Chapter 12: Solid Waste

A. INTRODUCTION

This chapter examines the Proposed Actions' potential for significant adverse impacts on solid waste and sanitation services. According to the 2014 *City Environment Quality Review (CEQR) Technical Manual*, a solid waste and sanitation services assessment is intended to determine whether a project has the potential to cause a substantial increase in solid waste production. Such an increase may overburden available waste management capacity or otherwise be inconsistent with New York City's Solid Waste Management Plan (SWMP) or with state policy related to the City's integrated solid waste management system.

As described in Chapter 1, "Project Description," the Proposed Actions comprise a series of land use actions—including zoning map amendments, zoning text amendments, City Map amendments, and disposition of City-owned property, which would affect an approximately 81-block area in Gowanus (the "Project Area"). The Proposed Actions are anticipated to facilitate new residential, commercial, and community facility development within the Project Area. Overall, the Proposed Actions are expected to result in a net increase of approximately 8,500 dwelling units (DUs) (a With Action condition of approximately 9,300 DUs); 734,000 square feet (sf) of commercial space; 251,000 sf square feet of community facility space; and approximately six acres of new open space. The Proposed Actions would result in net decreases of approximately 132,000 sf of warehouse space; 125,000 sf of self-storage space; and 60,000 sf of other industrial space, as compared to the No Action condition.

To assess the potential effects of the Proposed Actions on solid waste and sanitation services, the detailed analysis in this chapter estimates the amount of existing solid waste generated on the projected development sites identified in the reasonable worst-case development scenario (RWCDS), and provides a comparison of estimates under No Action and With Action conditions.

PRINCIPAL CONCLUSIONS

The analysis finds that the Proposed Actions would not result in a significant adverse impact on solid waste and sanitation services. The Proposed Actions would not directly affect a solid waste management facility. Development in the With Action condition would generate an increment above the No Action condition of approximately 224 tons per week of solid waste, of which approximately 79 percent (178 tons) would be handled by the New York City Department of Sanitation (DSNY) and 21 percent (46 tons) would be handled by private carters. This incremental increase in solid waste correlates to the addition of approximately 16 additional truckloads per week of solid waste handled by DSNY and 11 truckloads per week handled by private carters.

When compared with the solid waste generated by the No Action condition, the additional solid waste resulting from the With Action condition would constitute an increase that would not reach the level of impact significance, as it would be considered negligible relative to the approximately 12,260 tons of solid waste handled by the DSNY every day, or the 13,000 tons handled by private

carters.[1] As such, the Proposed Actions would not result in an increase in solid waste that would overburden available waste management capacity. The Proposed Actions would also not conflict with, or require any amendment to, the City's solid waste management objectives as stated in the SWMP.

B. METHODOLOGY

According to the *CEQR Technical Manual*, projects with a generation rate of less than 50 tons (100,000 pounds) of solid waste per week would not result in a significant adverse impact to the city's waste management capacity, and do not warrant detailed analysis. Because the Proposed Actions would result in a net increase of more than 50 tons of solid waste per week, an assessment of solid waste and sanitation services is warranted.

An assessment of solid waste/sanitation services is a density-based technical analysis; as a result, only development on identified projected development sites forms the basis of the analysis. The analysis describes existing and future New York City solid waste disposal practices (including the collection system and disposal methods) and estimates the solid waste generated by activities on the Project Area under existing conditions and in the No Action condition for the 2035 Build Year. The chapter also forecasts solid waste generation based on rates for typical land uses and activities, as provided in the *CEQR Technical Manual*, and assesses the effects of the Proposed Actions' incremental solid waste generation on municipal and private sanitation services in the With Action condition.

C. EXISTING CONDITIONS

DESCRIPTION OF CURRENT SOLID WASTE SANITATION SERVICES

DSNY is the agency responsible for the collection and disposal of residential and institutional solid waste in the City, while private carters collect solid waste from commercial and manufacturing uses. In addition to collecting municipal solid waste, refuse, and designated recyclable materials generated by residential and institutional uses, including schools, some nonprofit institutions, and many city and state agencies, DSNY also collects waste from city litter baskets, street-sweeping operations, and lot cleaning activities. The DSNY collection fleet is composed of over 2,100 waste collection trucks, with the typical collection truck for refuse carrying approximately 12.5 tons of waste material and the typical recycling truck carrying about 11.5 tons of paper or approximately 10.0 tons of metal, glass, and plastic containers. In total, DSNY collects approximately 9,680 tons per day of residential and institutional refuse and approximately 2,120 tons per day of recyclables.[2]

Commercial establishments (e.g., restaurants, retail facilities, offices, and industries) in New York City contract with private carters for collection and processing and/or disposal of various kinds of solid waste, including municipal solid waste construction and demolition debris, non-hazardous industrial wastes, and recyclables. According to the *CEQR Technical Manual*, commercial carters typically carry between 12 and 15 tons of waste material per truck. The City's businesses, whose

[1] About DSNY: http://www1.nyc.gov/assets/dsny/about/inside-dsny.shtml.

[2] "DSNY Annual Report; New York City Municipal Refuse and Recycling Statistics: Fiscal Year 2018," https://dsny.cityofnewyork.us/wp-content/uploads/2018/10/about_dsny-non-dsny-collections-FY2018.pdf.

waste is collected by private carting companies, generate approximately 13,000 tons of refuse each day.

Under New York City's mandatory Recycling Law (Tile 16 of the NYC Administrative Code, Chapter 3), DSNY has established and enforces rules requiring that certain designated recyclable materials be separated from household waste for separate collection. New York City residents are required to separate aluminum foil, glass, plastic, and metal containers, and newspapers and other paper waste from household waste for separate collection. Commercial establishments are also subject to mandatory recycling requirements. Businesses must source-separate certain types of paper waste, cardboard, metal items, and construction wastes. Food and beverage establishments must recycle metal, glass, and plastic containers, and aluminum foil, in addition to meeting the commercial recycling requirements.

DSNY delivers most of the refuse it collects to certain public or private solid waste management facilities known as transfer stations in the City or in adjoining communities for processing and transporting to out-of-city disposal facilities. Solid wastes that are not recycled, reused, or converted to a useful product locally must be exported from the City for disposal because New York City does not have public or private local disposal facilities such as sanitary landfills, construction and demolition debris landfills, traditional incinerators, or waste-to-energy resources recovery facilities.

Similarly, commercial refuse and other solid waste that is not carted directly to disposal facilities are delivered to transfer stations for transport to disposal facilities. Non-putrescible waste such as construction and demolition debris typically is sorted at transfer stations, which remove clean fill materials, metal, and wood for recycling, and send the residue to landfills for disposal.

As New York City has no public or private local disposal facilities, solid wastes that are not recycled, reused, or converted to a useful product locally must be exported from the City for disposal. Designated recyclable materials are delivered to privately operated materials recovery facilities (MRFs) in the City and surrounding communities. Paper recyclables collected by DSNY in Manhattan, Staten Island, and parts of Brooklyn are transported directly to the Pratt Industries Paper Plant in Staten Island, which processes them for use in the production of liner board and similar products.

As required by New York State Law, the City has adopted a comprehensive SWMP for the long-term management of solid waste generated within its borders. The current SWMP was adopted in 2006 and covers the period through 2025. It is anticipated that City will amend the current plan after 2025 to build on the ongoing programs to prevent, reuse, recycle, and compost waste, pursuant to the requirements of the New York State Solid Waste Management Act. The SWMP estimates public- and private-sector waste quantities that must be managed over the planning period and identifies processing, transfer, and disposal capacity that will be necessary for such waste. According to the SWMP, the City's commercial solid waste generation is projected to increase to approximately 74,000 tons per week by the year 2025.[3] The amount of DSNY-managed waste is projected to increase to approximately 115,830 tons per week.[4]

The SWMP takes into account the objectives of New York State's solid waste management policy with respect to the preferred hierarchy of waste management methods, in order of preference: waste reduction, recycling, composting, resource conservation and energy production, and landfill

[3] Comprehensive Solid Waste Management Plan, September 2006; Attachment IV, Table IV 2-2.

[4] Comprehensive Solid Waste Management Plan, September 2006; Attachment II, Table II 2-6.

disposal. The SWMP includes initiatives and programs for waste minimization, reuse, recycling, composting, and siting a new waste conversion facility to derive energy from waste, waste transfer, transport, and out-of-city disposal at waste-to-energy facilities and landfills.

With respect to commercial waste, the SWMP provides the capacity for barge export of certain amounts of commercial refuse from four converted DSNY marine transfer stations (MTSs); provides for barge export of construction and demolition waste from the existing DSNY MTSs at West 59th Street; and requires rail export of commercial refuse from the three private transfer stations that also contract to handle DSNY refuse. The SWMP also includes more stringent restrictions on the siting and operation of commercial solid waste transfer stations.

A DSNY sanitation garage, Brooklyn Garage 06, is located nearby, but outside of the study area at 127 2nd Avenue, between 11th and 12th Streets. The garage, one of 59 Citywide, is essential to DSNY's sanitation operations, as it stores and maintains DSNY vehicles that provide refuse collection, recycling, and winter emergency services. The facility allows DSNY to perform its regular duties and execute emergency response, as needed, to the surrounding neighborhoods. DSNY operations at Brooklyn Garage 6 would not be affected by the Proposed Actions.

SOLID WASTE GENERATION ON PROJECTED DEVELOPMENT SITES

In total, the 63 projected development sites are currently occupied by approximately 220 DUs; 394,000 sf of commercial floor area—including office space, retail space, and auto-related use; and 417,000 of industrial space. Based on Citywide average rates for solid waste generation used in the SWMP (and provided in Table 14-1 of the *CEQR Technical Manual*), the existing uses on the projected development sites generate a total of approximately 83 tons of solid waste per week. As shown in **Table 12-1**, approximately 94.3 percent—78.4 tons (non-residential) per week—of the existing solid waste generated is handled by private carters, and approximately 5.7 percent—4.7 tons per week—is handled by DSNY.

Table 12-1
Existing Solid Waste Generation on Projected Development Sites

Use	Floor Area (sf)	Population	Solid Waste Generation Rate (lbs/wk)	Solid Waste Generation (lbs/wk)	Solid Waste Generation (tons/wk)
Residential	204,838	223 households	41 per household	9,143	4.57
Office	88,219	353 employees	13 per employee	4,587	2.29
Retail	131,047	393 employees	79 per employee	31,058	15.53
Auto-Related	120,781	242 employees	72.5 per employee	17,513	8.76
Hotel	54,870	366 employees	75 per employee	27,469	13.73
Industrial	417,406	417 employees	182.5 per employee	76,177	38.09
Community Facility	9,000	---	0.03 per sf	270	0.14
Total Solid Waste Generation				***166,218***	***83.11***
Solid Waste Handled by DSNY (includes residential and all CF uses)				***9,413***	***4.71***
Solid Waste Handled by Private Carters (all includes commercial and industrial uses)				***156,805***	***78.40***

Notes: Solid waste generation is based on Citywide average waste generation rates presented in Table 14-1 of the *CEQR Technical Manual*, and estimates of workers by use, as follows:
Residential use: 41 lbs/wk per DU.
Office: 13 lbs/wk per employee; assume 1 employee per 250 sf.
General retail: 79 lbs/wk per employee; assume 3 employees per 1,000 sf.
Auto-related: use average of retail and wholesale rate—72.5 lbs per worker; assume 1 employee per 1,000 sf.
Hotel: 75 lbs/wk per employee, assume 2.67 employees per 400 sf.
Industrial use: use average of apparel/textile and printing/publishing rate—182.5 lbs/wk per employee; assume 1 employee per 1,000 sf.
Community facility uses (government office, *CTM 2014 Table 14-1)*: 0.03 lbs/wk. per sf.

D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

As detailed in Chapter 1, "Project Description," it is anticipated that in the No Action condition the projected development sites would contain approximately 800 DUs, 345,000 sf of retail space, 375,000 sf of office space, 55,000 sf of hotel space, 107,000 sf of auto-related commercial uses, 217,000 sf of community facility uses, and 415,500 sf of industrial and storage space. Overall, solid waste generated by the projected development sites would increase under the No Action condition, as compared to the Existing condition.

Under the No Action condition, approximately 119 tons of solid waste per week would be generated, compared with 83 tons per week under existing conditions. As shown in **Table 12-2**, the amount of solid waste handled by DSNY weekly would increase to approximately 20.0 tons from 4.7 tons, and the amount of solid waste handled by private carters per week is expected to increase to 98.7 tons from the 78.4 tons generated under existing conditions.

Table 12-2
No Action Solid Waste Generation on Projected Development Sites

Use	Floor Area (sf)	Population	Solid Waste Generation Rate (lbs/wk)	Solid Waste Generation (lbs/wk)	Solid Waste Generation (tons/wk)
Residential	714,645	816 households	41 per household	33,456	16.73
Retail	344,827	1,034 employees	79 per employee	81,724	40.86
Auto-Related	107,361	215 employees	72.5 per employee	15,567	7.78
Hotel	54,870	366 employees	75 per employee	27,469	13.73
Office	374,983	1,500 employees	13 per employee	19,499	9.75
Storage	124,976	9 employees	9 per employee	82	0.04
Industrial	290,514	291 employees	182.5 per employee	53,019	26.51
Community Facility	217,067	—	0.03 per sf	6,512	3.26
Total Solid Waste Generation				***237,329***	***118.66***
Solid Waste Handled by DSNY (includes residential and all CF uses)				***39,968***	***19.98***
Solid Waste Handled by Private Carters (all includes commercial and industrial uses)				***197,361***	***98.68***

Notes: Solid waste generation is based on Citywide average waste generation rates presented in Table 14-1 of the *CEQR Technical Manual*, and estimates of workers by use, as follows:
Residential use: 41 lbs/wk per DU.
General retail: 79 lbs/wk per employee; assume 3 employees per 1,000 sf.
Restaurant: 251 lbs/wk per employee; assume 3 employees per 1,000 sf.
Supermarket: 284 lbs/wk per employee; assume 3 employees per 1,000 sf.
Auto-related: use average of retail and wholesale rate—72.5 lbs per worker; assume 1 employee per 1,000 sf.
Hotel: 75 lbs/wk per employee, assume 2.67 employees per 400 sf.
Office: 13 lbs/wk per employee; assume 1 employee per 250 sf.
Storage: 9 lbs/wk per employee; assume 1 employee per 15,000 sf.
Industrial use: use average of apparel/textile and printing/publishing rate—182.5 lbs/wk per employee; assume 1 employee per 1,000 sf.
Community facility uses (government office, *CTM 2014 Table 14-1)*: 0.03 lbs/wk. per sf.

As required by New York State law, the City has adopted a comprehensive SWMP for the long-term management of solid waste generated within its borders. The current SWMP was adopted in 2006 and covers a period through 2025. The SWMP estimates public- and private-sector waste quantities that must be managed over the planning period and identifies processing, transfer, and disposal capacity that will be necessary for such waste. According to the SWMP, the City's commercial solid waste generation is projected to increase to approximately 74,000 tons per week

by the year 2025.[5] The amount of DSNY managed waste is projected to increase to approximately 118,830 tons per week.[6]

E. THE FUTURE WITH THE PROPOSED ACTIONS

Under the With Action condition, the 63 projected development sites are expected to result in the addition of approximately 9,300 DUs, which is a net increase of approximately 8,500 DUs, as compared with the No Action condition. The Proposed Actions are expected to result in net increases of approximately 753,000 sf of commercial space and 251,000 sf of community facility space. The Proposed Actions are also expected to result in a net decrease of approximately 60,000 sf of industrial/manufacturing space, 84,000 sf of auto-related space, and 257,000 sf of warehouse/storage, as compared with the No Action condition.

As shown in **Table 12-3**, the total solid waste generation under the Proposed Actions would be approximately 343 tons per week, which represents an additional 224 tons in weekly solid waste generation as compared with the No Action condition.

Table 12-3
With-Action Solid Waste Generation on Projected Development Sites

Use	Floor Area (sf)	Population	Solid Waste Generation Rate (lbs/wk)	Solid Waste Generation (lbs/wk)	Solid Waste Generation (tons/wk)
Residential	7,937,605	9,311 households	41 per household	381,751	190.88
Retail	524,794	1,574 employees	79 per employee	124,376	62.19
Restaurant	53,671	161 employees	251 per employee	40,414	20.21
Supermarket	36,000	108 employees	284 per employee	30,672	15.34
Hotel	54,870	366 employees		27,469	13.73
Office	936,739	3,747 employees	13 per employee	48,710	24.36
Industrial	98,571	99 employees	182.5 per employee	17,989	8.99
Community Facility	468,480	--	0.03 per sf	14,054	7.03
Total Solid Waste Generation				***685,437***	***342.72***
Solid Waste Handled by DSNY (includes residential and all CF uses)				***395,805***	***197.90***
Solid Waste Handled by Private Carters (all includes commercial and industrial uses)				***289,631***	***144.82***

Notes: Solid waste generation is based on Citywide average waste generation rates presented in Table 14-1 of the *CEQR Technical Manual*, and estimates of workers by use, as follows:
Residential use: 41 lbs/wk per DU.
General retail: 79 lbs/wk per employee; assume 3 employees per 1,000 sf.
Restaurant: 251 lbs/wk per employee; assume 3 employees per 1,000 sf.
Supermarket: 284 lbs/wk per employee; assume 3 employees per 1,000 sf.
Office: 13 lbs/wk per employee; assume 1 employee per 250 sf.
Industrial use: use average of apparel/textile and printing/publishing rate—182.5 lbs/wk per employee; assume 1 employee per 1,000 sf.
Community facility uses (government office, *CTM 2014 Table 14-1)*: 0.03 lbs/wk. per sf.

As shown in **Table 12-3**, commercial and industrial uses under the Proposed Actions would generate approximately 144.8 tons of solid waste per week. Solid waste generated by commercial and industrial uses would be collected by private commercial carters, and commercial buildings developed under the Proposed Actions would be subject to mandatory recycling requirements for paper, metals, construction waste, aluminum foil, as well as metal, glass and plastic containers. Residential and community facility uses would generate approximately 197.9 tons of solid waste

[5] SWMP, September 2006. Attachment IV, Table IV 2-2.

[6] SWMP, September 2006, Attachment II, Table II 202.

per week under the With Action condition (see **Table 12-4**). Solid waste generated by residential and community facility uses would be collected by DSNY trucks and would be served by existing DSNY collection routes. As a general practice, DSNY adjusts its operations to service the community. Residents will be required to participate in the City's recycling program for paper, metals, and certain types of plastics and glass.

Table 12-4
Comparison of Weekly Solid Waste Generation on Projected Development Sites (Existing, No Action, With Action Conditions)

	Existing Condition	No Action Condition	With Action Condition	Increment (No Action to With Action)
Total Solid Waste Generation (tons/wk)	83.1	118.7	342.7	224.1
Solid Waste Handled by DSNY (tons/wk)	4.7	20.0	197.9	177.9
Solid Waste Handled by Private Carters (tons/wk)	78.4	98.7	144.8	46.1

As shown in **Table 12-4**, compared with the No Action condition, the Proposed Actions would result in an approximately 177.9 ton increase in weekly solid waste handled by DSNY. This would represent approximately 0.2 percent of the City's anticipated future waste generation handled by DSNY (it is estimated that DSNY will manage 115,830 tons of solid waste for export, recycling compost, and refuse per week by 2025), as projected in the 2006 SWMP. [7] Based on the typical DSNY collection truck capacity of approximately 12.5 tons, the new residential and community facility uses introduced by the Proposed Actions would be expected to generate solid waste equivalent to approximately 14 truckloads per week. This increase is not expected to overburden the DSNY's solid waste handling services.

Compared with the No Action condition, conditions with the Proposed Actions would result in an approximately 46.1 ton increase in weekly solid waste handled by private carters. This would represent approximately 0.06 percent of the City's anticipated future commercial waste generation, as it is estimated that private carters will carry 74,000 tons of solid waste per week by 2025, as projected in the SWMP. Based on the typical commercial carter capacity of between 12 and 15 tons of waste material per truck, the Proposed Actions would require between 3.5 and 4.5 additional collection trucks per week compared with the No Action condition. There are more than 2,000 private carting businesses authorized to serve New York City, and it is expected that their collection fleets would be sufficiently flexible to accommodate this increased demand for solid waste collection. Therefore, the net increment in commercial solid waste handled by private carters would not overburden the City's waste management system.

Overall, the Proposed Actions would not conflict with the SWMP, or have a direct effect on a solid waste management facility. The Proposed Actions would generate a net increase pf approximately 16 DSNY truckloads and up to 11 commercial carter truckloads of refuse per week. The incremental solid waste generated by the Proposed Actions would not overburden the City's solid waste handling systems, and therefore the Proposed Actions would not have a significant adverse impact on the City's solid waste and sanitation services. ✷

[7] Comprehensive Solid Waste Management Plan, September 2006; Attachment II, Table IV 2-2, p. 4. Accessed August 8, 2016.