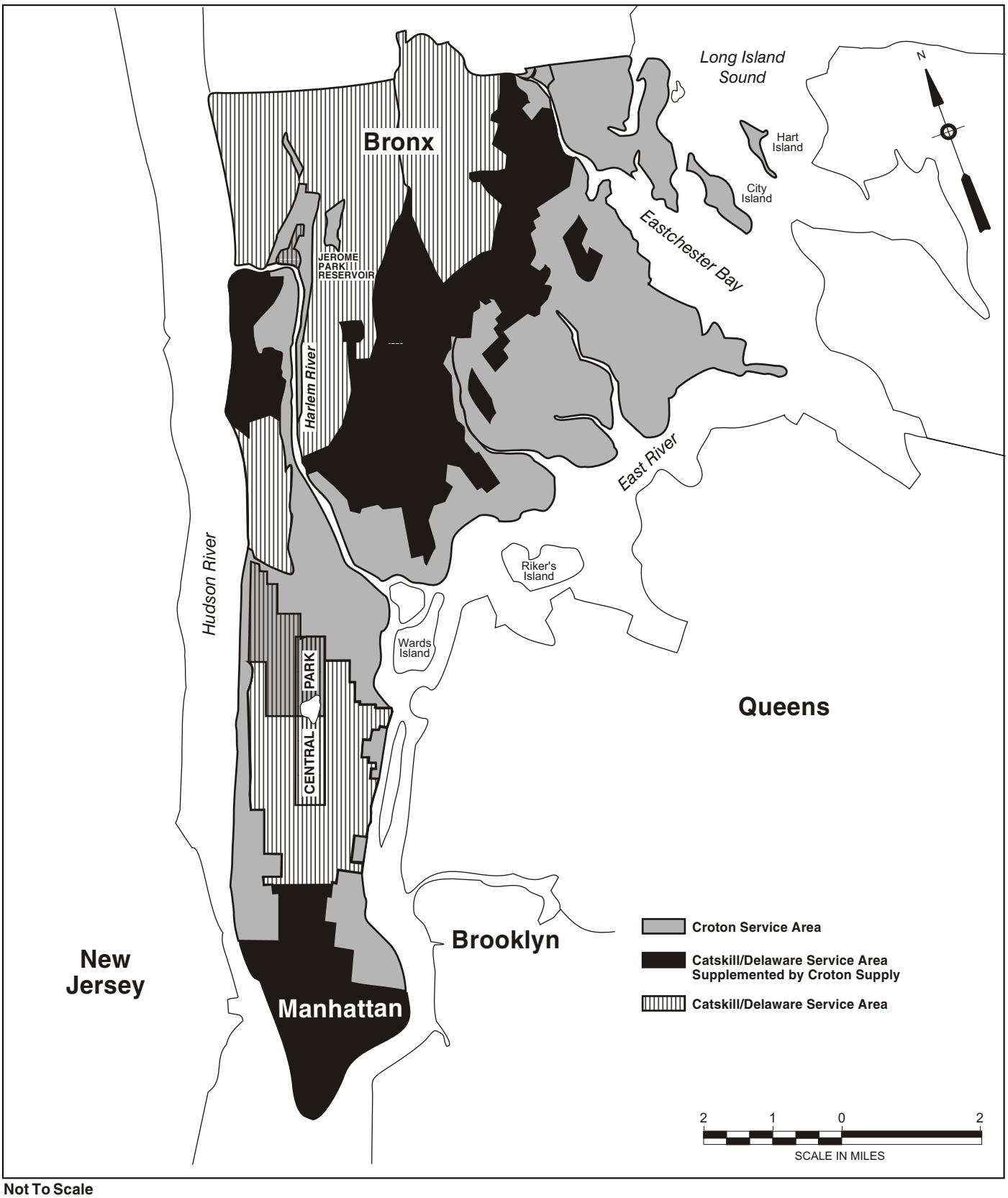
1.4.2.2. New York City Users

The City Water Supply System serves a population of approximately eight million inhabitants in the Boroughs of Manhattan, Brooklyn, Bronx, Queens, and Staten Island. As shown in Table 1-1, Hispanics represent the predominant minority group in the City except in the Borough of Brooklyn, where the predominant minority is Black/African American.

City residents receive water from the Catskill/Delaware and Croton Systems, which include the NCA, City Tunnels Nos. 1, 2, 3, and the Richmond Tunnel. These tunnels are the main structures responsible for water distribution throughout the New York City in-City system. City Tunnel Nos. 1, 2, and 3 serve the majority of City residents, delivering water to Staten Island, Queens, Brooklyn, northwest Bronx, and middle and lower Manhattan. The Croton System serves the areas of upper and lower Manhattan, and the southeast Bronx (Figure 1-4).

1.4.2.2.1. New York City Demands

Based on NYCDEP data, the average daily demand for the City Water Supply System by in-City residents was 1,229 million gallons in the year 2000. By evaluating previous demand



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Not To Scale

Existing NYC System Service Area

Catskill/Delaware UV Facility

Figure 1-4

data under average day demand and maximum day demand, the NYCDEP has projected low- and high-end demand ranges through the year 2045. By evaluating demand data between 1960 and 2000 a maximum to average day demand ratio (or peak ratio) was estimated. This peak ratio is then used to determine projection estimates. This analysis has concluded that the City's average daily demand could reach a low of 1,294 mgd and a high of 1,547 mgd by the year 2045 (Table 1-3).

TABLE 1-3. IN-CITY DEMAND PROJECTIONS USING 1.40 PEAK RATIO

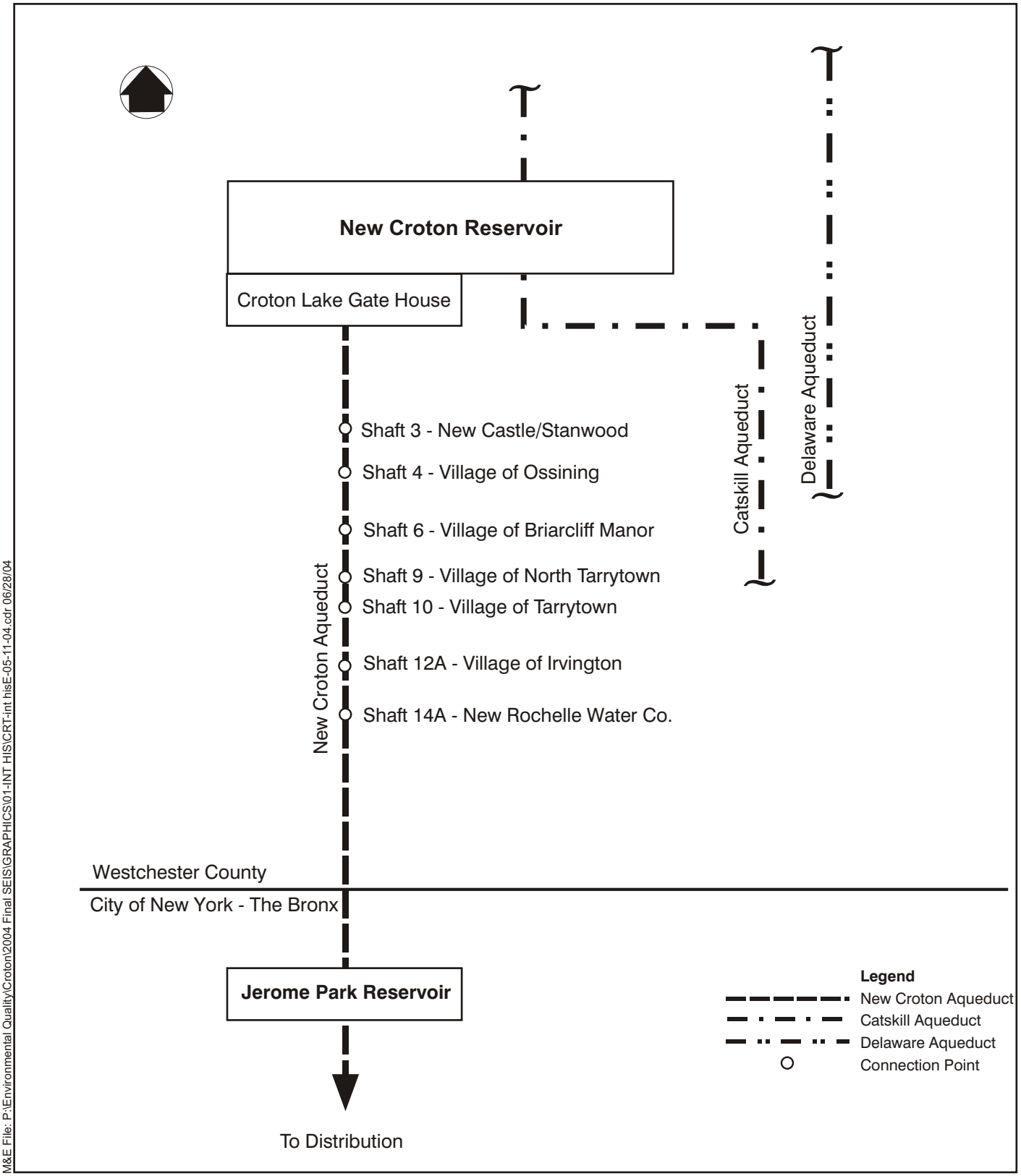
Year	Average Day Demand (mgd)		Maximum Day Demand (mgd)	
	Low	High	Low	High
2015	1,289	1,496	1,805	2,094
2025	1,301	1,522	1,821	2,131
2035	1,301	1,534	1,821	2,148
2045	1,294	1,547	1,812	2,166

1.4.3. Existing Croton Water Supply Users

1.4.3.1. Upstate Users

Croton water is conveyed to Westchester County residents directly from the system reservoirs and through the NCA, which extends from the New Croton Reservoir in Westchester County to the 135th Street Pumping Station in Manhattan. The Croton Water Supply System provided 11 mgd to Westchester County residents in 1998, or approximately nine percent of the County's total demand from the City System. The NCA is responsible for delivering approximately 4 mgd, with the remainder being withdrawn directly from the reservoirs in the Croton System. The Catskill and Delaware Systems provided the remaining demand from the City System. The following users withdraw water directly from the Croton System: Katonah Water District, Carmel Water District, Hunter Brook Cove Water District, Amawalk Department of Environmental Facilities, Town of Southeast (Brewster), Village of Croton-on-Hudson Water District, Putnam County Hospital, and the Village of Ossining.

Existing connections from the NCA are shown in Figure 1-5. The seven municipalities connected to the NCA consist of the Town of New Castle, the Village of Ossining, the Village of Briarcliff Manor, the Village of Sleepy Hollow, the Village of Tarrytown, the Village of Irvington, and the United Water New Rochelle. Although the capacity of these connections to the NCA totals about 44.05 mgd, their combined average demand is typically less than 4 mgd. None of these NCA connections has been granted filtration avoidance, and only two, New Castle and the Village of Ossining, have built filtration plants. Currently, most of the water used by the Town of New Castle and United Water New Rochelle comes from the Catskill Aqueduct, and only five to ten percent of the water is drawn from the NCA. United Water New Rochelle uses its NCA connection to meet peak summer demands that exceed the capacity of its two Catskill Aqueduct connections and has been actively pursuing local and City approval to develop a new connection to Shaft No. 22 of the Delaware Aqueduct. An independent study previously conducted by United Water New Rochelle estimated that the cost of providing filtration for its NCA connection would result in a cost of $30 million. However, United Water does not believe filtration is feasible since the company has not identified any suitable sites for a water filtration



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Existing Connections to the New Croton Aqueduct

Croton Water Treatment Plant

Figure 1-5

plant at or near the Shaft No. 14 ¼ connection. Five of the seven municipalities, including New Castle, Ossining, Sleepy Hollow, Tarrytown, and Irvington, already have suitable connections to other sources. The main water source for the Village of Briarcliff Manor is the NCA. Briarcliff Manor has been conducting negotiations with adjoining communities during the past year in an effort to develop a new, shared connection to the Catskill Aqueduct. This connection would provide Briarcliff Manor with an adequate supply year-round and make them independent of the NCA as their primary supply.

Briarcliff Manor and the Village of Ardsley (United Water New Rochelle) are the only suppliers south of the Eastview Site that currently regularly use the Croton System and could be potentially affected by changes in the operation of the NCA. If the proposed Croton WTP is built at the Eastview Site and the NCA is pressurized, all users below Shaft No. 11A could potentially receive treated water. If the KCT is selected for the conveyance of treated water from the Eastview Site, users south of the Eastview Site could potentially receive Croton water pending a feasibility study. If the proposed Croton WTP were built at the Mosholu or Harlem River Site, all Croton users outside of the City would receive untreated water. The implications of the site selection of the water treatment plant are described in Section 1.4.4.

1.4.3.2. New York City Users

Population profiles of City residents typically served by the Croton Water Supply System, those residents in the Bronx and Manhattan, were compared to the population profiles of those areas not typically served by the Croton System. Typical Croton water users are those who are regular users of the Low Level Croton Water Supply System. These are the users who receive Croton water by gravity. It should be noted that some areas that are not typically served by Croton water (usually served by Catskill/Delaware System) are sometimes supplemented by pumped Croton water.

This analysis was based on distribution maps for both Manhattan and the Bronx, which indicate the source of water within each of the Boroughs. The water distribution maps were correlated with information from the 2000 U.S. Census pertaining to the following parameters: age, race, income and poverty level. Census block group information was overlaid on the water distribution maps to determine which block groups fell within the distribution areas. Generally, the boundaries of the water distribution areas correlated well with the boundaries of the census block groups. In a few cases, only portions of block groups were located within the boundary of the water distribution area. In these circumstances, if 50 percent or more of the area of a block group were identified within the Croton water distribution system, then the demographic profile of the entire block group was attributed to the typical Croton user; if less than 50 percent of a block group were identified within the Croton water distribution system, the demographic profile of the entire block group was assigned to the typical non-Croton user. Using this approach, the block groups within Manhattan and the Bronx were assigned to one of two categories: a typical Croton water user or a typical non-Croton water user. Table 1-4 shows a summary of the basic demographic and socioeconomic statistics for the Bronx and Manhattan boroughs.

The typical Croton user in the Bronx is located in one of 212 block groups. In 2000, approximately 312,000 people lived within these block groups, which represented 23.4 percent

of the total Bronx population. According to the 2000 U.S. Census, approximately 48.7 percent of the population was between the ages of 20–54 years, with 20.5 percent over the age of 55. The minority population indicated in Table 1-4 includes the Black/African American, Hispanic origin, Asian, and Native American populations. The annual per capita income of the typical Croton user was approximately $13,801 per year in 2000. Approximately one-quarter of the typical Croton water users were below the poverty line.

TABLE 1-4. PROFILE OF THE TYPICAL CROTON USER IN THE BRONX AND MANHATTAN

	Bronx		Manhattan	
	Typical Croton Water User	**Typical Non-Croton Water User**	**Typical Croton Water User**	**Typical Non-Croton Water User**
Demographic Profile				
Total Population	311,692	1,020,958	450,793	1,086,402
Percentage 0-9 years	15.7	17.7	12.1	8.7
Percentage 10-19 years	15.1	15.9	11.7	8.5
Percentage 20-34 years	21.8	23.6	28.2	29.9
Percentage 35-54 years	26.9	26	28.3	30.9
Percentage 55-64 years	8.8	7.3	8.4	9.6
Percentage 65+ years	11.7	9.5	11.2	12.5
Percentage White Nonhispanic	20.1	12.8	27.7	53.3
Percentage Black/African American Nonhispanic	25.6	33	30.8	8.8
Percentage Asian and Pacific Islander Nonhispanic	3.4	2.8	5	11.2
Percentage Native American Nonhispanic	0.2	0.3	0.2	0.1
Percentage Other Race Nonhispanic	0.7	0.6	0.3	0.4
Percentage Nonhispanic of Two or More Races	2	2	2	1.9
Percentage of Hispanic Origin	47.9	48.5	34	24.3
Percentage Minority	77.2	84.5	70	44.5
Socioeconomic Profile				
Per Capita Income (1999)	$13,801	$13,392	$30,114	$54,141
Percentage Below Poverty	24.3	31.3	27.3	16.1

The typical non-Croton water user is not significantly different than the typical Croton user in Bronx County. In 2000, approximately 49.6 percent of the typical non-Croton water user population was between the ages of 20–54 years, with approximately 16.8 percent over the age of 55. Based on the 2000 U.S. Census, the non-Croton water distribution area is characterized by a slightly larger share of African Americans than the Croton water distribution area (33.0 percent and 25.6 percent, respectively) and a slightly smaller share of whites than the Croton water distribution area (12.8 percent and 20.1 percent, respectively). The percentages of Asians, Hispanics, Native Americans, Two Or More Races and Others categories within the two groups were quite similar. In 2000, approximately 81.7 percent of the Catskill/Delaware water users were classified as minorities, or eight percent higher than the typical Croton user area. The percentage of persons below the poverty line in the Catskill/Delaware distribution system was approximately eight percent greater than that within the Croton system. There was no significant difference between the per capita income of the typical Catskill/Delaware and typical Croton user.

The typical Croton distribution areas in Manhattan encompass 273 block groups. In 2000, approximately 450,793 people lived within these block groups, which represented 29.3 percent of the population. In Manhattan, unlike in the Bronx, there are significant differences between the typical Croton users and those who receive their water from the Catskill and Delaware Water Systems. Approximately 70.0 percent of the persons typically receiving Croton water consist of minority groups, contrasted with 44.5 percent for non-Croton users. The percentage of persons of Hispanic origin in the typical Croton user group is approximately 10 percent higher than in the non-Croton water users. In addition, the region typically receiving Croton water is characterized by a larger share of African Americans (30.8 percent as compared to 8.8 percent). On the other hand, the percentage of Asian population is slightly lower in the Croton users region than the region serviced primarily by the Catskill and Delaware Water Systems (11.2 percent and 5.0 percent, respectively). Based on the 2000 U.S Census, the annual per capita income of the typical Croton user was approximately $30,114, and approximately 27.3 percent of Croton users were below the poverty line. In contrast, 16.1 percent of those persons receiving primarily non-Croton water were below the poverty level, and the average annual per capita income was $54,141.

1.4.4. Future Potential Croton Water Supply Users – Eastview Site

1.4.4.1. New Croton Aqueduct - Upstream of Water Treatment Plant

If the proposed water treatment plant were sited at the Eastview Site, NCA users located upstream of the water treatment plant would receive untreated water since the location of the water treatment plant and structure of the distribution system does not allow for treated water to be delivered to this area. The following users would receive untreated water from the NCA upstream of the proposed project at the Eastview Site:

- Briarcliff Manor Water District
- New Castle/Stanwood Consolidated Water District
- Village of Ossining Water System
- Village of Sleepy Hollow

1.4.4.2. New Croton Aqueduct - Downstream of Water Treatment Plant

Twelve towns/villages south of the Eastview Site could potentially receive treated water from the NCA[7]:

- Village of Elmsford Water Department
- Greenburgh Consolidated Water District
- Village of Irvington Water Department
- Village of Larchmont Water Department
- City of Mount Vernon
- United Water New Rochelle
- Village of Scarsdale Water Department
- Village of Tarrytown
- Westchester County Water District No. 3 (Grasslands Reservation in Mount Pleasant)
- Westchester Joint Water Works
- City of White Plains
- City of Yonkers
- Valhalla Water District No. 1

If the Kensico-City Tunnel (KCT) is selected as the preferred means of conveyance of treated water from the Eastview Site, these twelve suppliers would not receive treated Croton water from the NCA. They could, subject to NYCDEP approval, be supplied with raw Croton water from the NCA[8] or an alternate connection to the Catskill, Delaware, or the new contemplated KCT aqueducts. Subject to NYSDOH review and approval, the supply alternatives for these users would be determined as part of the preliminary design of the KCT, scheduled to begin in 2004.

1.4.4.2.1. New York City Users

Currently, City residents are either regular or intermittent users of the Croton Water Supply System. If the Croton System is being pumped to the High Level system, Croton water could theoretically be provided to any part of the system. The NCA water is routinely delivered by gravity to the Manhattan Low Level and Bronx Low Level systems. The populations that this system serves are considered regular users. The Jerome Pumping Station can pump Croton water to the Intermediate Level, and the Mosholu Pumping Station can pump Croton water to the High Level system through City Tunnel No. 1. The Bronx and Manhattan Low Level systems can also be supplied by the High Level system through boundary valves and regulators if the Croton system is off-line.

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[7] These towns/villages could potentially receive treated water from the NCA if the pressurized NCA is chosen as the long-term treated water conveyance.

[8] The NCA will be rehabilitated in 2004-2006 and would be maintained after the construction of a water treatment plant at the Eastview site with the KCT as the primary means of treated water conveyance for overflows of raw water. It would also provide fresh source water for Jerome Park Reservoir. Some of this raw water flow could be used as a supply to the communities downstream of the Eastview Site.

Short-term conveyance of treated water from the proposed project would allow treated water to discharge to Shaft No. 19 of the Delaware Aqueduct. Consequently, areas now served by both the Catskill and Delaware Aqueducts could be considered as future potential users of Croton water. These areas encompass most of the City, except the area served by the former Jamaica Water Supply Service area and the Croton regular users. Again, these areas would be supplied through existing boundary valves and regulations within the Croton system.

1.4.5. Future Potential Croton Water Supply Users – Mosholu Site and Harlem River Site

1.4.5.1. New Croton Aqueduct - Users Upstream of Water Treatment Plant

If the proposed water treatment plant were sited at the Mosholu Site or the Harlem River Site, NCA users located upstream of the proposed plant at either site would receive untreated water since the location of the proposed plant and structure of the distribution system in each case would not allow for treated water to be delivered to this area. The following upstate users would receive untreated water from the NCA upstream of the proposed project at either the Mosholu Site or the Harlem River Site:

- Briarcliff Manor Water District
- Village of Elmsford Water Department
- Greenburgh Consolidated Water District
- Hawthorne Improvement District
- Village of Irvington Water Department
- Village of Larchmont Water Department
- Village of Mount Kisco Water Department
- City of Mount Vernon
- New Castle/Stanwood Consolidated Water District
- United Water New Rochelle
- Village of Sleepy Hollow
- Village of Ossining Water System
- Village of Scarsdale Water Department
- Village of Tarrytown
- Thornwood Water District
- Valhalla Water District No. 1
- Westchester County Water District No. 3
- Westchester Joint Water Works
- City of White Plains
- City of Yonkers

1.4.5.2. New Croton Aqueduct - Users Downstream of Water Treatment Plant

Future potential users downstream of the proposed plant are located in the City. Currently, City residents are either regular or intermittent users of the Croton Water System. If the Croton System is being pumped to the High Level Service Area, Croton water could theoretically be provided to any part of the system. The NCA water is routinely delivered by

gravity to the Manhattan Low Level and Bronx Low Level Service Areas. The populations that this system serves are considered regular users. The Jerome Pumping station can pump Croton water to the Intermediate Level, and the Mosholu Pumping Station can pump Croton water to the High Level Service through City Tunnel No. 1. The Bronx and Manhattan Low Level Service can also be supplied by the High Level Service through boundary valves and regulators if the Croton System is off-line.

If the proposed project were constructed at the Mosholu Site or the Harlem River Site, Croton water could be delivered to all City residents except those served by the former Jamaica Water Supply Service. Consequently, treated water could potentially be distributed throughout the entire system through the use of pumps, boundary valves and regulators. Therefore, all City residents would be considered as future potential users.

1.5. SITE SELECTION

1.5.1. Site Screening

In 1970, the City undertook an engineering study of the future treatment of the Croton Water Supply, including evaluation of potential sites for a water treatment plant, and concluded that Jerome Park Reservoir in the Bronx should be the site for a proposed plant. In response to public comments received on the 1993 Draft Scope of Work for an Environmental Impact Statement (EIS), which identified Jerome Park Reservoir as the preferred site for construction of the proposed plant and Related Facilities, another siting study for the proposed Croton WTP was initiated, to update the previous study and to consider additional locations as alternatives to the Jerome Park Reservoir. This study was a three-phased, multi-criteria, focused screening process that evaluated numerous potential locations within the Bronx and Westchester County, New York. This screening effort began with 120 sites, reduced that pool to 23 alternatives, and finally six alternatives to Jerome Park Reservoir that were evaluated in depth.

Each of these screening efforts considered lot size, distance from the NCA, zoning, height, and the possibility of a willing seller. In 1995, based on public comment asking that NYCDEP consider all sites equally and not select a preferred site until the public could review new, similar impact analyses, Jerome Park Reservoir was no longer identified as a preferred site and all the alternatives under consideration at that time were considered as equal candidates.

In 1996 and 1997, based on public comment and revised site screening analyses, additional sites were identified and evaluated. Because the sites initially screened were found to be unavailable or unacceptable, screening criteria were broadened to consider smaller lots, and parks for the first time. The sites under consideration when the Draft Scope of Work for the EIS was published were:

- Cove Site Alternative at New Croton Reservoir, Town of Yorktown, Westchester County
- Mount Pleasant Site Alternative, Town of Mount Pleasant, Westchester County
- Greenburgh Site Alternative, Town of Greenburgh, Westchester County
- Yonkers Raceway Site Alternative, City of Yonkers, Westchester County

- Croton Woods Site Alternative, Van Cortlandt Park, Borough of the Bronx, New York City
- Shandler Recreation Area Site Alternative, Van Cortlandt Park, Borough of the Bronx, New York City
- Jerome Park Reservoir Site Alternative, Borough of the Bronx, New York City
- Harris Park Site Alternative, Borough of the Bronx, New York City (Related Facilities only).

The Mosholu Golf Course Site, in Van Cortlandt Park, Borough of the Bronx, New York City, was added in May 1998 in response to public comment on the Draft Scope of Work for the EIS. The Draft EIS published in 1998 selected the Mosholu Golf Course, but in February 200l; the use this site was suspended pending legislative approval based on the court decision described above.

Revised siting criteria established subsequent to the February 2001 court decision include much smaller lots, greater distances from the NCA, larger changes in height, and for the first time, the consideration of land that could require the condemnation of private property. The site selection criteria were:

1. In accordance with the June 11, 2001 Order from the federal Magistrate, two sites must be evaluated and preliminary design started on both: one potential site must be in Bronx and one potential site must in Westchester County.
2. At least eight acres for permanent facilities, and four acres for staging, must be available
3. The site must be within 8,000 feet of the NCA.
4. The site must be in a site zoned Manufacturing, or suitable for development by a Special Use Permit.
5. Access for the conveyance of materials to and from the site must be readily available from major surface roads, rail, or barge traffic on waterways.
6. The site must not be immediately adjacent to schools, residences, or other sensitive receptors.

These criteria led to the choice to pursue the Harlem River Site in the Bronx and the Eastview Site in the Town of Mount Pleasant. Neither of these sites was evaluated in the 1999 Draft EIS. The Harlem Site failed to meet the size criterion used for site selection in that document. At that time, only sites greater than 15 acres were considered viable. It was also over a mile from the NCA.

The 83-acre[9] New York City-owned Eastview Site in the Town of Mount Pleasant has long been considered the best site for a water treatment plant for the Catskill and Delaware Systems, and has been declared as the City's preferred site in the July, 1998 Filtration Avoidance Determination deliverable required as a parallel track planning exercise from NYCDEP to USEPA. Although NYCDEP strongly believes the Avoidance Determination will be renewed on either a temporary or permanent basis, there is no guarantee. The approval in 2000 of ultraviolet

[9] A four-acre easement was recently provided to Westchester County for the extension of Walker Road along the western boundary of the site; this reduced the acreage from the 87 acres formerly reported.

treatment as a primary disinfectant by the NYSDOH allowed for a smaller plant footprint for both the Catskill and Delaware water treatment plant and the Croton water treatment plant. These smaller footprints now allow the design of two water treatment plants on the same site and the Eastview Site was selected as the Westchester site alternative for the Croton WTP. This site is also the preferred site for a Catskill/Delaware Ultraviolet Treatment Facility. If it ever becomes necessary to build a Catskill/Delaware water treatment plant, the ultraviolet facility could be a component of the future project.

The Harlem River Site, with a water treatment plant footprint of only 10.5 acres, also was selected as the site alternative in the Bronx. Both sites are farther from the NCA than previously considered, not at ideal hydraulic grades, and are smaller than the sites considered in 1999. They also each present unique engineering challenges compared to the sites evaluated in the past. However, the other sites considered in 1999 and earlier were eliminated from the list of current candidates because they did not have any advantages over Mosholu, that is they were either in parks, adjacent to schools and residences, or were not zoned appropriately.

This Final Supplemental EIS updates the analyses for the Mosholu Site presented in 1999 and for the Eastview and Harlem River Sites presented in April 2003, and provides a basis to compare the Eastview, Mosholu and Harlem River Sites. A summary of information about all three sites is presented in Table 1-5.

1.5.2. Site Comparison and Final Site Selection Criteria

As summarized in the preceding sections, each site has advantages and disadvantages compared to the other two. In addition, the designs for each site are different. For example, the Mosholu site requires an internal perimeter roadway that results in a larger building footprint than the other sites because they use an exterior passageway for this purpose. Table 1-5 summarizes general characteristics of the water treatment plant facilities at each site.

TABLE 1-5. SITE COMPARISON FOR THE CROTON WATER TREATMENT PLANT

	Eastview NCA[1]	**Eastview KCT[2]**	**Mosholu[3]**	**Harlem River**
Approximate dimensions – main building	1,000t. X 267 ft	1,000. X 267 ft	555 ft X 685 ft	920 ft X 260 ft.
Approximate dimensions- Other buildings	51 ft. X 44 ft.	51 ft. X 44 ft.	60 ft X 75 ft 60 ft. X 60 ft.	320 ft. X 180 ft.
Approximate building footprint area	262,000 sq. ft	262,000 sq. ft	380,000 sq. ft	272,000 sq ft
Maximum main building height above grade	65 ft	65 ft	Main building at grade - 0 ft. Others ~ 30 ft.	Penthouse – 76.5 ft. Roof – 65 ft.

TABLE 1-5. SITE COMPARISON FOR THE CROTON WATER TREATMENT PLANT

	Eastview NCA[1]	Eastview KCT[2]	Mosholu[3]	Harlem River
Length of Raw Water Tunnel	7,500 ft	7,500 ft	900 ft	1,415 ft
Length of Treated Water Tunnel	7,500 ft	Unknown	3,680 ft combined 0 High Level 650 Low Level	350 ft combined 6,640 High Level 1,200 Low Level
Approximate area affected during construction	30 acres	30 acres	28 acres	17.5 acres
Approximate finished WTP site area (buildings and roads)	12 acres	12 acres	11 acres	11 acres
Construction Costs, 2003[4] $million	$1,546	$1,196	$992	$1,174
Estimated Mitigation 2003 $ million	$23	$23	$43	$11
Committed Amenities 2003 $ million	$28	$28	$200	$30
Total Capital Costs 2004 $million	$1,597	$1,247	$1,235	$1,215
Annual Operating Costs, 2003 $million	$33	$33	$22	$25
Life Cycle Costs, 2003 $million	$1,814	$1,521	$1,352	$1,378

[1] NCA as the finished water conveyance. Includes $558,000,000 cost of aqueduct pressurization plus $125,000,000 for the Treated Water Tunnel.

[2] Kensico-City Tunnel. This is a proposed new City Water Tunnel to connect Kensico Reservoir, the Eastview Site, and the Van Cortlandt Valve Chamber. The New Croton Aqueduct would only be used for plant overflows.

[3] The Mosholu Design requires a passageway around the perimeter of the underground water treatment plant to move equipment that is accomplished at the other sites by an exterior roadway.

[4] Costs are based on 2.75% inflation, 6.4% interest, and 30-year life cycle. All costs are from Conceptual Designs. Estimates of amenities and mitigation costs are included. Baseline NCA rehabilitation is not included.

A decision for selecting the site for the Croton Water Treatment Plant would occur after thorough examination of the potential significant adverse impacts at the various sites and a thorough examination of public comments on the Draft SEIS are reviewed. The Commissioner of the New York City Department of Environmental Protection will ultimately select the site

upon a balance of environmental, social, and economic factors in the Executive Summary of the Final SEIS.

The costs presented above in Table 1-5 above for the Eastview Site alternative with the KCT as the treated water conveyance include $290 million for the Croton System's share of the Kensico-City Tunnel. This represents 12 percent (Croton's 290 mgd / Tunnel Capacity 2,400 mgd) of the $2,400,000,000 estimated project cost of the KCT project.

Analyzing and illustrating the potential impact of the Croton Water Treatment Plant site selection alternatives on water and sewer rates necessarily involves making a series of assumptions relative to a diverse set of key variables. Because the project would be built in the future, and future conditions are always uncertain, the analysis proceeds based on estimated values for key variables. Since it is certain that the future conditions that would be obtained with respect to at least some variables would be different than what is assumed for analytical purposes, the rate impact must be considered illustrative, rather than precise, and small rate differences among alternatives should be considered to render those alternatives as roughly equivalent in terms of rate impacts.

The following are among the variables for which assumptions have to be made and for which alternative assumptions are possible that affect the rate analysis: each project's construction schedule and its estimated costs, the inflation rate on construction costs, the financing rate realized at the time bonds are issued to finance each projects expenditures, the anticipated completion date of each alternative, contingencies for each alternative, the estimated annual operations and maintenance expenses for each alternative, the inflation rates on operations and maintenance expenses including personnel costs and materials and equipment costs, and the rate of increase on upstate real estate taxes.

The impact of the Croton Water Treatment Plant Project on in-City water rates is small and relatively insignificant between the three alternative sites. Since each site alternative has a different construction schedule and cash flow pattern, it is not useful to compare year-by-year changes among the alternatives or to focus on a single year that is within the construction period of all three sites. Rather, comparable impacts can only be measured by looking at the end year of the analysis when construction and cash flows are complete for each alternative and each alternative's costs are fully embedded in the rate impacts.

For example, no economic rate inference can be drawn from the fact that in 2006 Eastview (KCT with $28 million amenities package and using a four percent tax inflator) would add $3 to the typical in-City single family rate, while Eastview (NCA without amenities package and using a four percent tax inflator) and Harlem River (with $30 million amenities package) would also add $3, but Mosholu (with $200 million amenities package) would add $6. Similarly, a judgment that one alternative is more or less costly than another based on the fact that by 2010, Eastview (KCT) and Eastview (NCA) are both projected to have added $38 to the base rate, while Harlem River would add $40 and Mosholu $34 is also inappropriate. In 2010 construction is still ongoing for some sites and all costs for all alternatives are not included in the rates. A fair measurement of the relative rate impact values must look to an end point when all costs are reflected in the system's cash flows for all alternative sites.

The end year of the projection model is 2016. Virtually all costs upon which rates are based are embedded in the system's cash requirements by this year. Accordingly, 2016 represents the best comparison year available to measure relative rate impacts. Based on the assumptions utilized for the estimations, by 2016 in-City rate impact projections for each site are as follows:

For Eastview (KCT) site - the typical single family rate would equal $1,111 annually, representing a $45 increment over the no-build alternative;
For Eastview (NCA) site – the typical single family rate would equal $1,118 annually, representing a $52 increment over the no-build alternative;
For the Harlem River site - the typical single family rate would equal $1,112, representing a $46 increment over the no-build alternative; and
For the Mosholu site - the typical single family rate would equal $1,110, representing a $44 increment over the no-build alternative.

While there is a small difference of $1 between Mosholu and Eastview (KCT), and $2 between Mosholu and Harlem River, these differences are more apparent than real and are not decisive in an analytical sense. Consider that the difference between Mosholu and Eastview (KCT) in terms of the metered water rate is one cent per hundred cubic feet ($3.20/CCF as compared to $3.21/CCF at Eastview). This small differential could easily be negated yielding equivalent values for the two alternatives, or even be overcome making Mosholu more expensive as compared with Eastview, if only a small variance obtains between the actual future conditions and the assumptions made for projection purposes.

Since it is certain that future actual conditions would prove at least some of the currently assumed values to have been incorrect, small differences between alternatives should be given small weight. Larger differences can be afforded somewhat greater weight, but it must be understood that the projected difference is neither precise, nor absolute, nor certain. Where the rate differential is small between alternatives, given the certainty that forecast assumptions would not always match actual events, the alternatives should be considered equivalent from a rate impact perspective.

1.6. ORGANIZATION OF THE FINAL SUPPLEMENTAL EIS

The Final SEIS is organized into the following sections:

Volume A:

EXECUTIVE SUMMARY

1. INTRODUCTION, BACKGROUND AND SITING ALTERNATIVES
    - 1.1. INTRODUCTION
    - 1.2. DESCRIPTION OF THE CROTON WATER SUPPLY SYSTEM
    - 1.3. NEED FOR THE PROJECT
    - 1.4. BACKGROUND TO THE PROJECT
    - 1.5. SITE SELECTION
    - 1.6. ORGANIZATION OF THE DRAFT SUPPLEMENTAL EIS

12. GLOSSARY AND ACRONYMS

Volume D:

13. APPENDICES