APPENDIX A

NEIGHBORHOOD CHARACTER SUMMARY

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1.0 INTRODUCTION

For the Commercial Waste Management Study (Study), general land use and demographic information has been collected in order to provide a comprehensive snapshot of the neighborhoods in which Transfer Stations are located. The existing character for each neighborhood area studied inherently considers the presence of the transfer facilities.

In order to ascertain the measurable effect the presence of a group of facilities has on the community, the neighborhood character effects assessment relies heavily on the findings of the technical analyses (traffic, air, odor and noise). This technical information, either measured directly or modeled in accordance with environmental review standards, is then paired with the more general descriptions of neighborhood character that are based on existing land use and demographic conditions.

The technical findings, presented separately, indicate that there are no occasions when air quality standards are not met. The public health assessment has concluded that air quality and odor conditions are not of a public health concern. In fact, the only effects predicted to be resulting from the groups of Transfer Stations are noise effects from trucks idling outside certain facilities in Jamaica. In this case, the technical analyses indicate that certain residences near that group of facilities are adversely affected, and therefore the overall character of the Jamaica, Queens Community District (CD) #12 Study Area neighborhood is diminished. In the cases of the other three Study Areas, however, the technical studies support the conclusion that the groups of Transfer Stations are not major attributes of the character of the neighborhood overall or contributors to adverse conditions that may exist.

2.0 HUNTS POINT, BRONX CDS #2 AND #9 STUDY AREA

The character of the Hunts Point peninsula is defined by low-scale, low-density heavy commercial and industrial uses. The Hunts Point Food Market, a wholesale food distribution facility, is the largest property within the vicinity of the Transfer Stations and largely defines the character of the Study Area. It generates considerable amounts of truck traffic, especially to and from its large warehouse buildings oriented around Food Center Drive.

2.1 Definition of Area Studied

The area studied is comprised of 11 census tracts in the Hunts Point neighborhood and covers most of Bronx CD #2 (see Figures 2.1-1 and 2.1-2). It includes the entire Hunts Point peninsula with portions of the East River and Bronx River waterfronts, and it extends inland several blocks north of Bruckner Expressway.

The census tracts include those containing Transfer Stations, which were identified south of Bruckner Boulevard on the peninsula and west of Hunts Point Avenue, and those containing traffic data collection points. Traffic data collection points were identified at several key intersections on designated truck routes in the area, including Tiffany Street, Halleck Street, Leggett Avenue, Garrison Avenue and Bruckner Expressway.

2.2 Land Use Pattern, Visual Quality and Cultural Resources

The land use pattern of the area studied is markedly industrial (see Figure 2.2-1), although residential development, institutional and commercial uses and open space are located primarily north of Bruckner Expressway where there is little industrial activity. There is also a substantial mixed-use residential enclave extending south on the peninsula from Bruckner Expressway to Randall Avenue. It includes about 20 square blocks between Tiffany Street on the west and Longfellow Avenue on the east, and two middle schools and an elementary school, and is approximately one-half mile north of the concentration of Transfer Stations. A few additional residences are located intermittently throughout the more intensely industrial areas on the peninsula.

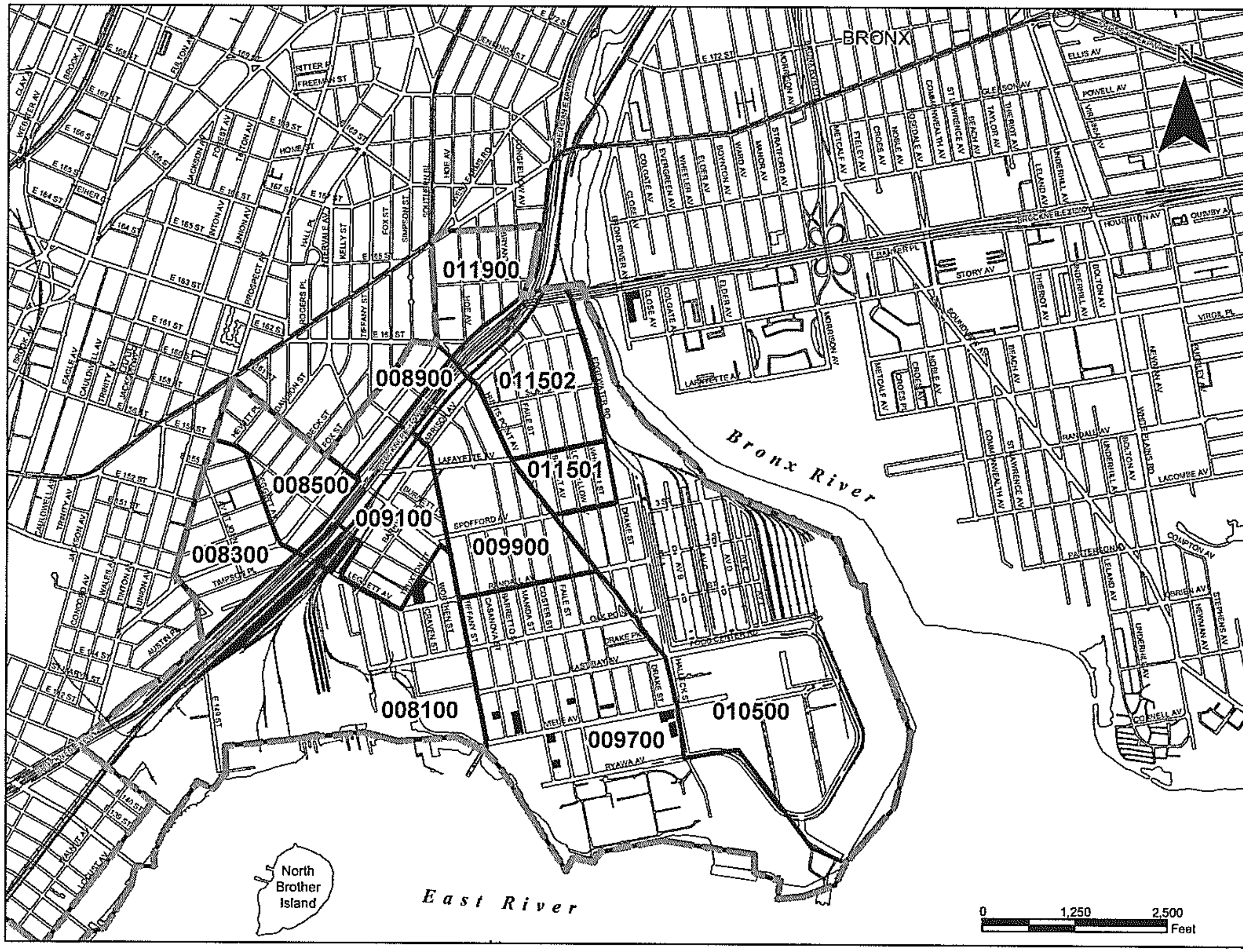

Figure 2.1-1
Census Tracts
Hunts Point, Bronx
Area Studied

City of New York
Department of Sanitation

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

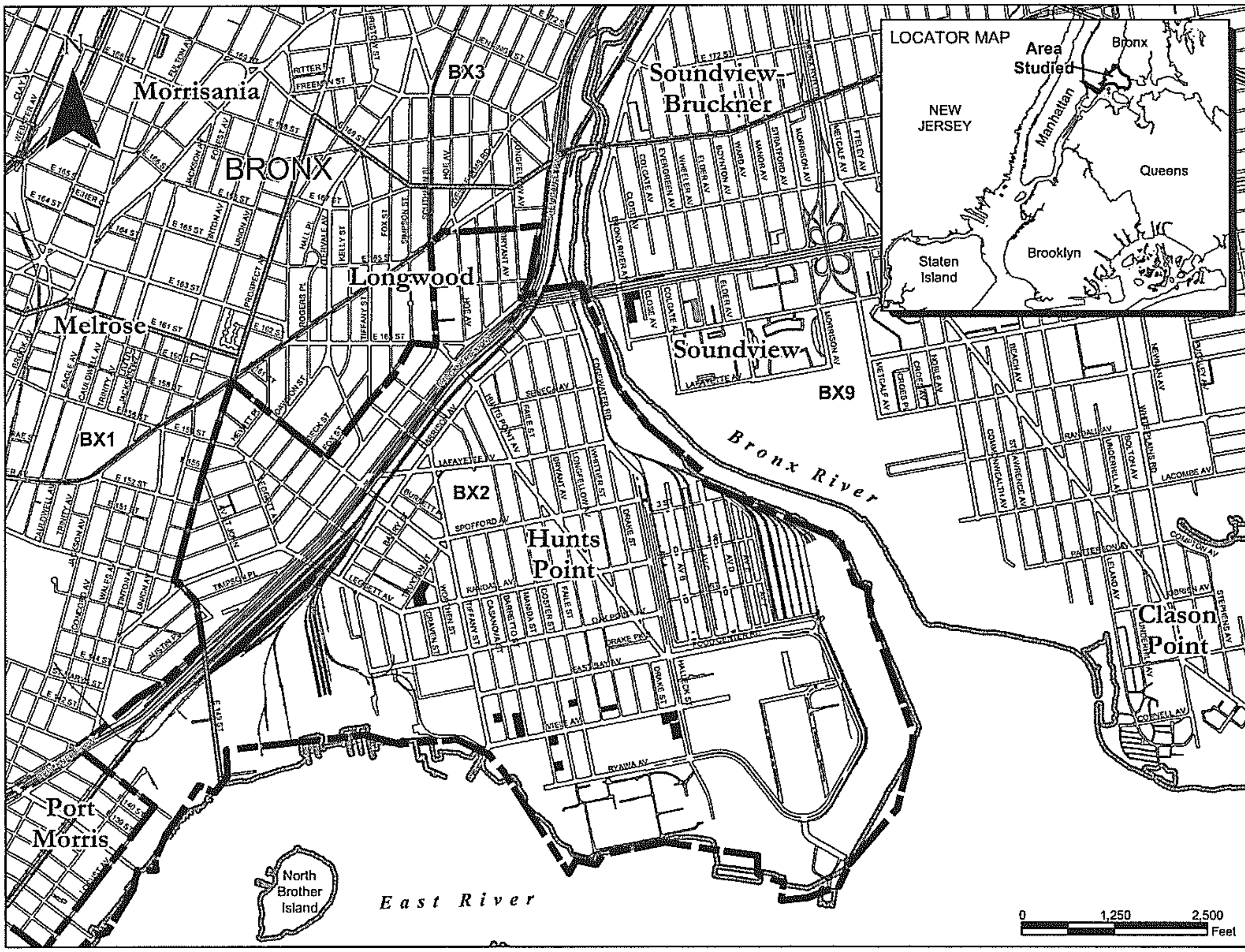

Figure 2.1-2
Neighborhoods
Hunts Point, Bronx
Area Studied

City of New York
Department of Sanitation

Legend

Area Studied

Community Boards

HDR

Cambridge Environmental Inc

URBITRAN

PB

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

Figure 2.2-1
Land Use
Hunts Point, Bronx
Area Studied

City of New York
Department of Sanitation

Legend

- Area Studied

Land Use

- Residential
- Industrial
- Institutional
- Commercial
- Open Space & Parks
- Transportation & Utility
- Vacant

HDR

Cambridge Environmental Inc

URBITRAN

PB

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

Hunts Point Avenue is the central hub of the larger community and serves as the primary entry point onto the Hunts Point peninsula. The avenue is lined with heavier commercial uses further to the southeast, such as auto glass repair establishments, and eventually leads into the industrial districts to the south.

Community facilities that exist on blocks abutting existing truck routes include the Corpus Christi Monastery at 1230 Lafayette Avenue and the Spofford Juvenile Detention Center at 2121 Spofford Avenue. Open spaces on adjacent blocks include Garrison Square and Barretto Park/Playground. An informal fishing and waterfront viewing location exists at the end of Farragut Street, adjacent to the inactive South Bronx marine transfer station (MTS) site. Other open spaces within the area studied include Joseph Rodman Drake Park, a 2.5-acre park that contains a historic cemetery and passive recreation areas, and Tiffany Street Pier and the adjacent waterfront park under development. A historic rail depot building on the north side of Hunts Point Avenue between Garrison Avenue and Bruckner Boulevard is a visual landmark that can be seen as one crosses below the Bruckner Expressway onto the peninsula, although it is not a designated New York City (City) historic landmark.

The elevated Bruckner Expressway visually separates the peninsula portion of Hunts Point from inland areas extending to Westchester Avenue, which are also considered to be part of the larger Hunts Point community. This highway and the Amtrak rail line below also present a physical barrier as they limit roadway crossings to the peninsula.

The area studied is zoned for industrial uses (primarily M3-1). Residential zoning, consistent with the residential uses, is present within the heart of the northern portion of the peninsula and north of Bruckner Expressway (see Figure 2.2-2).

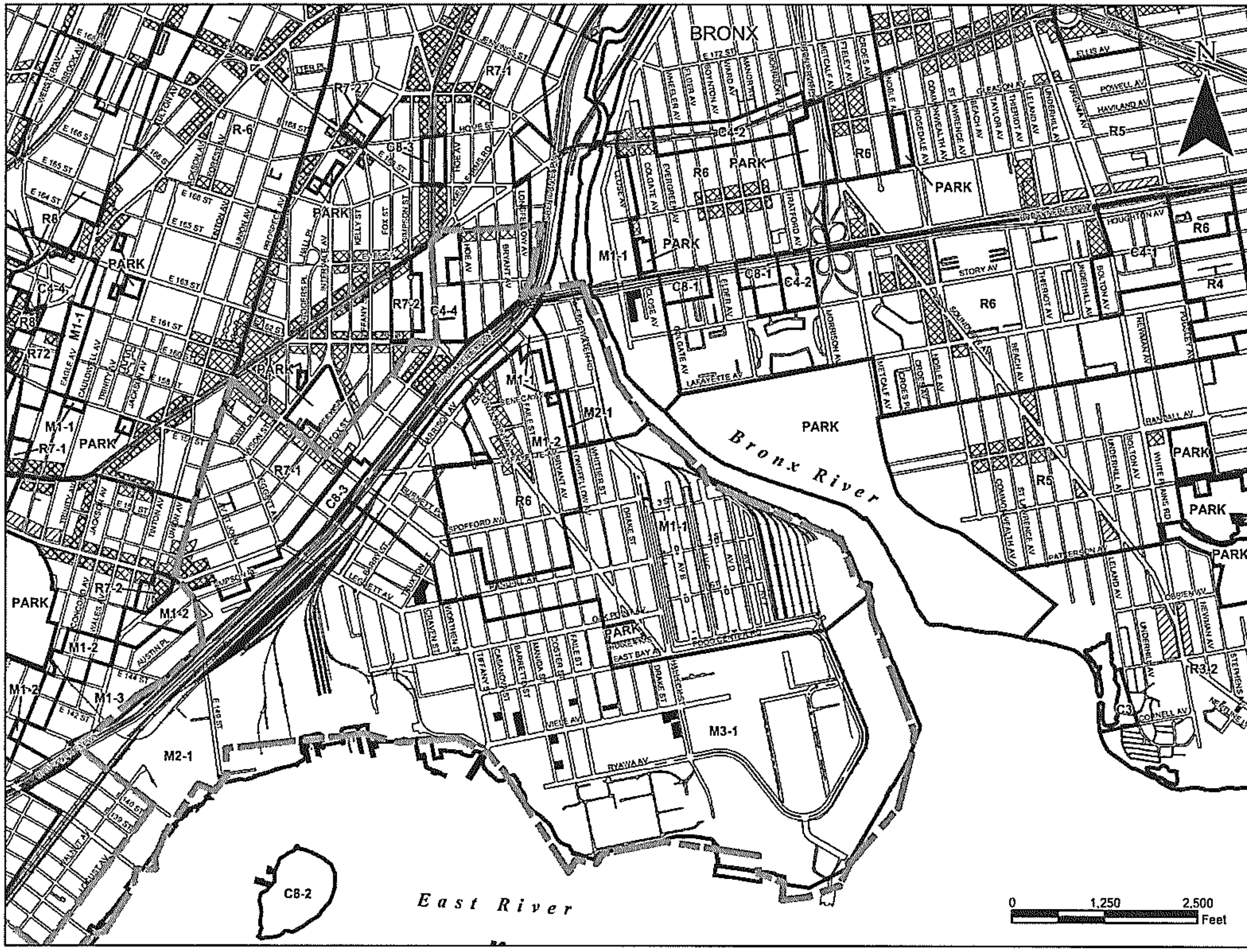

Figure 2.2-2
Zoning
Hunts Point, Bronx
Area Studied

City of New York
Department of Sanitation

Legend

Area Studied

Commercial Overlays

- C1-1
- C1-2
- C1-4
- C2-1
- C2-2
- C2-4

0 1,250 2,500 Feet

HDR

Cambridge Environmental Inc

URBITRAN

PB

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

2.3 Development History

Hunts Point is located within the eastern portion of a 500-acre tract of land purchased in 1641 by a Swedish sea captain from the Netherlands, Jonas Bronck, for whom the Borough of the Bronx is named. The peninsula was later renamed Hunts Point after Thomas Hunt, who constructed a mansion at its southern tip in 1668.

The western portion of the peninsula, which includes Oak Point, was home to an amusement park, ball fields, picnic grounds and a bathing beach from the time of the Civil War to around 1908. During this same period, Hunts Point went from an independent village to a neighborhood annexed by the City in 1874.[1]

The northwestern portion of Hunts Point developed rapidly following introduction of IRT service to Manhattan, with the construction of apartment buildings occurring in the 1910s and '20s. In the first half of the twentieth century, the population was mainly Jewish, with some German, Irish and Italian immigrants. The American Banknote Building, which still stands, was a prominent early industrial structure and employer in this vicinity.

Starting in the 1960s, the area fell subject to housing abandonment, poverty, crime and drugs, as did other areas in the South Bronx and the City. Only recently, most of the vacant apartment buildings in Hunts Point have been renovated through City housing programs. The Hunts Point Food Distribution Center has replaced former residential development on much of the southeastern portion of the Hunts Point peninsula on the north side of Farragut Street. The waterfront remains industrial, however, home to public utilities and the new Fulton Fish Market, which will bring new jobs and commerce to the area.

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[1] Jackson, Kenneth T., Editor. *Encyclopedia of New York City.* Yale University Press, New Haven (The New York Historical Society, New York). 1995.

2.4 Community Demographics

The area studied contains a growing population. Its 30,676 residents in 2000 represented an increase of about 17% since 1990 (see Table 2.4-1 and Figures 2.4-1 and 2.4-2). The two most populous tracts are located at the northwestern extent of the area studied north of Bruckner Expressway, where there is less industrial acreage than on the peninsula. The third most populous tract is located south of Bruckner Expressway in the residential enclave described above between the expressway, Randall Avenue, Tiffany Street and Longfellow Avenue, which is otherwise surrounded by the industrial setting of the Hunts Point peninsula. The only two tracts to lose population from 1990 to 2000 contained industrial uses almost exclusively and were located near the heavily industrial Oak Point Railyard in the western portion of the area studied.

Today, the area studied is about 75% Hispanic (any race), about 22% Black/African American, and less than 3% White, Asian, Other or multiple-race people (see Table 2.4-2). About 9,560 households are located in the area, with the average family size ranging from 3.04 to 3.68 persons/family (see Table 2.4-3).

2.5 Summary of Effects

While the presence of the Transfer Stations -- both independently and as a group -- contributes to an established industrial land use pattern and visual conditions (which essentially characterize this area overall), these transfer facilities themselves do not contribute to the character of the area in any adverse or otherwise notable way.

A replacement land use scenario was implemented as a means of modeling alternative traffic conditions for comparison to existing conditions. Levels of service (LOS) remained inadequate (mid-LOS D) or were worsened in the case of the replacement scenario, compared to existing conditions. In terms of air quality, no criteria pollutants were found to exceed National Ambient Air Quality Standards (NAAQS) as a result of combined emissions within the Study Area. In terms of noise, no effects were predicted to result from the facilities or the associated trucks.

Table 2.4-1
Population in the Hunts Point, Bronx Area Studied

Hunts Point, Bronx	Total Population		Population Change 1990-2000	
Census Tract	1990	2000	Number	Percent
8100	39	0	-39	-100.0
8300	5,208	6,204	996	19.1
8500	5,088	5,428	340	6.7
8900	2,678	2,886	208	7.8
9100	259	81	-178	-68.7
9700	105	133	28	26.7
9900	3,945	5,317	1,372	34.8
10500	268	439	171	63.8
11501	1,092	1,256	164	15.0
11502	3,123	4,139	1,016	32.5
11900	4,430	4,793	363	8.2
Total	**26,235**	**30,676**	**4,441**	**16.9**

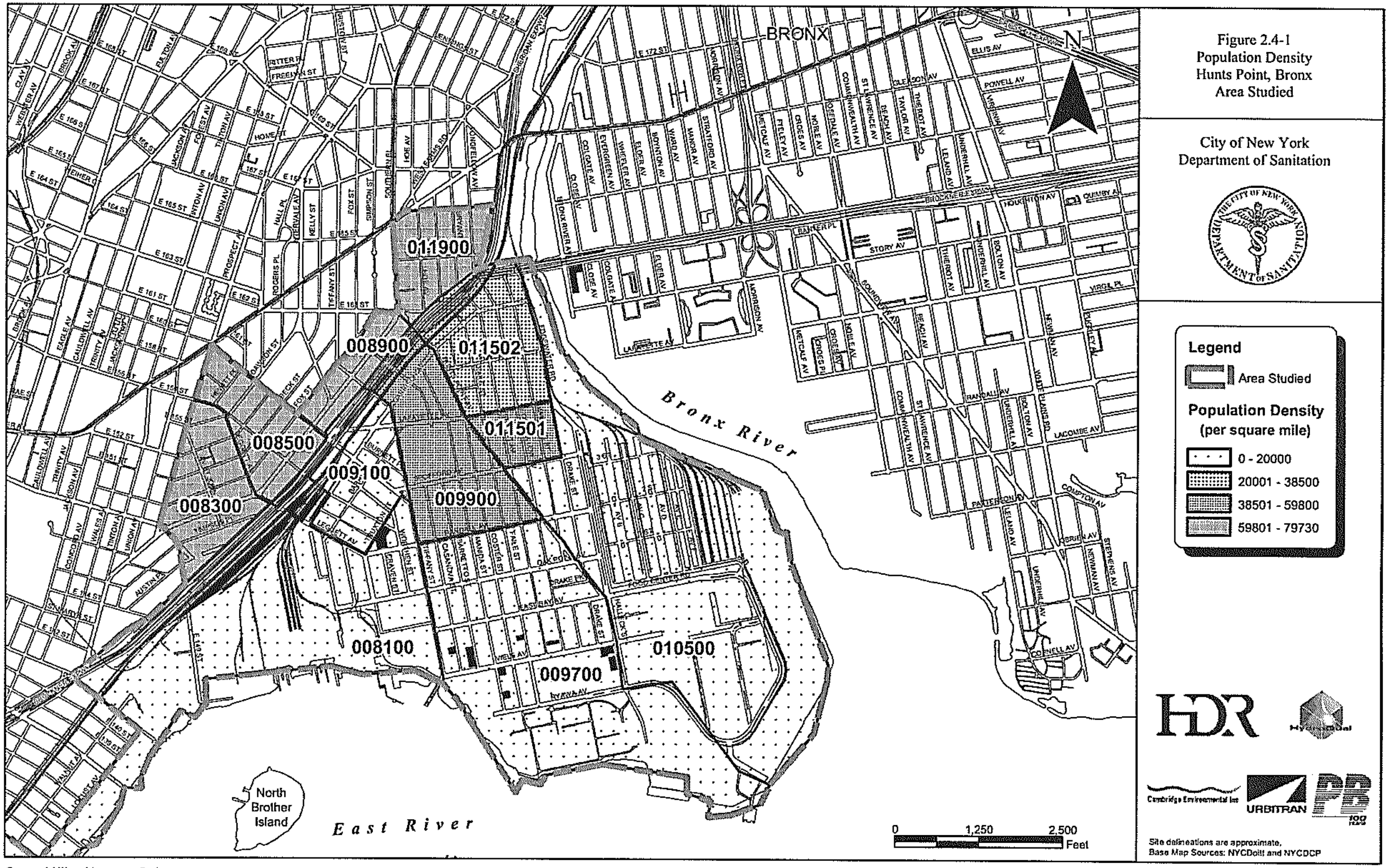


Figure 2.4-1
Population Density
Hunts Point, Bronx
Area Studied

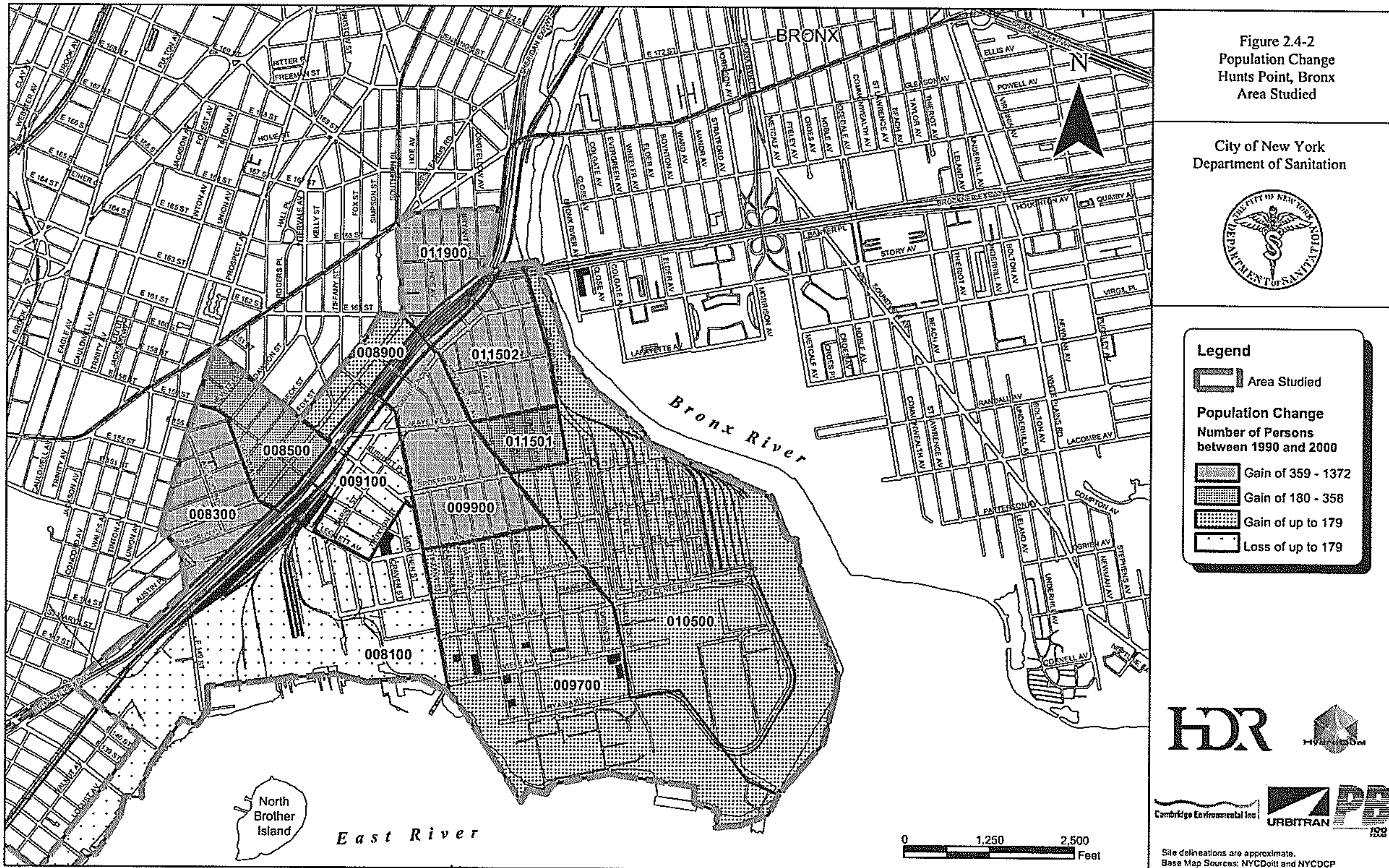


Figure 2.4-2
Population Change
Hunts Point, Bronx
Area Studied

Table 2.4-2
Population in the Hunts Point, Bronx Area Studied
(By Mutually Exclusive Race and Hispanic Origin)

Hunts Point, Bronx		Non-Hispanic by Race					Hispanic Origin (of any race)
		Single Race				Two or More Races	
Census Tract	Total Population	White	Black/African American	Asian	Other		
8100	0	0	0	0	0	0	0
8300	6,204	61	1,045	21	12	46	5,019
8500	5,428	105	1,252	15	26	39	3,991
8900	2,886	31	354	8	6	9	2,478
9100	81	3	3	0	0	0	75
9700	133	6	35	6	4	3	79
9900	5,317	82	1,308	7	29	20	3,871
10500	439	3	185	1	0	3	247
11501	1,256	9	372	10	7	2	856
11502	4,139	52	1,090	7	13	25	2,952
11900	4,793	52	1,213	29	44	41	3,414
Total	**30,676**	**404**	**6,857**	**104**	**141**	**188**	**22,982**
Percent of Total	--	1.31	22.4	0.33	0.45	0.61	74.9

Table 2.4-3
Hunts Point, Bronx Area Studied
Total Households by Household Family Type

Census Tract	Total Households	Total Family Households	Total Non-Family Households	Average Household Size	Average Family Size
8100	0	0	0	0.00	0.00
8300	1,999	1,496	503	3.10	3.54
8500	1,473	1,087	386	3.23	3.68
8900	1,027	642	385	2.78	3.58
9100	31	17	14	2.61	3.71
9700	40	28	12	3.13	3.54
9900	1,581	1,205	376	3.19	3.60
10500	98	71	27	2.67	3.04
11501	454	309	145	2.77	3.28
11502	1,215	863	352	3.10	3.58
11900	1,642	1,187	455	2.90	3.42
Total	**9,560**	**6,905**	**2,655**	--	--

3.0 PORT MORRIS, BRONX CD #1 STUDY AREA

The portions of Port Morris in the eastern extent of the area studied and Mott Haven in the western extent and north of Bruckner Boulevard include the waterfront and are predominantly industrial areas, with scattered residential, community facility and commercial uses located further inland. Bruckner Expressway forms a physical east-west barrier that divides the area south of East 134^{th} Street from areas further to the north.

Neighborhood character south of Bruckner Boulevard is diminished by industrial uses and the presence of vacant rubble-strewn lots and deteriorated sidewalk and building conditions. High volumes of truck traffic serving industrial uses and through-traffic accessing Manhattan via the Major Deegan Expressway also detract from the area's character.

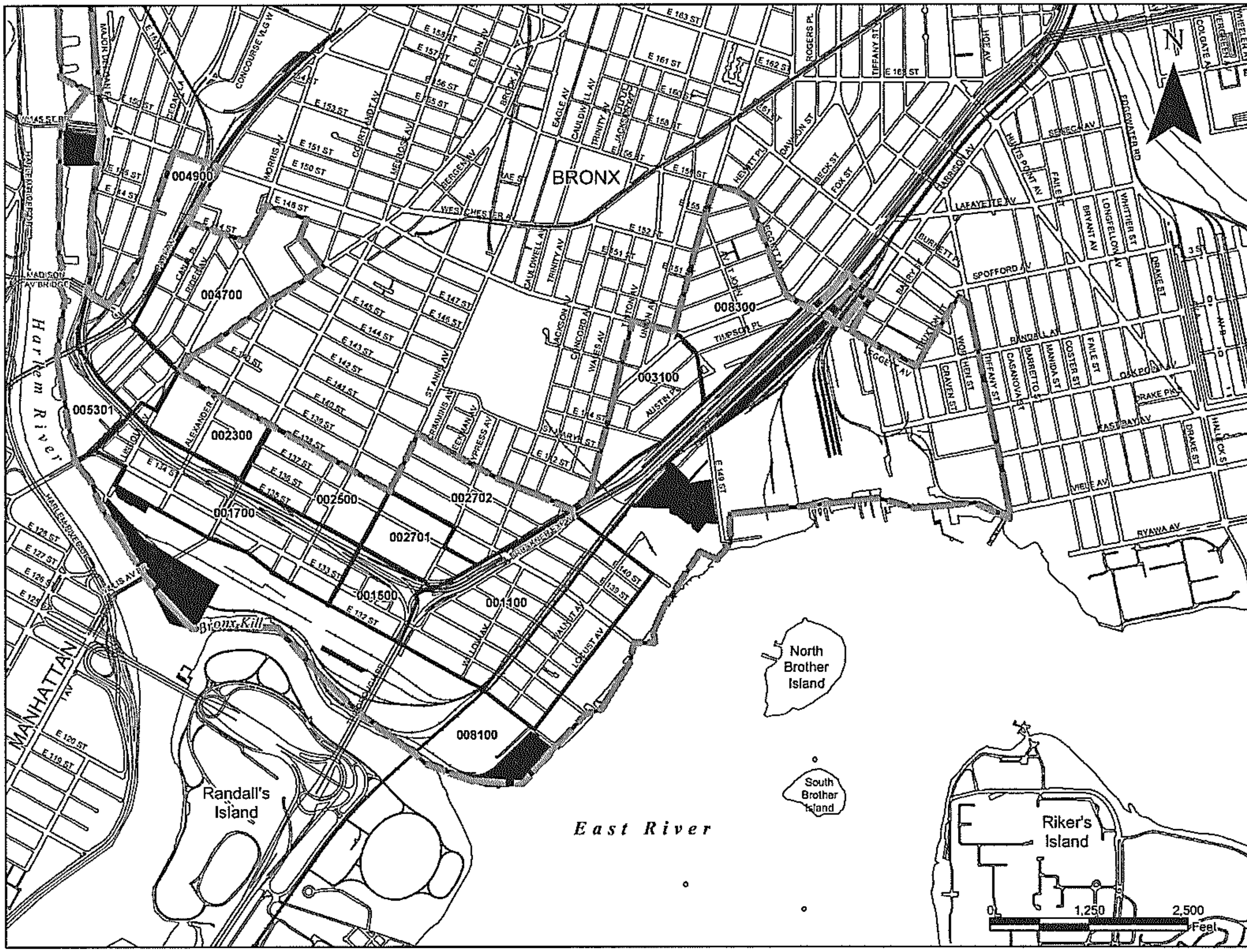
3.1 Definition of Area Studied

The area studied is comprised of 13 census tracts in the Port Morris area and covers the southwestern portion of Bronx CD #1, which is roughly about one-third of the district's overall area (see Figures 3.1-1 and 3.1-2). It extends along the Harlem River and East River waterfronts from near the 145^{th} Street Bridge at the northwest to about East 149^{th} Street at the southeast, and inland several blocks east of the Major Deegan Expressway and north of the Bruckner Expressway.

The census tracts include those containing Transfer Stations, which are generally located on the waterfront in this area of the Bronx, and those containing traffic data collection points. Traffic data collection points were identified at several key intersections on designated truck routes in the area, including Bruckner Boulevard and the Major Deegan Expressway.

Figure 3.1-1
Census Tracts
Port Morris, Bronx
Area Studied

City of New York
Department of Sanitation



Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

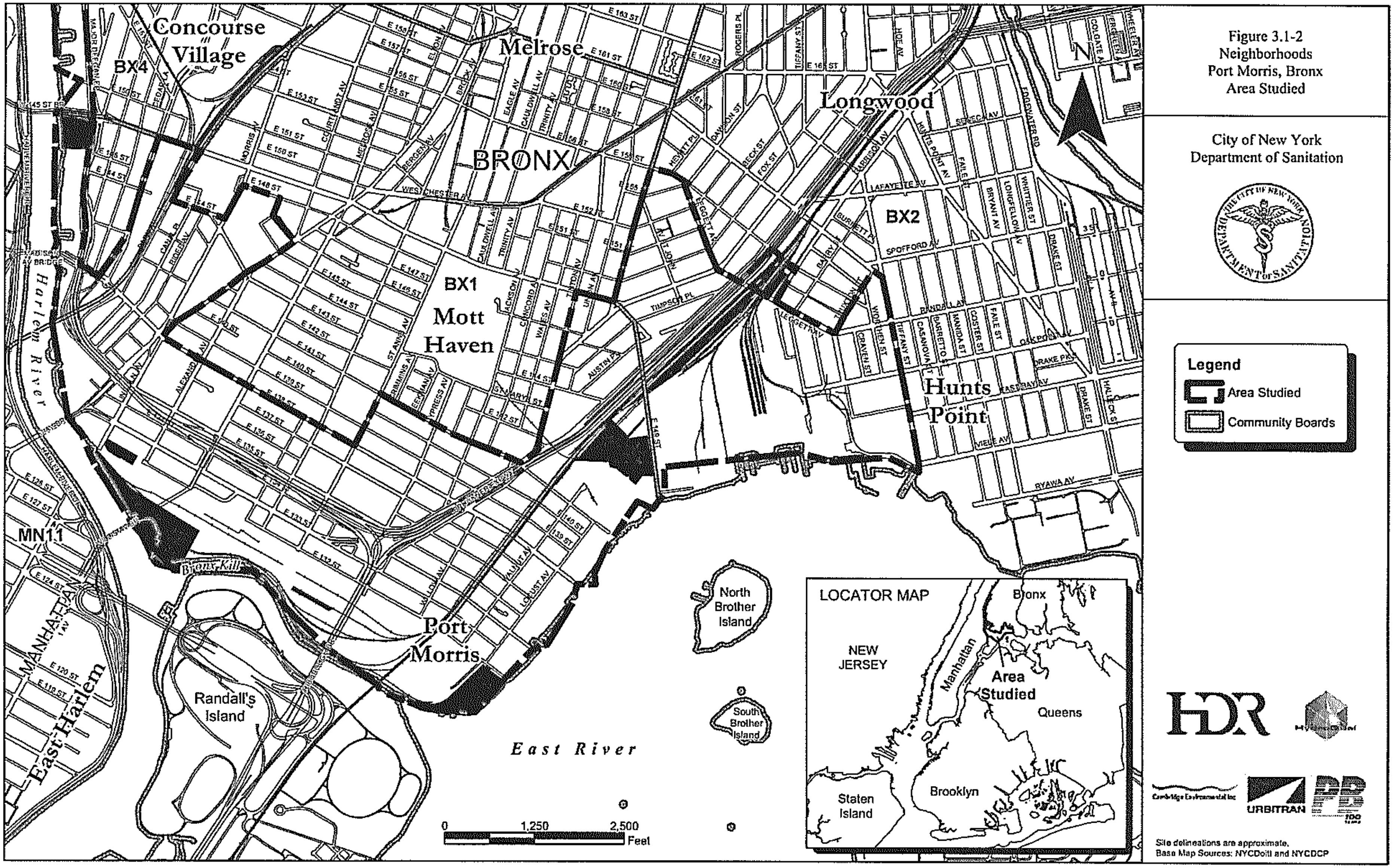


Figure 3.1-2
Neighborhoods
Port Morris, Bronx
Area Studied

3.2 Land Use Pattern, Visual Quality and Cultural Resources

With its heavily industrial waterfront, the area studied resembles the land use character of the South Bronx overall. The portion of the area studied (including the locations of the Transfer Stations) south of the Major Deegan Expressway is predominantly industrial waterfront, while generally, low- to mid-rise residential land uses, moderate-income housing and high-rise public housing communities in the area studied are located north of the Bruckner Expressway, though a few residential areas are located amid the predominantly industrial areas to the south (see Figure 3.2-1). In addition, there are some recently renovated and historic row house districts immediately north and south of the Major Deegan Expressway within the Mott Haven neighborhood. Here, too, also north of the Major Deegan Expressway, is the Port Morris Antique Center, which is centered around Bruckner Boulevard between Willis Avenue and Alexander Avenue.

The mixing of residential and non-residential uses, the recent upgrading of commercial areas and the presence of historic industrial loft buildings and row houses provides a strong "sense of place." Though not designated landmarks, row houses located on East 134th Street and recently renovated mixed-use buildings on the north side of Bruckner Boulevard are examples of nineteenth century development. Area community gardens, such as the Lincoln Gardens located at the northeastern corner of the intersection of Lincoln Avenue and East 134th Street, enhance neighborhood character.

Located at 82 Willis Avenue is the former Willis Avenue Railroad Station, a late-nineteenth century building that is now partly occupied as a residence (which is a non-conforming use in a manufacturing district). It was found to be eligible for listing on the State and National Registers (Secretary of the Interior, 1982).

Consistent with the land uses present in the area studied, the bulk of the area is zoned for industrial uses. Residential zoning is present to the north of the Bruckner Expressway, consistent with the residential uses there (see Figure 3.2-2).

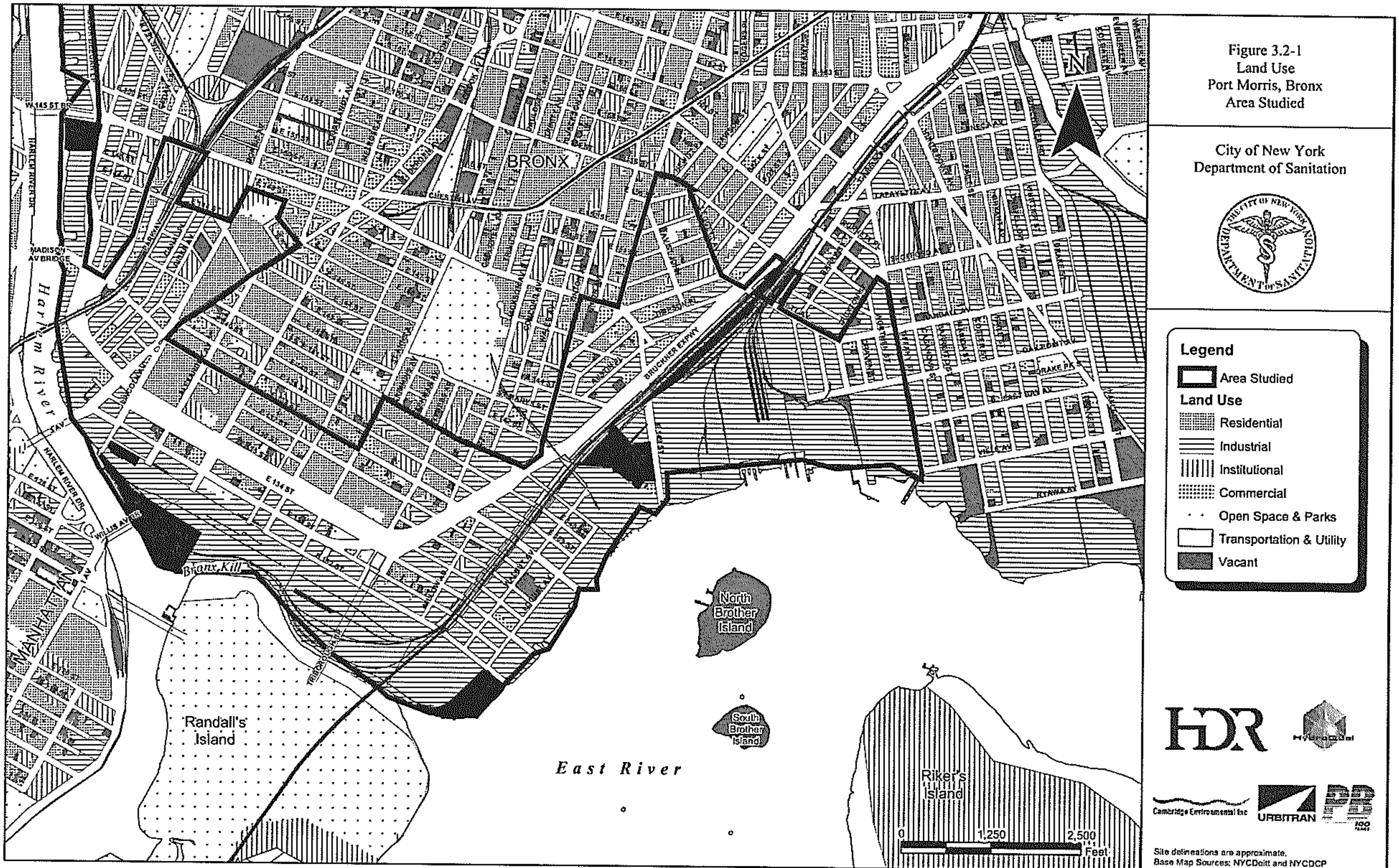


Figure 3.2-1
Land Use
Port Morris, Bronx
Area Studied
City of New York
Department of Sanitation
Legend
Area Studied
Land Use
Residential
Industrial
Institutional
Commercial
Open Space & Parks
Transportation & Utility
Vacant
BRONX
Harlem River
East River
Randall's Island
North Brother Island
South Brother Island
Riker's Island
Bronx Kill
BRUCKNER EXPWY
E 134 ST
MADISON AV BRIDGE
W 145 ST BR
HARLEM RIVER DR
WILLIS AV BR
MANHATTAN
0 1,250 2,500 Feet
HDR
Cambridge Environmental Inc
URBITRAN
PB
Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

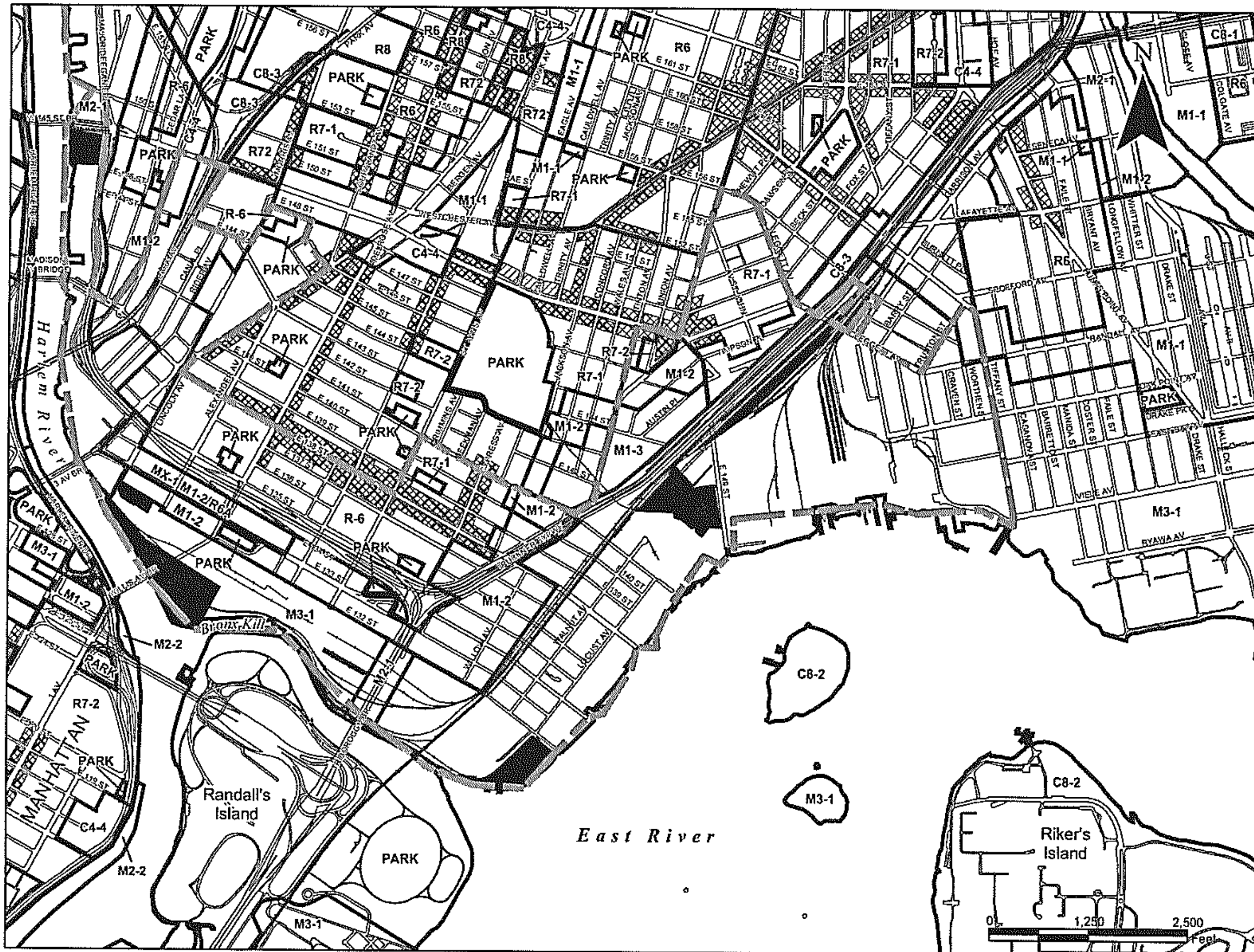


Figure 3.2-2
Zoning
Port Morris, Bronx
Area Studied

City of New York
Department of Sanitation

THE CITY OF NEW YORK DEPARTMENT OF SANITATION

Legend

Area Studied

Commercial Overlays

- C1-2
- C1-4
- C2-1
- C2-4

HDR

Cambridge Environmental Inc

URBITRAN

PB

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

3.3 Development History

Port Morris and Mott Haven are historic communities that developed around waterfront industrial uses in the mid-nineteenth century. Port Morris was also the location of the eighteenth and nineteenth century homesteads of the prominent Morris family and was briefly the home of Jonas Bronck, the first European settler in the Bronx. In the eighteenth century, manor lands of the Morris family extended 1,920 acres north from Bronx Kill to the present location of East 132nd Street. Villages were laid out within this area in the eighteenth century, including the Village of Mott Haven, which was incorporated in 1848.[2] Residential development in the area increased after the opening of the Third Avenue elevated line in 1886; the area contains notable examples of nineteenth century row houses, tenement buildings, and churches.

Following high rates of crime, drugs and property abandonment since the 1960s, efforts have been made to revitalize Port Morris; the Port Morris Antique Center is part of this development. Other recent commercial revitalization efforts complement the upgrading of vacant industrial lofts in this area. Banners adorning several antique stores are evidence of the resurgence of interest and activity in this area and enhance visual character.

3.4 Community Demographics

The area studied contains a relatively stable population, with its 32,149 people in 2000 being a nearly 4% increase since 1990 (see Table 3.4-1 and Figures 3.4-1 and 3.4-2). The four most populous tracts are located along the northern edge of the area studied north of the Major Deegan Expressway and east of St. Anns Avenue. Virtually all of the seven tracts south of the Major Deegan Expressway lost population over the same period, as did two tracts north of it and west of St. Anns Avenue.

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[2] McNamara, John, *History in Asphalt: The Origin of Bronx Street and Place Names*, Harbor Hills Books, Harrison, New York, 1978, pp 416-420.

Today, the area studied is about 71% Hispanic (any race), about 26% Black/African American and less than 3% White, Asian, Other or multiple-race people (see Table 3.4-2.) About 10,431 households are located in the area, with the average family size ranging from 2.5 to 3.74 persons/family (see Table 3.4-3).

Table 3.4-1
Population in the Port Morris, Bronx Area Studied

Port Morris, Bronx Census Tract	Total Population		Population Change, 1990-2000	
	1990	2000	Number	Percent
1100	725	559	-166	-22.9
1500	47	19	-28	-59.6
1700	817	1,006	189	23.1
2300	4,665	4,338	-327	-7.0
2500	5,484	5,109	-375	-6.8
2701	2,922	3,033	111	3.8
2702	4,012	4,736	724	18.0
3100	742	1,478	736	99.2
4700	5,943	5,387	-556	-9.4
4900	361	246	-115	-31.9
5301	0	34	34	--
8100	39	0	-39	-100.0
8300	5,208	6,204	996	19.1
Total	**30,965**	**32,149**	**1,184**	**3.82**

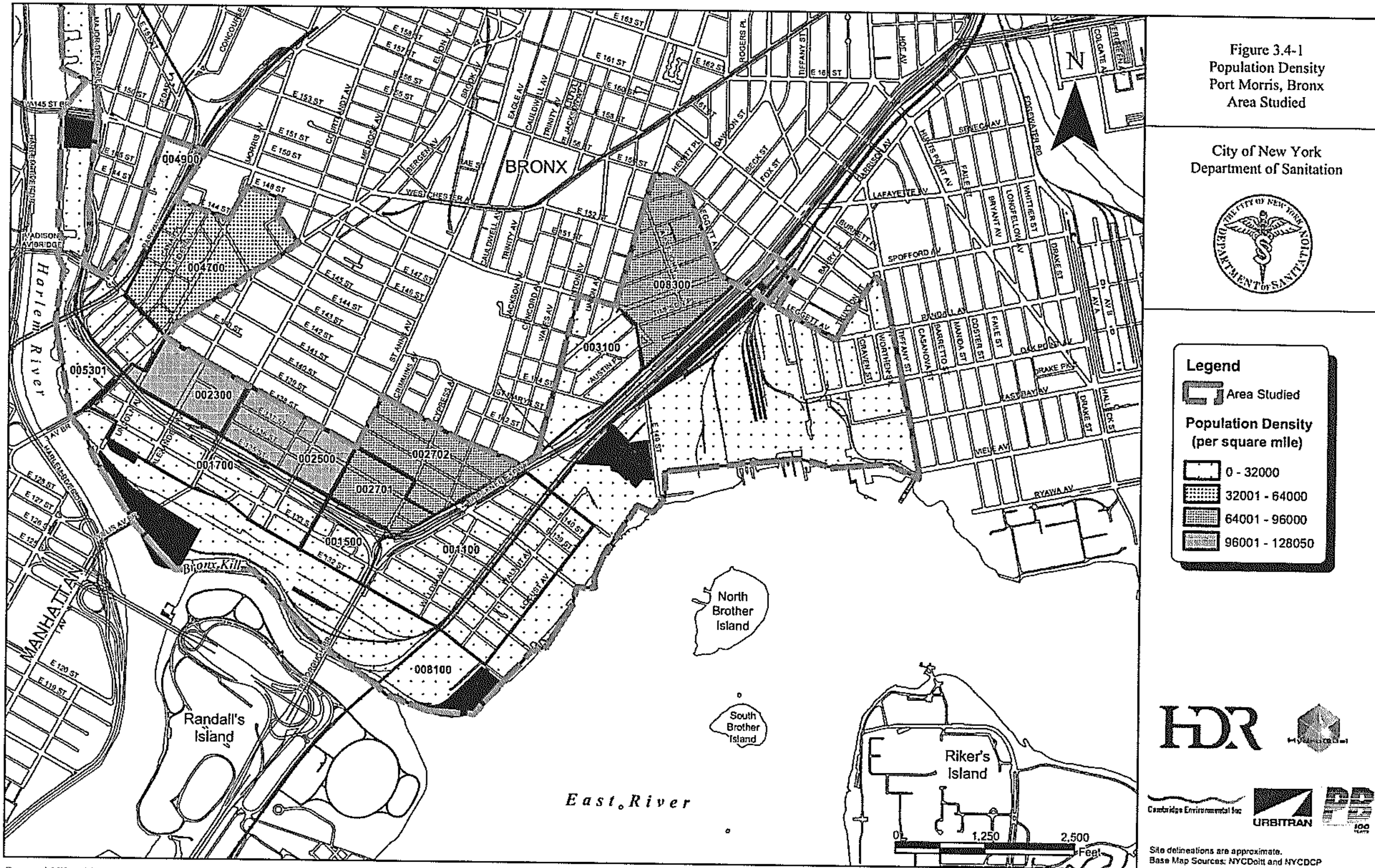


Figure 3.4-1
Population Density
Port Morris, Bronx
Area Studied
City of New York
Department of Sanitation
Legend
Area Studied
Population Density
(per square mile)
0 - 32000
32001 - 64000
64001 - 96000
96001 - 128050
BRONX
MANHATTAN
Harlem River
Bronx Kill
East River
North Brother Island
South Brother Island
Randall's Island
Riker's Island
004900
004700
005301
002300
002500
002702
002701
001700
001500
001100
008100
003100
008300
0
1,250
2,500
Feet
N
HDR
Cambridge Environmental Inc
URBITRAN
Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

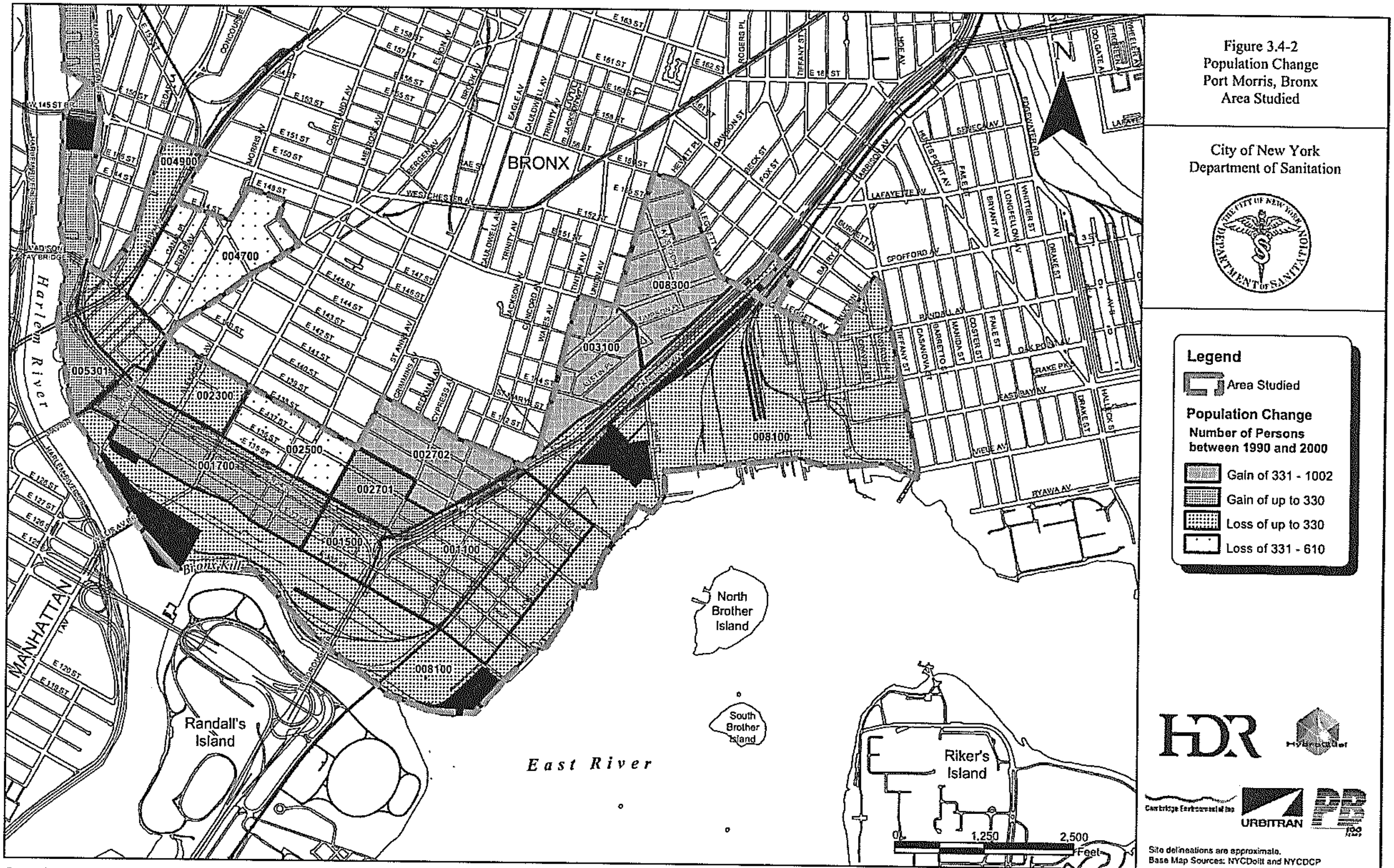


Figure 3.4-2
Population Change
Port Morris, Bronx
Area Studied
City of New York
Department of Sanitation
Legend
Area Studied
Population Change
Number of Persons between 1990 and 2000
Gain of 331 - 1002
Gain of up to 330
Loss of up to 330
Loss of 331 - 610
BRONX
MANHATTAN
Harlem River
East River
North Brother Island
South Brother Island
Randall's Island
Riker's Island
Bronx Kill
004900
004700
008300
003100
005301
002300
002500
002702
002701
001700
001500
001100
008100
0
1,250
2,500
Feet
N
HDR
URBITRAN
PB
Site delineations are approximate.
Base Map Sources: NYCDoITT and NYCDCP

Table 3.4-2
Population in the Port Morris, Bronx Area Studied
(By Mutually Exclusive Race and Hispanic Origin)

Port Morris, Bronx		Non-Hispanic by Race					Hispanic Origin (of any race)
		Single Race				Two or More Races	
Census Tract	Total Population	White	Black/African American	Asian	Other		
1100	559	46	176	12	6	12	307
1500	19	0	2	0	0	0	17
1700	1,006	45	276	2	3	17	663
2300	4,338	50	1,517	8	16	35	2,712
2500	5,109	40	963	31	19	18	4,038
2701	3,033	14	1,016	2	14	20	1,967
2702	4,736	54	1,089	1	16	29	3,547
3100	1,478	24	294	2	3	21	1,134
4700	5,387	37	2,039	21	25	27	3,238
4900	246	1	64	1	3	1	176
5301	34	2	15	0	0	0	17
8100	0	0	0	0	0	0	0
8300	6,204	61	1,045	21	12	46	5,019
Total	**32,149**	**374**	**8,496**	**101**	**117**	**226**	**22,835**
Percent of Total	--	1.2	26.4	0.3	0.4	0.7	71.0

Table 3.4-3
Port Morris, Bronx Area Studied
Total Households by Household Family Type

Census Tract	Total Households	Total Family Households	Total Non-Family Households	Average Household Size	Average Family Size
1100	150	89	61	2.63	3.53
1500	9	6	3	2.11	2.50
1700	258	144	114	2.83	3.74
2300	1,668	995	673	2.60	3.49
2500	1,725	1,154	571	2.96	3.67
2701	991	732	259	3.06	3.60
2702	1,289	1,008	281	3.36	3.74
3100	476	367	109	3.11	3.47
4700	1,771	1,338	433	3.00	3.47
4900	93	56	37	2.65	3.43
5301	2	0	2	1.00	0.00
8100	0	0	0	0.00	0.00
8300	1,999	1,496	503	3.10	3.54
Total	**10,431**	**7,385**	**3,046**	--	--

3.5 Summary of Effects

While the presence of the Transfer Stations -- both independently and as a group -- contributes to an established industrial land use pattern and visual conditions (which essentially characterize this area overall), these transfer facilities themselves do not contribute to the character of the area in any adverse or otherwise notable way.

A replacement land use scenario was implemented as a means of modeling alternative traffic conditions for comparison to existing conditions. LOS remained inadequate (mid-LOS D) or were worsened in the case of the replacement scenario, compared to existing conditions. In terms of air quality, no criteria pollutants were found to exceed NAAQS as a result of combined emissions within the Study Area. In terms of noise, no effects were predicted to result from the facilities or the associated trucks.

4.0 BROOKLYN CD #1 STUDY AREA

The character of the Brooklyn CD #1 Study Area, generally east of Greenpoint, is defined by predominantly industrial land use and visual quality. Newtown Creek and its tributary English Kills, which run through the area studied, have historically been home to heavy industry and remain a working waterfront characterized by large-scale municipal facilities and water-dependent industrial uses on large lots. It is among these manufacturing uses that the Transfer Stations are located. A portion of the Study Area is in Maspeth, Queens. Consistent with the heavily industrial area, there are no sensitive visual resources or unique features, and many of the streets are ill-suited for pedestrian activity.

Within the southwestern portion of the area studied, however, lies a portion of the residential community of Greenpoint, which is generally bordered on the south by the elevated portion of the Brooklyn-Queens Expressway (BQE). Though adjacent to manufacturing uses at its eastern edge, the character of this residential area is generally not intruded upon by its industrial surroundings.

4.1 Definition of Area Studied

The area studied is comprised of 17 census tracts in the northeastern portion of Brooklyn CD #1, including roughly about one-half of Greenpoint's overall area (see Figures 4.1-1 and 4.1-2). It extends along the Newtown Creek waterfront from Manhattan Avenue at the northwest to Flushing Avenue at the southeast, and it extends westward along Metropolitan Avenue to as far as Driggs Avenue.

The census tracts include those containing Transfer Stations, which are generally located within about 1,500 feet of Newtown Creek, and those containing traffic data collection points. The traffic data collection points were identified at several key intersections on designated truck routes in the area where traffic converges, including Apollo Street, BQE (Meeker Avenue), Metropolitan Avenue and Grand Street.

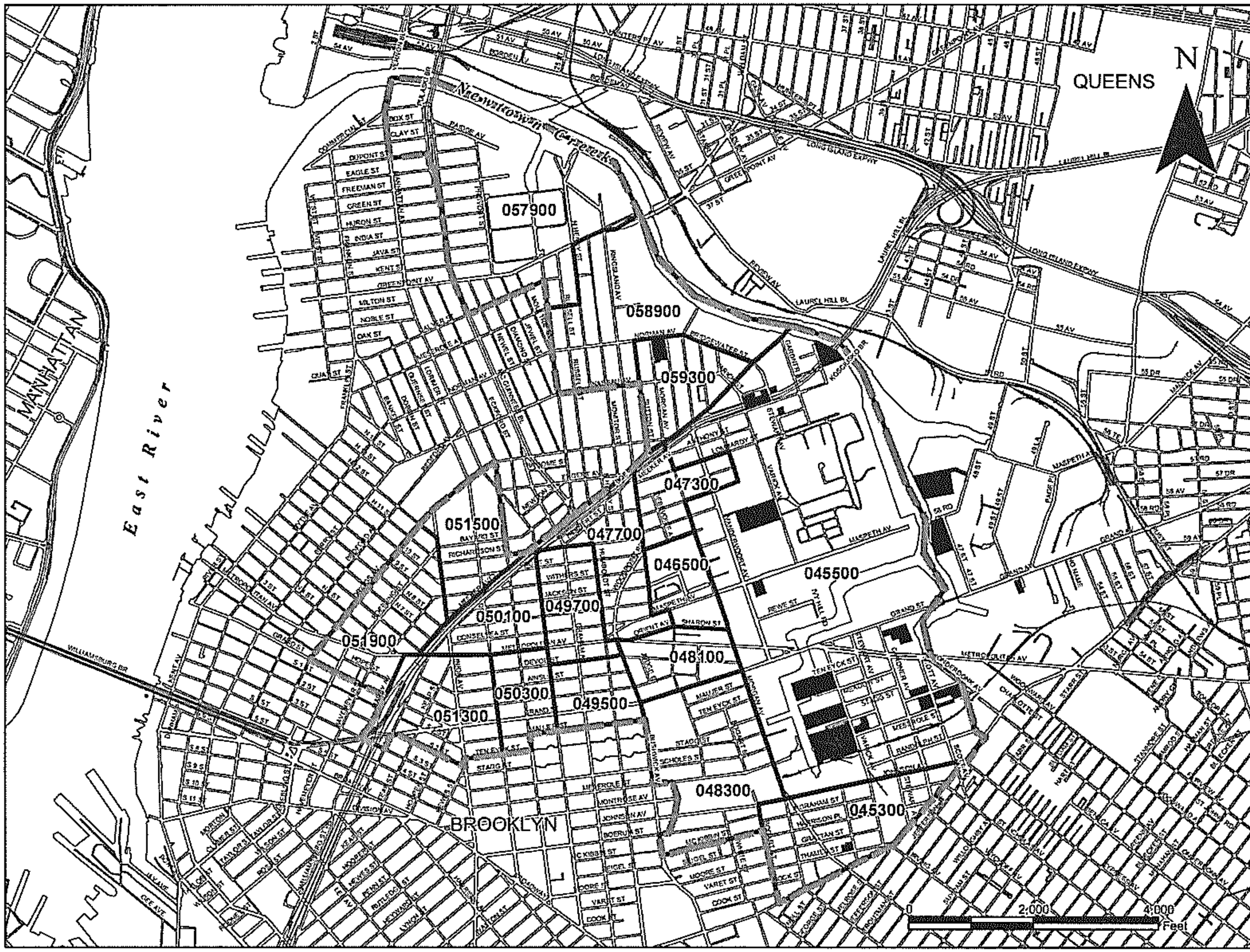


Figure 4.1-1
Census Tracts
Brooklyn Area Studied

City of New York
Department of Sanitation

Legend
Area Studied
Census Tracts

HDR

Cambridge Environmental Inc

URBITRAN

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

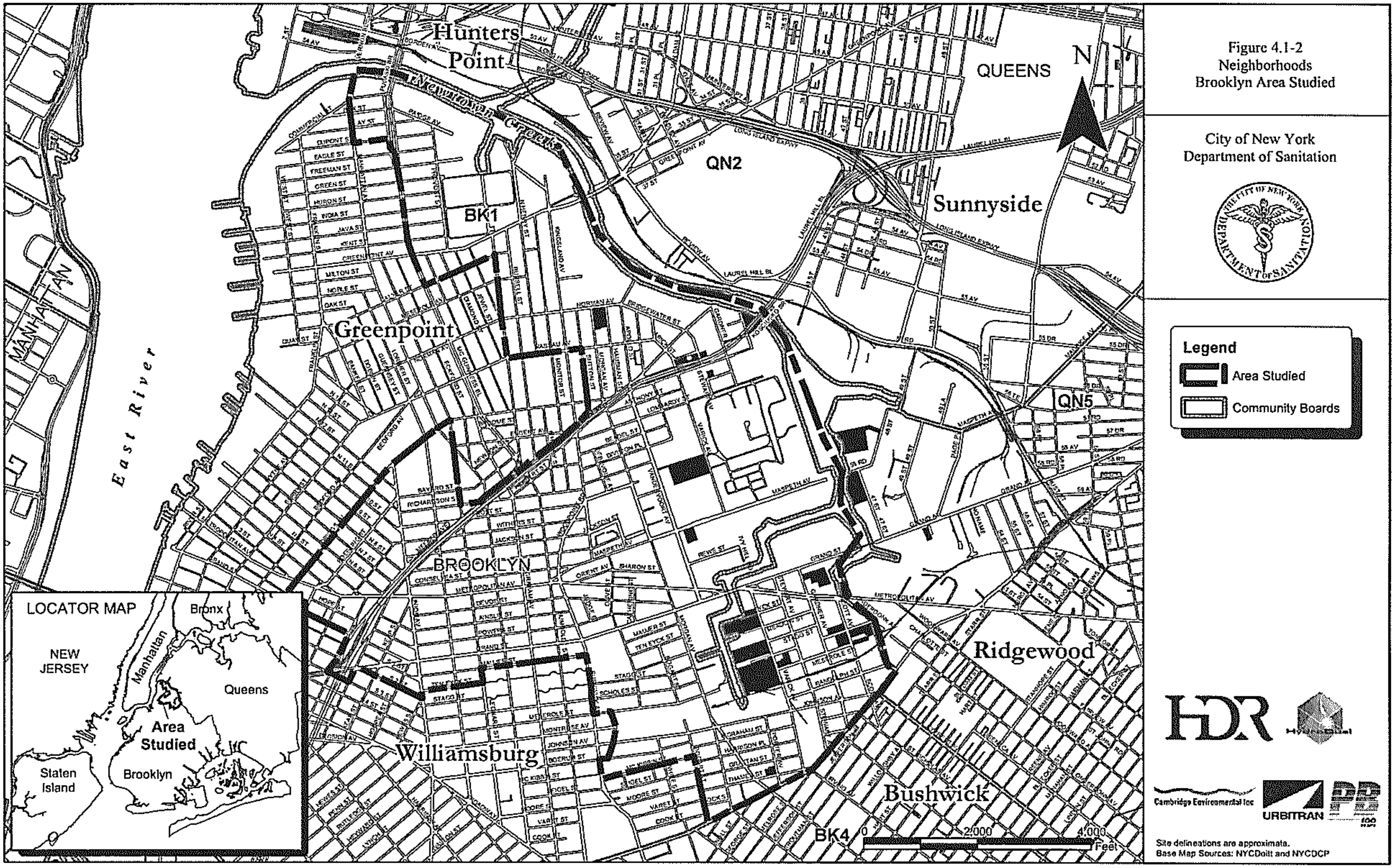


Figure 4.1-2
Neighborhoods
Brooklyn Area Studied

4.2 Land Use Pattern, Visual Quality and Cultural Resources

The area studied resembles the land use character of the district overall, with its industrial waterfronts and inland residential communities. The bulk of it -- that portion of the Newtown Creek waterfront in which the Transfer Stations are located -- features industrial land uses (see Figure 4.2-1). Residential uses are located primarily west of Morgan Avenue, though there are several residential blocks as far east as Vandam/Porter Street. The western portion of the area studied north of the BQE around McCarren Park is a mix of industrial and residential land uses, but the area south of the BQE and west of Kingsland Avenue is almost entirely residential.

Consistent with the land uses present in the Study Area, the Newtown Creek waterfront is zoned for industrial uses (primarily M3-1). Residential zoning, consistent with the residential uses, is present to the west, and a special purpose district surrounds McCarren Park at the westernmost point of the Study Area (see Figure 4.2-2).

4.3 Development History

The neighborhood of Greenpoint, the northern area of CD #1 in Brooklyn, is diverse and vibrant. It has a rich Dutch history dating back to the seventeenth century. Its East River and Newtown Creek waterfronts developed similarly into centers of industry. The five black arts -- printing, pottery, petroleum refining, gas refining and iron making -- typified Greenpoint's industrial nineteenth-century life. Greenpoint was annexed to the City of Brooklyn in 1855.

Greenpoint was bought by the Dutch in 1638 from the Keshaechqueren Indians and named for a grassy expanse that extended into the East River. With its extensive waterfront and access to Manhattan, it became a center for shipbuilding and manufacturing. Most of the population was Dutch, English and Irish until the 1880s, when immigrants from Poland, Russia and later Italy settled in the area to work in the factories and warehouses lining Kent Avenue, West Street and Newtown Creek. Active factory life in Greenpoint declined after World War II and, at the same time, there was an increase in the number of Puerto Rican immigrants. Later, Poles would account for more than half of all immigrants settling there in the 1980s, making this neighborhood the center of the city's Polish community.

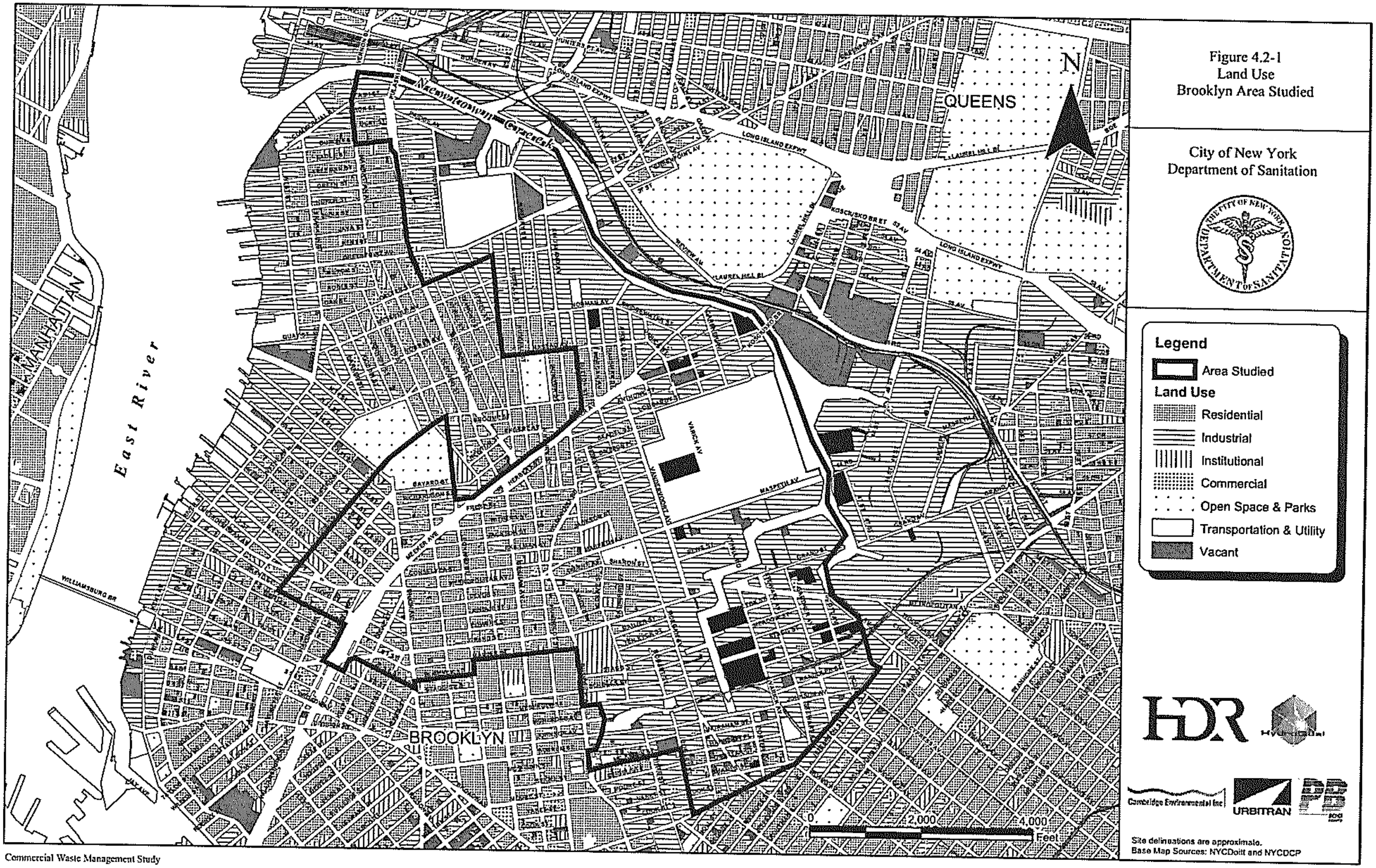


Figure 4.2-1
Land Use
Brooklyn Area Studied
City of New York
Department of Sanitation
Legend
Area Studied
Land Use
Residential
Industrial
Institutional
Commercial
Open Space & Parks
Transportation & Utility
Vacant
QUEENS
BROOKLYN
MANHATTAN
East River
Newtown Creek
0
2,000
4,000
Feet
Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP
HDR
URBITRAN

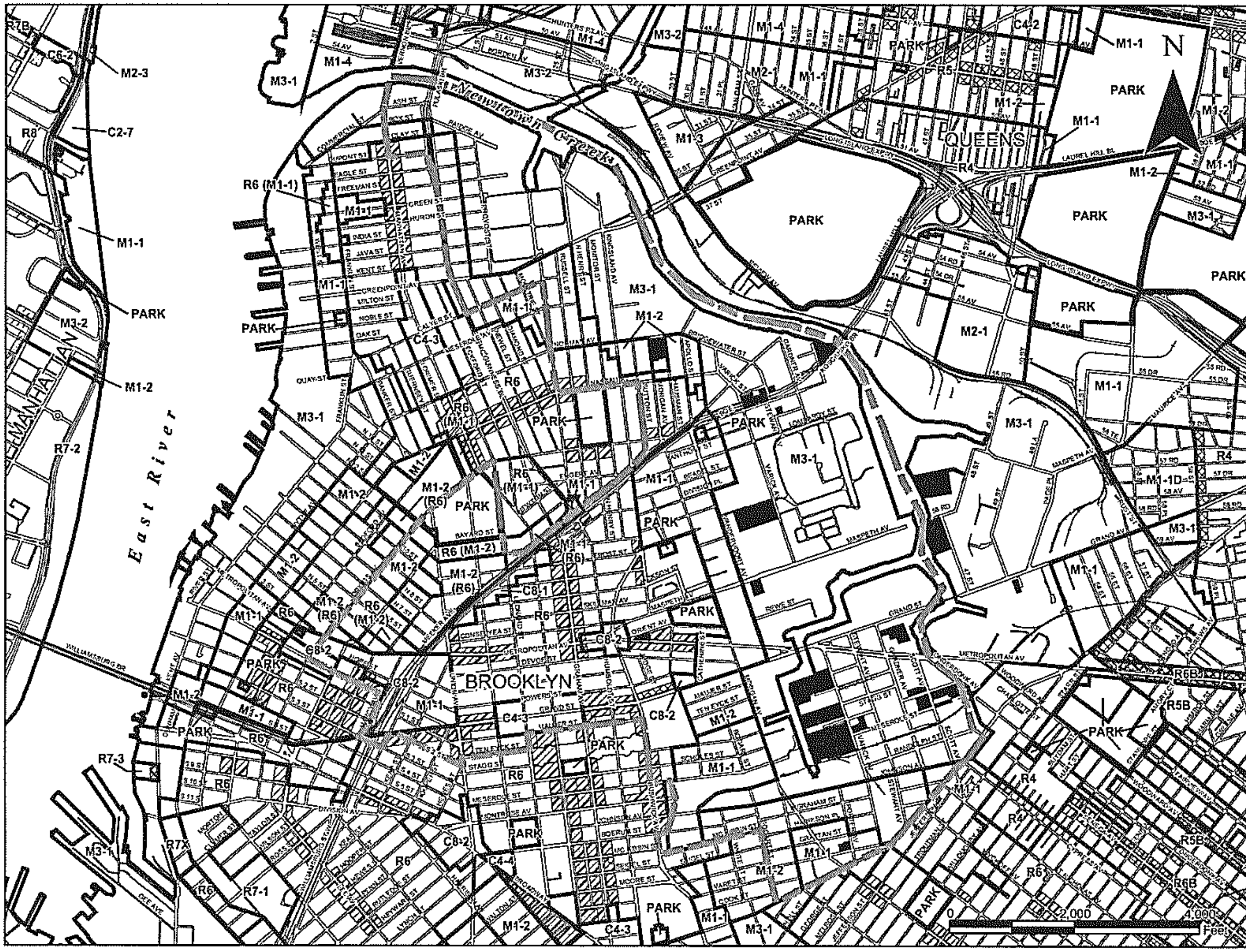


Figure 4.2-2
Zoning
Brooklyn Area Studied

City of New York
Department of Sanitation

Legend

Area Studied

Commercial Overlays

- C1-1
- C1-2
- C1-3
- C1-4
- C2-1
- C2-2
- C2-3
- C2-4

HDR

Cambridge Environmental Inc

URBITRAN

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

4.4 Community Demographics

The area studied contains a relatively stable population, with its 34,958 people in 2000 being an increase of less than 1% since 1990 (see Table 4.4-1 and Figures 4.4-1 and 4.4-2). The four most populous tracts are located at the western extent of the area studied, the portion with the least amount of industrial acreage. Three of these four tracts lost population between 1990 and 2000, as did three tracts immediately east and another on the waterfront in the heart of industrial lands. Census Tract 045500, which contains three-fourths of the Study Area's Transfer Stations, had 21 households (55 people) in 2000.

Today, the Study Area is about 47% non-Hispanic White and 41% Hispanic (any race), with 12% of the population comprised of Blacks/African American, Asian, Other or multiple-race people (see Table 4.4-2). About 13,920 households are located in the area, with the average family size ranging from 2.74 to 4.50 persons/family (see Table 4.4-3.)

Table 4.4-1
Population in the Brooklyn Area Studied

Census Tract	Total Population		Population Change, 1990-2000	
	1990	2000	Number	Percent
45300	1,568	1,616	48	3.1
45500	9	55	46	511.1
46500	2,656	2,341	- 315	- 11.9
47300	672	704	32	4.8
47700	2,422	2,276	- 146	- 6.0
48100	2,603	2,772	169	6.5
48300	669	952	283	42.3
49500	2,587	2,727	140	5.4
49700	2,248	2,228	- 20	- 0.9
50100	2,759	2,646	- 113	- 4.1
50300	3,002	2,735	- 267	- 8.9
51300	4,375	4,362	- 13	- 0.3
51500	841	877	36	4.3
51900	2,791	3,043	252	9.0
57900	1,230	1,362	132	10.7
58900	1,834	1,774	- 60	- 3.3
59300	2,372	2,488	116	4.9
Total	**34,638**	**34,958**	**320**	**0.9**

Figure 4.4-1
Population Density
Brooklyn Area Studied

City of New York
Department of Sanitation

Figure 4.4-2
Population Change
Brooklyn Area Studied

City of New York
Department of Sanitation

Legend

Area Studied

Population Change
Number of Persons between 1990 and 2000

- Gain of 191 - 361
- Gain of up to 190
- Loss of up to 190
- Loss of 191 - 361

Site delineations are approximate.
Base Map Sources: NYCDoITT and NYCDCP

Table 4.4-2
Population in the Brooklyn Area Studied
(By Mutually Exclusive Race and Hispanic Origin)

Brooklyn		Non-Hispanic by Race					Hispanic Origin (of any race)
		Single Race				Two or More Races	
Census Tract	Total Population	White	Black/African American	Asian	Other		
45300	1,616	100	57	24	10	22	1,403
45500	55	26	2	0	0	0	27
46500	2,341	52	1,110	14	0	30	1,135
47300	704	383	26	18	3	12	262
47700	2,276	1,467	43	77	8	77	604
48100	2,772	1,033	35	134	12	63	1,495
48300	952	135	49	25	7	22	714
49500	2,727	1,067	49	217	11	45	1,338
49700	2,228	1,799	9	121	4	63	232
50100	2,646	1,905	12	88	8	70	563
50300	2,735	1,390	22	142	13	69	1,099
51300	4,362	1,060	144	94	34	72	2,958
51500	877	522	7	30	7	29	282
51900	3,043	1,826	43	132	42	134	866
57900	1,362	482	35	83	25	29	708
58900	1,774	1,624	6	19	5	13	107
59300	2,488	1,616	19	49	5	121	678
Total	**34,958**	**16,487**	**1,668**	**1,267**	**194**	**871**	**14,471**
Percent of Total	--	47%	5%	4%	1%	2%	41%

Table 4.4-3
Brooklyn Area Studied
Total Households by Household Family Type

Census Tract	Total Households	Total Family Households	Total Non-Family Households	Average Household Size	Average Family Size
45300	441	338	103	3.57	3.86
45500	21	6	15	2.62	4.50
46500	763	560	203	2.82	3.31
47300	284	157	127	2.45	3.22
47700	1,004	520	484	2.24	2.99
48100	1,134	562	572	2.44	3.42
48300	288	187	101	3.27	3.76
49500	1,037	574	463	2.63	3.36
49700	1,138	504	634	1.95	2.74
50100	1,257	594	663	2.11	2.96
50300	1,130	554	576	2.42	3.31
51300	1,504	941	563	2.85	3.45
51500	407	187	220	2.15	3.11
51900	1,401	559	842	2.16	3.04
57900	483	290	193	2.82	3.56
58900	717	427	290	2.47	3.10
59300	911	577	334	2.73	3.25
Total	**13,920**	**7,537**	**6,383**	--	--

4.5 Summary of Effects

While the presence of the Transfer Stations -- both independently and as a group -- contributes to an established industrial land use pattern and visual conditions (which essentially characterize much of this area), these transfer facilities themselves do not contribute to the character of the area in any adverse or otherwise notable way.

A replacement land use scenario was implemented as a means of modeling alternative traffic conditions for comparison to existing conditions. LOS remained inadequate (mid-LOS D) or were worsened in the case of the replacement scenario, compared to existing conditions. In terms of air quality, no criteria pollutants were found to exceed NAAQS as a result of combined emissions within the Study Area. In terms of noise, no effects were predicted to result from the facilities or the associated trucks as further discussed in Volume I Summary Report.

5.0 JAMAICA, QUEENS CD #12 STUDY AREA

The character of the Jamaica area studied is mixed. The raised Long Island Rail Road (LIRR) corridor bisects the area, creating northern and southern halves. Heavily industrial uses are present along the eastern portion of the corridor and along its southern side, where the Transfer Stations are located. Residential areas are also located in the southern portion, adjacent to and south of the industrial uses. The northern portion features the vibrant commercial area along Jamaica Avenue, just north of the rail corridor. North of the commercial uses are more residential areas.

5.1 Definition of Area Studied

The area studied is comprised of 12 census tracts in the Jamaica neighborhood that cover the northern portion of Queens CD #12, and a portion of CD #8 to the north (see Figures 5.1-1 and 5.1-2). It straddles the LIRR corridor north of John F. Kennedy International Airport and west of the Jamaica station.

In addition to those census tracts containing Transfer Stations, which are located within about 500 feet of the south side of the LIRR corridor, census tracts containing traffic data collection points are included. Traffic data collection points were identified at several key intersections on designated truck routes in the area, including Highland Avenue, Hillside Avenue, Jamaica Avenue and Merrick Boulevard.

5.2 Land Use Pattern, Visual Quality and Cultural Resources

The area studied is a mix of all major land use types, even along the rail corridor that bisects the area (see Figure 5.2-1). While many large-lot industrial uses are located on either side of the rail right-of-way, smaller industrial lots line 166th Street, south of the right-of-way, and more scantly line Hillside Avenue and Jamaica Avenue north of the rail, where they are intermixed with commercial uses. Jamaica Center -- the large commercial core area -- spans Jamaica Avenue north of the LIRR corridor between Parsons Boulevard (approximately 160th Street) and 169th Street. Along with a few open spaces located on either side of the tracks within or adjacent

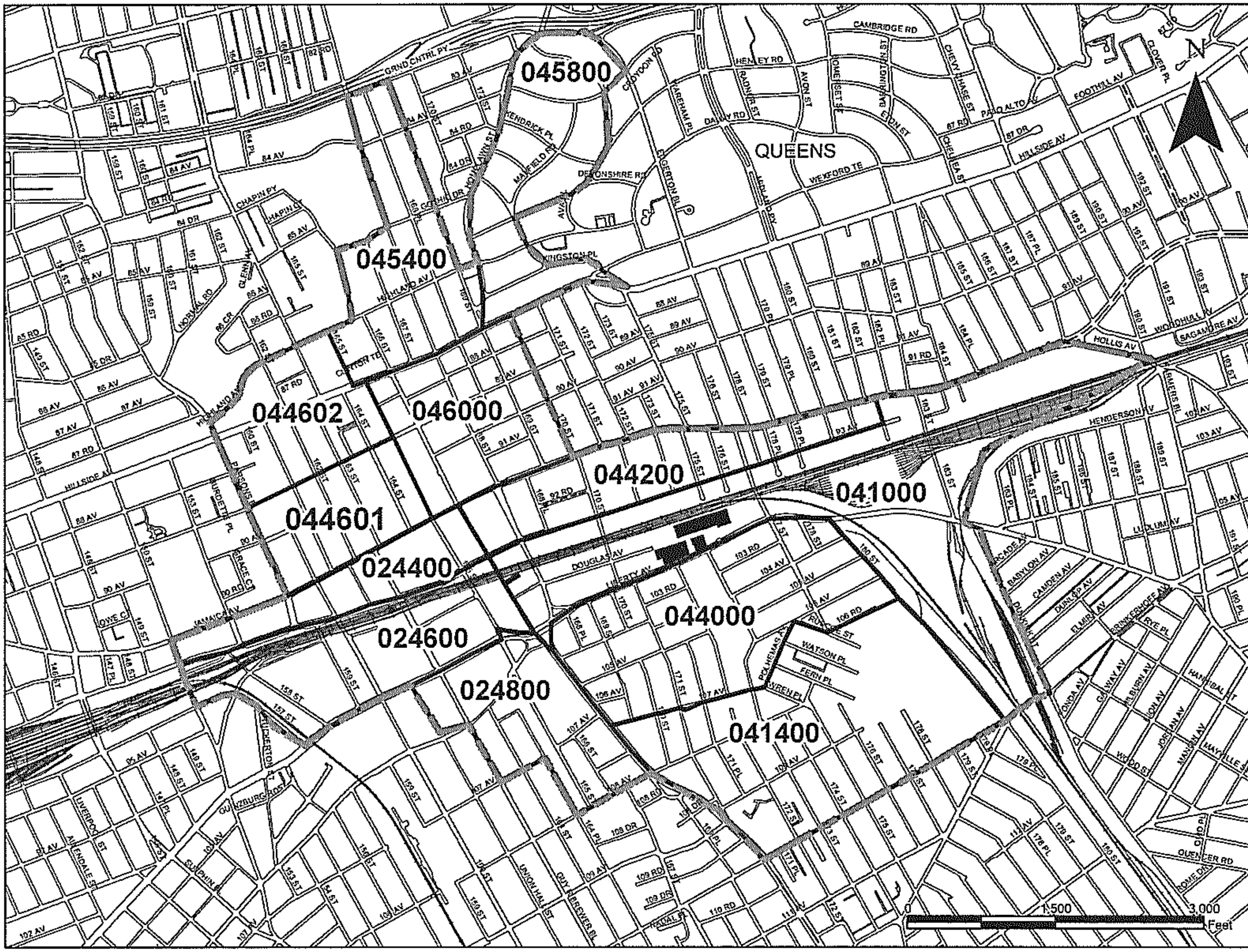


Figure 5.1-1
Census Tracts
Jamaica, Queens
Area Studied

City of New York
Department of Sanitation

Legend

Area Studied

Census Tracts

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

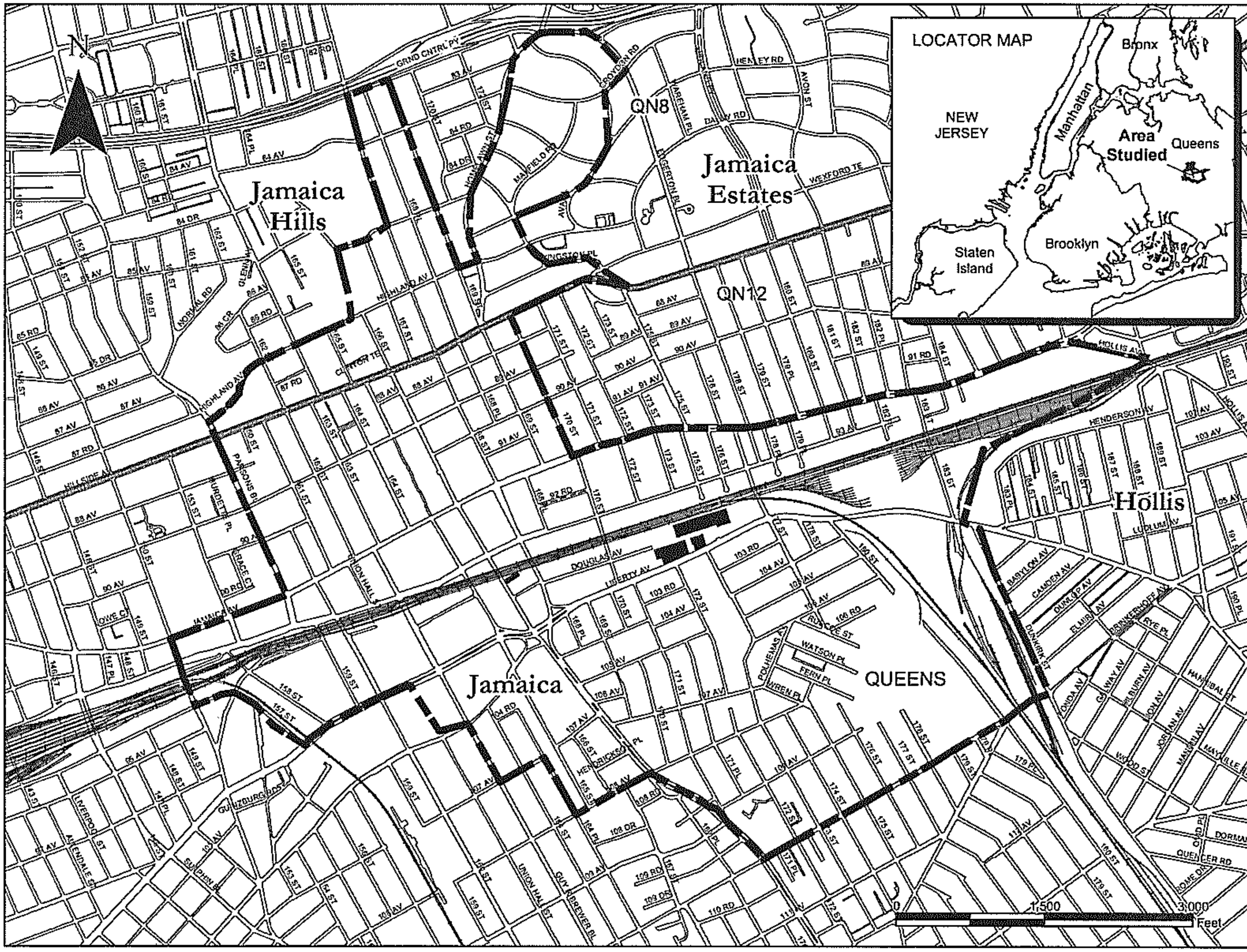


Figure 5.1-2
Neighborhoods
Jamaica, Queens
Area Studied

City of New York
Department of Sanitation

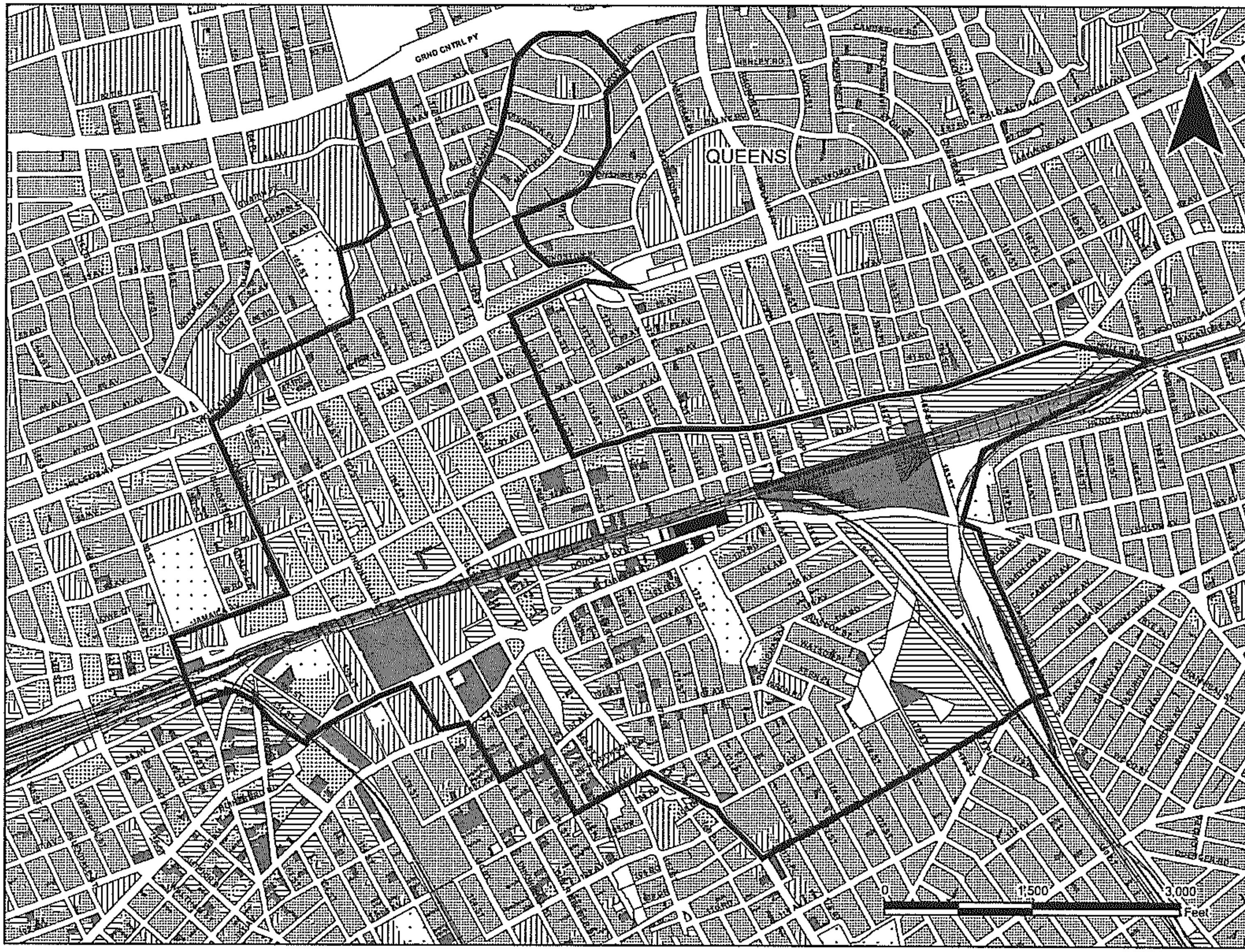


Figure 5.2-1
Land Use
Jamaica, Queens
Area Studied

City of New York
Department of Sanitation

Legend

- Area Studied

Land Use

- Residential
- Industrial
- Institutional
- Commercial
- Open Space & Parks
- Transportation & Utility
- Vacant

0 1,500 3,000 Feet

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

to the area studied, including the Detective Keith Williams Playground, residential uses make up the remainder of the area. Institutional uses, such as P.S. 116, Jamaica High School and York College, are located throughout the area studied, alongside all other types of land uses present.

Many institutional buildings in the area studied are City landmarks, some of which are also listed on the *State Register of Historic Places*. The northwestern portion of the area studied along Jamaica Avenue features several historic resources, including the First Reformed Church of Jamaica, Saint Monica's Church, Prospect Cemetery, Grace Episcopal Church and Graveyard, Rufus King House (King Manor Museum), an art deco store (formerly J. Kurtz & Sons furniture store), The Register (now Jamaica Arts Center), La Casina (now Jamaica Business Resource Center) and an attractive sidewalk clock at 161-11 Jamaica Avenue. Additional historic structures include the Jamaica Post Office, the Jamaica Chamber of Commerce Building and Jamaica Savings Bank. Together with the commercial uses present and the dynamic scene of bustling sidewalks, these landmarked institutions contribute to the established downtown character of Jamaica.

Consistent with the land uses present in the area studied, the heavily commercial area of Jamaica Avenue is zoned commercial (C-6 and C-4), the industrial areas around the rail corridor are zoned for manufacturing (M1-1) and the residential areas are zoned R-4 and R-5 (see Figure 5.2-2).

5.3 Development History

The land including the area studied was first inhabited by the Jameco (or Yamecah) Indians, whose name means "beaver" in Algonquian. They lived on the northern shore of Jamaica Bay and along Beaver Stream and Beaver Pond (filled in 1906). In 1656, English colonists from Massachusetts and eastern Long Island moved to the area, which was then named Rustdorp, meaning "rest-town." The English took control in 1683 and the area became the seat of the Town of Jamaica. Throughout the American Revolution, the area was heavily Tory. It was occupied from 1776 to 1783 by British troops, whose huts lay in the foothills north of Hillside Avenue.


Figure 5.2-2
Zoning
Jamaica, Queens
Area Studied
City of New York
Department of Sanitation
Legend
Area Studied
Commercial Overlays
C1-2
C2-2
C2-4
HDR
Cambridge Environmental Inc
URBITRAN
Site delineations are approximate.
Base Map Sources: NYCDoITT and NYCDCP
0
1,500
3,000
Feet
N
QUEENS
R2
R3-2
R1-2
R5
R4
R3-A
R6
C8-1
C4-2
M1-1
M1-5
C6-1A
C6-1
C4-8
M1-4
R7-2
PARK
HILLSIDE AV
JAMAICA AV
LIBERTY AV
DOUGLAS AV
HENDERSON AV
HOLLIS AV
FOOTHILL AV
GRND CNTRL PY
HIGHLAND AV
WEXFORD TE
DEVONSHIRE RD
KINGSTON PL

In 1814 it was incorporated as a village and in 1836, LIRR service began. After the Civil War the area grew rapidly, from 780 in 1875 to 6,500 in 1898, and 58,299 in 1910, and transit service was introduced. By 1918 the Myrtle Avenue elevated line that linked Brooklyn to lower Manhattan was extended along Jamaica Avenue, which became known for its department stores, including the first modern supermarket. In 1937 the Queens Boulevard Line opened in Queens and connected Jamaica directly to midtown and indirectly to other parts of Manhattan, Brooklyn and the Bronx. With the new subway service, population grew. It was accompanied by additional commercial development along and radiating from the Jamaica Avenue spine.

After World War II, Jamaica declined in population and business. Many people left for the suburbs (of Long Island), similar to population shifts in other parts of the City. After 1960, the population was predominantly Black and Latin American, and during the 1980s immigrants from the Caribbean, South America and elsewhere settled there. At the same time, much public investment was occurring to restore the neighborhood as a major employment center. Its commercial core remains anchored by the hub station serving the LIRR, where 10 of the 11 branches of the LIRR converge (just to the west of the neighborhood area studied). The recently completed AirTrain station links the LIRR to John F. Kennedy International Airport, and is also expected to induce additional commercial development in the vicinity. Today, Jamaica is a large and vibrant neighborhood in central Queens.

5.4 Community Demographics

The Study Area contains a relatively stable population, with its 28,774 people in 2000 being an increase of less than 1% since 1990 (see Table 5.4-1 and Figures 5.4-1 and 5.4-2). The three most populous tracts are located at the northern extent of the area studied, north of Jamaica Avenue. Two of these tracts experienced population growth between 1990 and 2000, while those adjacent showed the greatest proportional decrease (-13%) in that same period.

Today, the Study Area is about 47% Black/African American, about 23% Hispanic (any race) and about 30% White, Asian, Other or multiple-race people (see Table 5.4-2). About 9,493 households are located in the area, with the average family size ranging from 3.42 to 4.15 persons/family (see Table 5.4-3). Census Tract 041000, which contains the Study Area's Transfer Stations, had a population of 495 in 2000.

Table 5.4-1
Population in the Jamaica, Queens Area Studied

Jamaica, Queens	Total Population		Population Change 1990-2000	
Census Tract	1990	2000	Number	Percent
24400	0	20	20	--
24600	118	12	-106	-89.8
24800	844	859	15	1.8
41000	486	495	9	1.9
41400	3,561	3,637	76	2.1
44000	3,517	3,359	-158	-4.5
44200	1,695	1,964	269	15.9
44601	2,811	2,442	-369	-13.1
44602	4,742	4,128	-614	-12.9
45400	3,545	4,246	701	19.8
45800	1,888	1,894	6	0.3
46000	5,420	5,718	298	5.5
Total	**28,627**	**28,774**	**147**	**0.51**

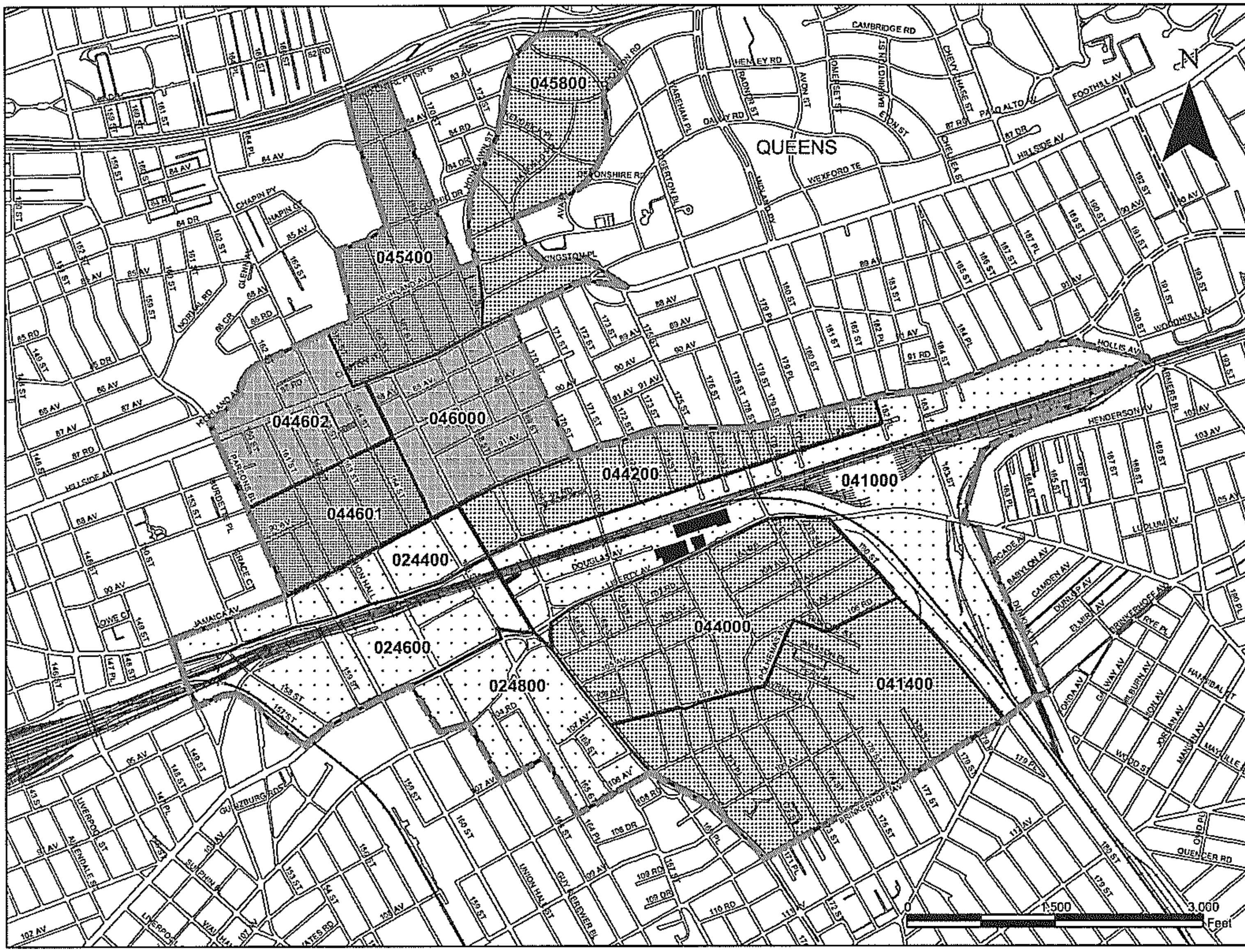


Figure 5.4-1
Population Density
Jamaica, Queens
Area Studied

City of New York
Department of Sanitation

Legend

Area Studied

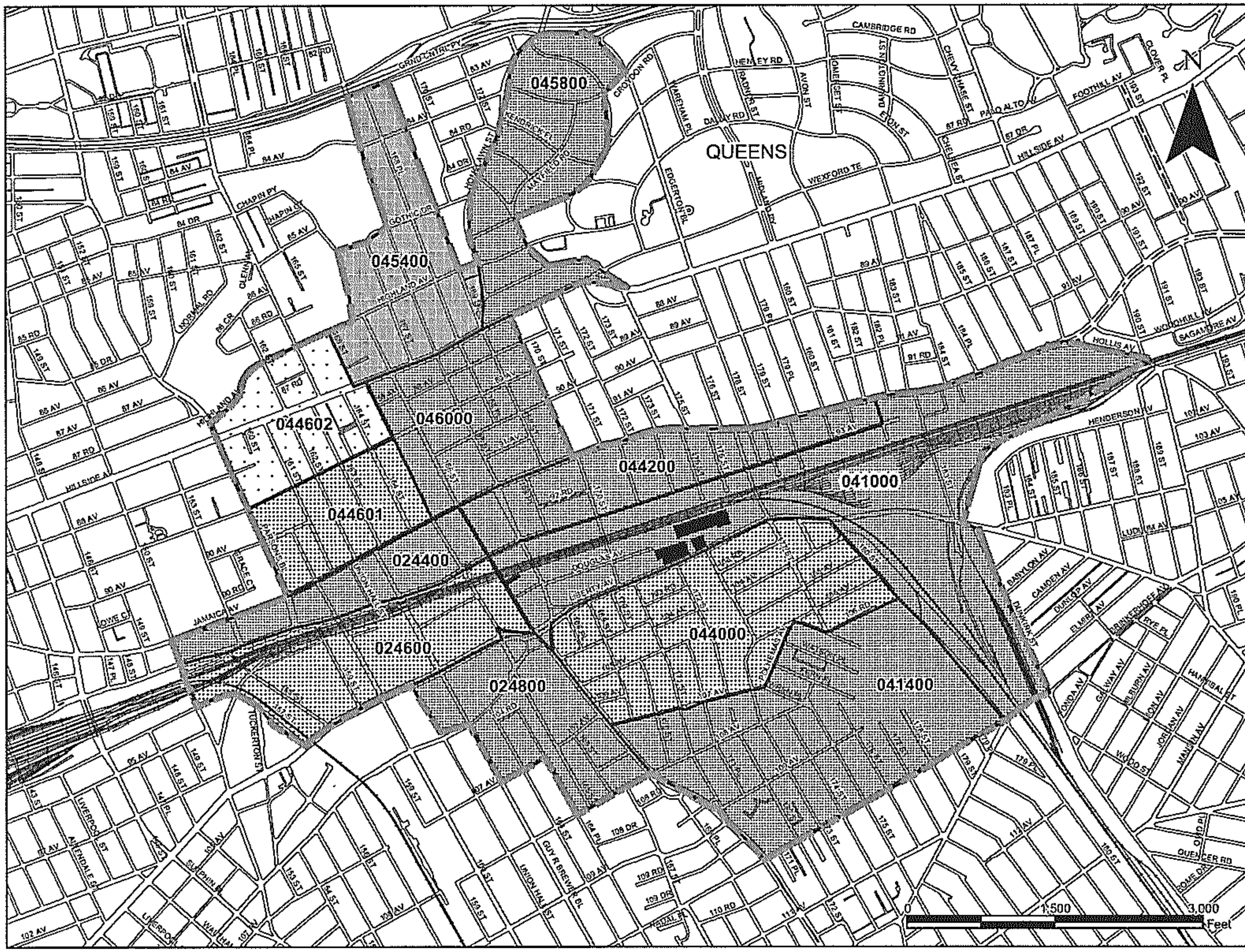
Population Density
(per square mile)

115 - 16800
16801 - 33550
33551 - 50250
50251 - 66950

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

Figure 5.4-2
Population Change
Jamaica, Queens
Area Studied

City of New York
Department of Sanitation



Legend

Area Studied

Population Change

Number of Persons between 1990 and 2000

- Gain of 331 - 916
- Gain of up to 330
- Loss of up to 329
- Loss of 330 - 743

Site delineations are approximate.
Base Map Sources: NYCDoitt and NYCDCP

Table 5.4-2
Population in the Jamaica, Queens Area Studied
(By Mutually Exclusive Race and Hispanic Origin)

Jamaica, Queens		Non-Hispanic by Race					Hispanic Origin (of any race)
		Single Race				Two or More Races	
Census Tract	Total Population	White	Black/African American	Asian	Other		
24400	20	8	10	0	0	0	2
24600	12	1	7	1	0	0	3
24800	859	3	755	6	13	15	67
41000	495	8	303	59	13	40	72
41400	3,637	25	3,265	24	28	126	169
44000	3,359	23	2,849	71	51	139	226
44200	1,964	47	783	208	147	324	455
44601	2,442	98	1,025	130	42	117	1,030
44602	4,128	142	1,538	634	165	293	1,356
45400	4,246	358	954	1,855	187	379	513
45800	1,894	289	305	779	50	131	340
46000	5,718	169	1,789	626	309	449	2,376
Total	**28,774**	**1,171**	**13,583**	**4,393**	**1,005**	**2,013**	**6,609**
Percent of Total	--	4%	47%	15%	3%	7%	23%

Table 5.4-3
Jamaica, Queens Area Studied
Total Households by Household Family Type

Census Tract	Total Households	Total Family Households	Total Non-Family Households	Average Household Size	Average Family Size
24800	235	172	63	3.66	4.15
41000	142	112	30	3.49	3.87
41400	1,192	867	325	3.05	3.56
44000	1,039	772	267	3.23	3.75
44200	673	401	272	2.85	3.83
44601	920	515	405	2.52	3.42
44602	1,331	848	483	2.85	3.48
45400	1,445	966	479	2.93	3.55
45800	623	450	173	3.04	3.55
46000	1,892	1,250	642	2.97	3.64
Total	**9,493**	**6,353**	**3,140**	--	--

Note: According to the U.S. Census, tracts 24400 and 24600 contained one or fewer total households.

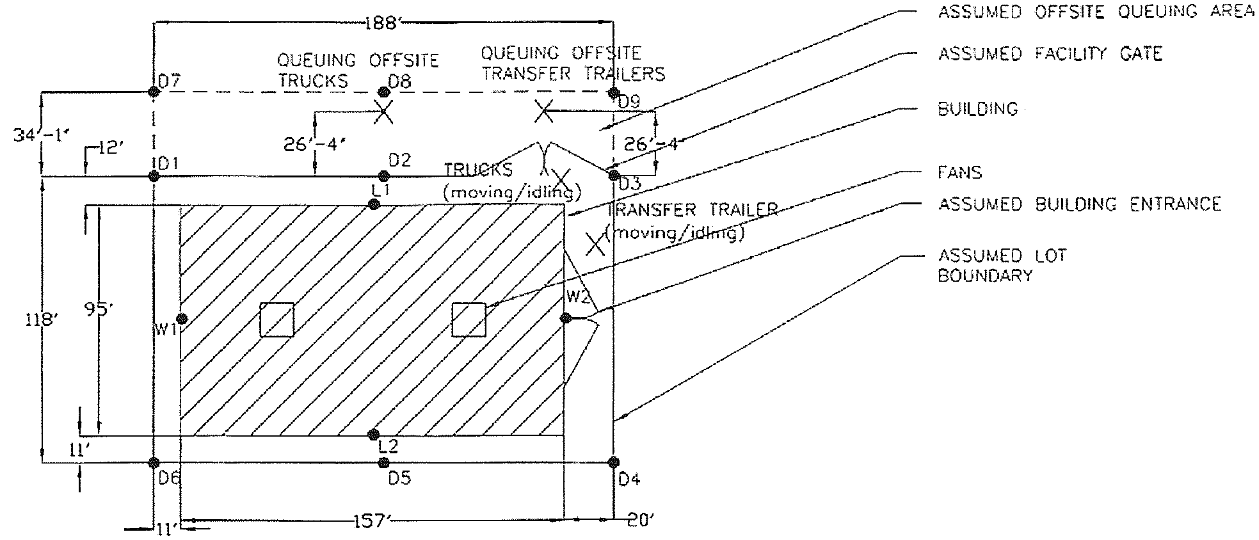
5.5 Summary of Effects

The presence of the Transfer Stations -- both independently and as a group -- contributes to an established industrial land use pattern and visual conditions. Technical analyses reveal, however, that the group of facilities contributes to a diminished sense of neighborhood character.

A replacement land use scenario was implemented as a means of modeling alternative traffic conditions for comparison to existing conditions. LOS remained inadequate (mid-LOS D) or were worsened in the case of the replacement scenario, compared to existing conditions. In terms of air quality, no criteria pollutants were found to exceed NAAQS as a result of combined emissions within the Study Area. Similarly, no instances of adverse noise effects to nearby residences (in a residential zone) were predicted to result from trucks queuing and idling outside facilities. The studies did not take into account existing noise from the LIRR tracks adjacent to the Transfer Station. The technical studies support the conclusion that the overall character of the neighborhood is potentially diminished by noise from the presence of the group of Transfer Stations.

APPENDIX B

ON-SITE PROTOTYPE DESIGNS



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	0.75
INSIDE DUMP TRUCKS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	0.75
INSIDE TRANSFER TRAILERS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FANS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING AND OUTSIDE	2	0.75
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	3	1.00
OUTSIDE TRANSFER TRAILERS (moving/idling)	DIESEL	MOBILE	OUTSIDE	1	1.00
OFF-SITE TRUCKS (QUEUING)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	5	1.00
OFF-SITE TRANSFER TRAILERS (QUEUING)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	1.00

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
BFI WASTE SYSTEMS OF NEW JERSEY	105-115 THAMES STREET BROOKLYN, NY 11237	560 TONS PER DAY
BFI WASTE SYSTEMS OF NEW JERSEY	598-636 SCHOLES STREET BROOKLYN, NY 11237	220 TONS PER DAY
REGAL RECYCLING INC.	172-06 DOUGLAS AVENUE JAMAICA, NY 11433	337.5 TONS PER DAY
NEW STYLE RECYCLING CORPORATION	49-10 GRAND AVENUE MASPETH QUEENS, NY 11378	50 TONS PER DAY

ASSUMPTIONS:
THE BUILDING SIZE IS 95' x 157'
THE LOT SIZE IS 118' x 188'
BUILDING HEIGHT IS 40'

Figure B-1
Stationary Noise Analysis
Putrescible Waste - Small

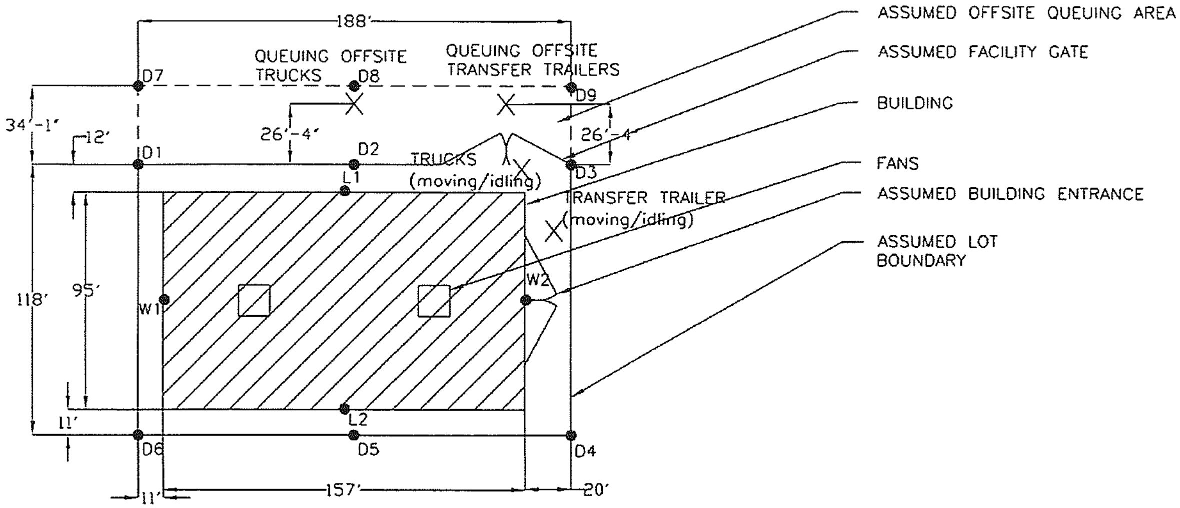
Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

City of New York
Department of Sanitation

Figure B-2
Stationary Noise Analysis
Putrescible Waste - Small

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	0.75
INSIDE DUMP TRUCKS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	0.75
INSIDE TRANSFER TRAILERS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FANS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING AND OUTSIDE	2	0.75
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	3	1.00
OUTSIDE TRANSFER TRAILERS (moving/idling)	DIESEL	MOBILE	OUTSIDE	1	1.00
OFF-SITE TRUCKS (QUEUING)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	5	1.00
OFF-SITE TRANSFER TRAILERS (QUEUING)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	1.00

COMPANY	ADDRESS	CAPACITY
BRONX		
IESI NY CORP	325 CASANOVA STREET BRONX, NY 10474	449 CUBIC YARDS PER DAY (113 TPD APPROX.)
METROPOLITAN TRANSFER STATION	287 HALECK STREET POINT BRONX, NY 10474	1,000 CUBIC YARDS PER DAY (250 TPD APPROX.)

ASSUMPTIONS:
THE BUILDING SIZE IS 95' x 157'
THE LOT SIZE IS 118' x 188'
BUILDING HEIGHT IS 40'

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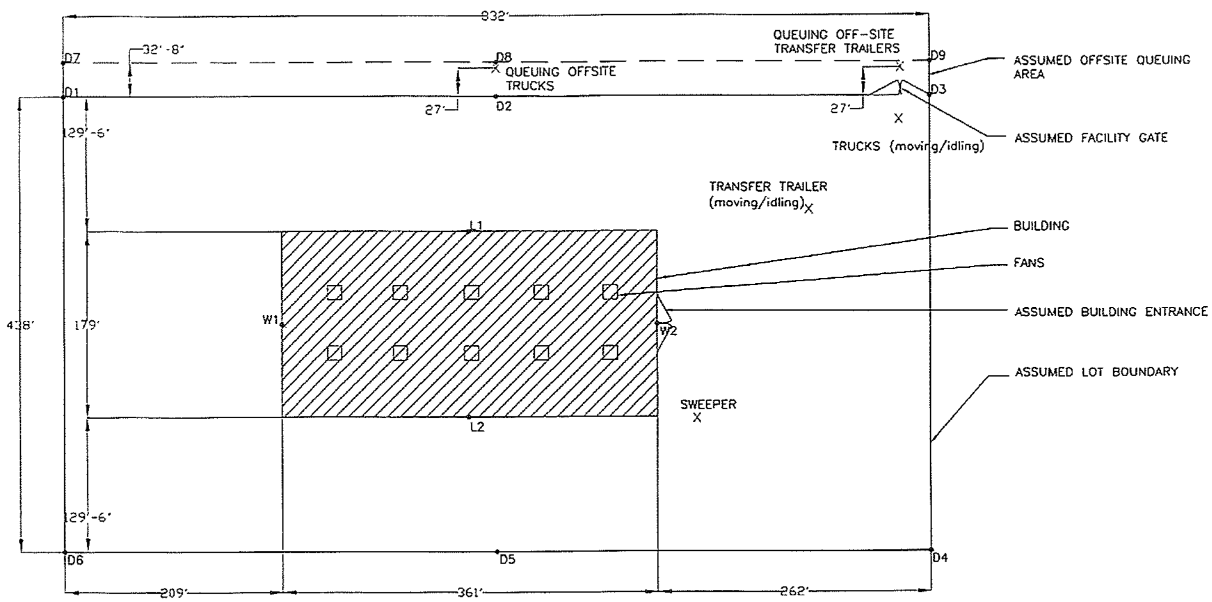
Figure B-3
Stationary Noise Analysis
Putrescible Waste -
Large With Baler

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
INSIDE DUMP TRUCKS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	4	0.75
INSIDE TRANSFER TRAILER	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FORKLIFT	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	0.75
SWEEPER	DIESEL	MOBILE	OUTSIDE	1	0.75
FANS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING AND OUTSIDE	10	0.75
OFF-SITE TRUCKS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	3	1.00
OUTSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	OUTSIDE	1	1.00
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	7	1.00
OFF-SITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	1.00
BALERS WITH CONVEYORS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING	2	0.75

COMPANY	ADDRESS	CAPACITY
BRONX		
WASTE SERVICES OF NEW YORK	920 EAST 132ND STREET BRONX, NY 10454	2999 TPD

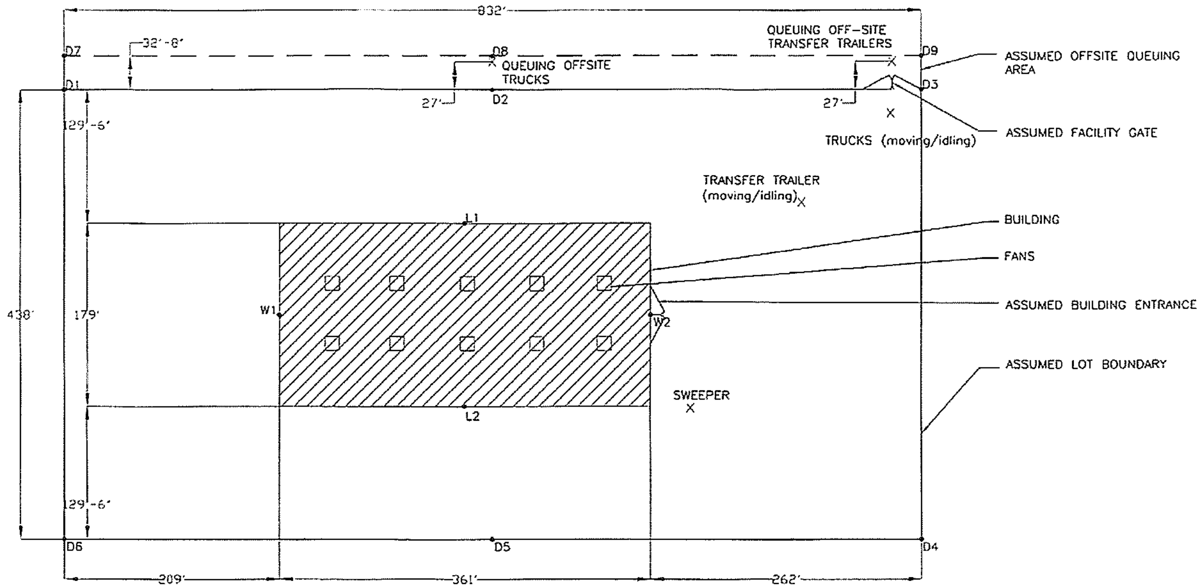
ASSUMPTIONS:
THE BUILDING SIZE IS 179' x 361'
THE LOT SIZE IS 438' x 832'
BUILDING HEIGHT IS 40'

HDR HydroQual Cambridge Environmental Inc URBITRAN PB

Figure B-4
Stationary Noise Analysis
Putrescible Waste -
Large With Baler

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
INSIDE DUMP TRUCKS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	4	0.75
INSIDE TRANSFER TRAILER	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FORKLIFT	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	0.75
SWEEPER	DIESEL	MOBILE	OUTSIDE	1	0.75
FANS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING AND OUTSIDE	10	0.75
OFF-SITE TRUCKS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	3	1.00
OUTSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	OUTSIDE	1	1.00
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	7	1.00
OFF-SITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	1.00
BALERS WITH CONVEYORS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING	2	0.75

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
WASTE MANAGEMENT OF NEW YORK	215 VARICK AVENUE BROOKLYN, NY 11237	4250 TONS PER DAY

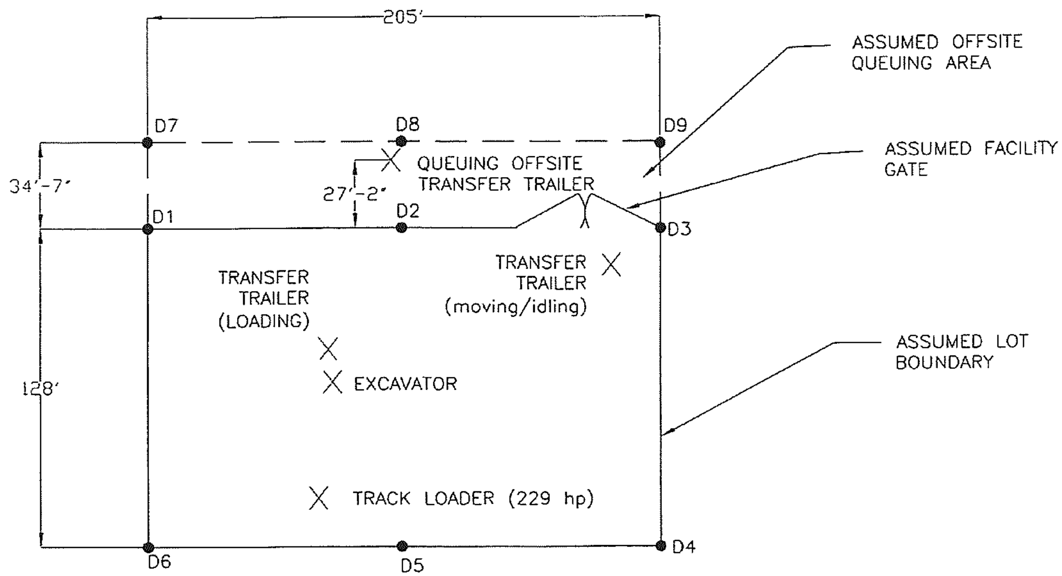
ASSUMPTIONS:
THE BUILDING SIZE IS 179' x 361'
THE LOT SIZE IS 438' x 832'
BUILDING HEIGHT IS 40'

HDR HydroQual Cambridge Environmental Inc URBITRAN PB

Figure B-5
Stationary Noise Analysis
Non-Putrescible Waste - C&D

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

City of New York
Department of Sanitation

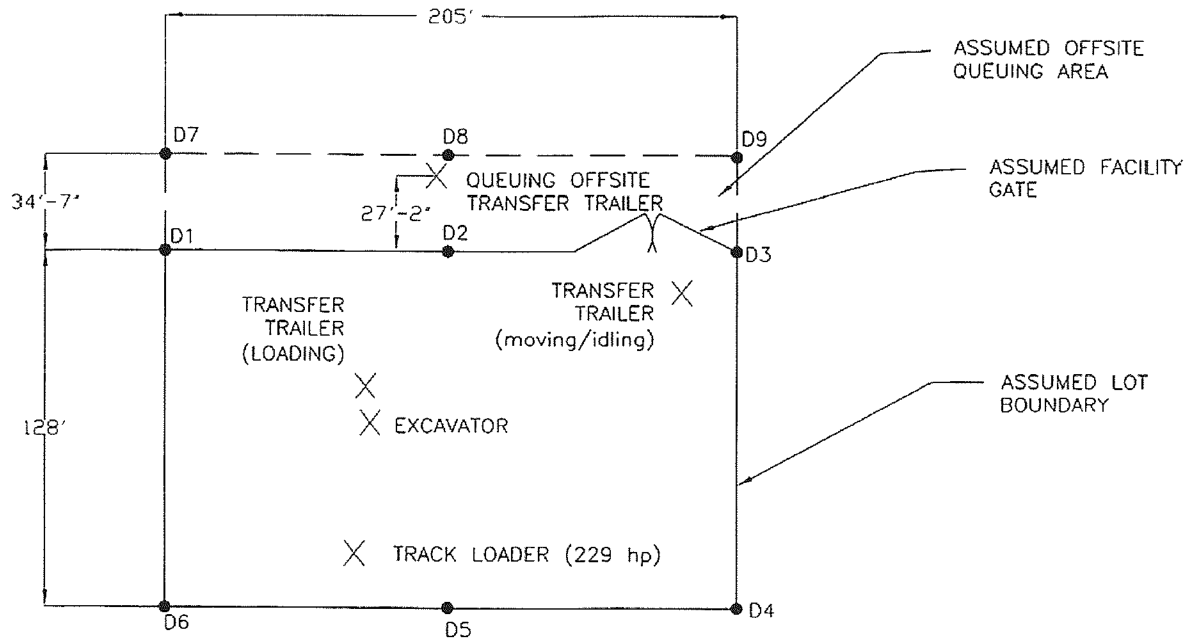


EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
TRACK LOADER (229 hp)	DIESEL	MOBILE	ON-SITE	1	0.75
EXCAVATOR (229hp)	DIESEL	MOBILE	ON-SITE	1	0.75
TRANSFER TRAILER (loading)	DIESEL	MOBILE	ON-SITE	1	0.75
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	ON-SITE	4	1.00
OFF-SITE TRANSFER TRAILER (queuing)	DIESEL	MOBILE	OFF-SITE	6	1.00

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
BROOKLYN UNION GAS CO.	287 MASPETH AVENUE BROOKLYN, NY 11211	166.7 TONS PER DAY
CITY RECYCLING GROUP	151 ANTHONY STREET BROOKLYN, NY 11222	1700 CY
COOPER TANK AND WELDING CORP	222 MASPETH STREET BROOKLYN, NY 11211	1,875 TONS PER DAY
HI-TECH RESOURCE RECOVERY, INC	130 VARICK AVENUE BROOKLYN, NY 11237	350 CUBIC YARDS PER DAY OF C&D
IESI NY CORP.	548 VARICK AVENUE BROOKLYN, NY 11222	1800 CUBIC YARDS PER DAY
WASTE MANAGEMENT OF NEW YORK	75 THOMAS STREET BROOKLYN, NY 11222	MAXIMUM STORAGE NOT TO EXCEED 5,000 CUBIC YARDS
AMERICAN RECYCLE MANAGEMENT, LLC	172-33 DOUGLAS AVE JAMAICA, NY 11433	1000 CUBIC YARDS PER DAY
REGAL RECYCLING INC.	172-06 DOUGLAS AVENUE JAMAICA, NY 11433	177.5 C&D DEBRIS PER DAY
T. NOVELLI	94-05 MERRICK BLVD JAMAICA, NY 11433	500 CUBIC YARDS PER DAY

ASSUMPTIONS:
THE LOT SIZE IS 128' x 205'

HDR HydroQual Cambridge Environmental Inc URBITRAN PB



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
TRACK LOADER (229 hp)	DIESEL	MOBILE	ON-SITE	1	0.75
EXCAVATOR (229hp)	DIESEL	MOBILE	ON-SITE	1	0.75
TRANSFER TRAILER (loading)	DIESEL	MOBILE	ON-SITE	1	0.75
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	ON-SITE	4	1.00
OFF-SITE TRANSFER TRAILER (queuing)	DIESEL	MOBILE	OFF-SITE	6	1.00

COMPANY	ADDRESS	CAPACITY
BRONX		
GM TRANSFER	216-222 MANIDA STREET BRONX, NY 10474	440 CUBIC YARDS PER DAY
KIDS WATERFRONT CORP	1264 VEILE AVENUE BRONX, NY 10474	1000 CUBIC YARDS PER DAY

ASSUMPTIONS:
THE LOT SIZE IS 128' x 205"

Figure B-6
Stationary Noise Analysis
Non-Putrescible Waste - C&D

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

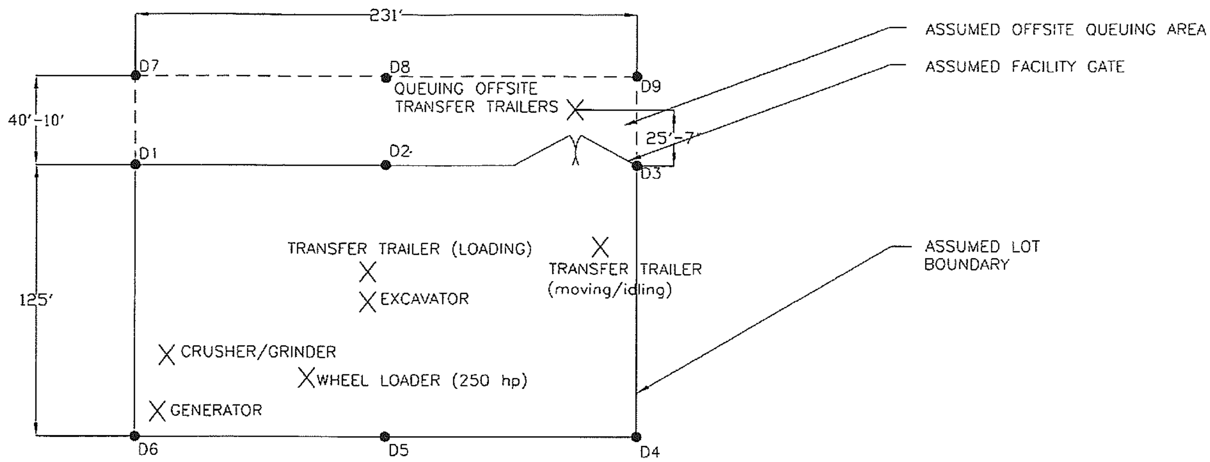
City of New York
Department of Sanitation

HDR HydroQual Cambridge Environmental Inc URBITRAN PB

Figure B-7
Stationary Noise Analysis
Non-Putrescible Waste -
Small / Medium Fill

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
OUTSIDE TRANSFER TRAILERS (moving/idling)	DIESEL	MOBILE	OUTSIDE	1	1.00
OFF-SITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	3	1.00
OUTSIDE TRANSFER TRAILER (loading)	DIESEL	MOBILE	OUTSIDE	1	0.75
WHEEL LOADER (250 hp)	DIESEL	MOBILE	OUTSIDE	1	0.75
EXCAVATOR (250 hp)	DIESEL	MOBILE	OUTSIDE	1	0.75
CRUSHER/GRINDER	DIESEL	MOBILE	OUTSIDE	1	0.75
GENERATOR	DIESEL	FIXED	OUTSIDE	1	0.75

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
PEBBLE LANE ASSOCIATES, INC. (CRUSHER)	57-00 47TH STREET MASPETH, NY 11378	4,666 TONS PER DAY
T. NOVELLI (CRUSHER)	94-05 & 94-07 MERRICK BLVD JAMAICA, NY 11433	1500 CUBIC YARDS PER DAY COMBINED FOR 94-05 & 94-07

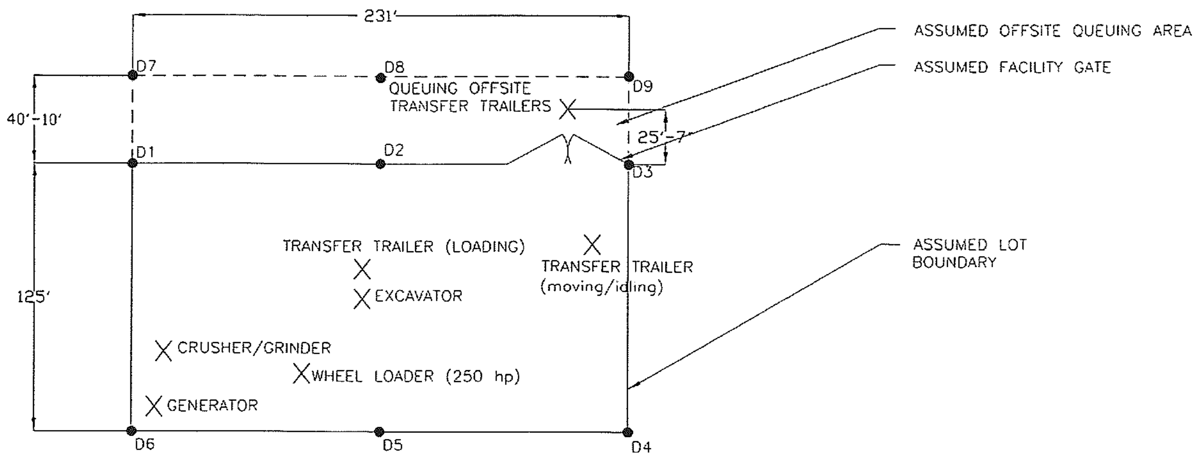
ASSUMPTIONS:
THE LOT SIZE IS 125' x 231'

HDR HydroQual Cambridge Environmental Inc URBITRAN PB

Figure B-8
Stationary Noise Analysis
Non-Putrescible Waste -
Small / Medium Fill

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
OUTSIDE TRANSFER TRAILERS (moving/idling)	DIESEL	MOBILE	OUTSIDE	1	1.00
OFF-SITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	3	1.00
OUTSIDE TRANSFER TRAILER (loading)	DIESEL	MOBILE	OUTSIDE	1	0.75
WHEEL LOADER (250 hp)	DIESEL	MOBILE	OUTSIDE	1	0.75
EXCAVATOR (250 hp)	DIESEL	MOBILE	OUTSIDE	1	0.75
CRUSHER/GRINDER	DIESEL	MOBILE	OUTSIDE	1	0.75
GENERATOR	DIESEL	FIXED	OUTSIDE	1	0.75

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
PEBBLE LANE ASSOCIATES, INC. (CRUSHER)	57-00 47TH STREET MASPETH, NY 11378	4,666 TONS PER DAY
T. NOVELLI (CRUSHER)	94-05 & 94-07 MERRICK BLVD JAMAICA, NY 11433	1500 CUBIC YARDS PER DAY COMBINED FOR 94-05 & 94-07

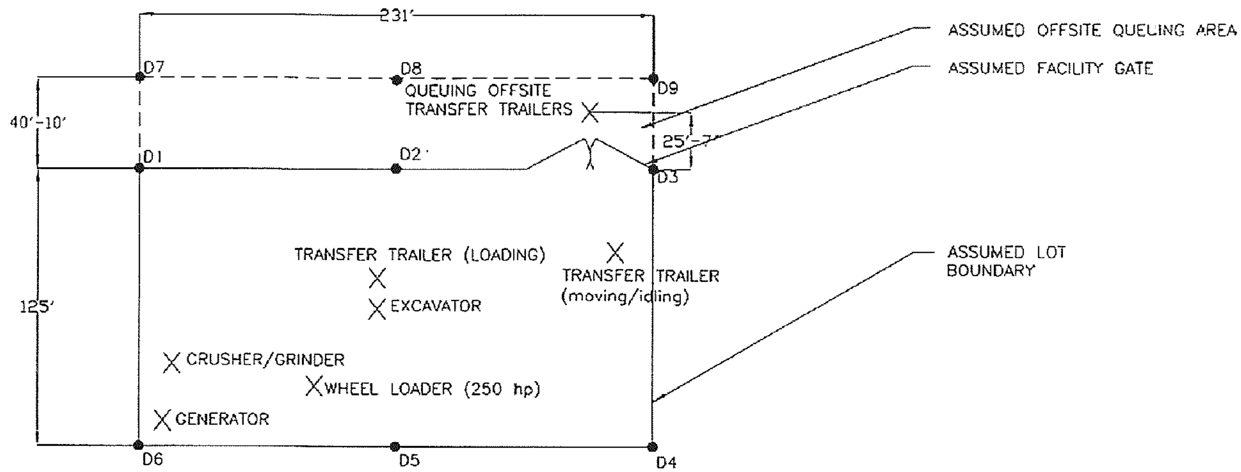
ASSUMPTIONS:
THE LOT SIZE IS 125' x 231'

HDR HydroQual Cambridge Environmental Inc URBITRAN PB 100 YEARS

Figure B-9
Stationary Noise Analysis
Non-Putrescible Waste -
Small / Medium Fill

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
OUTSIDE TRANSFER TRAILERS (moving/idling)	DIESEL	MOBILE	OUTSIDE	1	1.00
OFF-SITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	3	1.00
OUTSIDE TRANSFER TRAILER (loading)	DIESEL	MOBILE	OUTSIDE	1	0.75
WHEEL LOADER (250 hp)	DIESEL	MOBILE	OUTSIDE	1	0.75
EXCAVATOR (250 hp)	DIESEL	MOBILE	OUTSIDE	1	0.75
CRUSHER/GRINDER	DIESEL	MOBILE	OUTSIDE	1	0.75
GENERATOR	DIESEL	FIXED	OUTSIDE	1	0.75

COMPANY	ADDRESS	CAPACITY
BRONX		
BRONX CITY RECYCLING	1390 VIELE AVENUE BRONX, NY 10454	200 CY PER DAY PROCESSED 600 CY STORE
FELIX EQUITIES INC	290 EAST 132ND STREET BRONX, NY 10454	300 CYD
WASTE MANAGEMENT OF NEW YORK	315 BARRETTO STREET BRONX, NY 10474	PERMITTED OF C&D BUT CURRENTLY ONLY ACCEPTS CLEAN FILL

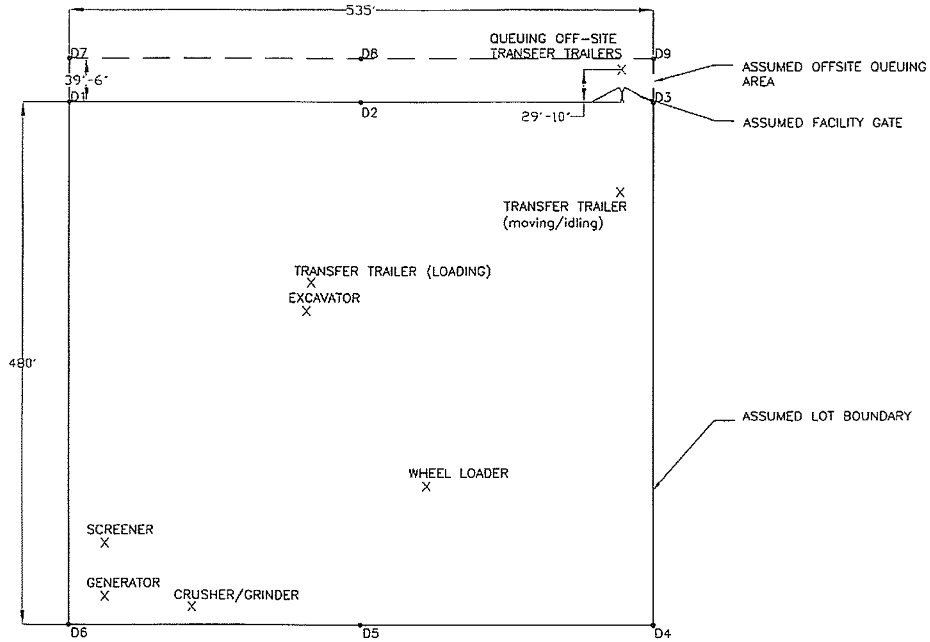
ASSUMPTIONS:
THE LOT SIZE IS 125' x 231'

HDR HydroQual Cambridge Environmental Inc URBITRAN PB

Figure B-10
Stationary Noise Analysis
Non-Putrescible Waste - Large Fill

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
OUTSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	OUTSIDE	3	1.00
OFF-SITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	1.00
WHEEL LOADER (250 hp)	DIESEL	FIXED	OUTSIDE	1	0.75
SCREENER	DIESEL	FIXED	OUTSIDE	1	0.75
GENERATOR	DIESEL	FIXED	OUTSIDE	1	0.75
OUTSIDE TRANSFER TRAILER (loading)	DIESEL	FIXED	OUTSIDE	1	0.75
EXCAVATOR (250 hp)	DIESEL	FIXED	OUTSIDE	1	0.75
CRUSHER/GRINDER	DIESEL	FIXED	OUTSIDE	1	0.75

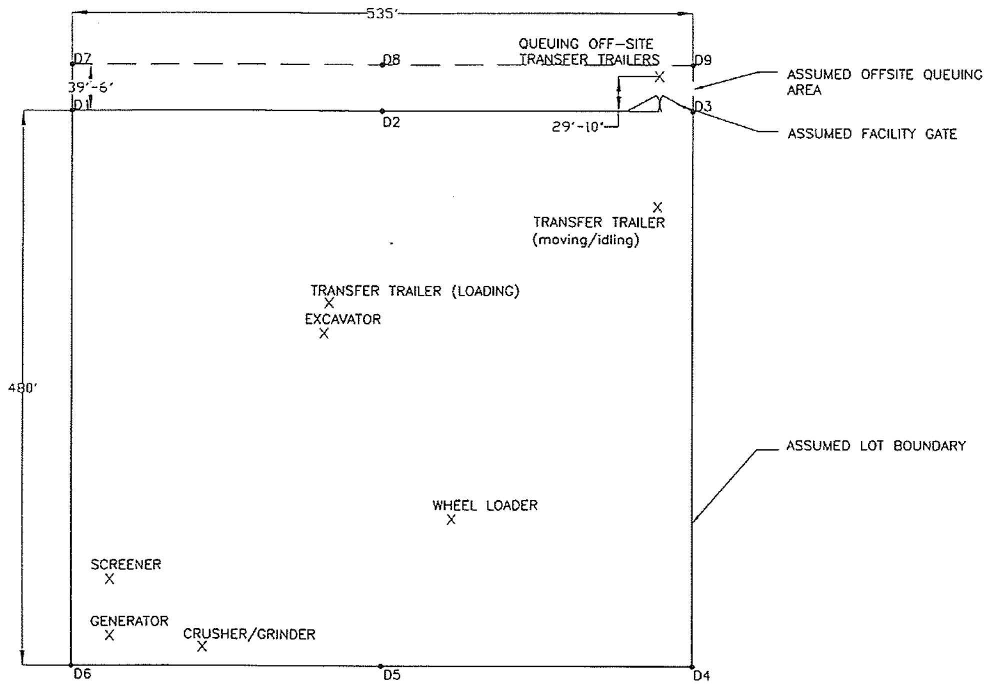
COMPANY	ADDRESS	CAPACITY
BRONX		
BRONX COUNTY RECYCLING (CRUSHER)	475 EXTERIOR STREET BRONX, NY 10461	1000 CUBIC YARDS PER DAY
TILCON NEW YORK (CRUSHER)	980 EAST 149TH STREET BRONX, NY 10461	TOTAL AREA IS LISTED AS 443,323 SF

ASSUMPTIONS:
THE LOT SIZE IS 480' x 535'

Figure B-11
Stationary Noise Analysis
Non-Putrescible Waste -
Large Fill

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

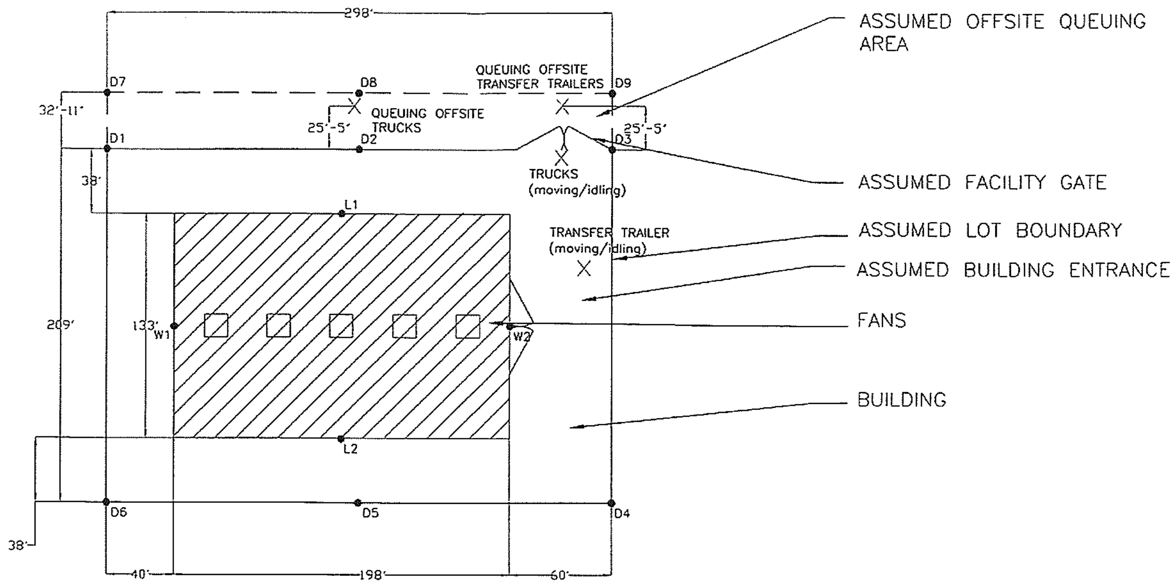
City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
OUTSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	OUTSIDE	3	1.00
OFF-SITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	1.00
WHEEL LOADER (250 hp)	DIESEL	FIXED	OUTSIDE	1	0.75
SCREENER	DIESEL	FIXED	OUTSIDE	1	0.75
GENERATOR	DIESEL	FIXED	OUTSIDE	1	0.75
OUTSIDE TRANSFER TRAILER (loading)	DIESEL	FIXED	OUTSIDE	1	0.75
EXCAVATOR (250 hp)	DIESEL	FIXED	OUTSIDE	1	0.75
CRUSHER/GRINDER	DIESEL	FIXED	OUTSIDE	1	0.75

COMPANY	ADDRESS	CAPACITY
QUEENS		
MASPETH RECYCLING	58-08 48TH STREET QUEENS, NY 11378	200 TONS PER DAY

ASSUMPTIONS:
THE LOT SIZE IS 480' x 535'



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FORK LIFTS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
BALERS WITH CONVEYORS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING	1	0.75
INSIDE DUMP TRUCKS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	0.75
INSIDE TRANSFER TRAILER	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FANS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING AND OUTSIDE	5	0.75
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	3	1.00
OUTSIDE TRANSFER TRAILERS (moving/idling)	ELECTRIC	MOBILE	OUTSIDE	1	1.00
OFFSITE TRUCKS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	5	1.00
OFFSITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	1.00

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
AMERICAN RECYCLE MANAGEMENT, LLC	172-33 DOUGLAS AVE JAMAICA, NY 11433	400 TONS PER DAY
HI-TECH RESOURCE RECOVERY, INC	130 VARICK AVENUE BROOKLYN, NY 11237	500 TONS PER DAY
WASTE MANAGEMENT OF NEW YORK	485 SCOTT AVENUE BROOKLYN, NY 11222	1,125 TONS PER DAY

ASSUMPTIONS:
THE BUILDING SIZE IS 133' x 198'
THE LOT SIZE IS 209' x 298'
BUILDING HEIGHT IS 40'

Figure B-12
Stationary Noise Analysis
Putrescible Waste - Medium With Baler

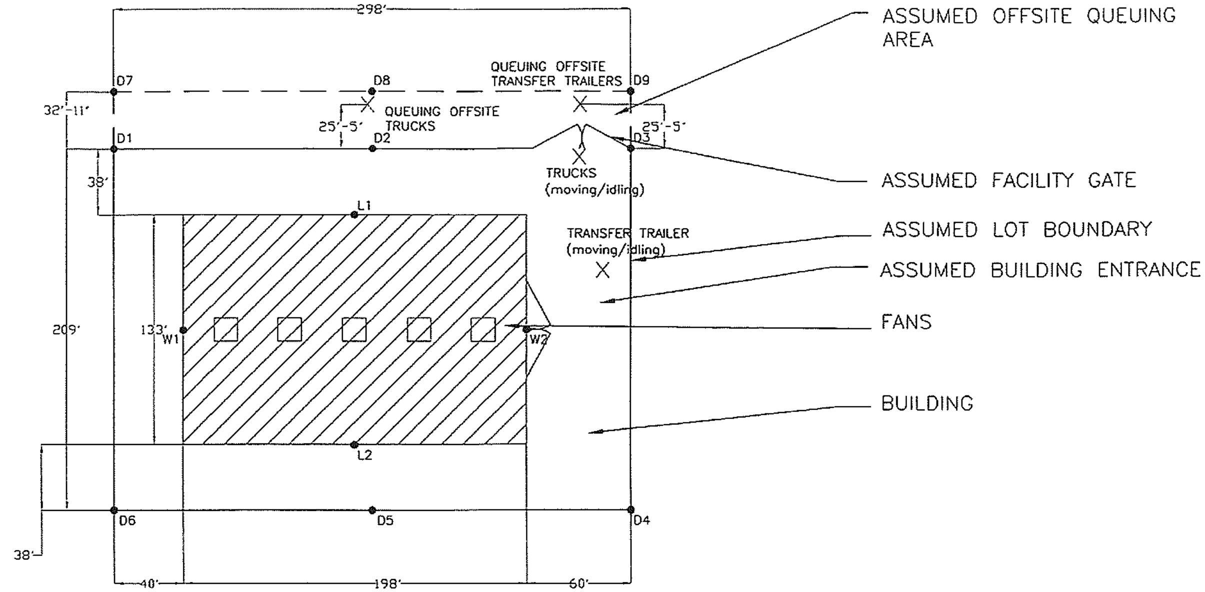
Brooklyn CD #1 and Jamaica, Queens CD #12 Study Areas

City of New York
Department of Sanitation

Figure B-13
Stationary Noise Analysis
Putrescible Waste -
Medium With Baler

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FORK LIFTS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
BALERS WITH CONVEYORS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING	1	0.75
INSIDE DUMP TRUCKS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	0.75
INSIDE TRANSFER TRAILER	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FANS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING AND OUTSIDE	5	0.75
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	3	1.00
OUTSIDE TRANSFER TRAILERS (moving/idling)	ELECTRIC	MOBILE	OUTSIDE	1	1.00
OFFSITE TRUCKS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	5	1.00
OFFSITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	1.00

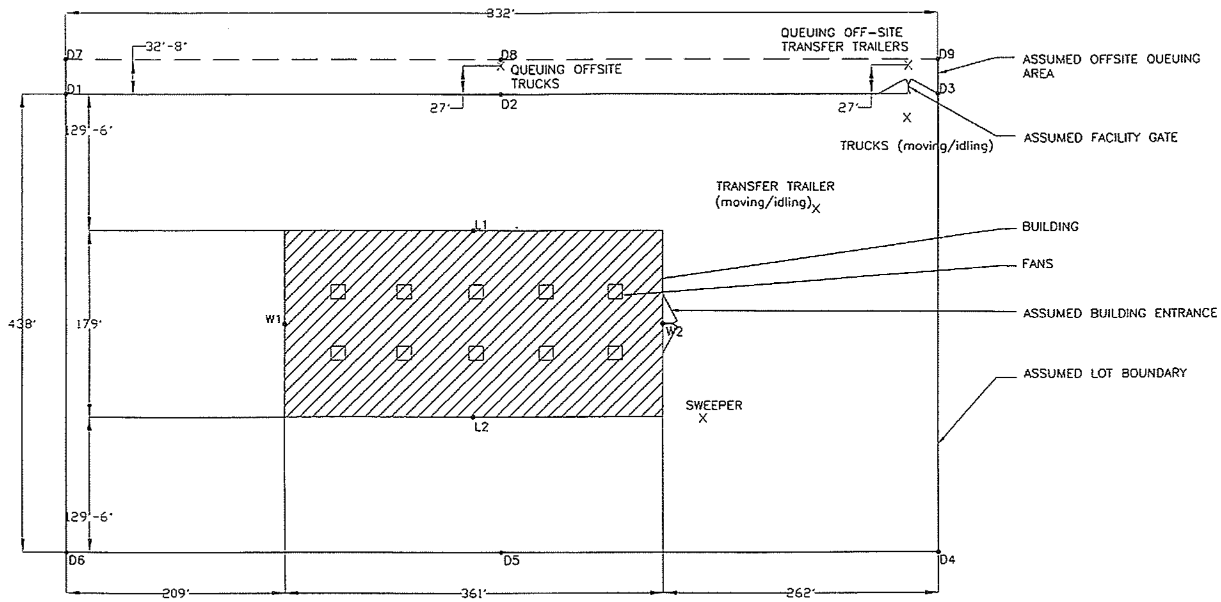
COMPANY	ADDRESS	CAPACITY
BRONX		
PAPER FIBRES CORP	960 BRONX RIVER AVENUE BRONX, NY 10473	74 TPD OF MSO AND 300 TPD OF WASTE PAPER

ASSUMPTIONS:
THE BUILDING SIZE IS 133' x 198'
THE LOT SIZE IS 209' x 298'
BUILDING HEIGHT IS 40'

Figure B-14
Stationary Noise Analysis
Putrescible Waste -
Large With Locomotive

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
INSIDE DUMP TRUCKS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	4	0.75
INSIDE TRANSFER TRAILER	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
FORKLIFT	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0.75
INSIDE RAIL CAR 90'	N/A	N/A	INSIDE PROCESSING BUILDING	4	0.75
SWEEPER	DIESEL	MOBILE	OUTSIDE	1	0.75
FANS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING AND OUTSIDE	10	0.75
OFF-SITE TRUCKS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	3	1.00
OUTSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	OUTSIDE	1	1.00
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	7	1.00
LOCOMOTIVE	DIESEL	MOBILE	OUTSIDE	1	0.75
OFF-SITE TRANSFER TRAILERS (queuing)	DIESEL	MOBILE	OUTSIDE/OFF-SITE	2	0.75

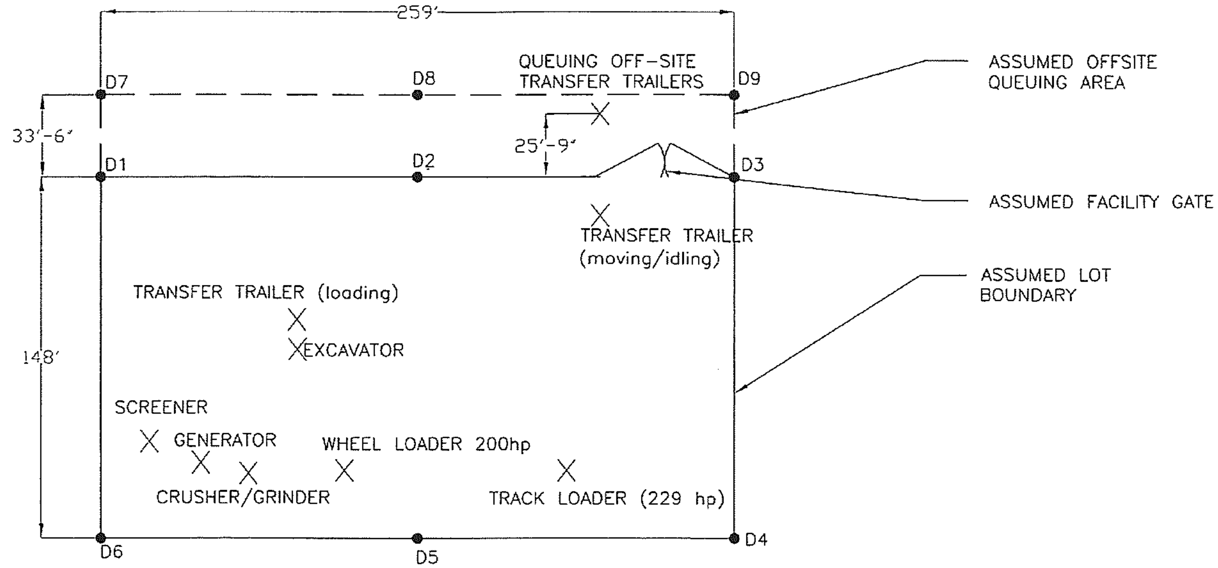
COMPANY	ADDRESS	CAPACITY
BRONX		
USA WASTE SERVICES OF NYC, INC. (HRY)	98 LINCOLN AVENUE BRONX, NY 10454	3,000 TONS PER DAY

ASSUMPTIONS:
THE BUILDING SIZE IS 179' x 361'
THE LOT SIZE IS 438' x 832'
BUILDING HEIGHT IS 40'

Figure B-15
Stationary Noise Analysis
Non-Putrescible C&D -
With Crusher / Screener

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	ON-SITE	1	0.75
TRACK LOADER (229 hp)	DIESEL	MOBILE	ON-SITE	1	0.75
EXCAVATOR (250hp)	DIESEL	MOBILE	ON-SITE	1	0.75
TRANSFER TRAILER (loading)	DIESEL	MOBILE	ON-SITE	1	0.75
SCREENER	ELECTRIC	FIXED	ON-SITE	1	0.75
CRUSHER/GRINDER	DIESEL	FIXED	ON-SITE	1	0.75
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	ON-SITE	3	1.00
OFF-SITE TRANSFER TRAILER (queuing)	DIESEL	MOBILE	OFF-SITE	12	1.00
GENERATOR	DIESEL	FIXED	OFF-SITE	1	0.75

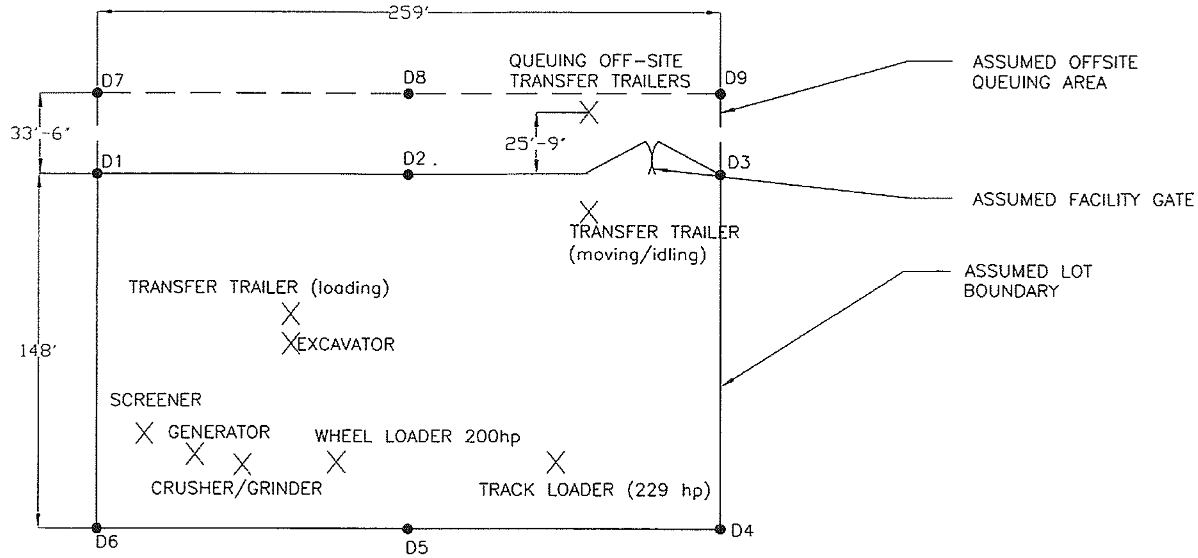
COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
WASTE MANAGEMENT OF NEW YORK	485 SCOTT AVENUE BROOKLYN, NY 11222	1875 TPD C&D AND 810 TPD RECYCLING
POINT RECYCLING LTD. (BALER)	686 MORGAN AVENUE BROOKLYN, NY 11222	400 CUBIC YARDS PER DAY
ASTORIA CARING CO. (BROOKLYN RECYCLING CORP.)	538-545 STEWART BROOKLYN, NY 11222	
BFI WASTE SYSTEMS OF NEW JERSEY	594 SCHOLES STREET BROOKLYN, NY 11237	1,088 TPD OF C&D, 1,450 TONS PER DAY OF SOURCE SEPARETED RECYCLABLE MATERIALS AND WASTE PAPER
WASTE MANAGEMENT OF NEW YORK	123 VARICK AVENUE BROOKLYN, NY 11237	2624 TONS PER DAY
WASTE MANAGEMENT OF NEW YORK	232 GARDNER AVENUE BROOKLYN, NY	4320 TONS PER DAY
NEW STYLE RECYCLING CORP.	49-10 GRAMP AVENUE MASPETH, NY 11378	4320 TONS PER DAY

ASSUMPTIONS:
THE LOT SIZE IS 148' x 259'

Figure B-16
Stationary Noise Analysis
Non-Putrescible C&D -
With Crusher / Screener

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

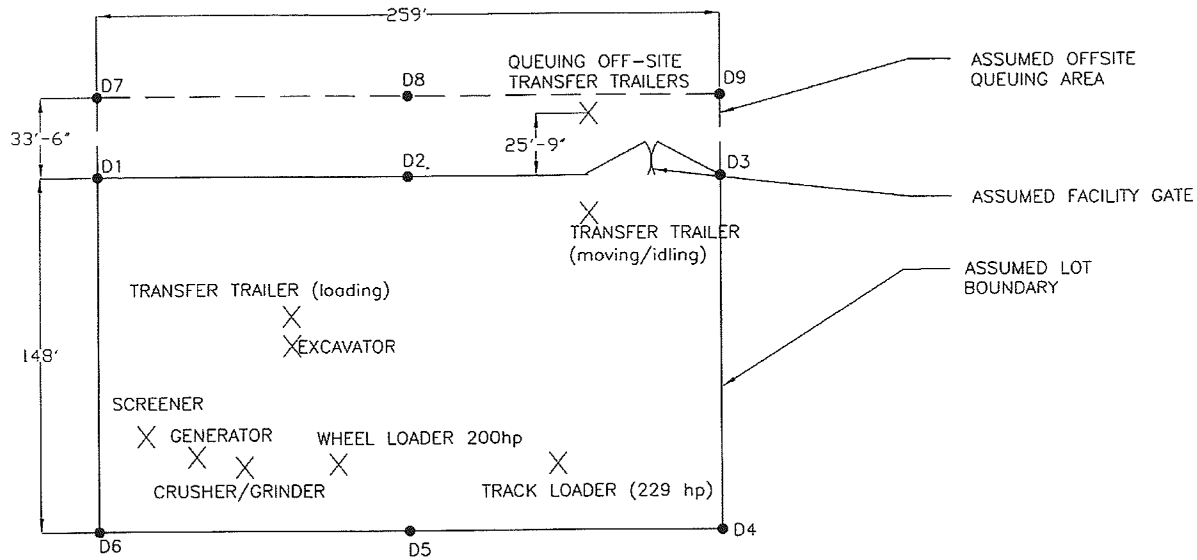
City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	ON-SITE	1	0.75
TRACK LOADER (229 hp)	DIESEL	MOBILE	ON-SITE	1	0.75
EXCAVATOR (250hp)	DIESEL	MOBILE	ON-SITE	1	0.75
TRANSFER TRAILER (loading)	DIESEL	MOBILE	ON-SITE	1	0.75
SCREENER	ELECTRIC	FIXED	ON-SITE	1	0.75
CRUSHER/GRINDER	DIESEL	FIXED	ON-SITE	1	0.75
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	ON-SITE	3	1.00
OFF-SITE TRANSFER TRAILER (queuing)	DIESEL	MOBILE	OFF-SITE	12	1.00
GENERATOR	DIESEL	FIXED	OFF-SITE	1	0.75

COMPANY	ADDRESS	CAPACITY
BRONX		
AJ RECYCLING INC.	325 FAILE STREET BRONX, NY 10474	STORED=800 CY
JOHN DANNA & SONS, INC	318 BRYANT AVENUE BRONX, NY 10474	540 CUBIC YARDS PER DAY
WASTE MANAGEMENT OF NEW YORK	620 TRUXTON STREET BRONX, NY 10474	1,050 TONS OF C&D PER DAY
WASTE MANAGEMENT OF NEW YORK	315 BARRETTO STREET BRONX, NY 10474	PERMITTED FOR C&D BUT CURRENTLY ONLY ACCEPTS CLEAN FILL

ASSUMPTIONS:
THE LOT SIZE IS 148' x 259'



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	NUMBER OF UNITS	DUTY CYCLE FACTOR
WHEEL LOADER (200hp)	DIESEL	MOBILE	ON-SITE	1	0.75
TRACK LOADER (229 hp)	DIESEL	MOBILE	ON-SITE	1	0.75
EXCAVATOR (250hp)	DIESEL	MOBILE	ON-SITE	1	0.75
TRANSFER TRAILER (loading)	DIESEL	MOBILE	ON-SITE	1	0.75
SCREENER	ELECTRIC	FIXED	ON-SITE	1	0.75
CRUSHER/GRINDER	DIESEL	FIXED	ON-SITE	1	0.75
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	ON-SITE	3	1.00
OFF-SITE TRANSFER TRAILER (queuing)	DIESEL	MOBILE	OFF-SITE	12	1.00
GENERATOR	DIESEL	FIXED	OFF-SITE	1	0.75

COMPANY	ADDRESS	CAPACITY
BRONX		
AJ RECYCLING INC.	325 FAILE STREET BRONX, NY 10474	STORED=800 CY
JOHN DANNA & SONS, INC	318 BRYANT AVENUE BRONX, NY 10474	540 CUBIC YARDS PER DAY
WASTE MANAGEMENT OF NEW YORK	620 TRUXTON STREET BRONX, NY 10474	1,050 TONS OF C&D PER DAY
WASTE MANAGEMENT OF NEW YORK	315 BARRETTO STREET BRONX, NY 10474	PERMITTED FOR C&D BUT CURRENTLY ONLY ACCEPTS CLEAN FILL

ASSUMPTIONS:
THE LOT SIZE IS 148' x 259'

Figure B-17
Stationary Noise Analysis
Non-Putrescible C&D -
With Crusher / Screener

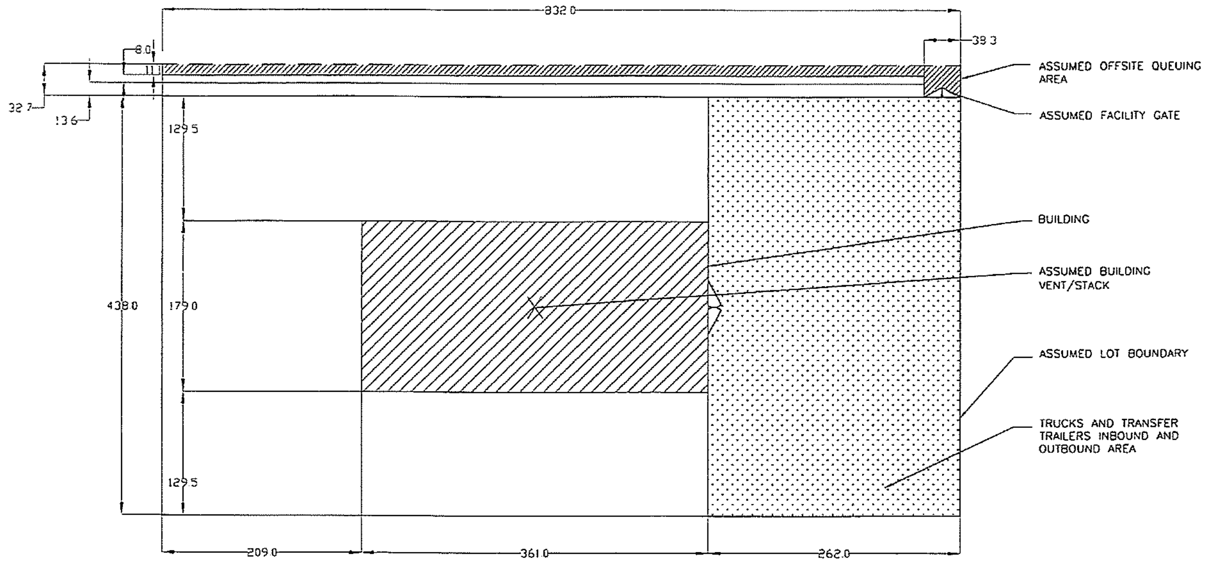
Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation

Figure B-18
Stationary Air Analysis Putrescible Waste - Large With Baler

Brooklyn CD #1 and Jamaica, Queens CD #12 Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK	AVERAGE	
				1 - HOUR 3 - HOUR 8 - HOUR	24 - HOUR	ANNUAL
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
INSIDE TRANSFER TRAILER	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	14	11	11
INSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	28	22	22
FORKLIFT (221hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	2	2
BALER/CONVEYOR	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING	2	2	2
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	28	22	22
FANS	ELECTRIC	FIXED	OUTSIDE	10	10	10
SWEEPER	DIESEL	MOBILE	OUTSIDE	1	1	1
OUTSIDE TRANSFER TRAILER (moving)	DIESEL	MOBILE	OUTSIDE	14	11	11
OFFSITE DUMPT TRUCK (idling)	DIESEL	MOBILE	OUTSIDE	3	2	2
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	OUTSIDE	2	1	1

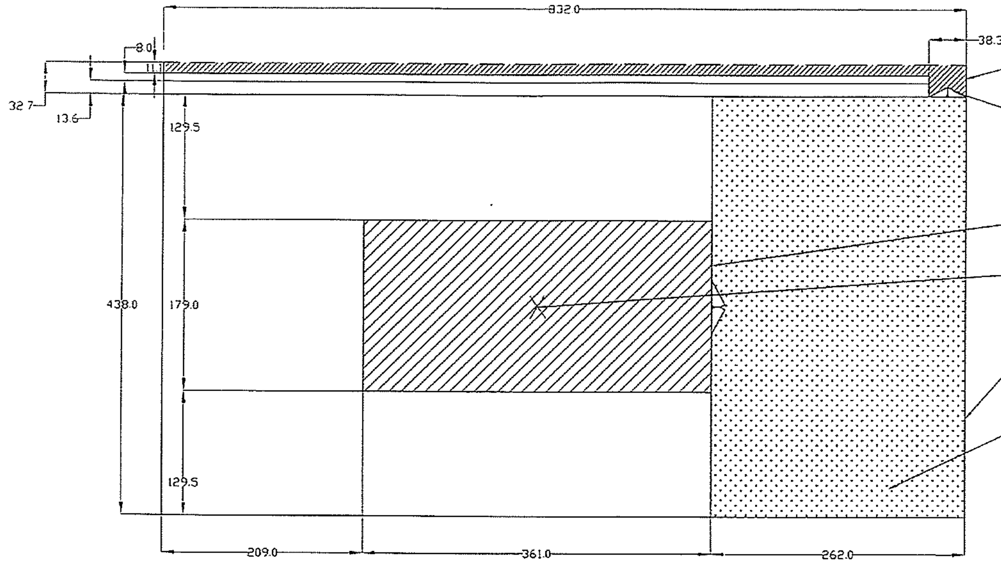
COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
WASTE MANAGEMENT OF NEW YORK	215 VARICK AVENUE BROOKLYN, NY 11237	4250 TONS PER DAY

ASSUMPTIONS:
THE BUILDING SIZE IS 179' x 361'
THE LOT SIZE IS 438' x 832'
BUILDING HEIGHT IS 40'

Figure B-19
Stationary Air Analysis
Putrescible Waste -
Large With Baler

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
INSIDE TRANSFER TRAILER	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	14	11	11
INSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	28	22	22
FORKLIFT (221hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	2	2
BALER/CONVEYOR	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING	2	2	2
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	28	22	22
FANS	ELECTRIC	FIXED	OUTSIDE	10	10	10
SWEEPER	DIESEL	MOBILE	OUTSIDE	1	1	1
OUTSIDE TRANSFER TRAILER (moving)	DIESEL	MOBILE	OUTSIDE	14	11	11
OFFSITE DUMPT TRUCK (idling)	DIESEL	MOBILE	OUTSIDE	3	2	2
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	OUTSIDE	2	1	1

COMPANY	ADDRESS	CAPACITY
BRONX		
WASTE SERVICES OF NEW YORK	920 EAST 132ND STREET BRONX, NY 10454	2999 TONS PER DAY

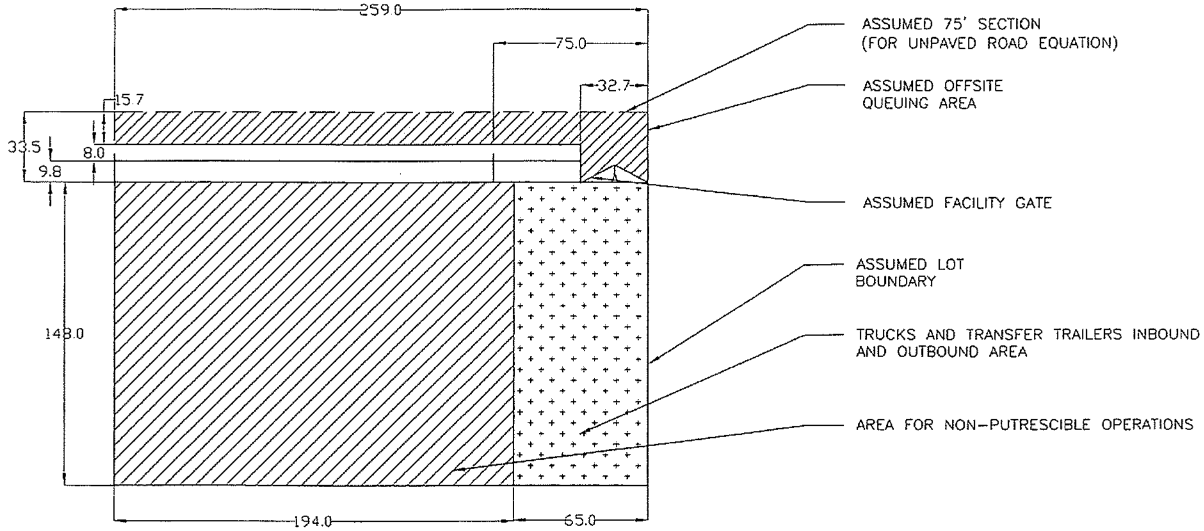
ASSUMPTIONS:
THE BUILDING SIZE IS 179' x 361'
THE LOT SIZE IS 438' x 832'
BUILDING HEIGHT IS 40'

HDR HydroQual Cambridge Environmental Inc URBITRAN PB 100 YEARS

Figure B-20
Stationary Air Analysis
Non-Putrescible C&D -
With Crusher / Screener

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
TRACK LOADER (229hp)	DIESEL	MOBILE	N/A	1	1	1
WHEEL LOADER (200hp)	DIESEL	MOBILE	N/A	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	N/A	1	1	1
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	N/A	6	2	2
DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	N/A	12	5	5
OFFSITE DUMP TRUCK (moving)	DIESEL	MOBILE	N/A	12	5	5
OFFSITE DUMP TRUCK (idling)	DIESEL	MOBILE	N/A	3	3	3
OFFSITE TRANSFER TRAILER (moving)	DIESEL	MOBILE	N/A	6	2	2
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	N/A	1	1	1
CRUSHER/GRINDER/SCREENER	DIESEL	FIXED	N/A	1	1	1
GENERATOR	DIESEL	FIXED	N/A	1	1	1

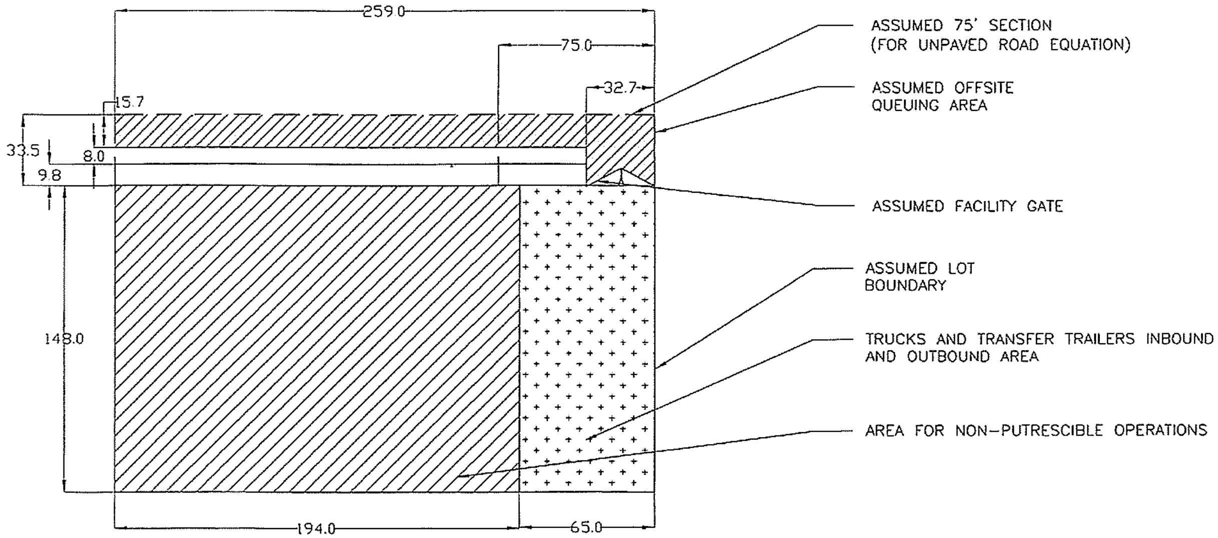
COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
WASTE MANAGEMENT OF NEW YORK	485 SCOTT AVENUE BROOKLYN, NY 11222	1875 TONS PER DAY C&D AND 810 TONS PER DAY RECYCLING
POINT RECYCLING LTD. (BALER)	686 MORGAN AVENUE BROOKLYN, NY 11222	400 CUBIC YARDS PER DAY
ASTORIA CARING CO. (BROOKLYN RECYCLING CORP.)	538-545 STEWART BROOKLYN, NY 11222	
BFI WASTE SYSTEMS OF NEW JERSEY	594 SCHOLES STREET BROOKLYN, NY 11237	1,088 TONS PER DAY OF C&D, 1,450 TONS PER DAY OF SOURCE SEPARETED RECYCLABLE MATERIALS AND WASTE PAPER
WASTE MANAGEMENT OF NEW YORK	123 VARICK AVENUE BROOKLYN, NY 11237	2624 TONS PER DAY
WASTE MANAGEMENT OF NEW YORK	232 GARDNER AVENUE BROOKLYN, NY	4320 TONS PER DAY
NEW STYLE RECYCLING CORP.	49-10 GRAMP AVENUE MASPETH, NY 11378	4320 TONS PER DAY

ASSUMPTIONS:
THE LOT SIZE IS 148' x 259'

Figure B-21
Stationary Air Analysis
Non-Putrescible C&D -
With Crusher / Screener

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

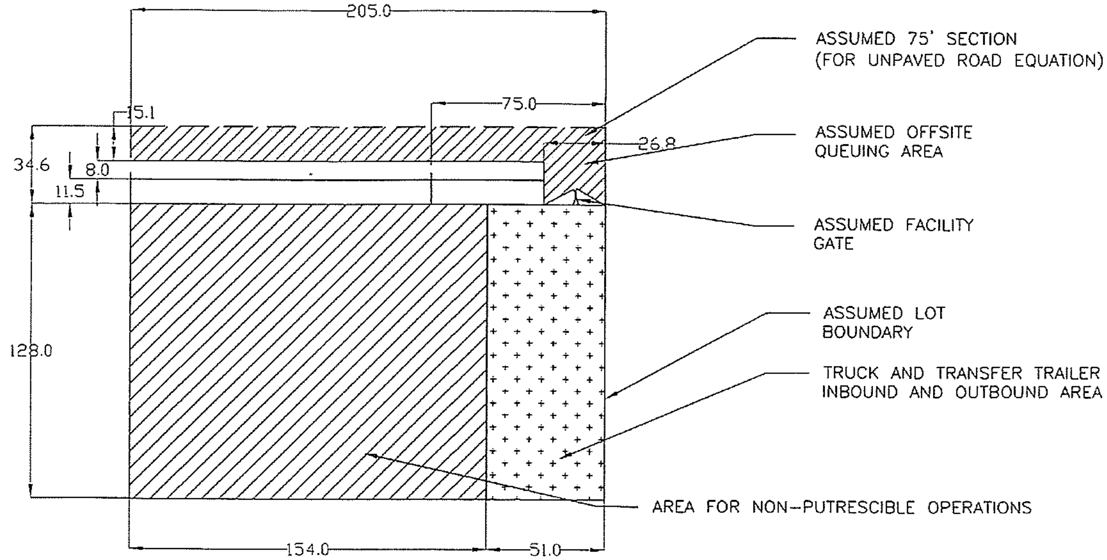
City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK	AVERAGE	
				1-HOUR 3-HOUR 8-HOUR	24-HOUR	ANNUAL
TRACK LOADER (229hp)	DIESEL	MOBILE	N/A	1	1	1
WHEEL LOADER (200hp)	DIESEL	MOBILE	N/A	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	N/A	1	1	1
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	N/A	6	2	2
DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	N/A	12	5	5
OFFSITE DUMP TRUCK (moving)	DIESEL	MOBILE	N/A	12	5	5
OFFSITE DUMP TRUCK (idling)	DIESEL	MOBILE	N/A	3	3	3
OFFSITE TRANSFER TRAILER (moving)	DIESEL	MOBILE	N/A	6	2	2
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	N/A	1	1	1
CRUSHER/GRINDER/SCREENER	DIESEL	FIXED	N/A	1	1	1
GENERATOR	DIESEL	FIXED	N/A	1	1	1

COMPANY	ADDRESS	CAPACITY
BRONX		
AJ RECYCLING INC.	325 FAILE STREET BRONX, NY 10474	STORED=800 CY
JOHN DANNA & SONS, INC	318 BRYANT AVENUE BRONX, NY 10474	540 CUBIC YARDS PER DAY
WASTE MANAGEMENT OF NEW YORK	620 TRUXTON STREET BRONX, NY 10474	1,050 TONS OF C&D PER DAY
WASTE MANAGEMENT OF NEW YORK	315 BARRETTO STREET BRONX, NY 10474	PERMITTED FOR C&D BUT CURRENTLY ONLY ACCEPTS CLEAN FILL

ASSUMPTIONS:
THE LOT SIZE IS 148' x 259'



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK	AVERAGE	
				1-HOUR 3-HOUR 8-HOUR	24-HOUR	ANNUAL
TRACK LOADER (229hp)	DIESEL	MOBILE	N/A	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	N/A	1	1	1
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	N/A	8	5	5
DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	N/A	17	11	11
OFFSITE DUMP TRUCK (moving)	DIESEL	MOBILE	N/A	17	11	11
OFFSITE DUMP TRUCK (idling)	DIESEL	MOBILE	N/A	3	2	2
OFFSITE TRANSFER TRAILER (moving)	DIESEL	MOBILE	N/A	8	5	5
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	N/A	2	1	1

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
BROOKLYN UNION GAS CO.	287 MASPETH AVENUE BROOKLYN, NY 11211	166.7 TONS PER DAY
CITY RECYCLING GROUP	151 ANTHONY STREET BROOKLYN, NY 11222	1700 CUBIC YARDS
COOPER TANK AND WELDING CORP	222 MASPETH STREET BROOKLYN, NY 11211	1,875 TONS PER DAY
HI-TECH RESOURCE RECOVERY, INC	130 VARICK AVENUE BROOKLYN, NY 11237	350 CUBIC YARDS PER DAY OF C&D
IESI NY CORP.	548 VARICK AVENUE BROOKLYN, NY 11222	1800 CUBIC YARDS PER DAY
WASTE MANAGEMENT OF NEW YORK	75 THOMAS STREET BROOKLYN, NY 11222	MAXIMUM STORAGE NOT TO EXCEED 5,000 CUBIC YARDS
AMERICAN RECYCLE MANAGEMENT, LLC	172-33 DOUGLAS AVE JAMAICA, NY 11433	1000 CUBIC YARDS PER DAY
REGAL RECYCLING INC.	172-06 DOUGLAS AVENUE JAMAICA, NY 11433	177.5 C&D DEBRIS PER DAY
T. NOVELLI	94-07 MERRICK BLVD JAMAICA, NY 11433	500 CUBIC YARDS PER DAY

ASSUMPTIONS:
THE LOT SIZE IS 128' x 205'

Figure B-22
Stationary Air Analysis
Non-Putrescible Waste - C&D

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

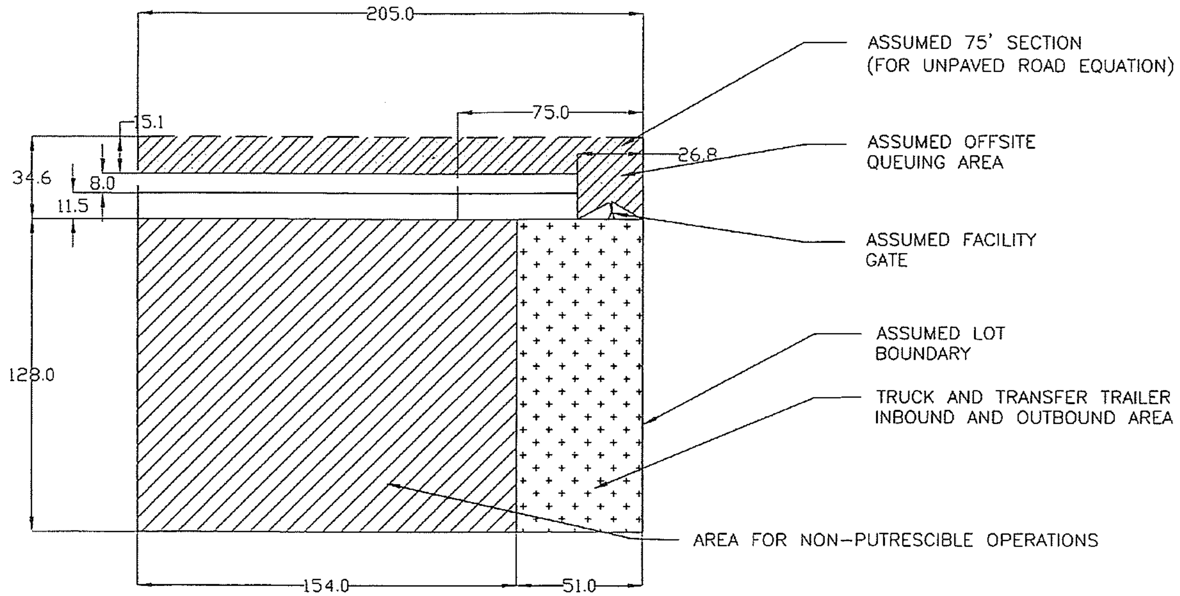
City of New York
Department of Sanitation

HDR HydroQual Cambridge Environmental Inc URBITRAN PB

Figure B-23
Stationary Air Analysis
Non-Putrescible Waste - C&D

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
TRACK LOADER (229hp)	DIESEL	MOBILE	N/A	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	N/A	1	1	1
TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	N/A	8	5	5
DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	N/A	17	11	11
OFFSITE DUMP TRUCK (moving)	DIESEL	MOBILE	N/A	17	11	11
OFFSITE DUMP TRUCK (idling)	DIESEL	MOBILE	N/A	3	2	2
OFFSITE TRANSFER TRAILER (moving)	DIESEL	MOBILE	N/A	8	5	5
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	N/A	2	1	1

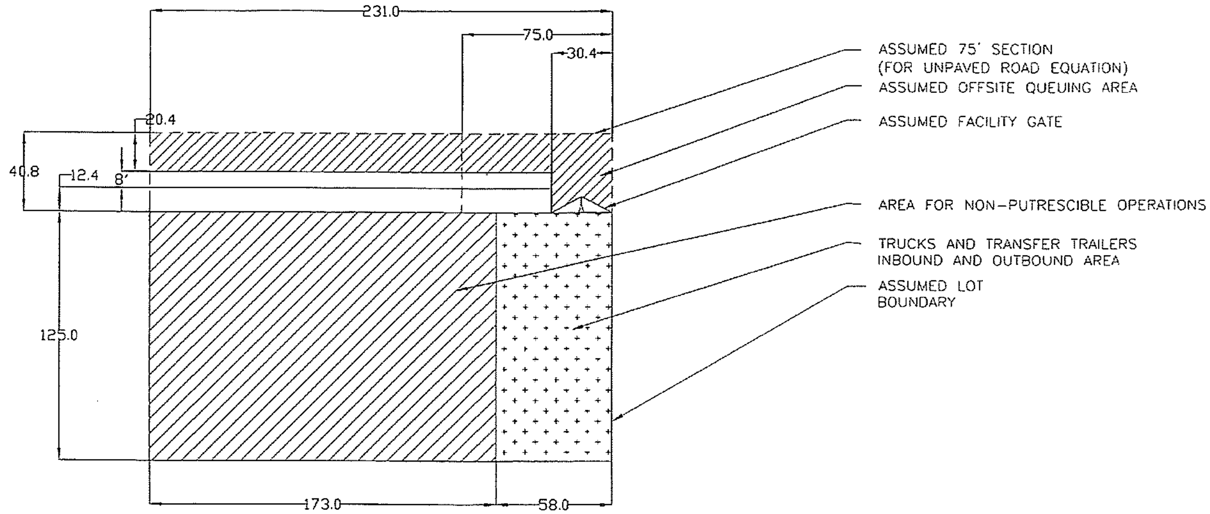
COMPANY	ADDRESS	CAPACITY
BRONX		
GM TRANSFER	216-222 MANIDA STREET BRONX, NY 10474	440 CUBIC YARDS PER DAY
KIDS WATERFRONT CORP	1264 VEILE AVENUE BRONX, NY 10474	1000 CUBIC YARDS PER DAY

ASSUMPTIONS:
THE LOT SIZE IS 128' x 205'

Figure B-24
Stationary Air Analysis
Non-Putrescible Waste - Small / Medium Fill

Brooklyn CD #1 and Jamaica, Queens CD #12 Study Areas

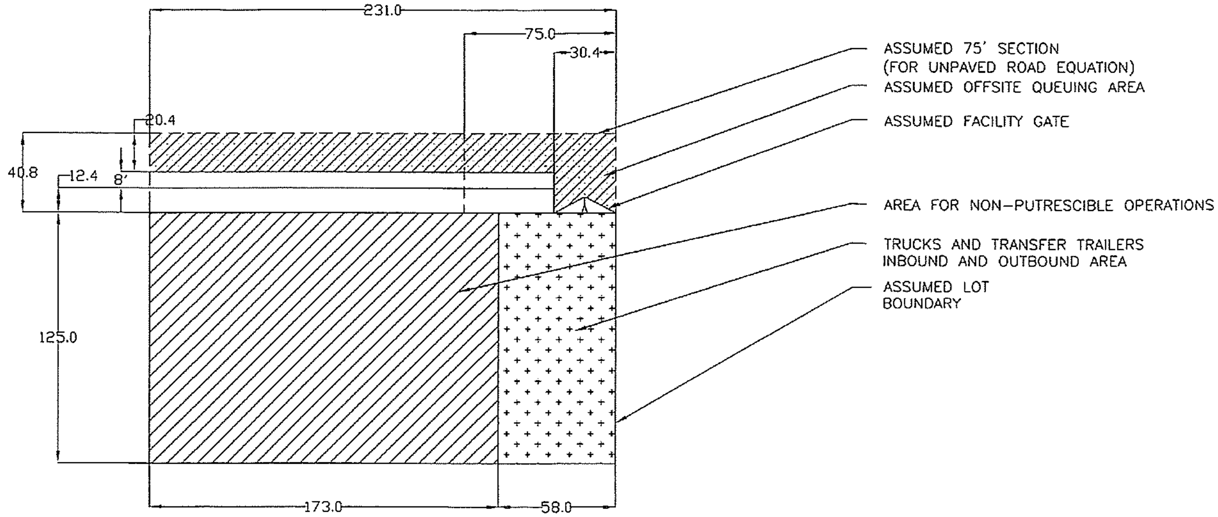
City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
WHEEL LOADER (250hp)	DIESEL	MOBILE	N/A	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	N/A	1	1	1
TRANSFER TRAILER	DIESEL	MOBILE	N/A	2	1	1
CRUSHER/GRINDER W/CONVEYOR	DIESEL	FIXED	N/A	1	1	1
ONSITE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	N/A	5	2	2
OFFSITE DUMP TRUCKS (idling)	DIESEL	MOBILE	N/A	2	1	1
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	N/A	1	0	0
GENERATOR	DIESEL	FIXED	N/A	1	1	1

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
PEBBLE LANE ASSOCIATES, INC. (CRUSHER)	57-00 47TH STREET MASPETH, NY 11378	4,666 TONS PER DAY
T. NOVELLI (CRUSHER)	94-05 & 94-07 MERRICK BLVD JAMAICA, NY 11433	1500 CUBIC YARDS PER DAY COMBINED FOR 94-05 & 94-07

ASSUMPTIONS:
THE LOT SIZE IS 125' x 231'



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK	AVERAGE	
				1-HOUR 3-HOUR 8-HOUR	24-HOUR	ANNUAL
WHEEL LOADER (250hp)	DIESEL	MOBILE	N/A	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	N/A	1	1	1
TRANSFER TRAILER	DIESEL	MOBILE	N/A	2	1	1
CRUSHER/GRINDER W/CONVEYOR	DIESEL	FIXED	N/A	1	1	1
ONSITE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	N/A	5	2	2
OFFSITE DUMP TRUCKS (idling)	DIESEL	MOBILE	N/A	2	1	1
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	N/A	1	0	0
GENERATOR	DIESEL	FIXED	N/A	1	1	1

COMPANY	ADDRESS	CAPACITY
BRONX		
BRONX CITY RECYCLING	1390 VIELE AVENUE BRONX, NY 10454	200 CUBIC YARDS PER DAY PROCESSED 600 CUBIC YARDS STORE
FELIX EQUITIES INC	290 EAST 132ND STREET BRONX, NY 10454	300 CUBIC YARDS PER DAY
WASTE MANAGEMENT OF NEW YORK	315 BARRETTO STREET BRONX, NY 10474	PERMITTED OF C&D BUT CURRENTLY ONLY ACCEPTS CLEAN FILL

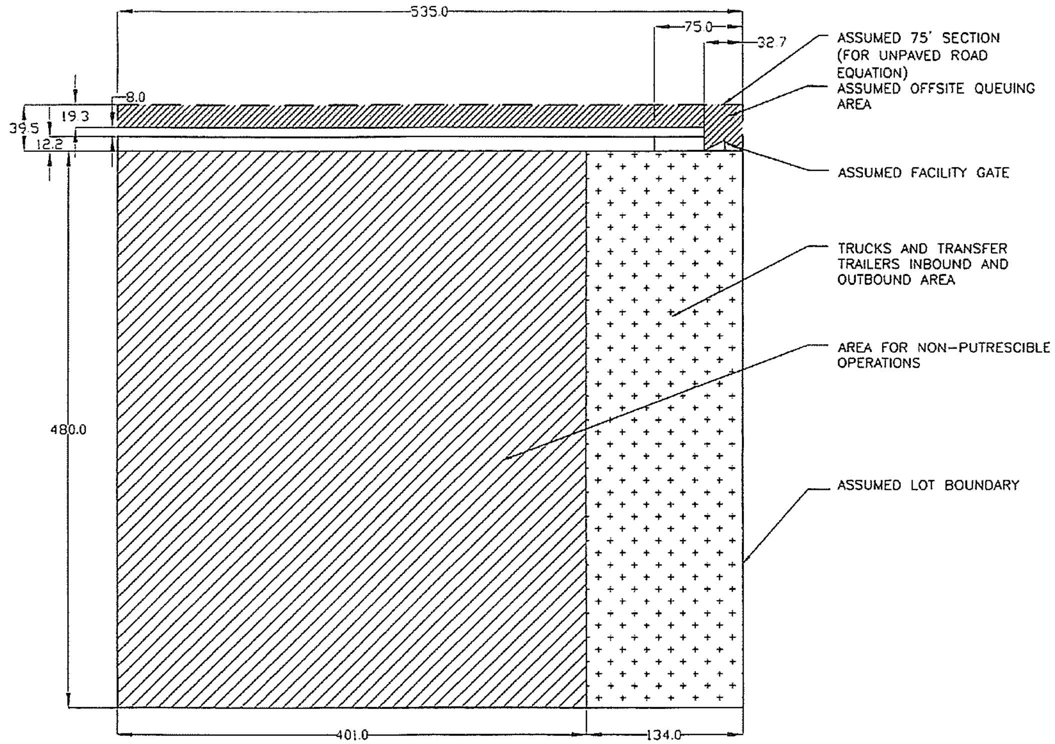
ASSUMPTIONS:
THE LOT SIZE IS 125' x 231'

Figure B-25
Stationary Air Analysis
Non-Putrescible Waste -
Small / Medium Fill

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation

HDR HydroQual Cambridge Environmental Inc URBITRAN PB



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
WHEEL LOADER (250hp)	DIESEL	MOBILE	N/A	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	N/A	1	1	1
TRANSFER TRAILER	DIESEL	MOBILE	N/A	6	2	2
CRUSHER/GRINDER W/CONVEYOR	DIESEL	FIXED	N/A	1	1	1
ONSITE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	N/A	13	3	3
OFFSITE DUMP TRUCKS (idling)	DIESEL	MOBILE	N/A	1	1	1
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	N/A	1	0	0
SCREENER	ELECTRIC	FIXED	N/A	1	1	1
GENERATOR	DIESEL	FIXED	N/A	1	1	1

COMPANY	ADDRESS	CAPACITY
QUEENS		
MASPETH RECYCLING	58-08 48TH STREET QUEENS, NY 11378	200 TONS PER DAY

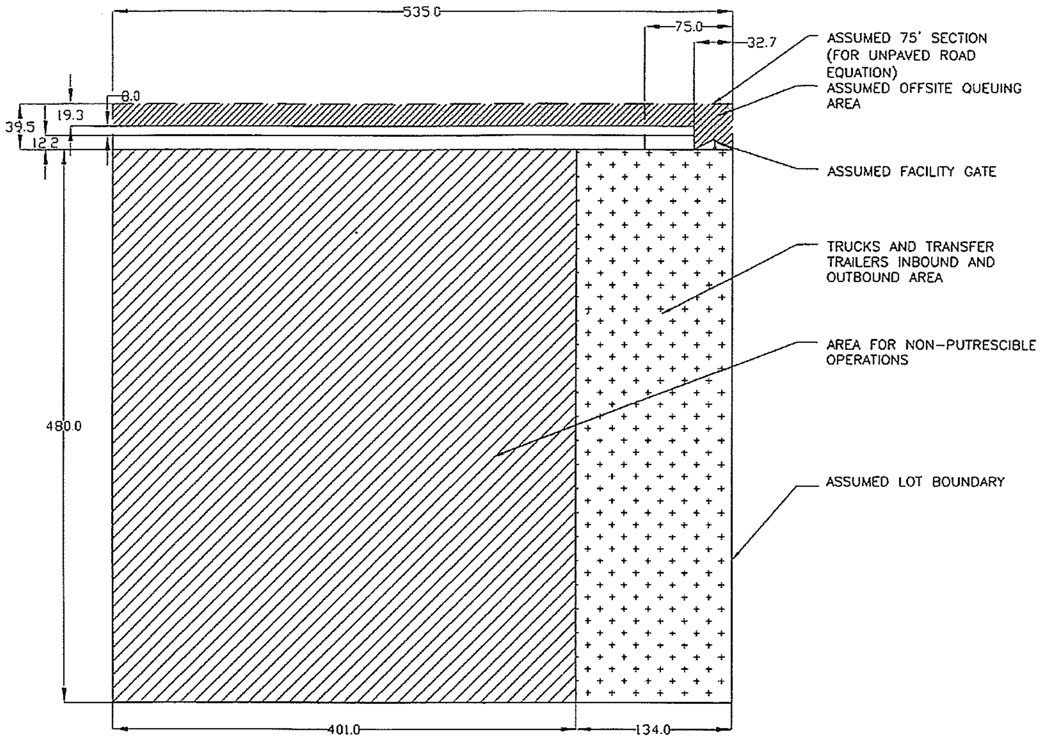
ASSUMPTIONS:
THE LOT SIZE IS 480' x 535'

Figure B-26
Stationary Air Analysis
Non-Putrescible Waste - Large Fill

Brooklyn CD #1 and Jamaica, Queens CD #12 Study Areas

City of New York
Department of Sanitation

HDR HydroQual Cambridge Environmental Inc URBITRAN PB



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	ANNUAL
WHEEL LOADER (250hp)	DIESEL	MOBILE	N/A	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	N/A	1	1	1
TRANSFER TRAILER	DIESEL	MOBILE	N/A	6	2	2
CRUSHER/GRINDER W/CONVEYOR	DIESEL	FIXED	N/A	1	1	1
ONSITE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	N/A	13	3	3
OFFSITE DUMP TRUCKS (idling)	DIESEL	MOBILE	N/A	1	1	1
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	N/A	1	0	0
SCREENER	ELECTRIC	FIXED	N/A	1	1	1
GENERATOR	DIESEL	FIXED	N/A	1	1	1

COMPANY	ADDRESS	CAPACITY
BRONX		
BRONX COUNTY RECYCLING (CRUSHER)	475 EXTERIOR STREET BRONX, NY 10461	1000 CUBIC YARDS PER DAY
TILCON NEW YORK (CRUSHER)	980 EAST 149TH STREET BRONX, NY 10461	TOTAL AREA IS LISTED AS 443,323 SF

ASSUMPTIONS:
THE LOT SIZE IS 480' x 535'

Figure B-27
Stationary Air Analysis
Non-Putrescible Waste - Large Fill

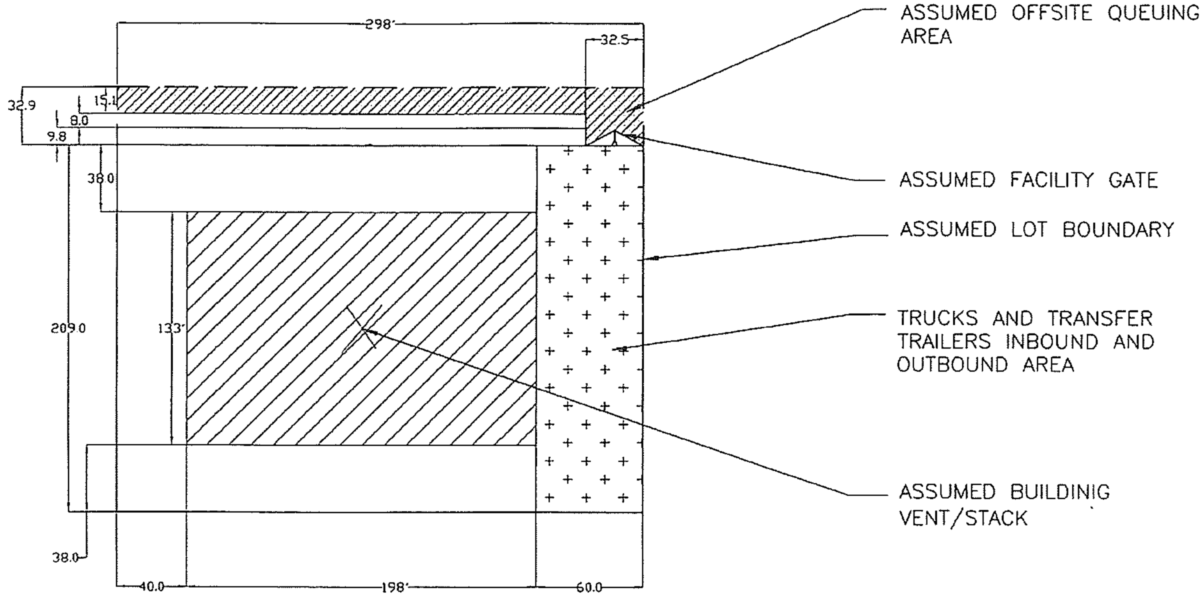
Hunts Point, Bronx CDs #2 and #9 and Port Morris, Bronx CD #1 Study Areas

City of New York
Department of Sanitation

Figure B-28
Stationary Air Analysis
Putrescible Waste
Medium With Baler

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0	0
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
INSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	8	5	5
FORKLIFTS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
BALERS WITH CONVEYORS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING	1	1	1
INSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	17	11	11
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	17	11	11
OUTSIDE TRANSFER TRAILER (moving)	DIESEL	MOBILE	OUTSIDE	8	5	5
OFFSITE DUMP TRUCKS (idling)	DIESEL	MOBILE	OUTSIDE	5	3	3
FANS	ELECTRIC	FIXED	OUTSIDE	5	5	5
OFFSITE TRANSFER TRAILER (idle)	DIESEL	FIXED	OUTSIDE	2	1	1

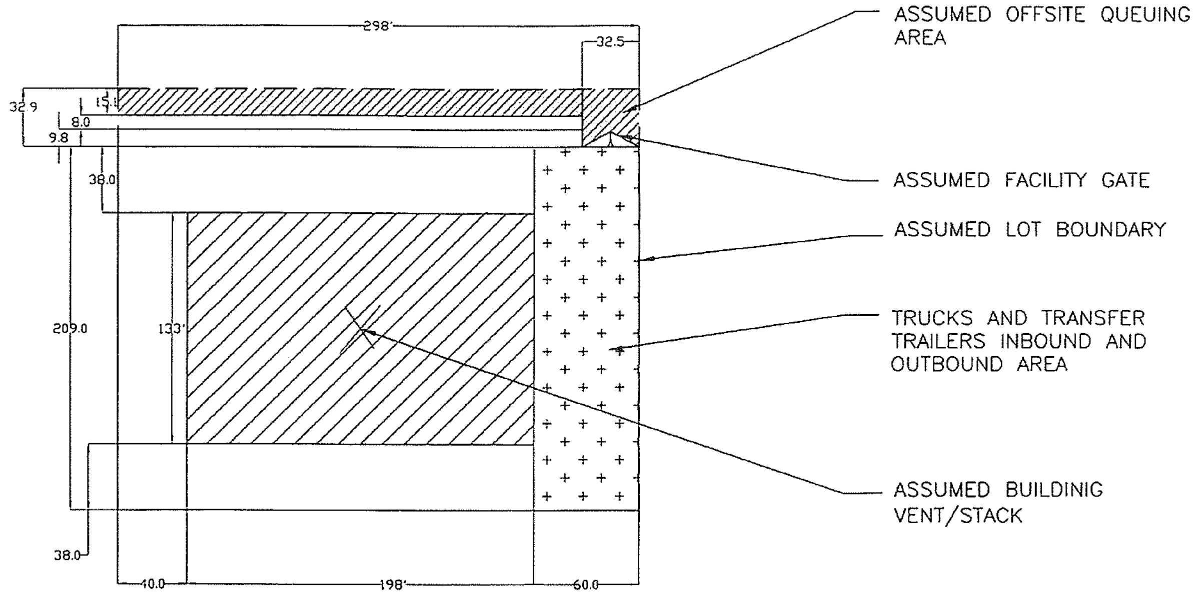
COMPANY	ADDRESS	CAPACITY
BRONX		
PAPER FIBRES CORP	960 BRONX RIVER AVENUE BRONX, NY 10473	74 TONS PER DAY OF MSW AND 300 TPD OF WASTE PAPER

ASSUMPTIONS:
THE BUILDING SIZE IS 133' x 198'
THE LOT SIZE IS 209' x 298'
BUILDING HEIGHT IS 40'

Figure B-29
Stationary Air Analysis
Putrescible Waste -
Medium With Baler

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	0	0
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
INSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	8	5	5
FORKLIFTS	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
BALERS WITH CONVEYORS	ELECTRIC	FIXED	INSIDE PROCESSING BUILDING	1	1	1
INSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	17	11	11
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	17	11	11
OUTSIDE TRANSFER TRAILER (moving)	DIESEL	MOBILE	OUTSIDE	8	5	5
OFFSITE DUMP TRUCKS (idling)	DIESEL	MOBILE	OUTSIDE	5	3	3
FANS	ELECTRIC	FIXED	OUTSIDE	5	5	5
OFFSITE TRANSFER TRAILER (idle)	DIESEL	FIXED	OUTSIDE	2	1	1

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
AMERICAN RECYCLE MANAGEMENT, LLC	172-33 DOUGLAS AVE JAMAICA, NY 11433	400 TONS PER DAY
HI-TECH RESOURCE RECOVERY, INC	130 VARICK AVENUE BROOKLYN, NY 11237	500 TONS PER DAY
WASTE MANAGEMENT OF NEW YORK	485 SCOTT AVENUE BROOKLYN, NY 11222	1,125 TONS PER DAY

ASSUMPTIONS:
THE BUILDING SIZE IS 133' x 198'
THE LOT SIZE IS 209' x 298'
BUILDING HEIGHT IS 40'

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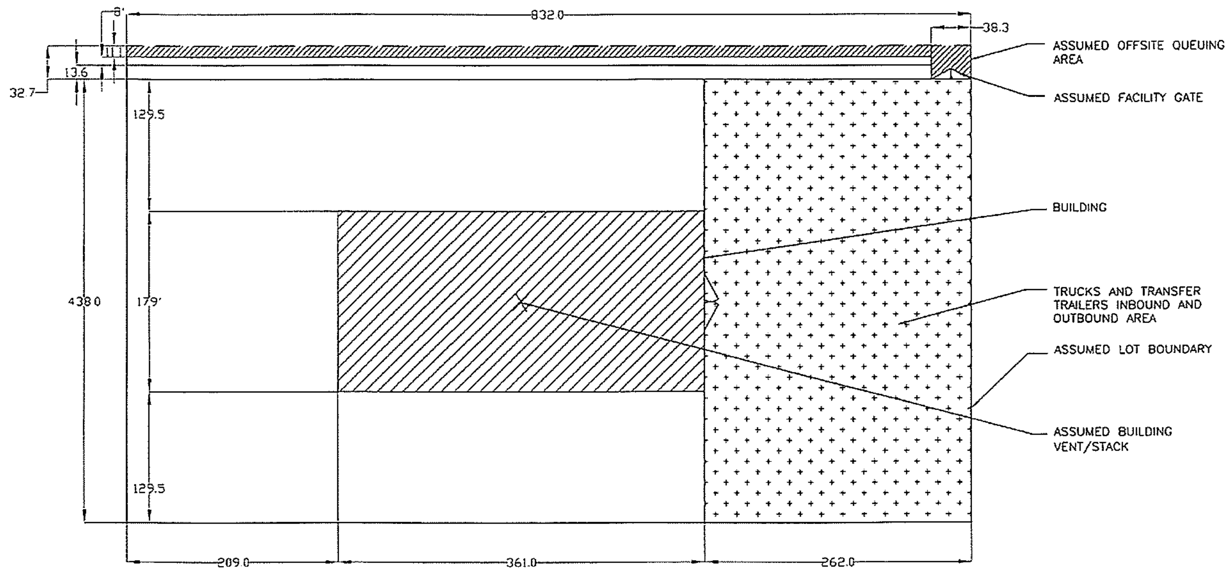
Figure B-30
Stationary Air Analysis
Putrescible Waste -
Large With Locomotive

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
WHEEL LOADER (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
EXCAVATOR (250hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
INSIDE TRANSFER TRAILER	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	14	11	11
INSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	28	22	22
FORKLIFT (221hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	1	1	1
RAIL CARS	N/A	MOBILE	INSIDE PROCESSING BUILDING	4	4	4
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	28	22	22
FANS	ELECTRIC	FIXED	OUTSIDE	10	10	10
SWEEPER	DIESEL	MOBILE	OUTSIDE	1	1	1
OUTSIDE TRANSFER TRAILER (moving)	DIESEL	MOBILE	OUTSIDE	14	11	11
OFFSITE DUMPT TRUCK (idling)	DIESEL	MOBILE	OUTSIDE	3	2	2
OFFSITE TRANSFER TRAILER (idling)	DIESEL	MOBILE	OUTSIDE	2	1	1
LOCOMOTIVE	DIESEL	MOBILE	OUTSIDE	1	1	1

COMPANY	ADDRESS	CAPACITY
BRONX		
USA WASTE SERVICES OF NYC, INC. (HRY)	98 LINCOLN AVENUE BRONX, NY 10454	3,000 TONS PER DAY

ASSUMPTIONS:
THE BUILDING SIZE IS 179' x 361'
THE LOT SIZE IS 438' x 832'
BUILDING HEIGHT IS 40'

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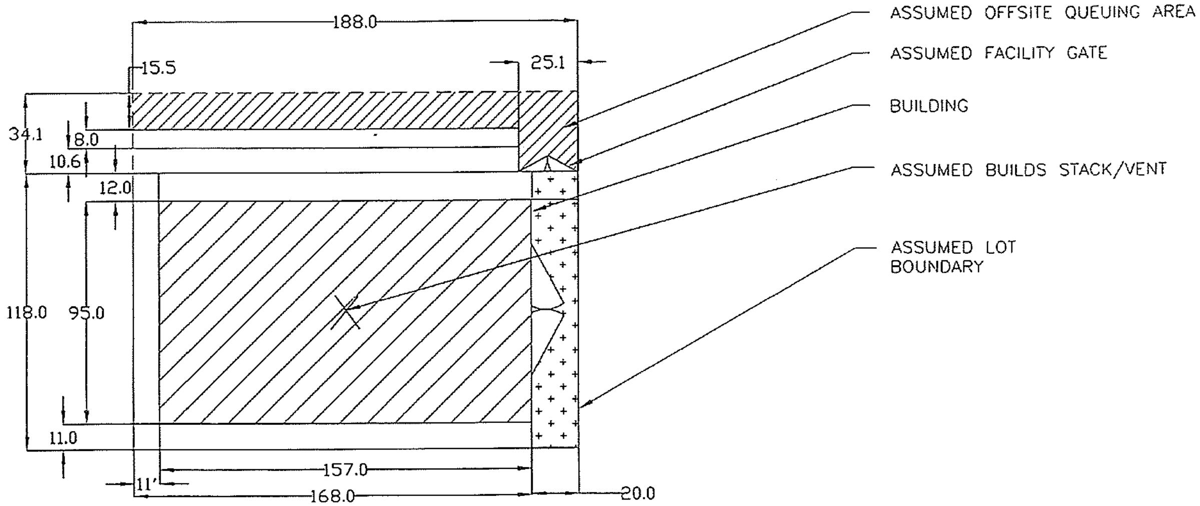


EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK 1-HOUR 3-HOUR 8-HOUR	AVERAGE 24-HOUR	AVERAGE ANNUAL
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	1	1
INSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	11	6	6
INSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	6	3	3
FANS	ELECTRIC	FIXED	OUTSIDE	2	2	2
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	11	6	6
OUTSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	OUTSIDE	6	3	3
OFFSITE QUEUING TRUCKS (idling)	DIESEL	MOBILE	OUTSIDE	5	2	2
OFFSITE QUEUING TRANSFER TRAILER (idling)	DIESEL	MOBILE	OUTSIDE	2	1	1

COMPANY	ADDRESS	CAPACITY
BROOKLYN AND QUEENS		
BFI WASTE SYSTEMS OF NEW JERSEY	105-115 THAMES STREET BROOKLYN, NY 11237	560 TONS PER DAY
BFI WASTE SYSTEMS OF NEW JERSEY	598-636 SCHOLES STREET BROOKLYN, NY 11237	220 TONS PER DAY
REGAL RECYCLING INC.	172-06 DOUGLAS AVENUE JAMAICA, NY 11433	337.5 TONS PER DAY
NEW STYLE RECYCLING CORPORATION	49-10 GRAND AVENUE MASPETH QUEENS, NY 11378	50 TONS PER DAY

ASSUMPTIONS:
THE BUILDING SIZE IS 95' x 157'
THE LOT SIZE IS 118' x 188'
BUILDING HEIGHT IS 40'

Figure B-31
Stationary Air Analysis
Putrescible Waste - Small

Brooklyn CD #1 and
Jamaica, Queens CD #12
Study Areas

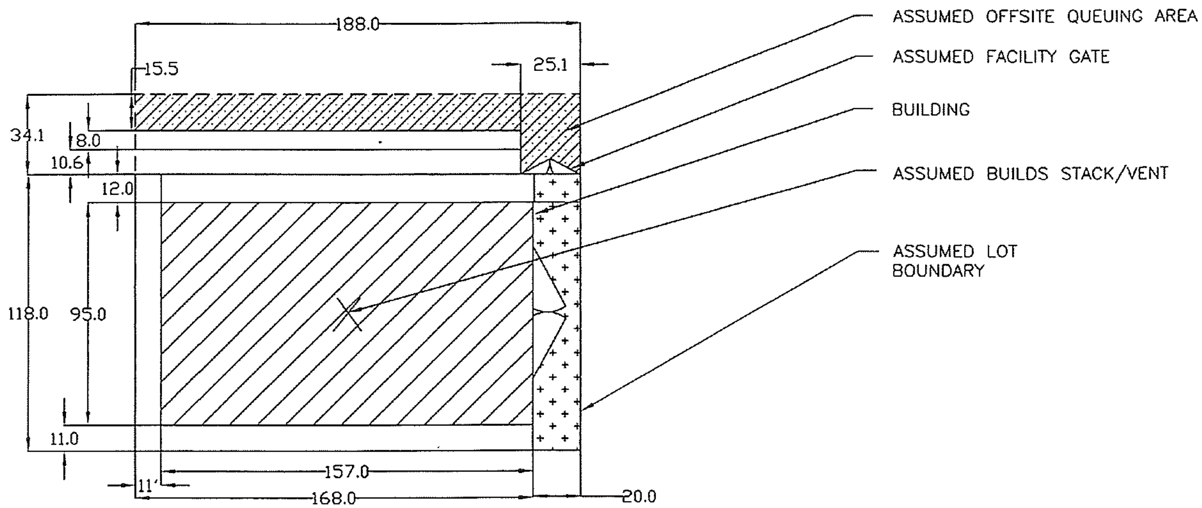
City of New York
Department of Sanitation

HDR HydroQual Cambridge Environmental Inc URBITRAN PB

Figure B-32
Stationary Air Analysis
Putrescible Waste - Small

Hunts Point, Bronx CDs #2 and #9
and
Port Morris, Bronx CD #1
Study Areas

City of New York
Department of Sanitation



EQUIPMENT	POWER SOURCE	TYPE OF EQUIPMENT	LOCATION	PEAK	AVERAGE	
				1-HOUR 3-HOUR 8-HOUR	24-HOUR	ANNUAL
WHEEL LOADER (200hp)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	2	1	1
INSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	11	6	6
INSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	INSIDE PROCESSING BUILDING	6	3	3
FANS	ELECTRIC	FIXED	OUTSIDE	2	2	2
OUTSIDE DUMP TRUCKS (moving/idling)	DIESEL	MOBILE	OUTSIDE	11	6	6
OUTSIDE TRANSFER TRAILER (moving/idling)	DIESEL	MOBILE	OUTSIDE	6	3	3
OFFSITE QUEUING TRUCKS (idling)	DIESEL	MOBILE	OUTSIDE	5	2	2
OFFSITE QUEUING TRANSFER TRAILER (idling)	DIESEL	MOBILE	OUTSIDE	2	1	1

COMPANY	ADDRESS	CAPACITY
BRONX		
IESI NY CORP	325 CASANOVA STREET BRONX, NY 10474	449 CUBIC YARDS PER DAY (113 TPD APPROX.)
METROPOLITAN TRANSFER STATION	287 HALECK STREET POINT BRONX, NY 10474	1,000 CUBIC YARDS PER DAY (250 TPD APPROX.)

ASSUMPTIONS:
THE BUILDING SIZE IS 95' x 157'
THE LOT SIZE IS 118' x 188'
BUILDING HEIGHT IS 40'

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Cambridge Environmental Inc
URBITRAN
PB 100 YEARS

APPENDIX C

ON- AND OFF-SITE AIR PROTOCOL

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1.0 INTRODUCTION

The purpose of the air quality analysis for the Commercial Waste Management Study (Study) is to analyze and assess the potential combined effects of groups of Transfer Stations within the same Study Area and determine whether groups of Transfer Stations within a Study Area have the potential to cause significant air quality effects.

The air quality analysis methodology used for the Study is described below. This methodology was used in performing air quality analyses pertaining to the operations of multiple Transfer Stations within a Study Area.

2.0 AIR QUALITY STANDARDS, SIGNIFICANT IMPACT CRITERIA AND BACKGROUND CONCENTRATIONS

2.1 National and State Ambient Air Quality Standards

National Ambient Air Quality Standards (NAAQS) have been established by the United States Environmental Protection Agency (USEPA) for the following major air pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_2) and lead (Pb). Two forms of PM have separate NAAQS: PM_{10}, meaning particles 10 microns in diameter and smaller; and $PM_{2.5}$, meaning particles 2.5 microns in diameter and smaller. These air pollutants have been identified by USEPA as being of concern nationwide. The NAAQS are summarized in Table 2.1-1.

Table 2.1-1
National and State Ambient Air Quality Standards (μg/m^3)

	Averaging	Federal	
Contaminant	Period	Primary	Secondary
Carbon Monoxide (CO)	8-hour(1)	10,000 (9 ppm)	10,000
	1-hour(1)	40,000 (35 ppm)	40,000
Sulfur Dioxide (SO_2)	Annual	80 (0.03 ppm)	--
	24-hour(1)	365 (0.14 ppm)	--
	3 hour(1)	--	1,300 (0.5 ppm)
Nitrogen Dioxide (NO_2)	Annual	100 (0.05 ppm)	100
Ozone (O_3)(2)(3)	1-hour(3)	235 (0.12 ppm)	235
	8-hour(1)(4)	0.08 ppm	0.08 ppm
PM_{10}	Annual	50	50
	24-hour(2)	150	150
$PM_{2.5}$(4)	Annual(6)	15	15
	24-hour(5)	65	65
Lead (Pb)	Three mo. (Calendar quarter)	1.5	--

Sources: USEPA, *National Primary and Secondary Ambient Air Quality Standards* (40 CFR 50)

Notes:

(1) Not to exceed more than once per year, per monitor location, over a three-year period.
(2) During any 12 consecutive months, 99% of the values shall not exceed 150 μg/m^3.
(3) The number of days with hourly levels greater than standard shall not exceed one per year.
(4) Standards for 8-hour ozone and for particulate matter smaller than 2.5 microns in diameter were promulgated in 1997, but are not yet fully implemented by USEPA.
(5) During any 12 consecutive months, 98% of the values shall not exceed 65 μg/m^3.
(6) Spatial average standard, applied by USEPA over a neighborhood scale.

2.2 CO Screening Thresholds

CO incremental impact criteria, known as "*de minimis*" criteria, were established under New York City (City) Department of Environmental Protection's (NYCDEP) City Environmental Quality Review (CEQR) guidelines to estimate the significance of contributions from projects affecting mobile source operations. These are:

- An increase of 0.5 parts per million (ppm) or more for the eight-hour period, when baseline CO concentrations are above 8.0 ppm; and
- An increase of one half the difference between the baseline and the standard concentration (9 ppm) for the eight-hour period when baseline CO concentrations are below 8 ppm.

2.3 Background Concentrations

Air pollutant levels in the New York metropolitan area are monitored by a network of sampling stations operated under the supervision of the New York State Department of Environmental Conservation (NYSDEC). Background concentrations (i.e., pollutant levels due to emission sources not accounted for in the modeling analysis) of the criteria pollutants for the on-site and off-site air quality analyses were obtained primarily from NYCDEP on April 18, 2003. These values were based on ambient monitored values for the last few years of data from NYSDEC's ambient monitoring system. The background concentrations were added to the on-site and off-site modeling results to estimate the total pollutant concentrations. It should be emphasized that adding existing Transfer Station concentrations to the monitored background levels is a conservative assessment procedure that involves some double-counting because the Transfer Stations actually contributed to the existing monitored background concentrations. The background concentrations presented in Table 2.3-1 and Table 2.3-2 were used for each Study Area.

$PM_{2.5}$ background levels were not included in this analysis because they had not yet been established by NYSDEC or NYCDEP. Instead, Transfer Station-related $PM_{2.5}$ concentrations were presented as a percent of the latest year of monitored concentrations within each Study Area.

Table 2.3-1
SO_2, PM_{10} and NO_2 Background Concentrations[1]

	SO_2					PM_{10}			NO_2
	Annual ($\mu g/m^3$)	24-hour ($\mu g/m^3$)		3-hour ($\mu g/m^3$)		Annual ($\mu g/m^3$)	24-hour ($\mu g/m^3$)		Annual ($\mu g/m^3$)
NAAQS	**80**	**365** **1st Max**	**365** **2nd Max**	**1,300** **1st Max**	**1,300** **2nd Max**	**50**	**150** **1st Max**	**150** **2nd Max**	**100**
Queens									
Queens College	---	---	---	---	---	---	---	---	---
Queensboro Comm. College	18.3	107	87	186	165	---	---	---	51
College Point Post Office	---	---	---	---	---	---	---	---	56
Bronx									
IS 155	26	113	100	215	194	24[4]	75[4]	55[4]	---
Morrisania	31	144	113	325	233	25[4]	73[4]	55[4]	68
Botanical Garden	---	---	---	---	---	---	---	---	58
IS 52	---	136	126	254	233	---	53	45	---
Brooklyn									
Greenpoint	21	87	84	189	147	23[2]	57[3]	50[3]	---
PS 321	24	94	94	152	144	22[4]	82[4]	48[4]	---
PS 314	---	---	---	---	---	27[4]	91[4]	57[4]	---

Notes:
(1) Pollutant background concentrations provided by NYCDEP in a memorandum dated April 18, 2003.
(2) Annual data is based on two years (1998-1999).
(3) 24-hour averages are based on three years (1997-1999).
(4) Based on data collected from 1996-1998.

Table 2.3-2
CO Background Levels

Location	1-hour Concentration (ppm)	8-hour Concentration (ppm)
Downtown Brooklyn and Long Island City	3,321	2,634
Rest of the City	3,779	2,634

Source: New York State Department of Transportation (NYSDOT) *Environmental Procedures Manual* (January 2001).

3.0 ON-SITE AIR QUALITY ANALYSIS

3.1 Emission Sources

The following emission sources were considered for the analysis of on-site operations:

- Combustion emissions of diesel engines of operational equipment, including moving and queuing Waste Hauling Vehicles and waste handling equipment (e.g., wheel loaders) that would operate within the Transfer Stations;
- Fugitive dust emissions from material handling operations (e.g., loading, unloading, transferring) that would occur at the Transfer Stations; and
- Re-entrained dust resulting from Waste Hauling Vehicles that would travel on paved and unpaved roads within the Transfer Stations and that would enter and exit these facilities.

3.2 Prototypical Transfer Stations

Because of the large number of Transfer Stations (43) located within the four Study Areas, the variations in their operations, and the fact that they are privately owned and operated facilities, it was not feasible to collect detailed design and operating information for each Transfer Station. Therefore, prototypical transfer stations were developed to approximate the characteristics of each actual Transfer Station based on the type(s) of waste they processed and their permitted processing capacity. For this analysis, each Transfer Station was considered as one of these prototypical facilities.

Eight categories of prototypical transfer stations were developed based on throughput, size and type of waste that the Transfer Stations process and to approximate the conditions found in them. Prototypical transfer stations and their equipment for each category are shown in Table 3.2-1. All putrescible facilities were assumed to have a processing building on site based on visits to actual Transfer Stations. For non-putrescible (construction and debris or C&D) prototypical transfer stations, the lot was divided into a processing area and a truck/transfer area. The lot and processing building sizes for all prototypical transfer stations were determined by averaging the lengths and widths of actual Transfer Stations in each category.

Assumptions were made for each category when determining the types and quantities of equipment that were typically used in the operations. In addition, an average number of idling Waste Hauling Vehicles in front of the Transfer Stations were included in the analysis based on observations of stations in the Study Areas. Putrescible waste processing operations occurred inside processing buildings; non-putrescible operations generally occurred within fenced-in lots.

Those facilities categorized as small handled up to 700 tons per day (tpd), medium facilities with baler handled up to 1,500 tpd and large facilities handled more than 1,500 tpd.

Table 3.2-1
Equipment List Considered for the On-Site Analysis

Prototypical Transfer Station	**Pieces of Equipment per Hour**	
Equipment	Peak	Average
Small Putrescible		
▪ Wheel Loader (200 horsepower [hp])[1]	2	1
▪ Space Heater	10	3
▪ Boiler	1	0.3
▪ Waste Hauling Vehicle Inside Processing Building	17	9
▪ Waste Hauling Vehicle Outside Processing Building	17	9
▪ Waste Hauling Vehicle Queuing Off Site	7	3
Medium Putrescible with Baler		
▪ Wheel Loader (200 hp) [1]	1	0
▪ Wheel Loader (250 hp) [1]	1	1
▪ Excavator [1]	1	1
▪ Forklift [1]	1	1
▪ Space Heater	10	3
▪ Boiler	1	0.3
▪ Waste Hauling Vehicle Inside Processing Building	25	16
▪ Waste Hauling Vehicle Outside Processing Building	25	16
▪ Waste Hauling Vehicle Queuing Off Site	7	4

Table 3.2-1 (Continued)
Equipment List Considered for the On-Site Analysis

Prototypical Transfer Station	Pieces of Equipment per Hour	
Equipment	Peak	Equipment
Large Putrescible with Baler		
▪ Wheel Loader (200 hp) (1)	1	1
▪ Wheel Loader (250 hp) (1)	1	1
▪ Excavator (1)	1	1
▪ Forklift (1)	2	2
▪ Space Heater	10	3
▪ Boilers	1	0.3
▪ Waste Hauling Vehicle Inside Processing Building	42	33
▪ Waste Hauling Vehicle Outside Processing Building	42	33
▪ Sweeper	1	1
▪ Waste Hauling Vehicle Queuing Off-site	5	3
Large Putrescible with Locomotive		
▪ Wheel Loader (200 hp) (1)	1	1
▪ Wheel Loader (250 hp) (1)	1	1
▪ Excavator (1)	1	1
▪ Forklift (1)	2	2
▪ Waste Hauling Vehicle Inside Processing Building	42	33
▪ Waste Hauling Vehicle Outside Processing Building	42	33
▪ Sweeper	1	1
▪ Locomotive	1	1
▪ Waste Hauling Vehicles Queuing Off Site	5	3
Construction & Demolition		
▪ Track Loader	1	1
▪ Excavator	1	1
▪ Waste Hauling Vehicle	21	16
▪ Waste Hauling Vehicle Queuing Off Site	6	3
Construction & Demolition with Crusher/Spreader		
▪ Track Loader	1	1
▪ Wheel Loader	1	1
▪ Excavator	1	1
▪ Crusher/Grinder/Screener	1	1
▪ Generator	1	1
▪ Waste Hauling Vehicle	18	7
▪ Waste Hauling Vehicle Queuing Off Site	12	3

Table 3.2-1 (Continued)
Equipment List Considered for the On-Site Analysis

Prototypical Transfer Station	**Pieces of Equipment per Hour**	
Equipment	Peak	Equipment
Construction & Demolition Small/Medium Fill		
▪ Wheel Loader	1	1
▪ Excavator	1	1
▪ Crusher/Grinder/Screener	1	1
▪ Generator	1	1
▪ Waste Hauling Vehicle	7	3
▪ Waste Hauling Vehicle Queuing Off Site	3	1
Construction and Demolition Large Fill		
▪ Wheel Loader	1	1
▪ Excavator	1	1
▪ Crusher/Grinder/Screener	1	1
▪ Generator	1	1
▪ Waste Hauling Vehicle	19	5
▪ Waste Hauling Vehicle Queuing Off Site	2	1

Notes:
(1) Equipment inside the processing building.

3.3 Methodology

3.3.1 Analytical Approach

The USEPA's Industrial Source Complex Short Term (ISCST3) model was used for the on-site analysis. Emissions generated from equipment operating inside the putrescible Transfer Stations were assumed to be released from stacks on the processing buildings and were modeled using ISCST3's point source algorithm. Moving Waste Hauling Vehicles and equipment operating outside of the processing building were modeled using ISCST3's area source algorithm with emissions distributed evenly over the paved area of each Transfer Station. Emissions from Waste Hauling Vehicles entering and exiting each Transfer Station were also modeled as area sources. It was assumed that all Waste Hauling Vehicles moving on site were traveling at 5 miles per hour (mph). The concentrations of each pollutant were estimated by modeling all of the sources of each pollutant from all Transfer Stations in a Study Area in one model run for each year of meteorological data.

3.3.2 Meteorological Data

Dispersion analyses were conducted using the latest available five consecutive years (1997 through 2001) of meteorological data collected at LaGuardia Airport (surface data) and Brookhaven (mixing heights).

3.3.3 Emission Source Parameters

The following assumptions were used to estimate emission rates at each Transfer Station:

- For pre-1996 non-road diesel engines, emission factors were estimated using USEPA's "Exhaust Emission Factors for Non-road Engine Modeling - Compression Ignition" Table 1. For newer engines, the applicable USEPA standards (emission factors) for the non-road diesel engines were used. The USEPA standards for newer engines, together with the pre-1996 engine emission factors, were used to develop fleet-average emission factors for the commercial waste facility fleet of non-road diesel engines.

- CO and nitrogen oxides (NO_X) emission factors for moving and idling vehicles were estimated using the USEPA MOBILE5b vehicular emission factor model.

- Waste collection vehicles were considered as heavy-duty diesel vehicles (HDDVs) with a gross vehicle weight of 64,000 pounds when full and 44,000 pounds when empty.

- Exhaust and fugitive dust PM_{10} emission factors for moving vehicles (e.g., re-entrained dust, exhaust, brake wear and tire wear) were estimated using USEPA Publication AP-42 (AP-42), Section 13.2.1 for paved roads and 13.2.2 for unpaved roads. For queuing Waste Hauling Vehicles, the PM_{10} emission factors were estimated using USEPA PART 5, A Program for Calculating Particle Emissions from Motor Vehicles (1995). For Waste Hauling Vehicles traveling inside the Transfer Stations, because of low speed (i.e., less than the 10 mph, for which the AP-42 paved road equation was applicable, and less than the 15 mph, for which the AP-42 unpaved road equation was applicable), emission factors were reduced by a factor developed by dividing the allowable speeds by the minimum speed for which the AP-42 equation was applicable, to account for the estimated average speed of 5 mph on site.

- Silt loading factors (e.g., amounts of dust on roadways, which influence re-suspended dust emission rates) of 0.4 grams per square meter (grams/m^2) for non-swept roadways and 0.16 grams/m^2 for swept roadways were used for calculating PM_{10} emissions from Waste Hauling Vehicles.

- $PM_{2.5}$ emission rates for Waste Hauling Vehicles were estimated using a similar methodology as used for PM_{10} except that re-entrained dust was not considered for $PM_{2.5}$. This is because re-entrained $PM_{2.5}$ emissions from traffic traveling at low speed (average speed of 5 mph or less) are considered by regulatory agencies to be negligible. For other types of emitting activities, if no $PM_{2.5}$ emission factor was available, PM_{10} emission factors were conservatively utilized.

- SO_2 emission factors for diesel-fueled equipment and idling Waste Hauling Vehicles were estimated based on the allowable sulfur content in diesel fuel and estimated fuel utilization rates. These factors were calculated using the following equation from USEPA's "Exhaust Emission Factors for Nonroad Engine Modeling – Compression Ignition."

$$SO_2 = BSFC \times 453.6 \times (1 - 0.022) - HC \times sulfur\ \ weight\ \ fraction \times 2$$

where:

SO_2	=	SO_2 emission factors in grams per horsepower hour (g/hp-hr);
BSFC	=	In-use adjusted brake-specific fuel consumption in pounds per horsepower hour (lb/hp-hr) (from Table 1 of the above-mentioned document, for different engine powers and years);
453.6	=	The conversion factor from pounds to grams;
1-0.022	=	An adjustment for sulfur converted to direct PM;
HC	=	The in-use adjusted hydrocarbon emissions in g/hp-hr;
Sulfur weight fraction	=	The weight fraction of sulfur in diesel fuel, 0.0005; and
2	=	Grams of SO_2 formed from a gram of sulfur.

- All on-site non-road engines were assumed to spend 50% of their time in "working" mode and 50% of their time in "idling" mode.

- All on-site "working" non-road engines were assumed to operate at an average of 70% of maximum engine horsepower during both peak-hour and annual average conditions, and at an average of 20% of maximum engine horsepower while idling.

- SO_2 emission factors from moving Waste Hauling Vehicles were estimated using the USEPA PART 5 program.

- Emission factors for space heaters and boilers operating inside the putrescible waste processing building were obtained from USEPA's AP-42 for natural gas-fired facilities (Table 1.4-1 for CO and NO_X and Table 1.4-2 for PM and SO_2).

- The quantity of dust (PM_{10} and $PM_{2.5}$) emissions generated by Transfer Station operations were estimated based on facility throughput. The emission factors for crushing and screening operations were obtained from USEPA AP-42, Section 11.19.2, Table 11.19.2-2 and the storage pile operations equation and parameters from Section 13.2.4, Equation 1:

$$EF = k \times (0.0032) \times \frac{\left(u/5\right)^{1.3}}{\left(M/2\right)^{1.4}}$$

  where:

EF	=	The emission factor in pounds per ton (lb/ton);
k	=	The particle size multiplier (0.35 for PM_{10} and 0.11 for $PM_{2.5}$);
u	=	Mean wind speed (mph), estimated to be 11 mph for outdoor activities and 2.2 mph for indoor activities; and
M	=	Material moisture content, which is assumed to be 10% for putrescible waste and 11% for non-putrescible waste and fill material (based on typical values in USEPA AP-42, Section 13.2.4, Table 13.2.4-1).

3.3.4 Operating Scenarios

Emission rates of each pollutant from all sources of that pollutant were estimated for time periods corresponding to the NAAQS. Separate analyses were conducted to estimate short-term (one-hour, three-hour and eight-hour) emission rates and long-term (annual average) emission rates.

Short-term emission estimates were based on peak one-hour activity levels for each prototypical transfer station; long-term estimates were based on annual average activity levels for each prototypical transfer station. For 24-hour and annual average estimates, hourly distributions or period average estimates of emissions were developed to represent more realistic emission levels. Assumptions on the number of hours that each piece of equipment was in operation were based on observations and on the operating permits of Transfer Stations assigned to each prototype category.

3.3.5 Coordinate System and Receptors

A Universal Transverse Mercator (UTM) coordinate system was used to establish geographic coordinates of sources and receptors for each Study Area. These coordinates were input into the modeling analysis of all Transfer Stations within a given Study Area.

A Cartesian ground-level (i.e., at 1.8 meters above the ground) receptor grid with 100-meter grid spacing was developed for an area encompassing all Transfer Stations in a given Study Area. The receptor locations included areas outside of prototypical property boundaries where the general public has access. All receptors within 100 meters of any individual Transfer Station within each Study Area were eliminated from the model input so that the results would be representative of the collective contributions of all Transfer Stations within the Study Area facilities rather than those of an individual Transfer Station.

For $PM_{2.5}$, the potential incremental concentrations from on-site operations were estimated on an annual spatial-average basis (i.e., on a neighborhood scale). Following NYCDEP guidelines, the DSNY Consultant developed a 1 kilometer (km) x 1 km Cartesian receptor grid at a 25-meter spacing, centered at the receptor having the highest estimated annual $PM_{2.5}$ concentration, which had been identified from a preliminary model run using a 100-meter spacing receptor grid covering the entire Study Area. All receptors within 15 meters of any source at a facility were eliminated from consideration. The concentrations estimated at all remaining receptors within the 1 km x 1 km grid were averaged to estimate the spatially-averaged neighborhood-scale concentrations for each Study Area. These estimated contributions from commercial waste facility activities are presented as a percent of the latest year of monitored concentration at the nearest monitoring location to each Study Area.

4.0 OFF-SITE AIR QUALITY ANALYSIS

4.1 Analytical Approach

Congested intersections that may be affected by the Waste Hauling Vehicle traffic to and from each Transfer Station within each Study Area were selected for analysis.

Mobile source analyses were conducted to estimate CO, PM_{10} and $PM_{2.5}$ concentrations at selected intersections in or near the Study Areas in order to determine whether the Waste Hauling Vehicles that deliver waste to these Transfer Stations are contributing a significant concentration to the existing background or monitored concentrations. Maximum one-hour and eight-hour CO concentrations, maximum 24-hour and annual PM_{10} and maximum 24-hour $PM_{2.5}$ concentrations were estimated as appropriate at these analysis sites using USEPA's Guideline for Modeling Carbon Monoxide from Roadway Intersections (EPA-454/R-92-005). The maximum annual $PM_{2.5}$ concentrations were estimated as appropriate at these analysis sites using a receptor placement of 15 meters (or approximately 49 feet) from the curb line and set back from the corner of the intersection in accordance with EPA-454/R-92-005. While pollutant levels were estimated at multiple receptor locations near each analysis site, only the highest levels predicted at any of these receptor locations were reported as an indication of the maximum levels for the analysis site as a whole.

4.2 Selection Analysis Sites

CO, PM_{10} and $PM_{2.5}$ analyses were conducted at up to four signalized intersections within each Study Area where the highest volumes of Waste Hauling Vehicles converged during peak one-hour traffic conditions. If the analyses indicated potential violations of the NAAQS at any of these sites, then additional representative locations in the vicinity would have been analyzed based on the site selection criteria described above. This, however, was not the case.

The analysis sites considered near each Study Area are presented in the site-specific analysis sections of the Study.

4.3 Analysis Years

The analyses were conducted based on when traffic data were collected within each Study Area (2003) to estimate existing air quality concentrations at these locations.

4.4 Traffic Data

Traffic data were developed for peak project analysis periods for each set of analysis conditions. The Highway Capacity Manual (HCM) 2000 methodology and field monitoring data were used to develop the following traffic data necessary for the air quality analysis for all the roadway links within 1,000 feet of each of the selected analysis sites:

- Peak-hour traffic volumes (traffic volumes for the daily one-hour period with the highest morning [AM] and afternoon [PM] background volumes) obtained from traffic analysis;
- Traffic volumes during periods with the highest number of Transfer Station-generated Waste Hauling Vehicles (i.e., facility peak periods);
- Average peak-hour, free-flow travel speeds for signalized approaches and average travel speeds for unsignalized roadway approaches;
- Vehicle classifications (percent autos, sport utility vehicles [SUVs], medallion taxis [where applicable], light-duty and heavy-duty trucks and buses);
- Width of traveled roadways (the effective width of the roadway);
- Signal timing data (cycle length, red time length);
- Number of effective moving lanes and exclusive turn lanes;
- Saturation flow rates (i.e., the maximum amount of vehicular throughput) per lane; and
- Arrival rate at signalized approaches.

The CO and PM_{10} analyses were conducted for up to three traffic periods (AM peak, facility [or midday] peak and PM peak). The $PM_{2.5}$ analysis was conducted for facility peak periods to estimate maximum Transfer Station contributions. It was generally assumed for these analyses that the traffic volumes during these periods would occur for every hour of the 24-hour and annual average analysis periods.

4.5 Vehicular Emissions

4.5.1 Carbon Monoxide

Mobile source CO emissions were estimated using the USEPA MOBILE5b (EPA-AA-AQAB-94-01) emission factor program. The most current state- and City-approved input parameters were used to estimate existing (2003) emission factors. Input files for the 2003 analysis year, showing parameters recommended by NYCDEP, including local vehicular age-distribution rates, inspection/maintenance and anti-tampering program credits, and low emission vehicle (LEV) program credits, are presented in the air quality technical back-up submitted with this Study.

4.5.2 Particulate Matter

Mobile source PM_{10} emission factors were estimated using USEPA AP-42, and mobile source $PM_{2.5}$ emission factors were estimated using USEPA AP-42 and USEPA's PART 5 software. The most current state- and City-approved input parameters at the time of the analysis were used to estimate existing (2003) emission factors. Idle exhaust PM_{10} and $PM_{2.5}$ emissions were only estimated for heavy-duty diesel trucks and buses due to the fact that emissions from idling vehicles could not be calculated for non-heavy-duty diesel vehicles using USEPA's PART 5. Idle PM_{10} and $PM_{2.5}$ emissions from non-HDDVs are considered to be negligible in comparison to the other idling and moving vehicle emissions estimated for this analysis.

Emissions of fugitive dust (i.e., emissions caused by the re-entrainment of dust into the air by moving vehicles) are primarily dependent on vehicle weight and on the surface silt loading. At the direction of NYCDEP, the following silt loading factors were used for estimating PM_{10} emissions:

- 0.16 grams/m^2 for roadways with more than 5,000 vehicles per day (New York State Implementation Plan [NYSIP], 1995);
- 0.10 grams/m^2 for principle and minor arterials with more than 5,000 vehicles per day (NYSDEC & NYCDEP, 2002);

- 0.015 grams/m^2 for expressways (NYSDEC); and
- 0.4 grams/m^2 for roadways with fewer than 5,000 vehicles per day (AP-42, 1997).

An average vehicle fleet weight of 6,000 pounds was used for all mobile intersection analyses (NYSIP, 1995).

Re-entrained dust was considered for the 24-hour $PM_{2.5}$ analysis (incremental contribution at receptors three meters away from the edge of the roadway). However, re-entrained dust was not included in the $PM_{2.5}$ annual neighborhood analysis due to the fact that existing neighborhood-scale ambient air monitoring data indicates that on a long-term (annual) average basis, very little paved road dust is collected by $PM_{2.5}$ monitors. Most $PM_{2.5}$ samples collected in the City have been found to consist primarily of combustion-related emissions, although on a short-term (24-hour) basis, especially near road fugitive sources, this may not always be the case.

4.5.3 Ambient Temperature

CO mobile emission rates were computed with the USEPA MOBILE5b model using ambient temperatures for winter conditions of 43˚F for each of the Study Areas. Ambient temperature is not a required input for particulate matter analyses.

4.5.4 Vehicle Classification

Vehicle classification data required to determine composite emission factors were based on traffic survey data and included percentages of light-duty gasoline vehicles (LDGVs), SUVs, medallion taxis, light-duty trucks, heavy-duty trucks, and buses. SUVs were classified as light-duty gasoline trucks (LDGTs) with 75% of SUV emissions modeled as LDGT1, while the remaining 25% were LDGT2. The percentages of these two groups (LDGT1 and LDGT2) were based on local registration data. The registered split between LDGT1 and LDGT2 used in the analysis was 73% to 27%, respectively. The split between heavy-duty gasoline vehicle (HDGV) and HDDV was based on values presented in NYCDEP's Report #34 for each borough during each particular time period. All Metropolitan Transportation Authority (MTA) and private commuter buses and Transfer Station-generated Waste Hauling Vehicles were considered as HDDV. Traffic-related data used in this analysis are presented in the air quality technical backup submitted as part of the Study.

4.5.5 Vehicular Operating Conditions

Hot and cold vehicle thermal state conditions for background automobile traffic were obtained from NYCDEP's Report #34 (see Table 4.5.5-1). SUVs were assumed to have the same thermal states as automobiles. These data were input into the USEPA MOBILE5b model for each borough for each applicable time period and roadway type. Light-duty truck operating conditions (excluding SUVs) were based on data supplied by the New York Metropolitan Transportation Council (NYMTC), as presented below. All heavy-duty trucks were assumed to be operating in a hot-stabilized mode.

Table 4.5.5-1

Thermal State Conditions for Light-Duty Gasoline Trucks

Location	% Cold Non Catalytic	% Hot Start	% Cold Catalytic
New York City, not including Manhattan	5.4	50.5	5.1

4.6 Dispersion Modeling

The CO dispersion analyses were conducted using USEPA's dispersion model, CAL3QHC, which uses worst-case meteorological data to estimate one-hour CO concentrations. Eight-hour maximum CO concentrations were estimated by multiplying the one-hour maximum concentrations by a "persistence factor" (see below).

The PM_{10}/$PM_{2.5}$ dispersion analyses were conducted using either CAL3QHC or CAL3QHR, which use hour-by-hour meteorological data over a five-year analysis period. CAL3QHCR, which provides more realistic and less conservative results than CAL3QHC, was used in those cases where potential exceedances of either a NAAQS or screening threshold were estimated using the CAL3QHC model.

The CO, PM_{10} and 24-hour $PM_{2.5}$ analyses were conducted following EPA-454/R-92-005 for modeling methodology and receptor placement. These analyses were conducted as follows:

- All major roadway segments (links) within approximately 1,000 feet of each intersection were considered. Elevated roadways were included, where appropriate.
- Receptors were placed: (1) near the midpoint of the adjacent sidewalks (generally 6- to 7½-feet from the curb line) and set back from the corner of the intersection in accordance with USEPA's modeling guidelines; (2) adjacent to queued approaches at the corner of each intersection and set back at 25, 50 and 75 meters from the corner, as well as at the mid-block location, if appropriate; and (3) near sensitive land uses (schools, hospitals, etc).
- Receptor heights were 1.8 meters (6.0 feet) above ground level.

In addition to the above receptors, the annual neighborhood average $PM_{2.5}$ analysis was performed in accordance with NYCDEP's Interim Guidance, with receptors placed at a distance of 15 meters (49 feet) from the curb line and set back from the corner of the intersection in accordance with USEPA's modeling guidelines (i.e., at the corner of each intersection and set back at 25, 50 and 75 meters from the corner, as well as at the mid-block location, as appropriate).

4.7 Meteorological Conditions

Reasonable worst-case meteorological conditions shown in Table 4.7-1 were used to estimate peak one-hour CO concentrations using CAL3QHC.

Peak 24-hour and annual average PM_{10} and $PM_{2.5}$ concentrations were estimated using CAL3QHCR and five consecutive years of meteorological data from LaGuardia Airport (1997 to 2001).

Table 4.7-1
Reasonable Worst-Case Meteorological Conditions[1]

Condition	Worst Case
Wind Speed	1 meter per second (m/s) (2.25 mph)
Stability Class	D (neutral stability, meaning moderate mixing)
Temperature	50°F for Manhattan, 43°F for the rest of the City
Mixing Height	1,000 meters (0.6 mile)
Wind Angles	1 degree increments from 0 degrees to 360 degrees
Surface Roughness Factor[1]	▪ 370 centimeters (cm) for Hunts Point, Bronx CDs #2 and #9 and Port Morris, Bronx CD #1 Study Areas ▪ 175 cm for Brooklyn CD #1 and Jamaica, Queens CD #12 Study Areas

Note:
(1) Source: USEPA, EPA-454/R-92-006, User's Guide to CAL3QHC version 2.0, Table 1.

4.8 Persistence Factors

Peak eight-hour concentrations of CO were obtained by multiplying the highest peak-hour CO estimates by a persistence factor appropriate for each Study Area. These factors, obtained from NYCDEP, account for the fact that over the eight hours, vehicle volumes will fluctuate downwards from the peak, speeds may vary and meteorological conditions including wind speed and wind direction will vary, as compared to the very conservative assumptions used for the single hour.

APPENDIX D

ODOR SAMPLING

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1.0 BACKGROUND AND OBJECTIVES

This Odor Sampling Report for the New York City (City) Department of Sanitation (DSNY) Commercial Waste Management Study (Study) outlines the procedures, results and conclusions that were used to develop representative odor emission factors for use in estimating the potential odor effects associated with putrescible waste Transfer Stations operating within the Study Areas.

The purpose of odor sampling was to develop total transfer station odor emission estimates for three prototypical transfer station sizes based on waste storage criteria. A description of how the prototypical emissions rates were assigned to Transfer Stations in the Study Areas and the odor modeling and impact analysis are described further in Volume I, Appendix E of the Study and Section 3.3 of this Appendix.

2.0 SAMPLING, ODOR PANEL AND DATA REDUCTION METHODOLOGIES

2.1 Sampling Methodology

2.1.1 Sampling Site and Location Selection

2.1.1.1 Sampling Site Selection

The Transfer Stations process putrescible waste, non-putrescible waste and/or fill material. Complaint records between January 2002 and April 2003 indicated that no odor complaints were filed for any of the Transfer Stations in the Study Areas. From July 2002 to July 2003 five violations were issued by the DSNY Permit and Inspection Unit (PIU) division to only three putrescible waste Transfer Stations within the Study Areas. Therefore, odor effects from non-putrescible waste and fill material transfer operations that are typically insignificant were not evaluated.

DSNY records, including Part 360 Permits, DSNY permits, engineering reports and Environmental Assessment Statements (EASs) were reviewed and site visits conducted to several Transfer Stations in the Study Areas to determine which facilities were most representative and to identify the best sampling sites and locations for evaluating odor generation rates. Since the focus of this effort was to identify potential odors from commercial waste processed at the Transfer Stations, Transfer Stations that processed DSNY-managed Waste were screened out. The additional sample site selection criteria included:

- Relatively high Transfer Station throughput rate/storage (provides the most representative odor generation rate);
- Active ventilation/building exhaust system (all putrescible waste must be processed within an enclosed building – an active exhaust vent provides the best odor sampling location);
- Adequate and identifiable odor capture rate (fugitive losses must be minimized to allow the most accurate assessment of the total source strength);

- Active odor control system; and
- Safe access to sampling locations.

On July 25th and August 13th, 2003 one putrescible waste Transfer Station was sampled from two of the four Study Areas (Hunts Point, Bronx CDs #2 and #9 and Brooklyn CD #1), and on July 18th, August 11th and August 20th, 2003 two putrescible waste Transfer Stations were sampled in the Jamaica, Queens CD #12 Study Area. The Port Morris, Bronx CD #1 Study Area contains only two putrescible waste Transfer Stations. (Note: Although this Study Area contains three putrescible facilities, two of the stations are considered as one for this Study.) Both of these Transfer Stations process DSNY-managed Waste and were therefore excluded from odor sampling.

2.1.1.2 Sampling Location Selection

To capture odors from the processing buildings at the putrescible waste Transfer Stations, vent samples were collected from the exhaust of each process building roof vent. At least one sample from each vent was collected while the odor control system was operating (controlled) and also while the odor control system was not operating (uncontrolled) to determine the effectiveness of the odor control system. The odor control systems were typically comprised of portable 55-gallon drums containing a scented odor-masking agent that is pumped through an atomizer nozzle to create a fine mist. These odor control systems were typically located adjacent to the entrances of the processing buildings and were capable of being moved to other locations on site, if necessary. In addition, a few facilities have a series of atomizer nozzles located below the ceiling near the exhaust vent intake(s). Transfer Station #3 had the ceiling-mounted atomizing nozzle odor control system, while the other three Transfer Stations sampled had the portable 55-gallon drum odor control system.

Field duplicates were collected at a single vent exhaust at each Transfer Station. An attempt was made to collect the field duplicate from the vent with one of the highest perceived odor strengths. A background sample was collected for each Transfer Station at a location upwind of the Transfer Station, not influenced by transfer operations. To ensure that the upwind (background) sampling location was not influenced by transfer operations, an inventory of area Transfer Station locations was referenced and DSNY PIU personnel confirmed the absence of any Transfer Station(s) upwind of the background sampling location. Upwind sampling location, approximate wind direction and speed, and time of day were recorded on the field data sheet. For each Transfer Station, a field blank was collected at an exhaust vent location; however, a charcoal tube was attached to the inlet line of the sampling system to produce a "zero" (odor-free) air field blank sample. Any measurable odor in the field blank sample would indicate possible odorant contamination of the sampling train (e.g., Teflon® sample line, etc.) and/or media (Tedlar® bag).

2.1.2 Sampling Program Procedures

2.1.2.1 Capture Assessment and Improvement

To most accurately determine the putrescible waste odor generation rate, fugitive emissions must be reasonably minimized. Minimization of fugitive emissions was accomplished by operating the building ventilation system, closing various building openings (e.g., doors, windows, etc.) and collecting various flow and physical observations while conducting the odor sampling program. Flow through some openings must be maintained in order for the ventilation system to operate properly. Therefore, the main access door to the tipping floor was left open at a height ranging from approximately 12 to 48 inches.

To effectively comply with United States Environmental Protection Agency (USEPA) Method 204 Total Enclosure Capture criteria, the following measurements/observations were made:

- The direction and facial velocity of the air through the various building openings. The facial velocity is the velocity of air through a building opening (i.e., measured within the frame of an open door). All facial velocities were measured with a hot-wire anemometer. The direction of the airflow must be and was into the building. The average facial velocity of air through all building openings was approximately 200 feet per minute or higher.

- Distance of waste piles and transfer operations from building openings. Under ideal circumstances these operations should be at least four equivalent diameters (actual equivalent diameter of each building opening during the time of sampling) from each opening. This was achieved by keeping the inbound and outbound waste delivery doors only partially open during each sample collection period. By closing or partially closing various building openings, the equivalent diameter of the opening is reduced, thereby reducing the required separation distance (four equivalent diameters) between the waste operations and the building opening, making it easier to comply with this USEPA Method 204 criteria.
- The total area of all openings should not exceed 5% of the surface area of the building's four walls, floor and ceiling. This was achieved by keeping the inbound and outbound waste delivery doors only partially open during each sample collection period.

By following these criteria, greater than 99% odor capture and odor emission discharge through the building ventilation system was assumed. In addition to evaluating each Transfer Station for the above criteria, odor sampling staff made qualitative observations just prior to any sampling at locations immediately outside of building openings to assess whether significant fugitive odor was escaping. If no odor was detected at such openings, fugitive odor emissions were assumed to be negligible.

2.1.2.2 Building Ventilation Measurements

Design fan exhaust rates for the ventilation system were acquired from each Transfer Station sampled and applied in all odor emission calculations and factors.

2.1.2.3 Odor Sampling

In accordance with guidance documents published by the USEPA and the Air and Waste Management Association (AWMA), whole air odor samples were collected from the exhaust vents on the roof of the processing buildings using a vacuum chamber sampling system. The vacuum chamber sampling system consists of a rigid, airtight container with an inlet port connected to an internal Tedlar® bag, and an outlet port connected to a portable pump (see Figure 2.1.2.3-1). The sampling location was connected to the inlet port of the vacuum chamber with a short length of Teflon® tubing. The Teflon® tubing was inserted well into the exhaust stream to avoid interference

Figure 2.1.2.3-1

Vacuum Chamber Sampling System

from outside ambient air. The air inside the vacuum chamber, but outside the Tedlar® bag, was withdrawn over an approximate five-minute sample duration at 1 to 5 liters per minute (l/min). This air was drawn through the outlet port with the portable pump to effectuate the flow of vent air (and odors) through the Teflon® line and inlet port and into the Tedlar® bag. This design ensures that the vent air never comes into contact with the sampling pump. The Teflon® tubing was replaced between samples, or flushed with ambient air at a rate of 5 l/min for several minutes between samples. As recommended by the AWMA Subcommittee on the Standardization of Odor Measurement (AWMA Odor Subcommittee), Tedlar® bags were used because they have a low permeability that results in minimal sample loss or outside infiltration (thus maintaining sample integrity) and have the lowest background odor.

In keeping with practices recommended by the AWMA Odor Subcommittee, the sampling line and each sample bag were pre-conditioned (filled) with a sample of the odorous air being evaluated, and then the air was evacuated from the bag prior to collecting the actual sample. The Tedlar® bags were filled/reduced to approximately 75% of capacity to prevent decompression during shipping. All samples were delivered to the odor panel for evaluation within 24 hours following sample collection.

The firm performing the odor panel evaluations, St. Croix Sensory, was limited to approximately 75 samples per day. Sample delivery totals were identified with the odor laboratory at least 24 hours in advance and were scheduled one to three days in advance.

Photographs of sampling activities are included in Attachment A (Photographic Log) to this report.

2.1.3 Process Operations

The following data were collected during odor sampling:

- Waste throughput, delivered and transferred (hourly and daily);
- Amount of waste on the floor in the processing building (“stored”) before and after sampling;
- Facial velocities through building opening(s); and
- Operational status of the odor control equipment.

Since the inbound and outbound doors had to remain closed to maintain efficient exhaust system odor capture, waste delivery and transfer operations were suspended while odor samples were collected. However, processing operations (active pile management and simulated transfer activities) occurred inside the processing building before and during the collection of each odor sample.

2.1.4 Documentation

Field notes (including capture assessment), vent drawings, odor sampling (location, date, time duration, sample identification number) and processing operation observations were completed and obtained for each sample. Copies of field documentation and supporting information are included in the technical backup to this report, which is available upon request.

2.1.5 Sample Handling

Each sample was assigned a unique sample identification number to allow for proper data management. These sample numbers were included on the sample label, the sampling data form and the Chain of Custody (COC) records. Samples were labeled immediately upon collection. The following information was included on the sample label: project number, sample location, sample identification number, date and time of collection, initials of sampler(s) and requested analyses. The information on the labels was printed with indelible ink.

The following steps were followed for packing and shipping samples to the analytical laboratory:

- Air samples were placed in a sturdy container (corrugated box) to protect the integrity of the sample.
- The Primary Sampler signed the COC record relinquishing custody of the samples.
- The Primary Sampler retained a copy of the COC record.
- The Primary Sampler placed the remaining copies of the COC record in the shipping container.
- The shipping container was closed and sealed with shipping tape.
- When more than one shipping container was required, the containers were numbered (e.g., 1 of 5, 2 of 5, 3 of 5, etc.).
- The appropriate shipping label was affixed to the shipping container(s) and the label was covered with clear, waterproof shipping tape.
- The Primary Sampler contacted the analytical laboratory at the end of each day prior to sending the shipping container(s) to the laboratory.
- The Primary Sampler transported the shipping container to the shipper.
- The Primary Sampler retained an original copy of all shipping manifests.

2.1.6 Quality Assurance/Quality Control

As part of the Quality Assurance/Quality Control (QA/QC) program, several Quality Assurance (QA) samples and analyses were prepared/performed. A Tedlar® bag field blank sample was collected and analyzed for each site by connecting a charcoal trap at the end of the inlet sampling line and sampling conditioned air for a standard sample procedure and duration. One set of duplicate field samples were collected, analyzed and reviewed per Transfer Station each day, and for every set of six to ten field samples.

2.2 Odor Panel Methodology

An Illinois Institute of Technology Research Institute (IITRI) dynamic dilution triangle olfactometer, with a sample presentation flow rate of 0.5 l/min and a method detection limit for detection threshold (DT) and recognition threshold (RT) of 4, was used to determine the thresholds for each odor evaluation. The method detection limit of 4 means that an odor with a full strength dilution to threshold "concentration" of 4 cannot be, within standard method accuracy, discerned from diluted aliquots of the same odor. In other words, although an odor concentration of 1 DT can be detected under laboratory condition (using filtered clean air), low odor concentrations less than 4 DT cannot be discerned within the method's standard level of confidence.

The analytical technique used on the odor samples is referred to as an odor panel evaluation in which a group of people, the "odor panel," quantifies the following:

- Detection and recognition thresholds ("odor concentration")
- Odor intensity
- Odor persistence (dose response)

The odor panel members were selected and odor analysis conducted by the laboratory in accordance with the following established protocols and standards set by the American Society of Testing Materials (ASTM):

- Selection and Training of Sensory Panel Members (Standard Practice 758);
- Determination of Odor and Taste Thresholds by a Forced-Choice Ascending Concentration Series Method of Limits (Standard Practice E679-91); and
- Referencing Suprathreshold Odor Intensity (Standard Practice E544-99).

Copies of the above ASTM methods are provided in the technical backup to this report, which is available upon request.

The odor panel evaluation utilized 6 to 12 trained and experienced assessors who together possess odor sensitivity representative of the general population.

2.2.1 Detection and Recognition Thresholds

Odor thresholds are determined using a presentation method called the "three-alternative forced-choice" method or the "triangular forced-choice" method. Each odor panel assessor performs the odor evaluation task by sniffing the diluted odor from an olfactometer. The assessor sniffs three sample presentations; one contains the odor while the other two are "blanks" (odor free). He/she must then select the one of the three that is "different" from the other two. The assessor is required (forced) to choose one of the three and acknowledges his/her response as a "guess," "detection," or "recognition," as defined by ASTM Standard Practice E679-91.

After the first set of three presentations, the assessor is then presented with the next dilution level. The assessor is again presented with three sample choices, one of which is the diluted odor sample. However, this next dilution level presents the odor at a higher concentration (e.g., two times higher). This is one-half the dilution ratio (fewer number of dilutions = higher concentration). The first dilution level presented to the assessor is below the odor thresholds (subthreshold). The assessor proceeds to higher levels of sample presentation following these methods. This statistical approach is called "ascending concentration series."

Results are computed for each assessor based on the dilution levels where correct "detection" or "recognition" responses are recorded. The responses of all assessors are averaged to determine the sample's detection and recognition thresholds.

The dynamic dilution of an odorous emission is the physical process that occurs in the atmosphere downwind of the odor source. The dilution ratio is an estimate of the number of dilutions needed to make the actual odor sample just detectable to an average nose. Under laboratory conditions, the concentration of an odor that is just detectable (i.e., at the detection threshold) is described as having a DT concentration of 1. The recognition threshold (RT) is the concentration at which the assessor first detects, or recognizes, the odor's character (smells like ..."), and is typically several times higher in concentration than the DT value.

For comparison purposes, an average person in a laboratory setting could just barely detect that there was something different about a sample that contained a concentration of 1 odor unit (OU) (1 DT), in comparison to clean, filtered background air. However, an odor concentration impact at 1 OU would not likely be detected in outdoor air within the City which, based on background measurements taken during this Study, had on the order of a 5 DT, or 5 OU concentration even without local source. Adding a concentration of 1 OU to such air would probably not make a detectable difference to an average observer. It is expected that an added impact of 5 OU from a Transfer Station would be a more likely level of odor impact that would begin to be detected by an average observer. Also, it is expected that an added impact of 10 OU from a Transfer Station would be a more likely odor impact that would be recognized and found objectionable by an average observer.

Odor impact analyses frequently use the RT value because it represents the concentration of the odor in the air that would be first recognized by an individual downwind of the odor source. For the purpose of this Study, the more conservative DT value has been used as the basic measure of odor concentration because it is expected that the DT value can be determined more consistently and accurately by an odor panel.

The DT value is dimensionless; however, it is "assigned" dimensions of odor units per cubic meter (OU/m^3) for the purpose of calculating effective odor emission rates. One odor unit is defined for the purposes of this Study as the amount of odor in a cubic meter of air that will provide an odor concentration of DT = 1.

2.2.2 Odor Intensity

The odor intensity is the relative strength of the odor above the recognition threshold (suprathreshold). The intensity of an odor is referenced on the ASTM Odor Referencing Scale described in ASTM Standard Practice E544-99, Referencing Suprathreshold Odor Intensity. The IITRI dynamic dilution binary olfactometer (butanol wheel) is the method St. Croix Sensory uses for the procedure of odor intensity referencing.

The odor referencing was accomplished by a comparison of the odor intensity of the odor sample to the odor intensity of a series of concentrations of the reference odorant (butanol). The olfactometer delivered the butanol in air to glass sniffing ports. The olfactometer had eight sniffing ports with a series of increasing concentrations of butanol (12, 24, 48, 96, 192, 384, 768 and 1,536 ppm butanol).

The intensity of the odor was expressed in parts per million (ppm) of butanol. A larger value of butanol means a stronger odor, but not in the same numerical proportion as the increase in concentration. The average value (of all assessors' observations) of the odor evaluation was the reported intensity for the odor sample.

2.2.3 Odor Persistence (Dose Response)

"Odor persistence" is a term used in conjunction with odor intensity. The perceived intensity of an odor will change in relation to its concentration. However, the rate of change in intensity versus concentration is not the same for all odors. This rate of change of intensity is termed the persistence of the odor. The persistence of an odor is represented as a dose-response function. The dose-response function is determined from intensity measurements of an odor at full strength and at several dilution levels above the threshold level, and from a dose-response curve prepared by St. Croix Sensory that is a logarithmic plot of the equivalent butanol intensity dilutions (x-axis) versus the equivalent butanol intensity concentrations (y-axis). The slope of this line defines the odor's persistence. A steeper slope (approaching -1) means that the odor intensity decreases rapidly as dilutions occur. A flatter slope (closer to 0) means that the odor intensity persists even as dilutions occur.

2.3 Data Reduction Methodology

The same odor panel protocol used for the February 2001 Final Comprehensive Solid Waste Management Plan Modification and Final Environmental Impact Statement (2001 Plan) was applied for this Study to provide a comparable measure of results from the 2001 Plan and this Study. However, since the 2001 Plan analysis, which used "butanol-equivalent" emissions rates for the modeling analysis, the odor evaluation industry has changed its direction in projecting odor. Rather than estimating and modeling dispersion of butanol-equivalent emissions, the currently preferred method involves applying a dispersion model to the odor emissions from individual sources to calculate the degree of odor dilution in the ambient air, in comparison to the DT level. Therefore, for the purpose of calculating odor emissions from the Transfer Stations in the Study Area, odor emission factors, and odor control equipment efficiency, only the DT values determined from the laboratory data will be applied in the following calculations.

2.3.1 Source Emission Rate (OU/sec)

An odor emission rate in odor units per second (OU/sec) for each vent was calculated by multiplying the vent's design air flow rate in cubic meters per second (m^3/sec) by the vent's odor concentration measured and reported by the odor panel as a multiple of the detection threshold (DT), applied as "odor units per cubic meter" (OU/m^3). This calculation is expressed as follows:

$$\text{Source Emission Rate (OU/sec)} = \text{design flow rate } (m^3/\text{sec}) \times \text{DT } (\text{OU}/m^3)$$

2.3.2 Transfer Station Emission Rate (OU/sec)

A transfer station emission rate for each operating mode (controlled and uncontrolled operations) was calculated by combining all vent emissions for each sample set. For example, a total emission rate for a transfer station with two active vents would be calculated as follows:

$$\text{Transfer Station Emission Rate (OU/sec)} = \text{Vent 1 (OU/sec)} + \text{Vent 2 (OU/sec)}$$

2.3.3 Emission Factor ([OU/sec]/ton stored)

Emission factors were calculated for each Transfer Station sample set by dividing the total transfer station emission rate by the amount of waste "stored" (amount of waste on the floor inside of the process building). This provided emission factors in odor units per second per ton of waste stored ([OU/sec]/ton stored) for each sample set. Separate sample sets were obtained for each operating mode (controlled and uncontrolled operations). Thus, a Transfer Station sample set emission factor was calculated as follows:

$$\text{Emission Factor ([OU/sec]/ton stored)} = \frac{\text{Transfer Station Emission Rate (OU/sec)}}{\text{Waste Stored (tons)}}$$

2.3.4 Prototypical Facility Classes and Emission Rates

Because of the large number of facilities to be analyzed for the Study, and the difficulty in obtaining accurate processing or waste storage rates for each, the permitted volume of waste that could be stored in the processing building was identified for all of the Transfer Stations in the Study Areas. The average allowable volume of waste permitted to be stored for each of the three prototypical transfer station sizes that were developed for modeling potential were used to calculate transfer station emission rates. The basis for the average permitted volume of waste for the three prototypical transfer station sizes is provided in the technical backup to this report, which is available upon request. Prototypical transfer station emission estimates are discussed and presented in Section 3.3 of this report.

3.0 SUMMARY OF ODOR SAMPLING, RESULTS AND STUDY EMISSION FACTORS

Total Transfer Station odor emissions at the four facilities sampled were measured by collecting multiple odor sample sets from all active exhaust vents, with and without the odor control system operating, during steady process operations (active pile management and simulated transfer activities occurring inside the building, but no delivery or transfer of waste into/out of the building). Fugitive emissions were minimized (improved capture) in order to most accurately determine the putrescible waste odor generation rate.

Whole air odor samples were collected from the building's exhaust vent(s) using a vacuum chamber system. Prior to sampling, most Transfer Station doors and windows were closed, facial velocities measured, and simulated waste handling activities initiated. Before each vent was sampled, at least 15 minutes were allowed to pass from when adequate facial velocities were measured. Sampling durations ranged from a few to several minutes for each bag sample.

Field odor samples were collected from the exhaust of each process building roof vent. Several QA samples were also collected using the same sampling equipment and procedures. One field duplicate was collected at a single vent exhaust at each Transfer Station for each day of sampling. For each Transfer Station, a background sample was collected at a location upwind of the Transfer Station, not influenced by transfer operations. Field blanks were collected at each Transfer Station for each day of sampling.

All samples were delivered to St. Croix Sensory for evaluation the day following sample collection. Sample concentration as a multiple of the detection threshold (DT) and the recognition threshold (RT) was determined for each sample by St. Croix's odor panel in accordance with ASTM Standard Practice E679-91. In addition, odor intensity, including dose-response slope, was determined in accordance with ASTM Standard Practice E544-99.

3.1 Summary of Results

Odor sampling was performed over the course of five days at four facilities. Table 3.1-1 through Table 3.1-5 provide a summary of the results from the sampling events. Forty-five (45) vent samples (21 without odor control and 24 with odor control), and 15 field QA samples were collected. Average facial velocities of 200 feet per minute (ft/min), supporting an assumed 100% ventilation system odor capture efficiency, were observed largely for all operations without odor control and operations with odor control. With these facial velocities, sampling staff did not note any significant fugitive losses outside any of the buildings.

Also noted in Tables 3.1-1 through 3.1-5, uncontrolled and controlled DT values ranged from 6 to 140 and 14 to 110, respectively. Uncontrolled and controlled emission factors ([OU/sec]/ton stored) ranged from 1.4 to 42.9 and 1.6 to 73.8, respectively. A comparison of uncontrolled and controlled emission factors suggests varying odor control system efficiencies (-15%, 38%, -11% and 1%). Negligible control efficiencies may be due to the presence of the masking agent in the odor suppressant material that is detected during the odor panel evaluation that cannot be discerned from the waste odor. Elevated odor emissions while the odor control system was operational may also be due to a more odorous inventory of waste.

The program's QA samples suggest no significant sampling media contamination in the field blank with a 5 DT result for each Transfer Station that is slightly higher than the method detection limit of 4. The 5 to 6 DT upwind sample value for all Transfer Stations suggests little or no significant background source interference with the on-site sampling program. Finally, the deviation about the average of the field duplicate samples for all Transfer Stations ranged from 14% to 17%, well within the typical range of +25%/-20%.

Attachment B to this report contains a summary of general field observations and laboratory and sampling results for the sampling efforts performed at the four noted facilities.

Table 3.1-1
Sampling Summary and Results
Transfer Station #1, Day 1
July 18, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
071803-1	1	OFF	09:05 - 09:12	13.6	6.9	62.8	256	33,244	15.7	21	330	1,789	27.0
071803-4	2	OFF	10:40 - 10:45	6.8	3.5	69.7	229	33,244	15.7	30	471		
071803-3	3	OFF	09:05 - 09:18	13.6	6.9	62.8	256	33,244	15.7	23	361		
071803-5	4	OFF	10:40 - 10:54	6.8	3.5	69.7	229	33,244	15.7	40	628		
OPERATIONS WITH ODOR CONTROL													
071803-10	1	ON	13:30 - 13:34	12.3	20.4	43.6	243	33,244	15.7	14	220	1,475	31.0
071803-7	2	ON	12:41 - 12:45	12.8	22.8	51.6	233	33,244	15.7	25	392		
071803-9	3	ON	13:18 - 13:22	12.3	20.4	43.6	243	33,244	15.7	30	471		
071803-8	4	ON	12:54 - 12:58	12.8	22.8	51.6	233	33,244	15.7	25	392		
DUPLICATE, BLANK AND UPWIND SAMPLES													
071803-2	- 1 dup	OFF	09:05 - 09:12	13.6	6.9	62.81	243	33,244	15.7	15	235	----	----
071803-6	blank	----	09:51 - 09:56	----	----	----	----	----	----	5	----		
071803-11	upwind	----	14:01 - 14:05	----	----	----	----	----	----	5	----		

Notes:
Tons processed on 7/18/03 = 396.
Odor system control efficiency = -15%.
All figures are rounded to the nearest tenth.

Table 3.1-2
Sampling Summary and Results
Transfer Station #1, Day 2
August 11, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
081103-12	1	OFF	08:30 – 08:35	6.3	0.0	161	245	33,244	15.7	70	1,098	6,433	40.1
081103-16	2	OFF	08:12 – 08:18	6.3	0.0	161	267	33,244	15.7	110	1,726		
081103-14	3	OFF	08:12 – 08:16	6.3	0.0	161	267	33,244	15.7	130	2,040		
081103-15	4	OFF	08:18 – 08:21	6.3	0.0	161	267	33,244	15.7	100	1,569		
081103-13	1	OFF	08:37 – 08:42	6.3	0.0	161	245	33,244	15.7	90	1,412	6,904	43.0
081103-17	2	OFF	08:19 – 08:25	6.3	0.0	161	267	33,244	15.7	80	1,255		
081103-18	3	OFF	08:30 – 08:34	6.3	0.0	161	245	33,244	15.7	140	2,197		
081103-19	4	OFF	08:36 – 08:39	6.3	0.0	161	245	33,244	15.7	130	2,040		
OPERATIONS WITH ODOR CONTROL													
081103-23	1	ON	11:20 – 11:25	5.4	31.4	173	359	33,244	15.7	80	1,255	4,550	26.4
081103-26	2	ON	11:33 – 11:40	5.4	31.4	173	359	33,244	15.7	60	941		
081103-27	3	ON	11:20 – 11:23	5.4	31.4	173	359	33,244	15.7	60	941		
081103-28	4	ON	11:26 – 11:30	5.4	31.4	173	359	33,244	15.7	90	1,412		
081103-22	1	ON	12:01 – 12:05	n/a	n/a	173	306	33,244	15.7	60	941	4,394	25.5
081103-25	2	ON	12:07 – 12:12	n/a	n/a	173	306	33,244	15.7	110	1,726		
081103-29	3	ON	12:01 – 12:05	n/a	n/a	173	306	33,244	15.7	55	863		
081103-30	4	ON	12:07 – 12:11	n/a	n/a	173	306	33,244	15.7	55	863		

Table 3.1-2 (Continued)
Sampling Summary and Results
Transfer Station #1, Day 2
August 11, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m3/sec)	DT (OU/m3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
DUPLICATE, BLANK AND UPWIND SAMPLES													
081103 - 24	- 23 dup	ON	11:20 - 11:25	5.4	31.4	172.6	359	33,244	15.7	60	941	----	----
081103 - 20	blank	----	08:55 - 09:02	----	----	----	----	----	----	5	----		
081103 - 21	upwind	----	09:28 - 09:34	----	----	----	----	----	----	6	----		

Notes:
Tons processed on 8/11/03 = 396.
Odor system control efficiency = 38%.
All figures are rounded to the nearest tenth.

Table 3.1-3
Sampling Summary and Results
Transfer Station #2
July 25, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
072503 - 1	1	OFF	08:33 - 08:42	23.2	0	435.5	320	10,860	5.1	35	179	615	1.4
072503 - 2	2	OFF	08:39 - 08:43	23.2	0	435.5	314	10,860	5.1	50	256		
072503 - 3	3	OFF	08:33 - 08:38	23.2	0	435.5	324	10,860	5.1	35	179		
OPERATIONS WITH ODOR CONTROL													
072503 - 5	1	ON	10:07 - 10:13	26.3	44.0	408.1	321	10,860	5.1	55	282	641	1.6
072503 - 8	2	ON	10:07 - 10:13	26.3	44.0	408.1	321	10,860	5.1	30	154		
072503 - 7	3	ON	10:13 - 10:18	26.3	44.0	408.1	310	10,860	5.1	40	205		
DUPLICATE, BLANK AND UPWIND SAMPLES													
072503 - 6	- 5 dup	ON	10:07 - 10:13	26.3	44.0	408.1	321	10,860	5.1	40	205	----	----
072503 - 4	blank	----	09:19 - 09:24	----	----	----	----	----	----	5	----		
072503 - 9	upwind	----	10:44 - 10:47	----	----	----	----	----	----	5	----		

Notes:
Tons processed on 7/25/03 = 800.
Odor system control efficiency = -11%.
All figures are rounded to the nearest tenth.

Table 3.1-4
Sampling Summary and Results
Transfer Station #3
August 13, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
081303-10	1	OFF	15:31 - 15:34	0	22.3	88	263	33,244	15.7	22	345	1,600	18.2
081303-11	2	OFF	15:34 - 15:38	0	22.3	88	422	33,244	15.7	30	471		
081303-12	3	OFF	15:40 - 15:44	0	22.3	88	336	33,244	15.7	50	785		
OPERATIONS WITH ODOR CONTROL													
081303-1	1	ON	12:25 - 12:29	16.7	22.1	100	249	33,244	15.7	45	706	1,804	18.0
081303-3	2	ON	12:17 - 12:22	16.7	22.1	100	347	33,244	15.7	35	549		
081303-5	3	ON	12:16 - 12:19	16.7	22.1	100	352	33,244	15.7	35	549		
~~081303-2~~	~~1~~	~~ON~~	~~13:12 - 13:15~~	~~18.9~~	~~44.2~~	~~100~~	~~300~~	~~33,244~~	~~15.7~~	~~35~~	~~549~~	~~1,224~~	~~12.2~~
~~081303-4~~	~~2~~	~~ON~~	~~13:18 - 13:21~~	~~18.9~~	~~44.2~~	~~100~~	~~406~~	~~33,244~~	~~15.7~~	~~8~~	~~126~~		
081303-6	3	ON	13:12 - 13:16	18.9	44.2	100	281	33,244	15.7	35	549		
DUPLICATE, BLANK AND UPWIND SAMPLES													
081303-7	- 6 dup	ON	13:12 - 13:16	18.9	44.2	100	281	33,244	15.7	25	392	----	----
081303-8	blank	----	13:26 - 13:31	----	----	----	----	----	----	5	----		
081303-9	upwind	----	14:33 - 14:38	----	----	----	----	----	----	5	----		

Notes:
Tons processed on 8/13/03 = 560.
Odor system control efficiency = 1%.
Strikethrough data has been excluded due to suspect laboratory results (081303-4 DT and odor descriptors that do not "match" other vent samples).
All figures are rounded to the nearest tenth.

Table 3.1-5
Sampling Summary and Results
Transfer Station #4
August 20, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
082003 - 1	1	OFF	10:52 - 10:55	16.3	0.0	35	168	33,244	15.7	6	94	94	2.7
082003 - 2	1	OFF	11:21 - 11:24	0.6	0.0	30	327	33,244	15.7	12	188	188	6.3
082003 - 3	1	OFF	11:26 - 11:31	0.6	0.0	30	256	33,244	15.7	30	471	471	15.7
OPERATIONS WITH ODOR CONTROL													
082003 - 7	1	ON	13:38 - 13:43	0	0	17	221	33,244	15.7	22	345	345	20.3
082003 - 8	1	ON	13:44 - 13:49	0	0	17	152	33,244	15.7	80	1,255	1,255	73.8
082003 - 9	1	ON	13:50 - 13:53	0	0	17	172	33,244	15.7	45	706	706	41.5
DUPLICATE, BLANK AND UPWIND SAMPLES													
082003 - 4	- 3 dup	OFF	11:26 - 11:31	0.6	0	30	256	33,244	15.7	22	345	----	----
082003 - 5	blank	----	11:49 - 11:52	----	----	----	----	----	----	5	----	----	----
082003 - 6	upwind	----	12:01 - 12:05	----	----	----	----	----	----	6	----	----	----

Notes:
Tons processed on 8/20/03 = 159.
Odor system control efficiency = A shipment of horse manure was delivered during operations with odor control, which resulted in a significant increase of odor emissions over standard waste emissions observed during operations without odor control. Evaluating the odor system's control efficiency with significantly different wastes is inappropriate.
All figures are rounded to the nearest tenth.

3.2 Emission Factors

A review of the controlled and uncontrolled odor emissions from the same facilities revealed that the controlled Transfer Station emissions were no more than 38% lower than the uncontrolled emissions, and in many cases the controlled emissions were actually higher than the uncontrolled emissions. This is likely due to the addition of fragrant masking agents in the Transfer Station. Odor panelists may have first detected (at high dilutions) unrecognizable odors that may have been due to the masking agent or a combination of the masking agent and the odors from the waste for the "controlled" cases. Therefore, for the dispersion modeling portion of the Study, it was decided that uncontrolled emission factors would be used to model all facilities.

The sampling results were reviewed to determine the most appropriate Transfer Station waste processing criteria for developing emission factors. This review focused primarily on daily and shorter-term (sampling period) waste processing rates, and on total amount of waste stored in piles on the tipping floor of the Transfer Station at the time of the sampling. It was determined from the sampling data that the latter criteria -- total putrescible waste stored in piles -- was the best operating factor to use in estimating odor emissions from commercial transfer facilities. This deviation is based on the inherent operational differences between the former marine transfer stations (MTSs), where waste was moved in short order onto barges (resulting in little on-site waste storage), and the Transfer Stations where waste is piled and stored until removed by transfer trucks.

The odor emission factors used in this Study are expressed as ([OU/sec]/ton stored), where one OU is defined as the amount or mass of odor needed to generate a concentration at the DT in a volume of one cubic meter of air. The laboratory analysis by an odor panel provided the concentration of odor for each sample, in multiples of DT. The DT multiple for a sample was then multiplied by the air exhaust flow rate from the vent sampled, to estimate the OU emission rate for that vent. Where a Transfer Station had multiple vents, each of which were sampled, the total OU emission rate (OU/sec) of all vents was divided by the amount of waste stored in piles (tons) to estimate the emission factor for that Transfer Station sampling period.

Table 3.2-1 provides a summary of the estimated odor emission factors based on all odor samples analyzed for this Study. These data show that the emission factors ranged from 1.4 ([OU/sec]/ton stored) to 42.9 ([OU/sec]/ton stored), with a mean value of 19.3 ([OU/sec]/ton stored).

As discussed below, the 42.9 ([OU/sec]/ton stored) maximum emission factor was applied to three prototypical facility floor storage capacities to establish a maximum odor emission rate (OU/sec) for each prototypical facility size.

Table 3.2-1
Summary of Uncontrolled Sampling Results[1]

Sampled Facility	Date	Tipping Floor Waste During Sampling (tons)	Transfer Station Emission Rate (OU/sec)[2]	Emission Factor ([OU/sec]/ton stored)
Transfer Station #1, Day 1	7/18/2003	66.3	1,789	27.0
Transfer Station #1, Day 2	8/11/2003	161	6,433	40.1
Transfer Station #1, Day 2	8/11/2003	161	6,904	42.9
Transfer Station #2	7/25/2003	435.5	615	1.4
Transfer Station #3	8/13/2003	88	1,600	18.2
Transfer Station #4	8/20/2003	35	94	2.7
Transfer Station #4	8/20/2003	30	188	6.3
Transfer Station #4	8/20/2003	30	471	15.7
Average Emission Factor for 8 Samples				19.3
Maximum Emission Factor for 8 Samples				42.9
Minimum Emission Factor for 8 Samples				1.4

Notes:
(1) Uncontrolled means without the odor control system operating.
(2) One odor unit (OU) = equivalent mass of odor represented by a concentration of one odor unit in one cubic meter of air.

3.3 Prototypical Transfer Station Odor Emission Rates

For each prototypical transfer station size analyzed, the potential maximum waste stored amount (on the tipping floor) was multiplied by the maximum and average emission factors, to obtain the respective maximum and average (for comparison purposes only) emission rates. Table 3.3-1 shows the estimated average and maximum odor emission rates (OU/sec) for each prototype transfer station size and type analyzed for this Study.

Table 3.3-1
Estimated Maximum and Average Odor Emission Rates for Each Facility Prototype

Parameter	Prototype Facility Size & Type		
	Small	Medium	Large
Floor Waste Capacity (tons)	119	236	1,605
Maximum Emission Rate (OU/sec)(1)	5,105	10,124	68,855
Average Emission Rate (OU/sec)(2)	2,297	4,555	30,977

Notes:
(1) Maximum Emission Factor = 42.9 ([OU/sec]/ton stored)
(2) Average Emission Factor = 19.3 ([OU/sec]/ton stored)

Short-term maximum emission rates and impact were calculated by applying a 2.5-peak-to-mean factor to the maximum emission rate and associated impact.

3.4 Comparison to the 2001 Final Comprehensive Solid Waste Management Plan Results

The same odor panel protocol used for the February 2001 Final Comprehensive Solid Waste Management Plan Modification and Final Environmental Impact Statement (2001 Plan) was applied for this Study to provide a comparable measure of results between the 2001 Plan and this Study. However, since the 2001 Plan analysis, which used "butanol-equivalent" emissions rates for the modeling analysis, the odor evaluation industry has changed its direction in projecting odor. Rather than estimating and modeling dispersion of butanol-equivalent emissions, the currently preferred method involves applying a dispersion model to the odor emissions from individual sources to calculate the degree of odor dilution in the ambient air, in comparison to the DT level. Therefore, for the purpose of calculating odor emissions, odor emission factors, and odor control equipment efficiency from the Transfer Stations in the Study Area, only the DT values determined from the laboratory data were applied.

In addition, the 2001 Plan odor analysis normalized odor emissions on a waste throughput basis, whereas the Study odor data analysis normalized odor emissions on a waste storage basis. This deviation is based on inherent operational differences between the former MTSs, where waste was moved in short order onto barges (resulting in little on-site waste storage), and the Transfer Stations where wastes are piled and stored until removed by transfer trucks.

Another, yet small, difference between the odor analyses is that the 2001 Plan odor analysis reported odor as dilutions-to-threshold (D/T), whereas, the Study odor analysis reported odor data as multiples of the detection threshold (DT). Therefore, an odor at the detection threshold would be reported as 0 D/T and 1 DT, respectively. For comparison purposes, the DT value is one unit higher than the D/T value.

In light of these differences, the best comparison of odor sampling data between the 2001 Plan and this Study involves the vent (fan) exhaust concentrations. Vent odor concentrations measured during the Study odor sampling effort, ranging from 6 DT to 140 DT, were fairly consistent with the vent concentrations measured during preparation for the 2001 Plan (11 D/T to 122 D/T or approximately 12 DT to 123 DT). Odor concentration differences between Transfer Stations and the former MTSs may be due to differences in the odor potential of the waste, waste storage, building ventilation rate and capture efficiency, housekeeping practices, etc.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Sampling was performed during the high heat of the summer months (July and August), when waste decomposition and odor generation is expected to be at its peak. Therefore, sampling results should conservatively represent odor emissions for the year. Of the 45 vent samples (21 without odor control and 24 with odor control), the data seemed to correlate well between samples and among facilities and were generally representative for the period. Field duplicate sample differences were well within acceptable tolerances. In one instance (Transfer Station #3, Sample 081103-4, with odor control) an inexplicably low DT value (and atypical odor character) was compared to other concurrent odor samples and excluded from any further analysis. Excluding this sample rendered the remaining two valid samples from the same sample set inconclusive, thereby resulting in their exclusion from the emission rate and emission factor analyses.

Vent odor concentrations measured during the Study odor sampling effort, ranging from 6 DT to 140 DT, were fairly consistent with the vent concentrations measured in preparation of the 2001 Plan (11 D/T to 122 D/T or approximately 12 DT to 123 DT). Odor concentration differences between Transfer Stations and the former MTSs may be due to differences in the odor potential of the waste, waste storage, building ventilation rate and capture efficiency, housekeeping practices, etc.

Highly variable (-15%, -11%, 1% and 38%) odor control efficiencies were observed over the course of sampling the four Transfer Stations. Noting that the 38% control efficiency occurred when the highest uncontrolled odor levels were measured (during Transfer Station #1, Day 2 sampling) and the lowest control efficiency occurred with much lower uncontrolled odor levels, it is probable that the masking agent used has a baseline odor concentration, at many times, at or in excess of the odor concentration associate with the waste. [Note: For the dispersion modeling portion of the Study, it was decided, because of the variation in odor control efficiency, that uncontrolled emission factors would be used to model all facilities, with an assumed odor control system efficiency applied.]

Emission factors were conservatively estimated. Odor impact analyses frequently use the RT value because it represents the concentration of the odor in the air that would be first recognized by an individual downwind of the odor source. For the purpose of this Study, the more conservative DT value (when the odor is first detected) has been used as the basic measure of odor concentration and because it is expected that the DT value can be determined more consistently and accurately by an odor panel.

Emission factors were also conservatively applied by using only the maximum emission rate for the three prototypical facility sizes. In addition, short-term maximum emission rates and effects were conservatively calculated by applying a 2.5-peak-to-mean factor to the maximum emission rate and associated effects.

A total of 45 vent samples and 15 field QA samples were collected for the Study odor sampling effort. Of these 60 samples, 21 uncontrolled samples were used to calculate the eight facility-specific Transfer Station odor emission factors that were then applied in establishing three prototypical transfer station odor emission rates. In the future, more samples should be collected to evaluate the best odor control options for these facilities. Those options include several combinations of various odor control agents (neutralizing, masking, and neutralizing with masking) and control system configurations (ceiling-mounted atomizing nozzle odor control system, portable 55-gallon drum odor control system, etc.). These data would also serve to expand, and possibly improve, the current emission factor database.

ATTACHMENT A

Photographic Log

Hand Insert ATTACHMENT A

ATTACHMENT B

Summary of Odor Sampling and Results

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ATTACHMENT B

Summary of Odor Sampling and Results

1.0 GENERAL FIELD OBSERVATIONS, AND LABORATORY AND SAMPLING RESULTS

This Attachment contains a summary of general field observations, and laboratory and sampling results for the sampling efforts performed at the four noted facilities. Tables summarizing pertinent sampling information, parameters, laboratory detection threshold (DT) values and sampling results are referenced for each Transfer Station individually. Data provided in the summary tables include:

- **Sample # -** The odor sample identification number assigned during sampling and referenced in the field data sheet and Odor Evaluation Report.
- **Vent # -** The specific active exhaust vent identifier assigned during sampling and referenced in the field data sheet. For the Field Duplicate, Blank and Upwind Samples, the Vent # value was supplemented and/or replaced with the sample type identifier (e.g., dup [duplicate sample]).
- **Odor Control System** – The on or off status of the odor control system during the collection of the associated sample.
- **Sampling Time** – Local time during which the associated sample was collected.
- **Waste Delivered (tons/hour)** – The approximate amount of waste delivered during the clock hour (e.g., 09:00:00 – 09:59:59) the sample was collected. Note that all waste delivery to and transfer from the process floor was suspended while each odor sample was collected.
- **Waste Transferred (tons/hour) -** The approximate amount of waste transferred during the clock hour (e.g., 09:00:00 – 09:59:59) the sample was collected. Note that all waste delivery to and transfer from the process floor was suspended while each odor sample was collected.
- **Waste Stored (tons)** – The approximate amount of waste stored on the floor while the associated sample was collected.
- **Average Facial Velocity (ft/min)** – The average facial velocity in feet per minute (ft/min) measured through an opening in the building, in part supporting an assumed 100% capture efficiency of all odors exhausted through the combined active vent exhausts.

- **Design Flow Rate (cfm)** – The individual design flow rate for the associated active exhaust vent in cubic feet per minute (cfm).
- **Design Flow Rate (m^3/sec)** – The individual design flow rate for the associated active exhaust vent in cubic meters per second (m^3/sec).
- **DT Value (OU/m^3)** – The odor concentration of a sample, expressed as a multiple of the detection threshold. A unit-less value but for calculation purposes, expressed as odor units per volume of air (i.e., odor units per cubic meter [OU/m^3]). All Odor Evaluation Reports are provided in Attachment F.
- **Emission Rate (OU/sec)** – Individual vent odor emission rate based on the product of the vent's design flow rate and sample concentration (DT multiple).
- **Total Emission Rate (OU/sec)** – A Transfer Station-wide total of all vent emissions for a defined sample set/operating mode (operations with or without odor control).
- **Emission Factor ([OU/sec]/ton stored)** – Facility-wide odor emissions normalized on a waste-stored basis.

1.1 Transfer Station #1

Odor sampling was performed at Transfer Station #1 over the course of two days in Jamaica, NY. Sampling observations and results are provided below for each day, separately.

1.1.1 Day 1 - July 18, 2003 Sampling Effort

As noted in Table B.1.1.1-1, two sets of process odor samples were collected from each of four active exhaust vents. One set of process odor samples was collected after the odor control system had been turned off for approximately two hours (operations without odor control). The second set of samples was collected after the odor control system had been operational for more than 1.6 hours (operations with odor control). Average facial velocities greater than 200 ft/min, supporting an assumed 100% ventilation system odor capture efficiency, were observed for operations without odor control (229 to 256 ft/min) and operations with odor control (233 to 243 ft/min). A duplicate sample (071803-1) was collected at Vent 1 (along with Sample 071803-2). A field blank sample (071803-6) was collected at a vent location according to the procedures mentioned in the report. An upwind (background) sample was collected approximately 600 feet south-southwest of the Transfer Station.

Also noted in Table B.1.1.1-1 are the results of the odor panel analysis (DT – detection threshold multiple) for each sample. For operations without odor control, DT multiples ranged from 21 to 40, with a total emission rate (OU/sec) of 1,789. For operations with odor control, DT multiples ranged from 14 to 30, with a total emission rate (OU/sec) of 1,475. The waste-storage-based emission factors ([OU/sec]/ton stored) for operations without and with control were 27.0 and 31.0, respectively. A comparison of the uncontrolled (27.0 [(OU/sec)/ton stored]) and controlled (31.0 [(OU/sec)/ton stored]) emission factors suggests a -15% odor control system efficiency. This negative control efficiency may be due to the presence of the masking agent in the odor suppressant material that is detected during the odor panel evaluation that cannot be discerned from the waste odor. Elevated odor emissions while the odor control system was operational may also be due to a more odorous inventory of waste.

The program's QA samples suggest no significant sampling media contamination in the field blank with a 5 DT result that is slightly higher than the method detection limit of 4. The upwind sample 5 DT value suggests little or no significant background source interference with the on-site sampling program. Finally, the deviation about the average of the field duplicate samples (results of 15 and 21 OU) was approximately 18 OU $\pm$ 3 OU (17%), which is within the typical range of +25%/-20%.

Table B.1.1.1-1
Sampling Summary and Results
Transfer Station #1, Day 1
July 18, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
071803-1	1	OFF	09:05 - 09:12	13.6	6.9	62.8	256	33,244	15.7	21	330	1,789	27.0
071803-4	2	OFF	10:40 - 10:45	6.8	3.5	69.7	229	33,244	15.7	30	471		
071803-3	3	OFF	09:05 - 09:18	13.6	6.9	62.8	256	33,244	15.7	23	361		
071803-5	4	OFF	10:40 - 10:54	6.8	3.5	69.7	229	33,244	15.7	40	628		
OPERATIONS WITH ODOR CONTROL													
071803-10	1	ON	13:30 - 13:34	12.3	20.4	43.6	243	33,244	15.7	14	220	1,475	31.0
071803-7	2	ON	12:41 - 12:45	12.8	22.8	51.6	233	33,244	15.7	25	392		
071803-9	3	ON	13:18 - 13:22	12.3	20.4	43.6	243	33,244	15.7	30	471		
071803-8	4	ON	12:54 - 12:58	12.8	22.8	51.6	233	33,244	15.7	25	392		
DUPLICATE, BLANK AND UPWIND SAMPLES													
071803-2	- 1 dup	OFF	09:05 - 09:12	13.6	6.9	62.81	243	33,244	15.7	15	235	----	----
071803-6	blank	----	09:51 - 09:56	----	----	----	----	----	----	5	----		
071803-11	upwind	----	14:01 - 14:05	----	----	----	----	----	----	5	----		

Notes:
Tons processed on 7/18/03 = 396.
Odor system control efficiency = -15%.
All figures are rounded to the nearest tenth.

1.1.2 Day 2 - August 11, 2003 Sampling Effort

As noted in Table B.1.1.2-1, four sets of process odor samples were collected from each of four active exhaust vents. Two sets of process odor samples were collected after the odor control system had been turned off for approximately 3.5 hours (operations without odor control). The third and fourth sets of samples were collected after the odor control system had been operational for more than 1.3 hours (operations with odor control). Average facial velocities greater than 200 ft/min, supporting an assumed 100% ventilation system odor capture efficiency, were observed for operations without odor control (245 to 267 ft/min) and operations with odor control (306 to 359 ft/min). A duplicate sample (081103-24) was collected at Vent 1 (along with Sample 081103-23). A field blank sample (081103-20) was collected at a vent location according to the procedures mentioned in the report. An upwind (background) sample was collected approximately 600 feet south-southwest of the Transfer Station.

Also noted in Table B.1.1.2-1 are the results of the odor panel analysis (DT – detection threshold multiple) for each sample. For operations without odor control, DT multiples ranged from 70 to 140, with a total emission rate (OU/sec) for each sample set totaling 6,433 and 6,904. For operations with odor control, DT multiples ranged from 55 to 110, with a total emission rate (OU/sec) for each sample set totaling 4,550 and 4,394. The waste-storage-based emission factor ([OU/sec]/ton stored) for operations without control for each sample set was 40.1 and 43.0. The waste-storage-based emission factor ([OU/sec]/ton stored) for each sample set was 26.4 and 25.5. A comparison of the average uncontrolled (41.6 [(OU/sec)/ton stored]) and average controlled (26.0 [(OU/sec)/ton stored]) emission factors suggests a 38% odor control system efficiency. As noted in Section 1.1.1 of this Attachment, odor control efficiency results may vary with overall waste odor levels and masking agent influences. While on site, sampling staff noted odor levels were significantly higher during this effort than the July 18, 2003 effort.

The program's QA samples suggest no significant sampling media contamination in the field blank with a 5 DT result, which is slightly higher than the method detection limit of 4. The upwind sample 6 DT value suggests little or no significant background source interference with the on-site sampling program. Finally, the deviation about the average of the field duplicate samples (results of 60 and 80 OU) was approximately 70 OU ± 10 OU (14%), which is within the typical range of +25%/-20%.

Table B.1.1.2-1
Sampling Summary and Results
Transfer Station #1, Day 2
August 11, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
081103-12	1	OFF	08:30 – 08:35	6.3	0.0	161	245	33,244	15.7	70	1,098	6,433	40.1
081103-16	2	OFF	08:12 – 08:18	6.3	0.0	161	267	33,244	15.7	110	1,726		
081103-14	3	OFF	08:12 – 08:16	6.3	0.0	161	267	33,244	15.7	130	2,040		
081103-15	4	OFF	08:18 – 08:21	6.3	0.0	161	267	33,244	15.7	100	1,569		
081103-13	1	OFF	08:37 – 08:42	6.3	0.0	161	245	33,244	15.7	90	1,412	6,904	43.0
081103-17	2	OFF	08:19 – 08:25	6.3	0.0	161	267	33,244	15.7	80	1,255		
081103-18	3	OFF	08:30 – 08:34	6.3	0.0	161	245	33,244	15.7	140	2,197		
081103-19	4	OFF	08:36 – 08:39	6.3	0.0	161	245	33,244	15.7	130	2,040		
OPERATIONS WITH ODOR CONTROL													
081103-23	1	ON	11:20 – 11:25	5.4	31.4	173	359	33,244	15.7	80	1,255	45,50	26.4
081103-26	2	ON	11:33 – 11:40	5.4	31.4	173	359	33,244	15.7	60	941		
081103-27	3	ON	11:20 – 11:23	5.4	31.4	173	359	33,244	15.7	60	941		
081103-28	4	ON	11:26 – 11:30	5.4	31.4	173	359	33,244	15.7	90	1,412		
081103-22	1	ON	12:01 – 12:05	n/a	n/a	173	306	33,244	15.7	60	941	4,394	25.5
081103-25	2	ON	12:07 – 12:12	n/a	n/a	173	306	33,244	15.7	110	1,726		
081103-29	3	ON	12:01 – 12:05	n/a	n/a	173	306	33,244	15.7	55	863		
081103-30	4	ON	12:07 – 12:11	n/a	n/a	173	306	33,244	15.7	55	863		

Table B.1.1.2-1 (Continued)
Sampling Summary and Results
Transfer Station #1, Day 2
August 11, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m3/sec)	DT (OU/m3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
DUPLICATE, BLANK AND UPWIND SAMPLES													
081103 - 24	- 23 dup	ON	11:20 - 11:25	5.4	31.4	172.6	359	33,244	15.7	60	941	----	----
081103 - 20	blank	----	08:55 - 09:02	----	----	----	----	----	----	5	----		
081103 - 21	upwind	----	09:28 - 09:34	----	----	----	----	----	----	6	----		

Notes:
Tons processed on 8/11/03 = 396.
Odor system control efficiency = 38%.
All figures are rounded to the nearest tenth.

1.2 Transfer Station #2

Odor sampling was performed at Transfer Station #2 on July 25, 2003 in Bronx, NY. As noted in Table B.1.2-1, two sets of process odor samples were collected from each of three active exhaust vents. One set of process odor samples was collected after the odor control system had been turned off for approximately 2.5 hours (operations without odor control). The second set of samples was collected after the odor control system had been operational for more than 1.3 hours (operations with odor control). Average facial velocities greater than 200 ft/min, supporting an assumed 100% ventilation system odor capture efficiency, were observed for operations without odor control (314 to 324 ft/min) and operations with odor control (310 to 321 ft/min). A duplicate sample (072503-6) was collected at Vent 1 (along with Sample 072503-5). A field blank sample (072503-4) was collected at a vent location according to the procedures mentioned in the report. An upwind (background) sample was collected at a location northwest of the Transfer Station.

Also noted in Table B.1.2-1 are the results of the odor panel analysis (DT – detection threshold multiple) for each sample. For operations without odor control, DT multiples ranged from 35 to 50, with a total emission rate (OU/sec) of 615. For operations with odor control, DT multiples ranged from 30 to 55, with a total emission rate (OU/sec) of 641. The waste-storage-based emission factors ([OU/sec]/ton stored) for operations without and with control were 1.4 and 1.6, respectively. A comparison of the uncontrolled (1.4 [(OU/sec)/ton stored]) and controlled (1.6 [(OU/sec)/ton stored]) emission factors suggests a -11% odor control system efficiency. This negative control efficiency may be due to the presence of the masking agent in the odor suppressant material that is detected during the odor panel evaluation and cannot be discerned from the waste odor. Elevated odor emissions while the odor control system was operational may also be due to a more odorous inventory of waste.

The program's QA samples suggest no significant sampling media contamination in the field blank with a 5 DT result, which is slightly higher than the method detection limit of 4. The upwind sample 5 DT value suggests little or no significant background source interference with the on-site sampling program. Finally, the deviation about the average of the field duplicate samples (results of 40 and 55 OU) was approximately 47.5 OU ± 7.5 OU (16%), which is within the typical range of +25%/-20%.

Additional samples were not collected at this Transfer Station due to unsafe sampling location conditions.

Table B.1.2-1
Sampling Summary and Results
Transfer Station #2
July 25, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
072503 - 1	1	OFF	08:33 - 08:42	23.2	0	435.5	320	10,860	5.1	35	179	615	1.4
072503 - 2	2	OFF	08:39 - 08:43	23.2	0	435.5	314	10,860	5.1	50	256		
072503 - 3	3	OFF	08:33 - 08:38	23.2	0	435.5	324	10,860	5.1	35	179		
OPERATIONS WITH ODOR CONTROL													
072503 - 5	1	ON	10:07 - 10:13	26.3	44.0	408.1	321	10,860	5.1	55	282	641	1.6
072503 - 8	2	ON	10:07 - 10:13	26.3	44.0	408.1	321	10,860	5.1	30	154		
072503 - 7	3	ON	10:13 - 10:18	26.3	44.0	408.1	310	10,860	5.1	40	205		
DUPLICATE, BLANK AND UPWIND SAMPLES													
072503 - 6	- 5 dup	ON	10:07 - 10:13	26.3	44.0	408.1	321	10,860	5.1	40	205	----	----
072503 - 4	blank	----	09:19 - 09:24	----	----	----	----	----	----	5	----		
072503 - 9	upwind	----	10:44 - 10:47	----	----	----	----	----	----	5	----		

Notes:
Tons processed on 7/25/03 = 800.
Odor system control efficiency = -11%.
All figures are rounded to the nearest tenth.

1.3 Transfer Station #3

Odor sampling was performed at Transfer Station #3 on August 13, 2003 in Brooklyn, NY. As noted in Table B.1.3-1, three sets of process odor samples were collected from each of three active exhaust vents. One set of process odor samples was collected after the odor control system had been turned off for approximately two hours (operations without odor control). The second and third sets of samples were collected after the odor control system had been operational for more than three hours (operations with odor control). Odor panel results for the third set of data are considered suspect due to the inexplicably low 8 DT value (and atypical odor character) for Sample 081303-4 and, therefore, has been excluded from any further analysis, except for the field duplicate analysis involving Sample 081303-6. Average facial velocities greater than 200 ft/min, supporting an assumed 100% ventilation system odor capture efficiency, were observed for operations without odor control (263 to 422 ft/min) and operations with odor control (249 to 352 ft/min). A duplicate sample (081303-7) was collected at Vent 3 (along with Sample 081303-6). A field blank sample (081303-8) was collected at a vent location according to the procedures mentioned in the report. An upwind (background) sample was collected upwind of the Transfer Station.

Also noted in Table B.1.3-1 are the results of the odor panel analysis (DT – detection threshold multiples) for each sample. For operations without odor control, DT multiples ranged from 22 to 50, with a total emission rate (OU/sec) of 1,600. For operations with odor control, DT multiples ranged from 35 to 45, with a total emission rate (OU/sec) of 1,804. The waste storage based emission factors ([OU/sec]/ton stored) for operations without and with control were 18.2 and 18.0, respectively. A comparison of the uncontrolled (18.2 [(OU/sec)/ton stored]) and controlled (18.0 [(OU/sec)/ton stored]) emission factors suggests a 1% odor control system efficiency. This negligible control efficiency may be due to the presence of the masking agent in the odor suppressant material that is detected during the odor panel evaluation that cannot be discerned from the waste odor. Elevated odor emissions while the odor control system was operational may also be due to a more odorous inventory of waste (see Section 1.4 of this Attachment).

The program's QA samples suggest no significant sampling media contamination in the field blank with a 5 DT result that is slightly higher than the method detection limit of 4. The upwind sample 5 DT value suggests little or no significant background source interference with the on-site sampling program. Finally, the deviation about the average of the field duplicate samples (results of 25 and 35 OU) was approximately 30 OU ± 5 OU (17%), which is within the typical range of +25%/-20%.

Table B.1.3-1
Sampling Summary and Results
Transfer Station #3
August 13, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
081303-10	1	OFF	15:31 - 15:34	0	22.3	88	263	33,244	15.7	22	345	1,600	18.2
081303-11	2	OFF	15:34 - 15:38	0	22.3	88	422	33,244	15.7	30	471		
081303-12	3	OFF	15:40 - 15:44	0	22.3	88	336	33,244	15.7	50	785		
OPERATIONS WITH ODOR CONTROL													
081303-1	1	ON	12:25 - 12:29	16.7	22.1	100	249	33,244	15.7	45	706	1,804	18.0
081303-3	2	ON	12:17 - 12:22	16.7	22.1	100	347	33,244	15.7	35	549		
081303-5	3	ON	12:16 - 12:19	16.7	22.1	100	352	33,244	15.7	35	549		
~~081303-2~~	~~1~~	~~ON~~	~~13:12 - 13:15~~	~~18.9~~	~~44.2~~	~~100~~	~~300~~	~~33,244~~	~~15.7~~	~~35~~	~~549~~	~~1,224~~	~~12.2~~
~~081303-4~~	~~2~~	~~ON~~	~~13:18 - 13:21~~	~~18.9~~	~~44.2~~	~~100~~	~~406~~	~~33,244~~	~~15.7~~	~~8~~	~~126~~		
081303-6	3	ON	13:12 - 13:16	18.9	44.2	100	281	33,244	15.7	35	549		
DUPLICATE, BLANK AND UPWIND SAMPLES													
081303-7	- 6 dup	ON	13:12 - 13:16	18.9	44.2	100	281	33,244	15.7	25	392	----	----
081303-8	blank	----	13:26 - 13:31	----	----	----	----	----	----	5	----		
081303-9	upwind	----	14:33 - 14:38	----	----	----	----	----	----	5	----		

Notes:

Tons processed on 8/13/03 = 560.

Odor system control efficiency = 1%.

Strikethrough data has been excluded due to suspect laboratory results (081303-4 DT and odor descriptors that do not "match" other vent samples).

All figures are rounded to the nearest tenth.

1.4 Transfer Station #4

Odor sampling was performed at Transfer Station #4 on August 20, 2003 in Jamaica, NY. As noted in Table B.1.4-1, six sets of process odor samples were collected from the Transfer Station's single active exhaust vent. Three sets of process odor samples were collected after the odor control system had been turned off for approximately five hours (operations without odor control). The fourth, fifth and sixth sets of samples were collected after the odor control system had been operational for more than two hours (operations with odor control). Average facial velocities of 200 ft/min, supporting an assumed 100% ventilation system odor capture efficiency, were observed largely for operations without odor control (168 to 327 ft/min) and operations with odor control (152 to 221 ft/min). With these facial velocities, sampling staff did not note any significant fugitive losses just outside the building doors. A duplicate sample (082003-4) was collected at the single vent location (along with Sample 082003-3). A field blank sample (082003-5) was collected at a vent location according to the procedures mentioned in the report. An upwind (background) sample was collected approximately 500 feet south-southwest of the Transfer Station.

Also noted in Table B.1.4-1 are the results of the odor panel analysis (DT – detection threshold multiple) for each sample. For the three sample sets collected during operations without odor control, the DT multiples (and total emission rates) were 6 OU/m^3 (94 OU/sec), 12 OU/m^3 (188 OU/sec) and 30 OU/m^3 (471 OU/sec). For the three sample sets collected during operations with odor control, the DT multiples (and total emission rates) were 22 OU/m^3 (345 OU/sec), 80 OU/m^3 (1,255 OU/sec) and 45 OU/m^3 (706 OU/sec). The waste-storage-based emission factors ([OU/sec]/ton stored) for operations without odor control were 2.69, 6.28 and 15.69. The waste-storage-based emission factors ([OU/sec]/ton stored) for operations with odor control were 20.3, 73.8 and 41.5. *A shipment of horse manure was received at the Transfer Station prior to operations with odor control, yet after sampling without odor control was completed. The horse manure was a large component of the total waste on site. Controlled Transfer Station odor emissions were biased high due to this 'unusual' and relatively odorous delivery. Therefore, a comparison of the controlled and uncontrolled emission factors is inappropriate and has not been provided.*

The program's QA samples suggest no significant sampling media contamination in the field blank with a 5 DT result that is slightly higher than the method detection limit of 4. The upwind sample 6 DT value suggests little or no significant background source interference with the on-site sampling program. Finally, the deviation about the average of the field duplicate samples (results of 22 and 30 OU) was approximately 26 OU ± 4 OU (15%), which is within the typical range of +25%/-20%.

Table B.1.4-1
Sampling Summary and Results
Transfer Station #4
August 20, 2003 Sampling Effort

Sample #	Vent #	Odor Control System	Sampling Time	Waste Delivered (tons/hour)	Waste Transferred (tons/hour)	Waste Stored (tons)	Average Facial Velocity (ft/min)	Design Flow Rate (cfm)	Design Flow Rate (m^3/sec)	DT (OU/m^3)	Source Emission Rate (OU/sec)	Transfer Station Emission Rate (OU/sec)	Emission Factor ([OU/sec]/ ton stored)
OPERATIONS WITHOUT ODOR CONTROL													
082003 - 1	1	OFF	10:52 - 10:55	16.3	0.0	35	168	33,244	15.7	6	94	94	2.7
082003 - 2	1	OFF	11:21 - 11:24	0.6	0.0	30	327	33,244	15.7	12	188	188	6.3
082003 - 3	1	OFF	11:26 - 11:31	0.6	0.0	30	256	33,244	15.7	30	471	471	15.7
OPERATIONS WITH ODOR CONTROL													
082003 - 7	1	ON	13:38 - 13:43	0	0	17	221	33,244	15.7	22	345	345	20.3
082003 - 8	1	ON	13:44 - 13:49	0	0	17	152	33,244	15.7	80	1,255	1,255	73.8
082003 - 9	1	ON	13:50 - 13:53	0	0	17	172	33,244	15.7	45	706	706	41.5
DUPLICATE, BLANK AND UPWIND SAMPLES													
082003 - 4	- 3 dup	OFF	11:26 - 11:31	0.6	0	30	256	33,244	15.7	22	345	----	----
082003 - 5	blank	----	11:49 - 11:52	----	----	----	----	----	----	5	----	----	----
082003 - 6	upwind	----	12:01 - 12:05	----	----	----	----	----	----	6	----	----	----

Notes:
Tons processed on 8/20/03 = 159.
Odor system control efficiency = A shipment of horse manure was delivered during operations with odor control, which resulted in a significant increase of odor emissions over standard waste emissions observed during operations without odor control. Evaluating the odor system's control efficiency with significantly different wastes is inappropriate.
All figures are rounded to the nearest tenth.