# Chapter 10: Water and Sewer Infrastructure

## A. INTRODUCTION

This chapter assesses 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 2025 *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 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.

The co-Applicants, the New York City Educational Construction Fund (ECF) and 240 Nassau Street Holdings, LLC, are seeking zoning approvals, including zoning map and text amendments, a special permit, and other City and State approvals and potential future U.S. Department of Housing and Urban Development (HUD) actions (the "Proposed Actions"), to facilitate the construction of a proposed mixed-use development on Block 110, Lot 25 and Block 111, Lot 1 (the "Project Site") in Downtown Brooklyn, Community District (CD) 2. The proposed development would include four new buildings totaling approximately 1.7 million gross square feet (gsf), including public school facilities; residential, retail, and community facility space; cultural center space; and open space (the "Proposed Project").

The Proposed Actions include the transfer, reallocation, and lease of property among 240 Nassau Street Holdings, LLC, ECF, and the City of New York to allow for the Proposed Project and ECF financing and discretionary zoning approvals from the New York City Planning Commission (CPC) and New York City Council. A detailed description of the Proposed Project and the approvals needed to facilitate the Proposed Project is presented in Chapter 1, "Project Description."

### PRINCIPAL CONCLUSIONS

The Proposed Actions would result in increased flows to the City's combined sewer system during rain events due to an increase in sanitary flow at the Project Site. However, the Proposed Project would incorporate best management practices (BMP) to meet the City's site connection requirements and compliance with the Unified Stormwater Rule. The BMPs would result in decreased peak stormwater runoff rates compared to existing conditions. Therefore, the Proposed Actions would not contribute to increased combined sewer overflow (CSO) events. In addition, because of the available capacity at the Newtown Creek Wastewater Resource Recovery Facility (WRRF) and the incorporation of BMP measures, the Proposed Actions would not result in significant adverse impacts to wastewater and stormwater conveyance and treatment infrastructure.

## B. METHODOLOGY

According to the *CEQR Technical Manual*, an analysis of a project's impact on the water supply system should be conducted only if a project would have exceptionally large demand for water (generally over 1 million gallons per day [gpd]), or if it is located in an area that experiences low water pressure (e.g., areas at the end of the water supply distribution system such as the Rockaway Peninsula and Coney Island). The Proposed Actions do not meet any of these criteria,[1] and therefore, an analysis of water supply is not warranted.

The *CEQR Technical Manual* indicates that for wastewater and stormwater conveyance and treatment analyses in Brooklyn, a preliminary assessment is warranted if a project is located in a combined sewer area and would have an incremental increase above the future without the Proposed Actions (the "No Action" condition) of 400 dwelling units (DUs) or 150,000 square feet (sf) of commercial, public facility, and institution and/or community facility space or more. Since the Project Site is located in a combined sewer area in Brooklyn and the Proposed Project would exceed these thresholds, 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 provides:

- A description of the existing water and sewer infrastructure serving the Project Site.
- A preliminary analysis that estimates water demand and sewage generation on the Project 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 New York City Department of Environmental Protection's (DEP) Volume Calculation Matrix. The preliminary analysis then forecasts water demand and sewage and stormwater generation by the Proposed Actions based on *CEQR Technical Manual* guidelines.
- An assessment of the effects of the future with the Proposed Actions (the "With Action" condition) 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.

## C. EXISTING CONDITIONS

### SEWER SYSTEM AND WASTEWATER TREATMENT

The Project Site is located within an area of Brooklyn that is served by a combined sewer system that collects both sanitary sewage and stormwater. In periods of dry weather, the combined sewers in the streets adjacent to the Project Site, which are sized based on the density levels permitted by the zoning, convey only sanitary sewage. Along Concord Street, there is a combined sewer and a relief combined sewer, both of which flow east and connect to a relief combined sewer that flows north along Navy Street. Along Nassau Street, a

[1] As shown in **Table 10-5**, the Proposed Project would result in a total water demand of 616,210 gpd and would not exceed 1 million gpd. Further, DEP has determined that existing water supply should be sufficient to accommodate the estimated increase in water demand associated with the Proposed Actions (see **Appendix E** for DEP correspondence in a letter dated May 27, 2026).

combined sewer flows east that connects to the relief combined sewer that flows north along Navy Street. From these combined sewers, flow is conveyed east to Regulators NC-B3 and NC-B4. Regulators are the structures that control the flow of sewage to interceptors (i.e., larger sewers that connect the combined sewer system to the City's sewage treatment system). NC-B3 and NC-B4 control flow to the interceptor that conveys sanitary sewage from the Project Site to the Newtown Creek WRRF.

At the Newtown Creek WRRF, wastewater is fully treated by physical and biological processes before it is discharged into the East River. The quality of the treated wastewater (effluent) is regulated by a New York State Pollution Discharge Elimination System (SPDES) permit issued by the New York State Department of Environmental Conservation (NYSDEC). The SPDES permit establishes limits for effluent parameters (i.e., suspended solids, fecal coliform bacteria, and other pollutants). Since the volume of flow to a WRRF affects the level of treatment a plant can provide, the maximum permitted capacity for the Newtown Creek WRRF is 310 million gpd. The average monthly flow over the past 12 months for which data are available[2] is 192 million gpd, well below the maximum permitted level.

During and immediately after wet weather, the combined sewers can experience a much larger flow due to storm water runoff collection. To control flooding at the Newtown Creek WRRF, the regulators built into the system allow only approximately twice the amount of the designed dry weather flow into the interceptors. The interceptors then take the allowable flow to the Newtown Creek WRRF, while the excess flow is discharged to the nearest waterbody as CSO. In wet weather, sanitary and stormwater runoff from the Project Site is conveyed to CSO outfall NCB-014, located on the Wallabout Channel, adjacent to the Brooklyn Navy Yard.

## SANITARY FLOWS

The eastern portion of the Project Site (Block 111, Lot 1) is occupied by P.S. 287, also known as the Dr. Bailey K. Ashford school, which is operated by the New York City Department of Education (DOE), and Community Roots Charter School. The western portion of the Project Site (Block 110, Lot 25) is occupied by the Madison Square Boys and Girls Club and owned by 240 Nassau Street Holdings, LLC.

As shown in **Table 10-1**, the existing uses on the Project Site currently generate 8,038 gpd of sanitary sewage. For purposes of analysis, the amount of sanitary sewage is estimated as all water demand generated on the Project Site except water used by air conditioning, which is typically not discharged to the sewer system.

[2] Twelve-month period through July 2025.

**Table 10-1**
**Existing Condition Water Consumption and Sewage Generation**

| Use | Floor Area (gsf) | Rate[1] | Consumption (gpd) |
|---|---|---|---|
| **Community Facility[2]** | | | |
| Domestic | 24,180 | 0.10 gpd/sf | 2,418 |
| Air Conditioning | 24,180 | 0.17 gpd/sf | 4,111 |
| **School** | | | |
| Domestic | 114 (students)[3] | 10 gpd/seat (student) | 5,620 |
| Air Conditioning | 110,000 | 0.17 gpd/sf | 18,700 |
| | | **Total Water Supply Demand** | **30,849** |
| | | **Total Sewage Generation** | **8,038** |

**Notes:**
[1] Rates are from the *CEQR Technical Manual*, Table 13-2.
[2] Utilizes the "Commercial/Office" use category.
[3] Current utilization.

## STORMWATER FLOWS

The Project Site is approximately 80,000 sf (1.83 acres) and contains the two buildings occupied by the existing schools and the Madison Square Boys and Girls Club, as noted above, as well as paved areas. **Table 10-2** summarizes the surface areas on the Project Site, as well as the weighted runoff coefficient (the fraction of precipitation that becomes surface runoff for each surface type).

**Table 10-2**
**Existing Condition Surface Coverage**

| Affected CSO Outfall | Site | Roof[2] | Pavement and Walkways | Other | Grass and Soft Scape | Total |
|---|---|---|---|---|---|---|
| NCB-014 | Total Surface Area (acres) | 1.13 | 0.64 | 0 | 0.05 | 1.83 |
| | Area (percent) | 62 | 35 | 0 | 3 | 100 |
| | Runoff Coefficient[1] | 1.00 | 0.85 | N/A | 0.20 | **0.92** |

**Notes:**
N/A – not applicable
Totals may not sum due to rounding.
[1] Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual*.
[2] Estimates based on New York City Department of Information Technology and Telecommunications Building Footprints and Project Site from MapPluto data.

### *UNIFIED STORMWATER RULE*

In February 2022, DEP adopted the Unified Stormwater Rule, which imposes on-site stormwater management requirements for development projects in combined sewer areas. The Unified Stormwater Rule was an update to the previous regulations (2012 Stormwater Rule) that reduced 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 the Unified Stormwater Rule.

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 Application (SCP). Additionally, under the Chapter 19.1 amendments, sites that disturb 20,000 sf or more of soil or increase impervious surfaces by 5,000 sf or more will also be required to manage the Water Quality Volume (WQvi), currently defined as 1.5 inches 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 is expected to result in substantial improvements to the way developments manage stormwater compared with the 2012 Stormwater Rule. In some cases, stormwater will be entirely prevented from entering the sewer system through retention and, in most cases, stormwater that does enter the system will be reduced and/or treated and released at a lesser rate, allowing the system to operate more efficiently during peak wet weather events. In combined sewersheds such as the portion of Brooklyn that contains the Project Site, the Unified Stormwater Rule is expected to lead to a reduction in CSO volume as lots redevelop over time. The analyses of stormwater flows presented in this assessment account for the recommendations of the Unified Stormwater Rule and design guidance included within.

## D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

It is assumed that in the No Action condition, the existing schools (P.S. 287 and the Community Roots Charter School) on Block 111, Lot 1 would remain, while the Madison Square Boys and Girls Club on Block 110, Lot 25 would close. Block 110, Lot 25 would be developed with an as-of-right approximately 83,500 gsf residential building with approximately 84 DUs. The estimated population at the Project Site in the No Action condition is approximately 171 residents and 721 students.

### SANITARY FLOWS

As shown in **Table 10-3**, it is estimated that the Project Site will generate 24,310 gpd of sanitary sewage in the No Action condition.

**Table 10-3**
**No Action Condition Water Consumption and Sewage Generation**

| Use | Floor Area (gsf) | Rate[1] | Consumption (gpd) |
|---|---|---|---|
| **Residential** | | | |
| Domestic | 171 (residents)[2] | 100 gpd/person | 17,100 |
| Air Conditioning | 83,500 | 0.17 gpd/sf | 14,195 |
| **School** | | | |
| Domestic | 721 (students)[3] | 10 gpd/seat (student) | 7,210 |
| Air Conditioning | 110,000 | 0.17 gpd/sf | 18,700 |
| | | **Total Water Supply Demand** | **57,205** |
| | | **Total Sewage Generation** | **24,310** |

**Notes:**
[1] Rates are from the *CEQR Technical Manual*, Table 13-2.
[2] Residential population is based on the average household size of 2.03 persons within Brooklyn CD 2.
[3] School capacity.

### STORMWATER FLOWS

In the No Action condition, there will be changes to the Project Site's surface coverage as a result of the new development on Block 110, Lot 25. This would represent a decrease in rooftop area as compared to the existing condition. **Table 10-4** summarizes the surface areas on the Project Site in the No Action condition, as well as the weighted runoff coefficient (the fraction of precipitation that becomes surface runoff for each surface type). As compared to the existing condition, the runoff coefficient would decrease from 0.92 to 0.91.

**Table 10-4**
**No Action Condition Surface Coverage**

| Affected CSO Outfall | Site | Roof[2] | Pavement and Walkways | Other | Grass and Soft Scape | Total |
|---|---|---|---|---|---|---|
| NCB-014 | Total Surface Area (acres) | 1.00 | 0.77 | 0 | 0.05 | 1.83 |
| | Area (percent) | 55 | 42 | 0 | 3 | 100 |
| | Runoff Coefficient[1] | 1 | 0.85 | N/A | 0.20 | **0.91** |

**Notes:**
N/A – not applicable
Totals may not sum due to rounding.
[1] Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual*.
[2] Estimates based on New York City Department of Information Technology and Telecommunications Building Footprints and Project Site from MapPluto data.

## E. THE FUTURE WITH THE PROPOSED ACTIONS

In the With Action condition, the Proposed Project would be constructed on the Project Site. The Proposed Project would result in the development of four buildings containing a total of approximately 1.7 million gsf, including approximately 1,502 mixed-income DUs (approximately 302 affordable DUs), 34,000 gsf of retail, and 166,000 gsf of community facility use, consisting of 121,000 gsf of public school space (approximately 931 seats),

15,000 gsf of cultural center space, and 30,000 gsf of community facility space. The With Action estimated population would include approximately 3,049 residents and 931 students on the Project Site.

## SANITARY FLOWS

As shown in **Table 10-5**, in the With Action condition, wastewater generated on the Project Site would total 326,870 gpd, which represents an incremental increase of 302,560 gpd compared to the No Action condition. The incremental increase in sewage generation would be approximately 0.1 percent of the average daily flow at the Newtown Creek WRRF and would not result in an exceedance of the WRRF's permitted capacity of 310 million gpd. 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.

**Table 10-5**
**With Action Condition Water Consumption and Sewage Generation**

| Use | Floor Area (gsf) | Rate[1] | Consumption (gpd) |
|---|---|---|---|
| **Residential** | | | |
| Domestic | 3,049 (residents)[2] | 100 gpd/person | 304,900 |
| Air Conditioning | 1,502,000 | 0.17 gpd/sf | 255,340 |
| **Retail Stores** | | | |
| Domestic | 34,000 | 0.24 gpd/sf | 8,160 |
| Air Conditioning | 34,000 | 0.17 gpd/sf | 5,780 |
| **Community Facility[3]** | | | |
| Domestic | 45,000 | 0.10 gpd/sf | 4,500 |
| Air Conditioning | 45,000 | 0.17 gpd/sf | 7,650 |
| **School** | | | |
| Domestic | 931 (students) | 10 gpd/seat (student) | 9,310 |
| Air Conditioning | 121,000 | 0.17 gpd/sf | 20,570 |
| | | **Total Water Supply Demand** | **616,210** |
| | | **Total Sewage Generation** | **326,870** |

**Notes:**
[1] Rates are from the *CEQR Technical Manual*, Table 13-2.
[2] Residential population is based on the average household size of 2.03 persons within Brooklyn CD 2.
[3] Utilizes the "Commercial/Office" use category.

Connecting to the City's sewer system requires certification from DEP as part of the building permit process. An applicant is required to file an SCP for approval from DEP to tie into the sewer system. The new mixed-use development with residential dwellings, retail, and community facility uses at the Project Site would require an SCP. The co-Applicants would be required to demonstrate that the existing sanitary system could handle the site-specific sanitary flows from the Proposed Project, or, if the Proposed Project would exceed the capacity of the existing built sewer system, the co-Applicants would be required to prepare a site-specific hydraulic analysis to identify any required sewer upgrades, including upgrades to the existing regulators. In addition, there may be a need to amend the existing drainage plan based on hydraulic analysis calculations.

As the Proposed Project is not expected to result in a significant increase in dry weather flows to the combined sewer system and the Newtown Creek WRRF, there would be no significant adverse impacts to sanitary sewage conveyance and treatment infrastructure.

## STORMWATER FLOWS

The With Action condition would result in changes to surface coverage on the Project Site. In addition to the four new buildings, the Project Site would include approximately 0.85 acres of open space, including 0.48 acres of publicly accessible open space.

The surface coverage on the Project Site in the With Action condition would consist of building rooftop area, paved area, and landscaped softscape area. **Table 10-6** shows the surface coverage and weighted runoff coefficient on the Project Site in the With Action condition. The weighted runoff coefficient would be 0.83 in the With Action condition, which would be a slight increase as compared to the existing (0.92) and No Action (0.91) conditions.

**Table 10-6**
**With Action Condition Surface Coverage**

| Affected CSO Outfall | Site | Roof[2] | Pavement and Walkways | Other | Grass and Soft Scape | Total |
|---|---|---|---|---|---|---|
| NCB-014 | Total Surface Area (acres) | 1.38 | 0.36 | 0 | 0.09 | 1.83 |
| | Area (percent) | 76 | 20 | 0 | 5 | 100 |
| | Runoff Coefficient[1] | 1 | 0.85 | N/A | 0.20 | **0.83** |

**Notes:**
N/A – not applicable
Totals may not sum due to rounding.
[1] Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual*.
[2] Estimates based on New York City Department of Information Technology and Telecommunications Building Footprints and Project Site from MapPluto data.

Using these sanitary and stormwater flow calculations, 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 wastewater volumes to the combined sewer system from existing conditions to the With Action condition and include four rainfall runoff volume scenarios with varying durations. The drainage analysis assumes that all stormwater runoff from the Project Site would flow via the existing combined sewer infrastructure serving the Project Site. The summary tables of the Volume Calculation Matrix are included in **Table 10-7**.

As shown in **Table 10-7**, in all rainfall scenarios, there would be an increase in volume for CSO outfall NCB-014 in the With Action condition as compared to the existing condition, as there would be an increase in sanitary sewage generation and stormwater runoff.

**Table 10-7**
**DEP Flow Volume Matrix:**
**Existing and With Action Conditions Volume Comparison**

| Rainfall Volume (in) | Rainfall Duration (hr) | Runoff Volume to Direct Drainage (MG) | Runoff Volume to CSS (MG)[1] | Sanitary Volume to CSS (MG) | Total Volume to CSS (MG) | Runoff Volume to River (MG) | Runoff Volume to CSS (MG)[1] | Sanitary Volume to CSS (MG) | Total Volume to CSS (MG) | Increased Total Volume to CSS (MG)[2] |
|---|---|---|---|---|---|---|---|---|---|---|
| **Regulators: NC-B3 and NC-B4 CSO Outfall: NCB-014** | | **Existing** | | | | **With Action** | | | | **NCB-014 Increment** |
| | | Area = 79,807 SF (1.83 acres) | | | | Area = 79,807 SF (1.83 acres) | | | | |
| 0 | 3.80 | 0 | 0.00 | 0 | 0 | 0 | 0.00 | 0.05 | 0.05 | 0.05 |
| 0.40 | 3.80 | 0 | 0.02 | 0 | 0.02 | 0 | 0.02 | 0.05 | 0.07 | 0.05 |
| 1.20 | 11.30 | 0 | 0.06 | 0 | 0.06 | 0 | 0.06 | 0.15 | 0.21 | 0.15 |
| 2.50 | 19.50 | 0 | 0.11 | 0.01 | 0.12 | 0 | 0.12 | 0.27 | 0.39 | 0.27 |

**Notes:**
[1] Assumes no on-site detention or BMPs for purposes of calculations.
[2] Totals may not sum due to rounding.
CSS = Combined Sewer System; MG = Million Gallons

The volume matrix calculations presented above do not reflect the use of any sanitary and stormwater source control BMPs to reduce sanitary volume and stormwater runoff volumes to the combined 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 process for new buildings connecting to the City's sewer system. As part of the SCP permit approval process, 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 on-site 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 waterbodies.

As noted above, the co-Applicants would be required to demonstrate that the existing sanitary system could handle the site-specific sanitary flows from the Proposed Project, or to identify required upgrades to the existing built sewer system. As shown in **Appendix E**, in letter correspondence dated May 27, 2026, DEP confirmed that a hydraulic analysis of the existing sewer system would likely be required prior to the SCP permit approval process. Further, DEP confirmed that an Amended Drainage Plan (ADP) would likely be required based on the results of the hydraulic analysis. Sewer improvements and/or incorporation of BMPs may also be required of the co-Applicants at the time of the site connection proposal.

With the incorporation of BMPs to meet the City site connection requirement and compliance with the Unified Stormwater Rule, as well as the use of low-flow plumbing fixtures, the Proposed Project would result in decreased peak stormwater runoff rates compared to existing conditions. Specific BMPs for the Proposed Project would be determined in the future in consultation with DEP when specific designs are advanced. Although the Proposed Project

would result in increased volume to the combined sewer system due to the higher-density development, the projected increased volume to the combined sewer system would not have a significant adverse impact on water quality because of the available capacity of the Newtown Creek WRRF. In addition, with the incorporation of BMP measures, the Proposed Project would not be expected to appreciably increase the frequency or volume of CSO events. Therefore, the Proposed Actions would not result in significant adverse impacts to local water supply or wastewater and stormwater conveyance and treatment infrastructure. ✶