HERKIMER-WILLIAMS EIS
Chapter 10: Water and Sewer Infrastructure

A. INTRODUCTION

This chapter assesses the potential effects of the Proposed Actions on the City's water supply, wastewater treatment, and stormwater management infrastructure in accordance with the 2021 *City Environmental Quality Review* (CEQR) *Technical Manual*. As described in **Chapter 1, "Project Description,"** approval of the Proposed Actions would facilitate the development of five new buildings and potentially, a small retail kiosk on the projected development sites in the Project Area. The new mixed-use development on the projected development sites would either contain a combined total of approximately 1,589,202 gross square feet (gsf) under the Proposed Development, or a combined total of approximately 1,620,348 gsf under the Alternate Community Facility Scenario. A Reasonable Worst Case Development Scenario (RWCDS) has been established for the Proposed Actions for an analysis year of 2036. Compared to the Alternate Community Facility Scenario, the Proposed Development would generate greater demand for water and produce a greater amount of wastewater. Therefore, the water demand and wastewater generation of the Proposed Development is assessed herein.

B. PRINCIPAL CONCLUSIONS

A preliminary assessment was conducted based on the methodology set forth in the 2021 *CEQR Technical Manual* and determined that the Proposed Actions would not result in any significant adverse impacts on water and sewer infrastructure.

Water Supply

Compared to the No-Action condition, the Proposed Development would generate an incremental water demand of approximately 506,294 gallons per day (gpd) (including water related to sanitary and domestic uses). While this would represent an increase in demand for the New York City water supply system, it does not meet the 2021 *CEQR Technical Manual* threshold of more than one million gallons per day (mgd), which would require a detailed analysis. Therefore, an analysis of water supply is not warranted as it is expected that there would be adequate water service to meet the incremental water demand generated by the Proposed Development under the Proposed Actions and there would be no significant adverse impacts on the City's water supply.

Wastewater Treatment

Based on the preliminary assessment presented herein, it has been determined that the Proposed Actions would not result in significant adverse impacts on wastewater treatment. The Proposed Development under the Proposed Actions would generate approximately 418,286 gpd of sanitary sewage, an increase of approximately 404,520 gpd compared to the No-Action condition. With the Proposed Actions, wastewater generated by the Proposed Development would continue to be treated as it is now, in the 26th Ward Wastewater Resource Recovery Facility (WRRF). This additional flow of wastewater is not expected to cause a significant adverse impact to wastewater treatment, as the 26th Ward WRRF has a permitted capacity of 85 mgd and is currently receiving 50 mgd on average (refer to **Table 10-2**). Based

on the average flow, the 26th Ward WRRF currently has an average reserve capacity of 35 mgd. Therefore, the 26th Ward WRRF would continue to have a reserve in treatment capacity in the future with the Proposed Actions.

Stormwater Conveyance

Based on the preliminary assessment presented herein, it has been determined that the Proposed Actions would not result in significant adverse impacts on stormwater conveyance. During wet weather, and depending on the rainfall volume and duration, the total volumes to the combined sewer system produced by the Proposed Development would range from approximately 0.07 to 0.50 million gallons (MG). Compared to the No-Action condition, this would represent an increase in combined sewer flows of up to approximately 0.34 MG. Based on detention requirements of the City's adopted Unified Stormwater Rule (USWR), it is concluded that the Proposed Actions would not result in significant adverse impacts to the wastewater treatment and stormwater conveyance infrastructure.

C. METHODOLOGY

Water Supply

According to the 2021 *CEQR Technical Manual*, a preliminary water supply infrastructure analysis is needed if a project would result in an exceptionally large demand for water (e.g., more than one mgd) or is located in an area that experiences low water pressure (e.g., areas at the end of the water supply distribution system). The projected development sites in the Project Area are located in the East New York neighborhood of Brooklyn Community District (CD) 5 and is not located in an area that experiences low water pressure (i.e., it is not located at the end of the water supply distribution system, such as the Rockaway Peninsula or Coney Island). The Proposed Actions under the Proposed Development would result in an incremental water demand of approximately 506,294 gpd (including water related to sanitary and domestic uses) compared to the No-Action condition. While this would represent an increase in demand on New York City's water supply system, the increase in demand does not meet the 2021 *CEQR Technical Manual* threshold requiring a detailed analysis (e.g., more than one million mgd). Therefore, an analysis of water supply is not warranted for the Proposed Actions, as it is expected that there would be adequate water service to meet the incremental water demand generated by the Proposed Actions. Accordingly, the Proposed Actions would not result in significant adverse impacts on the City's water supply system. It is expected that there would be adequate water service and existing infrastructure to meet the incremental water demand generated by the Proposed Actions. The New York City Department of Environmental Protection (DEP) has determined that existing water supply should be sufficient to accommodate the estimated increase in water demand associated with the Proposed Actions (refer to **Appendix D** for DEP correspondence in a letter dated September 3, 2024).

Wastewater Treatment

For wastewater treatment, a preliminary wastewater treatment analysis is warranted if a project is located in a combined sewer area and would result in the incremental development of at least 400 residential units or 150,000 sf or more of commercial space in Brooklyn. As the projected development sites in the Project Area are located in a combined sewer area in Brooklyn and the Proposed Actions would result in the incremental development of at least 400 residential units or 150,000 sf or more of commercial space, a preliminary assessment of wastewater treatment is provided herein.

Stormwater Conveyance

Existing and future sanitary sewage generation is calculated for the projected development sites in the Project Area based on use generation rates set forth in Table 13-2 of the 2021 *CEQR Technical Manual*. DEP's Volume Calculation Matrix is then used to calculate the overall combined sanitary sewage and stormwater runoff volume discharged to the combined sewer system for four rainfall volume scenarios with varying durations. Stormwater runoff volumes are determined by estimating the amount of pervious and impervious surfaces on the projected development sites in the Project Area. In accordance with 2021 *CEQR Technical Manual* guidance, the ability of the City's stormwater conveyance infrastructure to handle the estimated sanitary sewage and stormwater runoff generated from the development generated by the Proposed Actions is assessed by estimating and comparing existing, No-Action condition, and With-Action condition sanitary sewage and stormwater runoff generation.

D. EXISTING CONDITIONS

Wastewater Treatment

The majority of New York City's wastewater treatment system is comprised of the sewer network beneath City streets and the 14 Wastewater Resource Recovery Facilities (WRRFs) located throughout the City. Many of New York City's sewers are combined sewers as they receive both sanitary wastewater and stormwater runoff. Wastewater generated in a "drainage basin" (the area served by a WRRF) is conveyed through a network of combined sewers to the WRRF. The projected development sites in the Project Area are served by combined sewers that collect both sanitary sewage and stormwater. The projected development sites in the Project Area are located within the drainage basin for the 26th Ward WRRF, which serves approximately 283,428 people in the eastern section of Brooklyn and is located at 1552 Van Siclen Avenue in Brooklyn.

Collection sewers can be one to two feet in diameter on side or local streets, and three or four feet in diameter under larger roadways, which connect to trunk sewers, which are generally five to seven feet in diameter. During dry weather, regulators built into the combined sewer system direct flows to interceptor sewers leading to the WRRFs. These large interceptor sewers (often up to 10 or 12 feet in diameter) bring the wastewater to the WRRFs for treatment. Near the projected development sites in the Project Area, there is an existing 12-inch combined sewer pipe that runs on East New York Avenue between Fulton Street and Atlantic Avenue and connects to a combined sewer pipe that flows south to Hinsdale Street. Additionally, a 12-inch combined sewer pipe carries wastewater flows from Fulton Street to Atlantic Avenue along Van Sinderen Avenue, and a 12-inch combined sewer pipe carries wastewater flows east from Fulton Street, connecting to Broadway before flowing southward to Alabama Avenue.

Sanitary Flows (Dry Weather)

Under existing conditions, the projected development sites in the Project Area generate approximately 13,765 gpd of sanitary sewage, with a total water demand of approximately 26,061 gpd (refer to **Table 10-1**).

TABLE 10-1
Existing Water Consumption and Wastewater Generation on the Projected Development Sites

Land Use	Rate[1]	Area (gsf)	Domestic (gpd)	A/C (gpd)
Residential	100 gpd per resident	0	0	0
Retail	Domestic: 0.24 gpd/sf; A/C: 0.17 gpd/sf	0	0	0
Commercial Office	Domestic: 0.10 gpd/sf; A/C: 0.17 gpd/sf	9,000	900	1,530
Community Facility	Domestic: 0.10 gpd/sf; A/C: 0.17 gpd/sf	12,904	1,290	2,194
Light Industrial	Domestic: 0.10 gpd/sf; A/C: 0.17 gpd/sf	50,422	11,575	8,572
		Total Sanitary (gpd)	***13,765***	
		Total Water Demand (gpd)	***26,061***	

Note:
[1] Uses 2021 *CEQR Technical Manual* water demand rates from Table 13-2 "Water Usage and Sewer Generation rates for Use in Impact Assessment."

At the 26th Ward WRRF, wastewater is fully treated by physical and biological process before it is discharged into Jamaica Bay. The quality of the treated wastewater (effluent) is regulated by a State Pollutant Discharge Elimination System (SPDES) permit issued by the New York State Department of Environmental Conservation (NYSDEC), which establishes limits for effluent parameters (i.e., suspended solids, fecal coliform bacteria, and other pollutants). As the volume of flow to a WRRF affects the level of treatment a facility can provide, the maximum permitted capacity for the 26th Ward WRRF is 85 mgd. As presented in **Table 10-2**, the average daily flows to the 26th Ward WRRF for the 12-month period ending in July 2024 was approximately 50 mgd, which is approximately 35 mgd below the maximum permitted capacity of 85 mgd.

TABLE 10-2
Existing 26th Ward WRRF Average Daily Sewer Flows

Year	Month	Average Daily Flows (mgd)
2023	August	47
	September	57
	October	56
	November	50
	December	54
2024	January	54
	February	44
	March	55
	April	47
	May	42
	June	45
	July	43
12-Month Average		***50***

Source: DEP "Monthly Operating Efficiency" tables, August 2023 through July 2024.

Stormwater Conveyance

During and immediately after wet weather events, combined sewers can experience a much larger flow due to stormwater runoff collection. Near the projected development sites in the Project Area, stormwater runoff from impermeable surfaces is collected by catch basins along streets and conveyed by the City's interceptor sewers to the 26th Ward WRRF. During storm events, the regulators built into the combined sewer system allow only twice the dry weather design flow into interceptor sewers, and any

excess flow is directed to outfalls into the local waterway (e.g., Jamaica Bay) as combined sewer overflow (CSO).

Stormwater Flows (Wet Weather)

The projected development sites in the Project Area have an existing total lot area of approximately 120,371 sf. As described in **Chapter 1 "Project Description,"** the projected development sites in the Project Area are occupied by unimproved or vacant lots — both paved and unpaved, and several one- to three-story buildings, resulting in an existing runoff coefficient of 0.81 as shown in **Table 10-3**.

TABLE 10-3
Projected Development Sites Runoff Coefficient – Existing Conditions[1]

Surface Type	Roof	Pavement and Walks	Other	Grass and Softscape	Total
Area	49%	33%	0%	18%	100%
Surface Area (sf)	58,549	40,148	0.0	21,674	120,371
Runoff Coefficient[1]	1.00	0.85	0.85	0.20	0.81

Note:
[1] Weighted runoff coefficient calculations are based on the DEP Flow Volume Calculation Matrix provided in the 2021 *CEQR Technical Manual*.

For the analysis, standard DEP runoff coefficients were used to calculate the amount of stormwater runoff for various rainfall intensities and durations for the projected development sites in the Project Area, with rainfall ranging from 0.00 inches to 2.50 inches over durations of 3.80 to 19.50 hours. **Table 10-4** shows the combined stormwater runoff and wastewater generation for the projected development sites in the Project Area under existing conditions. As shown in **Table 10-4**, the projected development sites in the Project Area currently generate between 0.00 and 0.16 MG of stormwater and wastewater runoff for the different rainfall intensities, which are assumed to flow untreated into Jamaica Bay.

TABLE 10-4
Projected Development Sites Stormwater and Sanitary Sewage Flow Volumes – Existing Conditions

Rainfall Volume (in.)	Rainfall Duration (hr.)	Runoff Volume Direct Drainage	Runoff Volume to CSS (MG)	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)
0.00	3.80	0.00	0.00	0.00	0.00
0.40	3.80	0.00	0.02	0.00	0.02
1.20	11.30	0.00	0.07	0.00	0.07
2.50	19.50	0.00	0.15	0.01	0.16

Notes:
CSS = combined sewer system; MG = million gallons.

E. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO-ACTION CONDITION)

In the 2036 future without the Proposed Actions, the projected development sites in the Project Area would remain as under existing conditions.

Wastewater Treatment and Stormwater Conveyance

In the No-Action condition, the projected development sites in the Project Area would continue to be served by the 26th Ward WRRF. In the No-Action condition, as under existing conditions, the projected development sites in the Project Area would generate approximately 13,765 gpd of sanitary sewage

during dry weather (refer to **Table 10-1**), with total wet weather flows of between 0.00 and 0.16 MG, depending on rainfall intensity and duration (refer to **Table 10-4**).

F. THE FUTURE WITH THE PROPOSED ACTIONS (WITH-ACTION CONDITION)

In the 2036 With-Action condition, the Proposed Actions would be approved, and the projected development sites in the Project Area would be redeveloped with five new buildings and potentially, a small retail kiosk containing a combined total of approximately 1,589,202 gsf, including approximately 435,766 gsf of commercial office space, 113,760 gsf of commercial retail space, 834,763 gsf of residential space (1,112 DUs), 22,985 gsf of community facility space, and 98,483 gsf of light industrial space, as well as approximately 174 accessory parking spaces (approximately 83,445 gsf) and 20,080 sf of PAA space.

Wastewater Treatment

Sanitary Flows (Dry Weather)

As described previously, the projected development sites in the Project Area are served by combined sewers. In the future with the Proposed Actions, wastewater generated on the projected development sites in the Project Area would continue to be treated by the 26th Ward WRRF, which has a SPDES-permitted dry weather flow capacity of 85 mgd. As shown in **Table 10-5**, the Proposed Actions and resultant Proposed Development would generate approximately 418,286 gpd of sanitary sewage, with a total water demand of approximately 532,355 gpd. Compared to the No-Action condition, this sanitary sewage generation represents an incremental increase of approximately 404,520 gpd (0.40 mgd).

TABLE 10-5
Expected Water Consumption and Wastewater Generation on the Projected Development Sites – 2036 No-Action vs. 2036 With-Action Conditions

	Land Use	Area (gsf)	DUs (Residents)	Domestic Use (gpd)[1]	Air Conditioning (gpd)[1]
No-Action Condition	Residential	0	0 (0)	0	N/A
	Retail	0	-	0	0
	Office	9,000	-	900	1,530
	Light Industrial	50,422	-	11,575	8,572
	Community Facility	12,904	-	1,290	2,194
	Total No-Action Water Supply Demand				***26,061***
	Total No-Action Sewage Generation				***13,765***
With-Action Condition	Residential	834,763	1,112 (3,225)	322,500	N/A
	Retail	113,760	-	27,302	19,339
	Office	435,766	-	43,577	74,080
	Light Industrial	98,483	-	22,609	16,742
	Community Facility	22,985	-	2,299	3,907
	Total With-Action Water Supply Demand				***532,355***
	Total With-Action Sewage Generation				***418,286***
Increment	***Incremental Water Supply Demand***				***506,294***
	Incremental Sewage Generation				***404,520***

Note:
[1] Uses 2021 *CEQR Technical Manual* water demand rates from Table 13-2 "Water Usage and Sewer Generation rates for Use in Impact Assessment."

As shown in **Table 10-5**, the estimated amount of incremental sanitary sewage generated by the Proposed Development would be approximately 404,520 gpd. The Proposed Development's incremental sanitary

sewage would represent approximately 0.009 percent of the average daily flow of 50 mgd at the 26th Ward WRRF and would not result in an exceedance of the 26th Ward WRRF's permitted capacity of 85 mgd.

Connecting to the City's sewer system requires certification from DEP as part of the building permit process, which is not a discretionary approval. Before becoming operational, the Proposed Development would be required to file a site connection proposal for approval from DEP to tie into the adjacent combined sewer system. To obtain a sewer connection permit from DEP, the projected development sites in the Project Area would be required to demonstrate that the existing sewer system could handle the increased flows due to operation of the future buildings. As part of the site connection approval process, a hydraulic analysis of the existing sewer system would likely be required to determine whether the existing sewer system is capable of supporting additional development and the related increase in wastewater flows, or whether there will be a need to upgrade the existing sewer system. In addition, there may be a need to amend the existing drainage plan based on the hydraulic analysis calculations. These analyses would be undertaken prior to construction of the future buildings on the projected development sites in the Project Area and would be coordinated with DEP for review and approval. In addition, in accordance with the New York City Plumbing Code (Local Law 33 of 2007), while not accounted for in the quantitative analysis, the future buildings on the projected development sites in the Project Area would be required to utilize low-flow plumbing fixtures, which would reduce sanitary flows to the 26th Ward WRRF. Therefore, the Proposed Actions would not result in a significant adverse impact to the City's wastewater treatment infrastructure.

Stormwater Conveyance

Stormwater Flows (Wet Weather)

As shown in **Table 10-6**, development of the Proposed Development would result in an increase in the amount of roof area at the projected development sites in the Project Area (increasing from 49 percent to approximately 83 percent) and a decrease in the amount of grass and softscape (decreasing from 18 percent to 17 percent) and the amount of pavement and walks (decreasing from 33 percent to zero percent). Based on these anticipated changes in the surface areas of the projected development sites in the Project Area, the weighted runoff coefficient for the projected development sites in the Project Area would increase from 0.81 to 0.87 in the With-Action condition.

TABLE 10-6
Projected Development Sites Runoff Coefficient – With-Action Condition[1]

Surface Type	Roof	Pavement and Walks	Other	Grass and Softscape	Total
Area	83%	0%	0%	17%	100%
Surface Area (sf)	100,291	0.0	0.0	20,080	120,371
Runoff Coefficient[1]	1.00	0.85	0.85	0.20	0.87

Note:
[1] Weighted runoff coefficient calculations are based on the DEP Flow Volume Calculation Matrix provided in the 2021 *CEQR Technical Manual*.

The DEP Flow Volume Calculation Matrix was completed for the With-Action condition and compared to the existing conditions presented in **Table 10-4**. The calculations from the DEP Flow Volume Calculation Matrix help to determine the change in wastewater flow volumes to the combined sewer system from the existing conditions to the With-Action condition, based on four rainfall volume scenarios with varying durations. The drainage analysis assumes that all stormwater runoff from the projected development sites in the Project Area would flow via the existing combined sewer infrastructure adjacent to the projected

development sites in the Project Area. The DEP Flow Volume Calculation Matrix calculations are presented in **Table 10-7**.

TABLE 10-7
Projected Development Sites Stormwater and Sanitary Sewage Flow Volumes – With-Action vs. Existing Conditions

Rainfall Volume (in.)	Rainfall Duration (hr.)	Runoff Volume Direct Drainage	Runoff Volume to CSS (MG)	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)	*Incremental Volume to CSS over Existing Conditions (MG)*[1]
0.00	3.80	0.00	0.00	0.07	0.07	*0.07*
0.40	3.80	0.00	0.03	0.07	0.10	*0.08*
1.20	11.30	0.00	0.08	0.20	0.28	*0.21*
2.50	19.50	0.00	0.16	0.34	0.50	*0.34*

Notes:
CSS = combined sewer system; MG = million gallons
[1] Refer to **Table 10-4**.

As shown in **Table 10-7**, in the With-Action condition, approximately 0.00 to 0.16 MG of stormwater and approximately 0.07 to 0.34 MG of sanitary sewage would be conveyed to the existing combined sewers, for a total of approximately 0.07 to 0.50 MG of combined volumes to the combined sewer system. Compared to existing conditions, the total wet weather flows from the projected development sites in the Project Area would increase between 0.07 to 0.34 MG, depending on rainfall duration and intensity.

The projected development sites in the Project Area are located in an area that is served by combined sewer infrastructure. As previously described, the wastewater collection system adjacent to the projected development sites in the Project Area consists of several 12-inch combined sewer pipes beneath Fulton Street, Broadway, Atlantic Avenue, and Van Sinderen Avenue. Flows are directed southward to the 26th Ward WRRF, located approximately 2.7 miles to the south of the projected development sites in the Project Area. Given the size of the combined sewer systems in the vicinity of the projected development sites in the Project Area, it is anticipated that there is ample capacity in the adjacent sewer infrastructure to accommodate the additional stormwater and sanitary flows generated by the Proposed Development on the projected development sites in the Project Area.

Stormwater Best Management Practices

The DEP Flow Volume Matrix calculations presented above do not reflect the use of any stormwater and sanitary source control Best Management Practices (BMPs) to reduce stormwater runoff volumes and sanitary flows to the combined sewer system. It should also be noted that DEP has published a Unified Stormwater Rule ("USWR") that increases the amount of stormwater to be managed on-site as part of new development. For sites within municipal separate storm sewer system (MS4) areas, the release rate will be limited to 1.0 cubic feet per second (cfs) per acre or 0.046 cfs, whichever is greater. The new rules became effective on February 15, 2022, and will apply to the projected development sites in the Project Area.

Stormwater BMPs would be required as part of the DEP site connection approval process in order to bring the future buildings on the projected development sites in the Project Area into compliance with the required stormwater release rate in effect at the time of construction. Specific BMP methods will be determined with further refinement of the design of the future buildings and in consultation with DEP.

The implementation of low-flow fixtures, as required per the New York City Plumbing Code, Local Law 33 of 2007, and the U.S. Environmental Protection Agency's WaterSense Program, would help control

sanitary flows from the projected development sites in the Project Area. In addition, the following typical BMP measures could be used to help manage stormwater flows: the implementation of BMPs described in the New York City Green Infrastructure Plan and/or green technologies, such as blue and green roofs, subsurface detention and infiltration, porous pavement, enhanced tree pits, and rain cisterns, depending on conditions at each projected development site.

Therefore, with the incorporation of appropriate BMPs that would be required as part of the site connection approval process to be reviewed and approved by DEP, the overall volumes of sanitary sewer discharge and stormwater runoff, as well as the peak stormwater runoff rate, would be reduced. Sewer conveyance near the projected development sites in the Project Area and the treatment capacity at the 26th Ward WRRF is sufficient to handle wastewater flows that would result from the Proposed Development. Therefore, the Proposed Actions would not result in significant adverse impacts to the wastewater treatment and stormwater conveyance infrastructure.