Chapter 15: Solid Waste and Sanitation Services

A. INTRODUCTION

This chapter examines the potential effect of the Proposed Actions on solid waste and sanitation services by 2015 and 2030. As described below, the Proposed Actions would place new demands on solid waste and sanitation services. This increased demand would be primarily handled by the New York City Department of Sanitation (DSNY), while private sanitation companies would handle solid waste from any commercial ventures. DSNY provides solid waste services to institutions, such as Columbia University.

PRINCIPAL CONCLUSIONS

The Proposed Actions would result in a net increase over existing conditions of about 56 tons of solid waste per week in 2015 and about 146 tons per week in 2030. Although the new development would create new demand for the disposal of solid waste, municipal and private solid waste services have adequate capacity to meet these increases in demand. Therefore, no significant adverse impacts from the Proposed Actions on these services are expected.

Certain solid wastes, such as regulated medical wastes and spent chemicals, would likely be generated by the uses contemplated under the Proposed Actions, and these types of wastes are not handled by DSNY or ordinary private carters. Instead, specialty waste handling companies would be used to manage these wastes. These companies are regulated and licensed by both the New York State and federal governments. The regulations for the collection, handling, transportation, and final destruction of these wastes ensure that significant adverse impacts would not result. The specialty companies are able to expand their services to meet the demand and are expected to be available to handle the wastes.

B. EXISTING CONDITIONS

In New York City, residential and institutional refuse is handled by DSNY, while solid waste from commercial, retail, and manufacturing uses is collected by private carters. Since March 22, 2001, all DSNY-handled solid waste has been disposed of at landfills outside of New York City. Waste materials are taken to transfer stations for sorting and transfer to larger trucks. DSNY rules mandate that recyclable materials be separated from waste materials. Recyclable materials include paper, cardboard, beverage cartons, bottles, cans, metal, foils, and large metal appliances. Private carters take the solid waste to out-of-city landfills and waste to energy plants. Recycled materials are taken to recycling facilities. In New York City fiscal year 2006 (ended June 30, 2006), DSNY handled about 5,154 tons per day of recyclables and about 11,784 tons per day of solid waste, for a total of about 16,938 tons per day, or 5,115,360 tons from fiscal year 2006.

Commercial carters pick up refuse from businesses, manufacturers, and offices, and take the waste materials to transfer stations, where the recyclable materials are separated from the solid waste. The solid waste is consolidated into larger trucks for transport and disposal in landfills

outside New York City. The recyclable materials are sold and transported to manufacturing facilities. Private carters handled about 14,830 tons per day of recyclables and solid waste. In addition, private carters handled about 19,070 tons per day of construction debris and excavated material.

Specialty companies handle waste materials with characteristics that make them unsuitable for general disposal in landfills. The waste materials that need special handling include radioactive, medical, infectious, animal, chemical, and hazardous wastes. The low-level radioactive wastes (typically medical tracers) are usually allowed to decay until they pose no danger. In cases of radioactive waste with long half-lives (the amount of time needed for the radioactivity level to be reduced by one half), the waste is shipped off-site for disposal at a licensed facility. Depending on the level of potential infection, medical, animal, and infectious wastes are generally sterilized in an autoclave before being transported for final disinfection and treatment. Chemical and hazardous wastes are disposed of in specially designed landfills that are sealed to prevent the materials from leaching out. Both the U.S. and New York State Departments of Transportation have strict regulations for transporting these waste materials. The U.S. Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (DEC) have stringent rules and regulations that govern the collection, handling, transportation, and disposal of these wastes.

The rate of solid waste generation is based on the 2001 *City Environmental Quality Review (CEQR) Technical Manual*. The rates in the *CEQR Technical Manual* are generally based on the number of workers and residents. Table 15-1 shows the conversion factors used to translate the gross square feet (gsf) of the buildings into workers and users.

Table 15-1
Solid Waste Conversion Factors

Use	Conversion Factor
Housing	2.62 residents per 800-square-foot unit
Active ground-floor use	400 square feet per worker
Academic research space	900 square feet per worker
Academic space	320 square feet per worker/student
Recreation	1,750 square feet per worker
Community facility	500 square feet per worker
Storage space	10,000 square feet per worker
Academic research support	1,200 square feet per worker
Program support	625 square feet per worker
Mechanical and electrical space	1,200 square feet per worker
Parking	7,150 square feet per worker
Office	250 square feet per worker

Source: Columbia University and previous environmental reviews.

Current estimated solid waste generation on sites that would be developed by the Proposed Actions is shown in Table 15-2. It is estimated that existing activities in the Project Area generate a total of just under 160,000 pounds per week (80 tons per week) of solid waste and recyclables. Of this total, about 50,919 pounds (or about 25 tons) per week is handled by DSNY from the private residents and the bus depot, and about 107,932 pounds (or 54 tons) per week is handled by private carters. Using an average truckload of 10 tons, DSNY needs about three truck trips per week, and private carters need about five truckloads per week, to handle these materials.

Table 15-2
Existing Solid Waste Generation in Project Area

Use	Size	Rate (Pounds per Week)	DSNY-Handled Waste (Pounds per Week)	Privately Handled Waste (Pounds per Week)
Housing	165 units	41	6,765	0
Retail	474 workers	79	0	37,446
Office	736 workers	13	0	9,568
Industrial	1,250 workers	66	44,154	38,346
Transportation/ mechanical	342 workers	66	0	22,572
Total	**NA**	**NA**	**50,919**	**107,932**

Sources: Rates from 2001 *CEQR Technical Manual* and previous environmental reviews.

C. 2015 FUTURE WITHOUT THE PROPOSED ACTIONS

New York City adopted a comprehensive Solid Waste Management Plan (SWMP) in August 1992, and the implementation of the plan was altered slightly in May 1993 to gain approval from DEC. It has since been updated to reflect changing conditions. In order to close the Fresh Kills landfill, New York City developed interim plans to export all the municipal waste that it collects. A long-term plan was developed that led to large-scale trucking of municipal solid waste. A new SWMP was released in October 2004 with a focus on municipal solid waste. The Final Environmental Impact Statement (FEIS) for the new SWMP was released in April 2005. The new SWMP follows two main principles: (1) containerization of waste, and (2) long-distance export of that waste by barge or rail. Under the new SWMP, solid waste will be taken from Manhattanville to the Essex County, New Jersey, Resource Recovery Facility for sorting and disposal. Recyclable materials are expected to be sold after sorting and the remaining waste burned for energy recovery. The October 2004 SWMP has been approved by the New York City Council and has been submitted to DEC for its approval. Both approvals are necessary for the SWMP to go into effect.

Under the new SWMP, the methods of handling commercial solid waste are not expected to change significantly from current methods. In March 2004, DSNY published the Commercial Waste Management Study (CWMS) pursuant to Local Law 74 of 2000. The purpose is to: (1) address the siting and operations of private transfer station and waste collection operations; (2) determine future demand for commercial transfer capacity; and (3) facilitate a transition from the current mode of truck-based export to export by barge and/or rail. The study found that the basic system of private carters collecting and disposing of waste from commercial facilities is expected to remain unchanged. Overall, the major change to solid waste collection systems serving New York City is greater reliance on private carters to transport and dispose of DSNY-handled waste outside New York City. Municipal waste and privately handled waste will continue to be shipped to licensed landfills and resource recovery facilities outside New York City. Recyclables are expected to be sorted and sold.

D. 2015 FUTURE WITH THE PROPOSED ACTIONS

Columbia University has an extensive recycling program on its existing campuses that extends far beyond what is required under New York City regulations, and it is expected that the recycling program would be implemented at the University buildings in the Academic Mixed-Use area. All batteries, computers, monitors, printers, and other electronic equipment are recycled. Printer cartridges are also returned to the manufacturers for reuse. Silver is recovered from the development processes, and refrigerants are reclaimed. Mercury thermometers are exchanged for other types. Fluorescent and ultraviolet bulbs are handled specially and outside of the general solid waste system. The analysis of projected solid waste includes general recycling, but not the additional programs that Columbia University would implement. Therefore, the analysis is conservative.

For analysis purposes, a reasonable worst-case development scenario was developed to determine the likely maximum amount of solid waste that could be generated from proposed new uses in the Academic Mixed-Use Area. In general, the reasonable worst-case development scenario maximizes the uses that generate the most solid waste, such as active ground-floor uses and housing for graduate students, faculty, and other employees.

As shown in Table 15-3, solid waste generated from the Project Area is estimated to total 112,045 pounds (or just over 56 tons) per week. The reasonable worst-case development scenario shown in this table differs from the Illustrative Plan to demonstrate the maximum potential solid waste generation that could occur from the Proposed Actions. The development would displace certain existing uses, and they would no longer generate solid waste. The decrease is estimated to be about 152,000 pounds (76 tons) per week within the Project Area. Therefore, the incremental decrease would be about 20 tons per week. However, most of the solid waste is currently handled by private carters. With the Proposed Actions, DSNY would collect, transport, and dispose of the majority of the solid waste. This increase is not expected to overburden New York City's solid waste handling services, and the Proposed Actions would not have a significant adverse impact on solid waste and sanitation services.

It is likely that medical research would be conducted in the academic research space, and regulated medical waste would be generated by certain experiments. Regulated medical waste is not handled or disposed of by DSNY, but is collected, transported, and treated by licensed specialty contractors. These contractors handle and dispose of the medical waste outside the normal solid waste systems. Columbia University would enforce its current practices in the future, and regulated medical wastes would be sterilized in an autoclave before being transported off-site. Chemical waste is also handled by specialty contractors and is not handled or disposed of by DSNY. In addition, certain wastes from mechanical systems, such as solvents used in the central energy plants, would be handled by licensed specialty contractors. Both chemical and regulated medical wastes receive special packaging and handling controlled by New York State and federal laws and regulations. Radioactive waste is controlled under the New York City Health Code, which is intended to protect workers and the public from radioactivity. The current practice of allowing radioactive waste to decay to safe levels prior to disposal would continue at the Manhattanville university area. If a radioactive waste has a long half-life, it would be disposed of by specialty contractors. At this time, it is not possible to quantify the volume of these wastes that are handled by specialty contractors. However, these contractors have the ability and the incentive to expand their operations in response to increased demand. Therefore, no significant adverse impacts from the disposal of regulated medical waste and chemical waste are expected.

Table 15-3
Expected Solid Waste Generation for the Reasonable Worst-Case Development Scenario in 2015

Use	Size	Rate (pounds per week)	Total Solid Waste (pounds per week)
Academic Mixed-Use Area			
University housing	220 units	41	9,020
Active ground-floor use	450 workers	79	35,550
Academic	1,183 workers	13	15,379
Students	3,504	1	3,504
Academic research	411 workers	13	5,343
Below-grade academic uses	161 workers	13	2,093
Below-grade mechanical uses	101 workers	66	6,666
Total Academic Mixed-Use Area Solid Waste			**77,555**
Subdistrict B[1] and the Other Area East of Broadway			
Residential	111 units	41	4,551
Retail	310 workers	79	24,490
Office	220 workers	13	2,860
Community facility	123 workers	13	1,599
Transportation/mechanical	15 users	66	990
Total Subdistrict B and Other Area East of Broadway Solid Waste			**34,490**
Total Project Area Solid Waste			**112,045**

Notes: 1 CPC is contemplating certain modifications to Subdistrict B that would not result in any projected development sites in Subdistrict B. The proposed modifications are more fully described in Chapter 29, "Modifications to the Proposed Actions."

Source: Rates from 2001 *CEQR Technical Manual* and previous environmental reviews. Housing units, workers, and students in Academic Mixed-Use Area from Columbia University, based on maximum housing as described in Chapter 2, "Procedural and Analytical Framework."

E. 2030 FUTURE WITHOUT THE PROPOSED ACTIONS

As discussed above in "2015 Future Without the Proposed Actions," no major changes in the solid waste and sanitation services systems are expected. In addition, the level of solid waste generation is expected to remain at or about the same as the current levels in the Project Area.

F. 2030 FUTURE WITH THE PROPOSED ACTIONS

As shown in Table 15-4, solid waste generated from the Project Area is estimated to total 291,487 pounds per week (or 145 tons per week). The development shown in this table differs from the Illustrative Plan to demonstrate the maximum potential solid waste generation that could occur from the Proposed Actions. A total of about six additional truck trips per day would be needed for general solid waste. This increase is not expected to overburden New York City's solid waste handling services, and the Proposed Actions would not have a significant adverse impact on solid waste and sanitation services.

It is likely that medical research would be conducted in the academic research space, and regulated medical waste would be generated by certain experiments. Disposal of regulated medical waste is controlled under DEC rules and regulations. Regulated medical waste is not handled or disposed of by DSNY but is collected, transported, and treated by licensed specialty

Table 15-4
Expected Solid Waste Generation for the Reasonable Worst-Case Development Scenario in 2030

Use	Size	Rate (Pounds per Week)	Total Solid Waste (Pounds per Week)
University housing	1,625 units	41	66,625
Active ground-floor use	1,500 workers	79	118,500
Academic research	2,083 workers	13	27,079
Academic	3,125 workers	13	40,625
Students	4,400	1	4,400
Below-grade academic uses	359 workers	13	4,667
Below-grade mechanical uses	349 workers	66	23,034
Recreation	83 patrons	79	6,557
		Total Project Area Solid Waste	**291,487**

Source: Rates from 2001 *CEQR Technical Manual* and previous environmental reviews. Housing units, workers, and students in Academic Mixed-Use Area from Columbia University, based on maximum housing as described in Chapter 2, "Procedural and Analytical Framework."

contractors. These contractors handle and dispose of the medical waste outside the normal solid waste systems. It is expected that Columbia University in the future would enforce its current practices, and regulated medical wastes would be sterilized in an autoclave prior to these wastes being transported off-site. Chemical waste is also handled by specialty contractors and is not handled or disposed of by DSNY. Both chemical and regulated medical wastes receive special packaging and handling controlled by New York State and federal laws and regulations. Radioactive waste is controlled under the New York City Health Code. The current practice of allowing radioactive waste to decay to safe levels before disposal would continue at the Manhattanville university area. If a radioactive waste has a long half-life, it would be disposed of by specialty contractors. At this time, it is not possible to quantify the volume of these wastes that are handled by specialty contractors. However, these contractors have the ability and the incentive to expand their operations in response to increased demand. Therefore, no significant adverse impacts from the disposal of regulated medical waste and chemical waste are expected.✷