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

7.16. INFRASTRUCTURE AND ENERGY

7.16.1. Introduction

This section discusses the existing and potential demands upon water, wastewater, stormwater drains, electric systems, and natural gas associated with the proposed Croton Water Treatment Plant (WTP) project at the Harlem River Site. The stormwater management facility is also discussed in this section.

For the purpose of this analysis, a study area of approximately one-half mile has been established. The following analysis was performed in accordance with the methodology outlined in Section 4.16, Data Collection and Impact Methodologies, Infrastructure and Energy.

7.16.2. Baseline Conditions

7.16.2.1. Existing Conditions

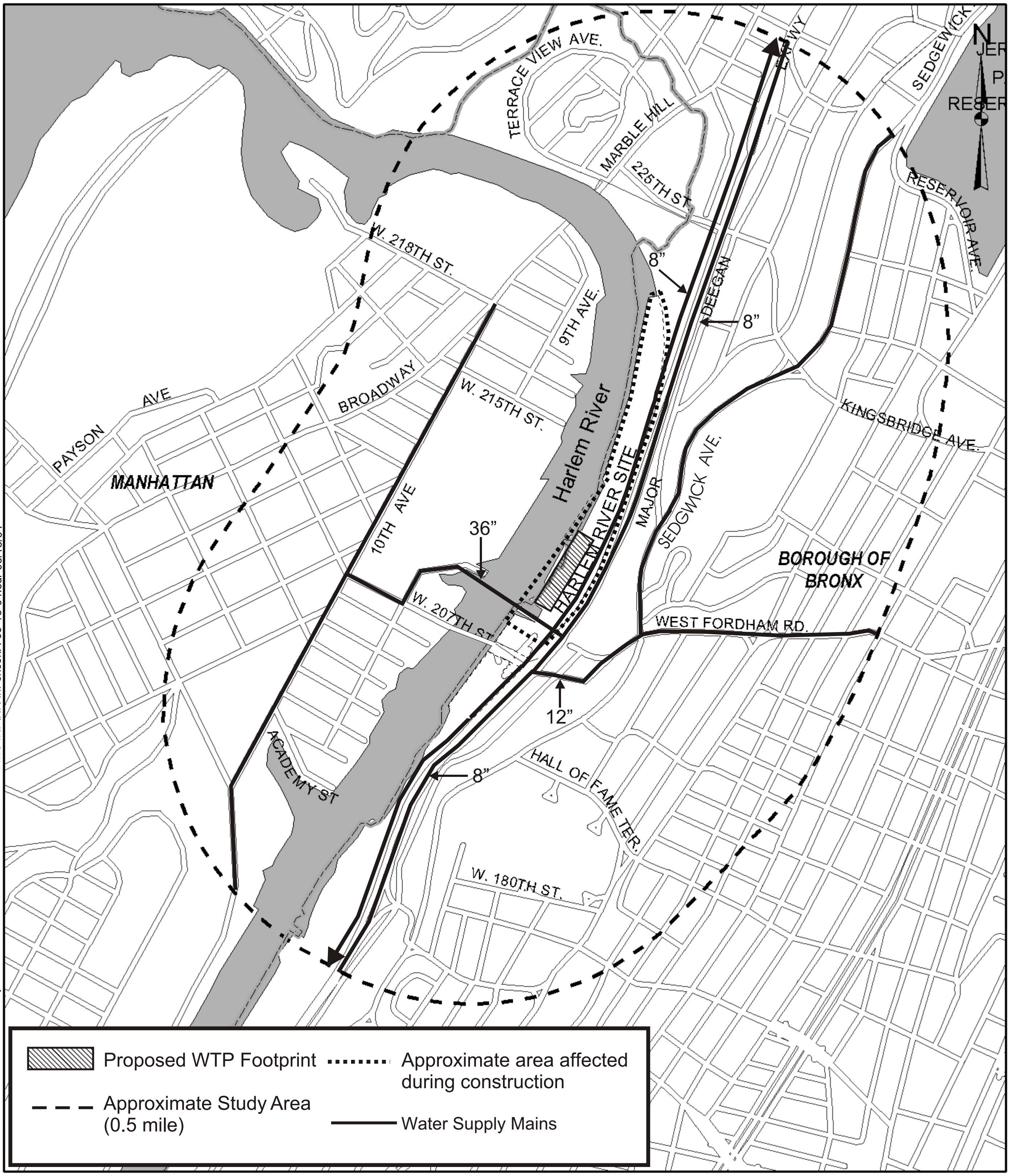
The New York City Department of Transportation (NYCDOT), Consolidated Edison Company of New York, Inc. (Con Edison), Storage Post self-storage facility, XCEL Ready-Mix Concrete batch plant, and CSX currently occupy the water treatment plant site.

7.16.2.1.1. Water supply

The City of New York (the City) consumes approximately 1.4 billion gallons of water per day through the combination of Catskill/Delaware and Croton Water Supply Systems. Residents of the Bronx use approximately 200 million gallons per day (mgd) of water, of which the Croton Water Supply System supplies roughly 50 mgd[1]. The water treatment plant site is currently not connected nor do the existing facilities receive potable water from the City's Water Supply System, although they are within the service area of both the Catskill/Delaware and Croton Systems. The two active businesses, the self-storage facility and the batching plant, operate and maintain their own water tanks.

The City maintains an 8-inch water main under Exterior Street supplying two fire hydrants, which are a hundred feet apart and located between Landing Road (a mapped but unimproved street) and the University Heights Bridge. This main also supplies water to a fire hydrant at the top of the West Fordham Road access ramp (Figure 7.16-1). The 8-inch water main ties into a 36-inch steel-flexible joint pipe that runs along Landing Road (west of the Major Deegan), connecting the Bronx water supply main along Sedgwick Avenue to the Manhattan water supply main on Tenth Avenue. The City also maintains another 8-inch main that runs over the Major Deegan Expressway/West Fordham Road overpass and terminates at the on-ramp to the southbound lanes of the Major Deegan Expressway. This 8-inch main ties into a 12-inch line, which runs beneath Fordham Road. Both of the 8-inch water mains have a pressure of approximately 45 to 50 pounds per square inch (psi).[2] No domestic water supply utility connections exist in the vicinity of the water treatment plant site.

[1] North River STP-Odor, Flow & Air Emissions Control Order, DEC Case No. R2-3669-9105, 2003.
[2] NYCDEP, City Wide Hydraulic Testing Unit, October 15, 2002.



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Not to Scale

Harlem River Site
Water Distribution System

Croton Water Treatment Plant

Figure 7.16-1

7.16.2.1.2. Upstate Water Supplies

Many upstate (i.e., outside of New York City) water supplies withdraw part or all of their supplies from the New York City Water Supply System. These water suppliers and their retail customers are discussed in Section 1.5, Croton Water System Users. Modifications to or the introduction of a water treatment system could result in necessary changes to the existing service customers and connections. Table 7.16-1 presents these connections and their capacities.

TABLE 7.16-1. EXISTING UPSTATE WATER SUPPLIES UPSTREAM OF THE PROPOSED PLANT

Croton Water Consumers	Connections	Capacity (MGD)	Year 2002 Usage (Million Gallon) [1]	Other Potable Water Sources [2]
Town of New Castle [3]	Pump House Stanwood Consolidated Water District	10.0	19.4	Catskill System
Village of Ossining [4]	Ossining Pumping Station	4.0	840	Indian Brook Reservoir
Village of Briarcliff Manor [5]	Briarcliff Pump Station	4.0	474.5	Village of Ossining and United Water New Rochelle
Village of Sleepy Hollow [6]	Croton Pump Station	2.8	1.8	Catskill System
Village of Tarrytown [1]	No pump station	4.0	0	Catskill System
Village of Irvington [7]	Pit connection locates approximately 2,000 ft below grade. Near NCA Shaft No. 12 A	2.25	77.1	Catskill and Delaware Systems. Also a small reservoir not in service since 1998.
United Water New Rochelle [8]	Croton Pumping Station Near NCA Shaft No. 14A	17	Approx. 365	Catskill and Delaware Systems

TABLE 7.16-1. EXISTING UPSTATE WATER SUPPLIES UPSTREAM OF THE PROPOSED PLANT

Notes:

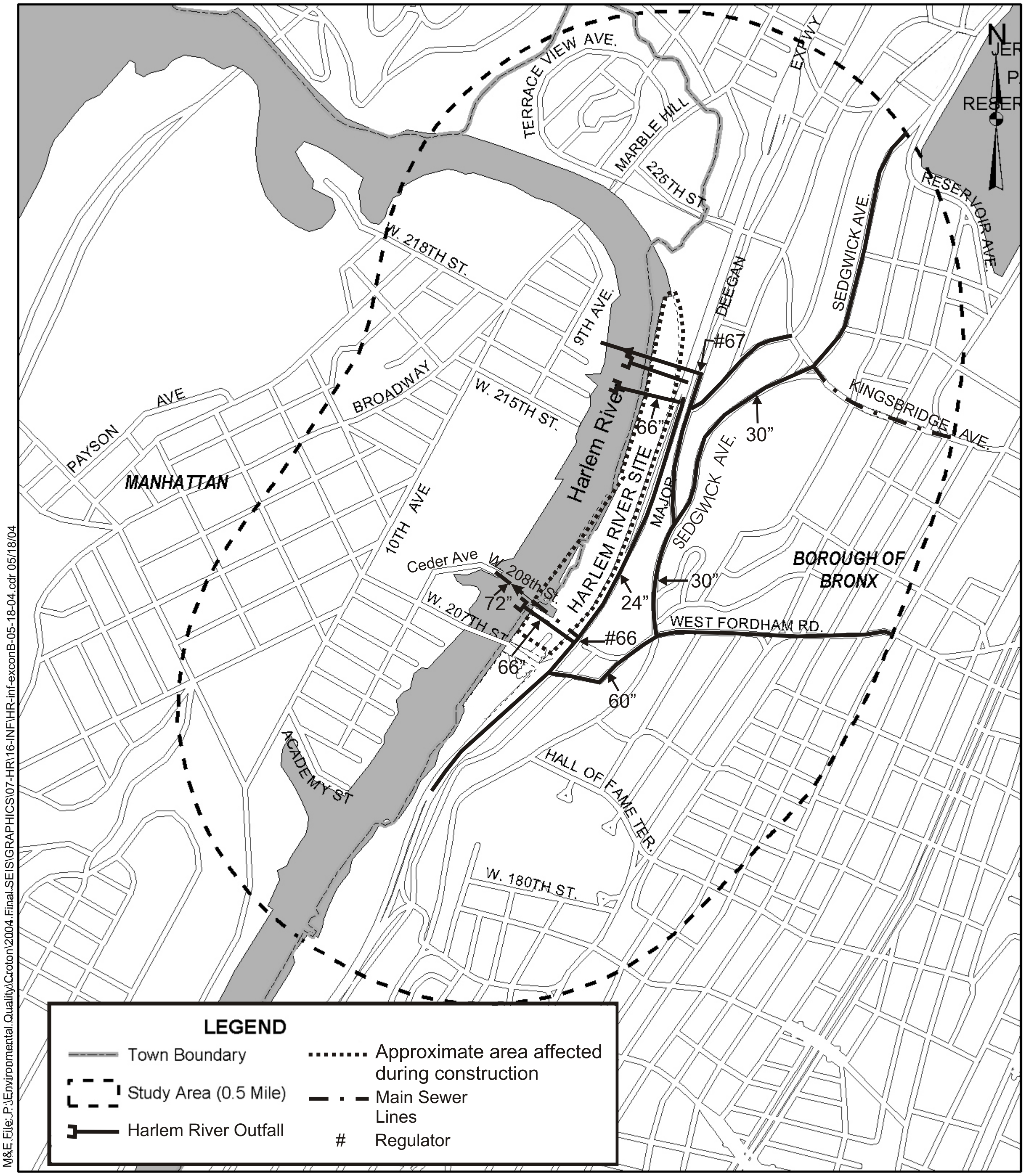
MGD = million gallon per day

1. Information received from the Annual Drinking Water Quality Report, 2002.
2. Other sources of potable water excluding the private wells.
3. Information provided by Gerard Moerschell, Commissioner of Public Works, October 29, 2002.
4. The Village of Ossining has the capacity to withdraw water from the New Croton Aqueduct from its connection to Shaft No. 4 and from the Croton Reservoir trough the Old Croton Aqueduct. Its NCA connection is used as a backup only. Information provided by Frank Sylvester, Chief Operator, Ossining Pumping Station, October 30, 2002.
5. Information provided by George Lackowitz, Water Consultant for the Briarcliff Manor Water District, November 13, 2003. Other potable water sources are used for emergency only during non-summer months.
6. Information provided by John D. Vydareny, WTP Operator, November 19, 2003.
7. Information provided by Donald Casadone, Irvington Water Department, October 30, 2002.
8. Communities served by United Water New Rochelle include the City of New Rochelle, Tow of Eastchester, Town of Greenburgh, Village of Ardsley, Village of Bronxville, Village of Dobbs Ferry, Village of Hastings-on-Hudson, Village of Pelham, Village of Pelham Manor and the Village of Tuckahoe. The New Croton Aqueduct supplies 5% or less of the total water purchased from New York City Water Supply System. Information provided by Chris Graziano, United Water New Rochelle, November 13, 2003. Year 2002 usage was calculated by multiplying 5% times the total amount of water purchased by UWNR presented in their 2002 Annual Drinking Water Quality Report.

7.16.2.1.3. Sanitary Sewage

The City does not maintain existing sewer connections to the businesses in the vicinity of the water treatment plant site; except for the self-storage facility and the batch plant, no sanitary sewage is generated on the water treatment plant site.

NYCDEP maintains a sewer easement in the northern section of the CSX property in the vicinity of the proposed water treatment plant site. Currently on the easement there is a 15 by 8.6-foot (oval shape) sewer pipe that runs north under the MTA/Metro-North rail tracks to West 225th Street; a 15 by 9.2-foot combined sewer outfall that directs the overflow to the Harlem River and is connected to the 15 by 8.6-foot sewer pipe; and a No. 67 regulator that connects to a 7-foot interceptor. The 7-foot interceptor runs along Sedgwick Avenue and directs sewage toward the Wards Island Water Pollution Control Plant (WPCP) (Figure 7.16-2). The NYCDEP also maintains a regulator (No. 66) under the Landing Road/Cedar Avenue intersection that connects a 24-inch and a 30-inch stormwater pipe from the Major Deegan Expressway and a 60-inch sanitary branch interceptor from Fordham Road to a 66-inch combined sewer outfall that passes through the Harlem River Site to the Harlem River. In addition, there is another 66-inch stormwater outfall with a tide gate just south of the existing NYCDEP easement that also passes through the site. This outfall is connected to a 66-inch stormwater drain from the Major Deegan Expressway. The capacity of the southern outfall is 210 cfs and the capacity of the northern outfall is 125 cfs.



Not to Scale

Harlem River Site
Combined Sanitary Sewer System

Croton Water Treatment Plant

Figure 7.16-2

The residential, commercial, and industrial areas surrounding the water treatment plant site are located within the service area of the Wards Island WPCP. The Wards Island WPCP State Pollutant Discharge Elimination System (SPDES) permit limit for dry-weather flow is 250 mgd. The annual average dry-flow for the plant was 184 mgd in 2000 and 2001. The average daily flow was approximately 195 mgd in 2001, while the WPCP design capacity is 275 mgd. The Wards Island drainage area consists of sanitary, storm, and combined sewer systems. During dry weather, the combined sewers function as sanitary sewers, bringing sewage flows to Wards Island WPCP. During wet weather, large volumes of rainfall runoff enter the combined system through storm drains and catch basins in the streets and mix with the sanitary sewage being sent to the WPCP. In the event that wet weather flow exceeds the WPCP design capacity, the combined sewage is discharged into the East River.

7.16.2.1.4. Stormwater Infrastructure

The study area for the water treatment plant site includes the stormwater draining from the area that is bounded by the site boundary and Exterior Street. Drainage conveyances along the Major Deegan Expressway prevent upland sources to the watershed. The water treatment plant site is narrow in the east-west direction with a maximum width of approximately 400 feet, and it is elongated in the north-south direction, approximately 3,400 feet long. The ten-year 24-hour storm (five inches) peak surface runoff generated from the water treatment plant site is approximately 82 cubic feet per second. Total volume discharged during the ten-year storm is equivalent to approximately 5.9 acre-feet.

The NYCDEP maintains three combined sewer outfalls in the vicinity of the water treatment plant site (refer to the Sanitary Sewage section above). Although this system passes through the water treatment plant site, the City does not maintain any collection systems in the vicinity of the water treatment plant site. Section 7.15, discusses the surface water sources, water quality and quantities in detail.

7.16.2.1.5. Energy Demand

The New York Power Authority (NYPA) sells electricity to Con Edison and government customers. Electric power is distributed and transmitted by Con Edison throughout most of Westchester County and New York City.

On the water treatment plant site, Con Edison supplies electricity to the self-storage facility and the batch plant. Con Edison maintains overhead feeders along Exterior Street that supply these businesses. However, the power that is supplied to the concrete batching plant is insufficient to run the operation and therefore the plant uses a freestanding diesel electric generator for extra electricity. According to Con Edison, the local area power supply is close to its capacity and the feeder system is not able to provide the required capacity to the XCEL Ready Mix concrete batching plant.

The feeder enters Exterior Street under the MTA/Metro-North rail tracks and Major Deegan Expressway adjacent to the north side of the West Fordham Road access ramp and connects to a utility pole. MTA/Metro-North also maintains an overhead utility line along the rail tracks but there is no connection between the Exterior Street feeder and the MTA/Metro-North utility lines.

Con Edison also maintains a cable house on the Con Edison-owned property at the water treatment plant site. The cable house is part of the network that originates from the Sherman Creek Substation in the Manhattan. This network, which consists of existing submersible cables in the Harlem River and underground feeders running through the water treatment plant site, supplies a quarter of the loads in Riverdale. The cables continue, after the cable house, under the MTA/Metro-North rail lines and the Major Deegan Expressway, connecting to the Bronx electric network where Con Edison supplies power to the commercial and residential properties, through both underground and overhead feeders.

7.16.2.1.6. Natural Gas Demand

Con Edison supplies natural gas to the Boroughs of Manhattan, the Bronx, and portions of Queens and Westchester County. Natural gas is commonly used for heating and non-heating purposes in residential, commercial, and industrial uses.

Con Edison maintains two low- to medium-pressure 30-inch subsurface gas mains that pass through the water treatment plant site on the Con Edison-owned property. One gas main is active; the other gas main is currently out of service. These mains run east to west under the Major Deegan Expressway, the MTA/Metro-North rail tracks, onto the Con Edison-owned property, and across the Harlem River into the Borough of Manhattan. The existing industries at the water treatment plant site do not use natural gas and there is no connection to the natural gas mains in the vicinity of the water treatment plant site.

7.16.2.2. Future Without the Project

The Future Without the Project conditions were developed for the anticipated peak year of construction (2009) and the anticipated year of operation (2011) for the proposed plant. The anticipated peak year of construction is based on peak truck traffic and the peak number of workers. In the Future Without the Project, the amount of water consumed, sewage generated, stormwater drainage utilities and energy used at the Harlem River Site are anticipated to remain essentially at the current levels. Structures currently located on the Harlem River Site would remain, including the NYCDOT storage/staging area, a cable house, the self-storage facility, and the concrete batch plant.

7.16.3. Potential Impacts

7.16.3.1. Potential Project Impacts

The anticipated year of operation for the proposed plant is 2011. Therefore, 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.

7.16.3.1.1. Water Supply

The proposed plant would require water for all plumbing services, including fire protection, plant operational demands, and domestic uses. Operational demands include wash down service water, laboratory and workshop water, centrifuge flushing water, seal water, and make-up water to boilers and chillers. Domestic usage would include all of the employee amenities such as the bathrooms, kitchen, and locker room facilities. Table 7.16-2 shows the water requirements at the proposed plant.

TABLE 7.16-2. INFRASTRUCTURE NEEDS FOR POTABLE WATER AND SANITARY FLOWS

Usage	Operations	
	Average Rate (gpd)[1]	Peak Rate (gpm) [1]
WTP Operational demand		
Wash Down Service Water	21,600	120
WTP Laboratory and workshop	1,000	10
Seal Water [2]	89,280	62
Make-Up Water Boiler/Chiller	7,200	25
Domestic Uses	1,325	237
Total Demand	120,405	454
Fire Protection Flow		1,250

Notes
[1] gpd = gallon per day; gpm = gallon per minute
[2] Seal water is required for the lubrication system of the pumps.

The proposed plant would be staffed 24 hours a day, 7 days a week. NYCDEP would employ approximately 53 people to operate the proposed plant. There would be a maximum of 41 employees working Monday to Friday (8am to 4pm); Monday to Friday would also have two off-shifts (4pm to 12am & 12am to 8am). On Saturday and Sunday, three off-shifts (8am to 4pm, 4pm to 12am, & 12am to 8am) would operate the proposed plant. Each off-shift would require a total of 12 employees. The average consumption of water by the employees is estimated to be 1,325 gallons per day (gpd) based on a consumption rate of 25 gpd per person and the maximum number of employees (53 persons) that could be present at the water treatment plant. This estimate is conservative and accounts for the presence of visitors at the water treatment plant. The peak rate for domestic use and the water treatment plant laboratory are based on the number of water outlets such as sinks, showers, and toilets in the vicinity of the proposed plant, and is in compliance with the *Plumbing Code, Mechanical Code and Fuel Gas Code of New York State* (May 2002). The water demand estimates for the wash down service and boiler/chiller were calculated using the best engineering estimates, while seal water calculations was based on the pumping requirements.

A 12-inch connection, with a capacity of 750 gpm under peak flow conditions, would be made to an existing 36-inch water main that currently runs east to west, following Landing Road (then extending into Manhattan) to supply the proposed plant with potable water and water for fire protection. The estimated pressure in the 12-inch pipe would be 45 to 50 psi. The 36-inch water main would be sufficient to supply water without reducing the pressure of the existing network. No significant impact is anticipated to the existing water supply network in the study area from the new connection.

The fire protection system would also receive water from the NCA as a backup to the proposed 36-inch water main connection. A 12-inch back-up connection would be made to the raw water pipe upstream of the turbines in the pump station. This 12-inch connection could draw 750 gpm under peak flow conditions. This source would be independent from the City water supply connection within the study area (Catskill/Delaware System) and would have no significant impact on the pressure of the existing water supply network.

Upstate Water Supplies. The location of the proposed project would affect the possibility of treated water being supplied to the current upstate consumers. Existing upstate Croton water consumers are listed in Table 7.16-1. None of the upstate consumers have been granted filtration avoidance and only the Town of New Castle and the Village of Ossining have built a filtration plant[3].

The Village of Sleepy Hollow, the Village of Tarrytown, and the Village of Irvington already have installed connections to other sources, and their NCA connections (raw water) would only be used as an emergency backup. The Village of Briarcliff Manor is completing negotiations to obtain water from other supplies that would serve as its primary source. Only United Water New Rochelle would continue to use the NCA as a primary supply to meet peak demands that exceed the capacity of its two Catskill Aqueduct connections.

United Water New Rochelle would be required to filter Croton water if it continues using its connection to the NCA. However, United Water New Rochelle has been actively pursuing the City's approval to develop a new connection to the Delaware Aqueduct Shaft No. 21 to replace its NCA connection.

Contingency plans put in place by the individual upstate supplier agreements to divert from the usage of Croton water to other sources would enable upstate suppliers to meet their water supply needs if treated Croton water is not available to them, thus preventing significant impacts from occurring to those systems.

7.16.3.1.2. Sanitary Sewage

Three wastewater sources (laboratory waste, sanitary, and process wastewater) would be collected and discharged from the proposed plant through a new sanitary connection line to the NYC Wards Island WPCP.

A drainage system would be provided to collect process wastewater and wash-down water from the Roof Level, the Operating Level, and the Lower Level. Also, at the Foundation Level, flows would be pumped and discharged into the main sanitary drainage system. The estimated

[3] Information gathered from the Annual Drinking Water Quality Report, 2002.

amounts of flows collected are as follows: wash-down service water - 21,600 gpd, seal water - 89,280 gpd, and make-up water boiler/chiller - 7,200 gpd. In addition, wastewater from the laboratory would be drained to the chemical waste neutralizing tanks, while the chemical sumps and chemical waste drainage system would be directed to the centrate tanks from each drip sump, and then discharged to the proposed sanitary sewer. These uses make up the rest of the 120,405 gallons per day (gpd) water demand. The neutralized waste would be discharged to the plant sanitary drainage system.

The sewage ejectors and sump pumps located at the foundation levels under the main treatment plant building and the pump station would be connected to a 6-inch underground sanitary pipe with a discharge capacity of 322 gpm. The 6-inch sanitary pipe would be connected to an existing 60-inch branch interceptor located under Landing Road.

Sanitary sewage would be generated from domestic uses. Domestic usage would include all of the employee amenities such as the bathrooms, kitchen, and locker room facilities. The total amount of sewage generated by employees is estimated to be 1,325 gallons per day, which is assumed to be equivalent to the amount of domestic water consumed.

Cleaning of UV lamps is a significant operation and maintenance issue, and its frequency is dependent on the fouling of quartz sleeves. Fouling of sleeves is a result of water quality effects such as precipitation of iron, calcium, aluminum, and manganese salts along with other inorganic and organic constituents. Fouling is also dependent on the type of lamp used; medium pressure lamps operate at much higher temperatures and irradiance concentrations than low-pressure lamps and therefore foul much more quickly. Phosphoric acid would be used as the cleaning solution for the UV disinfection units. Phosphoric acid is a non-hazardous acid that can be discharged to the sewer or hauled off-site for disposal. Currently this phosphoric acid is added to the water supply for corrosion control. Approximately, 200 gallons per month of phosphoric acid would be used to clean the UV disinfection units. Disposal of spent acid and related liquid waste would be intermittent and is estimated to be 16,000 gallons per month. Liquid waste from cleaning the Ultraviolet (UV) disinfection units would be discharged to the sanitary sewer system; however, due to the intermittent discharges it is not considered a regular source of sewage.

The 2001 average daily flow to the Wards Island WPCP is approximately 195 mgd and the SPDES permit limit is 250 mgd. The maximum possible sewage flows to be generated by the proposed plant are approximately 0.120 mgd, which is equivalent to less than 0.1 percent increase in daily average flow to Wards Island WPCP. This would be an insignificant increase in the amount of sewage to be handled by the Wards Island WPCP.

The residuals handling facility would recover a substantial amount of the generated process wastewater. The residuals handling facility would serve to reclaim filter-to-waste water (e.g. water wasted during the start-up of a filter after backwashing), and waste backwash water. The reclaimed wastewater would be recycled to the head of the plant for treatment. The floated coagulated material from the DAF (Dissolved Air Floatation) process used by the proposed plant would flow to the floated solid storage tanks. Floated sludge and sedimentation from the filter-to-waste and waste backwash water would also be directed to the floated solid storage tanks.

The design average and maximum mixed solids flow rates of two percent solids would be approximately 121,000 gpd and 284,000 gpd, respectively. The mixed solids from the floated solids storage tanks would be pumped through two proposed six-inch force mains (each would be able to handle the maximum flow) to the Hunts Point WPCP, which is located in the South Bronx, NY, approximately six miles from the water treatment plant site. The sludge would be dewatered at the Hunts Point WPCP dewatering facility.

There are three sludge storage tanks at the Hunts Point WPCP, which receives flow from Newtown Creek WPCP and the Hunts Point WPCP. The quantity of mixed solids from the proposed plant would not compromise these sludge storage tanks or the dewatering facilities at the Hunts Point WPCP. The Hunt Points WPCP dewatering facility maintains 13 centrifuges, each with a capacity of 250 gpm. Typically, the centrifuges are operated four to nine at a time with a combined capacity of 1,000 gpm to 2,250 gpm, depending on the amount of sludge received. The maximum flow of 197 gpm of mixed solids from the proposed plant would not impact the operation of these centrifuges.

7.16.3.1.3. Stormwater Infrastructure

A storm sewer network of storm pipes and catch basins would be designed and seized according to the amount of flow that they would be required to convey. The flow rate to each individual catch basin would accommodate for the 10-year 24-hour storm (5.1 inches)[4] except "Critical path" pipes, which would be designed for the 25-year storm. Critical path pipes are the main collector pipes of the storm sewer network, which would convey off-site flows through the site as well as on-site runoff. These pipes would be designed for a larger design storm to account for any unanticipated flows that may drain to the associated catch basins from off-site. With the storm sewer network in place, the runoff would be discharged to the Harlem River through two existing CSO outfalls (see below).

Stabilization and structural best management practices (BMPs) would be implemented during the operational phases of the proposed project in order to ensure that peak flows would be dissipated to avoid on-site erosion and that the pre-construction stormwater runoff volumes would be maintained to avoid impacts on the adjacent surface water (the Harlem River). A complete description of the BMPs proposed for stormwater management at the water treatment plant site is included in the Stormwater Pollution Prevention Plan (SWPPP) (Appendix G). The SWPPP for the water treatment plant site was prepared in accordance with the requirements stipulated in the New York State Department of Environmental Conservation (DEC) State Pollutant Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activity, and includes each of the components listed in Part III.D.2a [and] 2b of GP-02-01. The

[4] 1961. Technical Paper No. 40. Rain fall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years. Prepared by David M. Hershfield, Cooperative Studies Division, Hydrologic Services Division, for Engineering Division, Soil Conservation Service, U.S. Department of Agriculture. Washington, D.C.

pollution prevention plan has also been developed in conformance with the New York technical standards referenced in the general permit for construction activities, including standards and specifications for erosion and sediment control[5] and the design manual[6].

The permanent above ground structures, which are also described in Section 7.1, Introduction and Project Description, would consist of (in the south to north direction) a water treatment plant building that would contain the water treatment process elements, residuals pumping, and administrative functions; a separate pump station containing machinery and equipment pertaining to the treated water pumping and maintenance functions. The design for the site would incorporate certain "green building" concepts, including a green roof on all buildings. Each building would have a roof drainage system that would convey water by gravity via piping to the site stormwater collection system. Runoff from the 4.5-acre land located north of the proposed plant, planned to be a park-like area, would be attenuated by grassed swales adjacent to all impervious surfaces before discharging to the Harlem River.

The site stormwater collection system would consist of stormwater pipes that would collect stormwater from site access roadways, parking lots, and roof drainage. The structural pollution prevention BMPs would also be provided for localized treatment of runoff from impervious areas. These BMPs would be designed to remove oil and sediment from stormwater during frequent wet weather events. They would be sized to treat the peak flow from the 2-year 24-hour storm, and would provide removal of approximately 80 percent of total suspended solids. After the localized treatment, the stormwater would be discharged to the Harlem River through the two existing outfalls. The 66-inch outfall under Landing Road (below Regulator No. 66) would receive approximately 76 percent of the total anticipated runoff. The connection would be made downstream of Regulator No. 66 and may require the installation of a tide gate. The capacity of this southern outfall is 210 cfs. Another 66-inch outfall to the north (south of the existing sewer easement) would also receive approximately 24 percent of the total flow. This connection would be made upstream of the existing tide gate. The existing outfalls are sufficient to receive the stormwater runoff from the water treatment plant site. No significant long-term impact is anticipated to the existing stormwater system in the study area.

7.16.3.1.4. Energy Demand

The electrical power distribution system for the proposed plant would comply with all Federal, State and City codes. The design would consider safety, reliability, flexibility, ease of operation and maintenance, life cycle costs, and energy conservation; this would be in accordance with the *Energy Policy Act* of 1992, and the *New York State Energy Conservation Construction Code*, 2002.

Electric power for the proposed plant would be furnished by the New York Power Authority (NYPA), which has a contract to supply electricity to New York City government facilities. NYPA generates, buys, and transmits electrical power on a wholesale basis. NYPA would supply electrical power through the Con Edison distribution system. The distribution of

[5] New York Guidelines for Urban Erosion and Sediment Control, (NY, 1997).
[6] New York State Stormwater Management Design Manual, New York City DEC, (NY, 2001)

electricity to the proposed plant would be the responsibility of Con Edison. Electric supply for the proposed plant would be provided from the Con Edison Sherman Creek Substation, located approximately one mile to the south along the Harlem River in Manhattan.

Underground feeders would run north along the Harlem River from the Con Edison Sherman Creek Substation and cross the river into the water treatment plant site on the existing Con Edison property. The feeders would follow the route of the existing submersible cables that currently pass through the water treatment plant site. All feeders would enter the site underground and would be connected to a step-down substation located to the north of the main treatment building. The proposed plant would require up to six underground service feeders, each at 13.2-kV. The on-site substation would receive the incoming underground service feeders and step down the voltage to 4.16-kV for distribution throughout the proposed plant. The main substation would consist of the 13.2-kV service switchgear, service transformers, 4.16-kV main and distribution switchgear, 4.16-kV bus ducts, current-limiting reactors and 125-VDC battery banks and control system.

The feeders supplying the proposed plant would be independent of the existing electric distribution grid and therefore would not pose a significant impact on the local community. Table 7.16-3 shows the total electrical loads for the proposed plant. The electrical demands of the proposed plant were calculated for the following three scenarios: connected load, maximum capacity and normal capacity. The connected load is the energy demand that would result if all equipment, including standby units, were operating simultaneously, and represents the amount of power that must be made instantaneously available to the facilities by the power generator/supplier (NYPA/Con Edison). Maximum demand represents the total load of all electrical equipment operating simultaneously at the short-term maximum plant capacity flow of 290 mgd. Normal demand reflects the total load of all normally operating equipment during the long-term maximum treatment capacity (150 mgd).

TABLE 7.16-3. TOTAL ELECTRICAL LOADS

Total Croton WTP Demand	**Estimated Load**	
	kW	**kVA**[1]
Connected load	45,660	49,308
Maximum Operating Load (290 mgd)	29,187	30,865
Average Operating Load (150 mgd)	19,825	20,968
Emergency Load (0 mgd)	1,365	1,422

Notes: 1. kW = kVA x pf, where pf is the power factor (a measure of electrical efficiency).

The proposed plant would also be provided with an emergency power system. The emergency power system would be available for smoke purging, emergency elevators, alarms, fire pumps, communications, and other emergency equipment in case of fire or other emergency conditions. Emergency power would also be provided for the security system, communications system, lighting protection system, plant control system, and other safety related equipment. The emergency power system would not be provided to operate the proposed plant. In case all Con Edison feeders are out of service, approximately 1,365 kW of electrical power would be generated on-site using two emergency diesel generators. Each generator would be rated at

1,500 kW (480 volts) one operating and the other as a backup. Three thousand gallons of underground fuel storage would be provided, based on 24 hours of continuous full-load operation of one generator, and would be located near the generator room, at least 20 feet away from any means of egress.

7.16.3.1.5. Gas Demand

Con Edison would deliver natural gas to the gas meter room. Natural gas would supply the hot water heaters, HVAC boilers, and laboratory uses. Table 7.16-4 shows natural gas loads at the proposed plant during normal operation. The proposed plant would require an approximately 40,000 cubic feet per hour (cfh) gas load at two to four pounds per square inch (psi) pressure. Con Edison maintains one active natural gas main near the water treatment plant site. Conceptually, this 30-inch low-pressure gas line could potentially supply the proposed plant with natural gas. Con Edison would determine a means of meeting the natural gas demand of the proposed plant without causing a significant impact on the existing natural gas distribution system.

TABLE 7.16-4. NATURAL GAS DEMANDS AT THE CROTON WTP

Demands	Loads (cfh)
Hot Water Heaters and Laboratory Use	1,600
Boilers	30,200
Total Demands	40,000

Notes:
cfh = cubic feet per hour

7.16.3.2. Potential Construction Impacts

The anticipated year of peak construction for the proposed plant is 2009. Therefore, potential project impacts have been assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2009.

Initial construction activities would include clearing and grubbing and developing site haul roads. Perimeter fencing would be installed, stormwater runoff BMPs would be established, and the residential engineer’s field office complex would be constructed. Temporary site utilities for electrical power, telephones, site lighting, water, and sewer would be installed at this initial stage. Any underground activities entail the potential interruption of utility services. Locating and preserving the safety of any electric and natural gas lines would be the responsibility of Con Edison, while water and sanitary sewer utility safety would be the responsibility of the contractor and construction manager.

7.16.3.2.1. Water Supply

Initially, the water supply utility on the construction site would be provided by water tankers. The water tankers would deliver an estimated 5,000 gallons every other day. Sufficient storage tanks would be provided on-site for an uninterrupted water supply service. However, the contractor would be responsible for selecting a method of supplying water to best suit their method of working. In the initial phase of construction the proposed 12-inch water supply line would be constructed and connected to the existing 36-inch water main under Landing Road (for detail see existing conditions above). Following this installation the additional water supply service required during construction would be provided by the Catskill/Delaware System. No significant impact is anticipated to the existing water supply network in the study area from the new connection.

During the peak construction, an estimated 634 construction personnel would consume an estimated 15,850 gpd of potable water, based on an estimated rate of 25 gpd per person in a 5-day workweek. Estimated water use for construction activities would be on the order of 500,000 gallons over the 5.5 years of construction. Water would be used for wetting exposed soil and roadways during excavation, washing down concrete trucks during pouring operations and general clean up. The wetting operation would be required to prevent fugitive dust from entering the air during construction. The proposed 12-inch pipes and the temporary water storage tanks would be able to adequately supply the construction site with 100 percent redundancy. There would be no anticipated impact on the City water supply. The supply drawn to the construction site would equate to less than 0.001 percent of the total flow of approximately 1,400 mgd, which is normally supplied to the City by the City's Water Supply System.

Temporary shutdowns of the NCA during construction are necessary to connect the proposed water treatment plant to the NCA and activities related to this action. Portions of the Bronx and Manhattan obtain potable water from the Croton System through the NCA (refer to section 1.4.3 Existing Croton Water Supply Users, Introduction and History). The existing water regulators and boundary valves in the City's Water Supply System would supply water to the low level service (typical Croton service area) from the high level service (typical Catskill/Delaware service area) in the event of a Croton System shutdown or loss of pressure in the low service area. No special action other than adjusting the existing water regulators and valves is required to provide normal New York City Croton users with water when the Croton System is not operational. No significant adverse impact to the New York City Croton users is anticipated from temporary shutdown of the NCA.

7.16.3.2.2. Upstate Water Supplies

During the construction period the NCA is anticipated to be shutdown for short periods of time when connections to the water treatment plant are being made.

Throughout the periodic shutdowns for construction the Town of New Castle, the Village of Irvington, the Village of Ossining, the Village of Sleepy Hollow and the Village of Tarrytown would draw on their already existing alternate source for potable water supply (see existing conditions for the available alternate sources). The Village of Briarcliff Manor would obtain water from other supplies currently under negotiation and anticipated to be online prior to the Fall 2006. If the Village of Briarcliff Manor is unable to obtain connection to other sources the Bureau of Water Supply could place a temporary impoundment in the aqueduct just below the connection used by Briarcliff Manor (to prevent flow further down the NCA from this connection) and supply water to meet the Briarcliff Manor demand.

During the temporary NCA shutdowns United Water New Rochelle (UWNR) would not have an option to use the NCA as a primary supply to meet peak demands (i.e. when the capacity of its two Catskill Aqueduct connections are exceeded). UWNR's Catskill connection would only be operationally affected in the event the Catskill Aqueduct needed to be shut down from Kensico Reservoir. In that situation, UWNR's Catskill connection would be supplied by back feeding into the Catskill Aqueduct from Hillview Reservoir, which would be supplied by the Delaware Aqueduct. The elevation in Hillview Reservoir must remain above 291 feet for the UWNR connection to function. During diurnal peak demand periods in the City's distribution system, this elevation has – on occasion – not been able to be maintained, causing UWNR to temporarily lose this supply. When the flow control structure now being constructed at Shaft 18 in Mount Pleasant is complete and in service, scheduled to occur in summer 2004, it would facilitate maintaining the minimum elevation in Hillview to assure the UWNR supply through this connection.

Contingency plans put in place by the individual upstate supplier agreements to divert from the usage of Croton water to other sources would enable upstate suppliers to meet their water supply needs if Croton water is not available to them, thus preventing significant impacts from occurring to those systems.

7.16.3.2.3. Sanitary Sewage

In the initial stage of the 5.5-year construction period, portable rest rooms would be made available for the construction personnel. In addition, the residential engineer's field office complex would be provided with a temporary sanitary sewer connection to the existing 60-inch sanitary branch interceptor under West Fordham Road until the proposed sanitary sewer connection would be installed (see Section 7.16.3.1, Potential Project Impacts). The total amount of sewage generated (15,850 gpd) by employees during the peak construction period at the water treatment plant site is assumed to be equivalent to the amount of water consumed. The sanitary sewage from the portable restrooms would be collected and properly disposed of through a contract with a private hauler. The sanitary sewage discharge to the existing 60-inch sanitary branch interceptor would be directed to the Wards Island WPCP.

The 2001 average daily flow to the Wards Island WPCP was approximately 195 mgd and the SPDES permit limit is 250 mgd. The amount of sewage to be generated by the construction site is equivalent to less than 0.005 percent increase in daily average flow to Wards Island WPCP. This would be an insignificant increase in the amount of sewage to be handled by the Wards Island WPCP.

7.16.3.2.4. Stormwater Infrastructure

During construction, the sedimentation and erosion controls and stormwater management practices, which are described in Section 7.15, Water Resources, in more detail, may potentially be employed to minimize erosion, and prevent sedimentation impacts to the Harlem River. However, the final design of the erosion and sedimentation control measures during construction of the proposed plant would be the responsibility of the contractor. Control measures would include stabilization for disturbed areas, and structural controls to divert runoff and remove sediment. In addition to managing stormwater runoff and erosion, Best Management Plans (BMP) would help to ensure that measures are taken to prevent accidental releases of fuels, lubricating fluids, or other hazardous materials. The project contractor is responsible for developing and implementing a Sedimentation and Stormwater Control Plan (SSCP). The SSCP would be consistent with the level of stormwater, and erosion and sediment control to be described in the SWPPP.

Stormwater management, erosion and sedimentation control measures would be implemented in a phased approach during construction. Phase I, which is relatively short-term, includes installation of the construction area perimeter fencing, noise barriers, and preliminary erosion control measures (haybales and silt fencing and temporary sedimentation basins). This initial phase also includes demolition of the existing structures, and construction of the site access/haul roads, temporary facilities for construction management and site security, and the temporary docking facilities. Finally, Phase I includes the clearing and grubbing of trees within the proposed building footprint. Phase II includes excavation of the proposed plant and Pumping Station footprints, and the raw and treated water tunnels. The excavated materials would be removed from the site by barge. Phase II also includes preparation of the building foundation. Phase III includes construction of the water treatment plant facility and completion of the raw and treated water tunnels, as well as the permanent site road system, installation of water, sewer and remaining stormwater lines, and final landscaping. Structural BMPs would provide treatment of runoff from these impervious areas (access roadways, parking area). These pollution prevention devices would be designed to remove oil and sediment from stormwater during frequent wet weather events. They would be sized to treat the peak flow from the 2-year 24-hour storm, and would provide removal of approximately 80 percent of total suspended solids. The impervious areas during construction would be similar to the ground cover during existing conditions. The additional suspended solids generated by stormwater flows during construction would be equal to or less than the permitted loadings.

After the localized treatment, the stormwater would be discharged to the Harlem River through two of the three existing outfalls described previously. The existing outfalls are sufficient to receive the stormwater runoff during the construction activities of the water treatment plant without exceeding their permitted capacities. Efforts would be made to maintain stormwater flows similar to existing conditions.

The BMPs would be in compliance with the state and local requirements cited previously. There is no anticipated significant adverse impact from the stormwater runoff from the water treatment plant site to the existing infrastructures.

__7.16.3.2.5. Energy Demand__

Four temporary feeders each supplying 2,500 kVA would be provided by Con Edison to supply power during the construction period at the water treatment plant site. The temporary feeders would originate from the Sherman Creek Substation southwest of the construction site on the opposite bank of the Harlem River in Manhattan. The 5,000 kVA of the total temporary demand would supply the tunnel work that includes the tunnel boring machine and welding. An additional 2,500 kVA would supply electricity to other construction equipment, site lighting, and field offices for contractors, resident engineers and NYCDEP personnel. The outstanding 2,500-kVA feeder would serve as a back up. These feeders would be provided independent of the existing grid in the study area. Therefore, this source of power would be sufficient for all construction activities without resulting in a significant impact to the existing electrical utilities.

In addition to the feeders, a number of 1,500 kVA diesel generators would be available on a temporary basis during construction for uses in a localized construction area such as for providing power to an emergency escape elevator and dewatering from deep excavation. These generators would be sufficient for any emergency uses on the water treatment plant site without resulting in a significant impact to the existing electrical utilities.

__7.16.3.2.6. Gas Demand__

Natural gas would not be utilized during the construction of the proposed plant. No connection to the existing gas main for construction use would be made; therefore no significant impact is anticipated.