

**A. INTRODUCTION**

This chapter evaluates the potential for the proposed actions to result in significant adverse impacts on the City’s water supply, as well as its wastewater and stormwater conveyance and treatment infrastructure. As described in Chapter 1, “Project Description,” the proposed actions would result in a mixed-use development on an approximately 6.6-acre project site, which consists of ten City-owned sites (of which nine would be developed) and areas of streets to be mapped and demapped on the Lower East Side of Manhattan (together encompassing the “project site”). The reasonable worst-case development scenario (RWCDS) for the proposed actions envisions the development of 900 dwelling units, over 600,000 gross square feet (gsf) of commercial development, including a hotel, and 10,000 square feet of new publicly accessible open space. These new uses and project-generated residents, employees, and other users would increase the project site’s water consumption, sewage generation, and stormwater runoff as compared to conditions in the future without the proposed actions.

**PRINCIPAL CONCLUSIONS**

This analysis finds that the proposed actions would not result in any significant adverse impacts on the City’s water supply, wastewater or stormwater conveyance and treatment infrastructure.

*WATER SUPPLY*

By 2022, the RWCDS would generate an incremental water demand of 656,392 gallons per day (gpd) as compared to the future without the proposed actions. This represents a 0.06 percent increase in demand on the New York City water supply system. Based on the projected incremental demand, it is expected that there would be adequate water service to meet the proposed actions’ incremental water demand, and there would be no significant adverse impacts on the City’s water supply.

*SANITARY SEWAGE*

By 2022, the RWCDS would generate an incremental 373,844 gpd of sewage over the future without the proposed actions. This incremental volume in sanitary flow to the combined sewer system would represent approximately 0.16 percent of the average daily flow to the Newtown Creek Wastewater Treatment Plant (WWTP). This volume would not result in an exceedance of the Newtown Creek WWTP’s capacity, and therefore would not create a significant adverse impact on the City’s sanitary sewage treatment system.

*STORMWATER*

The overall volume of stormwater runoff and the peak stormwater runoff rate from the project site is anticipated to slightly increase due to the replacement of surface parking areas with

buildings; however, 10,000 square feet of publicly accessible open space is proposed on Site 5. With the incorporation of selected best management practices (BMPs), the peak stormwater runoff rates would be reduced from the future without the proposed actions and would not have a significant impact on the downstream City combined sewer system or the City sewage treatment system.

### **B. METHODOLOGY**

This analysis follows the methodologies set forth in the *City Environmental Quality Review (CEQR) Technical Manual* (January 2012 edition). According to the *CEQR Technical Manual*, a preliminary water analysis is needed if a project would result in an exceptionally large demand of water (over 1,000,000 gpd), or is located in an area that experiences low water pressure (i.e., at the end of the water supply distribution system such as the Rockaway Peninsula or Coney Island). The project site is not located in an area that experiences low water pressure and the proposed actions would not result in water demand exceeding 1,000,000 gpd. Therefore, further water analysis was not warranted; however total water demand has been calculated for purposes of the preliminary sanitary analysis.

A preliminary sewer analysis is warranted if a project site is over 5 acres and would result in an increase of impervious services on the site; or if a project located in a combined sewer area in Manhattan would result in the incremental development of 1,000 residential units or 250,000 square feet of commercial, public facility and institution and/or community facility space. The proposed actions meet both of these CEQR thresholds, and therefore a preliminary sewer analysis was conducted.

Existing and future water demands and sanitary sewage generation are calculated based on use generation rates set by the *CEQR Technical Manual*.<sup>1</sup> The New York City Department of Environmental Protection (DEP) Flow Volume Calculation Matrix was 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. The ability of the City's water and sewer infrastructure to handle the proposed actions' anticipated demand is assessed by estimating existing water demand and sewage generation rates, and then comparing the future with and without the proposed actions. In addition, this chapter compares the incremental water demand and sewage generated from the proposed actions to the future without the proposed actions per *CEQR Technical Manual* methodology.

The project site includes 10 City-owned sites but, as described in Chapter 1, "Project Description," development is proposed on only 9 of the 10 sites. See Figure 1-1 (Site Location Map) for the locations of each of the sites. Site 7, an existing public parking garage, is not proposed to be redeveloped as a part of the proposed actions; therefore it was not included in the calculations for this analysis.

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<sup>1</sup> *CEQR Technical Manual*, January 2012, p.13-12.

**C. EXISTING CONDITIONS**

**WATER SUPPLY**

New York City’s water supply system is composed of three watersheds—Croton, Delaware, and Catskill—and extends as far north as the Catskill Mountains. From these watersheds, water is carried to the City via a conveyance system made up of reservoirs, aqueducts, and tunnels. Within the City, a network of underground water pipes distributes water to customers. On average, the New York City water system delivers approximately 1.1 billion gallons per day (bgd) to the five boroughs and Westchester County.

The Croton system supplies an average of 22 million gallons per day (mgd), primarily to users in the lower-elevation portions of Manhattan and the Bronx. The Delaware and Catskill systems supply all five boroughs and deliver approximately 98 percent of the City’s drinking water. The Delaware and Catskill water systems collect water from watershed areas in the Catskill Mountains and deliver it to the Kensico Reservoir in Westchester County. From the Kensico Reservoir, water is sent to the Hillview Reservoir in Yonkers, which balances the daily fluctuations in water demand and pressure to the system. From there, water is delivered to the City through three tunnels, Tunnel Nos. 1, 2, and 3. Tunnel No. 1 carries water through the Bronx and Manhattan to Brooklyn; Tunnel No. 2 travels through the Bronx, Queens, Brooklyn, and then through the Richmond Tunnel to Staten Island; and Tunnel No. 3 goes through the Bronx and Manhattan, terminating in Queens. City Tunnel No. 1 serves the southern portion of Manhattan where the project site is located.

**WATER CONSUMPTION**

City water mains are present in all the roadways adjacent to each of the development sites. There are currently buildings on Sites 2, 5, 8, 9 and 10; however 35,925 square feet of the 83,395 square feet of building space is currently vacant. **Table 10-1** summarizes the estimated water demand on Sites 1-6 and 8-10.

**Table 10-1  
Existing Water Consumption**

Use	Unit	Size (Square feet)	Rate	Consumption (gallons per day)
<b>Residential</b>				
Domestic	9 (people)	NA	100 gpd/person	900
<b>Retail</b>				
Domestic	NA	23,480	0.24 gpd/sf	5,635
Air Conditioning	NA	23,480	0.17 gpd/sf	3,992
<b>Commercial</b>				
Domestic	NA	11,912	0.10 gpd/sf	1,191
Air Conditioning	NA	11,912	0.17 gpd/sf	2,025
<b>TOTAL</b>	NA	NA	NA	<b>13,743</b>
<b>Source:</b> Rates from <i>CEQR Technical Manual</i> (January 2012 edition).				

**SANITARY SEWAGE**

Sanitary sewage from the proposed development sites is conveyed to combined sewers in the abutting streets. For purposes of this analysis, the amount of sanitary sewage is conservatively estimated as all water demand except that used by air conditioning, which is typically not discharged

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to the sewer system. The estimated amount of daily sanitary sewage currently generated by the proposed development sites is 7,726 gpd.

In periods of dry weather, the combined sewers that are in the streets adjacent to the project site convey only sanitary sewage. During and immediately after wet weather, the combined sewers can experience a much larger flow due to stormwater runoff collection. To control flooding at the Newtown Creek WWTP, where combined sewage from the project site is treated, regulators are built into the system to allow only approximately two times the amount of design dry weather flow into the interceptors. The interceptor takes the flow to the Newtown Creek WWTP, while the excess flow to the regulators is discharged to the nearest waterbody as combined sewer overflow (CSO).

The 9 proposed development sites are located within the subcatchment areas of 8 different CSO outfalls (although all flow during dry weather is ultimately conveyed to Newtown Creek WWTP). See **Figure 10-1** for a map of CSO Outfall Subcatchment Area Locations. Sites 1, 2, 3, 4, 6 and 81 percent of Site 5 comprise approximately 4.98 acres and are located in CSO outfall subcatchment areas NCM-042, NCM-059, and NCM-060 (based on information provided by DEP, approximately 1.66 acres are located in each of these CSO outfall subcatchment areas). Approximately 19 percent of Site 5 (approximately 0.26 acres) is within CSO outfall subcatchment area NCM-063. Sites 8 and 10 (approximately 0.41 acres) are within CSO outfall subcatchment areas NCM-020 and NCM-057. Approximately 0.21 acres from Sites 8 and 10 are conveyed to CSO outfall NCM-020 and the remaining approximately 0.21 acres is conveyed to NCM-057. A total of 39 percent (approximately 0.19 acres) of Site 9 is with the CSO outfall NCM-028 subcatchment area and 61 percent (approximately 0.29 acres) is conveyed to CSO outfall NCM-058.

Flow is conveyed via the interceptor to the 13th Street Pumping Station, where flow is pumped from Manhattan to Newtown Creek WWTP. At Newton Creek WWTP, 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 (DEC). A maximum daily capacity for each treatment facility in the City is set to ensure that the quality of effluent is acceptable to discharge into surrounding water bodies, and the maximum capacity for the Newtown Creek WWTP is 310 million gallons per day (mgd). The average monthly flow over the past 12 months is 230 mgd, well below the maximum permitted level of 310 mgd.

### **STORMWATER**

As discussed above, the area surrounding the project site is served by a combined sewer system that conveys both sanitary and stormwater to Newton Creek WWTP. Stormwater runoff from the project site is collected and conveyed by the City's combined sewers to the Newtown Creek WWTP.

Cumulatively, the proposed development sites (Sites 1–6 and 8–10) are approximately 6.14 acres in size. As described above, combined sewer flow from the development sites is conveyed to 8 CSO outfall drainage areas. **Table 10-2** describes the surfaces and surface areas of the development sites, and how stormwater runoff is currently discharged from the sites. The weighted runoff coefficient calculated for each of the subcatchment areas is listed in Table 10-2. These numbers correspond to the percentage of precipitation that becomes surface runoff.



- Proposed Development Sites
- \* Site 7 Would Not Be Redeveloped Under the Proposed Actions
- CSO Subcatchment Area
- Regulator
- Tide Gate
- CSO Outfall

NOTES:  
 1. Per DEP, Sites 1,2,3,4,6 and a portion of Site 5 are located within CSO subcatchment areas NCM-042, NCM-059, and NCM-060 and Sites 8 and 10 are located within CSO subcatchment areas NCM-020 and NCM-057.  
 2. Regulator, Tide Gate and Outfall Locations are approximate

0 400 800 FEET  
 SCALE

CSO Subcatchment Area Location  
**Figure 10-1**

**Table 10-2  
Existing Surface Coverage**

Affected CSO Outfall	Surface Type	Surface Areas (sf)/ Percent Coverage	Discharge Method	Weighted Runoff Coefficient
NCM-020	Building Roofs	9,025/100%	Combined Sewer	1.00
	<b>Total</b>	<b>9,025/100%</b>		
NCM-028	Building Roofs	8,119/100%	Combined Sewer	1.00
	<b>Total</b>	<b>8,119/100%</b>		
NCM-042	Building Roofs	7,915/11%	Combined Sewer	0.87
	Paved Surfaces	64,439/89%	Combined Sewer	
	<b>Total</b>	<b>72,354/100%</b>		
NCM-057	Building Roofs	9,025/100%	Combined Sewer	1.00
	<b>Total</b>	<b>9,025/100%</b>		
NCM-058	Building Roofs	12,698/100%	Combined Sewer	1.00
	<b>Total</b>	<b>12,698/100%</b>		
NCM-059	Building Roofs	7,914/11%	Combined Sewer	0.87
	Paved Surfaces	64,439/89%	Combined Sewer	
	<b>Total</b>	<b>72,353/100%</b>		
NCM-060	Building Roofs	7,914/11%	Combined Sewer	0.87
	Paved Surfaces	64,439/89%	Combined Sewer	
	<b>Total</b>	<b>72,353/100%</b>		
NCM-063	Building Roofs	3,554/31%	Combined Sewer	0.90
	Paved Surfaces	7,981/69%	Combined Sewer	
	<b>Total</b>	<b>11,535/100%</b>		
<b>Sources:</b> Control Point Associates Survey dated July 2011.				

**D. THE FUTURE WITHOUT THE PROPOSED ACTIONS**

In the future without the proposed actions, existing conditions on each of the proposed development sites would not change. Most of the sites would continue to be largely vacant and underutilized.

In 2008, the City Council approved the Lower East Side/East Village Rezoning, which resulted in the rezoning of approximately 111 blocks from R7-2 and C6-1 designations to R7A, R7B, R8A, R8B, C4-4A, and C6-2A designations. This rezoning action is identified to analyze the cumulative impacts of additional sanitary flows to the combined sewer system because the rezoned area is partially located within the CSO outfall NCM-020, NCM-028, NCM-057 and NCM-058 subcatchment areas, and Sites 8, 9, and 10 are located within the 2008 East Village/Lower East Side Rezoning area. As a result of the rezoning, an additional 279,826 gpd of sanitary sewage is projected to be generated, which is approximately 0.21 percent of the 230 mgd average daily flow to Newtown Creek WWTP.

**E. PROBABLE IMPACTS OF THE PROPOSED ACTIONS**

**WATER SUPPLY**

By 2022, the proposed actions would result in the full redevelopment of the nine development sites as per the RWCDS. The existing buildings on Sites 2, 5, 8, 9, and 10 would be demolished, and the existing parking uses on all sites except Site 7 would be removed and replaced by the new development. These uses would be replaced by new mixed-use buildings of varying height and bulk. The project site also includes demapped sections of Broome and Suffolk Streets that would be mapped as City streets and sections of Clinton and Delancey Streets that would be

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demapped. **Table 10-3** summarizes the projected water consumption in the future with the proposed actions for the development sites based on the RWCDs.

**Table 10-3**  
**Future With the Proposed Actions Water Consumption**

Use	Unit	Size (Square feet)	Rate	Consumption (gallons per day)
<b>Residential</b>				
Domestic	1,989 (people) <sup>1</sup>	NA	100 gpd/person	198,900
Air Conditioning	NA	951,182	0.17 gpd/sf	161,701
<b>Commercial/Office<sup>2</sup></b>				
Domestic	NA	150,304	0.10 gpd/sf	15,030
Air Conditioning	NA	150,304	0.17 gpd/sf	25,552
<b>Retail<sup>3</sup></b>				
Domestic	NA	498,501	0.24 gpd/sf	119,640
Air Conditioning	NA	498,501	0.17 gpd/sf	84,745
<b>Hotel</b>				
Domestic	200 (rooms)	NA	120 gpd/room/occupant <sup>4</sup>	48,000
Air Conditioning	NA	97,450	0.17 gpd/sf	16,567
<b>TOTAL</b>	NA	1,697,437	NA	<b>670,135</b>
<b>Notes:</b>				
1. The number of residents was calculated based on 900 units. A Community District 3 rate of 2.21 residents per unit was applied.				
2. Commercial/Office uses also include community facilities.				
3. Retail uses include the relocated Essex Street Market.				
4. Assumes 2 occupants/hotel room.				
<b>Source:</b> Rates from <i>CEQR Technical Manual</i> (January 2012 edition).				

The cumulative water demand from the development on Sites 1–6 and 8–10 would be 670,135 gpd. The incremental water demand over the No Action condition generated by uses that would be introduced by the proposed actions would be 656,392 gpd.

The 656,392 gpd incremental demand represents a small increase in demand on the New York City water supply system—approximately 0.06 percent of the 1.1 bgd typically distributed within New York City and Westchester County. As a result, the proposed actions would have no significant adverse impacts on the City’s water supply.

**SANITARY SEWAGE**

The estimated amount of sanitary sewage generated by the proposed development would be 381,570 gpd. The incremental sanitary sewage over the No Action condition generated by the proposed development would be 373,844 gpd. This amount would represent approximately 0.16 percent of the average daily flow of 230 mgd at the Newtown Creek WWTP, and would not result in an exceedance of the Newtown Creek WWTP’s capacity. Therefore, the proposed actions would not create a significant adverse impact on the City’s sanitary sewage treatment system. In addition, per the New York City Plumbing Code (Local Law 33 of 2007) low-flow fixtures would be required to be implemented and would help to reduce sanitary flows from the new buildings.

**STORMWATER**

As a result of the proposed development, the weighted runoff coefficient of four of the CSO outfall subcatchment areas (NCM-042, NCM-059, NCM-060 and NCM-063) would slightly increase (see **Table 10-4** for incremental changes to the weighted runoff coefficients). The increase would be a result of the replacement of surface parking with buildings on Sites 1–6; however, in the subcatchment area of CSO outfalls NCM-042 NCM-059, and NCM-060, the increase of the weighted runoff coefficient would be partially offset by the 10,000 square feet of publicly accessible open space that would be developed on Site 5. The weighted runoff coefficient of CSO outfall subcatchment areas NCM-020, NCM-028, NCM-057 and NCM-058 would all remain the same, because these sites are fully occupied by buildings in both the existing and proposed conditions.

**Table 10-4  
Proposed Surface Coverage**

Affected CSO Outfall	Surface Type	Surface Areas (sf)/ Percent Coverage	Discharge Method	Weighted Runoff Coefficient	Existing Weighted Runoff Coefficient	Incremental Change in Runoff Coefficient
NCM-020	Building Roofs	9,025/100%	Combined Sewer	1.00	1.00	No Change
	<b>Total</b>	<b>9,025/100%</b>				
NCM-028	Building Roofs	8,119/100%	Combined Sewer	1.00	1.00	No Change
	<b>Total</b>	<b>8,119/100%</b>				
NCM-042	Building Roofs	69,020/95%	Combined Sewer	0.96	0.87	+0.09
	Vegetation	3,334/5%	Infiltration/Combined Sewer			
	<b>Total</b>	<b>72,354/100%</b>				
NCM-057	Building Roofs	9,025/100%	Combined Sewer	1.00	1.00	No Change
	<b>Total</b>	<b>9,025/100%</b>				
NCM-058	Building Roofs	12,698/100%	Combined Sewer	1.00	1.00	No Change
	<b>Total</b>	<b>12,698/100%</b>				
NCM-059	Building Roofs	69,020/95%	Combined Sewer	0.96	0.87	+0.09
	Vegetation	3,333/5%	Infiltration/Combined Sewer			
	<b>Total</b>	<b>72,353/100%</b>				
NCM-060	Building Roofs	69,020/95%	Combined Sewer	0.96	0.87	+0.09
	Vegetation	3,333/5%	Infiltration/Combined Sewer			
	<b>Total</b>	<b>72,353/100%</b>				
NCM-063	Building Roofs	11,535/100%	Combined Sewer	1.00	0.90	+0.10
	<b>Total</b>	<b>11,535/100%</b>				
<b>Sources:</b> Draft Large Scale General Development site plans, dated September 2011.						

Table 10-4 describes the development site surfaces and surface areas, how stormwater runoff would be discharged from the sites and incremental changes to the weighted runoff coefficient.

Using the existing site plan and the draft site plans for the proposed Large Scale General Development, the DEP Flow Volume Calculation Matrix was completed for the existing and With-Action conditions. The calculations from the Flow Volume Calculation Matrix help to determine the change in wastewater volumes to the combined sewer system from existing conditions to the future with the proposed actions. Runoff volumes were calculated for four rainfall volume scenarios with varying durations. The summary tables, taken from the DEP Flow Volume Calculation Matrix, are included in **Table 10-5**.

**Table 10-5  
DEP Flow Volume Matrix:  
Existing and Build Volume Comparison**

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)	Runoff Volume To River (MG)	Runoff Volume To CSS** (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Increased Total Volume to CSS** (MG)	Percent Increase From Existing Conditions (%)
<b>NCM-020</b>		Existing				Build				<b>NCM-020 Increment</b>	
		9,025 sf / 0.21 Acres				9,025 sf / 0.21 Acres					
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0012	*
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0012	52
1.20	11.30	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.0036	52
2.50	19.50	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.0061	43
<b>NCM-028</b>		Existing				Build				<b>NCM-028 Increment</b>	
		8,119 sf / 0.19 Acres				8,119 sf / 0.19 Acres					
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0009	*
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0009	40
1.20	11.30	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.0028	40
2.50	19.50	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.0048	34
<b>NCM-042</b>		Existing				Build				<b>NCM-042 Increment</b>	
		72,354 sf / 1.66 Acres				72,354 sf / 1.66 Acres					
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.0176	*
0.40	3.80	0.00	0.02	0.00	0.02	0.00	0.02	0.02	0.03	0.0193	123
1.20	11.30	0.00	0.05	0.00	0.05	0.00	0.05	0.05	0.10	0.0574	122
2.50	19.50	0.00	0.10	0.00	0.10	0.00	0.11	0.09	0.20	0.1010	103
<b>NCM-057</b>		Existing				Build				<b>NCM-057 Increment</b>	
		9,025 sf / 0.21 Acres				9,025 sf / 0.21 Acres					
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0012	*
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0012	52
1.20	11.30	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.0036	52
2.50	19.50	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.0061	43
<b>NCM-058</b>		Existing				Build				<b>NCM-058 Increment</b>	
		12,698 sf / 0.29 Acres				12,698 sf / 0.29 Acres					
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0015	*
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.0015	40
1.20	11.30	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.0044	40
2.50	19.50	0.00	0.02	0.00	0.02	0.00	0.02	0.01	0.03	0.0076	34
<b>NCM-059</b>		Existing				Build				<b>NCM-059 Increment</b>	
		72,353 sf / 1.66 Acres				72,353 sf / 1.66 Acres					
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.0176	*
0.40	3.80	0.00	0.02	0.00	0.02	0.00	0.02	0.02	0.03	0.0193	123
1.20	11.30	0.00	0.05	0.00	0.05	0.00	0.05	0.05	0.10	0.0574	122
2.50	19.50	0.00	0.10	0.00	0.10	0.00	0.11	0.09	0.20	0.1010	103
<b>NCM-060</b>		Existing				Build				<b>NCM-060 Increment</b>	
		72,353 sf / 1.66 Acres				72,353 sf / 1.66 Acres					
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.0176	*
0.40	3.80	0.00	0.02	0.00	0.02	0.00	0.02	0.02	0.03	0.0193	123
1.20	11.30	0.00	0.05	0.00	0.05	0.00	0.05	0.05	0.10	0.0574	122
2.50	19.50	0.00	0.10	0.00	0.10	0.00	0.11	0.09	0.20	0.1010	103

**Table 10-5, cont'd**  
**DEP Flow Volume Matrix:**  
**Existing and Build Volume Comparison**

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)	Runoff Volume To River (MG)	Runoff Volume To CSS** (MG)	Sanitary Volume To CSS (MG)	Total Volume To CSS (MG)	Increased Total Volume to CSS** (MG)	Percent Increase From Existing Conditions (%)
<b>NCM-063</b>		Existing				Build				<b>NCM-063 Increment</b>	
		11,535 sf / 0.26 Acres				11,535 sf / 0.26 Acres					
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0017	*
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0020	74
1.20	11.30	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.0060	74
2.50	19.50	0.00	0.02	0.00	0.02	0.00	0.02	0.01	0.03	0.0108	64
<b>Notes:</b>											
*Percent increase computed for rainfall events only.											
** Assumes no on-site detention/BMPs											
CSS = Combined Sewer System; MG = Million Gallons											

As shown in Table 10-5, the range of the percent increase in total combined sewer discharge to each subcatchment area is as follows:

- NCM-020 - 43 to 52 percent
- NCM-028 - 34 to 40 percent
- NCM-042 - 103 to 123 percent
- NCM-057 - 43 to 52 percent
- NCM-058 - 34 to 40 percent
- NCM-059 - 103 to 123 percent
- NCM-060 - 103 to 123 percent
- NCM-063 - 64 to 74 percent

The Flow Volume Matrix calculations do not, however, reflect the use of any best management practices to reduce sanitary and stormwater runoff volumes to the combined sewer system.

BMPs would be required as a part of the DEP site connection approval process. The BMP Concept Plan in the following section summarizes the potential BMPs that would be suitable for implementation within the project site.

**STORMWATER BMP CONCEPT PLAN**

The following stormwater BMP concept plan is intended to illustrate opportunities to incorporate onsite stormwater source controls during the site planning and building design phases of project development. The proposed zoning is described within the concept plan to provide a guideline of suitable BMPs based on allowable building form. Refer to **Figure 10-2** for the Stormwater Best Management Practice Concept Plan showing potential onsite stormwater source controls. Pursuant to a Request for Proposals (RFP), which will require the developer(s) to develop and implement BMPs that would achieve an overall release rate of 0.25 cfs or 10 percent of the allowable flow rate (whichever is greater) from the proposed development sites, the development and implementation of BMPs would also be a commitment



- Area for Potential Roof Detention
- Proposed Publicly Accessible Open Space
- Site with Potential Detention Tanks within Building
- Site with Potential Subsurface Detention

**NOTES:**

1. The selected BMPs will be designed to achieve 0.25 cubic feet per second (cfs) or 10% allowable flow discharge rate, whichever is greater. Other BMPs not identified in this plan could be implemented to achieve the required discharge rate, as approved by DEP.
2. Site 7 would not be redeveloped under the Proposed Actions.

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## **Seward Park Mixed-Use Development Project**

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in the legally binding agreement with the developer(s). The typical BMP measures described would help to avoid exacerbation of existing CSOs discharged to the East River.

### *ZONING DISTRICT*

The existing zoning for Sites 1 and 2 is C6-1, Sites 3-6 is R8, Site 7, 8 and 10 is C4-4A and Site 9 is located in two zoning districts: C6-2A and C4-4A. The proposed actions would not change the underlying zoning of the project site, except to map new C2-5 commercial overlay zones on Sites 3, 4, 5, and 6. See Chapter 2, “Land Use, Zoning, and Public Policy” for a description of the uses and regulations associated with the various existing zoning districts. BMPs suitable for the types of development permitted under the zoning in the future with the proposed actions include green roofs and blue roofs, subsurface detention, porous pavement and enhanced tree pits. Green and blue roofs would be suitable for retaining or releasing stormwater with slowed discharge rates to control peak runoff rates. In addition, onsite rain gardens, infiltration swales and stormwater detention are possible, where open space is required. Walkways, courtyards and other paved areas onsite could be constructed with permeable concrete or porous asphalt to decrease the overall volume of stormwater runoff.

### *STORMWATER SOURCE CONTROLS*

Stormwater management within the project site would be implemented through the use of BMPs including on-site detention facilities (rooftop detention, underground storage tanks or tanks within the buildings) or other stormwater source controls, which would be required as a part of the DEP site connection approval process as described above. On-site detention would be used to store water for gradual release during rain events, freeing up capacity in combined sewers.

The City of New York Department of Housing Preservation & Development (HPD) has mandated that all projects using their funding sources be certified as green buildings by Enterprise Green Communities. This program either mandates or provides optional support for many on-site water retention or water management building technologies. It also requires that water conserving fixtures be used. All of the BMPs outlined above would be suitable for the Enterprise Green Communities program for sites under HPD jurisdiction.

In coordination with DEP, the developer(s) to be designated pursuant to a Request for Proposals (RFP) would develop and implement BMPs that would be used together to achieve an overall release rate of 0.25 cfs or 10 percent of the allowable flow rate (whichever is greater) from the proposed development sites. The development and implementation of BMPs will be a commitment in the legally binding agreement with the developer(s) to be designated pursuant to the RFP.

With the incorporation of select BMPs outlined in the BMP concept plan, the overall volume of stormwater runoff and the peak stormwater runoff rate would be reduced. In conclusion, the proposed actions would not result in any significant adverse impacts to wastewater treatment or stormwater conveyance infrastructure. \*