

A. PROJECT IDENTIFICATION

The Hunts Point Water Pollution Control Plant (WPCP) is located in the Hunts Point section of the Bronx, in the City of New York, and treats wastewater from portions of the Bronx, Rikers Island, City Island, and Hart Island (see Figure S-1). The New York City Department of Environmental Protection (NYCDEP), on behalf of the City of New York, is currently upgrading the WPCP under two upgrade plans—the Phase I and Phase II Upgrades. The Phase I Upgrade is being undertaken to address the plant’s peak wet weather capacity. The Phase II Upgrade is being undertaken to address the plant’s nitrogen removal capabilities. This Environmental Impact Statement (EIS) assesses the potential for impacts from additional improvements to the WPCP.

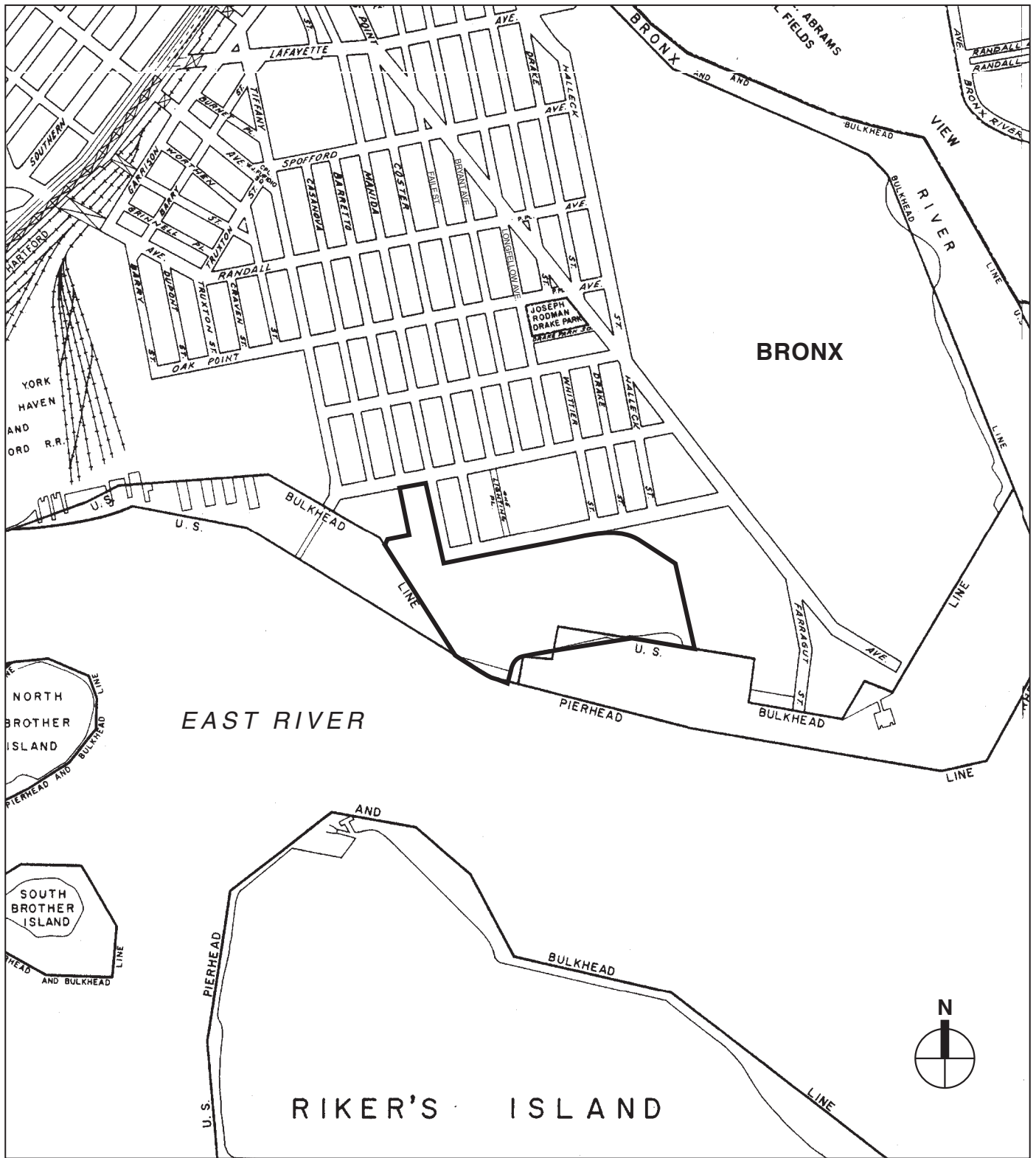
The “proposed action” considered in this EIS consists of two components; the first, which is known as the Phase III Upgrade, would involve construction and upgrading to improve the solids handling facilities at the plant. The second component would be undertaken to enhance nitrogen removal.

The Phase III Upgrade would involve construction of two new egg-shaped sludge digesters and a digester gallery, replacement of sludge thickener collector mechanisms, replacement of a gas holding tank, replacement of existing waste gas flares with three new enclosed waste gas burners, renovation of existing digesters and sludge storage tanks, installation of an emergency generator, and installation of odor controls on the plant’s primary effluent channels. The Phase III Upgrade is required to rehabilitate or replace facilities that are at or nearing the end of their useful life. The Phase III Upgrade requires construction and construction staging on the existing plant site and on an additional 5.5-acre vacant parcel of City-owned land located to the northwest of the existing plant boundary. This vacant 5.5-acre property is under NYCDEP’s jurisdiction and consists of a 4.3-acre area where the proposed new egg-shaped sludge digesters would be built and an approximately 1.2-acre area that would be used for construction staging. This 1.2-acre area will be transferred to the New York City Department of Parks and Recreation (NYCDPR) and mapped as parkland for inclusion in the adjacent Barretto Point Park when the area is no longer needed for construction staging.

The enhanced nitrogen removal elements would include carbon and polymer addition facilities. Carbon addition facilities would be constructed to address future 2014 nitrogen reduction goals, and polymer addition facilities would be constructed to enhance nitrogen removal facilities being constructed as part of the Phase II Upgrade.

Together, the Phase III Upgrade and the carbon and polymer addition facilities are the proposed action analyzed in this EIS. This EIS also assesses the potential for impacts from implementation of an additional two digesters (for a total of four—the “four-digester scenario”). These two additional digesters would be required in the future as the existing digesters (to be renovated under the proposed action) near the end of their useful life.

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Hunts Point WPCP

Project Location
Figure S-1

Hunts Point WPCP

NYCDEP is required to examine the potential environmental impacts of the proposed action in its role as lead agency under the State Environmental Quality Review Act (SEQRA) and its implementing regulations (6 NYCRR Part 617), New York City's Executive Order 91 of 1977 (as amended), City Environmental Quality Review (CEQR), and the State Environmental Review Process (SERP). The proposed action would also require site selection of the 4.3-acre area (Block 2777, Lots 100, 105, and 600) under the Uniform Land Use Review Procedure (ULURP). NYCDEP has determined that the proposed action is appropriate for analysis within the context of an EIS to permit the highest level of community involvement in the decision-making process. NYCDEP has therefore prepared this EIS to assess and fully disclose any potential significant adverse impacts on the environment. This EIS presents the results of the various environmental impact analyses, mitigation of any identified significant adverse impacts, and alternatives to the proposed action. The analyses in the Draft EIS (DEIS) were performed in accordance with the methodology set forth in the Scope of Analysis, which was issued on June 15, 2005, and reflected public comments. The DEIS and Notice of Completion were published on December 19, 2006 and the subsequent public comment period, which included a public hearing on April 12, 2007, remained open until April 23, 2007. After the close of the comment period on the DEIS, the comments were incorporated into this Final EIS (FEIS).

The proposed action would require site selection of the 4.3-acre area (Block 2777, lots 100, 105, and 600) under ULURP. The DEIS must be certified as complete before the ULURP application can proceed. Typically, the ULURP application is certified by the New York City Department of City Planning (NYCDCP) upon publication of the DEIS. In the case of the environmental review for the proposed action, the certification of the ULURP application (February 26, 2007) was delayed until after publication of the DEIS. This schedule allowed for additional time for community review of the DEIS.

B. THE HUNTS POINT WPCP

SERVICE AREA

The existing Hunts Point WPCP, built in 1952, is located on a 39-acre site adjacent to the East River in the Hunts Point section of the Bronx. The plant is bound by Ryawa Avenue to the north, the East River to the south and west, and Halleck Street to the east. The service area to the Hunts Point WPCP consists of 15,222 acres on the mainland portions of the Bronx, 367 acres on the north side of Rikers Island, 239 acres on City Island, and 111 acres on Hart Island, for a total of almost 16,000 acres.

The existing design dry weather flow capacity is 200 million gallons per day (mgd). The recent Phase I Upgrade provided improved conveyance and delivery at the plant to allow the plant to handle a peak wet weather capacity of 400 mgd. Based on NYCDEP's wastewater flow projections, the dry weather flow to the plant in the year 2045 is expected to be 124 mgd.

EXISTING PLANT OPERATIONS

EXISTING WASTEWATER TREATMENT PROCESS

Wastewater treatment at the plant consists of a modified aeration treatment process, including screening (primary and secondary), primary settling, step aeration activated sludge, final settling, and chlorination with sodium hypochlorite. The existing aeration tanks were retrofitted with a Basic Step Feed Biological Nutrient Reduction (BNR) process to provide an interim degree of

nitrogen removal until the Phase II Upgrade (which includes a Full Step Feed BNR process to achieve a higher degree of nitrogen removal) is completed. One of the existing aeration tanks is used to treat centrate produced by the sludge dewatering process at the dewatering facility. The treated effluent from the plant discharges to the East River. A schematic of plant operations is provided in Figure S-2.

The plant is currently designed to achieve the national effluent standards for secondary treatment—30 milligrams per liter of suspended solids (SS), 25 milligrams per liter of carbonaceous biochemical oxygen demand (CBOD), and an 85 percent removal of SS and CBOD on a monthly average basis.

EXISTING SLUDGE HANDLING FACILITIES

Primary sludge is generated in the primary settling tanks, and waste activated sludge is generated in the final settling tanks. Using gravity, sludge thickeners remove excess liquid from the sludge. The thickened sludge is sent to the four existing sludge digesters for anaerobic digestion, a biological process that reduces the quantity of sludge. After digestion, the sludge is transferred to the sludge storage tanks. The digestion process also produces methane gas, which is used to heat buildings at the facility. Any excess gas is sent to the waste gas burners.

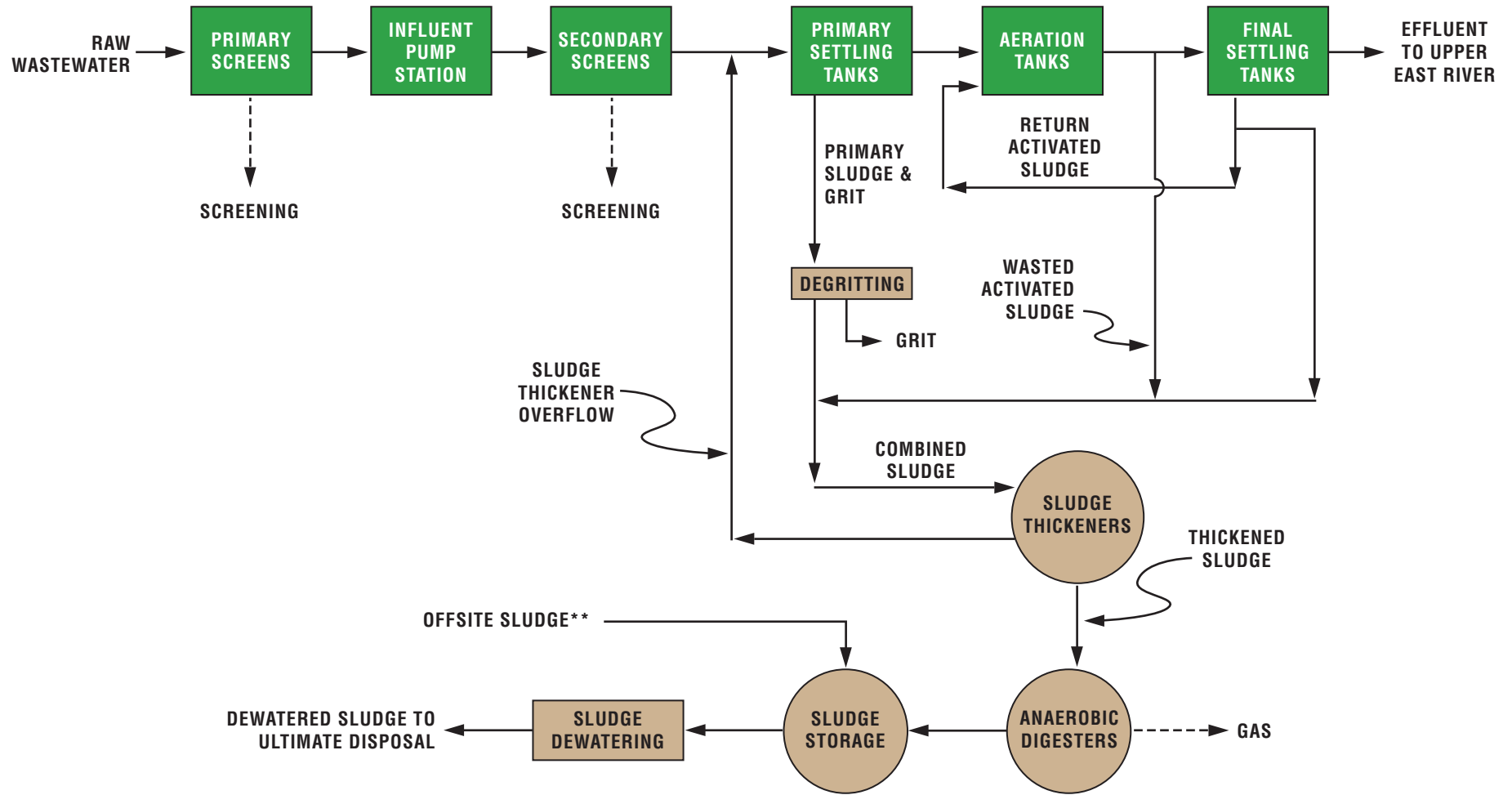
In addition to the sludge produced at the Hunts Point WPCP, the off-site sludge from other NYCDEP WPCPs is stored in the sludge storage tanks. After holding in the storage tanks, the sludge is pumped to the dewatering building. The dewatered sludge uses centrifuge dewatering to further remove liquids from the sludge. The resulting product is formed into sludge cake (called biosolids), which is trucked off-site for disposal. If the sludge cake satisfies the criteria established in the U.S. Environmental Protection Agency (EPA) Processes to Significantly Reduce Pathogens (PSRP) regulations, the sludge cake can be directly land applied. Sludge cake that does not meet PSRP criteria is further processed at an appropriate off-site facility then land applied.

C. BACKGROUND AND PLANNING CONTEXT

The proposed action is part of a multi-phased upgrade program at the Hunts Point WPCP. The Hunts Point WPCP upgrades were recommended after a series of planning exercises, which include the original Stabilization Program, Additional Facility Planning, and Interim Plant Upgrade Preliminary Design. The improvements follow a priority system developed under the original Stabilization Program and have been scheduled to ensure compliance with the schedules in several consent orders. The Phase I and Phase II Upgrades address consent order mandated improvements to the wastewater process and effluent quality, while the Phase III Upgrade addresses solids handling facilities at the plant, and is not mandated by Consent Order. Carbon and polymer addition facilities of the proposed action would also address compliance with consent order mandates.

Related to wet weather flow requirements, the Omnibus IV Consent Order required the Hunts Point WPCP to have the capacity to convey, deliver, and treat two times the design dry weather flow (i.e., 400 mgd) during wet weather events, effective by October 31, 2004. These requirements were addressed by the Phase I Upgrade.

Related to nitrogen removal requirements are the Long Island Sound Study, the plant's State Pollutant Discharge Elimination System (SPDES) permit, the EPA-approved Total Maximum



** Stored separately from Hunts Point sludge

Hunts Point WPCP

Daily Load (TMDL), which is based on the recommendations of the Long Island Sound Study, the 2002 Nitrogen Consent Order, and the 2006 Nitrogen Consent Judgment.

- Long Island Sound Study. In 1985, the EPA and the States of New York and Connecticut began the Long Island Sound Study to assess water quality and to address hypoxia in Long Island Sound (hypoxia is a condition in which water does not have enough oxygen to support fish and other aquatic life; hypoxia can be caused by the presence of excess nutrients in water). The Long Island Sound Study proposed a three-phase nitrogen reduction schedule to achieve a 58.5 percent reduction over a 15-year period for 11 management zones; two of these zones are within New York City (Zone 8—Upper East River and Zone 9—Lower East River). In 1988, the EPA and the States of Connecticut and New York adopted the following nitrogen reduction schedule: 40 percent of the 58.5 percent by August 2004; 75 percent of the 58.5 percent by August 2009; and 100 percent of the 58.5 percent by August 2014. The Hunts Point WPCP is among the Upper East River plants to implement the nitrogen program.
- State Pollutant Discharge Elimination System. Reacting to the information from the Long Island Sound Study in the early 1990s, the New York State Department of Environmental Conservation (NYSDEC) determined that there was a need to cap NYCDEP's nitrogen discharges for plants discharging to the East River to levels discharged prior to commencement of sludge dewatering in 1992. NYSDEC thus established limits and other regulatory requirements through modifications to the 1988 SPDES permits for certain City WPCPs.
- Total Maximum Daily Load Requirements and 2002 Nitrogen Consent Order. On April 3, 2001, the EPA approved a TMDL based on the recommendations of the Long Island Sound Study that mandates a 58.5 percent reduction of nitrogen from dischargers of nitrogen by August 2014, including New York City's East River WPCPs. An April 2002 Nitrogen Consent Order required that the City design and implement BNR upgrades in accordance with the TMDL requirements. Under the 2002 Consent Order, New York City was to implement Full Step Feed BNR at the Upper East River WPCPs by June 30, 2007 and achieve nitrogen limits specified in the Nitrogen Consent Order. This original program also included provisions to achieve additional nitrogen removals in the Upper East River to offset nitrogen discharges from the Newtown Creek WPCP, which does not have BNR capability and only contributes $\frac{1}{4}$ of an equivalent nitrogen loading as the Upper East River WPCPs that are closer to the Western Long Island Sound. NYCDEP committed, under the 2002 Consent Order, to achieve the 10-year Long Island Sound TMDL by 2014.
- 2006 Nitrogen Consent Judgment. Following comprehensive discussions between NYSDEC and NYCDEP concerning nitrogen-related issues at the City's WPCPs, NYSDEC agreed to a modified nitrogen program proposed by the City and entered into a Nitrogen Consent Judgment on January 10, 2006 to modify the 2002 Nitrogen Consent Order. The Consent Judgment includes nitrogen upgrade activities, construction schedules and limits that collectively represent a reasonable and appropriate program to meet the long-term nitrogen reduction goals of the original Nitrogen Consent Order and the Long Island Sound TMDL. Specifically, the Consent Judgment identified a two-phase approach to achieve nitrogen reductions, including a 52 percent reduction of nitrogen by 2014 and 58.5 percent by 2017, which essentially provided NYCDEP with additional time to meet the same overall target identified by the Long Island Sound TMDL and 2002 Nitrogen Consent Order. At the Hunts Point WPCP, the construction of Full Step Feed BNR facilities under the Phase II Upgrade was to be completed by June 30, 2008 and the carbon and polymer addition facilities being

proposed under this EIS were identified as critical elements in achieving the 52 percent reduction target by August 2014.

As a result of Omnibus IV and the 2006 Nitrogen Consent Judgment, the major schedule milestones related to the Hunts Point WPCP's wet weather flow and nitrogen requirements are listed below:

- Construction of all Phase I Upgrade facilities required for the plant to have the capability of delivering, accepting and treating 400 mgd during any storm was tentatively completed on October 31, 2004 and certification is pending (per the Omnibus IV Consent Decree);
- Construction of Phase I Upgrade including stabilization elements to be completed by October 31, 2006 (per the 2006 Nitrogen Consent Judgment);
- Construction of Phase II Full Step Feed BNR Facilities to be completed by June 30, 2008 (per the 2006 Nitrogen Consent Judgment); and
- Construction of supplemental carbon addition facilities to be completed by August 1, 2014 (per the 2006 Nitrogen Consent Judgment).

Following is a discussion of the Hunts Point WPCP Phase I and Phase II Upgrades.

In accordance with the Omnibus IV Consent Order, the Phase I Upgrade involved the construction of elements required to achieve the capability of delivering, accepting, and treating 400 mgd of wet weather flow (two times dry weather flow) and was completed by October 31, 2004. The Phase I Upgrade also included stabilization elements to enable the plant to continue compliance with SPDES requirements as well as a portion of the BNR work undertaken in accordance with the 2006 Nitrogen Consent Judgment.

The Phase II Upgrade includes improvements required to enhance nitrogen removal. These improvements are to be implemented by June 30, 2008 according to the modified schedule and targets identified in the 2006 Nitrogen Consent Judgment. As part of the Phase II Upgrade, a higher degree of nitrogen removal will be achieved with the Full Step Feed BNR facilities. This improved nitrogen removal will enhance effluent quality from the Hunts Point WPCP and help reduce hypoxia in Long Island Sound. To complete the Full Step Feed BNR facilities, changes will be made to the aeration tank, blowers, and air mains. The proposed nitrogen removal systems will increase the plant's oxygen demand. The Phase II Upgrade will include replacement of the existing aeration tank diffuser system with a higher efficiency diffuser system. New alkalinity feed facilities, anoxic zone mixers and baffles, and centrate distribution facilities will also be installed to enhance nitrogen removal. The existing blowers and air mains will be replaced with larger capacity units since the existing blowers and air mains will not be able to meet the oxygen demands of the nitrogen removal process.

To address increased energy demands from these systems, the Phase II Upgrade will include changes to the plant's electrical power system. A new main electrical substation and emergency generators (diesel-fueled combustion engines) will be constructed to provide back-up power if utility service becomes unavailable. Six emergency generators will also be constructed with the Phase II Upgrade.

D. DESCRIPTION OF THE PROPOSED ACTION

PURPOSE AND NEED

The Phase III Upgrade is being proposed to improve the reliability of the solids handling process by refurbishing and/or replacing equipment that is at or near the end of its useful life. The Phase III Upgrade would provide improved digesters and sludge storage tanks, upgraded sludge thickener facilities, odor control, improved sludge collection mechanisms, and more efficient waste gas burners. The two new egg-shaped digesters, in conjunction with the four existing digesters (to be renovated), would be sufficient to treat the projected flow of 124 mgd for the year 2045. Once the renovated digesters reach the end of their useful life, an additional two digesters—the four-digester scenario—would be required (see “Description of the Four-Digester Scenario,” below).

In addition to these project components, the proposed action would include construction of two elements to enhance nitrogen removal. Carbon addition facilities would be constructed to address a portion of the 2014 nitrogen reduction goals of 52 percent mandated in the 2006 Nitrogen Consent Judgment. Polymer addition facilities would be constructed to enhance nitrogen removal facilities being constructed as part of the Phase II Upgrade. The Full Step Feed BNR facilities being constructed under the Phase II Upgrade result in excess froth in the wastewater process; the addition of polymer would assist in froth control.

PROJECT APPROVALS

The proposed action may be subject to several potential State and City approvals, including the following:

- Financing under the State Revolving Fund Program, which requires review under SERP;
- Waterfront Revitalization (Coastal Zone) Consistency Determination from the New York State Department of State (NYS DOS);
- Approval by NYSDEC of a minor modification to the facility’s February 2006 air permit;
- ULURP site selection action. NYCDEP and the New York City Department of Citywide Administrative Services (DCAS) have initiated a ULURP action for locating or site selecting a public facility on previously undeveloped or vacant city-owned land (the ULURP application was certified as complete on February 26, 2007). A second ULURP application (with NYCDPR) for the mapping of Barretto Point Park is also following a parallel schedule. This mapping application consists of two separate application maps. The first is for Barretto Point Park and the second is for the 1.2-acre construction staging area. The application map for the construction staging area will be filed in the future (post-WPCP construction), and as such, the 1.2-acre parcel will not be given parkland status until NYCDEP determines that the parcel is no longer needed for work associated with its Hunts Point WPCP. NYCDEP has not yet determined when construction staging on the 1.2-acre staging area will no longer be necessary. Therefore, the exact filing date of the application map for the construction staging area is unknown but could be a minimum of 10 years from the ULURP application approval date.

COMPONENTS OF THE PHASE III UPGRADE

The Phase III Upgrade would include improvements to the sludge treatment and solids handling facilities. Two new egg-shaped digesters would be constructed to serve as primary digesters. The

four existing conventional digesters would be renovated for use as second stage digesters (i.e., sludge would first enter the new egg-shaped digesters and then flow downstream to the renovated conventional digesters for additional digestion). Ten of the 12 existing sludge thickeners would be upgraded. The five existing sludge storage tanks would be renovated. The Phase III Upgrade construction is expected to begin in the third quarter of 2008 and finish in late 2014. For the purposes of the analyses in this EIS, the future analysis year for operation of the proposed action is 2014 (see “Content of the EIS and Analysis Framework”).

The proposed site plan is included as Figure S-3 and the Phase III Upgrade elements are discussed below.

IMPROVEMENTS TO GRAVITY THICKENERS

The existing Hunts Point WPCP has a total of 12 gravity thickeners, which were constructed during the 1960s and 1970s. The existing gravity thickener sludge collection mechanisms and sludge pumps would be replaced in 10 of these thickeners under the Phase III Upgrade. The existing plunger pumps and grinders would be replaced with new progressive cavity pumps and grinders. A new control building, approximately 25 feet in height, would be constructed at the operating floor level to house new electrical equipment. Minor repairs would be made to the superstructure above the thickeners, and improvements would be made to floor drainage in the thickener gallery basement.

CONSTRUCTION OF NEW DIGESTERS

Two new egg-shaped digesters would be constructed on the additional 4.3-acre parcel, each with a volume of 3.0 million gallons. Egg-shaped digesters have steeply sloped bottoms that concentrate grit for easier removal, a sharply tapered top section that minimizes the open liquid surface area and concentrates scum for re-submergence or removal, and a relatively tall and narrow configuration for more efficient mixing. Egg-shaped digesters are normally mixed with a single large mechanical draft tube mixer, containing a non-clogging, screw-type impeller. Under the Phase III Upgrade, thickened sludge would be pumped into the hot digester liquor recirculation loops of the egg-shaped digesters for preheating. Heating during sludge digestion increases the anaerobic microorganism growth rate, the digestion rate, and gas production. Digested sludge would overflow from the egg-shaped digesters to the existing conventional digesters for second stage digestion. The sludge would then overflow by gravity through an overflow box to the existing sludge storage tanks.

CONSTRUCTION OF NEW EMERGENCY GENERATOR

As part of the Phase III Upgrade, a 500 kilowatt (kW) emergency generator would be installed adjacent to the digester building. The generator would be used to provide backup power to the digester building in the event of a power failure. This new emergency generator would undergo monthly testing, in conjunction with the testing program for the other on-site generators. NYCDEP has committed to the use of ultra low sulfur diesel (ULSD) fuel in the new emergency generator associated with the Phase III Upgrade (and in the emergency generators being implemented as part of the Phase II Upgrade).

IMPROVEMENTS TO EXISTING DIGESTERS

The four existing conventional digesters would be improved as part of the Phase III Upgrade and used as second stage digesters. The roofing of the tanks would be reconstructed, and the roof

leaks in the existing digester control building would be repaired. Liner plates would be sealed at the top and bottom to prevent gas and sludge leaks. The overflow boxes would be modified to lower the operating level in the tanks to provide additional storage volume for foam that may be generated by the Full Step Feed BNR Process (being constructed as part of the Phase II Upgrade). Miscellaneous deteriorated mechanical and electrical equipment, such as pumps, valves, instruments, and motor control centers, will be replaced in kind. In addition, new floodlights and lightning protection would be installed.

IMPROVEMENTS TO DIGESTER GAS SYSTEM

Under the Phase III Upgrade, the gas produced during sludge digestion (digester gas) would continue to be used to meet plant heating demands. Excess gas would continue to be used first in the plant's three fuel cells with any excess flared (burned off). Three replacement waste gas burners (i.e., gas flares) would be constructed on site to replace the existing open waste gas flares. These gas burners would be 51 feet tall and 6 feet in diameter. They would be enclosed and designed to minimize air pollution emissions (the low nitrogen oxide burners would provide 99.9 percent destruction removal efficiency of hydrocarbons). During the cold months of the year, the excess digester gas would typically be beneficially used to meet the heating demands of the plant. During these months, the digester gas would be collected and used to fuel the plant boilers. The plant boilers would in turn provide hot water for the sludge digester operations and the building heating systems. Natural gas would be used to supplement the digester gas when additional demand exists. During the warmer months, the excess digester gas would be sent to the gas burners.

ODOR CONTROL

Under the Phase III Upgrade, odor control equipment would be installed at two new egg-shaped digesters and maintained at the existing digesters and thickeners. Exhaust air from the digested sludge overflow boxes (to be located at the new egg-shaped digesters and the existing conventional digesters) would be treated with activated carbon to control odors. The odor control system would adsorb hydrogen sulfide (H₂S) and other inorganic odor-causing constituents found in the air stream. One four-foot diameter, single-bed activated carbon absorption unit and one standby unit would be provided for each new egg-shaped digester overflow box. The activated carbon units would be located on the digester gallery roof and would exhaust to a stack. The existing activated carbon odor control system and enclosures for the sludge distribution boxes would remain in service to control odors from the gravity thickeners.

Between the issuance of the DEIS and this FEIS, NYCDEP performed an evaluation of odor control enclosures at the Hunts Point plant to determine if the enclosures meet the EPA Method 204 requirements for total enclosure. Based on this analysis, NYCDEP will implement enclosure modifications at three locations—the primary influent channel, the thickener distribution box, and sludge storage tank No. 10—to ensure 100 percent capture of fugitive odor emissions. In addition, NYCDEP is committed to install odor control units on the primary effluent channels.

SITE REMEDIATION

Approximately 5.25 acres (Block 2777, Lot 600 and part of Lot 901, and Block 2770, part of Lot 1) would be remediated during construction of the Phase III Upgrade. The remediation would be performed in accordance with a Remedial Action Plan in a Record of Decision (ROD) issued by NYSDEC in 2003.

This ROD covered additional areas beyond those to be remediated during construction of the Phase III Upgrade. Specifically, the ROD covers 13 acres in Barretto Point, including the 5-acre Barretto Point Park, which has been remediated, and 2.75 acres on the additional NYCDEP parcel, which will be remediated in the future without the proposed action. The remaining area—the 5.25 acres—would be remediated as part of the Phase III Upgrade.¹

CARBON ADDITION AND POLYMER ADDITION

In addition to the Phase III Upgrade, the proposed action includes carbon and polymer addition facilities to enhance nitrogen removal.

The carbon feed facilities (including storage tanks, pumps, and piping) would be constructed at the northeast corner of the plant. The carbon source would be added to wastewater treatment process at the aeration tanks. Various chemicals can be used as a carbon source in the denitrification process. Potential impacts from two carbon addition alternatives, including methanol (a water soluble wood alcohol) and ethanol (alcohol found in liquor and beer) were considered for this EIS. It is expected that approximately 2 additional trucks per day for the removal of sludge cake and an additional 6 trucks per day for delivery of chemicals (for carbon addition) for plant operations would be expected with the proposed action.

In addition to a carbon feed system, polymer feed facilities, which would include storage tanks, feed equipment, and piping, would be installed in the basement of the centrate building.

SITE PLAN FOR THE PROPOSED ACTION

The proposed action improvements would be constructed in four areas of the WPCP site:

- on the 4.3-acre additional parcel, which is currently vacant and bordered by Barretto Point Park to the west,
- on the western portion of the existing plant to the south of the additional parcel (roughly west of Coster Street),
- at the northeast corner of the plant where the carbon feed facilities would be constructed, and
- within the centrate building (to be constructed as part of the Phase II Upgrade) where the polymer addition facilities would be constructed.

The new egg-shaped digesters and the associated digester gallery would be constructed on the 4.3-acre parcel. The digester gallery would be a one-story building (with a basement), about 25 feet above grade, with a footprint of 13,200 square feet. The egg-shaped digesters would be large oval structures—approximately 130 feet above grade and 84 feet in diameter. An emergency generator housed in a weatherproof acoustic enclosure would be constructed on the 4.3-acre parcel, near the sludge pipe tunnel between the sludge thickeners and the proposed egg-shaped digesters. The carbon addition facilities would consist of underground storage tanks, a canopy overhead, and a small 14-foot by 30-foot control building. The polymer addition facilities would be constructed entirely within the centrate building.

¹ If the proposed action were not implemented, NYCDEP will still proceed with the remediation of the remaining 5.25 acres as described in the December 2003 ROD.

E. DESCRIPTION OF THE FOUR-DIGESTER SCENARIO

Even after renovation of the four existing convention digesters under the proposed action, these digesters will ultimately reach the end of their useful life. Therefore, an additional two egg-shaped digesters (for a total of four) would be constructed once these digesters are no longer useful to ensure that the plant is able to treat the project flow for the year 2045. These two additional digesters would be constructed on Lot 100 to the north of the two digesters proposed as part of the Phase III Upgrade (see Figure S-3). The additional two digesters proposed under the four-digester scenario would be constructed after 2014. The EIS fully analyzes the potential for impacts from the four-digester scenario.

F. CONSTRUCTION SCHEDULE

The construction of the proposed action is scheduled to begin in the third quarter of 2008 and be completed by December 2014. There would be minimal overlap (approximately three quarters) between construction of the Phase II Upgrade and the proposed action. Work on the Phase II Upgrade commenced in June 2003 and is ongoing. The Full Step Feed BNR Facilities and other elements associated with Phase II Upgrade are scheduled to be completed in mid-2008 with some additional non-consent order related construction continuing through the first quarter of 2009.

The construction for the proposed action has been planned to minimize disruption to the wastewater treatment operations during the construction period. The renovation of the existing digesters and sludge storage tanks is scheduled to occur early in the construction period (between 2008 and 2009) to enable the plant to continue to provide reliable service while the new egg-shaped digesters are under construction. Renovation of the existing digesters and sludge storage tanks would occur on the existing plant site. The polymer addition facilities would be constructed at the same time as the digester renovation. This work would occur within the centrate building (the centrate building will be constructed as Part of the Phase II Upgrade). The sludge thickeners would be renovated one at a time to allow for maximum continued operation; this element of the construction would occur between 2008 and 2012. The two new egg-shaped digesters would be constructed in parallel with the remaining construction elements between 2010 and 2014; the new digesters would be on line in 2014. The carbon addition facility would be constructed between 2011 and 2014. Remediation of 5.25-acre area of the site as required under the ROD would occur after construction and/or staging is complete. The additional two digesters proposed under the four-digester scenario would be constructed at some point after 2014, depending on the life of the rehabilitated digesters; the specific time frame for construction of the two additional digesters is not known.

Staging for all elements of construction would occur on the 1.2-acre construction staging area, except for those activities associated with the carbon and polymer addition facilities. Staging for the carbon addition facilities would take place on the plant site in the northeast section, and staging for the polymer addition facilities would occur within or adjacent to the centrate building.

G. PUBLIC PARTICIPATION

Below is a description of some of the outreach efforts NYCDEP has undertaken with the Hunts Point community.

HUNTS POINT MONITORING COMMITTEE (HPMC)

In late 2003, the Hunts Point Monitoring Committee (HPMC) was established to ensure that community concerns are directly considered in the multi-phase upgrade program at the Hunts Point WPCP, and to incorporate community input into the decision-making process to the extent possible within NYCDEP's mandated requirements. NYCDEP continues to sponsor this public participation effort which enables NYCDEP to provide regular updates to the HPMC about the upgrades and operations at the plant and to receive continuous feedback from HPMC members about community issues.

HPMC comprises community representatives, NYCDEP, and other New York City agency representatives. As of December 2006, NYCDEP staff and HPMC members have met 33 times to discuss a variety of plant related issues and community concerns. For the review of the DEIS, HPMC was assisted by an independent consultant, provided by NYCDEP, but selected by HPMC. The consultant was tasked to review the DEIS and provide technical services in connection with the DEIS review. In connection with the consultant's review of the DEIS, NYCDEP held four technical meetings/conference calls with HPMC's consultant and met with HPMC to discuss the consultant's review (January 17, 2007, January 30, 2007, March 16, 2007, and March 19, 2007). NYCDEP also replied to over 125 questions and requests for additional data from the consultant.

In coordination with the certification of the ULURP applications (which occurred on February 26, 2007), NYCDEP attended public hearings with the CPC (on June 6, 2007), the Bronx Borough President's Office (on April 27, 2007), and the local Community Board (on March 14, 2007, March 28, 2007, April 11, 2007, and April 25, 2007) to present the DEIS as related to the ULURP applications.

OTHER NYCDEP AND CITY OUTREACH EFFORTS

In addition to the ongoing coordination with HPMC and the public participation efforts associated with review of the DEIS and ULURP application discussed below, the Mayor's Office and NYCDEP are working with the Hunts Point community to increase open space and improve the visual character of the neighborhood. Among the efforts being pursued by the City within the Hunts Point community are the Hunts Point Vision Plan, South Bronx Greenway, and roadway traffic improvements. NYCDEP-specific efforts are described below:

- Odor Source Study. The community odor surveys of the Hunts Point peninsula conducted by Malcolm Pirnie in November and December 2006 were a qualitative study to be used for informational purposes on the odors in the area. The findings were based on a snapshot in time. The community odor surveys did not quantify the odor emissions from any unit operations at the Hunts Point WPCP, and collection of the limited odor data during the study did not follow the rigorous procedures for quantitative analysis/data quality control that are required for use in a CEQR impact assessment. Therefore, this information could not be combined with data used in the DEIS.

The community odor surveys in November and December 2006 identified vehicle exhaust as the most predominant odor in the residential area. Odors from the Hunts Point WPCP (which still did not have all the odor mechanisms being installed under the Phase I Upgrade functioning at the time of the 2006 odor surveys) were localized along Ryawa Avenue and Halleck Street extension.

Hunts Point WPCP

- Hunts Point Community Investment Project. In recognition that the Hunts Point WPCP and its long-term construction have placed a burden on the community, including the potential visual impact associated with the proposed digesters (see “Visual Character and Shadows,” below), NYCDEP is currently working with community members, a HPMC subcommittee, and a consultant to obtain community input in selecting a project that will improve conditions on the Hunts Point peninsula for area residents. A workshop was held with the community on December 9, 2006 to discuss options for the amenity. At that workshop, three priority options were identified: 1) a boathouse facility at Lafayette Park and streetscape improvements on Lafayette Avenue (described as the Lafayette Paseo in the South Bronx Greenway Master Plan); 2) a multi-use facility focused on maintenance uses and environmental education; 3) a floating swimming pool, the reconstruction of Tiffany Street Pier, shellfish habitat creation, or streetscape improvements on Ryawa and Viele Avenues. Results of the workshop, including discussions of potential amenity projects have been shared with the Hunts Point community.
- Future Addition to Barretto Point Park. In 2001, NYCDEP transferred approximately 11 acres (5 upland acres and 6 acres of land underwater) to NYCDPR to create Barretto Point Park. Barretto Point Park has since been constructed and is now open to the public. NYCDEP will transfer additional land to NYCDPR—the 1.2-acre construction staging area—when it is no longer needed for construction staging for inclusion in Barretto Point Park (the area will be mapped as parkland at that time).

PUBLIC OUTREACH FOR CEQR AND ULURP

As discussed above, the proposed action is undergoing public review as required by City’s ULURP and CEQR rules. Both of these procedures require extensive public review of a proposed action. The process for both CEQR and ULURP as it relates to the proposed action is described above (see “Project Identification”).

H. CONTENT OF THE EIS AND ANALYSIS FRAMEWORK

For the purposes of the analyses in this EIS, the existing, No Action, and Build scenarios will be as follows:

- Existing Conditions. The Existing Conditions scenario includes the plant as upgraded under the Phase I Upgrade.
- The “No Action” or “Future without the Proposed Action” condition. The No Action scenario will be the plant as upgraded under the Phase II Upgrade. Other development projects expected to be complete in the No Action condition will also be included as part of the future condition, as appropriate. These projects include the Oak Point Detention Center, the Bruckner /Sheridan Reconstruction, New York City Transit Facility Reconstruction, Food Center Drive Projects, Residuals Force Main, the South Bronx Greenway, and the Hunts Point Special District and Rezoning.
- The “Proposed Action” condition. The proposed action consists of the Phase III Upgrade and the carbon and polymer addition facilities. This EIS assesses the potential for impacts from the proposed action during both the construction and operation phases. Where relevant, the EIS also considers the four-digester scenario.

I. PROBABLE IMPACTS OF THE PROPOSED ACTION

LAND USE, ZONING, NEIGHBORHOOD CHARACTER AND OPEN SPACE

TWO-DIGESTER SCENARIO

Land Use and Open Space

The changes at the existing WPCP would not change the land use at the existing plant site. The proposed development on the additional parcel would change the land use on the currently vacant lot. However, the additional area is relatively small and the WPCP, a heavy industrial use, is consistent with the land uses in the study area.

Overall, the proposed action would not result in significant adverse impacts to Barretto Point Park in the areas of shadows, noise, air pollutant emissions, or odors compared to the future no action condition. Specifically, in terms of shadows, shadow increments from the digesters would be short in duration and would be limited in coverage (see “Visual Character and Shadows”). The proposed action would not result in significant increases of criteria air pollutants, non-criteria air pollutants, or odors. In terms of noise, operation of the plant as upgraded under the proposed action would not result in substantial noise increases (an increase of 0.4 dBA within the park).

As discussed below (see “Visual Character and Shadows”), after construction, the proposed action would result in a potential significant adverse visual impact on Barretto Point Park. However, the potential impact would not result in a significant open space impact as the park users’ overall enjoyment of the park would not be significantly diminished. The park has been designed to transition from its industrial surroundings to a pastoral waterfront setting. No views of the waterfront would be affected; only views looking east from the park would be affected. The potential significant visual impact would be very limited. Furthermore, the proposed action would not impede the public’s access to the waterfront or disrupt the recreational activities that will be provided as part of the new park or the proposed greenway. Overall, the addition of new egg-shaped digesters and WPCP equipment would not result in a land use conflict or potential significant adverse open space impact on the existing park, or the additional adjacent open space to be created when NYCDEP transfers the 1.2-acre staging area to NYCDPR when it is no longer needed for construction staging, or on the proposed greenway.

The EIS analyses also evaluated the potential for impacts on the potential South Bronx Greenway Ryawa-Viele Connection. While the egg-shaped digesters would be visible from the Ryawa-Viele Connection for those users of the greenway traveling west along Ryawa Avenue, on Manida, and on Viele Avenue, the presence of the digesters would not result in a significant adverse visual impact given the industrial character of the area of the proposed South Bronx Greenway. The proposed action would not result in significant criteria air pollutant, non-criteria air pollutant, or odor impacts. Overall, the proposed action would not disrupt the activities that will be provided as part of the proposed greenway.

Zoning and Public Policy

As a heavy industrial use the Hunts Point WPCP would continue to be consistent with the M3-1 zoning for the area. No zoning map changes would be necessary as part of the proposed action. With the proposed action, the plant’s floor area would remain within that allowed by the site’s M3-1 zoning.

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The proposed action would be consistent with the area's active industrial character, the New York City's Comprehensive Waterfront Plan, the "Plan for the Bronx Waterfront," as well as the area's designation as an In-Place Industrial Park (IPIP) and Industrial Business Zone (IBZ). As a water-dependent industrial use, the WPCP would be consistent with its location within a Significant Maritime Industrial Area (SMIA), the goal of which is to protect and maintain a working waterfront and industrial use. In addition, the proposed action would be in conformance with the City's Waterfront Revitalization Program. The proposed action would also comply with industrial performance standards per the City of New York's Zoning Resolution Section 42-213. The proposed action would not impede the implementation of the recommendations of the *Hunts Point Vision Plan*, nor would it conflict with NYCDPCP's proposed Hunts Point Special District. Specifically, the plant is located at a distance from the peninsula's residential uses; upon completion of construction its truck traffic would increase only slightly; and it would not have potential significant adverse impacts on the proposed South Bronx Greenway.

The ULURP applications for site selection of the additional parcel and for mapping Barretto Point Park are described above. These applications are expected to be certified by the NYCDPCP.

The proposed action would be consistent with current and future zoning and public policy initiatives. Therefore, no potential significant adverse impacts to zoning or public policy are expected to occur as a result of the proposed action.

Neighborhood Character

The proposed action would increase the visibility of the plant's facilities from the area immediately surrounding the project site. While this would be consistent with the existing industrial character of the study area as well as zoning and public policy mentioned above, the digesters would result in a potential significant adverse visual character impact on park users looking east toward the digesters (see "Visual Character and Shadows"). The digesters would not affect park users' overall enjoyment of the park. It is not expected that the proposed action would result in any other potential significant adverse impacts during operations. Pedestrian and vehicular activity is not anticipated to significantly change as a result of the proposed action. The digesters and other equipment would be installed with odor control technology, and no potential significant adverse odor impacts for the new project components are expected. Therefore, the proposed action is not anticipated to result in potential significant adverse impacts to neighborhood character.

FOUR-DIGESTER SCENARIO

As with the two egg-shaped digester scenario, the four digester scenario would increase the presence of the wastewater treatment facility within the study area but would be consistent with the area's land uses and community character and current zoning and public policy initiatives. It is not expected that the four digester scenario would result in any potential significant adverse impacts other than the potential significant adverse visual character impacts on Barretto Point Park described above for the two-digester scenario. Pedestrian and vehicular activity is not anticipated to change as a result of the additional digesters. Overall, the four digester scenario would not result in potential significant adverse impacts to land use, open space, zoning, or neighborhood character.

SOCIOECONOMIC CONDITIONS

The proposed action and four-digester scenario would not involve the direct or indirect displacement of any residents or businesses. There are a few isolated residences within the largely industrial area surrounding the plant and no increase in population or displacement within the study area would result from the project.

Based on assessments conducted for similar city infrastructure projects, the cost of the proposed action would result in a change in water and sewer rates of less than \$0.50 per month per household, while the increase from all three phases of the upgrade would be less than \$1.50 per month per household. The four-digester scenario would result in an increase in water and sewer rates less than \$0.50 per month per household. These increases represent a very small percentage of rents and homeowner expenses and would not be expected to result in potential significant adverse displacement effects. Overall, no potential significant adverse impacts are expected from either the proposed action or the four-digester scenario.

VISUAL CHARACTER AND SHADOWS

VISUAL CHARACTER

Two-Digester Scenario

The renovation, replacement, and upgrades to existing facilities on the interior of the plant site would be consistent with the industrial character of the study area, and changes on the existing plant site would largely not be noticeable, as most of the plant interior is not visible from the study area due to distance and intervening buildings.

Rising 130 feet tall, the proposed two egg-shaped digesters would be prominent additions to the study area. While they would be in keeping with the area's industrial character, the height and bulk of the digesters would be much greater than the relatively low-lying industrial buildings in the area surrounding the plant. Because it is an industrial area, there are few viewers or views that would be affected. However, for Barretto Point Park users looking east toward the 4.3-acre additional parcel on which the digesters would be constructed, there would be a potential for a significant adverse impact on visual character.

The transfer of land from NYCDEP to NYCDPR to create Barretto Point Park and the planning for Barretto Point Park were both undertaken in the context of design work for the use of the 4.3-acre parcel for the egg-shaped digesters. The two projects were contemporaneously planned. It was conceived that the design of Barretto Point Park would transition from its industrial surroundings to the waterfront. The potential significant visual character impact would be very limited. No views of or access to the waterfront would be affected. Only views looking east from the park would be affected. The impact would not significantly impact park users' enjoyment of the park and there are no significant shadows impacts. Further, the final design of the digesters' exterior will be completed, with input from the community, to enhance and convey the modern, innovative architectural style associated with this particular wastewater technology, as was done at the Newtown Creek WPCP. A vegetated buffer has been established between Barretto Point Park and the area of the proposed digesters to partially screen the digesters when constructed and create an appearance of the digesters as emerging in the distance behind a foreground of dense plantings. The vegetated buffer within the park and bordering the plant would include a mix of large shade trees, understory trees, a line of pine trees for winter screening, and a wide field of tall wildflower meadow mix. However, due to the height of the digesters, the significant visual

character impact cannot be fully mitigated (see “Unavoidable Significant Adverse Impacts,” below). There would be no significant adverse impact on visual character from the Tiffany Street Pier where views would be at a distance and not intrusive, nor from the proposed greenway, from which views would be transient and at a distance from most vantage points.

In addition, the Mayor’s Office and NYCDEP are working with the Hunts Point community to increase both open space and visually attractive environments in the study area. NYCDEP is working with the Hunts Point community to identify a community open space amenity in recognition that the plant and its long-term construction have placed a burden on the community, including the potential visual impact associated with the proposed digesters. The Hunts Point Vision Plan, South Bronx Greenway, roadway traffic improvements, and future additions to Barretto Point Park are among the efforts being pursued by the City within the Hunts Point community.

For industrial workers, the visibility of the 130-foot-tall egg-shaped digesters would be variable depending on where they are located due to intervening buildings, topography, and distance. On Viele Avenue and Manida Street adjacent to the site, the digesters would be prominent but it is expected that the workers would not be concentrating on views of the site. From farther north and east on those streets, intervening buildings would partially block views, and the digesters would become background objects seen in the distance through a largely industrial landscape. On other streets—Casanova, Barretto, and Coster—the digesters would be less visible due to intervening buildings. Truck drivers also have clear views of the project site on Viele Avenue, Manida Street, and Ryawa Avenue but these views are fleeting. Therefore, there would be no potential significant adverse impacts on these viewers.

Four-Digester Scenario

As with the two egg-shaped digester scenario, the four-digester scenario would introduce new prominent structures on a formerly vacant site. While these structures would be in keeping with the industrial character of the site and study area, as described above they would also be substantially taller and bulkier than the surrounding industrial buildings and there would be a potential significant adverse impact for park users looking east toward the four egg-shaped digesters.

SHADOWS

Construction of the digesters (either two or four) would not result in potential significant adverse shadow impacts to Barretto Point Park or to the construction staging area. The shadows would be limited to the morning hours and to the eastern half of the park. After the morning hours, both Barretto Point Park and the construction staging area would receive full sunlight throughout the rest of the day since there is open water to the south and west and no other shadow-casting structures exist. Therefore, there would not be a significant reduction in the amount of sunlight on the park or in the usability of the park, and no significant adverse shadows impacts are expected. Shadows from two digesters would be less than the new shadows introduced by four digesters. Shadows from the digesters on the South Bronx Greenway Ryawa-Viele Connection would be limited to the late afternoon and evening hours on the Manida Street sidewalk and bikeway. The Ryawa-Viele Connection will be devoted to active uses and new shadows in this limited portion of the greenway would not significantly impact the usability or enjoyment of this resource. Overall, there would be no potential significant adverse shadows impacts on either Barretto Point Park or the South Bronx Greenway.

HISTORIC RESOURCES

Construction of the proposed action would involve below-ground construction in areas that have been previously disturbed. In letters dated May 12, 2000 and September 8, 2006, the New York City Landmarks Preservation Commission (NYCLPC) determined that the project site, including the additional 4.3-acre parcel and the 1.2-acre construction staging area, has no archaeological significance.

No known architectural resources are located on the project site or in the immediate area. In addition, no potential resources were identified in a field survey of the project area conducted in February 2005. NYCLPC determined that the project site has no architectural significance. In a letter dated November 17, 2006, the New York State Office of Parks, Recreation and Historic Preservation determined that the proposed action will have no impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

Therefore, the proposed action and four-digester scenario would not result in any potential significant adverse impacts on historic resources.

WATERFRONT REVITALIZATION PROGRAM

The Hunts Point WPCP is located within New York City's Coastal Zone Boundary and is an industrial, water-dependent use located in a Significant Maritime Industrial Area. It is consistent with the industrial development and working waterfront uses in the area. No in-water work is proposed, and the proposed action would improve the quality of the WPCP effluent discharge. The proposed action would be consistent with the applicable policies of the city's Local Waterfront Revitalization Program (WRP) and the WRP's guiding principle of maximizing the benefits derived from economic development, environmental preservation, and public use of the waterfront while minimizing conflicts among these objectives.

TRANSPORTATION

The proposed action would not result in any additional plant workers. Approximately 2 additional trucks per day for the removal of sludge cake and an additional 6 trucks per day for delivery of chemicals for plant operations would be expected with the proposed action. Therefore, the proposed action would not result in an exceedance of *CEQR Technical Manual* thresholds, and no potential significant adverse impacts would occur.

CRITERIA AIR POLLUTANTS

For NO₂, CO, PM₁₀, and SO₂, the air quality analysis considered impacts from the entire plant as upgraded under the Phase I, II, and III Upgrades and the carbon addition facility, rather than the incremental impact from Phase III only, in order to determine the WPCP's overall impacts and compliance with NAAQS. For PM_{2.5}, impacts were also analyzed from the entire plant as upgraded (Phases I, II, and III and carbon addition) and compared to the updated NYCDEP or NYSDEC PM_{2.5} interim guidance criteria. The Phase III Upgrade analysis incorporated building profiles due to the egg-shaped digesters, and a new 500 kW emergency generator. In addition to the analysis of the proposed action with the two new egg-shaped digesters (the two-digester scenario), an analysis was performed to analyze the effect of installing two additional egg-shaped digesters (the four-digester scenario).

Emissions from the emergency generators were modeled to assess the effects of maintenance testing and potential participation in a Peak Load Management (PLM) program. The PLM

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program would only be in effect from June 1 through September 30 between the hours of 11 AM to 7 PM. During this period, the analysis assumed five 2,000 kW emergency generators would operate for up to a maximum of six hours per day (11 AM to 5 PM), under non-emergency conditions. The generators were assumed to operate simultaneously at their expected maximum loads (75 percent). This is considered the maximum PLM scenario, and operation of the emergency generators assuming participation in the PLM program is considered Scenario 1.

During the rest of the year or the hours in the June through September period when the PLM program is not in effect, or if NYCDEP decides not to participate in the PLM program, the six 2,000 kW emergency generators would be subjected to maintenance testing under two operating scenarios. The first scenario, Scenario 2A, would be operation of four out of the six generators operating at 75 percent load for two hours per day. The second scenario, Scenario 2B, would be operation of three out of the six generators operating at partial load for two hours per day. For modeling purposes, 50 percent load conditions were used to simulate partial load operation. These scenarios were developed since they are reasonable worst-case scenarios and would cover the range of impacts expected from maintenance testing.

Between the issuance of the DEIS and the FEIS, NYCDEP has committed to the use of ULSD in the generators that are being installed under the Phase II Upgrade and the new emergency generator associated with the Phase III Upgrade. NYCDEP has also agreed to reduce the maximum number of emergency generators participating in a PLM program to five of the six 2,000 kW generators that are being installed under the Phase II Upgrade. In addition, NYCDEP will design and implement a PM monitoring program for both construction and operation of the upgrade.

CRITERIA POLLUTANT IMPACTS

The ISCST3 and PRIME models were used to estimate the maximum off-site pollutant concentrations. The maximum predicted concentrations from the modeling of the WPCP were added to the background concentrations to estimate the ambient air quality at the locations near the project site.

Table S-1 presents the maximum criteria pollutant impacts at the upgraded Hunts Point WPCP.

The results of the modeling analysis indicated that the entire plant as upgraded under Phases I, II, and the proposed action would not result in any impacts exceeding the NAAQS for NO₂, SO₂, PM₁₀, and CO. Therefore, no significant adverse air quality impacts are predicted from these emissions.

**Table S-1
Maximum Predicted Total Concentrations¹**

Pollutant	Averaging Period	Background Conc. (µg/m ³)	Predicted Impact (µg/m ³) ²	Total Max Predicted Conc. (µg/m ³)	Ambient Standard (µg/m ³)
NO ₂	Annual	60	3.1	63	100
SO ₂	3-hour	233	280	513	1,300
	24-hour	134	48	182	365
	Annual	34	2.5	36.5	80
PM ₁₀	24-hour	46	12	58	150
CO	1-hour	5,600	383	5,983	40,000
	8-hour	3,086	125	3,211	10,000

Notes:
 1. The impacts presented are the total impacts from the entire plant as upgraded under Phases I and II, and the proposed action.
 2. Short-term concentrations represents the highest impact from the Peak Load Management (PLM) scenario, generator maintenance testing scenario 2A, and generator maintenance testing scenario 2B. For the criteria pollutant analysis, the PLM program was conservatively modeled assuming six 2,000 kW emergency generators operating even though only five would operate.

PM_{2.5} IMPACTS

PM_{2.5} concentrations were also determined for the entire facility as upgraded under Phases I, II, and the proposed action, with the updated modeling and inclusion of the use of ULSD for the generators for the FEIS noted above. The potential PM_{2.5} impacts were evaluated on both a localized and neighborhood-scale. The results were then compared to the applicable interim guidance criteria to evaluate whether such predicted incremental impacts would be considered potential significant adverse impacts. For the 24-hour impact assessment, the potential frequency and extent of the predicted off-site PM_{2.5} incremental impacts, especially at locations where 24-hour exposure could occur, were examined. In addition, since the 2,000 kW generators installed under Phase II are the predominant sources contributing to the maximum predicted short-term off-site PM_{2.5} incremental impacts, the analyses considered the potential impacts under various operating scenarios for the generators. This included potential impacts from participation in the PLM program with five generators operating, maintenance testing, and no emergency generators operating, which represents the most typical operation condition at the plant (see Table S-2).

**Table S-2
Maximum Predicted PM_{2.5} Concentrations at Barretto Point Park and Nearest Residential Receptor**

Pollutant	Scenario	Maximum Impacts (µg/m ³)	
		Barretto Point Park	Nearest Residential Receptor
PM _{2.5}	PLM	1.8	0.62
	Maintenance Testing 2A	1.5	0.80
	Maintenance Testing 2B	1.4	0.72
	No Emergency Generators	0.79	0.63

For the plant as upgraded under the Phase I and II Upgrades and the proposed action, the maximum predicted PM_{2.5} annual average and 24-hour impacts would be below the interim

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guidance criteria of $0.1 \mu\text{g}/\text{m}^3$ and $2 \mu\text{g}/\text{m}^3$ at all locations of public access. The only location where the 2 or $5 \mu\text{g}/\text{m}^3$ $\text{PM}_{2.5}$ 24-hour criteria would be exceeded is along the waterfront where there would be no public access.

The nearest sensitive receptor location with potential continual 24-hour exposure would be the closest residence. At this residence, when no emergency generators are operating, the maximum predicted incremental $\text{PM}_{2.5}$ 24 hour concentration would be $0.63 \mu\text{g}/\text{m}^3$, and less than $0.63 \mu\text{g}/\text{m}^3$ in the nearest residential neighborhoods. During PLM participation and emergency generator testing periods, the maximum predicted incremental $\text{PM}_{2.5}$ 24 hour concentration would be 0.62 and $0.8 \mu\text{g}/\text{m}^3$, respectively. These values are well below the $2 \mu\text{g}/\text{m}^3$ criterion.

Other nearby receptors include Barretto Point Park and the proposed South Bronx Greenway. At the park, under typical, yet conservative conditions, the maximum predicted incremental $\text{PM}_{2.5}$ 24 hour concentration would be $0.79 \mu\text{g}/\text{m}^3$. During PLM participation and emergency generator testing periods, the incremental concentration would be 1.8 and $1.5 \mu\text{g}/\text{m}^3$, respectively. At the proposed South Bronx Greenway, under typical, yet conservative, conditions, the maximum predicted incremental $\text{PM}_{2.5}$ 24 hour concentration would be $1.57 \mu\text{g}/\text{m}^3$. During PLM participation and emergency generator testing periods, the incremental concentration would be 1.86 and $1.71 \mu\text{g}/\text{m}^3$, respectively.

Therefore, no potential significant air quality impacts related to $\text{PM}_{2.5}$ are expected to occur with the plant as upgraded under the Phases I and II Upgrades and the proposed action.

FOUR-DIGESTER SCENARIO

In addition to the two-digester modeling analysis, analyses were performed with the two additional egg-digesters to determine whether there would be any differences in maximum predicted off-site concentrations. The result of these analyses indicated that the maximum predicted increments under the four-digester scenario were less than or equal to the maximum predicted increments estimated for the two egg-digester scenario including all pollutants analyzed. The lower values were due to the effect of additional dispersion as a result of the wake effects from the two additional digesters. Therefore, there would be no significant adverse criteria air pollutant impacts under the four-digester scenario.

CONCLUSIONS

The entire Hunts Point plant as upgraded under the proposed action would not result in any predicted potential significant adverse air quality impacts associated with criteria air pollutants including NO_2 , SO_2 , $\text{PM}_{2.5}$, PM_{10} , and CO .

NON-CRITERIA AIR POLLUTANTS

In addition to the pollutants regulated by the NAAQS (see “Criteria Air Pollutants,” above), New York State regulates the ambient levels of air toxics from general process emission sources through the use of recommended guideline concentrations. These “non-criteria air pollutants” include carcinogens, as well as non-carcinogenic compounds and irritants. NYSDEC provides 1-hour and annual average guideline concentrations called Short-Term Guideline Concentrations (SGCs) and Annual Guideline Concentrations (AGCs) for these compounds.

In the future without the proposed action, three compounds from the wastewater process, chloroform, 1,4-dichlorobenzene, and dichlorobromomethane had exceedances of the AGC in areas where there are no residences or other permanent or occupied locations beyond the northern fence

line between Ryawa Avenue and Viele Avenue and beyond the southern fence line in the water. The predicted exceedances of the AGCs from these three compounds do not extend to the nearest residence or into the nearest residential neighborhood, or the Vernon C. Bain Center, hence there would be no long-term, continuous exposure in these areas. The proposed South Bronx Greenway would be located in the area where these predicted exceedances of the AGCs would occur; however there would be no long term continuous exposure in these areas. The maximum predicted impacts from the combined wastewater treatment process and combustion sources associated with non-criteria air pollutants without the proposed action are well below 10 times the respective AGC for the three pollutants, and the previous Best Available Control Technology (BACT) analysis demonstrated that additional controls were not required.

Under the proposed action, the incremental levels of the three non-criteria air pollutants with predicted exceedances of the AGCs would be slightly reduced due to the carbon addition and predicted off-site levels would remain relatively unchanged compared to the future without the proposed action conditions. The results of the BACT analysis for the future without the proposed action would be applicable to the proposed action. Therefore, no potential significant adverse non-criteria air pollutant impacts are expected from the proposed action.

ODORS

Using H_2S as an indicator compound for odorous compounds, it was determined that the predicted incremental H_2S impacts from the proposed action would be negligible, and potential impacts from the entire plant as upgraded under Phases I and II Upgrades and the proposed action as well as the four-digester scenario would comply with the NYSAAQS of 10 ppb H_2S in ambient air. Maximum predicted 1-hour H_2S concentrations at the nearest residence, the Vernon C. Bain Detention Center, and at Barretto Point Park during park hours with the proposed action would be less than the 1 ppb significant odor guidance threshold in the City's *CEQR Technical Manual*. Potential odor impacts (1.58 ppb) on the Ryawa Avenue segment of the proposed South Bronx Greenway would not be disruptive of the types of activities that would occur along the greenway. Therefore, no potential significant adverse malodorous impacts are expected from either the proposed action or the four-digester scenario.

NOISE

The proposed action and four-digester scenario would not result in any predicted exceedances of the suggested incremental thresholds in the City's *CEQR Technical Manual* at nearby sensitive receptors (including the adjacent Barretto Point Park and the nearest residence at Manida Street between East Bay and Viele Avenues), and would not create exceedances of the octave band limits contained in the New York City Noise Code or the performance standards of the New York Zoning Resolution. Noise emanating from the plant under future conditions with the proposed action would not be disruptive of the types of activities that would occur along proposed South Bronx Greenway. Therefore, there would be no predicted significant adverse noise impacts from the proposed action.

INFRASTRUCTURE AND SOLID WASTE

The purpose of the proposed action is to improve a crucial component of the city's infrastructure, the Hunts Point WPCP. The proposed action would improve wastewater quality due to enhanced nitrogen removal. At the same time, the proposed action would not be anticipated to result in potential significant adverse impacts to water supply or solid waste. The

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proposed action would include upgrades to the sludge handling systems at the Hunts Point WPCP, creating improved and more efficient sludge production, as well as carbon and polymer addition facilities to enhance nitrogen removal. Carbon addition would increase on-site sludge production at the plant from 173,000 dry tons per day in the No Action condition to 198,000 dry pounds per day. The new and rehabilitated sludge treatment facilities would be designed to satisfy EPA's PSRP regulations to allow the sludge to be beneficially reused for land application. Overall, the proposed action would not result in potential significant adverse impacts on the city's Sludge Management Program, including the handling, transport, and disposal of sludge materials.

ENERGY

With the proposed action, energy usage, including electricity and natural gas, would increase at the WPCP site. The total electricity demand for the WPCP would increase from 590,400 kW-hr per day in the No Action condition to 686,400 kW/hour/day. This expected additional power demand under the proposed action would not require any significant change in Consolidated Edison's regional distribution system or on the region's power supplies. A 500 kW emergency generator (diesel-engine driven) would be provided at the digester building to provide back-up life safety power to elevators and fire pumps if utility service becomes unavailable (blackout periods). This and the other six emergency generators would be operated periodically for routine maintenance functions to ensure operability should off-site power service ever be interrupted. NYCDEP is committed to using ULSD in all of the plant's emergency generators. Under the proposed action, the plant could participate in the PLM program. NYPA's PLM program is citywide, and when an event is called all the PLM customers, besides NYCDEP, participate in the effort to reduce power intake from the grid. The intention of the PLM program is to reduce the potential for power outages in New York City during peak demand for power, including the Hunts Point area of the Bronx. When NYCDEP participates in a PLM program, it is not plant specific; NYCDEP makes a total commitment to reduce. Commitments are chosen below the real emergency generating capacity of the plant. An event is called for all participating plant sites, not for each plant separately. In 2007, NYCDEP has not committed the Hunts Point WPCP for PLM participation; the existing generators are being replaced under the Phase II Upgrade with six new generators. In the future, NYCDEP may participate in PLM at Hunts Point, but has agreed to reduce the maximum number of emergency generators participating in the PLM program to five of the six 2,000 kW generators being installed under the Phase II Upgrade.

Typically, digester gas would be utilized to meet plant heating demand during the cold months of the year. However, during the coldest months there would not be sufficient digester gas produced to meet demand. At such times, natural gas would be purchased to supplement the WPCP's digester gas production. During warm weather periods of the year (June through September), WPCP heating and cooling demands would not require use of all of the digester gas produced. During these warm weather months and at times when digester gas cannot be fully used, the excess digester gas would be used first in the plant's three fuel cells and any further excess would be burned off.

The four-digester scenario would result in a small incremental increase in energy demand, as the four existing digesters would no longer be operational. No potential significant adverse impacts from the project's energy demands from the proposed action or the four-digester scenario are expected.

HAZARDOUS MATERIALS

Previous site investigations conducted for the existing Hunts Point WPCP site and the Barretto Point Site identified soil and groundwater contamination at locations where construction is proposed for the Phase III Upgrade. The areas that would be affected by the proposed action include the western portion of the existing Hunts Point WPCP site (including the area of the existing sludge thickeners, storage tanks, and digesters), the 5.5-acre parcel of city-owned land located to the northwest of the existing plant boundary (including the 1.2-acre construction staging area that would eventually be transferred to NYCDPR), and the carbon addition facility area. The polymer addition facilities would be located within the centrate building being constructed as part of the Phase II Upgrade, so no new construction would be required.

Portions of this area will be remediated by NYCDEP in accordance with the NYSDEC Record of Decision (ROD) for the Barretto Point brownfields site (specifically, a 2.75-acre area will be remediated, including a 0.7-acre former paint and varnish manufacturing facility area where soil and groundwater contaminated with volatile organic compounds have been detected). This remediation is scheduled to commence in the third quarter of 2008 and last for approximately one year. The remaining portion of the Barretto Point Site (5.25 acres) to be remediated by NYCDEP would be remediated during the construction of the Phase III Upgrade. Remediation of this area will include placement of two feet of clean fill over the entire area.

Construction activities would increase potential pathways for exposure of construction workers, workers at the WPCP, and others in the vicinity to contaminants in the soil and groundwater, including metals, polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds. All contaminated soils in the areas to be excavated would be removed and disposed of in accordance with all applicable federal, state, and local regulations. Construction Health and Safety Plans (CHASPs) would be developed and approved by NYCDEP for the various construction activities associated with the project to reduce the potential for worker or public contact with contamination found in either the soil or groundwater. These plans would address the potential exposure pathways and other safety concerns associated with a variety of construction methods. Each CHASP would address both the known contamination issues as well as contingency items. The CHASP would be developed in accordance with U.S. Occupational Health and Safety Administration (OSHA) regulations and guidelines.

Construction of the proposed action would include appropriate health and safety and remedial measures that would precede or govern all construction activities with the potential to encounter hazardous materials. With the implementation of these measures, no potential significant adverse impacts are expected during construction.

The carbon addition facilities required to meet future nitrogen reduction goals will add methanol or ethanol as an additional carbon source to the wastewater treatment process at the aeration tanks. Methanol and ethanol are considered hazardous because of their flammability and their storage and use are therefore strictly regulated by the New York City Fire Department (FDNY). Storage and handling facilities shall have fire suppression and prevention systems to maximize safety. Fire protection systems will include automated detection with thermal detectors and automated activation of fire fighting foam systems.

The polymer addition facilities will assist in controlling froth in the wastewater treatment process. Transportation, storage, and handling of the new chemicals associated with the Phase III upgrade, and the chemicals already used for operation of the plant would be in accordance with all applicable federal, state, and local regulations and guidelines. To minimize the potential

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impacts related to accidental spillage, the Hunts Point WPCP would continue to comply with New York State Petroleum and Chemical Bulk Storage design criteria, including secondary containment and other requirements. Plant personnel are instructed in the handling of all chemicals and, in the case of a spill, are required to abide by the emergency response and spill containment procedures for workers to contain spilled materials and contact the appropriate emergency response organizations, if necessary. These procedures include emergency response and spill containment procedures for all chemical usage associated with plant operations. Material Safety Data Sheets (MSDSs) for all chemical products used at the plant are available and would continue to be available on-site for plant personnel use. With the implementation of these measures, no potential significant adverse impacts are expected from chemical storage and handling at the Hunts Point WPCP.

WATER QUALITY

As part of the proposed action, the Hunts Point WPCP would introduce a carbon addition facility to enhance nitrogen removal, thereby improving the quality of the plant's effluent. Nitrogen is removed in a two step biological process called nitrification-denitrification. Under the proposed action, a source of carbon (methanol or ethanol) would be added to the wastewater to increase the denitrification rate. The nitrification-denitrification process on occasion can produce a heavy biological froth on the surface of the aeration tanks. The froth can adversely impact the settling of sludge and cause foaming in the sludge digesters. To control the froth, polymer addition facilities would be installed.

In April 2007, the New York City Mayor's Office issued a report—*PlaNYC, A Greener, Greater New York*, The City of New York, Mayor Michael R. Bloomberg, April 22, 2007. This report identified the following as one of New York City's primary water challenges: "to ensure that the waterways surrounding the city are clean and available for use by New Yorkers." To ensure that this goal is met, the plan states that the city's wastewater treatment infrastructure will continue to be upgraded. The plan also identifies nitrogen as a particular water quality concern. The proposed action is an upgrade to one of the city's 14 WPCPs and thus addresses this goal. In addition to improving the plant's solids handling facilities, the proposed action includes measures that will enhance the plant's nitrogen removing capabilities (the carbon and polymer addition facilities, described above). The proposed action is being undertaken to improve existing conditions and to accommodate long-term growth in the area that the plant serves. As discussed above, the carbon and polymer addition facilities would enhance nitrogen removal.

Therefore, the proposed action would improve the quality of the WPCP's effluent, and no potential significant adverse impacts on water quality are expected.

NATURAL RESOURCES

Although the plant site encompasses a small portion of littoral zone and coastal shoals, bars and mudflats, no wetland vegetation is present on the site, and no in-water work is proposed as part of the proposed action. Therefore, there would be no impacts to aquatic species. The proposed action would include enhanced nitrogen removal facilities, thereby improving the quality of the plant's effluent to the East River. This could, in turn, provide benefits for aquatic resources. Therefore, there is no potential for significant adverse natural resources impacts to occur.

CONSTRUCTION

The construction schedule is described above (see “Construction Schedule”). While certain types of construction activities would be noisy at times and visible from Barretto Point Park, overall, construction at the Hunts Point WPCP is not expected to result in potential significant adverse impacts to land use, open space, and neighborhood and visual character. Construction activities are predicted to result in a potential significant adverse traffic impact at one intersection, the intersection of Bruckner Boulevard and Tiffany Street, during both the AM and PM peak hours during most of the construction period. The impact would occur to the westbound left-turn movement at this intersection, which would deteriorate from LOS E to LOS F in the AM peak period and continue to operate at LOS F in the PM peak period. This impact could be mitigated with a modification to the signal timing at that intersection (see Section “Mitigation,” below).

The analysis of potential impacts on air quality from the construction of the proposed action, including both on-site and on-road sources of air emissions, concluded that no potential significant adverse impacts from construction sources are expected (see detailed sections below). The greatest potential for the release of odors during the construction period is for a short period when sludge and grit deposits are removed from the existing digesters and storage tanks prior to renovation. The construction contractor would be required to take all necessary steps to control odors from this operation. For example, the residuals from tank cleaning would be transported from the plant site in covered trucks, and odor counteractant would be used. In addition, mobile misters will also be used around the digesters and sludge storage tanks during cleaning. No potential significant adverse odor impacts are anticipated.

While the on-site construction activities would at times be noisy and intrusive in Barretto Point Park, due to the limited duration of the adverse impacts and in consideration that maximum construction impacts would occur on weekdays, which is not likely to be the period when Barretto Point Park is most fully utilized, the predicted temporary adverse noise impacts from the construction of the proposed action would not be significant. Nonetheless, pursuant to the New York City Noise Control Code, as amended December 2005 and effective July 1, 2007, the adoption and implementation of noise mitigation plans would be required for the construction of the proposed action. A construction wall at least 8 feet in height would also be built around the area of digester construction; however, the wall would not provide shielding during construction of the digesters at greater heights.

STATIONARY SOURCE IMPACTS

A dispersion modeling analysis was performed to estimate the maximum off-site pollutant concentrations associated with emissions produced by on-site construction activities at the project site. The maximum concentrations from on-site construction sources were predicted at receptors near the project site. The maximum predicted 24-hour $PM_{2.5}$ incremental concentration from the proposed action’s construction activities was modeled for comparison with the 24-hour average interim guidance criterion of $5.0 \mu\text{g}/\text{m}^3$ and with the annual average neighborhood-scale interim guidance criterion of $0.1 \mu\text{g}/\text{m}^3$. The 24-hour average concentration increment from the construction activities was predicted to be 1.17 $\mu\text{g}/\text{m}^3$, which is less than the $5.0 \mu\text{g}/\text{m}^3$ criterion. The annual average neighborhood-scale concentration increment from the construction activities was predicted to be $0.0025 \mu\text{g}/\text{m}^3$, which is less than the $0.1 \mu\text{g}/\text{m}^3$ criterion. Therefore, no significant adverse air quality impacts are predicted from the on-site construction sources for $PM_{2.5}$.

MOBILE SOURCE IMPACTS

A mobile source air quality analysis was conducted for the project during construction activities at the site for the peak construction traffic year, 2011. Localized pollutant impacts from the vehicles queuing at the selected intersection were analyzed for CO, PM₁₀, and PM_{2.5}.

The predicted total concentrations of CO (including background) for the peak year for construction-related traffic are below the corresponding ambient air quality standards. Both the 1-hour and 8-hour averaging periods for the modeled intersection are in compliance with their respective standards. In addition, the predicted incremental CO concentrations at the modeled intersection would not exceed the CEQR *de minimis* criteria (incremental value) for the 8-hour period.

The predicted total concentrations of PM₁₀ (including background) for the peak year for construction-related traffic are in compliance with the corresponding ambient air quality standards for both the 24-hour and annual averaging periods.

The maximum predicted 24-hour PM_{2.5} incremental concentration from the proposed action's construction-related traffic was modeled for comparison with the 24-hour average interim guidance criterion and with the annual average neighborhood-scale interim guidance criterion at the modeled intersection. For this assessment, no background contributions from other sources of PM_{2.5} are required. The 24-hour average concentration increment was predicted to be 0.02 µg/m³, which is less than the 5.0 µg/m³ criterion. The annual average neighborhood-scale concentration increment was predicted to be 0.004 µg/m³, which is less than the 0.1 µg/m³ criterion.

Therefore, no significant adverse air quality impacts are predicted from construction-related traffic for CO, PM₁₀, and PM_{2.5}.

PUBLIC HEALTH

Based on the air quality assessments performed for the EIS, the operation and construction of the proposed action (for both the two- and four-digester scenarios) would not result in any new predicted exceedances of air quality standards and the predicted neighborhood average incremental concentration of PM_{2.5} would be less than the applicable interim guideline concentration. The assessment also considered the type of sensitive receptors that could be affected, especially at locations where 24-hour exposure could occur, given that the standard was derived based on continual 24-hour exposure. Additionally, any increased emission levels produced during the construction activity would be transient. The principal health effects of airborne particulate matter are on the respiratory system. Based on the project changes in air quality resulting from the operation and construction of the proposed action, no significant impacts on public health in the community would be expected. In addition, the potential impacts from non-criteria air pollutants, noise, traffic and hazardous materials are also not expected to result in a significant adverse impact on public health. Therefore, the construction and operation of the proposed action is not expected to result in a potential significant adverse impact on public health.

J. MITIGATION

This section discusses the analysis areas where the potential for significant adverse impacts was identified, and measures that have been examined to minimize or eliminate the expected impacts.

TRAFFIC

Potential adverse traffic impacts were identified for one study area intersection (Bruckner Boulevard and Tiffany Street) under 2011 proposed action peak construction conditions. Although these impacts are not permanent and their effects would be less in other construction years, the length of time during which the impacts could be sustained is expected to span over numerous years. Hence, feasible mitigation measures were explored to alleviate these impacts.

Analysis results showed that only signal timing adjustments would be required to fully mitigate the one AM and PM peak hour traffic impacts identified. NYCDEP will continue to coordinate mitigation measures with NYCDOT, and upon completion of the planned construction activities, these measures could be maintained or removed at the discretion of the NYCDOT.

VISUAL CHARACTER

The introduction of the new egg-shaped digesters would result in a potential significant adverse impact on visual character for Barretto Point Park users facing east toward the additional parcel. This impact would be very limited and no views of or access to the waterfront would be affected. Only views looking east from the park would be affected, and park users' overall enjoyment of the park would not be significantly diminished. There would be a planted area within the eastern end of the park along the property line. However, due to the height of the digesters, the potential significant adverse impact on visual character cannot be mitigated (see "Unavoidable Significant Adverse Impacts"). This impact is also identified as an impact on a minority and low-income community (see "Environmental Justice").

K. UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

Unavoidable significant adverse impacts are defined as those that meet the following two criteria:

- There are no reasonably practicable mitigation measures to eliminate the impacts; and
- There are no reasonable alternatives to the proposed project that would meet the purpose and need of the action, eliminate the impact, and not cause other or similar significant adverse impacts.

The proposed action and four-digester scenario would result in a potential significant adverse impact on visual character for Barretto Point Park users looking east toward the 4.3-acre additional parcel on which the digesters would be constructed (see "Visual Character and Shadows," above). As described in that section and in "Mitigation," above, there are no measures available to mitigate the limited potential significant adverse visual impact. As described in "Alternatives," below, there is no feasible alternative that would better meet the objectives and implementation of the proposed action while reducing or eliminating this significant impact, which is limited in scope. Therefore, the potential significant adverse visual impact would remain unmitigated and is unavoidable.

L. ENVIRONMENTAL JUSTICE

An environmental justice analysis was prepared to determine any disproportionate and adverse impacts on minority or low-income populations that could result from the proposed action.

The study area is a minority and low-income community that is characterized by numerous light and heavy manufacturing uses. The cumulative analysis of the proposed action together with expected future No Action conditions indicated that the proposed action would not result in potential significant adverse impacts to the surrounding area for air quality, noise, hazardous materials, public health, or other environmental impact areas, with the exception of two potential significant adverse impacts: the proposed action's construction activities are predicted to result in a potential significant adverse traffic impact during construction, and the new egg-shaped digesters would result in a potential significant adverse impact on the visual character at Barretto Point Park. In addition, temporary noise impacts from construction activities would occur on the park. These impacts would be adverse impacts on minority or low-income populations. See "Construction," above for a discussion of the noise mitigation plan that will be implemented during construction, "Mitigation" for a discussion of how the construction-period traffic impact would be mitigated, and "Visual Character and Shadows" for more detail on the potential significant adverse visual impact.

M. ALTERNATIVES

CEQR requires that the alternatives analysis should present reasonable options for reducing or eliminating project impacts, while substantively meeting project goals and objectives; demonstrate a reasonable range of options to the proposed action; and compare potential impacts under alternative approaches for meeting project objectives. A full range of alternatives to the proposed action that might reduce or eliminate potential impacts identified for the proposed action were considered, but none of the alternatives assessed would better meet project goals.

Several alternatives to the proposed action were considered:

- The No Action Alternative. The No Action Alternative presents environmental conditions that would exist if the proposed action were not implemented. The assessment of the No Action Alternative is required for all EISs. The No Action Alternative would eliminate the proposed action's potential significant adverse visual impact but is not a feasible alternative because without changes to the WPCP's existing digesters, they would reach the end of their useful life. In addition, the No Action Alternative would not provide enhanced nitrogen removal to meet 2006 Consent Judgment requirements. This alternative would not improve solids handling at the plant and would not be capable of satisfying the EPA's PSRP regulations under all operating conditions of the Full Step Feed BNR process with the projected 2045 flow of 124 mgd.
- Site Plan Alternatives. The Site Plan Alternatives consist of two separate alternatives in which the egg-shaped digesters proposed under the proposed action and four-digester scenario are constructed on the western boundary of the plant site (Site Plan Alternative 1) or within the area of the existing conventional digesters (Site Plan Alternative 2). Site Plan Alternative 1 would not eliminate the potential significant adverse visual impact of the proposed action, but would require extensive in-water construction that may result in adverse impacts on natural resources that would not occur with the proposed action, and might exacerbate and lengthen the duration of construction-related impacts.

Site Plan Alternative 2 would eliminate the potential significant adverse visual impact of the egg-shaped digesters, but would greatly increase the construction complexity and schedule for the Phase III upgrade and would eliminate future flexibility of the plant configuration for potential future plant needs. The plant site is extremely densely developed with no additional area to meet potential future changes at the plant. Unlike with the proposed action, under this alternative, the area of the existing digesters could not be reserved for use in meeting potential future needs of the plant; instead, the additional parcel would be reserved for such uses. This plant configuration would be less efficient than under the proposed action. Although not known at this time, future needs at the plant could be related to the wastewater process consistent with the history of mandates NYCDEP has received for sewage treatment. Specifically, over the last 20 years, NYCDEP has had to upgrade the plant to meet federal and state mandates, many of which have related to the wastewater process and which have required an intensification of use within the plant site. Mandates have included the following: requirements related to reducing nitrogen, which included construction of bigger aeration blowers, larger solids recycle capabilities, chemical storage and feed systems, and increased electrical requirements; requirements related to CSO capture, which included construction of larger main sewage pumps; requirements related to ammonia removal during sludge dewatering, which necessitates centrate treatment and storage; and additional requirements related to effluent limits, which includes modifications to the disinfection systems and carbon treatment.

It is expected that NYCDEP will continue to have to respond to changing mandates in sewage treatment. Although not known at this time, future requirements could include additional mandates related to wastewater processes, for example, future potential CSO and BNR programs or other wastewater treatment requirements. These future needs cannot be predicted but previous mandates over the last 20 years (as discussed above) have necessitated the construction of additional facilities within the existing plant site, such that the plant is currently fully developed and little open space remains. Locating additional CSO or BNR facilities within the area of the existing digesters is more efficient because these facilities would be associated with the wastewater process.

If future wastewater process needs were to be met on the additional parcel instead of the location of the existing digesters, it would be more difficult to deliver the wastewater to that area. The wastewater treatment facilities transport 120 to 400 mgd, while transporting thickened sludge flow to the additional parcel is less than 1 mgd. The size of piping connections required for the wastewater process facilities would differ by orders of magnitude from the connections for the sludge facilities. The existing underground tunnels on the existing plant site would interfere with the required wastewater conduit connections to the additional parcel.

Furthermore, digester operation is very different than operation of the wastewater processes. Specifically, digesters have stable temperatures and constant mixing, and sludge is intermittently added and removed. In addition, the tanks are sealed, which eliminates the potential for significant adverse odor and air quality impacts on adjacent land uses. Wastewater processes, which tend to be more odorous, would be less appropriate to place next to a sensitive use. Overall, this site plan alternative may preclude efficient wastewater treatment configuration at the plant in the future. In contrast, the proposed action would allow wastewater treatment processes to be consolidated in one location at the plant.

In addition, construction of this alternative would be substantially more complex than construction of the proposed action/four-digester scenario. During the construction period,

the WPCP must remain in operation. To achieve this while constructing the egg-shaped digesters in the area of the existing conventional digesters, the digesters would need to be constructed one at a time. A larger engineering and construction effort would be required to design and build facilities that would fit within the space at the existing tanks, and to protect the existing tanks and maintain operations during construction. More extensive construction protective measures would be required due to the hazards involved with welding adjacent to existing active digesters and protection and maintenance of plant operations during construction. Construction progress would be slower due to limited site access, demobilization-mobilizations, installation of temporary facilities, and maintenance of plant operations. Because of the complexity, the construction period would also be extended, and this alternative would not be constructed by 2014. Construction complexity would also add over \$15 million to the cost.

- Technological Alternatives. The Technological Alternatives include the following: the construction of conventional digesters; digester mixing alternatives; and sludge heating alternatives. While the digesters that would be constructed under the Conventional Digester Alternative would not be as visible as the egg-shaped digesters under the proposed action, this alternative would not eliminate the potential significant adverse visual impact. This alternative would also directly displace land committed as open space (the 1.2-acre construction staging area) for incorporation into Barretto Point Park. Use of conventional digesters would also eliminate the technological advantages provided by the egg-shaped digesters. This alternative would also require extensive in-water construction that may result in adverse impacts on natural resources that would not occur with the proposed action. The Digester Mixing and Sludge Heating Alternatives would not result in a reduction of identified impacts.
- Carbon Addition Alternative. The Carbon Addition Alternative provides a discussion of two alternative chemicals that could be used in the carbon addition facility. The Carbon Addition Alternative would not result in a reduction of identified impacts and would require the construction of storage facilities capable of storing approximately three times the volume of either methanol or ethanol (for sodium acetate) or corrosion-resistant facilities (for acetic acid). The use of acetic acid could result in odor impacts. *