

A. INTRODUCTION

This chapter considers the potential for significant adverse impacts to the City’s water supply as well as its sanitary sewage and stormwater conveyance and treatment system that could result from the proposed project.

As described in Chapter 1, “Project Description,” the proposed project would redevelop the northern portion of the Bronx Psychiatric Center (BPC) campus with a mix of commercial and medical office, bio-tech/research, hotel, accessory, college/trade school, community facility, and retail uses along with open space and parking facilities. For the purposes of this Environmental Impact Statement (EIS), it is assumed that in the future without the proposed project (the “No-Action” condition), the three primary, existing buildings (Bronx Children’s Psychiatric, Thompson, and Parker Buildings) would remain vacant. The powerhouse, two metal shelters, and small storage building on the project site would also be vacated and decommissioned, and the ballfields would remain as in the existing condition. The proposed project would be completed in two phases, with 2023 as the analysis year for Phase I completion, and 2028 as the year for Phase II full build-out, or “With-Action” condition. According to the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, projects that increase density or change drainage conditions on a large site require a water and sewer infrastructure analysis. Developments that would result in an exceptionally large demand for water (more than one million gallons per day [gpd]) or that are in an area that experiences low water pressure require an analysis of potential impacts on the water supply system. Developments in a combined sewer area in the Bronx exceeding incremental development thresholds of 400 residential units or 150,000 square feet (sf) of commercial, public facility, institutional and or/community facility space require an analysis of potential impacts on the wastewater and stormwater conveyance and treatment system. Developments in separately sewered zoning designations with the following levels of development require an analysis as well: R5 (50 residential units or 100,000 square ft of commercial use) and M1-1 (100 residential units or 100,000 sq. ft. of commercial use). The project site is in an area of the Bronx that is generally served by a combined sewer system (CSS). However, the project site, which is located in both a R5 and M1-1 zoning district, is served by a separated sewer system. The proposed project would exceed CEQR thresholds; therefore, an analysis of the proposed project’s potential impacts on water and sewer infrastructure is presented below.

B. PRINCIPAL CONCLUSIONS

The proposed project would attract an increased amount of workers and visitors to the project site, which could create new demands on the City’s water and wastewater sewer infrastructure. An increase in impervious surfaces in the future with the proposed project would increase the total amount of stormwater runoff on the project site; however, with the implementation of new

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infrastructure the proposed project would not result in significant adverse impacts on the water supply or wastewater conveyance and treatment systems.

PHASE I

As part of Phase I of the proposed project, it is assumed that the project would utilize existing New York State Office of Mental Health (OMH) on-site sewer infrastructure to convey sanitary sewage until new, permanent sewer infrastructure is approved by the New York City Department of Environment Protection (DEP). This permanent sewer infrastructure would include a new lift station and interconnection with an existing internal sanitary lift station located on the Hutchinson Metro Center North property. The new gravity sewer infrastructure and lift station would convey sanitary sewage to the existing sanitary pump station. This existing pump station and existing 8-inch forced sewer main would convey sewage to the 156-by-108-inch New York City combined sewer located in Eastchester Road.

Stormwater collection, conveyance, and discharge would be improved with the development of the proposed project. The on-site stormwater conveyance system would discharge stormwater from the site to the existing storm sewer adjacent to the property line on the eastern side of the site, which connects downstream to a DEP storm sewer. An application would be filed with DEP to show flow reduction.

Phase I would result in a total water demand of 325,041 gallons per day (gpd), which includes the total water demand from the two developments planned adjacent to the site on Stillwell and Basset Avenues (No-Action condition). Additionally, the total sewer demand would increase as compared to the future without by 144,420 gpd, for a total sewer generation of 147,573 gpd. Phase I of the proposed project would produce an incremental volume of 0.12 percent of the average daily flow at Hunts Point WWTP.

PHASE II

With the completion of Phase II of the proposed project, there would be an additional water demand of 240,415 gpd, resulting in a total water demand of 565,186 gpd for the proposed project. However, this would not represent a significant increase in demand on the New York City water supply system. Additionally, the total sewer demand for the proposed project, with Phase II completion, would be 255,133 gpd. This would be an incremental increase of 251,980 gpd compared to the future without the proposed project. This incremental volume would be 0.21 percent of the average daily flow at the Hunts Point WWTP and would not result in the exceedance of the Hunts Point WWTP's capacity. Therefore, the proposed project would not be expected to result in significant adverse impacts on the City's water and wastewater sewer infrastructure.

C. METHODOLOGY

WATER SUPPLY

The *CEQR Technical Manual* recommends a preliminary water analysis to consider if a project would result in an exceptionally large demand of water (over one million gpd), or is located in an area that experiences low water pressure (i.e., in an area at the end of the water supply distribution system such as the Rockaway Peninsula or Coney Island). The development site is not in an area that experiences low water pressure. The proposed project would not result in a total incremental

water demand of greater than 1 million gpd; therefore, an analysis of water supply is not warranted since it is expected that there would be adequate water service to meet the incremental demand, and there would be no significant adverse impacts on the City's water supply.

WASTEWATER AND STORMWATER CONVEYANCE AND TREATMENT

As described above, the project site is in a separated sewer area (within a larger combined sewer area) in the Bronx, and the proposed project would exceed the *CEQR Technical Manual* thresholds outlined in the introduction of this chapter. Therefore, this chapter includes an analysis of the proposed project's potential impacts on the wastewater and stormwater conveyance and treatment systems. Existing and future water demand and sanitary sewage generation are calculated based on use rates set by the *CEQR Technical Manual*.¹ The DEP Flow Volume Calculation Matrix is used to calculate the overall combined sanitary sewage and stormwater runoff volume discharged to the combined sewer system from the phased proposed project for four rainfall volume scenarios with varying durations. The ability of the City's sewer infrastructure to handle the anticipated demand from the proposed project is assessed by estimating existing sewage generation rates and comparing these existing rates with the With-Action condition, per *CEQR Technical Manual* methodology.

D. EXISTING CONDITIONS

CONVEYANCE SYSTEM

The development site is in a part of the Bronx, New York City served predominantly by a combined sewer system. Combined sewer systems collect both sanitary sewage and stormwater and in periods of dry weather, the combined sewers (sized to convey the amount of sanitary sewage that is based on density levels according to zoning regulations) in the adjacent streets convey only sanitary sewage. During and immediately after wet weather, combined sewers experience a much larger flow due to stormwater runoff collection, which may result in combined wastewater and stormwater discharges at certain locations. Separated sewer systems collect and carry sanitary sewage to a wastewater treatment plant while stormwater is conveyed to an outfall.

The project site is currently connected to a 48" City storm sewer located adjacent to the site and parallel to the Hutchinson River Parkway on the eastern boundary of the property. An on-site stormwater network collects and conveys flow to this eastern storm sewer identified above. Stormwater from the project site is then conveyed south through DEP storm sewers to an outfall located at the upper Westchester Creek.

The project site is served by on-site sanitary sewer infrastructure that conveys flow to an existing pump station and force main at the southwest corner of the site. This pump station was constructed as part of the OMH's utilities upgrade, where a new sewage pumping station was installed to accommodate the new facility and the previous pump station was abandoned. The force main discharges flow west from the site to a 156" x 108" double-barrel, reinforced concrete combined sewer at Eastchester Road and Waters Place. The combined sewer in Eastchester Road conveys flow south to Regulator 6. Regulators are structures that control the flow of sewage to interceptors, i.e., larger sewers that connect the combined sewer system to the

¹ *CEQR Technical Manual*, March 2014, Table 13-2.

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City's sewage treatment system. From Regulator 6, flow is conveyed to an interceptor that connects to the Hunts Point WWTP, one of the largest of New York City's 14 water pollution control plants.

At the Hunts Point WWTP, wastewater from a 16,000-acre area of the Bronx is fully treated by physical and biological processes before it is discharged into the Upper East River. The quality of the treated wastewater (effluent) is regulated by a State Pollutant Discharge Elimination System (SPDES) permit issued by the New York State Department of Environmental Conservation (NYSDEC), which establishes limits for effluent parameters (i.e., suspended solids, fecal coliform bacteria, and other pollutants). Since the volume of flow to a WWTP affects the level of treatment a plant can provide, the maximum permitted capacity for the Hunts Point WWTP is 200 million gallons per day (MGD). The average monthly flow to the WWTP over the past 12 months is 124 MGD², which is well below the maximum permitted capacity.

As combined sewers experience a much larger flow from stormwater during wet weather, to control flooding at the Hunts Point WWTP, the regulators built into the system allow only approximately two times the amount of design dry weather flow into the interceptors. The interceptor then takes the allowable flow to the WWTP, while the excess flow is discharged to the nearest waterbody as combined sewer overflow (CSO).

The project site is located within the Regulator 6 drainage area: in wet weather, sanitary flow and stormwater runoff is conveyed to CSO outfall HP-06 located at Westchester Creek, which discharges into the Upper East River.

SANITARY FLOWS

As described in Chapter 1, "Project Description," the development site currently contains three primary existing BPC buildings—(1) the Bronx Children's Psychiatric, (2) the John W. Thompson, and (3) the Betty Parker Buildings—all of which have been vacated. The uses have been relocated to new BPC facilities located at the southern portion of the campus. Additionally, the powerhouse, two metal shelters and a small storage building on the project site have been vacated and decommissioned. For the analysis, the amount of sanitary sewage is estimated as all water demand generated by the occupied portions of the development site, excepting water used by air conditioning, which is typically not discharged to the sewer system. As the existing buildings are unoccupied, it is reasonable to estimate the water demand and sewage generation of the existing buildings on the project site to be zero, as shown on **Table 11-1**.

² 12-month period through July 2016.

**Table 11-1
Existing Water Consumption and Sewage Generation**

Use	Used Floor Area	Rate Domestic*	Rate A.C.*	Consumption (gpd)
Bronx Children's Psychiatric Building	0	0.10 gpd/sf	0.17 gpd/sf	0
John W. Thompson Building	0	0.10 gpd/sf	0.17 gpd/sf	0
Betty Parker Building	0	0.10 gpd/sf	0.17 gpd/sf	0
Steam Generating Powerhouse	0	0.10 gpd/sf	0.17 gpd/sf	0
Small Storage Buildings	0	0.10 gpd/sf	0.17 gpd/sf	0
Total Water Demand (gpd)				0
Total Sewer Generation (gpd)				0

Notes: *Rates are from the 2014 *CEQR Technical Manual*, Table 13-2.

STORMWATER FLOWS

The project site has a total area of approximately 1.52 million sf (approximately 34 acres). As noted in Chapter 1, “Project Description,” the project site includes three buildings, a steam generating powerhouse, a small storage building, and two metal shelters in addition to pervious surfaces and ball fields. Therefore, the surface area of the development site comprises rooftops, pavement and walkways, and grass and softscape. **Table 11-2** summarizes the existing surface coverage of the project site, as well as the weighted runoff coefficient (the fraction of precipitation that becomes surface runoff).

**Table 11-2
Existing Surface Coverage**

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other	Grass and Soft Scape	Total
HP-06	Percent of Total Site	14%	33%	0%	53%	100%
	Surface Area (acres)	5	11	0	18	34
	Runoff Coefficient*	1.00	0.85	0.85	0.20	0.53

Notes: *Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual*, retrieved September 2016.

E. THE FUTURE WITHOUT THE PROPOSED PROJECT—2023

As described in Chapter 1, “Project Description,” in the future without the proposed project (the No-Action condition), the existing buildings on the project site would remain vacant. The powerhouse, two metal shelters, and small storage building on the project site would remain vacated and decommissioned. The ball fields would remain as in existing conditions. In addition, the No-Action condition will also incorporate approved or planned development projects within the quarter mile study area that are likely to be completed by the respective analysis years.

There are two developments planned adjacent to the site on Stillwell and Basset Avenues introducing a total of 31,529 sf of commercial space to the quarter mile study area of the project. These two sites are expected to be completed by the 2023 (Phase I) analysis year. Considering that the existing buildings on the project site are vacant and no other developments are anticipated to be completed in the study area, the No-Action condition would include only this 31,529 sf of commercial space.

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CONVEYANCE SYSTEM

In the No-Action condition, there would be no changes anticipated to the wastewater conveyance system serving the development site. Sanitary sewage from the new Hospital Facility south of the project site would continue to be discharged to the combined sewer at Eastchester Road through the force main along Waters Place and conveyed to Regulator 6 and ultimately the Hunts Point WWTP. Stormwater from the project site would continue to be discharged to the Upper East River through the northern outfall at Westchester Creek.

SANITARY FLOWS

Table 11-3 summarizes the water demand and sewage generation of the No-Action condition in Phase I of the proposed project. The project site is estimated to have zero water demand and sewage generation as it is expected that it would remain vacant. In the ¼-mile study area, there would be additional water demand and sewage generation at the rates of commercial/office, as outlined in the *CEQR Technical Manual*. The No-Action condition is expected to generate a total water demand of 8,513 gpd and an estimated sanitary sewage generation of 3,153 gpd.

Table 11-3
No-Action Water Consumption and Sewage Generation

Use	Floor Area/Persons	Rate*	Consumption (gpd)
Existing Buildings: Vacant and Decommissioned; No Sewer or A.C.			
Bronx Children's Psychiatric Building	0	N.A.	0
John W. Thompson Building	0	N.A.	0
Betty Parker Building	0	N.A.	0
Steam Generating Powerhouse	0	N.A.	0
Small Storage Building	0	N.A.	0
Other Projects within a Quarter Mile Study Area			
Commercial			
Domestic	31,529	0.10	3,153
Air Conditioning	31,529	0.17	5,360
Total Water Supply Demand			8,513
Total Sewage Generation			3,153

Notes: *Rates are from the *CEQR Technical Manual*, Table 13-2.

STORMWATER FLOWS

The No-Action condition is expected to include the buildings currently on the project site and no demolition of the existing buildings is anticipated in the absence of the proposed project. Therefore existing surface types and areas would remain unchanged in the No-Action condition and no changes in stormwater flows would be anticipated on the project site.

F. THE FUTURE WITH THE PROPOSED PROJECT—2023

With Phase I of the proposed project, the project site would be redeveloped with approximately 542,500 gsf of commercial office space for business, professional, or medical facilities; it would also include 100,000 gsf of bio-tech/research space; 100,000 gsf of accessory use; 124,300 gsf of hotel use; 100,000 gsf of college/trade school space; 33,500 gsf of retail space; 2,000 gsf of community facility space; 304,400 sf of open space, including two baseball diamonds with a

2,000 gsf support building and supporting amenities; 8,100 gsf of accessory amenity space; and approximately 2,509 accessory parking spaces.

WATER SUPPLY

In the future with the proposed project, the existing 12” Hutchinson Metro Center campus water loop would be extended into the project site. This loop is connected to two distinct water mains: One connection is with the water main located in Marconi Street; the other is connected to the water main located in Pelham Parkway. Each water main connection to the internal 12” loop is made through a dedicated hot box with DEP approved backflow devices and water meters. No new water service connections to DEP infrastructure or the private water main in Marconi Street would be required.

CONVEYANCE SYSTEM

In the future with the proposed project in 2023, it is assumed that the project would utilize existing OMH sewer infrastructure to convey sanitary sewage until such time that DEP approves a new lift station and a new interconnection with an existing internal sanitary lift station that is located on the Hutchinson Metro Center North property. The new gravity sewer infrastructure and lift station would be completed as part of Phase I of the proposed project and would convey sanitary sewage to the existing sanitary pump station. This existing pump station and existing 8-inch forced sewer main would transfer sewage to the 156”x108” City combined sewer located in Eastchester Road. Wastewater would then be conveyed to Regulator 6 and finally to the Hunts Point WWTP.

In the future with the proposed project in 2023, the project site would utilize the existing connection to the storm sewer located parallel to the eastern property line, subject to DEP site connection approval.

Stormwater collection, conveyance, and disposal would be improved with the development of the proposed project. The on-site stormwater conveyance system would discharge stormwater from the site to the existing storm sewer adjacent to the property line on the eastern side of the site, similar to the existing condition.

Since the project site is greater than one (1) acre and discharges to a separated sewer system, the proposed project would be subject to the requirements of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002). A Stormwater Pollution Prevention Plan (SWPPP) containing both temporary erosion and sediment controls and permanent water quality controls would be required to be prepared before commencing any construction activities.

SANITARY FLOWS

Table 11-4 summarizes the water demand and sewage generation of Phase I of the proposed project, which includes commercial office, medical office, biotech/research space, accessory, hotel, college/trade school, retail, community facility, amenity, and open space uses of the proposed project. Phase I water demand and sewage generation also includes the water and sewer demand and generation for the two other projects within the quarter mile study area. For the purposes of this analysis, the water demand and sewer generation estimates of medical offices, biotech/research space, and the college/trade school are based on commercial/office generation rates as found in the *CEQR Technical Manual*.

Table 11-4

Total Proposed Project Water Consumption and Sewage Generation for Phase I

Use	Floor Area/Units/Persons	Rate ¹	Consumption (gpd)
Proposed Project			
Commercial Office			
Domestic	217,000 gsf	0.10 gpd/sf	21,700
Air Conditioning	217,000 gsf	0.17 gpd/sf	36,890
Medical Office			
Domestic	325,500 gsf	0.10 gpd/sf	32,550
Air Conditioning	325,500 gsf	0.17 gpd/sf	55,335
Biotech/Research²			
Domestic	100,000 gsf	0.10 gpd/sf	10,000
Air Conditioning	100,000 gsf	0.17 gpd/sf	17,000
Accessory Use			
Domestic	100 dwelling units	100 gpd/per person ³	29,000
Air Conditioning	100,000 gsf	0.17 gpd/sf	17,000
Hotel			
Domestic	133 rooms	120 gpd/per person/room ⁴	31,920
Air Conditioning	124,300 gsf	0.17 gpd/sf	21,131
College/Trade School⁵			
Domestic	100,000 gsf	0.10 gpd/sf	10,000
Air Conditioning	100,000 gsf	0.17 gpd/sf	17,000
Retail			
Domestic	33,500 gsf	0.24 gpd/sf	8,040
Air Conditioning	33,500 gsf	0.17 gpd/sf	5,695
Community Facilities⁶			
Domestic	2,000 gsf	0.10 gpd/sf	200
Air Conditioning	2,000 gsf	0.17 gpd/sf	340
Little League Field Support Building⁷			
Domestic	2,000 gsf	0.10 gpd/sf	200
Air Conditioning	2,000 gsf	0.17 gpd/sf	340
Additional Amenities⁸			
Domestic	8,100 gsf	0.10 gpd/sf	810
Air Conditioning	8,100 gsf	0.17 gpd/sf	1,377
Other Projects within a Quarter Mile Study Area			
Commercial			
Domestic	31,529 gsf	0.10 gpd/sf	3,153
Air Conditioning	31,529 gsf	0.17 gpd/sf	5,360
Phase I Total			
Total Water Supply Demand (gpd)			325,041
Total Sewage Generation (gpd)			147,573
Incremental Total			
Incremental Water Demand from No-Action (gpd)			316,528
Incremental Sewer Demand from No-Action (gpd)			144,420
Notes:	1. Rates are from the <i>CEQR Technical Manual</i> , Table 13-2. 2. Utilizes Commercial/Office Domestic rates for calculation. 3. This analysis assumes 2.9 occupants per unit (100 units). 4. This analysis assumes two occupants per hotel room (133 rooms). 5. Utilizes Commercial/Office Domestic rates for calculation. 6. Utilizes Commercial/Office Domestic rates for calculation. 7. Utilizes Commercial/Office Domestic rates for calculation. 8. Utilizes Commercial/Office Domestic rates for calculation.		

The incremental sanitary sewage generated by Phase I of the proposed project, as compared with the No-Action development, would be 144,420 gpd. This incremental increase in sewage generation would be 0.12 percent of the average daily flow at the Hunts Point WWTP (124 mgd) and would not result in an exceedance of the plant’s permitted capacity of 200 mgd. To meet the New York City Plumbing Code (Local Law 33 of 2007), the proposed project would be required to utilize low-flow plumbing fixtures, which would reduce sanitary flows to the plant. Overall, Phase I of the proposed project would not result in a significant adverse impact to the City’s sanitary sewage conveyance and treatment system.

STORMWATER FLOWS

Table 11-5 summarizes the proposed surface coverage of Phase I of the proposed project. There would be a total of 9 acres of pervious surface area, which is categorized as Grass and Soft Scape. There would be a total of 18 acres of impervious surface area (rooftops, pavement, and walkways).

**Table 11-5
Proposed Surface Coverage of Phase I**

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other	Grass and Soft Scape	Total
HP-06	Area (percent)	27%	38%	0%	34%	100%
	Surface Area (acres)	7	11	0	9	28
	Runoff Coefficient*	1.00	0.85	0.85	0.20	0.68
Notes: *Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the <i>CEQR Technical Manual</i> , retrieved September 2015. Totals may not sum due to rounding.						

G. THE FUTURE WITHOUT THE PROPOSED PROJECT—2028

In the future without the proposed project for Phase II, the existing buildings on the project site would remain vacant. There are no known developments planned adjacent to the site that would generate water or sewer demand, besides those on Stillwell and Basset Avenues as previously mentioned. These two sites are expected to be completed by the Phase I analysis year with no additional commercial space added to the study area by the 2028 (Phase II) analysis year.

CONVEYANCE SYSTEM

In the No-Action condition, there would continue to be no changes anticipated to the wastewater conveyance system serving the development site into the 2028 (Phase II) analysis year. Sanitary sewage from the new hospital facility south of the project site would continue to be discharged and stormwater from the project site would continue to be discharged to the Upper East River.

SANITARY FLOWS

The project site is estimated to continue to have zero water demand and sewage generation as it is expected that it would remain vacant. Since, no known developments are planned to occur, besides the two previously mentioned, the total water demand and estimated sanitary sewage generation would remain the same (see **Table 11-3**).

STORMWATER FLOWS

The No-Action condition for 2028 is expected to include the buildings currently on the project site and no demolition of the existing buildings. Therefore existing surface types and areas would remain unchanged in the No-Action condition; therefore, no changes in stormwater flows would be anticipated on the project site from the 2023 (Phase I) to the 2028 (Phase II) analysis year.

H. THE FUTURE WITH THE PROPOSED PROJECT—2028

With Phase II of the proposed project, the project site would be redeveloped with approximately 625,000 gsf of commercial office space for business, professional, or medical facilities; it would also include 150,000 gsf of accessory use; 6,500 gsf of retail space; 71,100 sf of open space; and approximately 1,520 accessory parking spaces.

WATER SUPPLY

Phase II of the proposed project would be served by the same water supply infrastructure described above for Phase I.

CONVEYANCE SYSTEM

In the future with the proposed project for Phase II, infrastructure upgrades are assumed to have been completed for the project site, in addition to the development of a SWPPP and obtaining the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002).

SANITARY FLOWS

Table 11-6 summarizes the water demand and sewage generation of Phase II of the proposed project, which includes commercial office, medical office, and retail uses.

The incremental increase in sewage generated by Phase II of the proposed project would be an additional 0.09 percent of the average daily flow at the Hunts Point WWTP (124 mgd). With the addition of Phase II to Phase I's 0.12 percent increase, the increase in sewage generation would not result in an exceedance of the plant's permitted capacity of 200 mgd. The total incremental sewer demand for the total project site would be 251,980 gpd, a 0.21 percent increase in daily flow at the Hunts Point WWTP. Therefore, the proposed project would not result in significant adverse impacts to the City's sanitary sewage conveyance and treatment system.

However, according to DEP, due to the increase in sanitary flow, a hydraulic analysis of the existing sewer system may be needed at the time of the site connection proposal application to determine whether the existing sewer system is capable of supporting higher density development and related increase in wastewater flow. If it is determined at that time that the existing sewer system is incapable of supporting the increase in wastewater flow, the existing sewer system would need to be upgraded.

Table 11-6

Total Proposed Project Water Consumption and Sewage Generation for Phase II

Use	Floor Area/Units/Persons	Rate ¹	Consumption (gpd)
Proposed Project			
Commercial Office			
Domestic	250,000 gsf	0.10 gpd/sf	25,000
Air Conditioning	250,000 gsf	0.17 gpd/sf	42,500
Medical Office			
Domestic	375,000 gsf	0.10 gpd/sf	37,500
Air Conditioning	375,000 gsf	0.17 gpd/sf	63,750
Biotech/Research²			
Domestic	0 gsf	0.10 gpd/sf	0
Air Conditioning	0 gsf	0.17 gpd/sf	0
Accessory Uses			
Domestic	150 dwelling units	100 gpd/per person ³	43,500
Air Conditioning	150,000 gsf	0.17 gpd/sf	25,500
Hotel			
Domestic	0 rooms	120 gpd/per person/room ⁴	0
Air Conditioning	0 gsf	0.17 gpd/sf	0
College/Trade School⁵			
Domestic	0 gsf	0.10 gpd/sf	0
Air Conditioning	0 gsf	0.17 gpd/sf	0
Retail			
Domestic	6,500 gsf	0.24 gpd/sf	1,560
Air Conditioning	6,500 gsf	0.17 gpd/sf	1,105
Community Facilities⁶			
Domestic	0 gsf	0.10 gpd/sf	0
Air Conditioning	0 gsf	0.17 gpd/sf	0
Little League Field Support Building⁷			
Domestic	0 gsf	0.10 gpd/sf	0
Air Conditioning	0 gsf	0.17 gpd/sf	0
Additional Amenities⁸			
Domestic	0 gsf	0.10 gpd/sf	0
Air Conditioning	0 gsf	0.17 gpd/sf	0
Phase II Total			
Total Water Supply Demand (gpd)			240,415
Total Sewage Generation (gpd)			107,560
Incremental Total			
Incremental Water Demand from No-Action (gpd)			231,902
Incremental Sewer Demand from No-Action (gpd)			104,407
Total Proposed Project Water Consumption and Sewage Generation (Phase I + II Completion)			
Total			
Proposed Project Total Water Supply Demand (gpd)			565,186
Proposed Project Total Sewage Generation (gpd)			255,133
Incremental Total			
Proposed Project Incremental Water Demand from No-Action (gpd)			556,673
Proposed Project Incremental Sewer Demand from No-Action (gpd)			251,980
Notes:	1. Rates are from the <i>CEQR Technical Manual</i> , Table 13-2. 2. Utilizes Commercial/Office Domestic rates for calculation. 3. This analysis assumes 2.9 occupants per unit (150 units). 4. This analysis assumes two occupants per hotel room (133 rooms). 5. Utilizes Commercial/Office Domestic rates for calculation. 6. Utilizes Commercial/Office Domestic rates for calculation. 7. Utilizes Commercial/Office Domestic rates for calculation. 8. Utilizes Commercial/Office Domestic rates for calculation.		

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STORMWATER FLOWS

Table 11-7 summarizes the proposed surface coverage of Phase II of the proposed project. There would be a total of 1 acre of pervious surface area and a total of 5 acres of impervious surface area. The total proposed project surface coverage, with the completion of Phase I and Phase II, would be a total of approximately 10 acres of pervious surface area and a total of 24 acres of impervious surface area.

**Table 11-7
Proposed Surface Coverage of Phase II and Total Buildout**

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other	Grass and Soft Scape	Total
Proposed Surface Coverage of Phase II						
HP-06	Area (percent)	40%	43%	0%	17%	100%
	Surface Area (acres)	2	3	0	1	6
	Runoff Coefficient*	1.00	0.85	0.85	0.20	0.80
Proposed Surface Coverage of Total Proposed Project						
HP-06	Area (percent)	29%	41%	0%	29%	100%
	Surface Area (acres)	10	14	0	10	34
	Runoff Coefficient*	1.00	0.85	0.85	0.20	0.70
Notes: *Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the <i>CEQR Technical Manual</i> , retrieved September 2015. Totals may not sum due to rounding.						

Using these sanitary and stormwater flow calculations from Phase I (see **Table 11-6**) and Phase II, the DEP Flow Volume Calculation Matrix was completed for the existing conditions and the proposed project (the With-Action condition full project buildout). The calculations from the Flow Volume Calculation Matrix determine the change in wastewater flow volumes to the storm sewer adjacent to the property line from existing to With-Action conditions, and include four rainfall volume scenarios with varying durations. The summary tables of the Flow Volume Calculation Matrix are included in **Table 11-8**.

**Table 11-8
DEP Flow Volume Matrix – Existing and With-Action (Phase I & II)
Volume Comparison**

Rainfall Volume (in.)	Rainfall Duration (hr.)	Existing 34 Acres				With-Action (Phase I & II) 34 Acres				Project Increment: Increased Total Volume to CSS (MG)
		Runoff Volume Direct Drainage (MG)	Runoff Volume To CSS (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Runoff Volume Direct Drainage (MG)	Runoff Volume To CSS (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04
0.40	3.80	0.19	0.00	0.00	0.00	0.26	0.00	0.04	0.04	0.04
1.20	11.30	0.58	0.00	0.00	0.00	0.78	0.00	0.12	0.12	0.12
2.50	19.50	1.22	0.00	0.00	0.00	1.62	0.00	0.21	0.21	0.21
Notes: CSS = Combined Sewer System; MG = Million Gallons Totals may not sum due to rounding.										

As shown in **Table 11-8**, in all rainfall volume scenarios, flow to CSO outfall HP-06 drainage area would increase. The increase is attributable to the increase in sanitary flow resulting from the proposed project. Stormwater runoff directly drains to an outfall along Westchester Creek

and does not discharge to the combined sewer system; therefore the increase in impervious surface area does not impact the volume to the CSO drainage area.

The Flow Volume Matrix calculations do not reflect the use of any sanitary and stormwater source control best management practices (BMPs) to reduce sanitary flow and stormwater runoff volumes to the City sewer system. As noted above, the proposed project would incorporate low-flow plumbing fixtures to reduce sanitary flow in accordance with the New York City Plumbing Code. In addition, stormwater BMPs would be required as part of the DEP site connection approval process in order to bring the site into compliance with the required stormwater release rate. The stormwater release rate shall be calculated based on the allowable site area to the City sewers, per the existing Drainage Plan. Specific BMP methods will be determined with further refinement of the building design and in consultation with DEP, but may include on-site stormwater detention systems such as planted rooftop spaces (“green roofs”), subsurface vaults/tanks, stone beds, stormwater chambers, and/or perforated pipes.

The incorporation of the appropriate sanitary flow and stormwater source control BMPs that would be required as part of the site connection approval process would help reduce the overall additional volume of sanitary sewer discharge as well as the peak stormwater runoff rate from the development site. Additionally, a SWPPP will be prepared as a part of the NYSDEC SPDES permit, which will identify both temporary erosion and sediment controls and permanent water quality controls. Through the implementation of infrastructure upgrades, if required, sewer conveyance near the development site and the treatment capacity at the Hunts Point WWTP would be sufficient to handle wastewater flow resulting from the proposed project; therefore, there would be no significant adverse impacts on wastewater treatment or stormwater conveyance infrastructure. *