# 960 FRANKLIN AVENUE REZONING EIS
# Chapter 11: Water and Sewer Infrastructure

## A. INTRODUCTION

This attachment assesses the potential effects of the Proposed Actions on the City's water supply, wastewater treatment, and stormwater management infrastructure.

As described in **Chapter 1, "Project Description,"** the Proposed Actions would facilitate the construction of two predominantly residential buildings totaling approximately 1,369,314 gsf (1,151,671 zsf). The Proposed Development would comprise 1,263,039 gsf of residential uses, introducing a total of 1,578 dwelling units, of which 50 percent or 789 dwelling units would be affordable units and 50 percent or 789 dwelling units would be market-rate units. 474 of the affordable dwelling units would be built pursuant to the MIH program. The Applicant intends, and will be enforced through the Restrictive Declaration, to construct 315 affordable dwelling units. An average unit size of 800 gsf per unit is assumed for all dwelling units. In addition to the residential component, approximately 21,183 gsf of local retail space and approximately 9,678 gsf of community facility space would be provided. It is anticipated that the community facility would need to be a daycare facility to avoid an adverse impact; as such, a Restrictive Declaration (RD) would specify that daycare space would be provided. Approximately 75,414 gsf (parking for approximately 16 percent of market-rate DUs) would be allocated for parking on the ground- and cellar-levels of the Proposed Development in two separate garages.

Construction of the Proposed Development is expected to begin in 2022~~1~~ with all components complete and fully operational in 2024

## B. PRINCIPAL CONCLUSIONS

Based on the methodology set forth in the 2020 *City Environmental Quality Review* (CEQR) *Technical Manual*, the analysis finds that the Proposed Development would not result in a significant adverse impact on the City's water supply, wastewater and stormwater conveyance and treatment infrastructure.

### Water Supply

The Proposed Development would generate an incremental water demand of approximately 288,870 gallons per day (gpd) over No-Action conditions. The increased demand associated with the Proposed Development would represent less than 0.01 percent of the over one billion gallons of water supplied daily to New York City by the New York City Department of Environmental Protection (DEP). Changes of this magnitude would not be large enough to have a significant adverse impact on the City's water system pursuant to *CEQR Technical Manual* guidelines. As such, existing water infrastructure should be capable to handle the estimated increase in water demand and the Proposed Development would not adversely affect the City's water supply or system water pressure. DEP Bureau of Water Distribution indicated that with present trends of development in this area, a proposal to upgrade some of the water mains will be prepared in the future. Therefore, no significant adverse impacts on area water supply would result in the future with the Proposed Development.

## Sewer System

### *Sanitary (Dry Weather) Flows*

The Owls Head water pollution control plant (WPCP), which is designed to treat a dry weather flow of 120 million gallons per day (mgd), handled an average of 96 mgd of sewage flow in the year ending February 2019. Based on rates in the *CEQR Technical Manual*, the Proposed Development has the potential to result in an increase of approximately 0.28 mgd of sanitary sewage flow as compared to the No-Action condition. 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 Actions may result in development that is inconsistent with the design of the existing built sewer system. As such, an amended drainage plan would be prepared, if warranted. In addition, in order to obtain a permit to connect to the City sewer system, a site-specific hydraulic analysis to determine whether the existing sewer system is capable of supporting higher density development and related increases in sanitary flows would be prepared prior to construction of the Proposed Development; sewer improvements may also be required to support the site connection proposal. Pursuant to CEQR methodology, as the projected increase in sanitary sewage would not cause the Owls Head WPCP to exceed its operational capacity or State Pollution Discharge Elimination System (SPDES)-permitted capacity, the Proposed Development would not result in significant adverse impacts to sanitary sewage conveyance and treatment. In addition, per the New York City Plumbing Code (Local Law 33 of 2007), while not accounted for in the quantitative analysis, low-flow fixtures would be required to be implemented and would help to reduce sanitary flows from the Proposed Development.

The Project Sponsor would be required to file a site connection proposal for approval from DEP to tie into the City's sewer system. In order to obtain a sewer connection permit from DEP, the Project Sponsor would be required to demonstrate that the existing system could handle the increased flows due to the Proposed Development. A hydraulic analysis of the existing sewer system will likely be required prior to the submittal of the Site Connection Proposal Application (SCP) to determine whether the existing sewer system is capable of supporting higher density development and related increase in wastewater flow, or whether there will be a need to upgrade the existing sewer system. In addition, there might be a need to amend the existing drainage plan based on the hydraulic analysis calculations.

Also, several regulators (OH-8, 8A, and 8B) in the Coney Island drainage area perform at or above capacity, especially during wet weather events. Taking this into consideration, the Applicant will need to perform flow studies prior to SCP to determine if existing regulators have capacity to accept this new flow. Any analysis and improvements, if required, would be undertaken prior to construction of the Proposed Development and would be coordinated with DEP for review and approval.

### *Stormwater (Wet Weather) Flows*

Compared to existing conditions, in the future with the Proposed Development, the combined wet weather flows from the Development Site would increase slightly (by up to 0.07 mg to up to 0.51 mg, depending on rainfall duration and intensity). The Development Site is located in an area that is well served by combined sewer infrastructure. In addition, as a New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001) is required for any development that would involve soil disturbance of one or more acres, a Stormwater Pollution Prevention Plan (SWPPP), consisting of both temporary erosion and sediment controls and post-construction stormwater best management practices (BMPs) such as on-site detention,

infiltration practices, and vegetated areas, would be required of the Project Sponsor. Sewer improvements and/or a new drainage plan may also be required to support the site connection proposal.

As the wastewater treatment capacity at the Owls Head WPCP and the sewer conveyance infrastructure near the Development Site would be sufficient to handle wastewater flows that would result from the Proposed Development, there would not be any significant adverse impacts on wastewater treatment or stormwater conveyance infrastructure.

## C. METHODOLOGY

According to the *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 million gpd) or is located in an area that experiences low water pressure (e.g., areas at the end of the water supply distribution system). While the Proposed Development would not generate more than one million gpd of incremental water demand, and an analysis is not warranted per *CEQR Technical Manual* guidance, water demand estimates are provided in this chapter to inform the wastewater and stormwater conveyance and treatment analysis.

For wastewater and stormwater conveyance and treatment, the *CEQR Technical Manual* indicates that a preliminary assessment would be needed if a project is located in a combined sewer area and would exceed the following incremental development of residential units or commercial space above the predicted No-Action scenario: (a) 1,000 residential units or 250,000 sf of commercial space or more in Manhattan; or (b) 400 residential units or 150,000 sf of commercial space or more in the Bronx, Brooklyn, Staten Island, or Queens. As the Proposed Development would be constructed in Brooklyn and would result in a net increase of more than 400 residential units, a preliminary assessment of wastewater and stormwater infrastructure is provided in this chapter.

To assess the Proposed Development's potential impacts on water and sewer infrastructure, this chapter:

- Describes the existing water and sewer infrastructure serving the Project Area and estimates water demand and sewage and stormwater generation under existing conditions and in the No-Action condition (for the 2024 Build Year). Existing and future water demands for the existing and future Development Site uses are based on information provided in the *CEQR Technical Manual*. Stormwater runoff and sanitary flows are calculated using the NYC DEP Flow Calculation Matrix.
- Describes relevant planned infrastructure improvements including the affected area, project components, and current schedules.
- Forecasts water demand and sewage and stormwater generated by the Proposed Development based on *CEQR Technical Manual* guidelines.
- Assesses the effects of the Proposed Development's water demand and sewage and stormwater generation on the City's water and sewer infrastructure, pursuant to *CEQR Technical Manual* guidelines.

# D. EXISTING CONDITIONS

## Water Supply

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 located within 125 miles of the City. Water from the watersheds is stored at 19 reservoirs and three control lakes, having a combined capacity of approximately 580 billion gallons. The water is then carried into the City by aqueducts. The water enters the City via City Tunnel No. 1, which runs through the Bronx, Manhattan, and Queens, and City Tunnel No. 2, which runs through the Bronx, Queens, and Brooklyn. The partially complete City Tunnel No. 3 serves the Bronx, Manhattan, and Queens, and, when fully complete, will terminate in Brooklyn. Staten Island obtains its water via the Richmond Tunnel, which is an extension of City Tunnel No. 2.

Once in the City, the three aqueducts distribute water into a network of water mains. Water mains up to 96 inches in diameter feed the smaller mains, which deliver water to their final destination. These are the same mains that provide water to fire hydrants. Nearly all of the water reaches its consumers by gravity alone, although some four percent (generally located 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.

Water conservation measures taken by DEP in the 1990s have resulted in a steady reduction in the City's overall water demand over the last 20 years. As of 2014, the in-City water consumption totaled approximately 1,000 mgd.

The Development Site is served by 8-inch water mains located beneath Montgomery Street (built in 1987) and Franklin Avenue (built in 1979). As indicated in **Chapter 1, "Project Description,"** the northern portion of the Development Site (lots 41 and 46) contains the approximately 107,744 sf Golombeck spice facility; the southern portion of the Development Site (lots 63 and 66) has remained predominantly vacant since 1961. As such, existing water demand on the Development Site is limited to water demand generated by the Golombeck spice facility. As presented in **Table 11-1**, the existing 107,744 sf facility is estimated to have a total daily water demand of 44,175 gallons per day (gpd), including 25,859 gpd of domestic demand and 18,316 gpd of air conditioning (A/C) demand.

**TABLE 11-1:**
**Existing Development Site Water Consumption and Wastewater Generation**

| Land Use | Rate[1] | Area (sf) | Domestic Water/ Wastewater Generation (gpd) | A/C (gpd) |
|---|---|---|---|---|
| Morris J. Golombeck, Inc. Importers Spice Company | Domestic: 0.24 gpd/sf<br>A/C: 0.17 gpd/sf | 107,744 sf | 25,859 | 18,316 |
| ***Total Water Consumption*** | | | **44,175** | |
| ***Total Wastewater Generation*** | | | **25,859** | |

**Notes:**
[1] Based on water demand rates based on schools rate provided in Table 13-2 of the *CEQR Technical Manual.*

## Sewer System

According to the *CEQR Technical Manual*, wastewater is considered to include sanitary sewage, wastewater generated by industries, and stormwater. Water used for air conditioning generates a negligible amount of wastewater as it recirculates or evaporates in the cooling and heating process.

New York City's sewer system consists of a grid of sewers beneath the streets that send wastewater flows to fourteen different WPCPs. The City's WPCPs are regulated by the NYSDEC, which issues permits regulating the discharge of treated effluent. Combined, all fourteen WPCPs in New York City have a SPDES permitted total capacity of 1.8 billion gpd. The area served by each plant is called a "drainage area" or "catchment area." The majority of New York City's sewers are combined sewers, since they receive both sanitary wastewater and stormwater runoff. During wet weather, large volumes of rainfall runoff enter the combined system through storm drains and catch basins in streets and mix with sanitary sewage, then flow through regulators (relief valves), before being sent to the WPCPs through interceptor sewers. During such wet-weather events, excessive volumes of stormwater runoff (ten to 50 times the dry-weather flow) can enter the combined sewer system and, if transported to the WPCP, could exceed the treatment design capacity. For limited periods, WPCPs are designed for only twice the average dry-weather flow. Flow into the interceptor sewers are controlled by regulators along the length of the interceptor sewers. The purpose of the regulators is to divert sanitary flow from the existing combined sewers to the interceptor sewers during normal flow periods (dry weather) and limit the flow to the interceptor sewers to twice dry weather flow during storm periods (wet weather). The existing tide gates placed on the combined sewer overflows (CSOs) downstream of the regulators are designed to keep tidal water from entering the existing combined sewers and the interceptor sewers. Tide gates can be part of the regulator structure or stand-alone chambers. The New York City sewer system currently (in 2015) treats approximately 1.3 billion gpd of municipal wastewater and a portion of combined sewer flow during wet weather events.

Sanitary sewers can be one to two feet in diameter on side streets and three or four feet in diameter under larger roadways. They connect to trunk sewers, which are generally five to seven feet in diameter. Combined sewers discharge to regulators and the interceptors carry wastewater to the WPCPs for treatment. The wastewater collection system at the Development Site consists of a 12-inch combined sewer beneath Montgomery Street, and a 12-inch combined sewer beneath Franklin Avenue. The existing combined sewer beneath Montgomery Street begins just west of Franklin Avenue, presumably near the eastern edge of the Franklin Avenue subway shuttle right-of-way and flows east along Montgomery Street. The existing sewer beneath Franklin Avenue flows south beginning just south of Montgomery Street, but does not intersect with the sewer line under Montgomery Street.

As shown in **Figure 11-1**, the Development Site is served by the Owls Head WPCP, which is the sixth largest of the City's 14 WPCPs, treating wastewater from a 12,947-acre area located in western Brooklyn. It serves approximately 758,007 New Yorkers. The Owls Head WPCP has been operating since 1952 and has a SPDES permitted dry weather capacity of 120 million gallons per day (mgd). As presented in **Table 11-2**, over the last ten months of 2018 and the first two months of 2019, the Owls Head WPCP handled an average of 96 mgd of flows, which is less than the facility's permitted capacity of 120 mgd.

**TABLE 11-2**
**Existing Owls Head WPCP Average Daily Sewer Flows**

| Month | Average Daily Flows (mgd) |
|---|---|
| March 2018 | 103 |
| April 2018 | 94 |
| May 2018 | 100 |
| June 2018 | 92 |
| July 2018 | 94 |
| August 2018 | 96 |
| September 2018 | 99 |
| October 2018 | 93 |
| November 2018 | 98 |
| December 2018 | 98 |
| January 2019 | 93 |
| February 2019 | 94 |
| **12-Month Average** | **96** |

**Source:** DEP "Monthly Operating Efficiency" tables.

In an effort to continually reduce process odors at the Owls Head Wastewater Treatment Plant, in 2011 DEP completed operational upgrades to the existing Grit and Scum Building as well as a reconstruction of the existing Forebay at the Owls Head WPCP. Contract OH-33 included the construction of a new extension to the existing Grit and Scum Building. This extension houses the grit containers, which were previously located outdoors in a temporary tent structure, within a permanent odor controlled environment. Four separate contracts were issued to complete the building, which includes steel H-piles, a new foundation, and a three floor reinforced concrete structure with brick and limestone façade. It also included plant roadway and drainage improvements as well as lighting improvements. The principle work items included replacement of the existing cyclone degritters/classifiers, installation of a new container conveyor system, and installation of a new odor control system.

Contract OH-36 included the reconstruction of the existing Owls Head Forebay. This contact included repair of the forebay cracks, repair and replacement of Forebay sluice gates and actuators. It also included the installation of a keyed plant interlock system designed to facilitate the operation of the engine generators and the rerouting of two feeders.

### *Sanitary Flows (Dry Weather)*

As presented in **Table 11-1**, above, the existing Golombeck facility on the Development Site currently generates approximately 25,859 gpd of wastewater.

### *Stormwater Flows (Wet Weather)*

As outlined in **Chapter 1, "Project Description,"** the Development Site totals approximately 120,209 sf. **Table 11-3** describes the surfaces, surface areas, and the weighted runoff coefficient (the fraction of precipitation that becomes surface runoff) for each surface type present on the Development Site. As indicated in the table, the majority of the Development Site (approximately 48 percent) comprises roof

area, with an additional 32 percent comprising grass and softscape, and 20 percent comprising pavement and walks. Based on the existing Development Site surface areas, the weighted runoff coefficient of the Development Site is 0.72.

**TABLE 11-3**
**Existing Development Site Surface Areas and Runoff Coefficients**

| Surface Type | Roof | Pavement and Walks | Other | Grass and Softscape | Total |
|---|---|---|---|---|---|
| **Area** | 48% | 20% | 0% | 32% | 100% |
| **Surface Area (sf)** | 57,415 | 24,673 | 0 | 38,121 | 120,209 |
| **Runoff Coefficient** | 1.00 | 0.85 | 0.85 | 0.20 | 0.72 |

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

For this analysis, the runoff coefficients were used to calculate the amount of stormwater runoff during a range of storm events, with rainfall averaging from 0.00 to 2.50 inches over durations of 3.80 to 19.50 hours. **Table 11-4** shows the existing stormwater runoff for the Development Site. As indicated in the table, the Development Site currently generates between 0.00 and 0.15 mg of wet weather flows for different rainfall intensities.

**TABLE 11-4**
**Existing Development Site Stormwater and Sanitary Sewage Flow Volumes**

| Rainfall Volume (in) | Rainfall Duration (hr) | Runoff Volume Direct Drainage (MG) | Runoff Volume to CSS (MG) | Sanitary Volume to CSS (MG) | Total Volume to CSS (MG) |
|---|---|---|---|---|---|
| 0.00 | 3.80 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 3.80 | 0.00 | 0.02 | 0.00 | 0.02 |
| 1.20 | 11.30 | 0.00 | 0.06 | 0.01 | 0.07 |
| 2.50 | 19.50 | 0.00 | 0.13 | 0.02 | 0.15 |

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

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

In the future without the Proposed Development (the No-Action condition), it is anticipated that an as-of-right residential development would be constructed on the Development Site (lots 41, 46, 63 and 66) pursuant to the existing R6A zoning under future No-Action conditions. The R6A zoning district permits 3.0 FAR with a maximum base height of 60 feet and a maximum building height of 70 feet. As such, the No-Action development would include a total of approximately 414,607 gsf (approximately 356,190 zsf) of residential uses with approximately 518 market rate condominiums (assuming an average dwelling unit size of approximately 800 gsf per unit).

## Water Supply

The overall water supply system in New York City is not expected to change materially in the future without the Proposed Development. In 2011, DEP launched the Water for the Future program, a comprehensive long-term planning effort to repair leaks in sections of the Delaware Aqueduct by 2024. To support this program, a newly created Demand Management Unit within DEP was tasked with the

development of a citywide strategy that will 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 to be implemented by 2024 in order to achieve targeted water demand reductions. It is anticipated that these initiatives will offset much of the increased demands citywide that may result from population growth and new development.

**TABLE 11-5:**
**Existing Development Site Water Consumption and Wastewater Generation**

| Land Use | Rate[1] | Area (sf) | Domestic Water/ Wastewater Generation (gpd) | A/C (gpd) |
|---|---|---|---|---|
| Residential | 100 gpd/person | 414,607 sf/ (1,358 residents) | 135,800 | 0 |
| ***Total Water Consumption*** | | | **135,800** | |
| ***Total Wastewater Generation*** | | | **135,800** | |

**Notes:**
[1] Uses *CEQR Technical Manual* water demand rates from Table 13-2 "Water Usage and Sewer Generation rates for Use in Impact Assessment"
Per 2010 Census information for Brooklyn CD 9, average household sizes of 2.62 persons per dwelling unit are assumed, resulting in approximately 1,357 residents.

With the proposed changes to land use anticipated in the 2024 No-Action condition (i.e., the change from a spice processing and storage facility to a residential development), the No-Action daily water demand would increase from 44,175 gpd under existing conditions to 135,800 gpd under future No-Action conditions, as shown in **Table 11-5**.

### Sewer System

The Development Site would continue to be served by the Owls Head WPCP in the future without the Proposed Development. The Development Site is expected to generate approximately 135,800 gpd of wastewater during dry weather, with total wet weather flows totaling between 0.02 and 0.29 mg, depending on rainfall intensity and duration.

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

For conservative analysis purposes, in the future with the Proposed Development (With-Action condition), the RWCDS anticipates that the Development Site would be redeveloped with approximately 1,578 dwelling units, approximately 21,183 gsf of local retail space, and approximately 9,678 gsf of community facility space. It is anticipated that the community facility would need to be a daycare facility to avoid an adverse impact; as such, a RD would specify that daycare space would be offered to the DOE. ~~be provided as a project component related to the environment (PCRE)~~. Approximately 75,414 gsf (approximately 180 parking spaces) would be allocated for parking on the ground- and cellar-levels of the Proposed Development in two separate garages.

## Water Supply

The Proposed Development would generate increased demand on the DEP water supply system, compared to No-Action conditions (see **Table 11-6**). As indicated in the table, the Proposed Development would generate an incremental water demand of approximately 288,870 gpd over the No-Action demand of 135,800 gpd. The incremental demand represents less than 0.01 percent of the approximately one billion gallons of water supplied daily to New York City by DEP. These estimated demands include water for both domestic uses and air conditioning systems.

As discussed above, the Development Site is served by 8-inch water mains located beneath Montgomery Street and Franklin Avenue. The existing water mains that are located along the Development Site's two street frontages are expected to adequately accommodate the incremental water demand generated by the Proposed Development. As such, given the relatively minor incremental increase in water consumption (as compared to citywide demand) and the Development Site's location in an area well-served by water infrastructure, the Proposed Development is not expected to adversely affect the City's water supply or system water pressure. With present trends of development in this area, DEP Bureau of Water Distribution would likely prepare a proposal to upgrade some of the water mains in the future.

**TABLE 11-6**
**Expected Water Demand on Development Site – 2024 No-Action vs. 2024 With-Action Conditions**

| | Use | Area (gsf) | Domestic Use (gpd)[1] | Air Conditioning (gpd)[1] |
|---|---|---|---|---|
| **No-Action Condition** | Residential | 414,607 (1,358 residents) | 135,800 | - |
| | | | ***Total No-Action Water Supply Demand*** | **135,800** |
| | | | ***Total No-Action Sewage Generation*** | **135,800** |
| **With-Action Condition** | Residential | 1,263,039 (4,136 residents) | 413,500 | - |
| | Commercial | 21,183 | 5,084 | 3,601 |
| | Community Facility (Daycare) | 9,678 (84 seats) | 840 | 1,645 |
| | | | ***Total With-Action Water Supply Demand*** | ***424,670*** |
| | | | ***Total With-Action Sewage Generation*** | ***419,424*** |
| **Increment** | | | ***Incremental Water Supply Demand*** | **288,870** |
| | | | ***Incremental Sewage Generation*** | **283,624** |

**Notes:**
[1] Based on average daily water use rates provided in Table 13-2 of the *CEQR Technical Manual* (unless otherwise indicated):
- Residential: 100 gpd/resident.
- Commercial: 0.24 gpd/sf, plus 0.17 gpd/sf for A/C.
- Community Facility (Daycare): Assumes *CEQR Technical Manual* school rate (10 gpd/seat and 0.17 gpd/sf for A/C).

## Sewer System

### *Sanitary Flows (Dry Weather)*

As indicated in **Table 11-6**, above, the estimated amount of sanitary sewage generated by the Proposed Development would be approximately 419,424 gpd. This amount would represent approximately 0.005

percent of the average daily flow of 93 mgd at the Owls Head WPCP and would not result in an exceedance of the plant's permitted capacity of 120 mgd. In addition, per the New York City Plumbing Code (Local Law 33 of 2007), low-flow fixtures would be required to be implemented, which would help to reduce sanitary flows from the Proposed Development.

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 Project Sponsor would be required to file a 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 Project Sponsor would be required to demonstrate that the existing sanitary system could handle the 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, it is possible that the Proposed Actions may result in development that is inconsistent with the design of the existing built sewer system. If the Proposed Development is determined to be inconsistent with the design of the existing built sewer system, an amended drainage plan would be prepared. In addition, in order to obtain a permit to connect to the City sewer, a site-specific hydraulic analysis to determine whether the existing sewer system is capable of supporting higher density development and related increases in sanitary flows would be prepared prior to development of the Proposed Development; sewer improvements may also be required to support the house or site connection proposal. The Applicant will need to perform flow studies at the time of the SCP to determine if existing regulators have capacity to accept the new flow.

As the Proposed Development is not expected to result in a significant increase in dry weather flows to the combined sewer system, no significant adverse impacts would result.

### *Stormwater Flows (Wet Weather)*

As presented in **Table 11-7**, below, based on the proposed site plan, the Proposed Development would result in an increase in the amount of roof and pavement and walkway area present on the Development Site (increasing to approximately 69 percent and 25 percent of the Development Site, respectively), while decreasing the area comprised of grass and softscape (decreasing to six percent of the Development Site). For conservative analysis purposes, proposed green roof spaces have been considered rooftop. However, it should be noted that approximately 14,152 sf of green roofs and plantings would be proposed. Based on these anticipated changes in the Development Site's surface areas, the weighted runoff coefficient of the Development Site would decrease from 0.72 to 0.91 in the future with the Proposed Development.

**TABLE 11-7**
**Development Site Runoff Coefficient – With-Action Condition**

| Surface Type | Roof[2] | Pavement and Walks | Other | Grass and Softscape | Total |
|---|---|---|---|---|---|
| **Area** | 69% | 25% | 0% | 6% | 100% |
| **Surface Area (sf)** | 82,699 | 30,182 | 0 | 7,328 | 120,209 |
| **Runoff Coefficient[1]** | 1.00 | 0.85 | 0.85 | 0.20 | 0.91 |

**Notes:**
[1] Weighted runoff coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual.*
[2] Conservative estimate of the total roof areas on site, not accounting for planned green roof areas of the Proposed Development.

Using these sanitary and stormwater flow calculations, the DEP Flow Volume Calculation Matrix was completed for the future With-Action condition and compared to the existing conditions presented in **Table 11-4**, above. The calculations from the Flow Volume Calculation Matrix help to determine the

change in wastewater flow volumes to the combined sewer system from existing conditions to With-Action conditions, based on four rainfall volume scenarios with varying durations. The drainage analysis assumes that all stormwater runoff from the Development Site would flow via the existing combined sewer infrastructure adjacent to the Development Site. The summary tables, taken from the DEP Flow Volume Calculation Matrix, are presented in **Table 11-8**.

**TABLE 11-8**
**Development Site 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 | 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 | 0.17 | 0.34 | 0.51 | 0.36 |

**Notes:**
CSS = combined sewer system; MG = million gallons
[1]Refer to **Table 11-4**.

As shown in **Table 11-8**, in the future With-Action condition, approximately 0.00 to 0.17 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 0.07 to 0.51 mg of combined volumes to the combined sewer system. Compared to existing conditions, the total wet weather flows from the Development Site would increase by 0.07 to 0.36 mg, depending on rainfall duration and intensity.

The Development Site is located in an area that is well-served by combined sewer infrastructure. As previously noted, the wastewater collection system at the Development Site consists of a 12-inch combined sewer beneath Montgomery Street, and a 12-inch combined sewer beneath Franklin Avenue. The existing combined sewer beneath Montgomery Street begins just west of Franklin Avenue and flows east. The existing sewer beneath Franklin Avenue flows south beginning just south of Montgomery Street, but does not intersect with the sewer line under Montgomery Street. Given the size of the existing combined sewer facilities in the vicinity of the Development Site, it is anticipated that there is ample capacity in the adjacent sewer infrastructure to accommodate the additional combined flows generated by the Proposed Development.

In addition, a NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001) is required for any development that would involve soil disturbance of one or more acres. In accordance with NYSDEC SPDES (GP-0-10-001), the Project Sponsor will be required to prepare a SWPPP, consisting of both temporary erosion and sediment controls and post-construction stormwater BMPs. Post-construction stormwater management measures that would be integrated into the Proposed Development as part of the SWPP could include measures such as on-site detention, infiltration practices, and vegetated areas. 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 site conditions. The design of detention tanks, green roofs, infiltration practices, and vegetated areas and/or other chosen stormwater control BMPs, would achieve an overall release rate of 0.25 cubic feet per second (cfs), or ten percent of DEP's allowable flow rate (whichever is greater) from the Development Site. Sewer improvements and/or a new drainage plan may also be required to support the site connection proposal.

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 volume of sanitary sewer discharge and stormwater runoff, as well as the peak stormwater runoff rate, would be substantially reduced. As the wastewater treatment capacity at the Owls Head WPCP and the sewer conveyance infrastructure near the Development Site would be sufficient to handle wastewater flows that would result from the Proposed Development, there would not be any significant adverse impacts on wastewater treatment or stormwater conveyance infrastructure.