FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE CROTON WATER TREATMENT PLANT AT THE MOSHOLU SITE

6.7. SOCIOECONOMIC ANALYSIS

6.7.1. Introduction

This section assesses potential socioeconomic impacts as a result of locating the proposed Croton Water Treatment Plant project (Croton project) at the Mosholu Site. Potential socioeconomic impacts include direct and indirect displacement and direct or indirect effects on income and employment at the water treatment plant site or the study area. Direct displacement is the geographical dislocation of existing populations, employment, or facilities at the site. Indirect displacement is the displacement of existing populations, employment or facilities due to changes in taxes, property values, living conditions or water rates that could potentially result from the proposed project. Potential beneficial direct and indirect effects include increases in revenue or employment at the site or in the study area.

The study area is based on a one-half mile radius from the periphery of the water treatment plant site. The majority of the study area is within Van Cortlandt Park, but it also includes a portion of the Woodlawn neighborhood to the northeast and residential and commercial development to the east and south of the site. Section 6.2, Land Use, Zoning, and Public Policy describes more detail on the land uses in the study area. The methodology used to prepare this analysis is presented in Section 4.7, Data Collection and Impact Methodologies, Socioeconomic Analysis. Detailed tables containing U.S. Census data used for this analysis at the tract and block group level are presented in Appendix A.

6.7.2. Baseline Conditions

6.7.2.1. Existing Conditions

6.7.2.1.1. Water Treatment Plant Site

The water treatment plant site includes the Mosholu Driving Range and a portion of the Mosholu Golf Course, which is within Van Cortlandt Park. The water treatment plant site is owned by New York City and under the jurisdiction of the NYC Department of Parks and Recreation (NYCDPR), includes the golf course, driving range, a professional shop, and a clubhouse with a snack shop. The First Tee of Metropolitan New York; a youth golf training program, that is sponsored by the Professional Golf Association (PGA), also utilizes the golf facilities at the water treatment plant site. The NYCDPR licenses the course and facilities to the First Tee Program.

The site generated $926,000 in gross revenues in 1997 and $776,800 in 1996. The license specifies that the concessionaire annually pays either a flat fee or ten percent of gross revenues (whichever is higher) to NYCDPR. The annual fee varies, so that during the five-year term that began in 1998, the fee was $130,000 per year, and for the next five-year term, $140,000 per year. NYCDPR received $120,000 in 1997 and $110,000 in 1996.

Currently, 35 persons are employed at the proposed water treatment plant site. Roughly 23 are laid off each year, during January and February. The employees' average weekly salary is estimated by the concessionaire at $600. This translates to a salary of $31,200 per year for the full-year workers and $24,000 per year for those laid off for part of the winter.

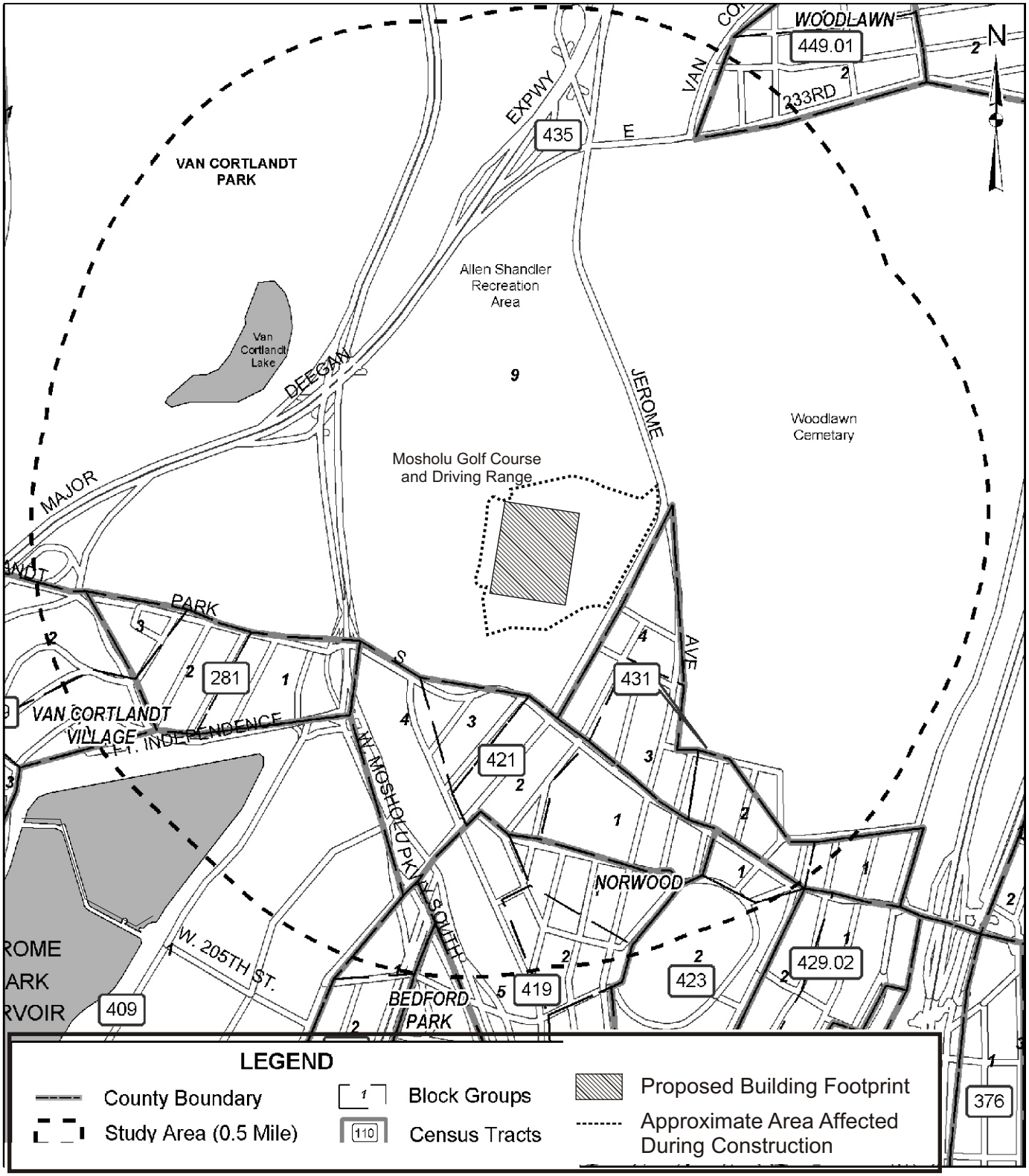
6.7.2.1.2. Study Area

The study area for the water treatment plant site consists of a one-half mile radius that primarily includes portions of Van Cortlandt Park. The majority of the eastern portion of the study area is comprised of Woodlawn Cemetery, while the northeastern portion includes a small part of the Woodlawn section of the Bronx. The southern portion of the study area includes sections of Norwood, Bedford Park, and Van Cortlandt Village. This southern area also contains the Montefiore Medical Center and DeWitt Clinton High School. A complete description of the existing land use in the study area is presented in Section 6.2, Land Use, Zoning and Public Policy.

The study area consists of eleven census tracts in Bronx County (Figure 6.7-1). Since the study area only includes eleven tracts, the tracts are discussed together, along with the general characteristics of Bronx County and NYC. Population and household estimates were determined for the study area based on the proportion of each block group, area-wise, located within the study area. Estimates for other characteristics are based on entire block groups. Appendix A provides detailed U.S. Census data and calculations

An estimated 26,200 persons resided in the study area in 2000 (Table 6.7-1). All tracts in the study area experienced a population increase from 1990 to 2000. However, the number of households in the study area slightly decreased in the same period. In total, 9,882 households were in the study area in 2000 as opposed to 9,909 in 1990 (Table 6.7-1).

The majority of block groups were substantially denser than Bronx County and New York City (see Appendix A, Table 6.7-1). Many of the densities appear very high; this is due to the small geographic area of the block groups, their lack of non-residential uses, and the presence of large, high-rise housing structures. Most dramatic is block group 3 in tract 421, with a density of 221,909 persons per square mile. Conversely, tract 409 has a relatively low density of 10,774 persons per square mile. Also, block group 9 in tract 435 has a very low density of 27 persons per square mile. These lower densities are largely due to the fact that tract 409 contains expansive non-residential uses (Jerome Park Reservoir and numerous schools) and block group 9 in tract 435 consists primarily of Van Cortlandt Park.



M&E File: P:\Environmental Quality\Croton\2004 Final SEIS\GRAPHICS\06-MOS\07-SOC\MOS-soc-exconA-05-24-04.cdr 06/22/04

Socioeconomic Analysis
Mosholu Site

Croton Water Treatment Plant

Figure 6.7-1

TABLE 6.7-1. MOSHOLU SITE DEMOGRAPHIC SUMMARY TABLE

Socioeconomic Feature	Geographic Unit	Details (categories differ by feature)					
Population Change and Density, 1990-2000		**1990 Pop.**	**2000 Pop.**	**% Change 1990-2000**	**2000 Density (persons per sq mi)**		
	Mosholu Study Area[1]	23,974	26,192	9.3	16,688		
	Bronx County, NY	1,203,789	1,332,650	10.7	31,718		
Change in Number of Households, 1990-2000		**1990**	**2000**	**% Change 1990-2000**			
	Mosholu Study Area[1]	9,909	9,882	-0.3			
	Bronx County, NY	424,112	463,212	9.2			
Racial Composition, 2000 % of Total Population		**White**	**Black**	**American Indian[2]**	**Asian or Pacific**	**Other**	**Hispanic or Latino[3]**
	Mosholu Study Area	40.8	23.1	0.6	7.3	28.2	43.6
	Bronx County, NY	29.9	35.6	0.9	3.1	30.5	48.4
Age Composition, 2000 % of Total Population		**Age 0-4**	**Age 5-9**	**Age 10-19**	**Age 20-44**	**Age 45-64**	**Age 65+**
	Mosholu Study Area	7.8	7.8	13.7	39.8	18.8	12.1
	Bronx County, NY	8.2	9.0	15.7	38.2	18.8	10.1
Change in Median Household Income, 1989-1999		**1989**	**1999**	**% Change 1989-1999**			
	Mosholu Study Area	$38,308	$36,021	-6.0			
	Bronx County, NY	$29,741	$27,611	-7.2			
Change in No. of People Below Poverty Line, 1990-2000		**1990**	**2000**	**% Change 1990-2000**			
	Mosholu Study Area	5,358	8,167	52.4			
	Bronx County, NY	334,137	395,263	18.3			
Change in Unemployment Rate, 1990-2000		**1990**	**2000**	**% Change 1990-2000**			
	Mosholu Study Area	6.6	9.8	49.2			
	Bronx County, NY	11.9	14.3	20.4			
Units in Structure, 2000 % of Total Units		**1 Unit Structure**	**2 to 4 Units in Structure**	**5+ Units in Structure**			
	Mosholu Study Area	3.0	11.4	85.6			
	Bronx County, NY	11.2	15.8	72.9			

TABLE 6.7-1. MOSHOLU SITE DEMOGRAPHIC SUMMARY TABLE

Socioeconomic Feature	Geographic Unit	Details (categories differ by feature)					
Owner-Occupied Housing Units and Vacancy Rates		**% Owner-Occupied Units 1990**	**% Owner-Occupied Units 2000**	**% Change 1990-2000**	**% Vacant 2000 (based on total units)**		
	Mosholu Study Area	14.3	16.1	12.8	3.9		
	Bronx County, NY	17.9	19.6	9.5	5.6		
Age of Housing Stock, 2000 % of Total Units		**Less than 10 Years Old**	**10 to 19 Years Old**	**Over 20 Years Old**			
	Mosholu Study Area	1.3	2.1	96.6			
	Bronx County, NY	4.9	4.4	90.7			
Year Householder Moved into Unit, 2000% of Total Householders		**Moved in from 1995 to 2000**	**Moved in from 1990 to 1994**	**Moved in from 1989 to 1980**	**Moved in from 1979 or earlier**		
	Mosholu Study Area	45.6	21.5	13.9	19.0		
	Bronx County, NY	43.2	17.4	17.4	22.1		
Comparison of Median Housing Value, 1990-2000		**1990 Median Value[5]**	**2000 Median Value**	**% Change 1990-2000**			
	Mosholu Study Area	$194,837	$232,553	19.4			
	Bronx County, NY	$229,148	$183,800	-19.8			
Comparison of Median Monthly Rent, 1990-2000		**1990 Median Rent[5]**	**2000 Median Rent**	**% Change 1990-2000**			
	Mosholu Study Area	$570	$623	9.2			
	Bronx County, NY	$517	$560	8.4			

Notes:
1. For block groups partially in a study area, the population was based on the percentage of the block group within the study area.
2. Category appeared as “Native American” in 1990 Census.
3. Category appeared as “Hispanic” in 1990 Census.
4. Adjusted to 1999 dollars based on the New York MSA Consumer Price Index (CPI) for 1989 (130.6) and 1999 (177.0).
5. Adjusted to 2000 dollars based on the New York MSA Consumer Price Index (CPI) for 1990 (138.5) and 2000 (182.5).
Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

New York City has seen a general trend of out-migration of whites and blacks from the 1970s until present. Meanwhile, Asians and persons of Hispanic origin have been migrating into the region.[1] The results have been dramatic shifts in racial composition over time. In 2000, the block groups differed in their degree of racial diversity, with block group 2 in tract 449.01 being the least diverse, with 96 percent of the population being white (see Appendix A, Table 6.7-5). Notable was the large Asian/Pacific Islander population (33 percent) in block group 1 in tract 421. The study area also contained a large Hispanic population in 2000, particularly in the block groups in tracts 413 and 423, where 44 to 69 percent of the population was of Hispanic origin.

Roughly 53 percent of the population in block group 4 in tract 431 (which is the closest block group to the project site) is of Hispanic origin (see Appendix A, Table 6.7-5).

The block groups varied in age composition, according to 2000 data (see Appendix A, Table 6.7-6). In the overall study area approximately 29 percent of the population was under the age of 20. One exception is notable: almost one-quarter of the population in the block groups in tract 281 was over age 65. This is due to the fact that the Amalgamated Houses complex located within the tract is a Naturally Occurring Retirement Community (NORC), which must contain at least 50 percent senior citizens in order to receive state funding. It should be noted that senior populations might be at home more often during the day than other age groups.

Economic trends since 1989 in the City included a decreased median household income (MHI).[2] In addition, poverty and unemployment rates also increased within the same period. After the longest period of employment growth ever recorded for the City (1992-2001), NYC's economic expansion has subsequently lagged.[3] The study area reflects these economic trends. From 1990 to 2000, the study area's MHI decreased six percent. During this same period, the study area experienced significant increases in the unemployment rate and the number of people below the poverty line (49 percent and 52 percent increases, respectively; Table 6.7-1). In 2000, the median household incomes in the study area varied from a low of $18,723 (block group 4 in tract 431) to a high of $80,488 (block group 9 in tract 435; see Appendix A, Table 6.7-3). Overall, the study area's MHI was higher than that of Bronx County ($27,611).

The percentages of the work force in the study area employed in various occupational sectors generally reflected those of Bronx County (Table 6-7.2). Roughly 62 percent of the study area's work force in 2000 was employed in either managerial and professional specialties occupations or in technical, sales, or administrative positions. Professional specialties include architects, engineers, teachers, and physicians, among other occupations. In 1990, the majority of the workers in the study area used public transportation (54 percent) to get to work, while many others drove alone (25 percent) or carpooled (seven percent) (Table 6-7.3). Larger percentages of the block groups in the study area obtained higher levels of education than in Bronx County in 2000. Roughly 73 percent of the study areas' residents had at least a high school diploma, while 62 percent of Bronx County's population had a high school diploma. Block group 1 in tract 421

[1] New York Metropolitan Transportation Council (NYMTC). 1998. Forecasts: Baseline Scenario. NYMTC. New York, NY.

[2] In making this comparison, 1989 MHI was adjusted to 1999 dollars based on the New York MSA Consumer Price Index for 1999.

[3] New York City Department of City Planning (NYCDCP). 2001. 2000/2001 Report on Social Indicators. NYCDCP. New York, NY.

TABLE 6.7-2. DISTRIBUTION OF OCCUPATIONS IN 2000 MOSHOLU SITE STUDY AREA

Occupation	% of Study Area Work Force	% of Bronx County Work Force
Management, professional, and related occupations	31.8	26.6
Service occupations	21.2	24.5
Sales and office occupations	29.7	28.9
Farming, fishing, and forestry occupations	0.1	0.1
Construction, extraction, and maintenance occupations	7.1	7.7
Production, transportation, and material moving occupations	10.1	12.3

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

TABLE 6.7-3. MEANS OF TRANSPORTATION TO WORK IN 2000 MOSHOLU SITE STUDY AREA

Travel Mode	% of Study Area Work Force	% of Bronx County Work Force
Drive Alone	24.9	27.0
Car Pool	7.3	9.3
Bus	13.4	15.6
Street Car	0.1	0.2
Subway or El	37.2	34.6
Railroad	2.3	2.0
Ferry Boat	0.0	0.0
Taxi	1.1	1.3
Motorcycle	0.0	0.0
Bicycle	0.1	0.2
Walk	11.5	7.2
Other	0.8	0.6
Work at Home	1.3	1.9

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

had an exceptionally higher percentage (76 percent) of residents over age 25 with at least some college education than the other block groups in the study area (see Appendix A).

The housing units in the study area are predominantly larger residential structures, containing five or more housing units (see Appendix A, Table 6.7-10). Except for the Amalgamated Houses complex (tract 281), the study area appears to afford little home-ownership opportunity, as over 80 percent of the housing units in the study area were renter-occupied in 2000 (see Appendix A,

Table 6.7-11). The tracts experienced slight increases in the number of owner-occupied units between 1990 and 2000. Tract 409 had the most dramatic increase in owner-occupancy during the decade, with a 51 percent increase in owner-occupied units during this period. This change most likely reflected conversions to condominiums or cooperatives, since the majority of the units were within larger structures. Block group 9 in tract 435 had the highest percentage of vacant units in the study area, at roughly 21 (see Appendix A, Table 6.7-11). Most of the housing units (97 percent) in the block groups in the study area were constructed before 1980, as there is little room for new construction (see Appendix A, Table 6.7-12).

The length of time that the study area's residents have lived in their housing unit varies, with 67 percent having moved into their 2000 unit within the previous ten years (Table 6.7-1).

In 2000, the study area had a median housing value of $232,553, which is higher than Bronx County's average of $183,800 (Table 6.7-1). The median monthly rents in the block groups varied in 2000, ranging from $534 to $770 (see Appendix A, Table 6.7-15). It is not certain what effects rent control and rent stabilization may have had on these median rents; the U.S. Census does not provide such data.

6.7.2.1.3. Property Value

The NYCDCP MISLAND database provided the average selling price for residential units by census tract annually from 1993 to 2002. Table 6.7-4 shows the average selling prices for the census tracts in the study area based on the MISLAND data. Data are not consistently reported for each year by type of housing unit. Data are only available for one- and two-family housing units. Prices for these units fluctuated over the decade (all dollars were adjusted to 2004 dollars for comparison purposes).

Table 6.7-4 shows the average selling prices by unit type for the study area based on the MISLAND data. In general, the average prices were higher in 2002 than in 1993, after adjusting for inflation.

6.7.2.1.4. Study Area Businesses

The study area contains numerous places of employment, including a small number of businesses, Montefiore Medical Center, schools, nursing homes, and the golf course. The neighborhood-type businesses are concentrated along Jerome Avenue and West Gun Hill Road, with others scattered in the study area.

According to the 2000 U.S Census, Bronx County's labor force approximated 500,700 persons in 2000, down from 502,300 in 1990. There were 198,751 people employed in Bronx County in 2000, representing a 2.7 percent increase from 1990. Sales/office, construction, and transportation occupations declined during this time period, while service and management/professional occupations increased. The estimated number of jobs within the study area was not available.

TABLE 6.7-4. AVERAGE SELLING PRICES FOR RESIDENTIAL UNITS, IN THE MOSHOLU STUDY AREA 1993 TO 2002[(1)]

Year	Average Selling Price[(2)(3)]				
	One Family	Two Family	Large and Small Walk-Up	Elevator Apartment	Residential Condominium
1993	$199,951	$165,749	N/A	N/A	N/A
1994	N/A	$179,858	N/A	N/A	N/A
1995	$210,507	N/A	N/A	N/A	N/A
1996	N/A	$185,095	N/A	N/A	N/A
1997	$199,908	$161,830	N/A	N/A	N/A
1998	$204,879	$235,318	N/A	N/A	N/A
1999	N/A	$180,275	N/A	N/A	N/A
2000	$187,092	N/A	N/A	N/A	N/A
2001	N/A	N/A	N/A	N/A	N/A
2002	$206,523	N/A	N/A	N/A	N/A

Notes:
(1) Based on data for Bronx County Census tracts 279, 281, 409, 411, 413, 419, 421, 423, 431, 435, and 449.01.
(2) Excludes multiple lot sales, sales less than $1,000, and miscellaneous insignificant sales as determined by NYCDCP.
All dollars were adjusted to 2003 dollars based on the New York MSA Consumer Price Index (CPI) for 2000 (182.5) and 2003 (197.8); then further inflated at 2.75 percent to 2004.
N/A – Not Available
Source: NYCDCP, 2003.

6.7.2.1.5. Water Rate Structure

This section summarizes the current water rate structure for City and upstate customers of the NYC Water Supply System. This information would be used to assess the potential socioeconomic indirect displacement effects from increased water rates due to the construction of the proposed project at the water treatment plant site.

Financing Mechanisms for New York City Department of Environmental Protection (NYCDEP) Capital Improvements. The NYC water and sewer system is financially self-sustaining (i.e. water and sewer charges are used only to pay for system costs) and annual revenues equal the cost of running the system. Costs (e.g. operating expenses and debt service on new and existing capital improvements) are estimated annually for the entire system and water and sewer rates are adjusted accordingly to provide annual operating revenues equal to the costs. Thus residential, commercial, and industrial users of the water supply system would pay for the capital and operating costs of the proposed project through their water charges.

There are two forms of borrowing available to fund the construction of NYCDEP capital improvement projects: (1) the New York City Municipal Water Finance Authority ("Authority"), and (2) the New York State Drinking Water Revolving Fund Program (SRF).

The Authority is authorized to issue bonds to fund the construction of capital improvement projects. The bonds are payable solely from, and secured by, a pledge of gross revenues from the New York City Water Board. Water and Sewer System fixed rate revenue bonds issued by the Authority for fiscal year 2004 currently carries an interest rate of 5.25 percent and are repaid over a period of 30 years. Amortization of Authority bonds begins in the year that the bonds are issued. Capital improvement projects with multi-year construction schedules, such as the proposed project, are financed with Authority bonds issued once or twice per year in amounts necessary to cover the anticipated construction cost in any given year.

New York State makes lower-cost financing available to municipalities around the state for capital improvement projects related to drinking water. The state receives an annual grant from the U.S. Environmental Protection Agency (USEPA) that provides seed money for construction of facilities related to drinking water. Under a matching fund provision, the state is required to contribute an amount equal to 20 percent of the grant as additional funding. The state invests the seed money, and uses the proceeds to subsidize the interest rate on bonds that it issues through the SRF to finance municipal projects. Municipalities repay the proceeds of the SRF bonds to the state, thus creating a "revolving fund" that can be used for future projects. Interest rates under the SRF program are currently less than bonds issued by municipalities. Rates vary; however, interest rates in FY 2004 are 5.2 percent. This rate is further reduced by one-third to one-half depending on the projects. SRF bonds have a repayment period of 20 years. Leveraged loans for drinking water projects would be approximately one-third less. As with some municipal bonds, the SRF program includes funding for several water projects from around the State in a single bond issue.

The proceeds of both bonds are typically used to finance the cost of the capital improvement program, to fund certain reserves, and to pay costs of issuance, including the premium for bond insurance. The majority of the proceeds is deposited in a construction fund, and smaller percentages of the proceeds are deposited in a debt service reserve fund and the operation and maintenance fund, or are used for various underwriting discounts.

Total Debt Service Payable from Current Revenues. Major investments have been made in the City's water and sewer infrastructure since the 19th century. Some ongoing capital improvement projects include: (1) the Water Quality Preservation Program, which provides for improvements to the upstate watersheds and includes a land acquisition program, the upgrade of non-City owned water pollution control facilities, and construction of an ultraviolet light disinfection facility; (2) the construction of portions of a new water tunnel (City Tunnel No. 3) from the Hillview Reservoir to Manhattan, Brooklyn, and Queens to create a more flexible system and provide an alternative water supply system in the event of a disruption of any of the tunnels (Stage 1 of the tunnel construction became operational in 1998); (3) trunk distribution and main replacement; and (4) wastewater treatment plant upgrades and construction in compliance with consent decrees.

The City's water and sewer system was obligated to make debt service payments in Fiscal Year (FY) 2004 of approximately $654.8 million on outstanding bonds. This number was projected to increase to $840.6 million in FY 2005. The majority of the debt service would be paid from current water and sewer user payments.

Existing Rates for City Customers. There are approximately 828,000 water and sewer accounts in the City, the vast majority of which receive both water and sewer service. Approximately ninety percent (747,000 accounts) are metered accounts, and annual charges are calculated on actual water usage. Sewer charges are computed as a percentage of water charges. The remaining 88,000 accounts are flat rate accounts and charges are assessed based on building characteristics, the number of housing units in the building, and the number of water-using fixtures in the building. In addition, certain institutions are exempt from payment of water and sewer charges, including religious institutions, certain educational and charitable institutions, homes for the aged, hospitals, and other not-for-profit or charitable corporations. In FY 2004, there were approximately 4,000 accounts that are entirely or partially exempt from water and sewer charges. In FY 2004, water and sewer payments for City customers were estimated to be $1.6 billion.[4]

There are 12 major categories of water and sewer system customers. As indicated in Table 6.7-5, which shows the respective percentage of billings in each category, approximately 65 percent of the user payments that support the water and sewer system come from residential customers.[5] The rate for a single-family residence household effective in FY 2004 is $1.52 per hundred cubic feet (cf).[6] This would represent an annual water and sewer charge of $526 per 100,000 gallons of usage (in 2004 dollars).

Existing Rates for Upstate Customers. Water is provided to customers north of the City on a wholesale basis. The City delivers water to central locations and municipalities or water districts which subsequently distribute the water to their individual customers. For the period 1991 through 2000, the City provided an average of approximately 44,600 million gallons per year, or 122.2 million gallons per day, to upstate customers. The total averaged approximately 8.65 percent of all water supplied to both in-City and upstate customers. The percentage of water supplied to upstate customers has increased in recent years, reaching a high of 9.6 percent in 1999. Four upstate water districts are the primary users of water from the Croton system. These four districts received an estimated 1.38 million gallons per day from the Croton system in 2000. Residential demand is estimated to be approximately 89 percent of total demand, with approximately 61,000 households served.

[4] NYCMWFA. 2003. State Clean Water and Drinking Water Revolving Funds Revenue Bonds. Series I. New York City Municipal Water Finance Authority. New York, NY.
[5] NYCMFWA. 2001. Fiscal Year 2001 Comprehensive Annual Financial Report. New York City Municipal Water Finance Authority. New York, NY.
[6] New York City Water Board. Water Rate Increase for Fiscal Year 2004. May 29, 2003.

TABLE 6.7-5. CITY WATER AND SEWER SYSTEM BILLING

Classification	Percent of Billings (%)
Single-family dwellings	9.6
Two-family dwellings	10.3
Walk-up apartments	19.0
Elevator apartments	25.7
Factories and Industrial Buildings	5.2
Stores	8.3
Office Buildings	5.6
Utility Properties	2.8
Loft Buildings	2.6
Hospitals and Health Facilities	1.5
Hotels	2.3
Other	7.1
Total	100.0

Source: NYCMFWA. 2001. Fiscal Year 2001 Comprehensive Annual Financial Report. New York City Municipal Water Finance Authority. New York, NY.

Rates for water supply service to upstate municipalities or water districts are determined in accordance with the Water Supply Act of 1905, which states that rates shall be based on the system's actual cost of service. Charges to upstate customers are established on the basis of actual total cost of water to the City after deducting the capital and operating costs incurred within the City limits for the distribution and delivery of water to City customers. The sale of water and the rates and the charges for that sale are regulated not only by state law, but by individual agreements between the City and upstate water purveyors. Each contract establishes a system of metering the water sales to individual communities and the application of a specific charge per unit of metered volume. According to information from the Authority, in most cases per capita consumption in the upstate communities is less than that of City customers.[7] The regulated rate for upstate customers may not exceed the rate charged to customers within the City. The upstate purveyors must pay for water in excess of allowance quantities at a rate equal to the in-City metered rate.

Rates for water supplied to upstate purveyors were $342.97 per million gallons in FY 1999, $383.78 per million gallons in FY 2000, $414.42 per million gallons in FY 2001, $448.83 per million gallons in FY 2002, and $485.71 per million gallons in FY 2003. The FY 2004 rate is $542.36 per million gallons. In FY 2004, total water payments from upstate customers are estimated to be $25.4 million. The cost of water per residential household using 100,000 gallons per year in FY 2004 would be approximately $54 (in 2004 dollars). It is important to note that this dollar amount represents the cost of New York City water only. The purveyor of water to the upstate customers would also assess charges for distribution and treatment, as applicable. In addition, upstate customers would be responsible for sewer charges, where applicable.

[7] NYCMWFA. 2002. Water and Sewer System Revenue Bonds, Fiscal 2003 Series A and B Statement. New York City Municipal Water Finance Authority. New York, NY.

6.7.2.2. Future Without the Project

The Future Without the Project conditions were developed for the anticipated peak year of construction (2010) and the anticipated year of operation (2011) for the proposed plant. The anticipated peak year of construction is based on the peak number of workers. For the purpose of evaluating potential impacts associated with the proposed project on water rates, future baseline conditions in the years 2011 and 2016 are discussed. The year 2011 is selected because it represents the anticipated first year of operation for the proposed plant, and the year 2016 is selected because it represents the year in which all the effects of capital costs would be reflected in the debt service of the bonds issued for the facility.

6.7.2.2.1. Water Treatment Plant Site

In the Future Without the Project, it is anticipated that the water treatment plant site would remain relatively unchanged from its existing condition. The water treatment plant site is anticipated to remain as a golf course and driving range in both analysis years. The First Tee program for disadvantaged youth is also anticipated to continue operating at the golf course and to expand its programming.

6.7.2.2.2. Study Area

Projections for population, employment, and labor force were undertaken. Data used to prepare projections were obtained from Woods & Poole Economics, Inc. (W&P) at the county-level. To determine the projections for the future analysis years, it was assumed the anticipated growth or decline would occur in even intervals annually.

Projected growth rates for Bronx County were applied to the study area to determine potential population change for the years 2005, 2010, and 2015 (Table 6.7-6). Based on these rates, the study area's population would increase by approximately 1,441 people (or 5.5 percent) by the year 2010, and approximately 1,598 people (or 6.1 percent) by the year 2011 (Table 6.7-7). It should be noted that the study area projections are intended to indicate anticipated trends. Since the area is well developed, little new residential development is anticipated in the study area.

Property Value. It is anticipated that existing property value trends would continue. Although housing production levels have risen over the past decade, it is anticipated that housing availability and affordability in NYC would continue to be a concern[8].

Study Area Businesses. Projections for employment and labor force for Bronx County were also carried out for the years 2005, 2010, and 2015. Both employment (number of jobs) and the labor force are anticipated to increase in the County (Table 6.6.7-8). Bronx County's employment base is anticipated to increase at a slightly higher rate than its labor force. However, the County's labor force is anticipated to continue to greatly exceed the number of jobs in the County. Table 6.6.7-9 shows the projections for Bronx County for the two future analysis

[8] Salins, Peter. 2002. New York City's Housing Gap Revisited. Civic Report No. 25, February 2002. Center for Civic Innovation at the Manhattan Institute.

TABLE 6.7-6. POPULATION PROJECTIONS

Geographic Unit	2000	2005		2010		2015	
	Total Pop.	Total Pop.	% Change over 2000	Total Pop.	% Change over 2000	Total Pop.	% Change over 2000
Study Area Estimate	26,192	26,925	2.8	27,633	5.5	28,418	8.5
Bronx County	1,334,414	1,371,424	2.8	1,407,942	5.5	1,448,147	8.5

Source: W&P. 2003. County Data Pamphlets for Bronx, NY and New York, NY.

TABLE 6.7-7. POPULATION PROJECTIONS FOR PEAK CONSTRUCTION AND OPERATION YEARS

Study Area	2000 Estimate	2010 Population	2011 Population
Mosholu Site Study Area	26,192	27,663	27,790

Source: W&P. 2003. County Data Pamphlets for Bronx, NY and New York, NY.

TABLE 6.7-8. LABOR FORCE AND EMPLOYMENT PROJECTIONS

		2000	2005		2010		2015	
		Total	Total	% Change over 2000	Total	% Change over 2000	Total	% Change over 2000
Bronx County	Labor Force (no. of people)*	843,530	872,840	3.5	906,900	7.5	926,180	9.8
	Employment (no. of jobs)	284,660	291,440	2.4	301,820	6.0	314,350	10.4

***Note:** Labor force includes all people between the ages of 16 and 65.
Source: W&P. 2003. County Data Pamphlets for Bronx, NY.

TABLE 6.7-9. LABOR FORCE AND EMPLOYMENT PROJECTIONS FOR PEAK CONSTRUCTION AND OPERATION YEARS

County		2000 Total	2010 Total	2011 Total
Bronx County	Labor Force (no. of people)*	843,530	906,900	910,675
	Employment (no. of jobs)	284,660	301,820	304,245

***Note:** Labor force includes all people between the ages of 16 and 65.
Source: W&P. 2003. County Data Pamphlets for Bronx, NY.

years. The largest employment increases in NYC are projected to be in the retail and computer sectors[9].

***Water Rate Structure*.** The New York City Water Board forecasts system-wide revenues and expenses for a future period. The forecast includes an estimate of the annual revenues that would be collected through water and sewer user payments, as well as an estimate of the annual debt service required to amortize bonds issued to fund previous capital improvement projects and future expenditures scheduled under the City's Capital Improvement Program. The City's most recent forecast (covering FY 2004 to FY 2013) was extended to FY 2016, and Croton capital costs were removed for this analysis. The year 2016 was used for the end year of the water rate projection model since 2016 represents the year in which all the effects of the capital costs related to the proposed project would be reflected in the debt service of the bonds issued to finance the capital costs.

Analyzing and illustrating the potential impact of the City's proposed projects on water and sewer rates necessarily involves making a series of assumptions relative to estimated values of a diverse set of 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.

The following are among the variables for which assumptions are typically made: construction schedules and estimated costs for proposed projects, the inflation rate on construction costs, the financing rate realized at the time bonds are issued to finance each project's expenditures, anticipated completion dates, contingencies, estimated annual operations and maintenance expenses, 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, as appropriate.

Future Rates for City Customers. Projected increases in rates in the absence of the proposed project have been estimated, as shown in Table 6.7-10. These increases would be anticipated to occur in the future without the project, and represent an increase in annual water and sewer cost per City customer household using 100,000 gpy from $526 in FY 2004 to $1,066

[9] NYSDOL. 2001. Occupations with Favorable Employment Prospects, 1998-2008: New York City. Available online: http://www.labor.state.ny.us/pdf/rs45.pdf.

in FY 2016. In FY 2011, the anticipated first year of operation for the proposed Croton plant, water rates would be $860. Note that these costs are inflated annually, so each year's rate is expressed in that year's respective dollars.

TABLE 6.7-10 PROJECTED BASE WATER RATES (FUTURE WITHOUT THE PROJECT) [1,2]

Year	In-City Rate Estimates ($)	Upstate Rate Estimates ($)
2011	$860	$91
2016	$1,066	$116

Notes:
1. Projected base case water rate estimates have been updated to reflect, among other factors, January 2004 Capital Program changes and more current estimated interest rates.
2. Costs are inflated, thus each year's rate is expressed in that year's respective dollars.

For the lowest income group in the study area, with a predicted 2004 median household income of $12,055[10] (Tract 271.01), current water and sewer costs account for 4.2 percent of annual median income. The projected rates without the proposed project represent a 52.3 percent increase in water and sewer rates from FY 2004 to FY 2016, accounting for inflation. Assuming an inflation rate of 2.75 percent, household incomes of this lowest income group would increase 38.5 percent to $16,694 during the same period. The projected increase in rates would raise water and sewer costs from 4.2 percent to 6.4 percent of annual median household income in the Future Without the Project. In FY 2011, the projected rates would be 5.9 percent of annual median household income for this income group.

Future Rates for Upstate Customers. Projections for the upstate uniform rate for 2011 and 2016 in the Future Without the Project have been estimated (Table 6.7-10). As stated above, these costs are inflated annually, so each year's rate is expressed in that year's respective dollars. The City charges upstate suppliers a wholesale rate for the water it supplies to upstate communities. Rates are anticipated to increase from $542 per million gallons in FY 2004 to $1,162 per million gallons in FY 2016, a 61.1 percent increase, accounting for inflation. In FY 2011, the anticipated first year of operation for the proposed Croton plant, the anticipated wholesale cost per household using 100,000 gpy would be $91. The anticipated wholesale cost per household using 100,000 gpy in FY 2016 would be $116. The actual rate charged to consumers, which includes the supplier's cost of constructing and maintaining the distribution system, varies between water districts within communities and is much higher than the rate wholesale rate charged by the City to the suppliers.

[10] $12,055 is the projected median family income in 2004 of Tract 271.01 in the Kingsbridge area of the Bronx. This was selected as a representative low income housing area for City water users. This income is based on a $10,825 annual income from the 2000 U.S. Census data, adjusted to 2003 dollars based on the New York MSA Consumer Price Index, and further inflated at 2.75 percent per year to 2004, the current projected year for water rates.

6.7.3. Potential Impacts

This section describes capital and operation and maintenance costs, employment, property tax revenues, water rate changes, and other socioeconomic effects related to the construction and operation of the proposed Croton project.

Some modifications to the manner in which the RIMS II multipliers have been used to estimate spin-off benefits as a result of operation of the proposed project have been made during preparation of the Final SEIS. These changes have been made due to additional consultation with the U.S. Bureau of Economic Analysis (BEA) and public comments received suggesting that the spin-off benefits reported in the Draft SEIS appeared to be too high. Based on discussions with the BEA, it was determined that while use of the RIMS II "final-demand multiplier" for estimating spin-off effects during construction of the proposed plant is accurate, the "direct-effect multiplier" is more appropriate for estimating spin-off effects during operation since some assumptions and associations made for operation of the Croton project (e.g. relationships between earnings and output or employment and output) do not match the assumptions of the RIMS II model for final-demand.[11] Also, it is important to note that the spin-off benefits reflect total effects (for both operation and construction). In other words, the spin-off benefits reported in this section include both the direct impacts from the operation and construction of the plant itself as well as indirect impacts experienced by the County and region.

In the Draft SEIS, multipliers from Sector 11.0800 (office, industrial, and commercial buildings construction) were used for the RIMS II construction analysis. Subsequently, it was determined that multipliers from Sector 11.0900 (other new construction) were more appropriate to use for the proposed plant since these multipliers are referenced to "other heavy construction," such as water treatment plant construction, in SIC codes. Thus, Sector 11.0900 multipliers are used for analysis in this Final SEIS. Also, as a means to more reasonably reflect the number of spin-off jobs in response to public comments received on the Draft SEIS, the RIMS II employment multiplier for construction was corrected for inflation in this Final SEIS since the RIMS multipliers reflect 2000 regional data while costs for the proposed plant are in 2003 dollars. Such an adjustment is also recommended by the BEA. Finally, in this Final SEIS, average year employment rather than peak year employment data have been used for the construction analysis. None of these modifications has resulted in changes to any of the results or conclusions.

6.7.3.1. Potential Project Impacts

The anticipated year of operation for the proposed plant is 2011. Therefore, for most socioeconomic indicators potential project impacts have been assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2011. This section further describes jobs and other socioeconomic effects related to the proposed project, and then compares them to the Future Without the Project to determine potential socioeconomic impacts. In addition, potential socioeconomic impacts due to increases in water rates are analyzed. As previously noted, costs associated with the debt service issued to finance the project would be reflected in the year 2016. Thus, effects on water rates are discussed for 2016 (in 2016 dollars) in addition to 2011, which was disclosed in the Draft SEIS.

[11] BEA. 2004. Personal communication between BEA and M&E, May 24, 2004.

6.7.3.1.1. Socioeconomic Conditions Associated with the Proposed Water Treatment Plant Site

Capital and Operation and Maintenance Costs. The estimated capital and construction costs for the proposed project would be approximately $1.2 billion. Annual operation and maintenance would be approximately $22 million. These amounts are in 2003 dollars.

Jobs. Fifty-three new and permanent employees would be required at the proposed water treatment plant. These new employees would be in addition to the 35 workers currently employed at the Mosholu Golf Course and Driving Range. The new employees may reside in Bronx County, elsewhere in New York City, in Westchester County, or in other nearby counties. The City may benefit from additional income tax revenue paid by proposed plant employees living within the City. A resident's income tax depends on his or her income bracket, but includes a flat amount plus a percentage of the income above a baseline threshold (see Appendix A).

This analysis provides a range of estimates for total income taxes the City could receive from the workers at the proposed plant. The low estimate assumes that all workers live outside of the City. This situation would not provide any income taxes to the City. The high estimate assumes that all workers live within the City and file as either single or married but filing separately. This situation would provide the City with just over $89,000 per year in cumulative income taxes. The actual benefit that New York City would see would be between these two estimates. These estimates do not account for deductions, and the analysis was determined in 2003 dollars and not for the first year of operation (2011). Also, some of the workers may currently be employed by NYCDEP. Calculations are provided in Appendix A.

Indirect Effects. The 53 permanent operations employees, their salaries, and the total dollars invested annually by NYCDEP for operation and maintenance ($22 million) of the proposed project would create indirect effects on Bronx County's economy. These effects include additional jobs created in the County, associated earnings, and increased output, which are estimated using RIMS II multipliers (see Section 4.7, Data Collection and Impact Methodologies, Socioeconomic Analysis for details on RIMS II). Multipliers were not available for water supply facilities for Bronx County, so this analysis uses the multipliers for the water supply industry for Westchester County. The results are provided in Table 6.7-11, which show that spin-off benefits could add a total of 186 new jobs to the County's economy (including the 53 employees at the plant). It is likely that the benefits to Bronx County would be less, since some of the benefits could occur in other counties. Multipliers were not available for water supply facilities for Bronx County, so this analysis uses the multipliers for the water supply industry for Westchester County. These benefits would be in addition to the economic activity generated by the golf course, driving range, and clubhouse that would be restored upon completion of construction of the proposed plant.

TABLE 6.7-11. INDUCED ECONOMIC BENEFITS DURING OPERATION, BRONX COUNTY

Economic Factor	Induced Effects to Bronx County's Economy
Total Output to County's Economy	$38,898,200
Total Income	$6,575,985
Total New Jobs	186

Source: Bureau of Economic Analysis, U.S. Department of Commerce. 2003. RIMS II for Westchester County, 2003.

The RIMS II employment multipliers indicate that the most pronounced growth would occur in the following sectors: construction; electric, gas and sanitary services; retail and wholesale trade; business services; and insurance. It is reasonable to conclude that some of the benefits would occur in the immediate area. For example, sales could increase for commercial services including gas stations, convenience stores, and restaurants, such as those found along Broadway and Jerome Avenue. If the workers were to frequent businesses during, before, or after their workday, it could result in increased business to area merchants.

Property Values. It is difficult to determine the extent to which potential project-related impacts would cause displacement. One potential indicator of how project-related impacts affect displacement is reduced property values since property values in an area reflect the willingness or unwillingness of people to live in a certain area. To determine potential impacts to property values during operation of the proposed plant, literature was reviewed that covered a broad range of land uses perceived as undesirable or unwanted. Unfortunately, no studies were identified that were similar in nature to the proposed plant and its operation. The studies focused on noxious land uses (such as incinerators, hazardous waste facilities, and Superfund sites), and less noxious uses (mental health facilities and subsidized housing). Other land uses addressed in the studies included high voltage transmission lines and mining. Overall, each type of undesirable land use had unique features that were analyzed to determine potential impacts to property values, including health and safety risks, visibility, or the introduction of distinct population groups to the neighborhood.

The studies were inconclusive or conflicting in their results. For example, research by Greenberg et al. indicated that an incinerator decreased property values and increased residents' desires to relocate according to the distance from the site,[12] while research by Liu claimed that empirical studies have not provided any conclusive evidence as to whether an undesirable facility negatively affects nearby property values[13]. In addition, Steelman and Carmin state that the siting of facilities such as landfills or incinerators often make significant contributions to surrounding neighborhoods by providing local jobs and economic stability, thereby minimizing

[12] Greenberg, Michael, Dona Schneider, and Jim Parry. 1995. Brown Fields, a Regional Incinerator and Resident Perception of Neighborhood Quality. Risk: Health, Safety, & Environment Vol. 6, No. 3, pp. 241-260.
[13] Liu, Feng. 1997. Dynamics and Causation of Environmental Equity, Locally Unwanted Land Uses, and Neighborhood Changes. Environmental Management Vol. 21, No. 5, pp. 643-656.

any impacts on property values[14]. A study of high voltage electric transmission lines was determined to have an effect on property values, but only for a narrow corridor of houses in direct proximity to the lines[15]. The study attributed the effects to the appearance of the lines. Any power lines associated with the proposed plant would be underground.

Some studies recognized that many external factors affect the rating of neighborhood quality and property values rather than any specific land use, such as presence of crime, litter, and existing undesirable land uses[16]. These factors further complicate a comparison between the studies and the proposed project. Most of the studies noted a lack of adequate sales data. Many studies did not address whether the values that were affected would rebound over time. However, Kiel and McClain did discuss rebounding in a study on an incinerator. They noted that the combination of the loss by the seller and the benefit the buyer realizes after the property values rebound results in no overall loss in value[17].

Many of the studies stressed the importance of community involvement during the siting process in order to lessen the negative perceptions associated with a facility. Research by Liu suggests that the impact of an undesirable land use on the socioeconomic structure of a neighborhood depends on how the neighborhood responds to the undesirable land use and what risks they perceive as a result of it[18].

The proposed project is not considered to be similar to projects within undesirable land use categories. The existing golf course and facilities would be restored, and the operation of the proposed project is not anticipated to generate appreciable amounts of undesirable pollution. Therefore, it is not anticipated that the operation of the proposed plant would significantly cause commercial or residential property values to rise or fall.

6.7.3.1.2. Potential Displacement Impacts (other than those due to Water Rate changes)

This section analyzes the potential for direct and indirect displacement during operation of the proposed plant.

Operation of the proposed plant would not result in direct displacement since existing facilities would be restored on the water treatment plant site after construction. Indirect displacement is not anticipated since the completed water treatment plant site would resemble baseline conditions and there would be no significant impacts associated with the operation of the proposed plant.

---

[14] Steelman, Toddi A. and Joann Carmin. 1998. Common Property, Collective Interests, and Community Opposition to Locally Unwanted Land Uses. Society & Natural Resources. 11, pp. 485-504.

[15] Hamilton, S. W. and G.M. Schwann. 1995. Do high voltage electric transmission lines affect property value? Land Economics. 71, pp. 436 - 439.

[16] Greenberg, Michael, Dona Schneider, and Jim Parry. 1995. Brown Fields, a Regional Incinerator and Resident Perception of Neighborhood Quality. Risk: Health, Safety, & Environment Vol. 6, No. 3, pp. 241-260.

[17] Kiel, K.A. and K. T. McClain. 1995. House Prices during Siting Decision Stages: The Case of an Incinerator from Rumor through Operation. Journal of Environmental Economics and Management. 28, pp. 241-255.

[18] Liu, Feng. 1997. Dynamics and Causation of Environmental Equity, Locally Unwanted Land Uses, and Neighborhood Changes. Environmental Management Vol. 21, No. 5, pp. 643-656.

6.7.3.1.3. Water Rate Structure

The following describes the potential socioeconomic impacts on City and upstate consumers of the City Water Supply System due to potential water rate increases from the proposed project. If these rate increases were high enough, potential indirect socioeconomic impacts such as housing dislocation could occur.

Capital Costs. Table 6.7-12 shows the anticipated capital costs in 2003 dollars for the proposed project. As discussed in Section 4.7, Data Collection and Impact Methodologies, Socioeconomic Analysis and also noted in the existing conditions, there are two forms of borrowing that would be available to fund the construction of the proposed project and off-site facilities: (1) bonds issued by the New York City Municipal Water Finance Authority ("Authority"), and (2) bonds issued through the State Revolving Fund Loan Program (SRF).

TABLE 6.7-12. ESTIMATED CAPITAL AND O&M COSTS AT THE MOSHOLU SITE

Capital Cost	O&M Cost
$1,235,000,000	$22,000,000

Note: Costs reflects total costs for all components of the project in 2003 dollars.

It is assumed that the Authority would issue long-term debt for the permanent financing of the capital costs. The long-term debt of the Authority is assumed to cover a term of 30 years, with the level repayment of principal and interest on the bonds, and an annual interest rate of approximately 6.26 percent, which is the weighted average of anticipated interest rates between FY 2004 and FY 2016. The interest cost on commercial paper and the principal and interest cost for Authority debt become an additional revenue requirement that must be met through the rates and charges of the water and sewer system.

The City may be able to obtain a low-interest SRF from the State Environmental Facilities Corporation (EFC) for part or all of the construction costs for the proposed project. Funds obtained from the EFC would carry a lower interest rate; however, these funds must be repaid in a shorter time frame (20 years as opposed to 30 years). The result is that overall debt service using SRF funding would not result in a substantially lower cost than Authority financing.

Operating Costs. Operating costs include the labor required to operate and maintain the systems, as well as expenses such as electricity, chemicals, spare parts and property taxes. Labor costs are escalated from the year 2011 at the rate of 2.5 percent per year and costs other than labor are escalated at the rate of three percent per year. These escalations are consistent with the rates used in the financial forecast prepared in connection with the issuance of the bonds.

Potential Impacts on City and Upstate Consumers. The following section evaluates potential socioeconomic impacts due to water rate increases on City and upstate consumers of the New York City Water Supply system. The year 2016 was used for the end year of the water rate projection model since 2016 represents the year in which all the effects of the capital costs

related to the proposed Croton project alternatives would be reflected in the debt service of the bonds issued to finance the capital costs. While total costs over the life of the proposed project would vary depending upon the type of financing method selected (due to the shorter repayment period, but lower interest rate imposed by the SRF program), as noted above, the actual difference in cost between the Authority financing and the SRF financing is negligible. Therefore, the anticipated rate increases and the effect on charges to residential consumers have been developed for the water treatment plant site using only the Authority form of financing.

Analyzing and illustrating the potential impact of the proposed Croton plant at the Eastview Site on water and sewer rates necessarily involves making a series of assumptions relative to estimated values of a diverse set of 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.

The following are among the variables for which assumptions have been made: the proposed 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 project's expenditures, the anticipated completion date, contingencies, the estimated annual operations and maintenance expenses, and the inflation rates on operations and maintenance expenses including personnel costs and materials and equipment costs.

Using these assumptions, the allocation of the project costs for the years 2011 and 2016 has been developed for the proposed Croton project, including the $200 million amenities package. Table 6.7-13 shows the anticipated charge to City and upstate consumers in the years 2011 and 2016 (in 2011 dollars and 2016 dollars, respectively), the anticipated dollar increase over the estimated rate without the proposed project (base rate), and the percentage increase the new rate represents over the base rate. The base rates, which reflect the City's CIP without the proposed Croton project, are also shown in this table.

TABLE 6.7-13 ESTIMATED ANNUAL WATER RATES FOR MOSHOLU WATER TREATMENT PLANT

Water Rate Projection Model	Year	In-City Rates (Dollar)	Increase over Base Rate (Dollar)	(Percent)	Upstate Rate (Dollar)	Increase over Base Rate (Dollar)	(Percent)
Base Case (CIP without Croton)	2011	860	0	0.0	91	0	0.0
	2016	1,066	0	0.0	116	0	0.0
Mosholu with $200 million amenities	2011	888	28	3.3	91	0	0.0
	2016	1,110	44	4.1	116	0	0.0

Note: Base rate is the estimated rate cost in the Future Without the Project. Each year's rate is expressed in that year's respective dollars.

As previously noted, costs associated with the debt service issued to finance the project would be reflected in the year 2016. Thus, the year 2016 is used for the following water rate discussion as an illustrative example of potential water rate impacts resulting from the proposed project. Note that values are presented in 2016 dollars.

As noted in Table 6.7-13, the average annual payment per household required in 2016 to support the City share of the proposed project would be $44. This represents a 4.1 percent increase over the base rate ($1,066, without the proposed project) in the year 2016.

There would be no anticipated increase in annual customer cost to upstate consumers in 2016 as a result of the proposed project since no work would occur outside the City if the water treatment plant were located in the Bronx, as presented in Table 6.7-13. Thus, no increase over the base rate is anticipated in the year 2016 as a result of the proposed project.

Potential Impacts on City Residential Consumers. In 2000, approximately 2.1 million units in the City were renter-occupied (69.8 percent) and over 900,000 units were owner-occupied (30.2 percent), as shown in Table 6.7-14. Queens had the highest number of owner-occupied units (334,815); Brooklyn had the highest number of renter-occupied units (642,360).

TABLE 6.7-14. DISTRIBUTION OF HOUSING UNITS IN NEW YORK CITY, 2000

Borough	Renter occupied	Owner occupied	Percent Renter (%)	Percent Owner (%)
Bronx	372,525	90,687	80.4	19.6
Brooklyn	642,360	238,367	72.9	27.1
Manhattan	589,912	148,732	79.9	20.1
Queens	447,849	334,815	57.2	42.8
Staten Island	56,646	99,695	36.2	63.8
New York City	2,109,292	912,296	69.8	30.2

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

As described above, in the year 2016, the proposed project would require an increase of approximately $44, or 4.1 percent, in annual water and sewer payments per average household. Table 6.7-15 presents the median gross rent in the five boroughs in 2016 (presented in 2016 dollars), to be consistent with the end year of the water rate projection model. Gross rent is defined by the U.S. Census as the contract rent plus the estimated average monthly cost of utilities (electricity, gas, water and sewer) and fuels (oil, coal, kerosene, wood, etc.) if these are paid by the renter. In 2016, the estimated median monthly gross rent ranges from $960 in the Bronx to $1,232 in Manhattan. The average for all renter-occupied units in the City would be $1,091. As shown in the Table 6.7-15, the additional monthly rate charge of less than four dollars (figured by dividing the annual rate increase by twelve) related to implementation of the

TABLE 6.7-15. POTENTIAL IMPACT ON RENTER MEDIAN MONTHLY GROSS RENT[1]

Borough	Median Monthly Gross Rent	Increase as Percentage of Median Monthly Gross Rent (%)
Bronx	$960	0.38
Brooklyn	$1,040	0.35
Manhattan	$1,232	0.30
Queens	$1,200	0.31
Staten Island	$1,149	0.32
New York City	$1,091	0.34

Notes:
1. Represents percentage increase in 2016 dollars due to implementation of the proposed project.
2. Adjusted to 2003 dollars based on the New York MSA Consumer Price Index (CPI) for 2000 (182.5) and 2003 (197.8); then further inflated at 2.75 percent per year to 2016, the end year of the water rate projection model.
Source: U.S. Department of Commerce, Bureau of Census, 2000.

proposed project would represent increases of less than one percent in median monthly gross rent.

Table 6.7-16 presents the median monthly costs of owner-occupied units in the five boroughs in 2000, expressed in 2016 dollars to be consistent with the end year of the water rate projection model. The median monthly owner costs are estimated by the U.S. Census for one-family houses and include the following expenses: mortgages (including first, second, and third mortgages), equity loans, real estate taxes, insurance, utilities (including water, electricity and gas), heating fuel, and other miscellaneous fees. In 2016, median monthly owner-occupied unit costs were highest in Manhattan, $5,596 and lowest in Staten Island, $2,215. The average for all owner-occupied units in New York City would be $2,418. As shown in the Table 6.7-16, the implementation of the proposed project would result in increases of less than one percent in monthly owner cost, using the same method as above.

The potential impact of the proposed project was also evaluated for the lowest income groups in the City. As discussed in Future Without the Project section above, median household income for in-City customers in the lowest income block in the Bronx study area (Tract 271.01) is projected to be $12,055 in 2004, and is anticipated to rise to $16,694 by 2016. Water and sewer rates are anticipated to rise from 4.4 percent of annual income in 2004 to 6.4 percent in 2016 without the proposed Croton project. The additional $44 of annual water and sewer costs resulting from the construction and operation of the proposed Croton project would raise the percentage of annual income that would go to water and sewer payments from 6.4 percent to 6.6 percent. This incremental increased expense of 0.2 percent of annual income to the lowest income group is not considered significant, and the costs to other users would be less adverse.

TABLE 6.7-16. POTENTIAL IMPACT ON CITY OWNER MEDIAN MONTHLY COST[1]

Borough	Median Monthly Owner Cost[2]	Increase as Percentage of Median Monthly Cost (%)
Bronx	$2,452	0.15
Brooklyn	$2,484	0.15
Manhattan	$5,596	0.07
Queens	$2,472	0.15
Staten Island	$2,215	0.17
New York City	$2,418	0.15

Notes:
1. Represents percentage increase in 2016 dollars due to implementation of the proposed project.
2. Adjusted to 2003 dollars based on the New York MSA Consumer Price Index (CPI) for 2000 (182.5) and 2003 (197.8); then further inflated at 2.75 percent per year to 2016, the end year of the water rate projection model.
Source: U.S. Department of Commerce, Bureau of Census, 2000.

While the proposed project would result in a minimal increase in monthly costs to both renters and owners of residential units in New York City, it is unlikely that they would relocate from the City as a result of the proposed project. Therefore, the proposed project is not anticipated to result in significant adverse socioeconomic impacts on New York City residential system consumers, including those within the study area.

6.7.3.2. Potential Construction Impacts

The anticipated year of peak construction for the proposed plant is 2010, in terms of peak number of workers on the site. Therefore, potential construction impacts have been assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2010. This section further describes jobs and other socioeconomic effects related to the proposed construction activities, and then compares them to the Future Without the Project to determine potential socioeconomic impacts. References to other analyses are included where appropriate.

Construction would temporarily directly displace the driving range, clubhouse, and a portion of the golf course from the water treatment plant site. This temporary displacement would not be significant. As described in Section 9.2.3, the concessionaire would be compensated for the temporary displacement, the clubhouse would be temporarily relocated to the Shandler Recreation Area, and golfers would still be able to use a reconfigured golf course and driving range within the Mosholu Golf Course. The area disrupted during construction would be restored to the greatest extent possible upon completion of the proposed project.

6.7.3.2.1. Jobs

Roughly 660 construction workers per day would be on-site in the peak year. These construction workers would be in addition to the 35 workers employed at the golf course and driving range, who would not be displaced during construction. Since it is not certain what the salaries of each construction worker would be, a median salary of approximately $49,600 (based on the salaries of the types of construction workers that would be on-site) was used to determine examples of income tax benefits the City could collect. Since the New York City Commuter Tax has been repealed, one worker, with this median salary and living outside of New York City, would not pay any taxes to the City. If residing in New York City, however, the same worker would pay approximately $1,700 in taxes per year to the City (Appendix A).

6.7.3.2.2. Indirect Effects

The 660 construction workers would likely add money to the local economy through their visits to area businesses. The RIMS II multipliers used for this analysis are available by county for certain detailed industries. The detailed industries are based on the 1999/2000 annual input-output accounts and are referenced to standard industrial classification (SIC) codes. The multipliers for the Croton analysis for the construction period are those developed for the construction industry, specifically Sector 11.0900, other new construction (construction other than residential, commercial, or industrial buildings, or highway and streets).

The multipliers for each county are derived based on data from national input-output accounts and other secondary data, and then adjusted by regional data. These regional data account for variations in the level of activity in the various sectors of the local economy. According to data provided by the U.S. Department of Commerce Bureau of Economic Analysis, multipliers for new activities tend to be higher in a region when existing levels of that activity are fairly low. Conversely, when there is already a fairly high level of a certain activity, the multiplier for new input into that activity is relatively low. Thus, multipliers for new input in the water supply and sewerage system classifications are higher in Westchester County where the existing infrastructure is less developed than in Bronx County where the infrastructure systems are essentially fully developed.

The RIMS II multipliers for the construction industry indicate that the sectors that would benefit most during construction are retail trade and business services. It is not possible to determine exactly where the workers may conduct business, but it is likely that they would visit gas stations, convenience stores, and restaurants. The dollar investment that NYCDEP would make for construction of the proposed plant, including capital costs, could add an average of 456 new jobs per year of construction to the economy, according to the RIMS II multipliers for Bronx County (Table 6.7-17 and Appendix A). The actual benefit would be less since the benefits would likely spill over to other counties. Benefits associated with construction of the proposed plant would be in addition to those generated by the golf course.

TABLE 6.7-17. INDUCED ECONOMIC BENEFITS DURING CONSTRUCTION, BRONX COUNTY

Economic Factor	Induced Effect to County's Economy
Total Output to County's Economy	$1,616,244,500
Total Income	$134,615,000
Average Annual Employment	456

Source: Bureau of Economic Analysis, U.S. Department of Commerce. 2003. RIMS II for Bronx County, 2003.

6.7.3.2.3. Potential Displacement Due to Construction Related Noise, Vibrations, Traffic and Air Quality Impacts

The characteristics of the proposed project were reviewed to identify impacts that could result in indirect displacement due to construction related noise, vibrations, traffic, and air quality impacts. This analysis depends upon other analyses, as discussed below. Refer to the respective sections for an explanation of peak years.

Noise. Construction activities at the water treatment plant site would likely inconvenience nearby land uses, specifically the golf course fairways immediately adjacent to the site, but they would not significantly interfere with the functioning of the land uses. Construction noise levels emanating from the construction site are predicted to result in significant adverse impacts that would require mitigation. Mobile source emissions from construction and operations, and stationary noise emissions during operations, are not predicted to result in significant impacts (see Section 6.10, Noise).

Vibrations. Due to the magnitude of this project, it is possible that excavation activities may cause vibrations. Vibrations could occur due to rock blasting activities and from tunnel boring machine (TBMs). The foundation and the shafts of the proposed Croton project would require rock drilling and some blasting. The elevated subway line located to the east of the site could be sensitive to vibrations. New York City Transit (NYCT) has developed guidelines for construction activity near elevated subway lines to protect the structures from any damage. These guidelines would be incorporated into all construction specifications. NYCT has been consulted specifically on the proposed activity at the Mosholu Site and has confirmed that their standard construction practices would be adequate to protect the elevated subway (see Section 6.10, Noise Analysis).

Traffic. Increases in construction-related traffic would occur, but no displacement or indirect effects would be anticipated to occur given that mitigation measures would be incorporated into the project to address the significant traffic-related impacts during construction (Section 6.9, Traffic and Transportation, and Section 9, Mitigation).

Air Quality. Air quality could be affected by both mobile and stationary sources. The mobile source emissions during construction or operations from vehicles would not result in significant air quality impacts (see Section 6.11, Air Quality).

Stationary sources include diesel emissions from heavy equipment and fugitive dust emissions raised from the movement of bulk material during construction, and boiler emissions during operations. The concentrations resulting from construction and operation of stationary equipment would not be significant. See Section 6.11 for detailed information on air quality analyses.

Overall, jobs created and their indirect effects would result in positive socioeconomic effects. Potential noise impacts are not anticipated but monitoring would be conducted and any unforeseen excessive sound levels at sensitive receptor locations would be addressed. Traffic impacts would be mitigated. Air quality impacts would not be significant. Based on the above analysis, it is not anticipated that potential significant adverse socioeconomic impacts would occur during construction.