

A. INTRODUCTION

This chapter evaluates the potential for the Proposed Actions to result in significant adverse impacts on the City's water supply and wastewater and stormwater conveyance, management, and treatment infrastructure in accordance with the guidance of the 2021 *City Environmental Quality Review (CEQR) Technical Manual*. New York City's water and sewer network is fundamental to the operation, health, safety, and quality of life of the City and its surrounding environment, and it must be sized to fit the City's users and surface conditions in order to function adequately. Ensuring these systems have adequate capacity to accommodate land use or density changes and new development is critical to avoiding environmental and health problems such as sewer back-ups, street flooding, or pressure reductions.

As described in Chapter 1, "Project Description," the Applicant is seeking discretionary approvals (the "Proposed Actions") to facilitate the development of the Western Rail Yard (Block 676, Lots 1 and 5) in the Hudson Yards neighborhood of Manhattan (the "WRY Site" or the "Development Site") with new mixed use buildings containing residential, commercial, and community facility space, a hotel resort with gaming, and new public open space (the "Proposed Project"). There is an ongoing state process underway to designate locations for downstate gaming licenses; therefore, the Applicant is also presenting for environmental analysis purposes an Alternative Scenario that reflects a similar density and the same open space configuration as the Proposed Project but includes residential and commercial buildings in place of the hotel resort with gaming. The scenario that would result in the more conservative analysis is analyzed for each technical area. Based on preliminary estimates, the Alternative Scenario would result in lower water demand and sanitary sewage generation than the Proposed Project. Therefore, for the purposes of analysis, the Proposed Project is considered the worst-case with regard to water and sewer infrastructure, and the Alternative Scenario is not assessed in this chapter.

PRINCIPAL CONCLUSIONS

The Proposed Actions would not result in significant adverse impact on the City's water and sewer infrastructure. Based on the methodology set forth in the *CEQR Technical Manual*, while the Proposed Actions would result in increased demand for water and treatment of sewage, the incremental increases would not constitute a significant adverse impact on the City's water supply, wastewater treatment, or stormwater management and treatment infrastructure.

WATER SUPPLY

In the future with the Proposed Actions (the With Action condition), the Proposed Project would generate an incremental water demand of approximately 343,000 gallons per day (gpd) as compared to the No Action condition. This represents an approximately 0.03 percent increase in demand on the New York City water supply system compared to the City's average daily water use of approximately 1.1 billion gpd. Under the No Action condition, DEP will construct a new water main in West 33rd Street between Eleventh and Twelfth Avenues. In the With Action condition, the Applicant would construct the new water main as part of the proposed reconfiguration of West 33rd Street. West 33rd Street would remain a City street. With this improvement, the water mains in the area of the Development Site would be able to handle the increase in water demand, and there would be no significant adverse impacts on the City's water supply in the With Action condition.

SEWER SYSTEM AND WASTEWATER TREATMENT

The With Action condition would generate an incremental 208,887 gpd compared to the No Action condition. This incremental volume in sanitary flow to the combined sewer systems would represent approximately 0.2 percent of the average daily flow to the North River Wastewater Resource Recovery Facility (WRRF). This volume would not result in an exceedance of the North River WRRF's capacity and is not anticipated to create a significant adverse impact on the City's sanitary sewage treatment system. In addition, in accordance with 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 help to further reduce sanitary flows to the WRRF. The Proposed Project would be required to file a Site Connection Proposal Application (SCP) for approval from the New York City Department of Environmental Protection (DEP) to tie into the sewer system. In this process, before a building permit can be issued, site connection proposals must be certified for sewer availability by DEP. This analysis and any improvements would be undertaken, as necessary, in coordination with DEP. Due to the West 33rd Street reconstruction, the Proposed Project will also require a private sewer plan showing the upgraded storm and sanitary sewers to be submitted to DEP.

STORMWATER FLOWS

In the No Action and With Action conditions, a platform would be constructed over approximately two-thirds of the railyard, along with new buildings. As a result, as compared to the existing condition, in which most of the Development Site is occupied by the Long Island Rail Road (LIRR) Western Rail Yard, there would be an increase in fully impervious surface area with the Proposed Project. However, the Proposed Project would not result in an increase in stormwater runoff to the combined sewer system that may be discharged as combined sewer overflows (CSOs) during rain events, as all stormwater on the Development Site would be detained and released via controlled flow to the Hudson River by separated storm sewers. In particular, stormwater collected on the platform would be detained on-site and discharged to storm sewers, including potentially the existing LIRR private storm sewer serving the Western Rail Yard. Similarly, stormwater collected on the small "terra firma" portion of the Development Site not covered by the platform or buildings would be conveyed to the existing LIRR storm sewer. Because of the available capacity of the North River WRRF, the projected increase in sanitary sewage flows from the Proposed Project to the combined sewer system would

not result in a significant adverse impact on water quality. Furthermore, the Applicant would develop a Stormwater Pollution Prevention Plan (SWPPP) for active construction and post-construction stormwater management that would effectively decrease the rate and quantity and improve the quality of stormwater discharged by the Proposed Project as compared to the Development Site's existing condition. Specific stormwater source control best management practices (BMPs) for the Proposed Project would be confirmed with preparation of the SWPPP and consultation with DEP when specific designs are advanced, but are expected to include use of detention tanks, roof detention systems, and green roofs (particularly on the public open space).

With the development of a SWPPP and incorporation of BMP measures to meet the City site connection requirement, development under the Proposed Actions would not result in a significant increase in stormwater runoff as compared to existing conditions. Therefore, it is concluded that the Proposed Actions would not result in significant adverse impacts to local water supply or wastewater and stormwater conveyance and treatment infrastructure.

B. METHODOLOGY

This analysis follows the *CEQR Technical Manual* guidelines that recommend a preliminary water analysis if a project would result in an exceptionally large demand of water (over 1 million gpd), or if it is located in an area that experiences low water pressure (i.e., 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. In the future with the Proposed Actions, the Proposed Project is expected to result in a water demand of more than one million gpd. Therefore, an assessment of water supply is warranted.

The *CEQR Technical Manual* indicates that for wastewater and stormwater conveyance and treatment analyses, a preliminary assessment is warranted if a project is located in a combined sewer area and would have an incremental increase above the No Action condition of 1,000 residential units or 250,000 square feet (sf) of commercial, public facility, and institution and/or community facility space in Manhattan. Since the Proposed Actions would result in a net increase of more than 250,000 sf of commercial and community facility space, an assessment of wastewater and stormwater infrastructure is provided.

To assess the potential impacts of the Proposed Actions on water and sewer infrastructure, this chapter:

- Describes the existing water, sanitary sewer, and stormwater infrastructure serving the Development Site;
- Provides a preliminary analysis which estimates water demand and sewage generation on the Development Site under Existing and No Action conditions based on use generation rates provided in the *CEQR Technical Manual*. The preliminary analysis also calculates stormwater runoff and sanitary flows using the DEP Volume Calculation Matrix. The preliminary analysis then forecasts water demand and sewage and stormwater generation by the Proposed Project facilitated by the Proposed Actions based on *CEQR Technical Manual* guidelines; and

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- Assesses the effects of the With Action water demand and sewage and stormwater generation on the City's water and sewer infrastructure based on the preliminary analyses, pursuant to *CEQR Technical Manual* guidelines.

As described above, based on preliminary estimates the Alternative Scenario would result in lower water demand and sanitary sewage generation than the Proposed Project. Therefore, for the purposes of analysis, the Proposed Project is considered the worst-case With Action scenario for the Proposed Actions with regard to water and sewer infrastructure, and the Alternative Scenario is not assessed in this chapter.

C. EXISTING CONDITIONS

WATER SUPPLY SYSTEM

The New York City water supply system comprises a network of reservoirs, lakes, and aqueducts extending into the Catskill region and a pipe network that distributes water within the City. New York City obtains nearly all of its water from the Delaware, Catskill, and Croton watersheds, which are within 125 miles of the City. Water from the watersheds is stored at 19 reservoirs and 3 control lakes with a combined capacity of approximately 550 billion gallons. The water is then carried into the City by a number of aqueducts. The water enters the City via City Tunnel 1 (which runs through the Bronx, Manhattan, and Queens) and City Tunnel 2 (which runs through the Bronx, Queens, and Brooklyn); more recently, a third tunnel, Water Tunnel No. 3, originating at Hillview Reservoir in Yonkers, has been constructed. The portion of Water Tunnel No. 3 serving Midtown Manhattan, including the Development Site and the surrounding area, was completed and activated in 2013. Once in the City, the three aqueducts distribute water into a network of water mains. Water mains up to 96 inches in diameter feed smaller mains that deliver water to their final destination. Nearly all the water reaches its consumers by gravity alone, although some 4 percent (generally at the outer limits of the system where in-line pressure is lowest, at high elevations, or at a pressure extremity, such as Far Rockaway) is pumped to its final destination. Pressure regulators throughout the City monitor and control the water pressure.

The Development Site is served by existing 12-inch mains in West 30th Street and West 33rd Street, which connect to a 20-inch diameter trunk main in Twelfth Avenue. As discussed in Chapter 1, "Project Description," the Development Site primarily contains an LIRR train yard and other LIRR facilities, including a railroad-interior cleaning facility, storage, and buildings that house other operational functions. The existing LIRR facilities on the Development Site are served by a private 6-inch water main that runs along the south and west sides of the Development Site and connects to the water main in Twelfth Avenue. The main feeds an internal water distribution piping network that extends primarily north-south throughout the rail yard.

SEWER SYSTEM AND WASTEWATER TREATMENT

The Development Site is located within a part of Manhattan that is served by a combined sewer system that collects both sanitary sewage and stormwater. In periods of dry weather, the combined sewers located in the adjacent streets convey only sanitary sewage. The Development Site is served by combined sewers within the service area of the North River WRRF. Combined sewers are located along West 33rd Street, West 30th

Street, and Twelfth Avenue, which generally flow to the west, connecting to an interceptor sewer in Twelfth Avenue.

The Development Site contains a sanitary sewer system serving the existing LIRR facilities, which consists of pipes running through the site from north to south and connecting to a sanitary sewer at the south side of the site. The on-site sewer runs along the south side of the site and discharges to a pump station near Eleventh Avenue. The pump station discharges to a force main that runs east and south under Eleventh Avenue and turns southwest to discharge into the combined sewer in West 30th Street. The West 30th Street sewer runs west to the interceptor sewer in Twelfth Avenue, which conveys flow to the North River WRRF.

At the North River WRRF, wastewater is treated by physical and biological processes before it is discharged into the Hudson River. A Stormwater Pollution Discharge Elimination System (SPDES) permit issued by the New York State Department of Environmental Conservation (DEC), which establishes limits for effluent parameters (i.e., suspended solids, fecal coliform bacteria, and other pollutants), regulates the quality of the treated wastewater (effluent). Since the volume of flow to a WRRF affects the level of treatment a plant can provide, the maximum permitted capacity for the North River WRRF is 170 million gallons per day (mgd). The average monthly flow over the latest 12-month period for which data are available is 110 mgd,¹ which is well below the maximum permitted capacity.

Most of New York City's sewers are combined sewers that collect both sanitary sewage and stormwater. In periods of dry weather, the combined sewers (sized to convey an amount of sanitary sewage that is based on density levels according to zoning regulations) convey only sanitary sewage. During and immediately after wet weather, combined sewers can experience a much larger flow due to stormwater runoff collection. To control flooding at the WRRFs, regulators built into the system serve as relief valves, allowing only approximately two times the amount of design dry weather flow into the interceptors (larger sewers that convey wastewater to the WRRFs). The interceptors then take the allowable flow to the WRRFs, while the excess flow is discharged untreated to the nearest waterbody as CSO. In the area of the Development Site, the combined sewers connect to a regulator located at West 30th Street and Twelfth Avenue (regulator N-45), which controls flow to the interceptor and outfall (SPDES Outfall No. 027), located on the Hudson River.

WATER CONSUMPTION

As noted above, the Development Site contains LIRR facilities, which have limited water consumption (e.g., for domestic supply, yard hydrants, and other fire protection systems). Water consumption from these existing facilities were estimated based on the approximate square footage of the existing LIRR buildings utilizing the rates presented in the *CEQR Technical Manual*, assuming that the facilities generate water consumption at the rates of commercial office space. As shown in **Table 11-1**, it is estimated that the existing LIRR facilities on the Development Site currently consume approximately 5,157 gpd, including approximately 1,910 gpd for domestic uses and approximately 3,247 gpd for air conditioning.

¹ Twelve-month period through March 2017.

Table 11-1
Existing Water Consumption

Land Use	Water Consumption and Wastewater Generation Rates ¹	Area/Units	Domestic Water/Wastewater Generation (gpd)	Air Conditioning (gpd)
LIRR Facilities ²	Domestic: 0.10 gpd/sf A/C: 0.17 gpd/sf	19,100 sf	1,910	3,247
Development Site—Total Water Demand				5,157
Development—Total Wastewater Generation				1,910
Notes: Totals may not sum due to rounding. gpd = gallons per day ¹ Consumption rates from <i>CEQR Technical Manual</i> Table 13-2, "Water Usage and Sewage Generation Rates for Use in Impact Assessment," unless otherwise noted. ² All existing LIRR facility space is assumed to consume water and generate domestic wastewater at the <i>CEQR Technical Manual</i> rates for commercial office space.				

SANITARY FLOWS

For purposes of analysis, the amount of sanitary sewage is estimated as all water demand generated on the Development Site except water used by air conditioning, which is typically not discharged to the sewer system. As shown on **Table 11-1** and noted above, the total estimated sanitary sewage generated on the Development Site under existing conditions is 1,910 gpd.

STORMWATER FLOWS

The Development Site has a total area of approximately 571,592 sf (13.12 acres). Most of the Development Site is occupied by the LIRR Western Rail Yard. Currently, stormwater collected on the LIRR facilities on the Western Rail Yard is not conveyed to the combined sewer. The Development Site utilizes a stormwater collection system consisting of five pipe runs with catch basins, which connect to a storm sewer that runs east-west near the southern boundary of the yard to outfall into the Hudson River (this storm sewer also conveys stormwater flow from the Eastern Rail Yard, east of Eleventh Avenue). The storm sewer exits the Western Rail Yard near the extension of West 31st Street and Twelfth Avenue and runs south under Twelfth Avenue to tie into the outfall at West 30th Street downstream of Regulator N-45. Because the tie-in for the LIRR private storm sewer is downstream of the regulator chamber, the runoff from the Development Site has no opportunity to discharge into the City combined sewer system, and instead is considered a direct stormwater discharge into the Hudson River. The outfall is regulated under the DEC's General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). LIRR is the permittee for the MS4 stormwater discharge from the Western Rail Yard.

The southern section of the Development Site, between West 30th Street and the approximate prolongation of West 31st Street, includes land (terra firma) that is not occupied by LIRR operations. Stormwater runoff from this area drains by a combination of inlet drains and surface flows into street catch basins into the existing combined sewer system within West 30th Street. Depending on downstream flows within the interceptor sewer, Regulator N-45 either allows this drainage with effluent from other sources entering the regulator to drain into the interceptor sewer for treatment at the North River WWTP, or diverts some or all of the flows as a CSO event to discharge directly into the Hudson River.

For purposes of analysis, stormwater generation on the Development Site is separately estimated for the area occupied by LIRR facilities and the terra firma area, as only the terra firma area drains into the combined sewer system. In consideration of the extensive above- and below-grade structures on the LIRR portion of the Development Site including train tracks, operational buildings, and tunnels for Amtrak's Hudson River and Empire Lines, this area is assumed to be fully impervious surface area (i.e., equivalent to rooftop space). The terra firma area, which does not contain any structures, is assumed to be paved surface area. **Table 11-2** summarizes the surfaces and surface areas, as well as the weighted runoff coefficient (the fraction of precipitation that becomes surface runoff for each surface type).

Table 11-2
Existing Surface Coverage

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other	Grass and Soft Scape	Total
N-45 (Terra Firma)	Area (percent)	0%	100%	0%	0%	100%
	Surface Area (sf)	0	147,064	—	—	147,064
	Runoff Coefficient	1.00	0.85	—	0.20	0.85
N/A (LIRR)	Area (percent)	100%	0%	0%	0%	100%
	Surface Area (sf)	424,528	0	—	—	424,528
	Runoff Coefficient	1.00	0.85	—	0.20	1.00
Notes: The Runoff Coefficient is a weighted average. The calculations are based on the DEP Volume Calculation Matrix provided in the <i>CEQR Technical Manual</i> , retrieved March 2024. Totals may not sum due to rounding.						

UNIFIED STORMWATER RULE

The City recently enacted amended on-site stormwater management requirements for new and redevelopment projects in combined sewer areas, updating the previous regulations (2012 Stormwater Rule), which reduce peak discharges to the City's sewer system during rain events by requiring greater on-site storage of stormwater runoff and slower release to the sewer system. Specifically, DEP adopted amendments to Chapters 31 and 19.1 of Title 15 of the Rules of the City of New York (RCNY) as part of a Unified Stormwater Rule. Development of the amended stormwater management regulations began in August 2020, when the New York City Council passed Intro No. 1851, enabling DEP to move forward with the Chapter 19.1 amendments necessary to package the Unified Stormwater Rule amendments. Draft rules were published in Spring 2021, and City adopted the Unified Stormwater Rule in February 2022.

Under the Chapter 31 amendments, the Unified Stormwater Rule increases the amount of stormwater required to be managed on-site and further restricts the release rates for all new and redevelopment projects that require a DEP House or Site Connection Proposal. Additionally, under the Chapter 19.1 amendments, sites that disturb 20,000 square feet or more of soil or increase impervious surfaces by 5,000 square feet or more will also be required to manage the Water Quality Volume (WQv), currently defined as 1.5" over the lot area, using stormwater management practices (SMPs) dictated by DEP SMP hierarchies. DEP has developed hierarchies for both combined and separate sewer areas. The SMP hierarchies prioritize vegetated retention SMPs for both drainage areas with stormwater volume control and stormwater treatment communicated as the underlying goals for combined and separate sewer areas, respectively. For sites that

trigger the Chapter 19.1 component of the Unified Stormwater Rule, the hierarchy is mandatory, meaning that developers must start with the most preferred SMP and provide documentation of site constraints that prevent implementation in order to move to the next SMP.

The Unified Stormwater Rule substantially improves the way that individual new and redeveloped properties manage stormwater compared to the 2012 Stormwater Rule it replaced. In some cases, stormwater is entirely prevented from entering the sewer system through retention and, in most cases, stormwater flow that does enter the system will be reduced and/or treated and released at a much lower rate, allowing the system to operate more efficiently during peak wet weather events. In combined sewer sheds, such as the portion of Manhattan where the Development Site is located, the Unified Stormwater Rule is expected to lead to a reduction in CSO volume as more lots redevelop over time. The analyses of stormwater flows presented in this chapter conservatively do not account for the recommendations of the Unified Stormwater Rule, and design guidance included within.

D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

In the No Action condition, it is assumed that the Development Site will be developed with 4.5 million zoning square feet (zsf, or 5 million gsf) of residential, commercial, and community facility space. The No Action condition is based on the Maximum Commercial Scenario analyzed in the 2009 FEIS, although it conservatively assumes less residential development than permitted by that Scenario, as well as less open space and less parking. As with the Proposed Project, the No Action condition is expected to include the construction of a platform over approximately two-thirds of the railyard. The No Action condition development will include a new 81-story building on Site B containing residential, cultural retail, and school space; a 66-story office tower on Site C-1; and an 81-story residential tower on Site C-2. In total, it is assumed that the No Action condition development will total approximately 5 million gsf, including 2.1 million gsf of office space, 164,500 gsf of retail, 2.5 million gsf of residential space (3,454 DUs), and 146,000 gsf of community facility space, as well as 4.31 acres of publicly accessible open space.

As part of prior approvals for the Western Rail Yard project, DEP developed an Amended Drainage Plan (ADP) for a portion of the Hudson Yards area that includes the area generally bounded by West 40th Street to the north, Tenth Avenue to the east, West 30th Street to the south, and Twelfth Avenue (Route 9A) to the west. The ADP identifies improvements to the existing storm and combined sewer system infrastructure that are necessary to accommodate the full build out of the Hudson Yards area. The ADP identifies replacement of the existing combined sewer in West 33rd Street, on the north side of the Development Site, with a separate storm sewer and sanitary sewer; similarly, the combined sewer in West 30th Street may be upgraded to separated storm and sanitary sewers. The new storm sewers along West 30th Street and West 33rd Street will divert existing stormwater runoff from the combined sewer system. DEP has designed the sewers proposed by the ADP of an adequate size to handle the flows that will be discharged from the Development Site as well as the adjacent Hudson Yards area. In the No Action condition, it is assumed that these sewer improvements will be completed in order to serve the development on the Development Site, as required by the ADP. In addition, subject to additional consultation with DEP and the New York City Metropolitan

Transportation Authority (MTA)/LIRR, development on the platform may convey stormwater to the existing LIRR private storm sewer serving the Western Rail Yard. Therefore, for the purposes of analysis, it is assumed that stormwater runoff from the No Action condition development will be conveyed to storm sewers; sanitary flows will be conveyed to the North River WRRF by sanitary sewers, connecting to the Twelfth Avenue interceptor.

Additional changes to the water supply and sewer infrastructure serving the Development Site are anticipated to be made in the No Action condition. A new 20-inch water main will be constructed by DEP between Eleventh and Twelfth Avenues. Other improvements will be made to maintain service to the LIRR facilities that will be located below the platform. In particular, the existing fire suppression system for the railyard, which primarily consists of an underground main supplying fire hydrants throughout the site, will be abandoned and replaced with an overhead fire suppression system incorporated into the platform. In addition, in order to accommodate the structural foundations and columns to support the platform, the existing sanitary pipes in the LIRR facilities will be relocated where necessary, and the existing pump station modified. As the platform will largely cover the below-grade track area of the railyard, stormwater runoff onto the railyard will be largely eliminated; however, after the platform is built, portions of the railyard will remain uncovered (a small open area between the platform and the High Line will remain) and minor runoff will still be expected. In addition to stormwater runoff, the LIRR facilities will require a drainage system to capture water from the fire suppression system (when used). In accordance with the New York City Plumbing Code (Section 301.3), any water emitted from the new fire suppression system will be considered “liquid waste,” which must be discharged directly to the sanitary drainage system, per the same plumbing code. Therefore, after the platform is fully built, the existing storm sewers on the LIRR facilities will be diverted to the sewer system on the Development Site, and the existing track-level catch basins will act as floor drains.

WATER SUPPLY

The overall water supply system in New York City is not expected to change materially in the No Action condition. **Table 11-3** summarizes the water demand and sewage generation on the Development Site in the No Action condition. It is estimated that the No Action condition development will consume approximately 1.7 mgd, including approximately 855,280 gpd for domestic uses and approximately 851,650 gpd for air conditioning. As there is currently minimal water consumption from the existing LIRR facilities on the Development Site, this represents an incremental increase of approximately 1.7 mgd as compared to existing conditions.

Table 11-3
No Action Condition Water Consumption

Land Use	Water Consumption and Wastewater Generation Rates ¹	Area/Units	Domestic Water/Wastewater Generation (gpd)	Air Conditioning (gpd)
Residential	Domestic: 100 gpd/person ³ A/C: 0.17 gpd/sf	2,514,225 sf (3,454 DU)	587,200	427,418
School	Domestic: 10 gpd/seat A/C: 0.17 gpd/sf	120,000 sf (750 seats)	7,500	20,400
Community Facility ²	Domestic: 0.10 gpd/sf A/C: 0.17 gpd/sf	26,000 sf	2,600	4,420
Retail	Domestic: 0.24 gpd/sf A/C: 0.17 gpd/sf	164,500 sf	39,480	27,965
Office	Domestic: 0.10 gpd/sf A/C: 0.17 gpd/sf	2,185,000 sf	218,500	371,450
Project Area—Total Water Demand				1,701,776
Project Area—Total Wastewater Generation				855,280
Notes: Totals may not sum due to rounding. gpd = gallons per day; DU = dwelling unit ¹ Consumption rates from <i>CEQR Technical Manual</i> Table 13-2, "Water Usage and Sewage Generation Rates for Use in Impact Assessment," unless otherwise noted. ² Includes day care and cultural space; assumed to consume water and generate domestic wastewater at the CEQR Technical Manual rates for office space. ³ Assumes 1.70 residents per DU—average household size of Manhattan Census Tract 99.03, 2020 Census.				

Additionally, in 2011, DEP launched the Water for the Future Program (WFF), a comprehensive long-term planning effort to repair leaks in sections of the Delaware Aqueduct. To support this program, a newly created Demand Management Unit within DEP was tasked with the development of a city-wide strategy to outline DEP's plan for the implementation of water demand management projects. DEP's 2013 *Water Demand Management Plan* identified five key strategies for managing water demand in New York City and detailed 21 specific initiatives in order to achieve targeted water demand reductions. It is anticipated that these initiatives will offset much of the increased demands City-wide that may result from population growth and new development.

SEWER SYSTEM AND WASTEWATER TREATMENT

As shown in **Table 11-3**, in the No Action condition, wastewater generated on the Development Site will total 855,280 gpd, an incremental increase of 853,370 gpd over existing conditions. This additional sanitary discharge to the North River WRRF will be well within the capacity available at the facility on average; therefore, the WRRF will continue to operate within its design capacity.

STORMWATER FLOWS

In the No Action condition, surface coverage is anticipated to change on the Development Site with the construction of a platform over approximately two-thirds of the railyard, as well as new buildings. The surface area on the platform is assumed to be fully impervious; however, stormwater collected on the platform will be detained on-site, and any overflow of stormwater collected on the platform will be conveyed to storm sewers. Only a small portion of the Development Site will be open (not covered by the platform or buildings); this terra firma area is planned for improvements to the LIRR facilities under the No Action condition, as described above, which will include a stormwater management system to

convey stormwater collected in this area to the existing LIRR storm sewer.² As stormwater runoff in this area currently drains into the existing combined sewer system within West 30th Street, this modification will result in a reduction of flows to the combined sewer and an increase in direct stormwater discharge to the Hudson River from the Development Site.

As the platform and new buildings will cover most of the Development Site, for purposes of analysis, it is assumed that the surface area of the Development Site will be fully impervious (i.e., equivalent to rooftop space) in the No Action condition. While this will represent an increase in rooftop area on the site and the resulting runoff coefficient as compared to the existing condition (see **Table 11-4**), the No Action condition is not anticipated to result in an increase in stormwater runoff to the combined sewer system, as the Development Site will be served by separated sewers, as noted above. In addition, as required by the DEP regulations and the recently adopted Unified Stormwater Rule (described above), the No Action condition will include sanitary and stormwater source control BMPs to reduce sanitary volume and peak stormwater runoff volumes to the sewer system, and will incorporate low-flow plumbing fixtures to reduce sanitary flow.

Table 11-4
No Action Condition Surface Coverage

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other	Grass and Soft Scape	Total
N/A*	Area (percent)	100%	0%	0%	0%	100%
	Surface Area (sf)	571,592	-	-	-	571,592
	Runoff Coefficient	1.00	0.85	-	0.20	1.00
Notes: The Runoff Coefficient is a weighted average. The calculations are based on the DEP Volume Calculation Matrix provided in the <i>CEQR Technical Manual</i> , retrieved March 2024. Totals may not sum due to rounding. * The Development Site would be served by a separated sewer in the No Action Condition, and would not generate stormwater flows into the combined sewer system.						

E. THE FUTURE WITH THE PROPOSED ACTIONS

In the With Action condition, the Development Site would be developed by the Applicant with the Proposed Project, which would include new mixed use buildings containing residential, commercial, and community facility space, including a hotel resort with gaming, as well as new public open space. Similar to the No Action condition development, the Proposed Project would include construction of a platform over approximately two-thirds of the railyard. The Proposed Project would total approximately 6.2 million gsf (approximately 1.2 million gsf larger than the No Action condition development) in three buildings: an 80-story building on Site A containing residential and

² Following the completion of the 2009 FEIS, the Applicant entered into a Restrictive Declaration with New York City, which incorporates commitments associated with the design and construction of the platform and new development on the Development Site. The Restrictive Declaration requires the installation of drainage mechanisms on the southern terra firma portion of the Development Site to convey stormwater to the LIRR storm sewer and outfall; the Restrictive Declaration allows for, but does not require, other portions of the Development Site to be connected to the LIRR sewer, subject to a separate agreement between LIRR and the Applicant.

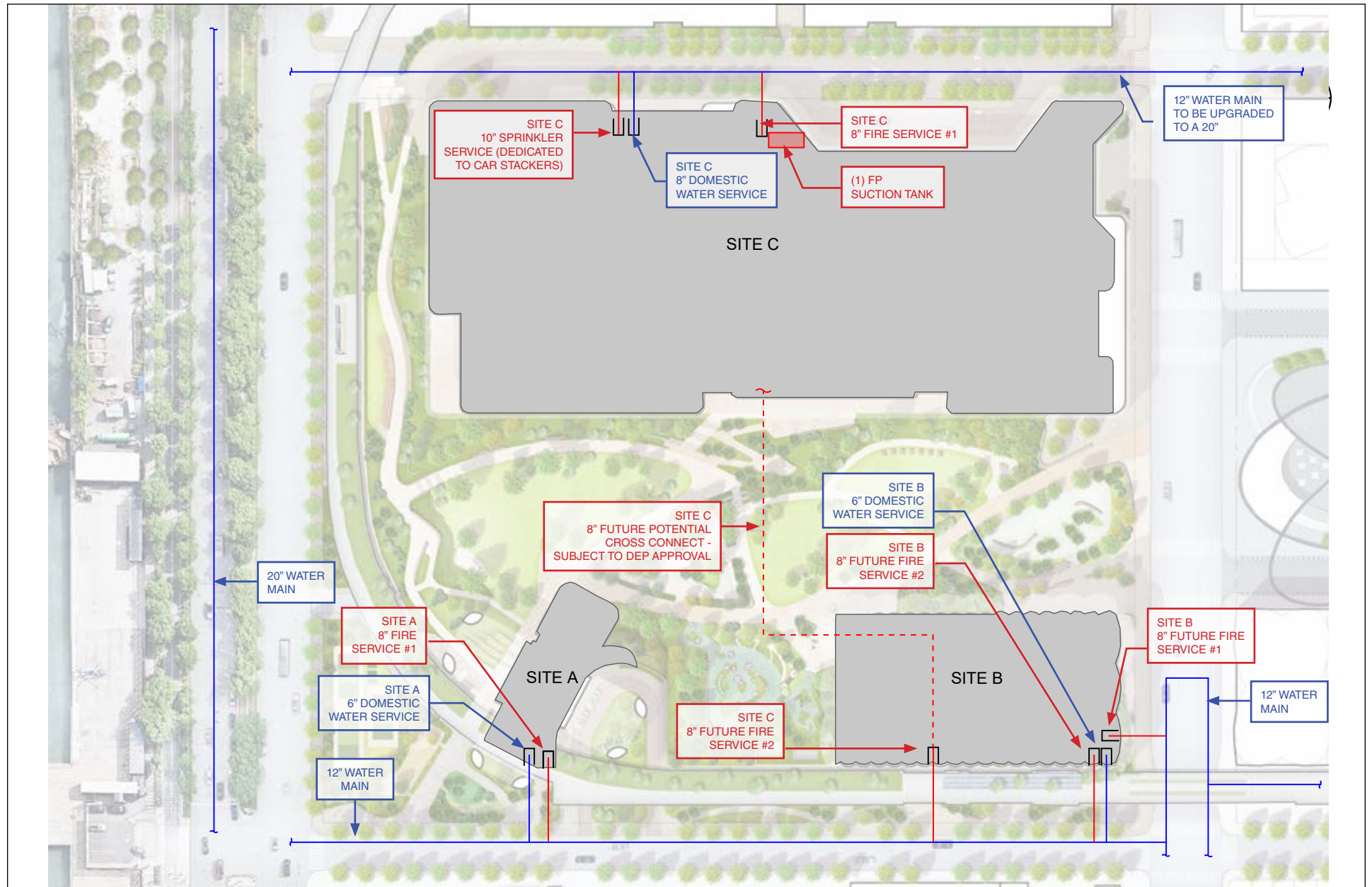
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retail uses; a 74-story tower on a podium on Site B containing office, retail, and day care space, as well as a public school and space for a local cultural institution; and an 80-story (above a 5-story podium) hotel resort with gaming on Site C. In total, Site A and Site B would contain approximately 1.2 million gsf of residential space (1,507 DUs), 146,000 gsf of community facility space, 2.2 million gsf of office space, and 24,600 gsf of retail space; the hotel resort with gaming on Site C would total approximately 2.7 million gsf, consisting of hotel space (1,750 rooms) and gaming and amenities areas, along with associated retail and food and beverage spaces.

The Proposed Project's anticipated connections to water supply and the sewer system (sanitary and stormwater) are shown in **Figure 11-1** and summarized below.

WATER SUPPLY

As shown in **Table 11-5**, the With Action condition on the Development Site would result in a total water demand of 2,050,242 gpd (approximately 2.0 mgd); this would be an increase in incremental water demand of approximately 343,000 gpd as compared to the No Action condition. This represents an approximately 0.03 percent increase in demand on the water supply system compared to the City's average daily water use of approximately 1.1 billion gpd. As noted above, in the No Action condition DEP will construct a new water main in West 33rd Street between Eleventh and Twelfth Avenues (see **Figure 11-1a**). In the With Action condition, the Applicant would construct the new water main as part of the proposed reconfiguration of West 33rd Street. West 33rd Street would remain a City street. With this improvement, the water mains in the area of the Development Site would be capable of handling the increase in water demand. Therefore, there would be no significant adverse impact on the City's water supply.



Proposed Project Preliminary Site Connections
Figure 11-1a

Table 11-5
With Action Condition Water Consumption

Land Use	Water Consumption and Wastewater Generation Rates ¹	Area/Units	Domestic Water/Wastewater Generation (gpd)	Air Conditioning (gpd)
Residential	Domestic: 100 gpd/person ³ A/C: 0.17 gpd/sf	1,208,623 sf (1,507 DUs)	256,200	205,466
School	Domestic: 10 gpd/seat A/C: 0.17 gpd/sf	120,000 sf (750 seats)	7,500	20,400
Community Facility ²	Domestic: 0.10 gpd/sf A/C: 0.17 gpd/sf	26,000 sf	2,600	4,420
Hotel ⁴	Domestic: 120 gpd/person/room A/C: 0.17 gpd/sf	1,599,766 sf (1,750 rooms)	420,000	271,960
Retail ⁵	Domestic: 0.24 gpd/sf A/C: 0.17 gpd/sf	666,155 sf	159,877	113,246
Office	Domestic: 0.10 gpd/sf A/C: 0.17 gpd/sf	2,179,899 sf	217,990	370,583
Project Area—Total Water Demand				2,050,242
Project Area—Total Wastewater Generation				1,064,167
No Action to With Action Incremental Water Supply Demand				343,309
No Action to With Action Incremental Sewage Generation				208,887
Notes: Totals may not sum due to rounding. gpd = gallons per day; DU = dwelling unit ¹ Consumption rates from <i>CEQR Technical Manual</i> Table 13-2, "Water Usage and Sewage Generation Rates for Use in Impact Assessment," unless otherwise noted. ² Includes day care and cultural space; assumed to consume water and generate domestic wastewater at the CEQR Technical Manual rates for office space. ³ Assumes 1.70 residents per DU—average household size of Manhattan Census Tract 99.03, 2020 Census. ⁴ Includes both general and extended-stay hotel space; assumes occupancy of two people per room. ⁵ Includes both non-resort and resort retail, gaming, food/beverage, and resort amenity space.				

SEWER SYSTEM AND WASTEWATER TREATMENT

As shown in **Table 11-5**, the With Action condition on the Development Site is expected to generate 1,064,167 gpd (1 mgd) of daily sanitary sewage. The sanitary sewage generated by the With Action condition would be an incremental increase of 208,887 gpd compared to the No Action condition. The incremental increase in sewage generation would be approximately 0.2 percent of the average daily flow at the North River WRRF and would not result in an exceedance of the WRRF's permitted capacity of 170 mgd. In addition, in accordance with 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 help to further reduce sanitary flows to the WRRF.

Connecting to the City's sewer system requires certification from DEP as part of the building permit process, which is not a discretionary approval. The Applicant would be required to file an SCP for approval from DEP to tie into the sewer system. In this process, before a building permit can be issued, site connection proposals must be certified for sewer availability by DEP. The Applicant would be required to demonstrate that the existing sanitary system could handle the site-specific sanitary flows from the proposed development. Because the City's sewers are sized and designed based on the designated zoning of an area and related population density and surface coverage characteristics, the Proposed Project may result in development that is inconsistent with the design of the existing built sewer system. An ADP would be prepared for the Project Area to reflect the proposed reconfiguration of West 33rd Street. In addition, a site-specific hydraulic analysis of the existing sewer system may be required to determine

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whether the existing sewer system is capable of supporting higher density development and related increases in wastewater flows. The hydraulic analysis calculations would inform the ADP process as necessary. Sewer upgrades may be required at the time of the SCP to accommodate the projected flows from the new development.

As the Proposed Actions are not expected to result in a significant increase in sanitary flows to the sewer system, they would not result in a significant adverse impact to the sanitary sewage conveyance and treatment infrastructure.

STORMWATER FLOWS

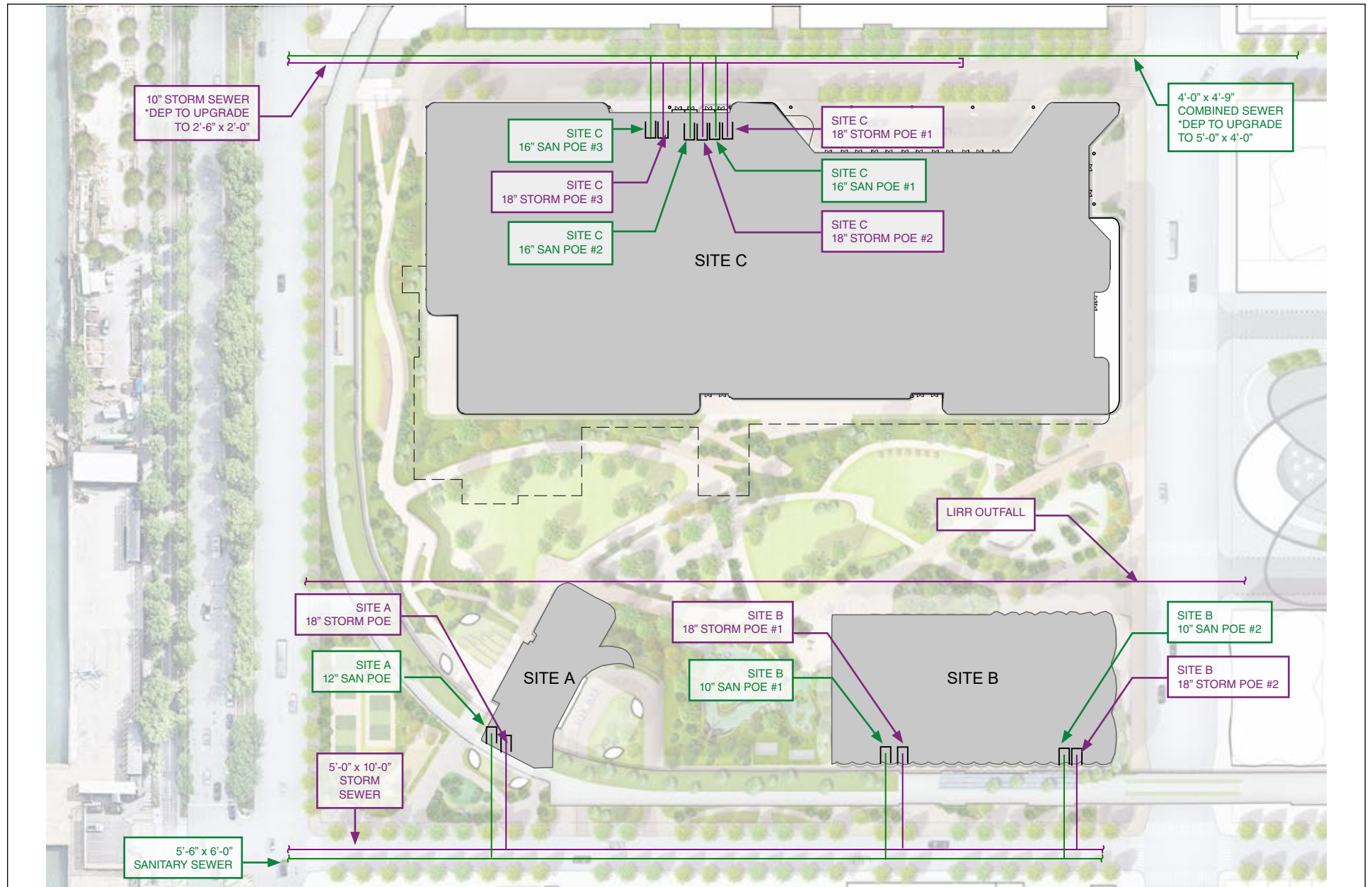
As with the No Action condition, the With Action condition includes construction of a platform over approximately two-thirds of the railyard, as well as new buildings. As a result, the surface area on the Development Site under the With Action condition would be similar to surface coverage under the No Action condition, and the surface area under the With Action condition is assumed to be fully impervious (i.e., equivalent to rooftop space). As with the No Action condition, the Proposed Project would result in an increase in rooftop area on the Development Site and the resulting runoff coefficient as compared to the existing condition (see **Table 11-6**); however, it would not result in an increase in stormwater runoff to the combined sewer system, as the Development Site would be served by separated sewers. Stormwater collected on the platform would be detained on-site and discharged to storm sewers, including potentially the existing LIRR private storm sewer serving the Western Rail Yard (see **Figure 11-1b**). Similarly, stormwater collected on the small terra firma portion of the Development Site not covered by the platform or buildings would be conveyed to the existing LIRR storm sewer.

Table 11-6
With Action Condition Surface Coverage

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other	Grass and Soft Scape	Total
N/A*	Area (percent)	100%	0%	0%	0%	100%
	Surface Area (sf)	571,592	-	-	-	571,592
	Runoff Coefficient	1.00	0.85	-	0.20	1.00
Notes: The Runoff Coefficient is a weighted average. The calculations are based on the DEP Volume Calculation Matrix provided in the <i>CEQR Technical Manual</i> , retrieved March 2024. Totals may not sum due to rounding. * The Development Site would be served by a separated sewer in the No Action Condition, and would not generate stormwater flows into the combined sewer system.						

Using the sanitary and stormwater flow calculations outlined above, the DEP Volume Calculation Matrix was utilized to determine flows for the With Action condition. The calculations from the Volume Calculation Matrix help to determine the change in sanitary and stormwater volumes to the sewer system from existing conditions to With Action condition, and include four rainfall runoff volume scenarios with varying durations.³ The drainage analysis assumes that all stormwater runoff from the Development Site would flow to storm sewers in the With Action condition; therefore, there would be no stormwater runoff to the combined sewer system (as noted above, in the existing condition, stormwater runoff

³ Consistent with the guidance of the *CEQR Technical Manual* and the DEP Volume Calculation Matrix, With Action condition flows are compared to existing conditions rather than No Action conditions.



Proposed Project Preliminary Site Connections
Figure 11-1b

from only the terra firma portion of Development Site would drain into the existing combined sewer system, while the remainder of the Development Site would drain into the LIRR storm sewer). The summary tables of the Volume Calculation Matrix are included in **Table 11-7**.

Table 11-7

**DEP Volume Calculation Matrix:
Existing and With Action Condition Volume Comparison**

Rainfall Volume (in)	Rainfall Duration (hr)	Runoff Volume to SS (MG)	Runoff Volume to CSS (MG)*	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)	Runoff Volume to SS (MG)	Runoff Volume to CSS (MG)*	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)	Increased Total Volume to CSS (MG)*
N-45		Existing				With Action				N-45 Increment
		571,592 sf (13.12 acres)				571,592 sf (13.12 acres)				
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.17
0.40	3.80	0.11	0.03	0.00	0.03	0.14	0.00	0.17	0.17	0.17
1.20	11.30	0.32	0.09	0.00	0.10	0.43	0.00	0.50	0.50	0.41
2.50	19.50	0.66	0.20	0.00	0.20	0.89	0.00	0.86	0.86	0.67
Notes: Totals may not sum due to rounding.										
*Assumes no on-site detention or Best Management Practices (BMPs) for purposes of calculations.										
SS = Storm Sewer; CSS = Combined Sewer System; MG = Million Gallons										

As shown in **Table 11-7**, in all rainfall scenarios the total flows to regulator N-45, which controls flow to SPDES Outfall No. 027, would increase: during storm events with up to 2.5 inches of rainfall, the increase would be up to 0.67 million gallons. However, the increase in volume under the With Action condition as compared with the existing conditions is entirely attributable to the increase in sanitary flow from development on the Development Site, which has minimal sanitary sewage generation in the existing condition. There would not be an increase in stormwater runoff to the combined sewer system, as all stormwater collected on the Development Site in the With Action condition would be conveyed to separated storm sewers.

In addition, the volume matrix calculations presented in **Table 11-7** do not reflect the use of any sanitary and stormwater source control BMPs to reduce sanitary volume and stormwater runoff volumes to the sewer system. As noted above, the Proposed Project would incorporate low-flow plumbing fixtures to reduce sanitary flow as required by the New York City Plumbing Code. In addition, stormwater detention would be required as part of the DEP SCP application process for new buildings connecting to the City's sewer system. As part of the SCP permit approval processes, developments must be in compliance with the required on-site stormwater volume requirements and stormwater release rate as detailed in the Unified Stormwater Rule. The performance standard is intended to reduce peak discharges to the City's sewer system during rain events by requiring greater onsite storage of stormwater runoff and slower release to the sewer system. The implementation of DEP's stormwater performance standard over time is expected to provide additional capacity to the existing sewer system, thereby improving its performance. The performance standard is a key element of the New York City Green Infrastructure Plan to promote green infrastructure and improve water quality in the City's surrounding waterbodies.

In addition, as required by the RD, the Applicant would develop a SWPPP for post-construction stormwater management which would decrease the rate and quantity and improve the quality of stormwater discharged from the Proposed Project as compared to baseline conditions. Specific BMP measures for the Proposed Project would be confirmed

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with preparation of the SWPPP and consultation with DEP when specific designs are advanced, but are expected to include use of detention tanks, roof detention systems, and green roofs (particularly on the public open space).

As noted above, the Proposed Project would result in development that is inconsistent with the design of the existing built sewer system. A Hydraulic Study and Drainage Proposal and a Private Sewer plan would need to be prepared for the Development Site for DEP review and approval. DEP currently has a Drainage Plan that shows the installation of a sanitary and storm sewer in West 33rd Street which would need to be installed as a part of this process.

The Proposed Actions would not result in increased stormwater flows to the City's combined sewer system that may be discharged as CSOs during rain events, as stormwater on the Development Site would be directly discharged to the Hudson River by separated storm sewers. Because of the available capacity of the North River WRRF, the projected increased in sanitary sewage flows to the sewer system would not have a significant adverse impact on water quality. In addition, with the development of a SWPPP and incorporation of BMP measures to meet the City site connection requirement, development under the Proposed Actions would not result in a significant increase in stormwater runoff or CSO volumes/frequencies as compared to existing conditions. Therefore, it is concluded that the Proposed Actions would not result in significant adverse impacts to local water supply or wastewater and stormwater conveyance and treatment infrastructure. *