

**A. INTRODUCTION**

The workers, visitors, and shoppers introduced to the site as a result of the Proposed Project are expected to place new demands on New York City's water supply and sewage treatment/disposal systems. The evaluation of these new demands is based on a proposed retail and hotel development that would cover approximately 18 acres and comprise:

- Approximately 957,711 gross square feet of large- and medium-scale retail uses, as well as local retail;
- A 250-room hotel and banquet hall; and
- 2,835 parking spaces.

The analysis concludes that the Proposed Project would not result in any significant adverse impacts to the existing water supply, sewage treatment, and stormwater discharge systems.

**B. EXISTING CONDITIONS****WATER SUPPLY**

The New York City water supply system comprises three watersheds north and northwest of the city: the Delaware, Catskill, and Croton. From these watersheds, water is conveyed as far as 125 miles to the City via a system of reservoirs, aqueducts, and tunnels. Within the City, a grid of pipes distributes water to consumers. The average daily consumption in 2003 was 1.094 billion gallons per day according to the New York City Department of Environmental Protection (NYCDEP), the municipal agency that operates the system.

The Bronx's water supply comes primarily from the Croton system. Watersheds within the Croton system collect runoff from areas in Westchester, Dutchess, and Putnam Counties and deliver it via open channel streams and rivers to the New Croton Reservoir in Westchester County. From there, water flows to the Jerome Park Reservoir through the Croton Aqueduct, then to the low lying areas of the Bronx and Manhattan. However, water can also come from the Catskill/Delaware system, which originates in the Catskills. Water from this system is brought via aqueducts to the Kensico Reservoir in Westchester County. From the Kensico Reservoir, the water is conveyed to the Hillview Reservoir in the City of Yonkers. Hillview Reservoir serves to balance the fluctuating daily water demand and connects into the system of water pipes that deliver the water in New York City.

Average daily water consumption in the Bronx is estimated at about 187 million gallons per day (mgd). Because of the size of the water supply system, little variation in water pressure occurs from hour to hour, except within the local distribution network. The average water pressure in the Bronx is 38 pounds per square inch (psi). A pressure of 20 psi is considered the minimum acceptable level for uninterrupted service.

## Gateway Center at Bronx Terminal Market FEIS

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The project area is serviced by a network of water mains forming an interconnected looped service. Portions of this looped service abut the project site; specifically a 20-inch diameter water main located within Exterior Street, a 12-inch diameter main in River Avenue (western side), a 36-inch diameter main in River Avenue (eastern side), a 12-inch diameter main in Cromwell Avenue, a 12-inch diameter main in East 151st Street, and a 12-inch diameter main in East 150th Street. These mains provide domestic and fire services to the existing buildings on the project site and to neighboring businesses, and also to street hydrants for fire fighting.

Minimal water is consumed by the uses on the project site.

### SANITARY SEWAGE

The project site is located in the service area of the Wards Island Water Pollution Control Plant (WPCP). This plant provides full secondary physical and biological treatment of sanitary sewage so that it can be discharged into the City's waterways without adversely affecting water quality. Secondary treatment requires the removal of at least 85 percent of the total dissolved solids and biochemical oxygen demand in the influent. In addition, the effluent is treated with chlorine to kill pathogens. Effluent from the Wards Island WPCP is discharged into the East River. Discharges from the WPCP are regulated by a State Pollutant Discharge Elimination System (SPDES) permit issued by the New York State Department of Environmental Conservation (NYSDEC).

For the Wards Island WPCP, the SPDES permit allows an inflow of 275 mgd. As shown on Table 13-1, during the past 12 months the Wards Island WPCP had an average flow of 211 mgd, which is below the SPDES permit allowable limit. In addition, all other permit conditions were met.

**Table 13-1**  
**Actual Average Monthly Flows at**  
**Wards Island WPCP**

Month	Actual Flow (mgd)
<u>September 2004</u>	<u>219</u>
<u>October</u>	<u>198</u>
<u>November</u>	<u>206</u>
<u>December</u>	<u>211</u>
<u>January 2005</u>	<u>212</u>
<u>February</u>	<u>203</u>
<u>March</u>	<u>204</u>
<u>April</u>	<u>217</u>
<u>May</u>	<u>184</u>
<u>June</u>	<u>213</u>
<u>July</u>	<u>215</u>
<u>August</u>	<u>208</u>
<u>12-Month Average</u>	<u>211</u>
<b>Note:</b>	Permit Limit: 275 mgd.
<b>Source:</b>	New York City Department of Environmental Protection.

For the conveyance of sanitary sewage, the project site is currently served by combined sewers. Combined sewers carry only sanitary sewage during dry weather and convey all sewage to the WPCP. During rain storms and other precipitation events, the combined sewer carries both

sanitary sewage and stormwater runoff. The volume of water during a storm is too great for the WPCP to handle. Therefore, the maximum amount of water that the WPCP can handle is sent to the plant, and the excess mixture of sanitary sewage and runoff is discharged into a receiving water body. In the case of the project site, the excess is discharged into the Harlem River.

An interceptor sewer under Exterior Street conducts flows in a southerly direction towards a regulating chamber at 149th Street. Only connections from NYCDEP sewer lines in the streets are allowed to connect to interceptor sewer lines. Direct connections from individual buildings are not permitted. Dry weather flows in the 10-foot by 7.5-foot interceptor sewer are conveyed to a grit chamber in St. Ann’s Avenue before flowing to the Wards Island WPCP. During wet weather, the excess flow is diverted into the Harlem River at a regulator at 149th Street.

A combined sewer line that allows connections from buildings is located under River Avenue. It is 50 inches by 62 inches. This sewer flows to the same regulator chamber at 149th Street as the interceptor sewer under Exterior Street. Again, during dry weather, the sanitary sewage is conveyed to Wards Island WPCP through a grit chamber at St Ann’s Avenue. During wet weather, the excess mixture of sanitary sewage and runoff is discharged in the Harlem River at 149th Street.

The existing uses at the project site currently generate minimal sanitary sewage.

**STORMWATER RUNOFF**

For the analysis of the impact of stormwater runoff from the Proposed Project, and subsequent development of the stormwater management plan, all areas tributary to the storm sewers must be considered. The stormwater analysis considers the 18 acres from the Proposed Project plus an additional 9 acres from offsite tributary areas—specifically Exterior Street between East 149th Street and the Major Deegan Expressway Ramp D, portions of the area under the Major Deegan Expressway Ramp A, and the land approximately 100 feet west of Exterior Street (see Figure 13-1).

The project site is fully developed and primarily consists of impervious surfaces (roof, pavement, roadway, sidewalk) with minimal landscaped or other pervious surfaces. The coverage of each existing use is presented in Table 13-2.

**Table 13-2  
Existing Surface Coverages**

Surface	Size	Percent
Building Rooftops	452,927 sq.ft. (10.40 acres)	38.2
Existing Roadway & Pavement Area	718,239 sq. ft. (16.49 acres)	60.5
Pervious/Vegetated Area	15,857 sq. ft. (0.36 acres)	1.3
<b>Totals</b>	<b>1,187,023 sq.ft. (27.25 acres)</b>	<b>100.0</b>

The majority of the stormwater runoff volume discharges directly into the Harlem River via existing internal drains through four outfalls. One stormwater sewer serving the project site is 21 inches in diameter and serves the northern portion of the project site. The central portion of the project site is served by a 36-inch and 42-inch stormwater sewer. The southern portion of the site is served by a 30-inch stormwater sewer. Based on topographic information, portions of the Bronx House of Detention site and the market building located at the intersection of 149th Street and River Avenue discharge to the 50- by 62-inch combined sewer in River Avenue.

Table 13-3 shows an estimate of the existing stormwater discharge volumes. The calculated volumes are based on NYCDEP Design Guidelines for developed areas with rainfall intensity (I) of 5.95 inches per hour. The runoff coefficient (C) is based on standard NYCDEP rates and represents the percent of precipitation that becomes surface flow and does not filter into the ground. Runoff rates are presented in cubic feet per second (cfs).

**Table 13-3**  
**Existing Estimated Stormwater Runoff Volumes**

	Surface Area			Runoff (cfs)
	Roof Area (C = 1.0)	Roadway/Pavement Area (C = 0.85)	Pervious/Vegetated Area (C = 0.2)	
Directly to the Harlem River	<u>420,678</u> sq. ft. ( <u>9.66</u> acres)	<u>652,801</u> sq. ft. ( <u>14.99</u> acres)	<u>15,857</u> sq. ft. ( <u>0.36</u> acres)	<u>133.72</u>
Discharges into River Avenue Sewer	32,249 sq. ft. (0.74 acres)	65,438 sq. ft. (1.50 acres)	0	11.99
<b>TOTAL</b>	<b><u>452,927</u> sq. ft.</b> <b>(<u>10.40</u> acres)</b>	<b><u>718,239</u> sq. ft.</b> <b>(<u>16.49</u> acres)</b>	<b><u>15,857</u> sq. ft.</b> <b>(<u>0.36</u> acres)</b>	<b><u>145.71</u></b>

During the design storm, the Harlem River receives approximately 134 cfs of runoff directly and another 12 cfs to the combined sewer line in River Road that goes to the 149th Street regulator. A total of 146 cfs of stormwater flows from the project site during the design storm.

**C. THE FUTURE WITHOUT THE PROPOSED ACTIONS**

In the future without the proposed actions, water consumption, sewage generation and stormwater runoff are not expected to change significantly from existing conditions.

**WATER SUPPLY**

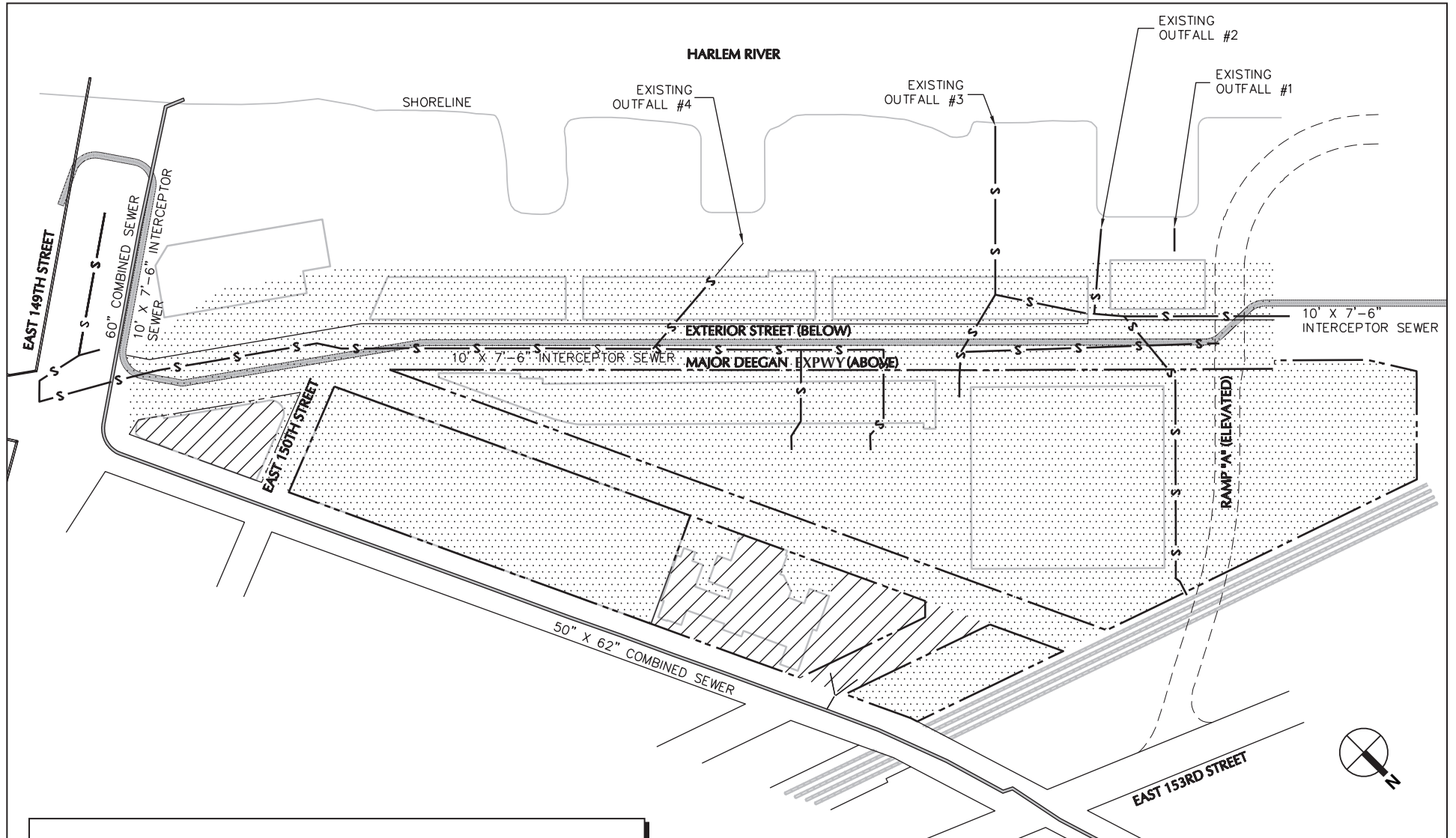
Water demand in the area would be expected to increase as a result of incidental growth; however, this increase is not anticipated to adversely affect the water supply system. The effects of water conservation measures, such as low-flow fixtures and metering, are expected to keep any growth in water demand to a minimum. No major changes to the water distribution system are planned by the City in the project area.

**SANITARY SEWAGE**

New York City regulations require all new construction and substantial renovation projects to incorporate low-flow fixtures for water conservation purposes. In addition, the City has an active program to install water meters in all buildings. Based on 1998 projections, NYCDEP estimates that the flows to the Wards Island WPCP would increase between 6 and 18 percent, to a range of 206 to 230 mgd by the year 2015. Trends since 1998 have shown that sewage generation has been very close to the low end of the range. This estimated future flow is well below the SPDES permit level of 275 mgd.

**STORMWATER RUNOFF**

Without the Proposed Project, current runoff patterns at the project site are not expected to change.



	Property Line
	Existing Areas Tributary to Combined Sewer
	Existing Areas Tributary to Harlem River
	Existing Storm Line

**Existing Stormwater Runoff Conditions**  
Figure 13-1

## D. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

### WATER SUPPLY

As part of the Proposed Project, the existing 20" main in Exterior Street will be reconstructed. This 20" main would facilitate the new service laterals to the retail development and street hydrant system. All new water lines would be designed and built to meet NYCDEP requirements.

Water mains located within City streets proposed to be demapped would be capped and removed/abandoned in accordance with NYCDEP requirements.

The expected water demand is shown in Table 13-4.

**Table 13-4**  
**Projected Water Consumption**

Use	Size (square feet)	Rate	Consumption (gallons per day)
<b>Retail Uses</b>			
Domestic	<u>957,711</u>	0.17 gpd/sq. ft.	<u>162,811</u>
Air conditioning	39,000	0.17 gpd/sq. ft.	6,630
<b>Hotel</b>			
Domestic	250 rooms	150 gpd/room/occupant	75,000
Function Space	30,000	0.17 gpd/sq. ft.	5,100
Air conditioning	55,000	0.10 gpd/sq. ft.	5,500
<b>TOTAL</b>	<b>NA</b>	<b>NA</b>	<b><u>255,041</u></b>
<b>Source:</b> Rates from 2001 <i>City Environmental Quality Review Technical Manual.</i>			

The additional demand is not expected to adversely affect the City's water supply or local water pressure. Pursuant to public law, all plumbing fixtures would be of low-flow design. Compared to the average daily water demand in New York City of about 1.1 billion gpd, the proposed usage represents 0.023 percent of the City's total consumption, which is an insignificant increase. The water supply system has adequate capacity to support the Proposed Project and would not experience a significant adverse impact.

### SANITARY SEWAGE

As part of the Proposed Project, sanitary sewers would be constructed within Exterior Street. These sewers would connect directly to the City's interceptor main located within Exterior Street.

The estimated sanitary sewage generation would be the same as the estimated domestic water demand. The projected sanitary sewage flow from the Proposed Project would be approximately 242,911 gpd. This generation rate represents approximately 0.10 percent of the SPDES permitted flow of 275 mgd to the Wards Island WPCP and is considered to be insignificant. The Proposed Project would not have a significant adverse impact on the Wards Island WPCP's ability to properly treat and discharge sanitary sewage.

New sewer lines would be designed in accordance with the NYCDEP amended drainage plan for the area and will be built to meet all NYCDEP requirements. The Proposed Project would not exceed the capacity of the local sewer system. The Proposed Project is not expected to result in significant adverse impacts on the existing City's sewer system.

**STORMWATER RUNOFF**

The development of the Proposed Project would result in approximately 14 acres of building roof area; 13 acres of structured parking, surface parking, and associated entrance roadways; and 0.2 acres of pervious area. Again, as in the analysis of existing runoff conditions, approximately nine acres of off-site tributary area is taken into consideration for this analysis (see Figure 13-2). Pursuant to discussions with the NYCDEP, site areas from the Proposed Project that previously discharged stormwater into the combined sewer in River Avenue would be designed to discharge into a new, separate storm sewer to be constructed in Exterior Street. This is consistent with current NYCDEP policy to separate storm and sanitary discharges and would also serve to reduce storm flows presently routed to the Wards Island WPCP.

Surface coverage within the Proposed Project is presented in Table 13-5.

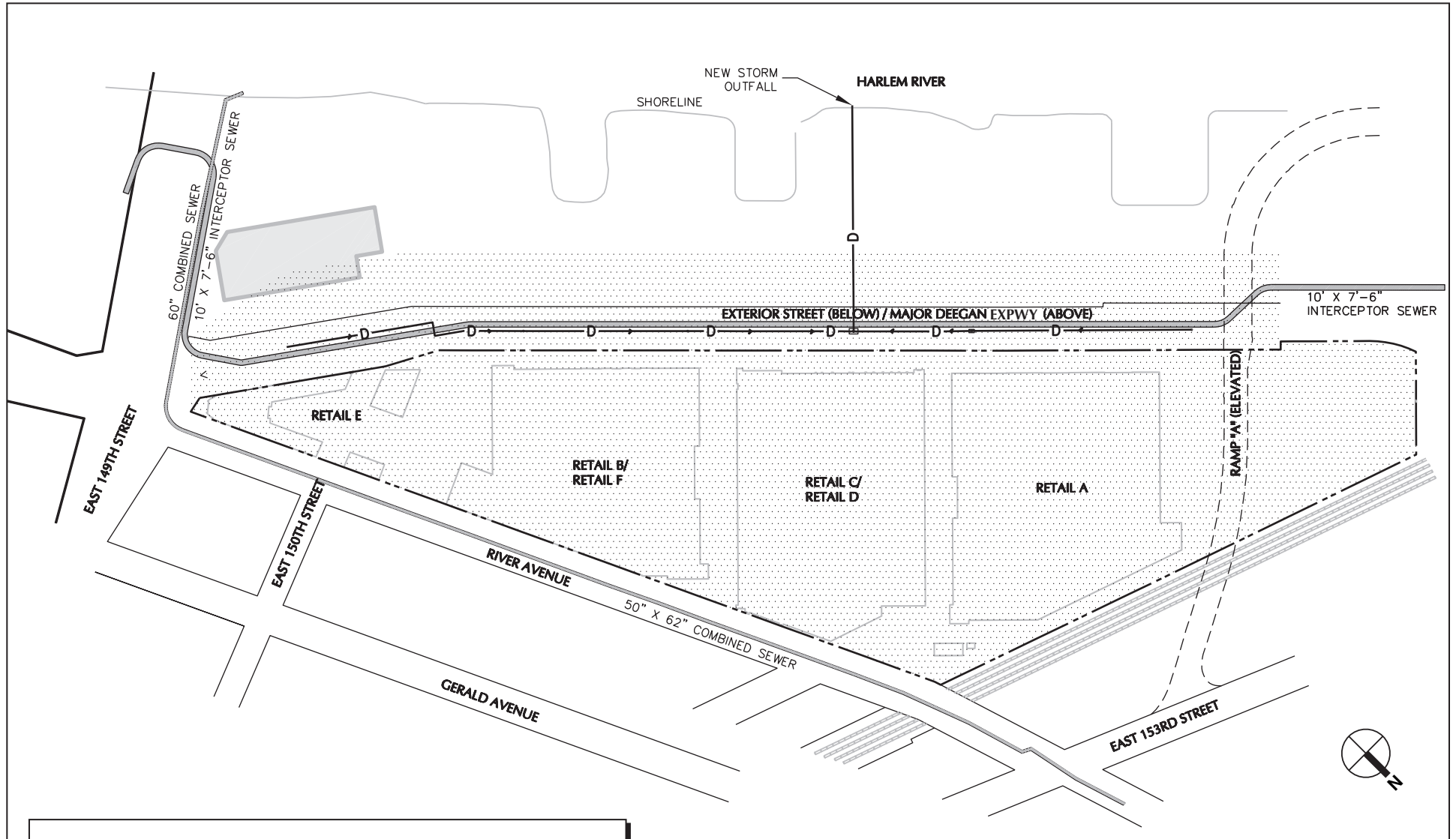
**Table 13-5  
Proposed Surface Coverages**

Surface	Size		Percent
	Proposed Project	Offsite Area	
Building Rooftops	<u>334,105 SF</u> <u>(7.67 acres)</u>	<u>257,440 SF</u> <u>(5.91 acres)</u>	<u>49.8</u>
Roadway & Pavement Area	<u>465,656 SF</u> <u>(10.69 acres)</u>	<u>123,275 SF</u> <u>(2.83 acres)</u>	<u>49.6</u>
Pervious Area	<u>6,534 SF</u> <u>(0.15 acres)</u>	<u>0 SF</u> <u>(0 acres)</u>	<u>0.6</u>
Total	<u>806,295 SF</u> <u>(18.51 acres)</u>	<u>380,715 SF</u> <u>(8.74 acres)</u>	100

The Proposed Project would include construction of a NYCDEP storm sewer within Exterior Street in accordance with the City’s amended drainage plan for the area. The drainage plan would be amended as part of the mapping action associated with the Proposed Project. At the direction of the NYCDEP, the plan also would include a single new outfall into the Harlem River to replace the four existing outfalls into the Harlem River.

New site storm sewers would be constructed to collect runoff from the buildings, parking areas, and pervious area within the project site. These internal drains would discharge into a newly constructed NYCDEP storm sewer within Exterior Street. Stormwater runoff from the Major Deegan Expressway would also discharge into the new NYCDEP storm sewer in Exterior Street.

The Proposed Project would be designed in accordance with a Stormwater Pollution Prevention Plan (SWPPP) in order to minimize potential water quality and stormwater drainage effects associated with the discharge of stormwater during and after the completion of construction activities. The SWPPP will incorporate stormwater management practices (SMP's) consistent with the SPDES General Permit for Construction Activities (GP-02-01) and with the New York State Stormwater Management Design Manual. Table 13-6 presents a summary of the stormwater discharge volumes associated with the Proposed Project. The runoff calculations are in accordance with design parameters established for the NYCDEP Amended Drainage Plan for this project and a rainfall intensity of 5.95 in/hr. Runoff rates are presented as cubic feet per second (cfs).





**Table 13-6**

**Estimated Stormwater Runoff Volumes with the Proposed Project**

	NYCDEP Runoff Coefficient	Rainfall Intensity	Tributary Area (sq.ft.)	Total Runoff (cfs)
Directly to the Harlem River		5.95		
<u>Project Site</u>	<u>1.0</u>	<u>5.95</u>	<u>771,461 sf</u> <u>(17.71 acres)</u>	<u>105.38</u>
<u>Off-Site Public Open Space</u>	<u>0.2</u>	<u>5.95</u>	<u>415,562 sf</u> <u>(9.54 acres)</u>	<u>11.35</u>
Into the River Avenue sewer	0.85	5.95	<u>0</u>	<u>0.0</u>
<b>Total Discharge (cfs)</b>				<b><u>149.15</u></b>

Overall, the stormwater runoff is expected to increase from the existing 146 cfs to 149 cfs with the Proposed Project with the creation of the off-site public open space by the City, which is an insignificant increase. This would not have a significant adverse impact on water quality in the Harlem River.

## E. CONCLUSION

In conclusion, the Proposed Project would not result in significant adverse impacts on existing infrastructure systems. The existing City infrastructure has sufficient capacity to accommodate the Proposed Project without having a significant adverse impact on other users. \*