2.J WATER AND SEWER INFRASTRUCTURE

INTRODUCTION

This chapter evaluates the potential impacts of the Proposed Action on three components of the City's infrastructure: water supply, wastewater treatment and storm water management. The *CEQR Technical Manual* defines the City's "infrastructure" as the physical systems that support the City's population, which also includes, roadways, bridges, tunnels and public transportation and solid waste and sanitation services. Where applicable, these other components are addressed separately under CEQR and discussed in separate chapters of this EIS. The analyses utilized in this chapter follow the guidelines contained in Section 13 of the 2010 *CEQR Technical Manual* and include the analysis of the anticipated impacts of the Reasonable Worst Case Development Scenario (RWCDS). The RWCDS that is presented for the Proposed Action includes the proposed project to be developed on parcels controlled by the applicant within the proposed rezoning area as well as development projected to occur on parcels controlled by others (see Chapter 1, "Project Description").

The Proposed Action could affect water demand and wastewater generation since the RWCDS would change development density and uses from existing conditions. Additionally, the Proposed Action could affect the rate of storm water runoff since it could change the ground cover distribution of the area (e.g. pavement, roofs and pervious surfaces).

The infrastructure analysis contained herein will assess whether the Proposed Action may adversely affect the City's water distribution or sewer system. The analysis will also indicate whether impacts on the water distribution system, sewer system, regulators and outfalls during both wet and dry conditions may be significant.

PRINCIPAL CONCLUSIONS

The Proposed Action would not result in any significant adverse impacts related to infrastructure in terms of water supply, wastewater treatment, or storm water runoff.

Water Supply

In the future with the Proposed Action, development in the rezoning area would generate a net increase in water demand of approximately 672,962 gallons per day (gpd) (0.67 million gallons per day (mgd)) greater than estimated in the future without the Proposed Action. This demand represents less than 0.1 percent of the City's overall water supply demand of 1.3 billion gallons per day. Since the Proposed Action would not result in developments that consume an exceptional amount of water (i.e., more than 1.0 mgd), the Proposed Action would not result in a significant adverse impact on the city's water supply or water pressure.

Wastewater Treatment

The proposed rezoning area is located in the South Bronx, and approximately bound by the Boone/ Longfellow Avenues to the West, Westchester Avenue to the South, West Farms Road to the east, and Boston Road to the North (see Chapter 1, "Project Description"). Wastewater generated in this area is treated at the Hunts Point Water Pollution Control Plant (WPCP), which is designed to treat up to 200 mgd of wastewater. In 2009, the average dry weather flow was 114 mgd, and in the build year of 2022, it is projected to be 118 mgd, leaving 82 mgd available

capacity. The Proposed Action would generate approximately 0.70 mgd more sanitary sewage over the future without the Proposed Action, which is equivalent to 0.85 percent of the available capacity of the Hunts Point WPCP. Therefore, the Proposed Action would not result in a significant adverse impact on the Hunts Point WPCP.

Sanitary and Storm water Drainage and Management

The Proposed Action would not generate substantial additional runoff compared to the amount of runoff that would occur in the future without the Proposed Action. Because the amount of impervious surfaces (roof, pavement, etc.) on the projected development sites would not change substantially as compared to the existing and future without the Proposed Action conditions, there would not be a substantial increase of storm water runoff as a result of the action. The increase in combined sewer/wastewater runoff flows between existing and No Action/Action conditions combined sewer amounts to 0.86, 2.57, and 5.17 mg and 0.02, 0.08 and 0.13 mg for the, 0.4, 1.2 and 2.5 inch rainfall events, respectively, which includes other proposed projects in the No Action condition as well as the estimated effluent from previous rezonings in the HP 003 and HP 004 catchment areas.

Between the Draft EIS and Final EIS, the applicant and lead agency will coordinate with DEP to further consider measures to reduce potential increases in storm water runoff and wastewater flow as a result of the Proposed Action. A BMP concept plan for the applicant properties will be refined and submitted to DEP to illustrate the opportunities for the applicant's development lots within the rezoned area, to incorporate onsite storm water source controls during planning and building design phases of project development.

As stated previously, at the time of detailed design, the applicant will work with DEP to determine which of the BMPs, summarized above, will be incorporated into the project design to achieve a target storm water release rate of 0.25 cfs or 10% of the allowable flow per the drainage plan, whichever is greater.

For non-applicant properties, self-certification of house or site connection proposals will not be permitted by the Department of Buildings or DEP in connection with any proposed new developments or expansions of existing development for which sewer connections are required.

Based on the analysis and procedures described above, it is concluded that the Proposed Action would not result in significant adverse impacts to the local water supply, sanitary wastewater treatment, or storm water management infrastructure systems with the above measures in place.

METHODOLOGY

Water Supply

Potential impacts on the water supply system are judged by the volume of water a particular project would require. The CEQR Technical Manual provides that a preliminary infrastructure assessment is needed for water supply only if the Proposed Action would result in an exceptionally large demand for water (e.g., use more than 1.0 mgd of water) or is located in an area that experiences low water pressure (e.g., areas at the end of the water supply distribution system). Existing and future water usage from the Proposed Action was calculated using the water usage rates in Table 13-2 of the CEQR Technical Manual.

Wastewater Treatment

Potential impacts on the wastewater treatment system are judged by the volume of dry weather sanitary flow a proposed project would add to the WPCP. This added dry weather sanitary flow is directly correlated to projected water demand, since these flow estimates are the same except for the air conditioning water demand (which is assumed to evaporate or be recirculated).

Most sanitary sewage in the City is collected and conveyed through a combined sewer system operated and maintained by DEP. This system receives sanitary sewage from buildings, as well as storm water runoff from roof and street drainage, and transmits this combined flow to one of 14 WPCPs for treatment. In dry weather, only sanitary sewage is conveyed to the WPCP. In wet weather (e.g., rain or snow melt), both sanitary sewage and storm water runoff are conveyed to the WPCP.

Existing sewers serving the proposed rezoning area were described using information obtained from DEP. The site of the Proposed Action is located within the Hunts Point WPCP drainage basin. Existing and future flows to the WPCP resulting from the Proposed Action were calculated using the generation rates in Table 13-2 of the *CEQR Technical Manual*. The potential effects of the increased demand on the system were assessed to determine whether there would be any significant impact to the WPCP's ability to treat wastewater within its permit limits.

Sanitary and Storm water Drainage Management

A number of thresholds are presented in the 2010 *CEQR Technical Manual* to determine when a preliminary infrastructure assessment for storm water management would be appropriate, including whether a Proposed Action is located in a combined sewer area and, for projects in the Bronx, the incremental development of residential units for the future with the Proposed Action condition would exceed 400 units. The Proposed Action would result in an incremental increase of 2,635 residential units compared to the future without the Proposed Action. Therefore, a preliminary infrastructure analysis of the area's wastewater and storm water collection systems is appropriate.

The proposed rezoning area is located within two separate sub-catchment areas for the Hunts Point WPCP: HP-003 and HP-004 (see Figure J-1). Most storm water runoff resulting from the Proposed Action would fall within the drainage basin of the HP-003 combined sewer outfall. One parcel at the northern-most portion of the proposed rezoning area (Parcel 9C) would fall within the drainage basin of the HP-004 combined sewer outfall. The preliminary infrastructure assessment uses an expanded study area in order to provide a cumulative assessment of land use changes within the two sub-catchment areas. The study area includes the proposed rezoning area, sites identified as no action projects within the secondary (1/4-mile) study area in Table A-6 in the Land Use, Zoning and Public Policy chapter of this EIS, and the proposed rezoning areas for the following recently approved zoning map amendments: Crotona Terrace (also known as 1825 Boston Road) and the New Horizon Retail Center, both of which are located in the HP-003 sub-catchment area, and 625 Fordham Road and the Third Avenue / East Tremont Avenue Rezoning, which are located in the HP-004 sub-catchment area.

Storm water runoff and sanitary wastewater generation was estimated using the calculation matrix contained in the *CEQR Technical Manual*. Separate calculations were prepared for each sub-catchment area. Runoff coefficients used for the analysis were provided by DEP. Existing conditions ground covers were estimated using aerial photos of the properties. Proposed future conditions for applicant-controlled properties were estimated based on the RWCDS, site plans and conceptual massing diagrams that have been prepared for the proposed project parcels and

considering zoning regulations for FAR, lot coverage, etc. and taking into account the relief granted under the Proposed Action. For non-applicant parcels, studies of likely lot coverages and roof areas were based on a zoning/ development study based on the proposed rezoning over these parcels. The analysis considers three rainfall volume events – 0.4, 1.2 and 2.5 inches – based on historical data within New York City.



CROTONA PARK EAST / WEST FARMS ZONING MAP AMENDMENT

Bronx, New York

EXISTING CONDITIONS

Water Supply

Most of New York City obtains water from three surface water supply systems, operated by DEP, that form a network of reservoirs, aqueducts and tunnels extending as far as 125 miles north of the City. The watersheds of the systems cover almost 2,000 square miles, with 19 reservoirs and three controlled lakes, which have a storage capacity of 550 billion gallons. Water flows to the City through aqueducts, reaching most consumers by gravity.

Two of the three surface water systems, the Delaware and Catskill systems, collect water from watershed areas in the Catskill Mountains and deliver it to the Hillview Reservoir in Yonkers. From there, it is distributed to the City through 3 tunnels, City Tunnel No. 1, which goes through the Bronx and Manhattan to Brooklyn, City Tunnel No. 2, which goes through the Bronx, Queens and Brooklyn (and from there through the Richmond Tunnel to Staten Island) and City Tunnel No. 3, which goes through the Bronx and Manhattan, ending in Queens. The third surface water system, the Croton system, collects water from watershed areas in Dutchess, Putnam and Westchester Counties and delivers it to the Jerome Park Reservoir in the Bronx, from which it is distributed to the Bronx and Manhattan through the New Croton Aqueduct.

As shown in Table J-1, based on CEQR Technical Manual consumption rates, it is estimated that under existing conditions, 219,158 gpd of water is used for domestic use and 117,274 gpd is used for air conditioning for a total of 336,432 gpd (0.34 mgd) of water.

Table J-1 : Existing Water Consumption and Wastewater Generation

Land Use	Rate[1]	Existing Condition Summary: Quantity (units)	Water/ Wastewater Generated (in gpd)	Air Conditioning & Function (in gpd)
Residential[2]	Domestic: 100 gpd/person (300 gpd/DU)	141 DU's	42,300	0
	Air Conditioning: 0 gpd/sf	0 sf		
Commercial/Office[3]	Domestic: 25 gpd/person (0.10 gpd/sf)	65,324 sf	6,532	11,105
	Air Conditioning: 0.17 gpd/sf			
Community Facility[4]	Domestic: 0.17 gpd/sf	1,875 sf	319	319
	Air Conditioning: 0.17 gpd/sf			
Industrial/ Manufacturing[5]	Domestic: 1,000 gpd/ac (0.23 gpd/sf)	544,726 sf	125,287	92,603
	Air Conditioning: 0.17 gpd/sf			
Retail Stores	Domestic: 0.24 gpd/sf	0 sf	0	0
	Air Conditioning: 0.17 gpd/sf			
Hotel[6]	Domestic: 120 gpd/rm/occupant	41 rooms	4,920	2,805
	Function Space: 0.17 gpd/sf	1,500 sf		
	Air Conditioning: 0.17 gpd/sf	15,000 sf		
Schools	Domestic: 10 gpd/seat	500 seat	5,000	9,670
	Air Conditioning: 0.17 gpd/sf	56,882 sf		
Laundromat[4]	Domestic: 580 gpd/machine	60 machine	34,800	772
	Air Conditioning: 0.17 gpd/sf	4,539 sf		
		Subtotals - Water Consumption	219,158	117,274
		Subtotals - Wastewater Generation	219,158	0
		Total Water Consumption	**336,432**	
		Total Wastewater Generation	**219,158**	

Notes:
1- Consumption rates obtained from *CEQR Technical Manual* unless otherwise indicated.
2- Assumes 100 gpd/person (*CEQR Technical Manual*) and avg. household size of 3.0 persons / DU (DCP), or 300 gpd/DU.
3- Assumes 25 gpd/person and 250 sf of office space per person, which equates to 0.10 gpd/sf.
4- Consumption rates obtained from NYSDEC Design Standards for Wastewater Treatment Works (1988). Retail rate for air conditioning water demand was applied.
5- Because the *CEQR Technical Manual* does not provide industrial water consumption rates, factors contained in DEP's Draft Rules and Regulations Governing the Construction of Private Sewers and Drains were used. Floor areas were multiplied by 1.0 for Industrial/Manufacturing in MI-1 districts and 2.0 for Industrial/Commercial in R7-1/C2-4 districts. The retail rate for air conditioning water demand was applied.
6- Assumes 10% of total floor area is designated as function space.
7- Includes offsite areas in Cumulative Study Area.
gpd=gallons per day, mgd=millions of gallons per day, sf=square feet, occup=occupant

Wastewater Treatment

The proposed rezoning area is within two combined sewer subcatchments: HP-003 and HP-004 (see Figure J-1 for a delineation of these areas). All but Parcel 9C at the northern-most portion of the proposed rezoning area is within the HP-003 subcatchment; Parcel 9C is within the HP-004 subcatchment. During dry weather, regulators built into the combined sewer system direct flows to interceptor sewers leading to the Hunts Point WPCP. However, during storm events, the regulators allow only twice the dry-weather design flow into interceptor sewers and the remaining flow is diverted as a CSO to the East River for HP-003 and the Bronx River for HP-004.

Table J-2, "Existing Surface Calculations," contains a breakdown of existing surface area and runoff coefficient calculations by drainage area. For this analysis, the CEQR Sanitary and Storm water Drainage Calculation Matrix was used to calculate the total volume from the study area to the combined sewer systems during a range of storm events. Under existing conditions, the total surface area of the portion of the study area in the HP-003 subcatchment area is 815,519 square feet, of which 61 percent (500,320 square feet) has the permeability of rooftops, 24 percent (194,749 square feet) is covered by hard surface and 15 percent (120,450 square feet) is covered by grass/softscapes. The total surface area of the portion of the study area in the HP-004 subcatchment area is 38,920 square feet, of which 71 percent (27,695 square feet) has the permeability of rooftops and 29 percent (11,225 square feet) is covered by hard surface.

Table J-2: Existing Surface Calculations

Subcatchment Area	COMPOSITE SITE COEFFICIENT, C					
	SURFACE TYPE[1]	ROOF[2]	PAVT & WALKS	OTHER	GRASS & SOFT SCAPE	TOTAL / AVG.
Hunts Point (HP-003)	Area, %	61%	24%	0%	15%	100%
	Surface Area, sf	500,320	194,479	0	120,450	815,519
	Runoff Coefficient	1	0.85	--	0.2	0.85
Hunts Point (HP-004)	Area, %	71%	29%	0%	0%	100%
	Surface Area, sf	27,695	11,225	0	0	38,920
	Runoff Coefficient	1	0.85	--	0.2	0.96

Notes:
1- Runoff coefficients for each surface type as per DEP.
2- Total roof areas onsite.

Sanitary and Storm water Drainage Management

The total combined storm water and wastewater flow generated by the existing uses in the study area in million gallons (mg) are presented in Tables J-3 and J-3A broken down by drainage area. As shown in Table J-3, the existing uses in the rezoning area within the study area for the HP-003 drainage area are expected to generate 3.11, 9.33 and 19.43 mg of storm water runoff and 0.03, 0.10 and 0.17 mg of wastewater flow during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively. The total volume expected to be handled by the CSO system for the HP-003 CSO is 3.14, 9.42, and 19.6 mg during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively.

Table J-3: Existing Storm water and Wastewater Generation

RAINFALL VOLUME (inches)	All Assessed Parcels			
	1,464,332 SF		33.62 Ac.	
	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.4	0	3.11	0.03	3.14
1.2	0	9.33	0.1	9.42
2.5	0	19.43	0.17	19.6

As shown in Table J-4, the existing uses in the rezoning area within the study area for the HP-004 drainage area are expected to generate 0.37, 1.10 and 2.30 mg of storm water runoff and 0.01, 0.03 and 0.05 mg of wastewater flow during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively. The total volume expected to be handled by the CSO system for the HP-003 CSO is 0.38, 1.13, and 2.35 mg during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively.

Table J-4: Existing Storm water and Wastewater Generation

RAINFALL VOLUME (inches)	All Assessed Parcels			
	136567 SF		3.14 Ac.	
	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.4	0	0.37	0.01	0.38
1.2	0	1.1	0.03	1.13
2.5	0	2.3	0.05	2.35

FUTURE WITHOUT THE PROPOSED ACTION

Water Supply and Wastewater Treatment

In the future without the Proposed Action condition, uses in the rezoning area would include 275 dwelling units, 65,324 square feet of commercial/office space, 1,875 square feet of community facility space, 463,946 square feet of industrial/ manufacturing area, 38,928 square feet of retail space, 500 school seats and a 60-machine Laundromat. The anticipated water usage for these areas is calculated using the consumption rates in Table J-2. Based on the CEQR Technical Manual consumption rates, it is estimated that the facilities would consume approximately 245,201 gpd of water for domestic uses and 100,736 gpd of water for air conditioning for a total of 345,938 gpd (0.35 mgd) of water. These results are summarized in Table J-5. As compared to existing conditions, the future without the Proposed Action condition would generate a net increase in water demand of 9,506 gpd (0.01 mgd).

As may also be seen from Table J-5, the expected sanitary flows expected in the future without the Proposed Action are expected to be similar to existing conditions. Total expected wastewater generation is expected to be 245,201 gallons per day. This compares to 219,158 gallons per day

under existing conditions. The difference is primarily due to the development of site 9C in the northern part of the area to be rezoned.

Table J-5: 2022 No-Action Condition Water Consumption and Wastewater Generation

Land Use	Rate[1]	Existing Condition Summary		
		Quantity (units)	Water/ Wastewater Generated (in gpd)	Air Conditioning & Function (in gpd)
Residential[2]	Domestic: 100 gpd/person (300 gpd/DU)	275 DU's	82,500	0
	Air Conditioning: 0 gpd/sf	0 sf		
Commercial/Office[3]	Domestic: 25 gpd/person (0.10 gpd/sf)		6,532	11,105
	Air Conditioning: 0.17 gpd/sf	65,324 sf		
Community Facility[4]	Domestic: 0.17 gpd/sf		319	319
	Air Conditioning: 0.17 gpd/sf	1,875 sf		
Industrial/ Manufacturing[5]	Domestic: 1,000 gpd/ac (0.23 gpd/sf)		106,708	78,871
	Air Conditioning: 0.17 gpd/sf	463,946 sf		
Retail Stores	Domestic: 0.24 gpd/sf		9343	6618
	Air Conditioning: 0.17 gpd/sf	38928 sf		
Hotel[6]	Domestic: 120 gpd/rm/occupant	0 rooms	0	0
	Function Space: 0.17 gpd/sf	0 sf		
	Air Conditioning: 0.17 gpd/sf	0 sf		
Schools	Domestic: 10 gpd/seat	500 seat	5,000	9,670
	Air Conditioning: 0.17 gpd/sf	56,882 sf		
Laundromat[4]	Domestic: 580 gpd/machine	60 machine	34,800	772
	Air Conditioning: 0.17 gpd/sf	4,539 sf		
		Subtotals - Water Consumption	245,201	100,736
		Subtotals - Wastewater Generation	245,201	0
		Total Water Consumption	**345,938**	
		Total Wastewater Generation	**245,201**	

Notes:
1- Consumption rates obtained from CEQR Technical Manual unless otherwise indicated.
2- Assumes 100 gpd/person (CEQR Manual). The avg. household size for the rezoning area is 3.0 persons per DU (DCP). This equates to 300 gpd/DU.
3- Assumes 25 gpd/person and 250 sf of office space per person, which equates to 0.10 gpd/sf.
4- Consumption rates obtained from NYSDEC Design Standards for Wastewater Treatment Works (1988), The retail rate for air conditioning water demand was applied.
5- Because the CEQR Technical Manual does not provide industrial water consumption rates, factors contained in DEP's Draft Rules and Regulations Governing the Construction of Private Sewers and Drains were used. Floor areas were multiplied by 1.0 for Industrial/Manufacturing in MI-1 districts and 2.0 for Industrial/Commercial in R7-1/C2-4 districts. The retail rate for air conditioning water demand was applied.
6- Assumes 10% of total floor area is designated as function space.
7- Includes offsite areas in Cumulative Study Area.
gpd=gallons per day, mgd=millions of gallons per day, sf=square feet, occup=occupant

Sanitary and Storm water Drainage Management

Under this scenario, the uses on the properties within the rezoning area are assumed to remain unchanged from their existing condition with minor exceptions noted in the project description. However, to capture the cumulative impacts of other land use changes in the HP-003 and HP-004 subcatchments, no action projects within the secondary (1/4-mile) study area identified in Table A-6 (Land Use, Zoning and Public Policy) were included as were projected development projects for the Crotona Terrace, New Horizon Retail Center, 625 Fordham Road and Third Avenue / East Tremont Avenue rezoning.

Table J-6, "No Action Surface Calculations," contains a breakdown of existing surface area and runoff coefficient calculations by drainage area. For this analysis, the CEQR Sanitary and Storm water Drainage Calculation Matrix was used to calculate the total volume from the study area to the combined sewer systems during a range of storm events. Maintaining the current zoning, not implementing the Proposed Action and considering the proposed land use trends by others in the study area, i.e., in the future without the Proposed Action, it is anticipated that the parcels within the study area would experience an increase of approximately 1,150 residential units, and additional increases in commercial floor area (402,095 square feet) and community facility floor area (197,396 square feet). Of these amounts, 339 dwelling units and 123,981 square feet of commercial space would be located within the HP-004 outfall drainage area.

Table J-6: No Action Surface Calculations

	COMPOSITE SITE COEFFICIENT, C					
Subcatchment Area	SURFACE TYPE[1]	ROOF[2]	PAVT & WALKS	OTHER	GRASS & SOFT SCAPE	TOTAL / AVG.
Hunts Point (HP-003)	Area, %	61%	24%	0%	15%	100%
	Surface Area, sf	500,320	194,749	0	120,450	815,519
	Runoff Coefficient	1	0.85	0.7	0.2	0.85
Hunts Point (HP-004)	Area, %	62%	31%	0%	7%	100%
	Surface Area, sf	23,975	12,221	0	2724	38,920
	Runoff Coefficient	1	0.85	0.7	0.2	0.9

As shown in Table J-7, the future without the Proposed Action uses within the study area for the HP-003 drainage area are expected to generate 3.11, 9.33 and 19.43 mg of storm water runoff and 0.10, 0.28 and 0.49 mg of wastewater flow during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively. The total volume expected to be handled by the CSO system for the HP-003 CSO is 3.20, 9.61, and 19.92 mg during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively. These volumes represent increases over the existing condition of 0.06 mg, 0.19 mg and 0.32 mg respectively.

Table J-7: 2022 No Action Storm water and Wastewater Generation For HP-003 Drainage Area

RAINFALL VOLUME (inches)	All Assessed Parcels			
	1,464,332 SF		33.62 Ac.	
	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.4	0	3.11	0.1	3.2
1.2	0	9.33	0.28	9.61
2.5	0	19.43	0.49	19.92

As shown in Table J-8, the future without the Proposed Action uses within the study area for the HP-004 drainage area are expected to generate 0.38, 1.14 and 2.37 mg of storm water runoff and .02, 0.07 and 0.11 mg of wastewater flow during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively. The total volume expected to be handled by the CSO system for the HP-004 CSO is 0.40, 1.20, and 2.49 mg during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively. These volumes represent increases over the existing condition of 0.02 mg, 0.07 mg and 0.14 mg respectively.

Table J-8: 2022 No Action Storm water and Wastewater Generation For HP-004 Drainage Area

RAINFALL VOLUME (inches)	All Assessed Parcels			
	136567 SF		3.14 Ac.	
	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.4	0	0.38	0.02	0.4
1.2	0	1.14	0.07	1.2
2.5	0	2.37	0.11	2.49

FUTURE WITH THE PROPOSED ACTION

Water Supply

In the future with the Proposed Action condition, uses in the rezoning area include 2,875 dwelling units, 65,324 square feet of commercial/office space, 13,763 square feet of community facility space, 74,653 square feet of industrial/ manufacturing area, 131,869 sf of retail space, 500 school seats and a 60-machine Laundromat. The anticipated water usage for these uses is calculated using the consumption rates in Table J-9. Based on the *CEQR Technical Manual* consumption rates, it is estimated that the facilities would consume approximately 959,905 gpd of water for domestic uses and 58,995 gpd of water for air conditioning for a total of 1,018,900 gpd (1.0 mgd) of water. These results are summarized in Table J-9.

Table J-9: 2022 Proposed Action Water Consumption and Wastewater Generation

Land Use	Rate[1]	Existing Condition Summary		
		Quantity (units)	Water/ Wastewater Generated (in gpd)	Air Conditioning & Function (in gpd)
Residential[2]	Domestic: 100 gpd/person (300 gpd/DU)	2,875 DU's	862,414	0
	Air Conditioning: 0 gpd/sf	0 sf		
Commercial/Office[3]	Domestic: 25 gpd/person (0.10 gpd/sf)		6,532	11,105
	Air Conditioning: 0.17 gpd/sf	65,324 sf		
Community Facility[4]	Domestic: 0.17 gpd/sf		2,340	319
	Air Conditioning: 0.17 gpd/sf	13,763 sf		
Industrial/ Manufacturing[5]	Domestic: 1,000 gpd/ac (0.23 gpd/sf)		17,170	78,871
	Air Conditioning: 0.17 gpd/sf	74,653 sf		
Retail Stores	Domestic: 0.24 gpd/sf		31,649	6,618
	Air Conditioning: 0.17 gpd/sf	131,869 sf		
Hotel[6]	Domestic: 120 gpd/rm/occupant	0 rooms	0	0
	Function Space: 0.17 gpd/sf	0 sf		
	Air Conditioning: 0.17 gpd/sf	0 sf		
Schools	Domestic: 10 gpd/seat	500 seat	5,000	9,670
	Air Conditioning: 0.17 gpd/sf	56,882 sf		
Laundromat[4]	Domestic: 580 gpd/machine	60 machine	34,800	772
	Air Conditioning: 0.17 gpd/sf	4,539 sf		
Subtotals - Water Consumption			959,905	58,995
Subtotals - Wastewater Generation			959,905	0
Total Water Consumption			**1,018,900**	
Total Wastewater Generation			**959,905**	

Notes:

1- Consumption rates obtained from CEQR Technical Manual unless otherwise indicated.
2- Assumes 100 gpd/person (CEQR Manual). The avg. household size for the rezoning area is 3.0 persons per DU (DCP). This equates to 300 gpd/DU.
3- Assumes 25 gpd/person and 250 sf of office space per person, which equates to 0.10 gpd/sf.
4- Consumption rates obtained from NYSDEC Design Standards for Wastewater Treatment Works (1988), The retail rate for air conditioning water demand was applied.
5- Because the CEQR Technical Manual does not provide industrial water consumption rates, factors contained in DEP's Draft Rules and Regulations Governing the Construction of Private Sewers and Drains were used. Floor areas were multiplied by 1.0 for Industrial/Manufacturing in MI-1 districts and 2.0 for Industrial/Commercial in R7-1/C2-4 districts. The retail rate for air conditioning water demand was applied.
6- Assumes 10% of total floor area is designated as function space.
7- Includes offsite areas in Cumulative Study Area.

gpd=gallons per day, mgd=millions of gallons per day, sf=square feet, occup=occupant

Table J-10 provides a summary of water demand under the existing, future without the Proposed Action and future with the Proposed Action conditions. As compared to the future without the Proposed Action condition, the future with the Proposed Action condition would generate a net increase in water demand of 672,962 gpd (0.67 mgd), which is significantly below the 1.0 mgd threshold set forth in the *CEQR Technical Manual*.

Table J-10: Summary of Water Consumption

Total Water Consumption	GPD	MGD
Existing Condition	336,432 gpd	0.34 mgd
2022 Future No Action Condition	345,938 gpd	0.35 mgd
2022 Future with Proposed Action Condition	1,018,900 gpd	1.0 mgd
Change in Condition with Proposed Action	672,962 pd	0.67 mgd

Wastewater Treatment

The proposed rezoning area is located in the South Bronx, and approximately bound by the Boone/ Longfellow Avenues to the West, Westchester Avenue to the South, West Farms Road to the east, and Boston Road to the North (see Chapter 1, "Project Description"). Wastewater generated in this area is treated at the Hunts Point Water Pollution Control Plant (WPCP), which is designed to treat up to 200 mgd of wastewater. In 2009, the average dry weather flow was 114 mgd, and in the build year of 2022, it is projected to be 118 mgd, leaving 82 mgd available capacity. The Proposed Action would generate approximately 0.70 mgd more sanitary sewage over the future without the Proposed Action, which is equivalent to 0.85 percent of the available capacity of the Hunts Point WPCP. Therefore, the Proposed Action would not result in a significant adverse impact on the Hunts Point WPCP.

Sanitary and Storm water Drainage Management

Under this scenario, the uses on the properties within the rezoning area are assumed to change consistent with the Reasonable Worst Case Development Scenario. The no action condition land use changes within the study area (1/4 mile radius) and the four rezoning projects described above are included in this analysis to assure the assessment of cumulative impacts.

In the future with the Proposed Action it is anticipated the Proposed Action area (e.g., the area to be rezoned) would see a net increase of approximately 2,635 net new additional residential units, and modest increases in net new commercial floor area (92,941 square feet) and community facility floor area (11,888 square feet) and a decrease of approximately 392,000 square feet in industrial floor area as compared to the no action condition. Of these amounts, 280 residential units (146 more than the no action condition) and 38,300 square feet of retail commercial space (626 square feet less than the no action condition) would be located on Parcel 9C, which is within the HP-004 drainage basin.

Parcels within the HP-003 portion of the rezoning area are expected to be generally developed with hard surfaces including parking lots in the no action condition that will be redeveloped with more pervious courtyards and other pervious surfaces in the action condition. Table J-11 "Surface Calculations for the Future with the Proposed Action" contains a breakdown of surface area and runoff coefficient calculations by drainage area.

Table J-11: 2022 Proposed Action Surface Calculations

Subcatchment Area	COMPOSITE SITE COEFFICIENT, C					
	SURFACE TYPE[1]	ROOF[2]	PAVT & WALKS	OTHER	GRASS & SOFT SCAPE	TOTAL / AVG.
Hunts Point (HP-003)	Area, %	56%	26%	4%	14%	100%
	Surface Area, sf	457,526	212,347	31918	113,728	815,519
	Runoff Coefficient	1	0.85	0.4	0.2	0.83
Hunts Point (HP-004)	Area, %	62%	31%	0%	7%	100%
	Surface Area, sf	23,975	12,221	0	2724	38,920
	Runoff Coefficient	1	0.85	0	0.2	0.9

Notes:
1- Runoff coefficients for each surface type as per DEP.
2- Total roof areas onsite.
3- Green roofs with soil depths of approximately 12 inches. Coefficient of 0.4 as per DEP.

Sanitary and Storm water Drainage Management

As shown in Table J-12, the Proposed Action uses within the study area for the HP-003 drainage area are expected to generate 3.81, 11.44 and 23.84 mg of storm water runoff and 0.18, 0.54 and 0.94 mg of wastewater flow during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively. The total volume expected to be handled by the CSO system for the HP-003 CSO is 4.00, 11.99, and 24.77 mg during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively.

Table J-12: Proposed Action Storm water and Wastewater Generation For HP-003 Drainage Area

RAINFALL VOLUME (inches)	All Assessed Parcels			
	1,464,332 SF		33.62 Ac.	
	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.4	0	3.81	0.18	4
1.2	0	11.44	0.54	11.99
2.5	0	23.84	0.94	24.77

As shown in Table J-13, the Proposed Action uses within the study area for the HP-004 drainage area are expected to generate 0.37, 1.12 and 2.33 mg of storm water runoff and 0.03, 0.09 and 0.15 mg of wastewater flow during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively. The total volume expected to be handled by the CSO system for the HP-004 CSO is 0.40, 1.21, and 2.48 mg during the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches, respectively.

Table J-13: Proposed Action Storm water and Wastewater Generation For HP-004 Drainage Area

RAINFALL VOLUME (inches)	All Assessed Parcels			
	136567 SF		3.14 Ac.	
	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.4	0	0.37	0.03	0.4
1.2	0	1.12	0.09	1.21
2.5	0	2.33	0.15	2.48

A comparison of combined storm water runoff and wastewater flows in the future with the Proposed Action with existing combined flows is provided in Tables J-14 and J-15 below. As shown in these tables, the total combined storm water and wastewater flows with the Proposed Action would result in an increase in the combined flows compared to the existing conditions during a range of storm events. As may be noted from Table J-14, the Proposed Action study area would generate over 25 percent higher flows to the HP-003 CSO than under existing conditions during the rainfall volumes presented in the matrix. The one value in the table listed at 500 percent reflects the percentage increase in dry weather flows to the WPCP.

Table J-14: Existing and Proposed Action Comparison For HP-003 Drainage Area

Rainfall Volume (in.)	Rainfall Duration (hr.)	Existing				Future With the Proposed Action				Project Increment	
		1,464,332 sf/ 33.62 Acres				1,464,332 sf/ 33.62 Acres					
		Runoff Volume Direct Drainage (MG)	Runoff Volume To CSS (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Runoff Volume To River (MG)	Runoff Volume To CSS (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Increased Total Volume to CSS (MG)	Percent Increase From Existing Conditions (%)
0	3.8	0.00	0.00	0.03	0.03	0.00	0.00	0.18	0.18	0.15	500%
0.4	3.8	0.00	3.11	0.03	3.14	0.00	3.81	0.18	4.00	0.86	27%
1.2	11.3	0.00	9.33	0.10	9.42	0.00	11.44	0.54	11.99	2.57	27%
2.5	19.5	0.00	19.43	0.17	19.60	0.00	23.84	0.94	24.77	5.17	26%

As may be noted from Table J-11A, the Proposed Action study area would generate between 5 and 7 percent higher flows to the HP-004 CSO than under existing conditions for the rainfall volumes presented in the matrix, 0.4, 1.2 and 2.5 inches.

Table J-15: Existing and Proposed Action Comparison For HP-004 Drainage Area

Rainfall Volume (in.)	Rainfall Duration (hr.)	Existing				Future With the Proposed Action				Project Increment	
		136,567 sf/ 3.14 Acres				136,567 sf/ 3.14 Acres					
		Runoff Volume Direct Drainage (MG)	Runoff Volume To CSS (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Runoff Volume To River (MG)	Runoff Volume To CSS (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Increased Total Volume to CSS (MG)	Percent Increase From Existing Conditions (%)
0	3.8	0.00	0.00	0.01	0.01	0.00	0.00	0.03	0.03	0.02	200%
0.4	3.8	0.00	0.37	0.01	0.38	0.00	0.37	0.03	0.40	0.02	5%
1.2	11.3	0.00	1.10	0.03	1.13	0.00	1.12	0.09	1.21	0.08	7%
2.5	19.5	0.00	2.30	0.05	2.35	0.00	2.33	0.15	2.48	0.13	6%

As shown in Tables J-14 and J-15, there would be an increase to receiving water bodies (the East River for HP003 and the Bronx River for HP0040) of .86, 2.57 and 5.17 mg to HP003 for the 0.4, 1.2 and 2.5 inch rainfall volumes, and 0.02, 0.08 and 0.13 mg to HP004 for those rainfall volumes, respectively.

STORMWATER BEST MANAGEMENT PRACTICES CONCEPT PLAN SUMMARY

The following Storm water Best Management Practices (BMPs) Concept Plan illustrates opportunities for development lots within the proposed rezoning area to incorporate onsite storm water source controls during site planning and building design phases of project development and to help achieve a target storm water release rate of 0.25 CFS or 10% of the allowable flow per the drainage plan, whichever is greater. The concept plan addresses this primarily through a description of the proposed building forms, both for the applicant controlled sites on Block 3014 and portions of Blocks 3013, 3009 and 3016, as well as on other sites not controlled by the applicant within the rezoning area.

Contextual Districts

As described in the Project Description, in the southern portion of the rezoning area (south of the Cross Bronx Expressway) an existing M1-1 district is proposed to be rezoned to a mix of R6A, R7A and R8X residential districts, with partial C2-4 commercial overlays. In the northern portion of the rezoning area (north of the Cross Bronx Expressway), existing R7-1 and M1-1 are proposed to be rezoned to R8X with partial C2-4 overlays. The proposed districts are all mid-density contextual districts.

BMPs suitable for these districts include green roofs and blue roofs, which would retain or release storm water with slowed discharge rates to control peak run off rates. Blue roofs can be constructed on new roofs at limited additional cost to the developer, property manager or tenants. Trees planted per NYC's street tree requirements could also be constructed to capture and store water below the tree pit at low additional costs. Walkways, courtyards and other paved areas onsite could utilize porous pavers, concrete or asphalt. Other BMPs may include onsite rain gardens, infiltration swales and storm water detention is possible, where open space is required. Subsurface vaults/tanks, stone beds, storm water chambers, and perforated pipes allow storm water to seep into the ground, where site conditions allow, and store water for gradual release during rain events freeing up capacity in combined and separate storm sewers are also possible.

BMP concept plans for the proposed districts indicate that blue and green roofs would be particularly suitable given that lot coverage by the building footprint and rooftop is typically 65 – 100% of the lot depending on site configuration and topography and whether retail or enclosed parking is provided on the ground floor. Tree plantings to capture storm water as well as porous pavement for walkways, courtyards or other paved surfaces can also be utilized.

Incorporation of the BMPs, summarized above, on the development sites should be designed to achieve a target storm water release rate of 0.25 cfs or 10% of the allowable flow per the drainage plan, whichever is greater.

Enterprise Green Communities

The Department of Housing Preservation and Development (HPD) is mandating that all projects to use their funding sources are to be certified as green buildings by Enterprise Green Communities through the Green Communities Initiative Program. This program either mandates or provides optional support for many on-site water retention or water management building technologies. It also requires that water conserving fixtures and appliances be used.

BMPs suitable for Enterprise Green Communities Initiative program include green roofs and blue roofs, which would retain or release storm water with slowed discharge rates to control peak run off rates. Blue roofs can be constructed on new roofs at limited additional cost to the developer, property manager or tenants. Trees planted could capture and store water below the tree pit at low additional costs. Walkways, courtyards and other paved areas onsite could utilize porous pavers, concrete or asphalt.

The proposed project may be inconsistent with the existing drainage plan, which is based on outdated zoning. Exiting sanitary sewers in some portions of the rezoning area may not be able to accommodate increased wastewater flows generated by increased zoning densities. To be issued a permit to connect to a city sewer, an applicant proposing a new development or expansion of an existing development within the proposed rezoning area may be required to submit a site-specific hydraulic analysis DEP for its review and approval. The site specific hydraulic analysis would establish the adequacy of the existing combined sewer systems that would serve the development lot. Based on this site-specific hydraulic analysis, sewer improvements or onsite detention that account for downstream and upstream zoning and related densities may be required of the applicant at the time of the house or site connection proposal.

Self-certification of house or site connection proposals will not be permitted by the Department of Buildings or DEP in connection with any proposed new developments or expansions of existing development for which sewer connections are required.

Based on the analysis described above, conducted pursuant to *CEQR Technical Manual* methodologies, in concert with the measures described above, it is concluded that the Proposed Actions would not result in significant adverse impacts to the local water supply, sanitary wastewater treatment, or storm water management infrastructure systems with the above measures in place.

CONCLUSION

Water Supply

Water demands of the Proposed Project would not overburden the City's water supply system. In the build year of 2022, Proposed Action is expected to generate a net increase in water demand of

approximately 672,962 gallons per day (gpd) (0.67 mgd). The project would not result in additional water demand of over one million gallons per day, and is not located in a low water pressure area. Therefore, no potential impacts to the area's water supply would be expected, and a preliminary infrastructure assessment pertaining to water supply is not necessary.

Wastewater Treatment

The Hunts Point WPCP is designed to treat up to 200 million gallons per day (mgd) of wastewater. In 2009, the average dry weather flow was 114 mgd, and in the build year of 2022, it is projected to be 118 mgd, leaving 82 mgd of available capacity. The Proposed Action would generate approximately 0.70 mgd of sanitary flows to the plant, equivalent to 0.85 percent of the available capacity of the Hunts Point WPCP. Therefore, the Proposed Action is not anticipated to adversely affect the Hunts Point WPCP.

Sanitary and Storm water Drainage and Management

The Proposed Action would not generate substantial additional runoff compared to the amount of runoff that would occur in the future without the Proposed Action. Because the amount of impervious surfaces (roof, pavement, etc.) on the projected development sites would not change substantially as compared to the existing and future without the Proposed Action conditions, there would not be a substantial increase of storm water runoff as a result of the action. The increase in combined sewer/wastewater runoff flows between existing and No Action/Action conditions combined sewer amounts to 0.86, 2.57, and 5.17 mg and 0.02, 0.08. and 0.13 mg for the, 0.4, 1.2 and 2.5 inch rainfall events, respectively, which includes other proposed projects in the No Action condition as well as the estimated effluent from previous rezoning in the HP 003 and HP 004 catchment areas.

Between the Draft EIS and Final EIS, the applicant and lead agency will coordinate with DEP to further consider measures to reduce potential increases in storm water runoff and wastewater flow as a result of the Proposed Action. A BMP concept plan for the applicant properties will be refined and submitted to DEP to illustrate the opportunities for the applicant's development lots within the rezoned area, to incorporate onsite storm water source controls during planning and building design phases of project development.

As stated previously, at the time of detailed design, the applicant will work with DEP to determine which of the BMPs, summarized above, will be incorporated into the project design to achieve a target storm water release rate of 0.25 cfs or 10% of the allowable flow per the drainage plan, whichever is greater.

For non-applicant properties, self-certification of house or site connection proposals will not be permitted by the Department of Buildings or DEP in connection with any proposed new developments or expansions of existing development for which sewer connections are required.

Based on the analysis and procedures described above, it is concluded that the Proposed Action would not result in significant adverse impacts to the local water supply, sanitary wastewater treatment, or storm water management infrastructure systems with the above measures in place.