FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE CROTON WATER TREATMENT PLANT AT THE HARLEM RIVER SITE

7.9. TRAFFIC AND TRANSPORTATION 1
7.9.1. Introduction 1
7.9.2. Baseline Conditions 1
7.9.2.1. Existing Conditions 1
7.9.2.2. Future Without the Project 12
7.9.3. Potential Impacts 26
7.9.3.1 Potential Project Impacts 26
7.9.3.2. Potential Construction Impacts 35

FIGURE 7.9-1. TRAFFIC COUNT STUDY LOCATIONS FOR HARLEM RIVER SITE 2
FIGURE 7.9-2. HARLEM RIVER SITE 2002 EXISTING TRAFFIC VOLUMES – AM/PM HOUR 5
FIGURE 7.9-3. HARLEM RIVER SITE 2009 FUTURE WITHOUT THE PROJECT TRAFFIC VOLUME – AM/PM HOUR 14
FIGURE 7.9-4. HARLEM RIVER SITE 2011 FUTURE WITHOUT THE PROJECT TRAFFIC VOLUME – AM/PM HOUR 15
FIGURE 7.9-5. HARLEM RIVER SITE OPERATIONAL TRAFFIC DISTRIBUTION – AM/PM HOUR 28
FIGURE 7.9-6. HARLEM RIVER SITE OPERATIONAL YEAR 2011 TRAFFIC VOLUME – AM/PM HOUR 29
FIGURE 7.9-7. HARLEM RIVER SITE CONSTRUCTION TRAFFIC DISTRIBUTION – AM/PM HOUR 38
FIGURE 7.9-8. HARLEM RIVER SITE CONSTRUCTION YEAR 2009 TRAFFIC VOLUME –AM/PM HOUR 39

TABLE 7.9-1. 2002 EXISTING TRAFFIC CONDITIONS 6
TABLE 7.9-2. INVENTORY OF ACCIDENTS (5/01/98 to 4/30/01) 11
TABLE 7.9-3. HARLEM RIVER PARKING 13
TABLE 7.9-4. 2009 FUTURE WITHOUT THE PROJECT CONDITIONS 18
TABLE 7.9-5. 2011 FUTURE WITHOUT THE PROJECT CONDITIONS 22
TABLE 7.9-6. WATER TREATMENT PLANT STAFFING 26
TABLE 7.9-7. WATER TREATMENT PLANT OPERATION TRUCK DELIVERIES 26
TABLE 7.9-8. VEHICULAR TRIP FORECAST 27
TABLE 7.9-9. 2011 FUTURE WITH PROJECT CONDITIONS FOR THE HARLEM RIVER SITE 31
TABLE 7.9-10. CONSTRUCTION RESOURCE REQUIREMENTS 36
TABLE 7.9-11. CONSTRUCTION TRIP GENERATION 36
TABLE 7.9-12. CONSTRUCTION TRANSIT GENERATION 36
TABLE 7.9-13. 2009 POTENTIAL CONSTRUCTION IMPACTS 40

7.9. TRAFFIC AND TRANSPORTATION

7.9.1. Introduction

This section examines the potential operational and construction impacts on the nearby transportation system due to the Croton Water Treatment Plant (WTP) at the Harlem River Site. The existing operating conditions of the nearby transportation system, including traffic, parking, pedestrian safety and transit are presented. The study areas were established based upon anticipated volumes, logical traffic routes, and potentially problematic areas. The methodology used to prepare this analysis is presented in Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation.

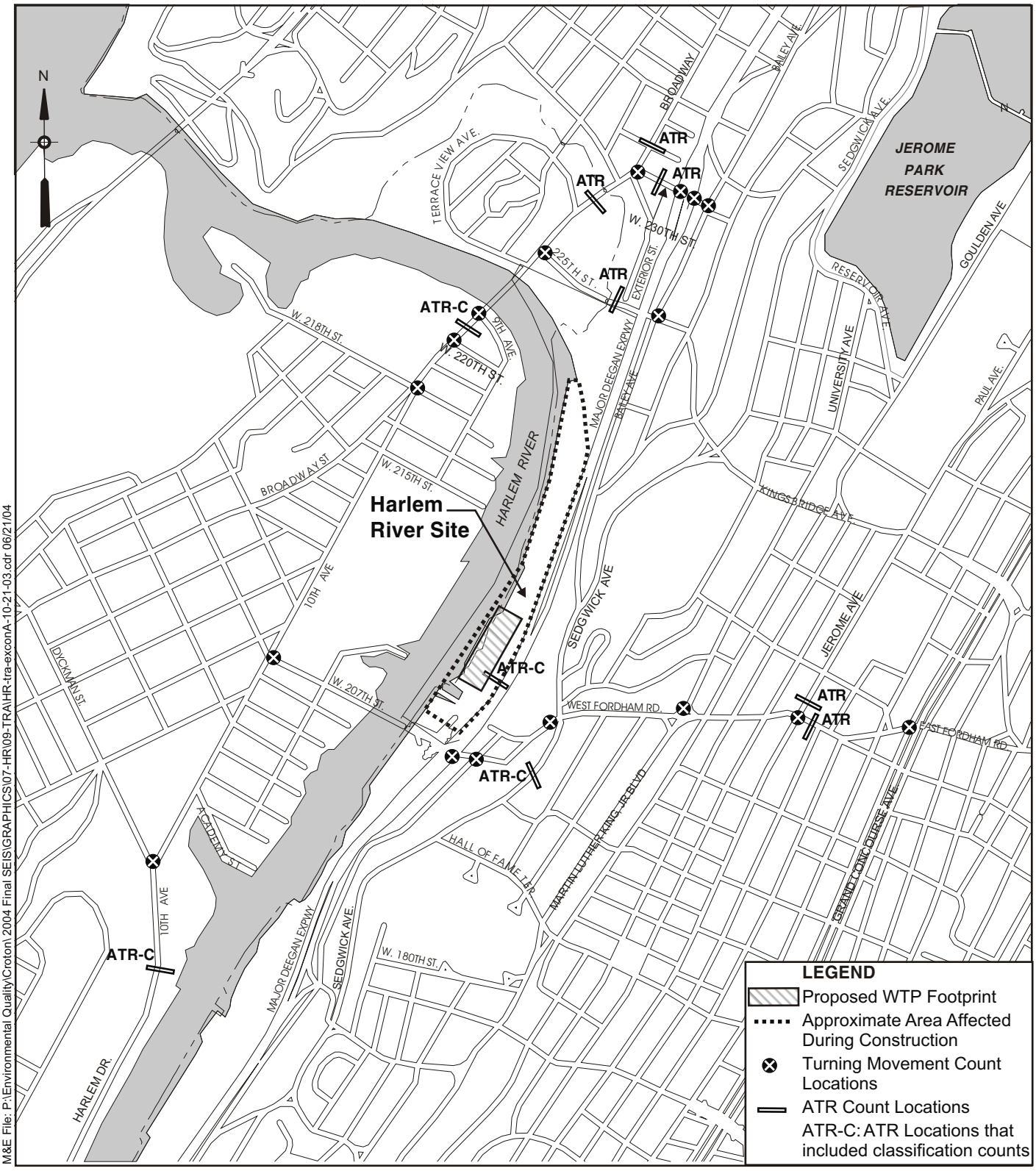
7.9.2. Baseline Conditions

7.9.2.1. Existing Conditions

7.9.2.1.1. Traffic Study Area

The Harlem River Site is located along the Harlem River in the Borough of the Bronx, New York. The study area for this water treatment plant site was selected to encompass those roadways most likely to be used by the majority of vehicular traffic traveling to and from the water treatment plant site. The study area is bounded by West 230th Street to the north, Dyckman Street to the south, Grand Concourse Boulevard to the east, and 10th Avenue in Manhattan to the west. The traffic study area for the Harlem River Site is presented in Figure 7.9-1. The use of barges is anticipated for the purpose of removing the excavated soil from the water treatment plant site and bringing in construction materials, as a means of reducing vehicular traffic on area roadways. Spuyten Duyvil and Broadway bridges would need to be opened to allow barge movement through. The impact of opening these bridges will be analyzed as part of this chapter.

The main roadway providing access to the Harlem River Site is I-87 (Major Deegan Expressway). The principal traffic corridor providing the most direct link between the I-87 and the Harlem River Site is West Fordham Road. This corridor is heavily traveled under current traffic conditions. Other routes, such as Sedgwick Avenue to Fordham Road, also serve as access routes to the water treatment plant site. The northern access to the site would be via West 230th Street at I-87 traveling south to West Fordham Road. The southern access would be at West Fordham Road between the University Heights Bridge and I-87.



Traffic Count Study Locations for Harlem River Site

Croton Water Treatment Plant

Figure 7.9-1

The Major Deegan Expressway (Major Deegan) (I-87) is a major north-south arterial highway that provides connections south to Manhattan and to New Jersey and Connecticut via I-95. Northern New York is also accessible from the Major Deegan. Interchanges in the vicinity to local roadways include West Fordham Road and West 230th Street. In the vicinity of these interchanges, the Major Deegan consists of three travel lanes in each direction divided by a concrete barrier median. Currently, the expressway experiences significant delays during rush hour times at the interchanges including the High Bridge interchange. This section of the Major Deegan is currently being reviewed by the New York State Department of Transportation (NYSDOT) for improvement alternatives under the "Bronx Arterial Needs Major Improvement Study".

West Fordham Road is an east-west connector between the Major Deegan and the Grand Concourse Avenue in the Bronx. Access to the Harlem River Site is from an existing ramp off of West Fordham Road adjacent to the Major Deegan interchange. Connections to Manhattan and Broadway Street are made across the University Heights Bridge and West 207th Street.

7.9.2.1.2. Traffic Conditions and Analysis

Traffic counts were collected during June 2002 and September/October 2002. The counts documented traffic conditions on key study area roadways and intersections. The data collection included manual turning movement counts (TMC), automatic traffic recorders (ATR), vehicle classification counts, and travel speed runs along principal corridors. Below is a list of intersections where turning movement counts were performed:

Turning Movement Count Locations:

- West 230th Street and Broadway
- West 230th Street and Major Deegan Expressway (I-87) Southbound Ramps
- West 230th Street and Major Deegan Expressway (I-87) Northbound Ramps
- West 230th Street and Bailey Avenue
- West 225th Street and Broadway
- West 225th Street/Kingsbridge Road West and Bailey Avenue
- West 218th Street and Broadway/10th Avenue
- West 207th Street and 10th Avenue
- Dyckman Street and 10th Avenue/Harlem River Drive
- West Fordham Road and Major Deegan Expressway (I-87) Southbound Ramps
- West Fordham Road and Major Deegan Expressway (I-87) Northbound Ramps
- West Fordham Road and Sedgwick Avenue
- West Fordham Road and Doctor Martin Luther King, Jr. Boulevard
- West Fordham Road and Jerome Avenue
- West Fordham Road and Grand Concourse Boulevard
- West 220th Street and Broadway
- 9th Avenue and Broadway

The TMC at the above listed intersections were conducted on mid-weekdays (Tuesday to Thursday) from 7AM to 10AM and from 2PM to 6PM to capture the morning and afternoon peak hours.

In addition to TMC, ATR counts were performed for a 24-hour period for seven days at the following locations:

ATR Count Locations:

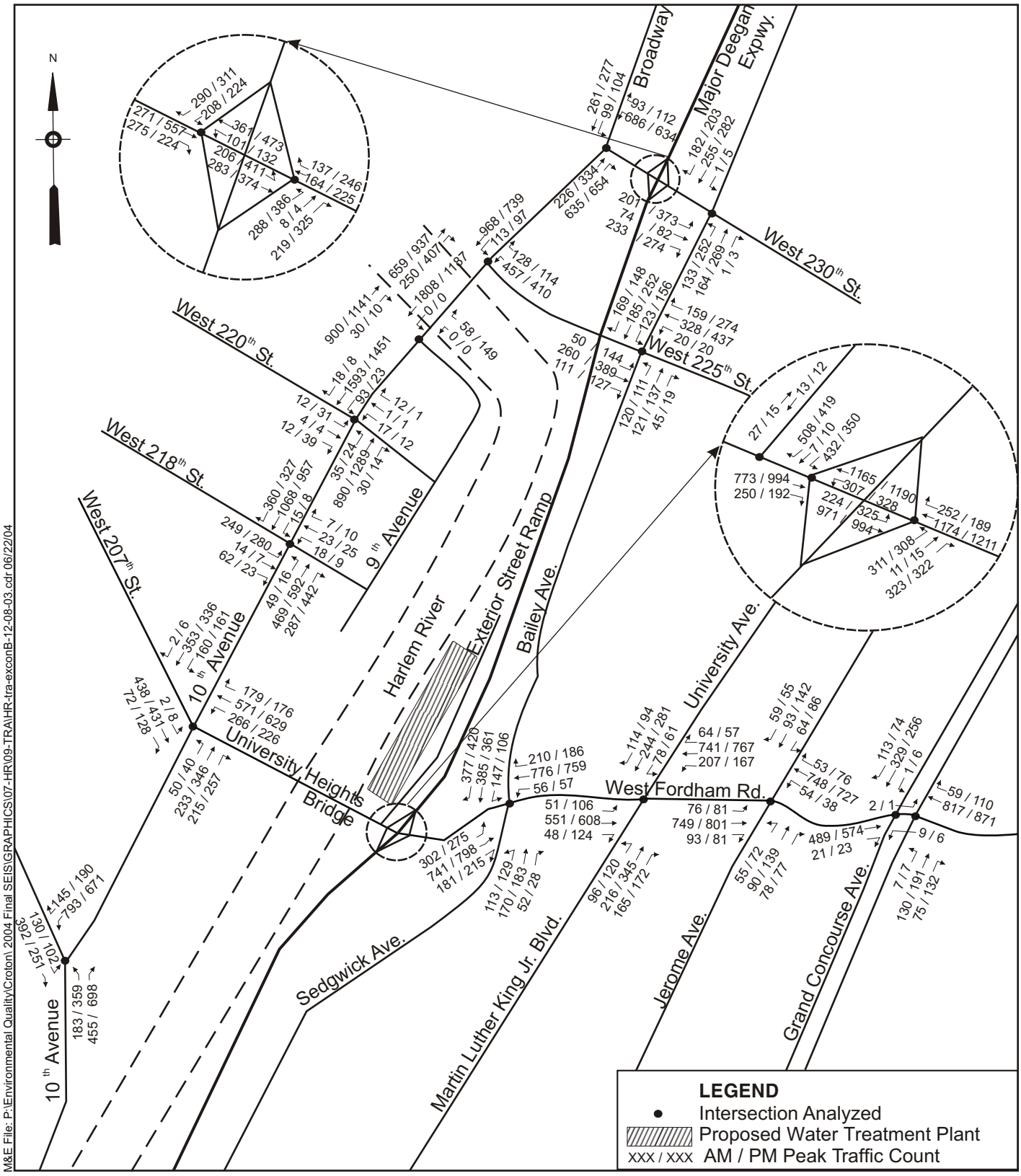
- Harlem River Drive – 2000 feet south of 10th Avenue
- Exterior Street Ramp – North of West Fordham Road
- Sedgwick Avenue – South of West Fordham Road
- Jerome Avenue – North of West Fordham Road
- East Fordham Road – East of Jerome Avenue
- 230th Street – East of Exterior Street
- Broadway (Route 9A) – North of 230th Street
- Broadway (Route 9A) – North of West 228th Street
- 225th Street – East of Broadway
- Broadway (Route 9A) – North of 220th Street before bridge

The vehicle classification counts were performed for 24-hour periods during the weekday and weekend. These hours, as well as the hours for which the TMC were performed, were chosen as representative of the periods of heaviest traffic volumes during the potential construction period. It has been assumed that construction would typically commence at 7AM and finish no later than 6PM.

To develop year 2002 traffic volumes for the study intersections, the traffic volumes from the TMC were factored utilizing adjacent ATR counts. The resultant intersection turning movement volumes represent an average mid-weekday volume. There are several possible factors including other intersecting roads and residential and commercial entrances between study intersections, different count days, and counts performed in spring versus fall that may contribute to intersection imbalances since the study intersections represent only a portion of the roadway networks in the study area. The year 2002 traffic volumes for the AM and PM peak hours are illustrated in Figure 7.9-2.

A review of the manual count data and the 24-hour ATR data indicated that traffic in the area exhibits some typical commuter characteristics. Traffic volumes increase from the early morning hours and peak between 8AM and 9AM. Traffic decreases only slightly in the midday periods until the evening peak between 5PM and 6PM.

As noted above, each study area intersection was analyzed in terms of its capacity to accommodate existing traffic volumes and its resulting Level of Service (LOS) using the Highway Capacity Manual procedures. A summary of findings is presented in Table 7.9-1 with the key findings discussed below. See Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation for the procedural details.



Not To Scale

Harlem River Site
2002 Existing Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 7.9-2

TABLE 7.9-1. 2002 EXISTING TRAFFIC CONDITIONS FOR THE HARLEM RIVER

SIGNALIZED INTERSECTIONS	LANE GROUP	EXISTING CONDITIONS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 230th Street (E-W) at Broadway Avenue (N-S)	WB – L	0.80	38.0	D	0.78	36.5	D
	WB – R	0.21	26.0	C	0.25	26.4	C
	NB - TR	0.63	18.5	B	0.71	20.2	C
	SB – LT	0.36	18.6	B	0.40	19.4	B
	Intersection		**25.5**	**C**		**25.3**	**C**
W. 230th Street (E-W) at I-87 SB Ramp (N-S)	EB – TR	0.39	14.8	B	0.49	15.9	B
	WB – LT	0.37	9.5	A	0.47	10.7	B
	SB – LTR	1.02	78.0	E	1.05	86.5	F
	Intersection		**34.1**	**C**		**33.9**	**C**
W. 230th Street (E-W) at I-87 NB Ramp (N-S)	EB – L	0.37	9.9	A	0.91	43.6	D
	EB – T	0.27	8.8	A	0.39	10.0	B
	WB – TR	0.21	13.3	B	0.33	14.5	B
	NB – LTR	0.70	34.7	C	0.96	54.9	D
	Intersection		**20.2**	**C**		**34.4**	**C**
W. 230th Street (E-W) at Bailey Avenue (N-W) Kingsbridge Road W	EB – LTR	0.28	8.6	A	0.37	9.3	A
	NB – LTR	0.47	39.4	D	0.72	82.6	F
	SB – LTR	0.54	30.1	C	0.57	30.5	C
	Intersection		**23.6**	**C**		**37.3**	**D**
W. 225th Street (E-W) at Broadway Avenue (N-W)	WB – L	0.78	35.3	D	0.76	33.8	C
	WB – R	0.29	22.4	C	0.25	21.7	C
	NB – TR	0.54	22.5	C	0.85	30.5	C
	SB – LT	0.62	16.3	B	0.49	15.1	B
	Intersection		**22.2**	**C**		**25.8**	**C**
W. 225th Street (E-W) at Bailey Avenue (N - S)	EB – L	0.15	14.0	B	0.45	20.6	C
	EB – TR	0.23	14.2	B	0.29	14.9	B
	WB – L	0.05	12.6	B	0.05	12.7	B
	WB – TR	0.33	15.4	B	0.40	16.2	B
	NB – TR	0.40	34.8	C	0.30	31.1	C
	SB – LTR	0.55	32.5	C	0.58	33.0	C
	Intersection		**23.2**	**C**		**22.2**	**C**
W. 218th Street (E-W) at Broadway/ 10th Ave	EB – LTR	0.85	48.6	D	0.74	39.9	D
	WB – LTR	0.11	23.9	C	0.09	23.7	C
	NB – LTR	0.45	10.6	B	0.44	10.3	B
	SB – LTR	0.89	22.6	C	0.73	15.3	B
	Intersection		**22.2**	**C**		**16.3**	**B**

TABLE 7.9-1. 2002 EXISTING TRAFFIC CONDITIONS FOR THE HARLEM RIVER

SIGNALIZED INTERSECTIONS	LANE GROUP	EXISTING CONDITIONS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 207th Street (E-W) at 10th Avenue (N-S)	EB – LTR	0.40	20.8	C	0.44	21.3	C
	WB - LTR	1.04	68.6	E	1.03	63.9	E
	NB – LTR	0.62	19.8	B	0.74	23.5	C
	SB – LTR	0.80	28.9	C	0.90	40.5	D
	Intersection		**41.3**	**D**		**41.3**	**D**
Dyckman Street at 10th Ave / Harlem River Drive	EB – L	0.91	94.7	F	0.71	64.8	E
	EB – R	0.60	33.4	C	0.38	29.1	C
	NB – LT	0.50	15.5	B	0.83	33.1	C
	SB – T	0.64	25.4	C	0.55	23.8	C
	SB – R	0.24	15.3	B	0.29	15.9	B
	Intersection		**27.5**	**C**		**29.9**	**C**
W. Fordham Road (E-W) at I-87 SB Off Ramp	EB – TR	0.81	30.2	C	0.83	37.1	D
	WB – L	0.70	36.5	D	0.71	46.1	D
	WB – LT	0.63	12.8	B	0.62	12.9	B
	SB – LT	0.94	60.4	E	0.80	56.4	E
	SB – R	1.03	83.6	F	0.99	89.9	F
	Intersection		**35.9**	**D**		**37.4**	**D**
W. Fordham Road (E-W) at I-87 NB Off Ramp	EB – L	0.73	29.2	C	1.01	78.0	E
	EB – T	0.50	10.6	B	0.48	15.3	B
	WB – T	0.58	19.8	B	0.52	24.0	C
	WB – R	0.41	18.9	B	0.26	20.9	C
	NB – L	0.76	41.4	D	0.53	35.9	D
	NB – TR	0.80	43.9	D	0.58	37.3	D
	Intersection		**22.2**	**C**		**28.9**	**C**
W. Fordham Road at Sedgwick Avenue (N-S)	EB – L	0.97	63.9	E	0.88	45.8	D
	EB – TR	0.55	19.1	B	0.59	19.9	B
	WB – LT	0.78	35.6	D	0.80	36.9	D
	WB – R	0.39	26.3	C	0.33	25.2	C
	NB – LTR	0.93	67.9	E	0.90	60.7	E
	SB – LT	0.52	31.0	C	0.45	29.5	C
	SB – R	0.72	40.3	D	0.80	44.8	D
	Intersection		**36.0**	**D**		**34.3**	**C**

TABLE 7.9-1. 2002 EXISTING TRAFFIC CONDITIONS FOR THE HARLEM RIVER

SIGNALIZED INTERSECTIONS	LANE GROUP	EXISTING CONDITIONS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. Fordham Road (E-W) at Dr. Martin Luther King Blvd. (N-S)	EB – L	0.17	14.9	B	0.32	17.0	B
	EB – TR	0.45	24.0	C	0.53	25.5	C
	WB – L	0.49	17.9	B	0.47	18.7	B
	WB – TR	0.58	26.5	C	0.60	26.9	C
	NB – LTR	0.67	37.5	D	0.86	48.0	D
	SB – LTR	0.59	35.0	D	0.59	35.0	C
	Intersection		**28.5**	**C**		**31.6**	**C**
W. Fordham Road (E-W) at Jerome Avenue (N-S)	EB – LTR	0.63	17.0	B	0.66	17.5	B
	WB – LTR	0.53	14.9	B	0.51	14.3	B
	NB – LTR	0.56	40.0	D	0.74	48.7	D
	SB – LTR	0.57	40.7	D	0.78	52.8	D
	Intersection		**20.8**	**C**		**24.4**	**C**
W. Fordham Road (E-W) at Grand Concourse (N-S)	EB – TR	0.24	7.1	A	0.30	7.6	A
	WB – TR	0.41	8.6	A	0.50	9.5	A
	NB – LTR	0.35	40.6	D	0.57	45.1	D
	SB – LTR	0.67	47.6	D	0.57	45.0	D
	Intersection		**19.9**	**B**		**19.5**	**B**
W. 220th Street (E-W) at Broadway (N-S)	EB – LTR	0.07	24.3	C	0.18	25.6	C
	WB – LTR	0.08	24.4	C	0.03	23.8	C
	NB – LTR	0.48	10.2	B	0.50	10.5	B
	SB – LTR	0.84	17.7	B	0.56	11.1	B
	Intersection		**15.2**	**B**		**11.3**	**B**

TABLE 7.9-1. 2002 EXISTING TRAFFIC CONDITIONS FOR THE HARLEM RIVER

UNSIGNALIZED INTERSECTIONS	LANE GROUP	EXISTING CONDITIONS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
9th Avenue (E-W) at Broadway (N-S)	WB-R	0.12	13.3	B	0.34	17.1	C

ABBREVIATIONS:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway
V/C Ratio - Volume to Capacity Ratio
SEC/VEH - Seconds per Vehicle
LOS - Level of Service

Currently, 16 of the 16 signalized intersections in the study area operate at an overall acceptable LOS D or better in both peak hours, although some individual approaches and movements are worse. For many of the intersections that operate at overall unacceptable levels of service, there are insufficient green times to process existing traffic demands. Such disproportions can be easily remedied by shifting a modest amount of time from one approach that has unused green time to another that is congested. Other intersections experience significant existing delays due to high traffic volumes that are not as easily remedied. The one unsignalized intersection in the study area operates at acceptable levels of service in both peak hours.

The West 207th Street at 10th Avenue intersection experiences marginally acceptable LOS D conditions during both the AM and PM peak hours. This is due to the westbound approach of 207th Street, which carries high levels of traffic from the University Heights Bridge and the West Fordham interchange with the Major Deegan.

The intersection of West Fordham Road and the Major Deegan Southbound Off Ramp experiences marginally acceptable LOS D during the AM and PM peaks. The southbound right-turning traffic from the Major Deegan to West Fordham Road operates at LOS F conditions during both peak hours. In addition, the southbound left and through movements operate at LOS E during both peak hours. This traffic congestion condition is compounded by the close proximity of the two interchange intersections, the ramp to Exterior Street, and the University Heights Bridge that minimizes capacity and storage available for vehicles at this intersection.

The intersection of West Fordham Road and Sedgwick Avenue experiences marginally acceptable LOS D during the AM peak hour. The intersection operates at an LOS C during the PM peak hour.

The intersection of W. 230th Street at Bailey Avenue experiences marginally acceptable LOS D during the PM peak hour. The intersection operates at an LOS C during the AM peak hour.

7.9.2.1.3. Safety

Accident data information was obtained from the period from 5/01/98 to 4/30/01. Table 7.9-2 summarizes the accident data. Within the study area there were a total of 539 reportable accidents between 5/01/98 and 4/30/01, of which one involved a fatality, 427 involved injuries, and 111 were property damage only.

TABLE 7.9-2. HARLEM RIVER SITE INVENTORY OF ACCIDENTS (5/01/98 to 4/30/01)

Intersection	Total # of Reportable Accidents[1]	Total # of FTL	Total # of INJ	Total # of PDO
West 230th Street and Broadway	39	0	25	14
West 230th Street and I-87 Ramps	7	0	2	5
West 230th Street and Bailey Ave	10	0	7	3
West 225th Street and Broadway	4	0	4	0
West 225th Street/Kingsbridge Road West and Bailey Ave.	31	1	23	7
Broadway and 10th Avenue/West 218th St.	20	0	18	2
10th Avenue and West 207th Street	10	0	8	2
10th Avenue and Harlem River Drive	43	0	38	5
West Fordham Road and I-87 SB Ramps	0	0	0	0
West Fordham Road and I-87 NB Ramps	0	0	0	0
West Fordham Road and Sedgwick Ave.	105	0	90	15
West Fordham Road and Dr. Martin Luther King Jr. Blvd	76	0	64	12
West Fordham Road and Jerome Avenue	123	0	95	28
West Fordham Road and Grand Concourse	71	0	53	18

NOTES:

1.Reportable accidents consist of all fatal, injury or property damage accidents that exceed NYS criteria for minimum damage.

Source:

New York Department of Transportation

ABBREVIATION:

FTL – Accidents with a fatality

INJ – Accidents with personal injury

PDO – Property Damage Only Accidents

7.9.2.1.4. Parking

Parking availability in the study area consists of curbside parking and restricted off-street parking lots for residential, commercial, and industrial developments. In the immediate vicinity of the water treatment plant site there is limited curbside parking available because of the presence of the I-87 (Major Deegan Expressway) interchange with West Fordham Road. As such, only on some side streets, such as Cedar Avenue off West Fordham Road is there curbside parking in the vicinity of the water treatment plant site. Off-street parking facilities in the vicinity of the project site are described in Table 7.9-3.

7.9.2.1.5. Transit

Access to the Harlem River Site from mass transit is available through three different modes. The Metro-North Railroad Hudson Line's University Heights Station is located just south of West Fordham Road at the Major Deegan. Bus services include one New York City Transit (NYC Transit) route (Bx12). The Bx12 travels along 207th Street in Manhattan across the University Heights Bridge and along Fordham Road in the Borough of the Bronx. This bus line offers both local and limited stop service. The line connects two Metropolitan Transit Authority (MTA) subway lines to the water treatment plant site. The Interborough Rapid Transit (IRT) No. 4 Subway line's Fordham Rd. stop in the Bronx and the No. 1 & 9 and the A subway line's 207th Street stops in Manhattan are located along the Bx12 route.

7.9.2.2. Future Without the Project

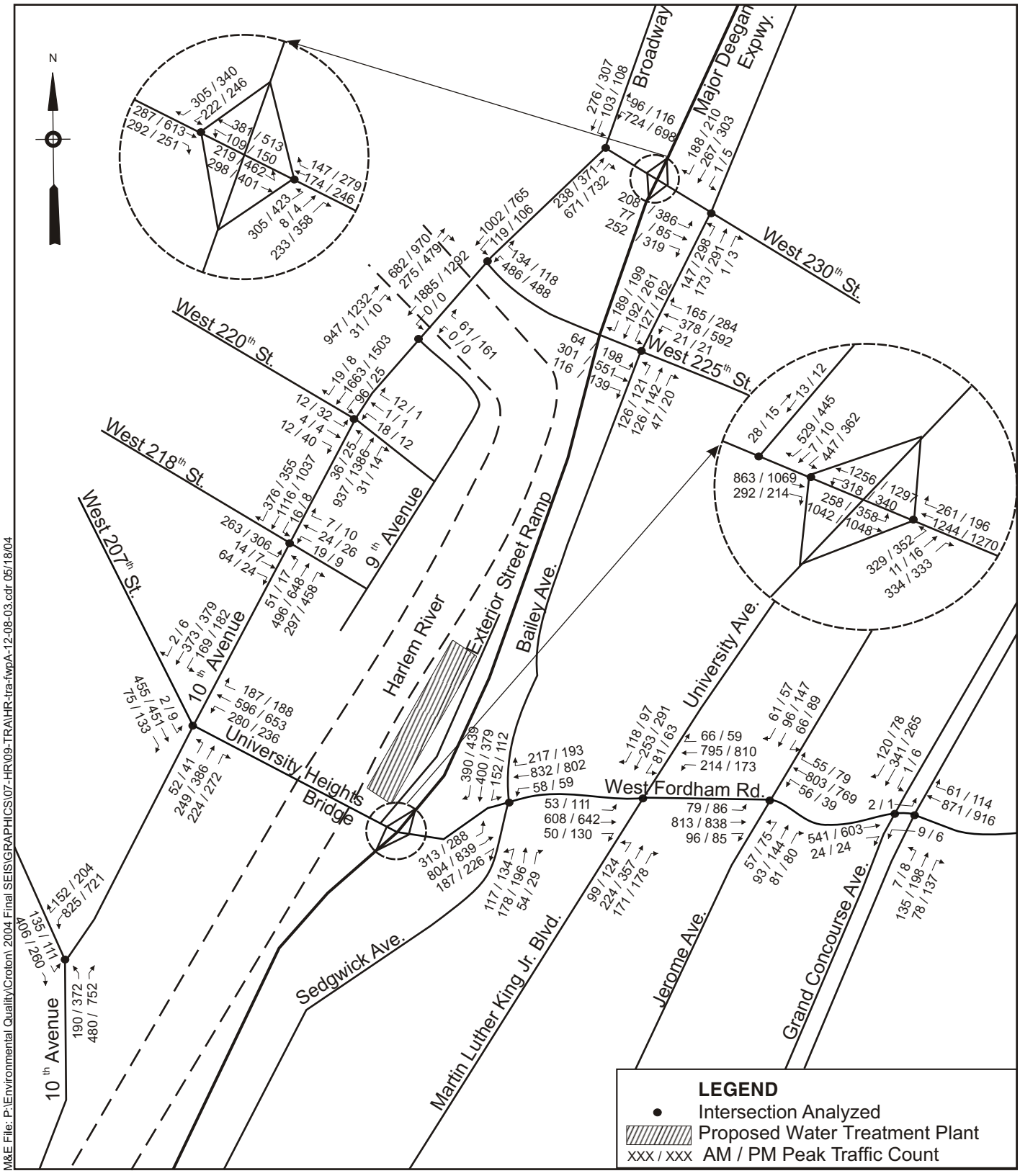
The Future Without the Project considerations include the anticipated year of peak construction activities (2009) and the anticipated year of operation (2011) for the proposed plant. The traffic growth would arise from anticipated site developments as well as from general background traffic growth in the study area. To account for potential general traffic increases in the Bronx area, an annual growth rate of 0.5 percent per year was applied to the 2002 Existing Traffic Volumes. Figures 7.9-3 and 7.9-4 show the turning movements anticipated for the study intersections in 2009 and 2011, respectively.

There are two proposed site developments in the study area that may occur during the time frame of the proposed project. The first is the River Plaza Shopping Center that is currently under construction and located on the south side of West 225th Street across from Exterior Street in the Bronx. This development project would include 211,700 sq. ft. of retail space. The second is Fordham Landing, which is a proposed 500 housing unit residential development with convenience store space located just south of West Fordham Road next to the Harlem River.

Due to the size of these developments, there could be potential significant adverse impacts along both West 225th Street and West Fordham Road. Assuming that the developments would be finished by the peak construction year (2009) of the proposed project, mitigation measures recommended within these development plans would be implemented as part of the Future Without the Project conditions. Mitigation measures that were proposed, however, would not affect any of the study intersections for the proposed project.

TABLE 7.9-3. 2008 EXISTING PARKING FOR HARLEM RIVER SITE

#	NAME	LOCATION	SPACES	USAGE	NOTES
(Manhattan)					
1	Pathmark	9th & W. 206th	121	Approximately 30 cars parked in lot. Approximately 80 spaces available.	Sign stating "Pathmark customers only parking 3hrs limit" Additional parking may be available on roof
2	24 hr. parking	9th & 204th	120	Completely full, no spaces available	Lot to the east
3	24 hr. parking	9th & 204th	75	Completely full, no spaces available	Lot in the middle of the block
4	207 Bridge Parking	9th & 207th	95	Approximately 50 spaces available	Sign says 95 spots, lot actually looks larger. Several vehicles inside but not completely full.
5	street parking	along adjacent streets			
(Bronx)					
6	parking lot	Fordham & Landing	45-60	Approximately 30 spaces available	auto repair shop with parking
7	City of NY garage	Jerome & E. 190th 2478 Jerome Avenue	410	150-200 spaces available	7 stories, no commercial traffic. $1.25/hr, $0.75 add'l hrs.
8	US Veterans Medical Center	Kingsbridge & Sedgewick	more than 350	very full, no spaces available	several lots on property, mostly full, several employee lots, didn't count all spots
9	24 hr parking	Sedgewick & Bailey	n/a	n/a	212-221-6111 - Fordham hill area
10	Lehman College	along Goulden Avenue	900	empty, school not in session	Faculty lot - 300, Student lot - 500, metered - 200, by harris park - street parking, no meter, no parking westside Monday & Thursday, no parking eastside Tuesday & Friday
11	NYCT shop - home of the 4	Paul Ave & Mosholu Pkwy	n/a	inaccessible	parking garage, probably for nyct workers
12	Bronx Community College	University Avenue & Hall of Fame Terrace	200	empty, school not in session	25 - visitors area, 60 - on campus lot, 115 - sutdent parking lot right outside of campus gates, usually have to swipe a card to get in, guard booth there, empty b/c of school not in session. Visitors/campus lot, also have to go through guard gate, person there, not card swipe.
13	Jimmy's Bronx Café	Cedar Avenue & Landing Road	50	Empty, 50 spaces available	Empty lot with sign in front of driveway stating Private Parking For Jimmy's (valet)



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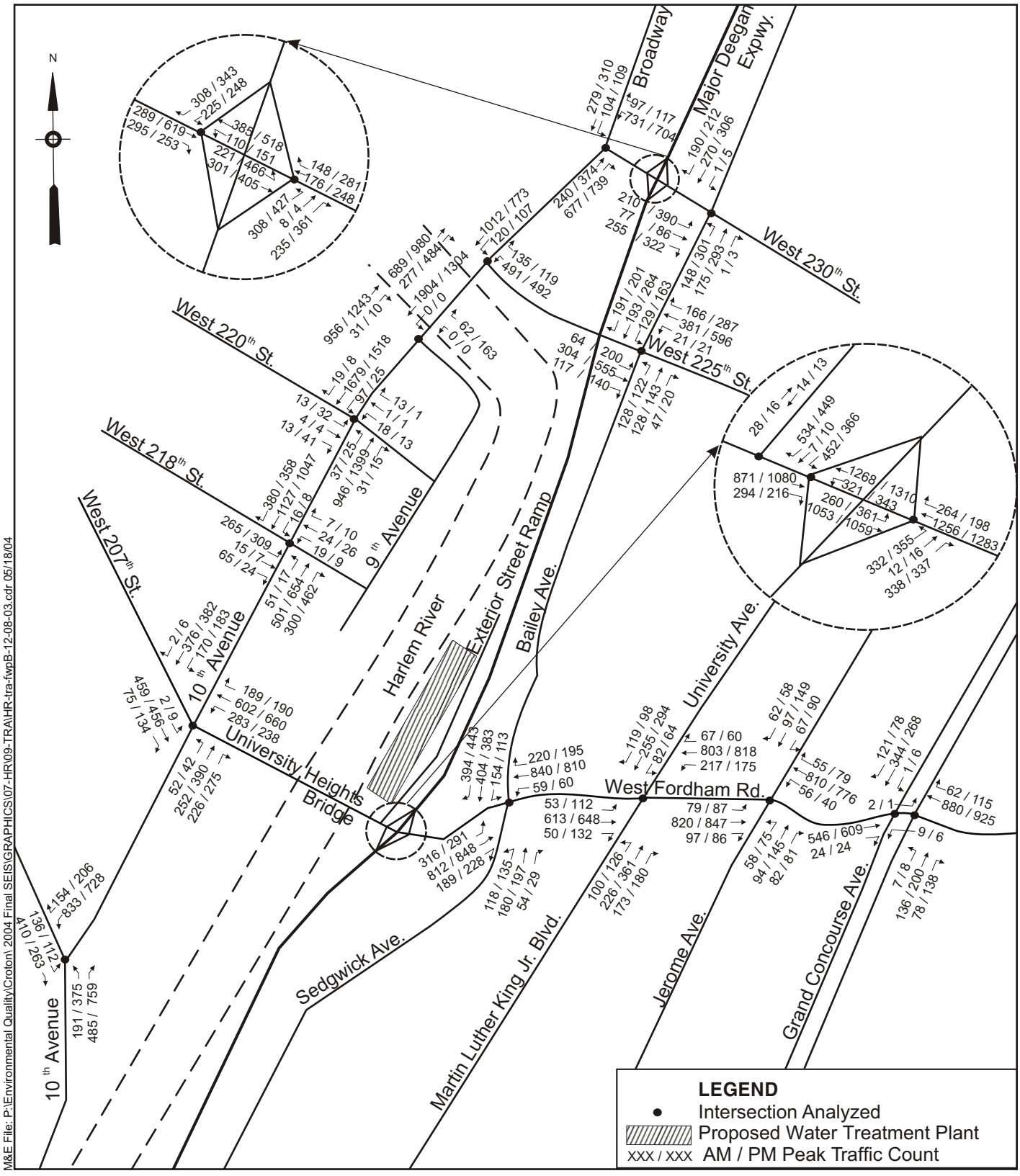
Not To Scale

Harlem River Site
2009 Future Without the Project
Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 7.9-3



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Not To Scale

Harlem River Site
2011 Future Without the Project
Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 7.9-4

The traffic volumes due to these proposed site developments and background growth would result in increased congestion in the study area. Results of the 2009 analysis are presented in Table 7.9-4 and the 2011 analysis are presented in Table 7.9-5. In the 2009 and 2011 analysis years, seven signalized intersections would experience increased LOS overall conditions for the AM and/or PM peak hours. These intersections are as follows:

1. West 230th Street and Major Deegan Expressway (I-87) Southbound Ramps
2. West 230th Street and Major Deegan Expressway (I-87) Northbound Ramps
3. W. 230th Street and Bailey Avenue/Kingsbridge Road
4. West 207th Street and 10th Avenue
5. Dyckman Street at 10th Avenue/Harlem River Drive – 2011 only
6. West Fordham Road and Major Deegan Expressway (I-87) Northbound Ramps – 2011 only
7. West Fordham Road and Sedgwick Avenue

All seven intersections listed above would have increased overall congestion (or worse LOS) from the 2002 Existing Conditions to the 2009 and/or 2011 Future Without the Project conditions in the AM and/or PM peak hours. All of the intersections listed above previously operated at an overall marginally acceptable LOS D or better in both peak hours. All other study intersections in this area would continue to experience acceptable levels of service in the future analysis years. These intersections and their relative operations are described below.

Under the 2009 and 2011 Future Without the Project conditions, the intersection of West 230th Street and the Major Deegan (I-87) Southbound Ramp would have increased overall congestion from the 2002 Existing Conditions. The AM peak hour conditions would change from LOS C to marginally acceptable LOS D. In the PM peak hour, the intersection would experience LOS D conditions in the future analysis years, downgraded from acceptable LOS C in the 2002 Existing Conditions.

Under the 2009 and 2011 Future Without the Project conditions, the intersection of West 230th Street and the Major Deegan (I-87) Northbound Ramp would have increased overall congestion from the 2002 Existing Conditions. The intersection would operate at acceptable LOS C in the AM peak hour in the future analysis years. In the PM peak hour, however, the intersection operations would change from LOS C conditions to marginally unacceptable LOS D in 2009 and LOS E in 2011.

Under the 2009 and 2011 Future Without the Project conditions, the W. 230th Street and Bailey Avenue intersection would have increased overall congestion from the 2002 Existing Conditions. The intersection would experience LOS E conditions in both the PM peak hours in the future analysis years, downgraded from marginally acceptable LOS D in the 2002 Existing Conditions. The intersection would continue to operate at an LOS C during the AM peak hour.

Under the 2009 and 2011 Future Without the Project conditions, the West 207th Street and 10th Avenue intersection would have increased overall congestion from the 2002 Existing Conditions. In the future analysis years, the intersection would experience marginally unacceptable LOS D

and LOS E conditions in both the AM and PM peak hours, respectively, downgraded from marginally acceptable LOS D in the 2002 Existing Conditions.

Under the 2011 Future Without the Project conditions, the Dyckman Street and 10th Avenue/Harlem River Drive intersection would have increased overall congestion from the 2002 Existing Conditions. In the future analysis year, the intersection would experience marginally acceptable LOS D conditions during the PM peak hour, downgraded from LOS C in the 2002 Existing Conditions. The intersection would continue to operate at an LOS C during the AM peak hour in 2011, as well as the AM and PM peak hours in 2009.

Under the 2011 Future Without the Project conditions, the intersection of West Fordham Road and the Major Deegan (I-87) Northbound Ramp would have increased overall congestion from the 2002 Existing Conditions. In the PM peak hour, the overall LOS would degrade from acceptable LOS C to marginally acceptable LOS D. In the AM peak hour, the intersection would continue to experience acceptable LOS C for both future analysis years.

Under the 2009 and 2011 Future Without the Project conditions, the West Fordham Road at Sedgwick Avenue intersection would have increased overall congestion from the 2002 Existing Conditions. In the AM peak hour, the intersection would continue to operate at a marginally acceptable LOS D in 2009 and 2011. In the PM peak hour, the overall LOS would be reduced from acceptable LOS C to marginally acceptable LOS D in 2009 and 2011.

TABLE 7.9-4. 2009 FUTURE WITHOUT THE PROJECT CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2009 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 230th Street (E-W) at Broadway Avenue (N-S)	WB – L	0.85	40.8	D	0.86	41.1	D
	WB – R	0.22	26.1	C	0.26	26.5	C
	NB - TR	0.66	19.2	B	0.79	22.9	C
	SB – LT	0.39	19.1	B	0.44	20.2	C
	Intersection		**26.9**	**C**		**28.0**	**C**
W. 230th Street (E-W) at I-87 SB Ramp (N-S)	EB – TR	0.42	15.1	B	0.54	16.7	B
	WB – LT	0.39	9.9	A	0.45	11.5	B
	SB – LTR	1.08	96.0	F	1.15	120.3	F
	Intersection		**40.2**	**D**		**43.8**	**D**
W. 230th Street (E-W) at I-87 NB Ramp (N-S)	EB – L	0.40	11.6	B	1.09	93.6	F
	EB – T	0.28	8.9	A	0.41	10.3	B
	WB – TR	0.22	13.4	B	0.37	15.0	B
	NB – LTR	0.74	36.3	D	1.05	79.1	E
	Intersection		**21.2**	**C**		**54.0**	**D**
W. 230th Street (E-W) at Bailey Avenue (N-W) Kingsbridge Road W	EB – LTR	0.30	8.7	A	0.40	9.6	A
	NB – LTR	0.51	47.7	D	0.82	146.3	F
	SB – LTR	0.57	30.6	C	0.60	31.2	C
	Intersection		**25.8**	**C**		**58.1**	**E**
W. 225th Street (E-W) at Broadway Avenue (N-W)	WB – L	0.83	38.8	D	0.90	46.0	D
	WB – R	0.30	22.7	C	0.26	21.8	C
	NB – TR	0.57	23.0	C	0.93	36.0	D
	SB – LT	0.65	16.9	B	0.52	15.7	B
	Intersection		**23.3**	**C**		**31.0**	**C**
W. 225th Street (E-W) at Bailey Avenue (N - S)	EB – L	0.20	15.0	B	0.80	43.8	D
	EB – TR	0.26	14.5	B	0.39	16.0	B
	WB – L	0.05	12.7	B	0.06	13.0	B
	WB – TR	0.37	15.8	B	0.49	17.5	B
	NB – TR	0.42	37.8	D	0.33	34.4	C
	SB – LTR	0.59	33.5	C	0.65	34.8	C
	Intersection		**23.9**	**C**		**24.8**	**C**
W. 218th Street (E-W) at Broadway/ 10th Ave	EB – LTR	0.89	54.5	D	0.80	44.2	D
	WB – LTR	0.11	24.0	C	0.09	23.7	C
	NB – LTR	0.48	11.0	B	0.47	10.7	B
	SB – LTR	0.93	27.0	C	0.79	17.1	B
	Intersection		**25.4**	**C**		**17.8**	**B**

SIGNALIZED INTERSECTIONS	LANE GROUP	2009 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 207th Street (E-W) at 10th Avenue (N-S)	EB – LTR	0.41	21.0	C	0.46	21.6	C
	WB - LTR	1.11	90.1	F	1.09	85.1	F
	NB – LTR	0.65	20.7	C	0.81	26.8	C
	SB – LTR	0.87	35.6	D	1.09	89.5	F
	Intersection		**51.5**	**D**		**59.3**	**E**
Dyckman Street at 10th Ave / Harlem River Drive	EB – L	0.94	102.2	F	0.77	71.4	E
	EB – R	0.62	33.9	C	0.39	29.3	C
	NB – LT	0.53	16.2	B	0.90	42.5	D
	SB – T	0.66	26.0	C	0.59	24.6	C
	SB – R	0.25	15.5	B	0.32	16.3	B
	Intersection		**28.4**	**C**		**34.9**	**C**
W. Fordham Road (E-W) at I-87 SB Off Ramp	EB – TR	0.92	37.9	D	0.90	42.3	D
	WB – L	0.73	39.7	D	0.74	48.3	D
	WB – LT	0.72	14.8	B	0.70	14.8	B
	SB – LT	0.97	66.9	E	0.83	58.8	E
	SB – R	1.08	98.1	F	1.06	109.0	F
	Intersection		**41.6**	**D**		**42.1**	**D**
W. Fordham Road (E-W) at I-87 NB Off Ramp	EB – L	0.88	48.6	D	1.16	128.0	**F**
	EB – T	0.53	11.1	B	0.51	15.7	**B**
	WB – T	0.61	20.3	C	0.55	24.5	**C**
	WB – R	0.43	19.2	B	0.27	21.1	**C**
	NB – L	0.81	44.7	D	0.61	38.1	**D**
	NB – TR	0.83	46.1	D	0.60	37.9	**D**
	Intersection		**24.4**	**C**		**34.8**	**C**
W. Fordham Road at Sedgwick Avenue (N-S)	EB – L	1.07	95.2	F	0.96	63.6	E
	EB – TR	0.59	19.9	B	0.62	20.6	C
	WB – LT	0.85	39.5	D	0.86	40.9	D
	WB – R	0.40	26.6	C	0.34	25.4	C
	NB – LTR	0.99	82.4	F	0.97	75.9	E
	SB – LT	0.55	31.5	C	0.47	30.0	C
	SB – R	0.75	41.7	D	0.83	47.9	D
	Intersection		**41.3**	**D**		**38.8**	**D**
W. Fordham Road (E-W) at Dr. Martin Luther King Blvd. (N-S)	EB – L	0.19	15.5	B	0.35	18.0	B
	EB – TR	0.49	24.8	C	0.56	26.1	C
	WB – L	0.57	20.7	C	0.50	19.9	B
	WB – TR	0.60	27.0	C	0.63	27.7	C
	NB – LTR	0.70	38.8	D	0.90	52.5	D
	SB – LTR	0.63	36.1	D	0.63	36.0	D
	Intersection		**29.4**	**C**		**33.1**	**C**

SIGNALIZED INTERSECTIONS	LANE GROUP	2009 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. Fordham Road (E-W) at Jerome Avenue (N-S)	EB – LTR	0.70	18.8	B	0.71	19.2	B
	WB – LTR	0.59	15.9	B	0.54	14.9	B
	NB – LTR	0.58	41.0	D	0.79	52.0	D
	SB – LTR	0.60	41.8	D	0.83	57.6	E
	Intersection		**22.0**	**C**		**26.1**	**C**
W. Fordham Road (E-W) at Grand Concourse (N-S)	EB – TR	0.27	7.3	A	0.32	7.7	A
	WB – TR	0.44	8.8	A	0.52	9.8	A
	NB – LTR	0.36	40.8	D	0.60	45.7	D
	SB – LTR	0.70	48.7	D	0.59	45.6	D
	Intersection		**20.1**	**C**		**19.8**	**B**
W. 220th Street (E-W) at Broadway (N-S)	EB – LTR	0.07	24.3	C	0.18	25.6	C
	WB – LTR	0.08	24.4	C	0.03	23.8	C
	NB – LTR	0.50	10.5	B	0.54	10.9	B
	SB – LTR	0.89	20.5	C	0.58	11.5	B
	Intersection		**17.1**	**B**		**11.6**	**B**

TABLE 7.9-4. 2009 FUTURE WITHOUT THE PROJECT CONDITIONS FOR THE HARLEM RIVER SITE

UNSIGNALIZED INTERSECTIONS	LANE GROUP	2009 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
9th Avenue (E-W) at Broadway (N-S)	WB-R	0.13	13.7	B	0.39	19.1	C

ABBREVIATIONS:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway

V/C Ratio - Volume to Capacity Ratio

SEC/VEH - Seconds per Vehicle

LOS - Level of Service

TABLE 7.9-5. 2011 FUTURE NO BUILD CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2011 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 230th Street (E-W) at Broadway Avenue (N-S)	WB – L	0.86	41.4	D	0.86	41.7	D
	WB – R	0.22	26.1	C	0.26	26.6	C
	NB - TR	0.67	19.4	B	0.80	23.2	C
	SB – LT	0.40	19.2	B	0.44	20.3	C
	Intersection		**27.2**	**C**		**28.4**	**C**
W. 230th Street (E-W) at I-87 SB Ramp (N-S)	EB – TR	0.42	15.1	B	0.54	16.8	B
	WB – LT	0.40	9.9	A	0.46	11.6	B
	SB – LTR	1.09	100.0	F	1.16	124.1	F
	Intersection		**41.6**	**D**		**44.9**	**D**
W. 230th Street (E-W) at I-87 NB Ramp (N-S)	EB – L	0.40	11.7	B	1.11	99.9	F
	EB – T	0.29	9.0	A	0.42	10.4	B
	WB – TR	0.22	13.5	B	0.37	15.0	B
	NB – LTR	0.75	36.6	D	1.06	81.4	F
	Intersection		**21.3**	**C**		**56.2**	**E**
W. 230th Street (E-W) at Bailey Avenue (N-W) Kingsbridge Road W	EB – LTR	0.30	8.7	A	0.41	9.7	A
	NB – LTR	0.52	48.6	D	0.83	>150	F
	SB – LTR	0.57	30.7	C	0.60	31.3	C
	Intersection		**26.1**	**C**		**60.1**	**E**
W. 225th Street (E-W) at Broadway Avenue (N-W)	WB – L	0.84	39.4	D	0.91	47.1	D
	WB – R	0.31	22.7	C	0.26	21.8	C
	NB – TR	0.58	23.1	C	0.94	37.1	D
	SB – LT	0.66	17.1	B	0.52	15.8	B
	Intersection		**23.5**	**C**		**31.8**	**C**
W. 225th Street (E-W) at Bailey Avenue (N - S)	EB – L	0.21	15.0	B	0.81	46.2	D
	EB – TR	0.26	14.6	B	0.39	16.1	B
	WB – L	0.05	12.7	B	0.06	13.0	B
	WB – TR	0.37	15.9	B	0.49	17.6	B
	NB – TR	0.44	38.5	D	0.33	34.8	C
	SB – LTR	0.60	33.7	C	0.65	35.0	D
	Intersection		**24.1**	**C**		**25.1**	**C**
W. 218th Street (E-W) at Broadway/ 10th Ave	EB – LTR	0.90	55.9	E	0.81	45.0	D
	WB – LTR	0.11	24.0	C	0.09	23.7	C
	NB – LTR	0.49	11.1	B	0.47	10.7	B
	SB – LTR	0.94	28.2	C	0.79	17.3	B
	Intersection		**26.3**	**C**		**18.1**	**B**

TABLE 7.9-5. 2011 FUTURE NO BUILD CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2011 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 207th Street (E-W) at 10th Avenue (N-S)	EB – LTR	0.42	21.1	C	0.46	21.7	C
	WB - LTR	1.12	95.4	F	1.11	90.6	F
	NB – LTR	0.66	20.9	C	0.82	27.4	C
	SB – LTR	0.88	36.9	D	1.11	95.4	F
	Intersection		**54.0**	**D**		**62.5**	**E**
Dyckman Street at 10th Ave / Harlem River Drive	EB – L	0.95	103.8	F	0.78	72.2	E
	EB – R	0.63	34.1	C	0.39	29.4	C
	NB – LT	0.54	16.3	B	0.91	44.3	D
	SB – T	0.67	26.1	C	0.60	24.7	C
	SB – R	0.26	15.5	B	0.32	16.3	B
	Intersection		**28.6**	**C**		**35.8**	**D**
W. Fordham Road (E-W) at I-87 SB Off Ramp	EB – TR	0.92	38.8	D	0.91	43.3	D
	WB – L	0.74	40.2	D	0.74	48.8	D
	WB – LT	0.73	15.1	B	0.71	15.1	B
	SB – LT	0.98	69.4	E	0.84	59.7	E
	SB – R	1.09	101.9	F	1.07	112.3	F
	Intersection		**42.8**	**D**		**43.1**	**D**
W. Fordham Road (E-W) at I-87 NB Off Ramp	EB – L	0.89	51.5	D	1.18	136.4	F
	EB – T	0.54	11.1	B	0.51	15.8	B
	WB – T	0.62	20.4	C	0.56	24.6	C
	WB – R	0.43	19.2	B	0.28	21.1	C
	NB – L	0.81	45.3	D	0.61	38.3	D
	NB – TR	0.84	47.2	D	0.61	38.2	D
	Intersection		**24.9**	**C**		**35.7**	**D**
W. Fordham Road at Sedgwick Avenue (N-S)	EB – L	1.09	102.4	F	0.98	69.2	E
	EB – TR	0.59	20.0	C	0.63	20.7	C
	WB – LT	0.86	40.5	D	0.88	42.6	D
	WB – R	0.40	26.7	C	0.35	25.5	C
	NB – LTR	1.01	87.5	F	0.98	79.2	E
	SB – LT	0.55	31.6	C	0.48	30.1	C
	SB – R	0.76	42.1	D	0.84	48.6	D
	Intersection		**42.7**	**D**		**40.0**	**D**

TABLE 7.9-5. 2011 FUTURE NO BUILD CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2011 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. Fordham Road (E-W) at Dr. Martin Luther King Blvd. (N-S)	EB – L	0.19	15.6	B	0.36	18.2	B
	EB – TR	0.49	24.8	C	0.57	26.2	C
	WB – L	0.55	19.7	B	0.51	20.2	C
	WB – TR	0.63	27.6	C	0.64	27.8	C
	NB – LTR	0.71	39.3	D	0.92	54.4	D
	SB – LTR	0.64	36.4	D	0.64	36.4	D
	Intersection		**29.6**	**C**		**33.7**	**C**
W. Fordham Road (E-W) at Jerome Avenue (N-S)	EB – LTR	0.71	19.0	B	0.73	19.8	B
	WB – LTR	0.59	16.0	B	0.55	15.1	B
	NB – LTR	0.59	41.4	D	0.79	52.7	D
	SB – LTR	0.61	42.3	D	0.85	59.4	E
	Intersection		**22.3**	**C**		**26.7**	**C**
W. Fordham Road (E-W) at Grand Concourse (N-S)	EB – TR	0.27	7.3	A	0.32	7.7	A
	WB – TR	0.44	8.9	A	0.53	9.9	A
	NB – LTR	0.36	40.8	D	0.60	45.8	D
	SB – LTR	0.70	48.6	D	0.60	45.7	D
	Intersection		**20.1**	**C**		**19.8**	**B**
W. 220th Street (E-W) at Broadway (N-S)	EB – LTR	0.08	24.3	C	0.18	25.7	C
	WB – LTR	0.08	24.4	C	0.03	23.8	C
	NB – LTR	0.50	10.6	B	0.55	11.0	B
	SB – LTR	0.90	21.4	C	0.59	11.6	B
	Intersection		**17.6**	**B**		**11.7**	**B**

TABLE 7.9-5. 2011 FUTURE NO BUILD CONDITIONS FOR THE HARLEM RIVER SITE

UNSIGNALIZED INTERSECTIONS	LANE GROUP	2011 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
9th Avenue (E-W) at Broadway (N-S)	WB-R	0.14	13.8	B	0.40	19.4	C

ABBREVIATIONS:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway

V/C Ratio - Volume to Capacity Ratio

SEC/VEH - Seconds per Vehicle

LOS - Level of Service

7.9.3. Potential Impacts

Potential impact analyses were performed for the water treatment plant site to determine projected future conditions with the proposed project in place and fully operational as well as during the project construction phase. The 2011 Future With the Project conditions were compared with the 2011 Future Without the Project conditions to determine whether or not the proposed project's operation would have potential significant impacts on the study area traffic and safety. The 2009 Future With the Project conditions were compared to the 2009 Future Without the Project conditions to determine whether the construction of the proposed project would have potential significant impacts on the study area traffic and safety. The following section describes the potential project impacts should the proposed plant be constructed and made operational at the water treatment plant site.

7.9.3.1 Potential Project Impacts

When fully constructed and operational, the future peak hour trips associated with the proposed project would be almost entirely employee-related. Based on preliminary engineering design, Table 7.9-6 shows the number of employees for each shift. For a more conservative analysis, however, it was assumed that employees for the first shift would arrive at the proposed plant during the AM peak hour as those for the off-shift leave, and that they would leave during the PM peak hour, as those for the off -shift would arrive. Table 7.9-7 shows the anticipated truck deliveries during plant activity, which is based on preliminary engineering design. All truck deliveries would be scheduled during normal working hours and would not impact either the AM or PM peaks.

TABLE 7.9-6. WATER TREATMENT PLANT STAFFING

	Employees	
	Shift 1	**Off-Shift***
Water Treatment Plant	41	12

*Off-shift consists of one shift M-F and three shifts S-S.

TABLE 7.9-7. WATER TREATMENT PLANT OPERATION TRUCK DELIVERIES

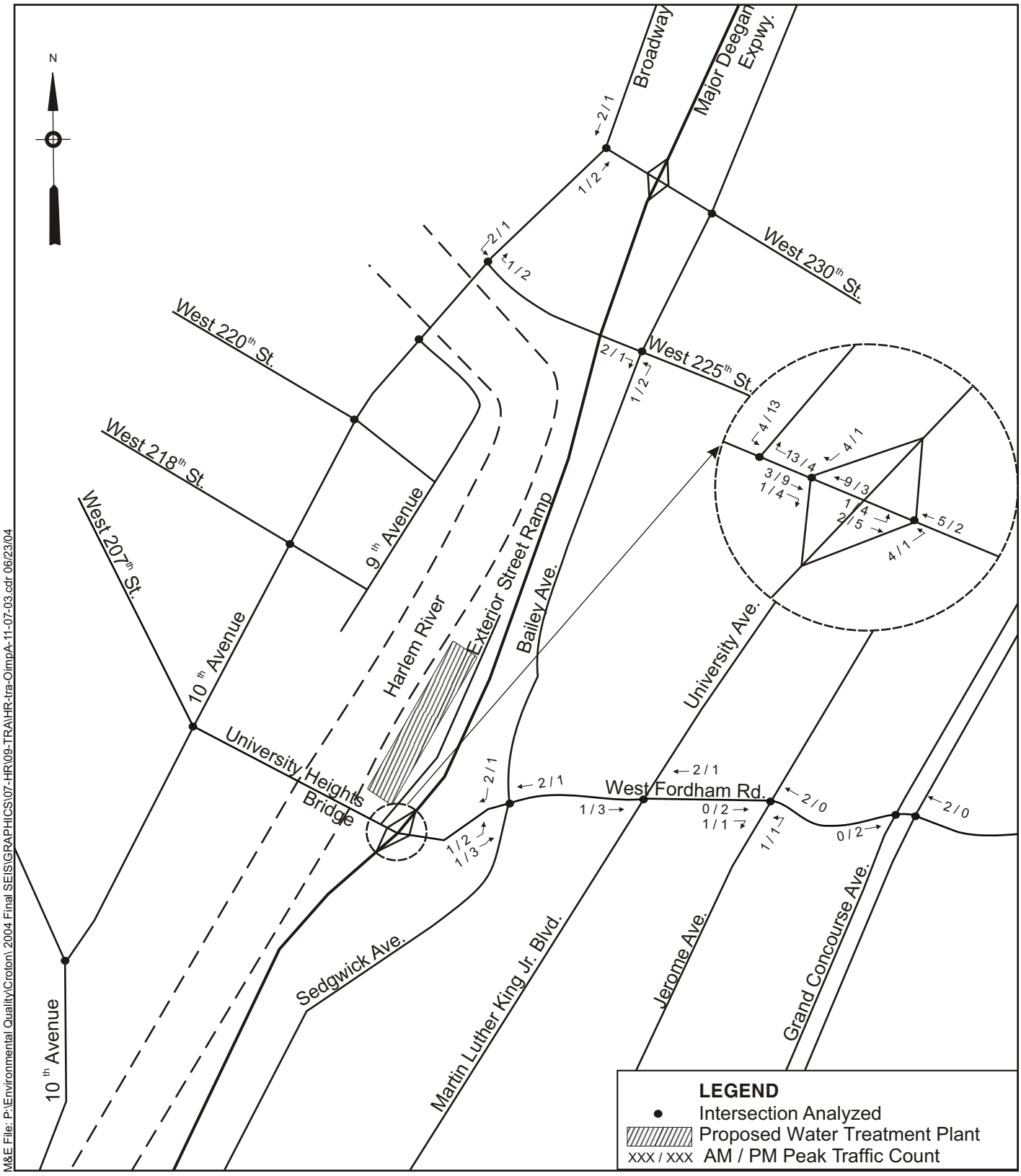
Type of Truck	**Operation**	**Average Traffic**	**Peak Traffic**
Tanker Trucks	Chemical	16 deliveries/week Potential 4 deliveries/day	32 deliveries/week Potential 6 deliveries/day
Medium Trucks	Misc. Deliveries	2 deliveries/day	2 deliveries/day
Total		6 deliveries/day	8 deliveries/day

As described in Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation, it is assumed that employees would arrive at the site via mass transit, bus, or private vehicles. It was likewise assumed that the vehicle occupancy rate would be 1.2 or that 20 percent of employees would carpool to the site. Table 7.9-8 shows the vehicular trip forecast for the proposed project.

TABLE 7.9-8. VEHICULAR TRIP FORECAST

	Trips/Hour via Auto		
Peak Hour	**In**	**Out**	**Total**
AM	13	4	17
PM	4	13	17

Vehicle trips were assigned to the study area network using the assignment pattern for autos, as discussed in Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation, and the project generated traffic for the proposed plant is shown in Figure 7.9-5. Figure 7.9-6 shows the total combined traffic under operation conditions.



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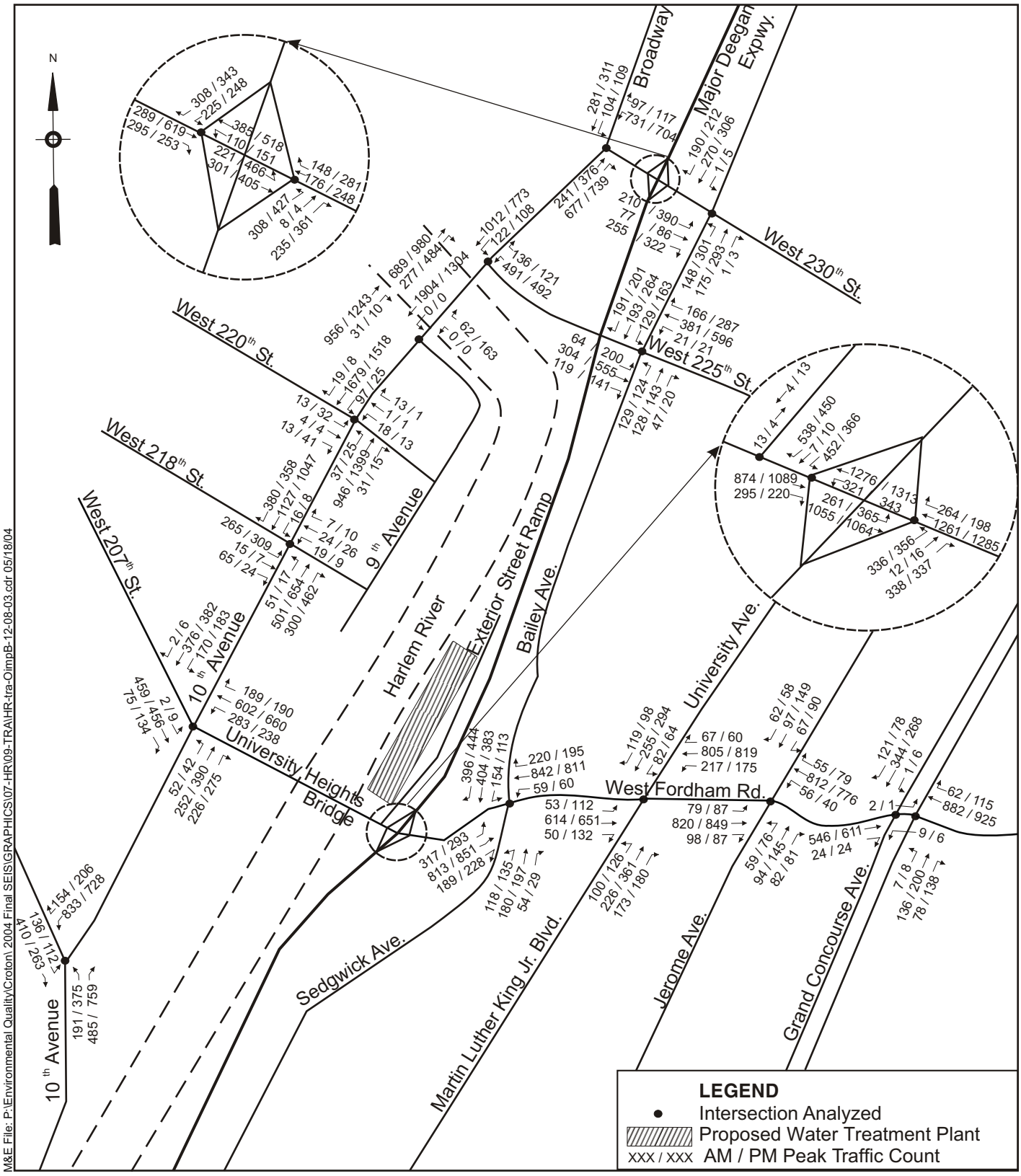
Not To Scale

Harlem River Site
Operational Traffic Distribution - AM / PM Hour

Croton Water Treatment Plant

Figure 7.9-5



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Not To Scale

Harlem River Site
Operational Year 2011
Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 7.9-6

Overall, the 17 vehicles per hour (vph) generated for the operations of the facility at the water treatment plant site after construction is substantially below the threshold of 50 vph, which is typically used to determine the need for detailed quantitative analysis for potential impacts. However, given the congestion in the area and the restricted ingress/egress routes to the site, a quantitative analysis was undertaken at each intersection to analyze whether impacts would occur as a result of the traffic generated for operation of the proposed plant.

7.9.3.1.1. Traffic

Applying the potential traffic impact criteria described in Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation, and as shown in Table 7.9-9, two (2) signalized intersections would potentially experience potential significant adverse impacts due to operation traffic in the AM and/or PM peak hours. These intersections are described below.

At the West Fordham Road and Major Deegan Northbound Ramp, the eastbound left turning movement would experience LOS F in the PM peak hour. The PM peak hour would experience delays of 141.5 seconds per vehicle (LOS F) compared to 136.4 seconds per vehicle for the Future Without Project Conditions. These increases in delay would be considered potential significant adverse impacts in accordance with CEQR criteria for determining potential significant traffic impacts. It is anticipated that this intersection would potentially have a significant adverse impact due to the operation of the proposed plant.

At the West Fordham Road and Sedgwick Avenue, the northbound movement would experience LOS F in the AM peak hour. The AM peak hour would experience delays of 90.8 seconds per vehicle (LOS F) compared to 87.5 seconds per vehicle for the Future Without Project Conditions. These increases in delay would be considered potential significant adverse impacts in accordance with CEQR criteria for determining potential significant traffic impacts. It is anticipated that this intersection would potentially have a potential adverse impact due to the operation of the proposed plant.

7.9.3.1.2. Parking

With the provision of on-site parking for employees after construction is complete, no significant adverse parking impacts would be anticipated.

7.9.3.1.3. Safety

No additional accidents are anticipated given the low traffic volumes generated by the proposed project; therefore, no significant adverse traffic safety impacts are anticipated.

TABLE 7.9-9. 2011 FUTURE WITH PROJECT CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2011 FUTURE WITHOUT THE PROJECT						2011 OPERATIONAL IMPACTS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 230th Street (E-W) at Broadway Avenue (N-S)	WB – L	0.86	41.4	D	0.86	41.7	D	0.86	41.4	D	0.86	41.7	D
	WB – R	0.22	26.1	C	0.26	26.6	C	0.22	26.1	C	0.26	26.6	C
	NB - TR	0.67	19.4	B	0.80	23.2	C	0.67	19.4	B	0.80	23.2	C
	SB – LT	0.40	19.2	B	0.44	20.3	C	0.40	19.2	B	0.44	20.3	C
	Intersection		**27.2**	**C**		**28.4**	**C**		**27.2**	**C**		**28.4**	**C**
W. 230th Street (E-W) at I-87 SB Ramp (N-S)	EB – TR	0.42	15.1	B	0.54	16.8	B	0.42	15.1	B	0.54	16.8	B
	WB – LT	0.40	9.9	A	0.46	11.6	B	0.40	9.9	A	0.46	11.6	B
	SB – LTR	1.09	100.0	F	1.16	124.1	F	1.09	100.0	F	1.16	124.1	F
	Intersection		**41.6**	**D**		**44.9**	**D**		**41.6**	**D**		**44.9**	**D**
W. 230th Street (E-W) at I-87 NB Ramp (N-S)	EB – L	0.40	11.7	B	1.11	99.9	F	0.40	11.7	B	1.11	99.9	F
	EB – T	0.29	9.0	A	0.42	10.4	B	0.29	9.0	A	0.42	10.4	B
	WB – TR	0.22	13.5	B	0.37	15.0	B	0.22	13.5	B	0.37	15.0	B
	NB – LTR	0.75	36.6	D	1.06	81.4	F	0.75	36.6	D	1.06	81.4	F
	Intersection		**21.3**	**C**		**56.2**	**E**		**21.3**	**C**		**56.2**	**E**
W. 230th Street (E-W) at Bailey Avenue (N-W) Kingsbridge Road W	EB – LTR	0.30	8.7	A	0.41	9.7	A	0.30	8.7	A	0.41	9.7	A
	NB – LTR	0.52	48.6	D	0.83	>150	F	0.52	48.6	D	0.83	>150	F
	SB – LTR	0.57	30.7	C	0.60	31.3	C	0.57	30.7	C	0.60	31.3	C
	Intersection		**26.1**	**C**		**60.1**	**E**		**26.1**	**C**		**60.1**	**E**
W. 225th Street (E-W) at Broadway Avenue (N-W)	WB – L	0.84	39.4	D	0.91	47.1	D	0.84	39.4	D	0.91	47.1	D
	WB – R	0.31	22.7	C	0.26	21.8	C	0.31	22.7	C	0.27	21.9	C
	NB – TR	0.58	23.1	C	0.94	37.1	D	0.58	23.1	C	0.94	37.1	D
	SB – LT	0.66	17.1	B	0.52	15.8	B	0.66	17.1	B	0.52	15.8	B
	Intersection		**23.5**	**C**		**31.8**	**C**		**23.5**	**C**		**31.8**	**C**
W. 225th Street (E-W) at Bailey Avenue (N - S)	EB – L	0.21	15.0	B	0.81	46.2	D	0.21	15.0	B	0.81	46.2	D
	EB – TR	0.26	14.6	B	0.39	16.1	B	0.27	14.6	B	0.39	16.1	B
	WB – L	0.05	12.7	B	0.06	13.0	B	0.05	12.7	B	0.06	13.0	B
	WB – TR	0.37	15.9	B	0.49	17.6	B	0.37	15.9	B	0.49	17.6	B
	NB – TR	0.44	38.5	D	0.33	34.8	C	0.44	38.7	D	0.34	35.3	D
	SB – LTR	0.60	33.7	C	0.65	35.0	D	0.60	33.7	C	0.65	35.0	D
	Intersection		**24.1**	**C**		**25.1**	**C**		**24.1**	**C**		**25.2**	**C**

TABLE 7.9-9. 2011 FUTURE WITH PROJECT CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2011 FUTURE WITHOUT THE PROJECT						2011 OPERATIONAL IMPACTS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 218th Street (E-W) at Broadway/ 10th Ave	EB – LTR	0.90	55.9	E	0.81	45.0	D	0.90	55.9	E	0.81	45.0	D
	WB – LTR	0.11	24.0	C	0.09	23.7	C	0.11	24.0	C	0.09	23.7	C
	NB – LTR	0.49	11.1	B	0.47	10.7	B	0.49	11.1	B	0.47	10.7	B
	SB – LTR	0.94	28.2	C	0.79	17.3	B	0.94	28.2	C	0.79	17.3	B
	Intersection		**26.3**	**C**		**18.1**	**B**		**26.3**	**C**		**18.1**	**B**
W. 207th Street (E-W) at 10th Avenue (N-S)	EB – LTR	0.42	21.1	C	0.46	21.7	C	0.42	21.1	C	0.46	21.7	C
	WB - LTR	1.12	95.4	F	1.11	90.6	F	1.12	95.4	F	1.11	90.6	F
	NB – LTR	0.66	20.9	C	0.82	27.4	C	0.66	20.9	C	0.82	27.4	C
	SB – LTR	0.88	36.9	D	1.11	95.4	F	0.88	36.9	D	1.11	95.4	F
	Intersection		**54.0**	**D**		**62.5**	**E**		**54.0**	**D**		**62.5**	**E**
Dyckman Street at 10th Ave / Harlem River Drive	EB – L	0.95	103.8	F	0.78	72.2	E	0.96	105.5	F	0.78	72.2	E
	EB – R	0.63	34.1	C	0.39	29.4	C	0.63	34.2	C	0.39	29.4	C
	NB – LT	0.54	16.3	B	0.91	44.3	D	0.54	16.4	B	0.91	44.3	D
	SB – T	0.67	26.1	C	0.60	24.7	C	0.67	26.2	C	0.60	24.7	C
	SB – R	0.26	15.5	B	0.32	16.3	B	0.26	15.5	B	0.32	16.3	B
	Intersection		**28.6**	**C**		**35.8**	**D**		**28.8**	**C**		**35.8**	**D**
W. Fordham Road (E-W) at I-87 SB Off Ramp	EB – TR	0.92	38.8	D	0.91	43.3	D	0.93	39.2	D	0.92	44.4	D
	WB – L	0.74	40.2	D	0.74	48.8	D	0.74	40.2	D	0.74	48.8	D
	WB – LT	0.73	15.1	B	0.71	15.1	B	0.74	15.2	B	0.72	15.3	B
	SB – LT	0.98	69.4	E	0.84	59.7	E	0.98	69.4	E	0.84	59.7	E
	SB – R	1.09	101.9	F	1.07	112.3	F	1.10	104.9	F	1.08	113.2	F
	Intersection		**42.8**	**D**		**43.1**	**D**		**43.4**	**D**		**43.6**	**D**
W. Fordham Road (E-W) at I-87 NB Off Ramp	EB – L	0.89	51.5	D	1.18	136.4	F	0.90	52.7	D	1.19	141.5	F
	EB – T	0.54	11.1	B	0.51	15.8	B	0.54	11.2	B	0.52	15.8	B
	WB – T	0.62	20.4	C	0.56	24.6	C	0.62	20.5	C	0.56	24.6	C
	WB – R	0.43	19.2	B	0.28	21.1	C	0.43	19.2	B	0.28	21.1	C
	NB – L	0.81	45.3	D	0.61	38.3	D	0.82	46.1	D	0.61	38.4	D
	NB – TR	0.84	47.2	D	0.61	38.2	D	0.84	47.2	D	0.61	38.2	D
	Intersection		**24.9**	**C**		**35.7**	**D**		**25.1**	**C**		**36.3**	**D**

TABLE 7.9-9. 2011 FUTURE WITH PROJECT CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2011 FUTURE WITHOUT THE PROJECT						2011 OPERATIONAL IMPACTS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. Fordham Road at Sedgwick Avenue (N-S)	EB – L	1.09	102.4	F	0.98	69.2	E	1.09	103.6	F	0.99	71.9	E
	EB – TR	0.59	20.0	C	0.63	20.7	C	0.59	20.0	C	0.63	20.7	C
	WB – LT	0.86	40.5	D	0.88	42.6	D	0.86	40.6	D	0.88	42.8	D
	WB – R	0.40	26.7	C	0.35	25.5	C	0.40	26.7	C	0.35	25.5	C
	NB – LTR	1.01	87.5	F	0.98	79.2	E	1.02	90.8	F	0.98	79.2	E
	SB – LT	0.55	31.6	C	0.48	30.1	C	0.55	31.6	C	0.48	30.1	C
	SB – R	0.76	42.1	D	0.84	48.6	D	0.76	42.5	D	0.84	48.7	D
	Intersection		**42.7**	**D**		**40.0**	**D**		**43.2**	**D**		**40.2**	**D**
W. Fordham Road (E-W) at Dr. Martin Luther King Blvd. (N-S)	EB – L	0.19	15.6	B	0.36	18.2	B	0.19	15.7	B	0.36	18.2	B
	EB – TR	0.49	24.8	C	0.57	26.2	C	0.49	24.9	C	0.57	26.3	C
	WB – L	0.55	19.7	B	0.51	20.2	C	0.55	19.7	B	0.51	20.3	C
	WB – TR	0.63	27.6	C	0.64	27.8	C	0.63	27.6	C	0.64	27.8	C
	NB – LTR	0.71	39.3	D	0.92	54.4	D	0.71	39.3	D	0.92	54.4	D
	SB – LTR	0.64	36.4	D	0.64	36.4	D	0.64	36.4	D	0.64	36.4	D
	Intersection		**29.6**	**C**		**33.7**	**C**		**29.7**	**C**		**33.7**	**C**
W. Fordham Road (E-W) at Jerome Avenue (N-S)	EB – LTR	0.71	19.0	B	0.73	19.8	B	0.71	19.0	B	0.73	19.8	B
	WB – LTR	0.59	16.0	B	0.55	15.1	B	0.60	16.1	B	0.55	15.1	B
	NB – LTR	0.59	41.4	D	0.79	52.7	D	0.60	41.5	D	0.80	53.3	D
	SB – LTR	0.61	42.3	D	0.85	59.4	E	0.61	42.3	D	0.85	59.4	E
	Intersection		**22.3**	**C**		**26.7**	**C**		**22.3**	**C**		**26.8**	**C**
W. Fordham Road (E-W) at Grand Concourse (N-S)	EB – TR	0.27	7.3	A	0.32	7.7	A	0.27	7.3	A	0.32	7.7	A
	WB – TR	0.44	8.9	A	0.53	9.9	A	0.45	8.9	A	0.53	9.9	A
	NB – LTR	0.36	40.8	D	0.60	45.8	D	0.36	40.8	D	0.60	45.8	D
	SB – LTR	0.70	48.9	D	0.60	45.7	D	0.70	48.9	D	0.60	45.7	D
	Intersection		**20.1**	**C**		**19.8**	**B**		**20.1**	**C**		**19.8**	**B**
W. 220th Street (E-W) at Broadway (N-S)	EB – LTR	0.08	24.3	C	0.18	25.7	C	0.08	24.3	C	0.18	25.7	C
	WB – LTR	0.08	24.4	C	0.03	23.8	C	0.08	24.4	C	0.03	23.8	C
	NB – LTR	0.50	10.6	B	0.55	11.0	B	0.50	10.6	B	0.55	11.0	B
	SB – LTR	0.90	21.4	C	0.59	11.6	B	0.90	21.4	C	0.59	11.6	B
	Intersection		**17.6**	**B**		**11.7**	**B**		**17.6**	**B**		**11.7**	**B**

TABLE 7.9-9. 2011 FUTURE WITH PROJECT CONDITIONS FOR THE HARLEM RIVER SITE

UNSIGNALIZED INTERSECTIONS	LANE GROUP	2011 FUTURE WITHOUT THE PROJECT						2011 OPERATIONAL IMPACTS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
9th Avenue (E-W) at Broadway (N-S)	WB-R	0.14	13.8	B	0.40	19.4	C	0.14	13.8	B	0.40	19.4	C

ABBREVIATIONS:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway

V/C Ratio - Volume to Capacity Ratio

SEC/VEH - Seconds per Vehicle

LOS - Level of Service

7.9.3.1.4. Transit

The proposed project would generate approximately 29 transit trips utilizing multiple transit stations. Specifically, operational activity is anticipated to generate additional transit ridership using Metro-North Railroad and three (3) MTA subway stations. During the AM and PM peak hours, a total of two (2) additional passengers are anticipated to take the Metro-North Railroad to and from the University Heights Bridge Station to the Harlem River Site during these hours. Three (3) MTA subway stations, including the 207th Street and Marble Hill Stations of No. 1 and 9 subway, and the Fordham Road Station of No. 4 are anticipated to be utilized during the proposed plant's operation. Approximately nine (9) additional passengers would be anticipated to use each of these three stations during the AM and PM peak hours. Bus BX 12 would be the primary bus service to be utilized since it provides a connection to the above MTA subway stations except the Marble Hill station.

This volume of transit trips falls below the threshold where detailed analysis would be necessary; therefore, no adverse transit-related impacts would be anticipated under the 2011 Future With the Project conditions at the water treatment plant site.

7.9.3.2. Potential Construction Impacts

Transportation data and planning assumptions for the construction workers as well as the construction trucks during the 2009 peak construction period were presented previously in Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation. As described under Existing Conditions, there are subway lines and bus routes along major streets in the vicinity of the Harlem River Site. In addition, there is a Metro-North Railway station located just on the south side of West Fordham Road from the site.

The water treatment plant site has limited staging area to provide temporary parking facilities for the construction employees. To account for the site conditions, similar to more developed areas of the City, the number of construction employees allowed to access the site utilizing personal vehicles would be limited to supervisors and NYCDEP employees. The construction employees would be required to provide alternate means of travel to work. This would take the form of increased ridership on mass transit and the use of private parking facilities in the vicinity of the site.

The construction supervisors would access the site based upon the following mode splits. It was assumed that 33.8 percent of construction supervisors would arrive in private vehicles (8.6 percent of which are anticipated to carpool), 54.6 percent would arrive by mass transit, and 11.6 percent by other means. Based on preliminary engineering design, Table 7.9-10 shows the anticipated 2009 peak year construction resources based upon preliminary engineering design. Table 7.9-11 and Table 7.9-12 show the resulting peak construction generated traffic and transit trips, respectively. Typically, construction vehicles are considered to be equivalent to 1.5 passenger cars for 2-axle trucks and 2.0 passenger cars for 3-axle trucks. To obtain conservative traffic analysis results, however, all construction trucks were assumed to be 3-axle trucks, or equivalent to 2.0 passenger cars.

TABLE 7.9-10. CONSTRUCTION RESOURCE REQUIREMENTS

Potential Construction Impacts	Harlem River
Peak Year	2009
Construction Hours	7:00AM to 6:00 PM
Construction Shifts	1
Construction workers on a peak day	634
Construction vehicles on a peak day	29
Time of arrival (workers)	6:00 AM to 7:00 AM
Time of departure (workers)	6:00 PM to 7:00 PM
Period of arrivals and departures (trucks)	7:00 AM to 6:00 PM

TABLE 7.9-11. CONSTRUCTION TRIP GENERATION

	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Auto	180 (19)	10 (1)	190	10 (1)	180 (19)	190
Trucks	5	1	6	1	5	6
Total	185	11	196	11	185	196
PCE Total	190	12	202	12	190	202

Note: Number in parentheses indicates number of autos accessing the site during AM and PM peak hours.

TABLE 7.9-12. CONSTRUCTION TRANSIT GENERATION

	Line	Station	AM and PM Peak
MNR	Hudson	University Heights	37
MTA	1 & 9	207th Street	108
MTA	1 & 9	Marble Hill	108
MTA	4	Fordham Road	108
Total			361

Traffic assignment of construction workers to and from the site was determined through the use of population densities from U.S. census information within a 5-mile radius of the site. U.S. census areas that exhibited larger population densities within this area were assumed to generate a higher number of project-related trips. Traffic assignment of construction trucks was based on anticipated truck origins and known truck routes in the study area.

The traffic assignment pattern for private auto vehicles generated by construction workers was assumed to be the same as the one generated by employees during operation. Since the water treatment plant site does not have parking for the entire construction work force, construction worker vehicles were distributed to the roadway network in the vicinity of the water treatment plant site to public parking areas that could be utilized by the contractor to provide worker parking.

The project-generated construction traffic was added to the year 2009 Future Without the Project volumes in the AM and PM peak hours and capacity analyses were performed for these combined conditions. Figure 7.9-7 shows the proposed construction generated traffic. Figure 7.9-8 shows the total combined traffic under construction conditions. Table 7.9-13 shows a comparison of the traffic conditions for the 2009 Future Without the Project and the 2009 Potential Construction Impacts.

The construction vehicle trip generation has been reduced through the implementation of construction material barging described as follows.

Construction Material Barging. Due to the constraints at the Harlem River Site, the barging of excavated material off the site and material deliveries to the site will be utilized. This construction methodology would reduce the necessary truck volumes that need to access the site from West Fordham Road. This reduced truck traffic at the West Fordham Road location was reviewed in conjunction with potential impacts that the barge operation might have on traffic operations elsewhere.

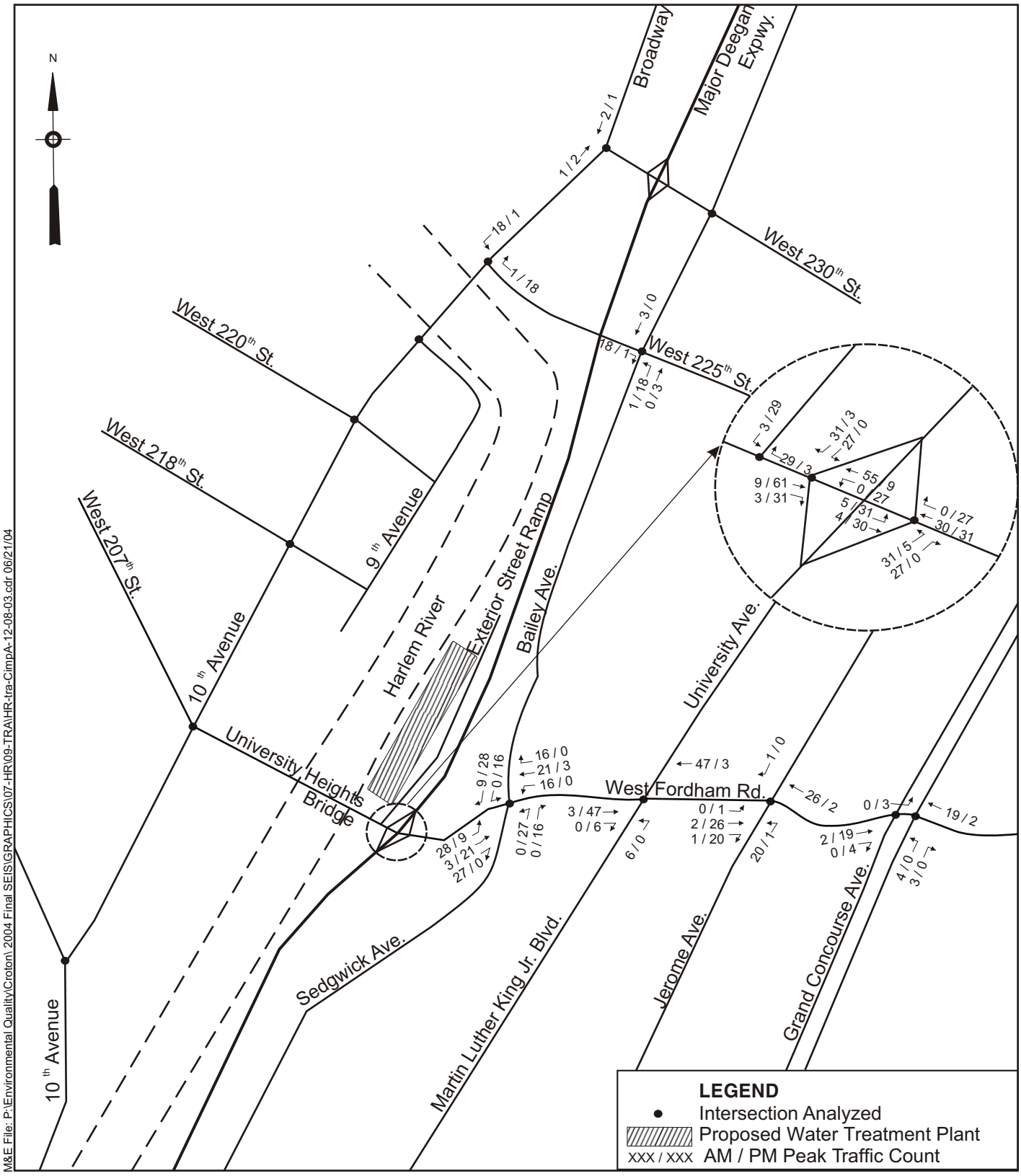
The barging operation would require the transport of material along the Harlem River from the site to the Hudson River. Two moveable bridges that would require opening to allow the barges through are the Spuyten Duyvil Bridge and the Broadway Bridge. The barge operator would be responsible for all permits regarding the operation of barges, including mitigation procedures for possible spills and other potential boating accidents.

The Spuyten Duyvil Bridge is located by the mouth of the Harlem River and the Hudson River. This bridge is a swing span bridge that carries a double Amtrak rail line. This bridge is regularly opened to accommodate the Circle Line Ferry service and would not need any additional openings to accommodate the construction barging operations.

The Broadway Bridge is located between West 220th Street in Manhattan and West 225th Street in The Bronx. This bridge carries three tracks of the Interborough Rapid Transit (IRT) subway on its upper deck and a four-lane two-way roadway on its lower deck. The construction barges would not be tall enough to require this bridge to be opened. Delivery and removal of a crane barge at the beginning and end of the project may require the opening of this bridge. This would be scheduled in advance at off-peak times to limit traffic and transit disturbance.

In addition to the navigation route impacts, the potential offloading impacts were reviewed. The potential off-loading facilities reviewed were the Red Hook Terminal, Brooklyn, NY; Claremont Terminal, Jersey City, NJ; and Port Newark, NJ. Since these facilities are full port transport facilities, each has set operating parameters within their development plans. These incorporate both port side as well as land side operating parameters. The barging operations would be developed such that the facilities would not exceed any operational parameters, thus requiring no additional impact analysis for these offloading points.

The following is a summary of potential impacts associated with constructing the proposed project at the water treatment plant site.



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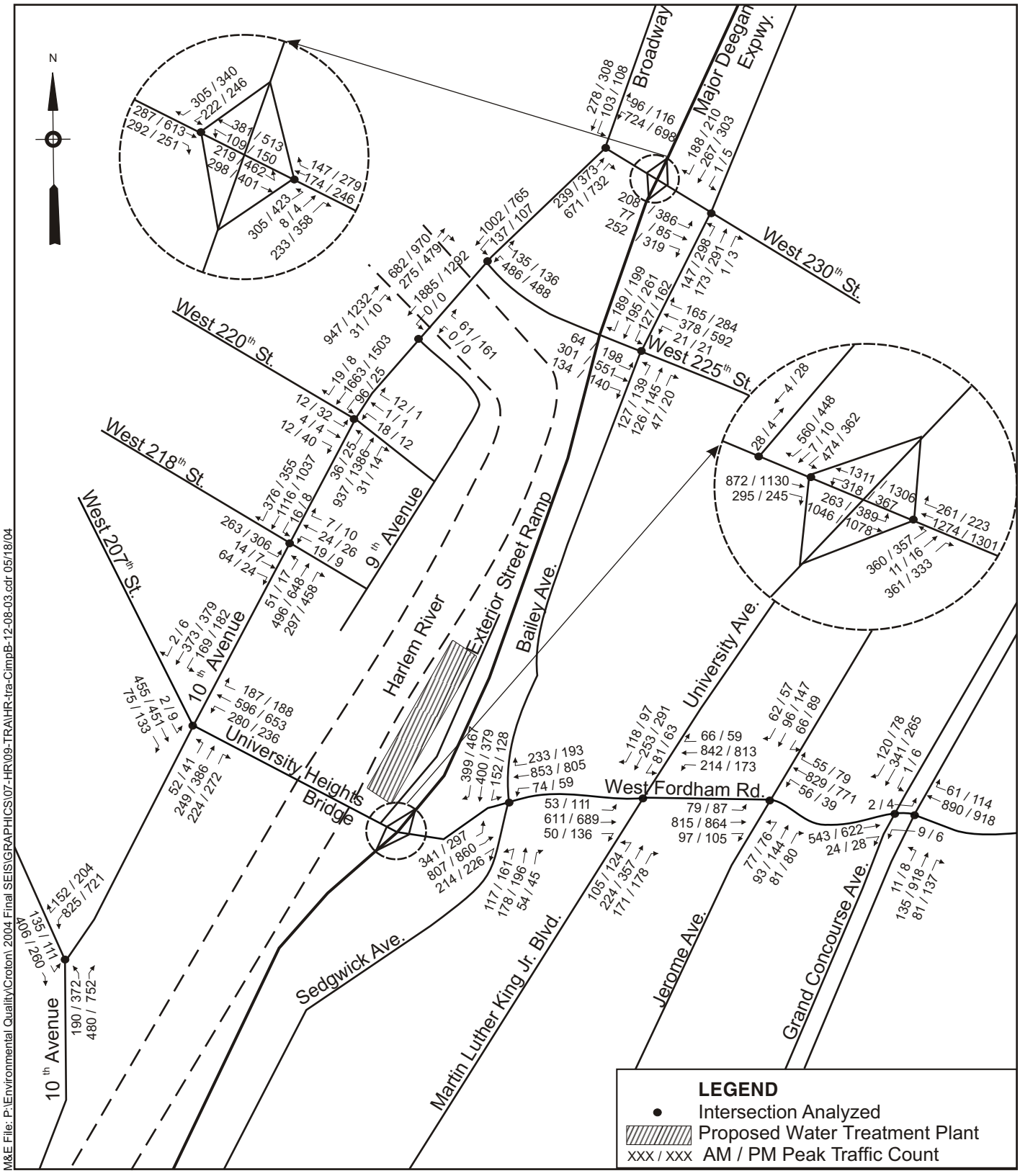
Not To Scale

Note: The majority of the traffic passenger vehicles are distributed to mid-block parking locations and do not enter/exit the site.

Harlem River Site
Construction Traffic Distribution - AM / PM Hour

Croton Water Treatment Plant

Figure 7.9-7



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Not To Scale

Harlem River Site
Construction Year 2009
Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 7.9-8

TABLE 7.9-13. 2009 POTENTIAL CONSTRUCTION IMPACTS TRAFFIC CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2009 FUTURE WITHOUT THE PROJECT						2009 CONSTRUCTION IMPACTS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 230th Street (E-W) at Broadway Avenue (N-S)	WB – L	0.85	40.8	D	0.86	41.1	D	0.85	40.8	D	0.86	41.1	D
	WB – R	0.22	26.1	C	0.26	26.5	C	0.22	26.1	C	0.26	26.5	C
	NB - TR	0.66	19.2	B	0.79	22.9	C	0.66	19.3	B	0.79	22.9	C
	SB – LT	0.39	19.1	B	0.44	20.2	C	0.39	19.1	B	0.44	20.2	C
	Intersection		**26.9**	**C**		**28.0**	**C**		**26.9**	**C**		**28.1**	**C**
W. 230th Street (E-W) at I-87 SB Ramp (N-S)	EB – TR	0.42	15.1	B	0.54	16.7	B	0.42	15.1	B	0.54	16.7	B
	WB – LT	0.39	9.9	A	0.45	11.5	B	0.39	9.9	A	0.45	11.5	B
	SB – LTR	1.08	96.0	F	1.15	120.3	F	1.08	96.0	F	1.15	120.3	F
	Intersection		**40.2**	**D**		**43.8**	**D**		**40.2**	**D**		**43.8**	**D**
W. 230th Street (E-W) at I-87 NB Ramp (N-S)	EB – L	0.40	11.6	B	1.09	93.6	F	0.40	11.6	B	1.09	93.6	F
	EB – T	0.28	8.9	A	0.41	10.3	B	0.28	8.9	A	0.41	10.3	B
	WB – TR	0.22	13.4	B	0.37	15.0	B	0.22	13.4	B	0.37	15.0	B
	NB – LTR	0.74	36.3	D	1.05	79.1	E	0.74	36.3	D	1.05	79.1	E
	Intersection		**21.2**	**C**		**54.0**	**D**		**21.2**	**C**		**54.0**	**D**
W. 230th Street (E-W) at Bailey Avenue (N-W) Kingsbridge Road W	EB – LTR	0.30	8.7	A	0.40	9.6	A	0.30	8.7	A	0.40	9.6	A
	NB – LTR	0.51	47.7	D	0.82	146.3	F	0.51	47.7	D	0.82	146.3	F
	SB – LTR	0.57	30.6	C	0.60	31.2	C	0.57	30.6	C	0.60	31.2	C
	Intersection		**25.8**	**C**		**58.1**	**E**		**25.8**	**C**		**58.1**	**E**
W. 225th Street (E-W) at Broadway Avenue (N-W)	WB – L	0.83	38.8	D	0.90	46.0	D	0.83	38.8	D	0.90	46.0	D
	WB – R	0.30	22.7	C	0.26	21.8	C	0.31	22.7	C	0.30	22.4	C
	NB – TR	0.57	23.0	C	0.93	36.0	D	0.57	23.0	C	0.93	36.0	D
	SB – LT	0.65	16.9	B	0.52	15.7	B	0.58	16.5	B	0.52	15.7	B
	Intersection		**23.3**	**C**		**31.0**	**C**		**23.1**	**C**		**31.0**	**C**
W. 225th Street (E-W) at Bailey Avenue (N - S)	EB – L	0.20	15.0	B	0.80	43.8	D	0.20	15.0	B	0.80	43.8	D
	EB – TR	0.26	14.5	B	0.39	16.0	B	0.27	14.7	B	0.39	16.0	B
	WB – L	0.05	12.7	B	0.06	13.0	B	0.05	12.8	B	0.06	13.0	B
	WB – TR	0.37	15.8	B	0.49	17.5	B	0.37	15.8	B	0.49	17.5	B
	NB – TR	0.42	37.8	D	0.33	34.4	C	0.43	38.1	D	0.35	38.2	D
	SB – LTR	0.59	33.5	C	0.65	34.8	C	0.60	33.5	C	0.65	34.9	C
	Intersection		**23.9**	**C**		**24.8**	**C**		**23.9**	**C**		**25.3**	**C**

TABLE 7.9-13. 2009 POTENTIAL CONSTRUCTION IMPACTS TRAFFIC CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2009 FUTURE WITHOUT THE PROJECT						2009 CONSTRUCTION IMPACTS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. 218th Street (E-W) at Broadway/ 10th Ave	EB – LTR	0.89	54.5	D	0.80	44.2	D	0.89	54.5	D	0.80	44.2	D
	WB – LTR	0.11	24.0	C	0.09	23.7	C	0.11	24.0	C	0.09	23.7	C
	NB – LTR	0.48	11.0	B	0.47	10.7	B	0.48	11.0	B	0.47	10.7	B
	SB – LTR	0.93	27.0	C	0.79	17.1	B	0.93	27.0	C	0.79	17.1	B
	Intersection		**25.4**	**C**		**17.8**	**B**		**25.4**	**C**		**17.8**	**B**
W. 207th Street (E-W) at 10th Avenue (N-S)	EB – LTR	0.41	21.0	C	0.46	21.6	C	0.41	21.0	C	0.46	21.6	C
	WB - LTR	1.11	90.1	F	1.09	85.1	F	1.11	90.1	F	1.09	85.1	F
	NB – LTR	0.65	20.7	C	0.81	26.8	C	0.65	20.7	C	0.81	26.8	C
	SB – LTR	0.87	35.6	D	1.09	89.5	F	0.87	35.6	D	1.09	89.5	F
	Intersection		**51.5**	**D**		**59.3**	**E**		**51.5**	**D**		**59.3**	**E**
Dyckman Street at 10th Ave / Harlem River Drive	EB – L	0.94	102.2	F	0.77	71.4	E	0.94	102.2	F	0.77	71.4	E
	EB – R	0.62	33.9	C	0.39	29.3	C	0.62	33.9	C	0.39	29.3	C
	NB – LT	0.53	16.2	B	0.90	42.5	D	0.53	16.2	B	0.90	42.5	D
	SB – T	0.66	26.0	C	0.59	24.6	C	0.66	26.0	C	0.59	24.6	C
	SB – R	0.25	15.5	B	0.32	16.3	B	0.25	15.5	B	0.32	16.3	B
	Intersection		**28.4**	**C**		**34.9**	**C**		**28.4**	**C**		**34.9**	**C**
W. Fordham Road (E-W) at I-87 SB Off Ramp	EB – TR	0.92	37.9	D	0.90	42.3	D	0.92	39.0	D	0.97	51.9	D
	WB – L	0.73	39.7	D	0.74	48.3	D	0.73	39.8	D	0.80	52.8	D
	WB – LT	0.72	14.8	B	0.70	14.8	B	0.76	15.8	B	0.74	16.0	B
	SB – LT	0.97	66.9	E	0.83	58.8	E	1.03	81.4	F	0.83	58.8	E
	SB – R	1.08	98.1	F	1.06	109.0	F	1.15	122.8	F	1.07	111.5	F
	Intersection		**41.6**	**D**		**42.1**	**D**		**47.7**	**D**		**46.7**	**D**
W. Fordham Road (E-W) at I-87 NB Off Ramp	EB – L	0.88	48.6	D	1.16	128.0	**F**	0.91	54.8	D	1.29	>150	F
	EB – T	0.53	11.1	B	0.51	15.7	**B**	0.54	11.1	B	0.52	15.9	B
	WB – T	0.61	20.3	C	0.55	24.5	**C**	0.62	20.6	C	0.56	24.7	C
	WB – R	0.43	19.2	B	0.27	21.1	**C**	0.43	19.2	B	0.31	21.6	C
	NB – L	0.81	44.7	D	0.61	38.1	**D**	0.88	52.5	D	0.62	38.4	D
	NB – TR	0.83	46.1	D	0.60	37.9	**D**	0.89	53.3	D	0.60	37.9	D
	Intersection		**24.4**	**C**		**34.8**	**C**		**26.8**	**C**		**40.9**	**D**

TABLE 7.9-13. 2009 POTENTIAL CONSTRUCTION IMPACTS TRAFFIC CONDITIONS FOR THE HARLEM RIVER SITE

SIGNALIZED INTERSECTIONS	LANE GROUP	2009 FUTURE WITHOUT THE PROJECT						2009 CONSTRUCTION IMPACTS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
W. Fordham Road at Sedgwick Avenue (N-S)	EB – L	1.07	95.2	F	0.96	63.6	E	1.21	147.1	F	1.00	73.2	E
	EB – TR	0.59	19.9	B	0.62	20.6	C	0.61	20.3	C	0.63	20.8	C
	WB – LT	0.85	39.5	D	0.86	40.9	D	0.95	52.1	D	0.87	42.0	D
	WB – R	0.40	26.6	C	0.34	25.4	C	0.43	27.2	C	0.34	25.4	C
	NB – LTR	0.99	82.4	F	0.97	75.9	E	1.00	85.5	F	1.14	129.4	F
	SB – LT	0.55	31.5	C	0.48	30.0	C	0.55	31.5	C	0.50	30.5	C
	SB – R	0.75	41.7	D	0.83	47.9	D	0.77	42.8	D	0.89	53.9	D
	Intersection		**41.3**	**D**		**38.8**	**D**		**49.6**	**D**		**46.7**	**D**
W. Fordham Road (E-W) at Dr. Martin Luther King Blvd. (N-S)	EB – L	0.19	15.5	B	0.35	18.0	B	0.20	16.1	B	0.35	18.1	B
	EB – TR	0.49	24.8	C	0.56	26.1	C	0.49	24.8	C	0.60	27.0	C
	WB – L	0.57	20.7	C	0.50	19.9	B	0.54	19.5	B	0.53	21.3	C
	WB – TR	0.60	27.0	C	0.63	27.7	C	0.65	28.3	C	0.63	27.7	C
	NB – LTR	0.70	38.8	D	0.90	52.5	D	0.72	39.4	D	0.90	52.5	D
	SB – LTR	0.63	36.1	D	0.63	36.0	D	0.63	36.2	D	0.63	36.0	D
	Intersection		**29.4**	**C**		**33.1**	**C**		**29.8**	**C**		**33.3**	**C**
W. Fordham Road (E-W) at Jerome Avenue (N-S)	EB – LTR	0.70	18.8	B	0.71	19.2	B	0.71	19.1	B	0.75	20.5	C
	WB – LTR	0.59	15.9	B	0.54	14.9	B	0.60	16.2	B	0.54	15.0	B
	NB – LTR	0.58	41.0	D	0.79	52.0	D	0.68	45.7	D	0.79	52.6	D
	SB – LTR	0.60	41.8	D	0.83	57.6	E	0.60	42.1	D	0.83	57.6	E
	Intersection		**22.0**	**C**		**26.1**	**C**		**22.9**	**C**		**26.7**	**C**
W. Fordham Road (E-W) at Grand Concourse (N-S)	EB – TR	0.27	7.3	A	0.32	7.7	A	0.27	7.3	A	0.33	7.8	A
	WB – TR	0.44	8.8	A	0.52	9.8	A	0.45	8.9	A	0.52	9.8	A
	NB – LTR	0.36	40.8	D	0.60	45.7	D	0.38	41.1	D	0.60	45.7	D
	SB – LTR	0.70	48.7	D	0.59	45.6	D	0.70	48.7	D	0.59	45.6	D
	Intersection		**20.1**	**C**		**19.8**	**B**		**20.1**	**C**		**19.7**	**B**
W. 220th Street (E-W) at Broadway (N-S)	EB – LTR	0.07	24.3	C	0.18	25.6	C	0.07	24.3	C	0.18	25.6	C
	WB – LTR	0.08	24.4	C	0.03	23.8	C	0.08	24.4	C	0.03	23.8	C
	NB – LTR	0.50	10.5	B	0.54	10.9	B	0.50	10.5	B	0.54	10.9	B
	SB – LTR	0.88	20.5	C	0.58	11.5	B	0.89	20.5	C	0.58	11.5	B
	Intersection		**16.7**	**B**		**11.6**	**B**		**17.1**	**B**		**11.6**	**B**

TABLE 7.9-13. 2009 POTENTIAL CONSTRUCTION IMPACTS TRAFFIC CONDITIONS FOR THE HARLEM RIVER SITE

UNSIGNALIZED INTERSECTIONS	LANE GROUP	2009 FUTURE WITHOUT THE PROJECT						2009 CONSTRUCTION IMPACTS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
9th Avenue (E-W) at Broadway (N-S)	WB-R	0.13	13.7	B	0.39	19.1	C	0.13	13.7	B	0.39	19.1	C

ABBREVIATIONS:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway

V/C Ratio - Volume to Capacity Ratio

SEC/VEH - Seconds per Vehicle

LOS - Level of Service

7.9.3.2.1. Traffic

Applying the potential traffic impact criteria described in Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation, three (3) signalized intersections would potentially experience potential significant adverse impacts due to construction traffic in the AM and/or PM peak hours. These intersections are described below.

At the intersection of West Fordham Road and I-87 Southbound Ramps, the southbound right turning movement would experience delays of 122.8 and 111.5 seconds per vehicles (LOS F) in the AM and PM peak hours, respectively. The southbound left/through movement would experience 81.4 seconds of delay (LOS F) during the AM peak hour, compared to 66.9 seconds of delay (LOS E) in the 2009 Future Without the Project. The eastbound through/right movement would experience 51.9 seconds of delay (LOS D) compared with 42.3 seconds (LOS D) in the PM peak hour of the 2009 Future Without the Project. The overall intersection would experience a delay of 47.7 seconds (LOS D) in the AM peak hour, compared to 41.6 seconds (LOS D). These increases in delay would be considered potential significant adverse impacts in accordance with CEQR criteria for determining potential significant traffic impacts.

At the intersection of West Fordham Road at I-87 Northbound Ramps, the eastbound left turning movement would experience delays in excess of 150 seconds per vehicles (LOS F) in the PM peak hour and a LOS D in the AM peak hour and the increases in delay would be considered potential adverse impacts in accordance with CEQR criteria. The northbound left, through and right turning movements would experience a LOS D in the AM peak hour and the increases in delay would be considered potential adverse impacts in accordance with CEQR criteria.

At the intersection of West Fordham Road and Sedgwick Avenue, the eastbound left turning movement would experience delays of 147.1 seconds per vehicle (LOS F) in the AM peak hour and a LOS E in the PM peak hour and the increase in delay would be considered potential adverse impacts in accordance with CEQR criteria. The westbound left/through movements would experience a LOS D in the AM peak hour and the increases in delay would be considered potential adverse impacts in accordance with CEQR criteria. The northbound left, through and right turning movement would continue to experience LOS F and LOS E in the AM and PM peak hours, respectively, with increases in delay that would be considered potential adverse impacts in accordance with CEQR criteria. The southbound right movement would experience a LOS D in the PM peak hour and the increases in delay would be considered potential adverse impacts. The overall intersection would have a potential adverse impact due to the traffic generated during construction.

Mitigation measures for the above potential significant adverse construction-related traffic impacts are presented in Section 9, Mitigation of Potential Impacts.

7.9.3.2.2. Parking

As discussed above, the proposed project is anticipated to provide on-site parking for construction supervisors and NYCDEP personnel only. Other construction workers would access the site via transit (Metro-North or MTA bus) or would park at remote parking facilities in the vicinity of the project site. Based on the transportation data and planning assumptions presented in the Potential Construction Impacts, Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation, the on-site parking facility would need to accommodate approximately 20 construction worker vehicles. Approximately 170 construction worker vehicles are anticipated to be accommodated at off-site parking lots in the vicinity. There is adequate parking spaces available in combined multiple off-site parking lots. However, due to different ownership and operational restrictions on these lots, the construction off-site parking requirements could create and adverse parking impact.

7.9.3.2.3. Safety

Eight intersections experienced a high rate of accidents between May 1998 and April 2001. Table 7.9-2 summarizes the accident data listed below:

1. West 230th Street and Broadway
2. West 225th Street/Kingsbridge Road West and Bailey Avenue
3. Broadway and 10th Avenue/W 218th Street
4. 10th Avenue and Harlem River Drive
5. West Fordham Road and Sedgwick Avenue
6. West Fordham Road and Dr. Martin Luther King, Jr. Boulevard
7. West Fordham Road and Jerome Avenue
8. West Fordham Road and Grand Concourse

At the West 230th Street and Broadway intersection, there are projected to be 2,098 vehicles entering the intersection in the AM peak hour and 2,320 vehicles entering in the PM peak hour. The construction activities would increase these volumes by two (2) vehicles in each of the peak hours, or by 0.09 percent in each peak hour. With thirteen (13) reportable accidents annually, this increase in traffic at this location can be anticipated to translate to less than one additional accident per year and less than one additional accident over the entire construction period.

At the West 225th Street/Kingsbridge Road West and Bailey Avenue intersection, there are projected to be 1,842 vehicles entering the intersection in the AM peak hour and 2,676 vehicles entering in the PM peak hour. The construction activities would increase these volumes by three (3) vehicles in each of the peak hours, or by 0.2 and 0.1 percent in the AM and PM peak hours, respectively. With 10 reportable accidents annually, this increase in traffic at this location can be anticipated to translate to less than one additional accident per year and less than one additional accident over the entire construction period.

At the West 218th Street/10th Avenue at Broadway intersection, there are projected to be 2,759 vehicles entering the intersection in the AM peak hour and 2,976 vehicles entering in the PM

peak hour. The construction activities would not increase these volumes in either of the peak hours. No additional accidents per year are anticipated at this intersection due to construction activities.

At the 10th Avenue and Harlem River Drive intersection, there are projected to be 2,183 vehicles entering the intersection in the AM peak hour and 2,407 vehicles entering in the PM peak hour. The construction activities would not increase these volumes in either of the peak hours. No additional accidents per year are anticipated at this intersection due to construction activities.

At the West Fordham Road and Sedgwick Avenue intersection, there are projected to be 3,685 vehicles entering the intersection in the AM peak hour and 3,676 vehicles entering in the PM peak hour. The construction activities would increase these volumes by 10 vehicles in the AM peak hour and seven (7) vehicles in the PM peak hour or by 0.27 and 0.19 percent in the respective peak hours. With 35 reportable accidents annually, this increase in traffic at this location can be anticipated to translate to less than one additional accident per year and less than one additional accident over the entire construction period.

At the West Fordham Road and Dr. Martin Luther King, Jr. Boulevard intersection, there are projected to be 2,718 vehicles entering the intersection in the AM peak hour and 3,021 vehicles entering in the PM peak hour. The construction activities would increase these volumes by seven (7) vehicles in the AM peak hour and four (4) vehicles in the PM peak hour, or by 0.26 and 0.13 percent in the respective peak hours. With 25 reportable accidents annually, this increase in traffic at this location can be anticipated to translate to less than one additional accident per year and less than one additional accident over the entire construction period.

At the West Fordham Road and Jerome Avenue intersection, there are projected to be 2,344 vehicles entering the intersection in the AM peak hour and 2,475 vehicles entering in the PM peak hour. The construction activities would increase these volumes by six (6) vehicles in the AM peak hour and four (4) vehicles in the PM peak hour, or by 0.26 and 0.16 percent in the respective peak hours. With 41 reportable accidents annually, this increase in traffic at this location can be anticipated to translate to less than one additional accident per year and less than one additional accident over the entire construction period.

At the West Fordham Road and Grand Concourse intersection, there are projected to be 2,178 vehicles entering the intersection in the AM peak hour and 2,344 vehicles entering in the PM peak hour. The construction activities would increase these volumes by four (4) vehicles in the AM peak hour and two (2) vehicles in the PM peak hour, or by 0.18 and 0.1 percent in the respective peak hours. With 24 reportable accidents annually, this increase in traffic at this location can be anticipated to translate to less than one additional accident per year and less than one additional accident over the entire construction period.

7.9.3.2.4. Transit

Construction at the water treatment plant site is anticipated to generate additional transit ridership using Metro North Railroad, three (3) MTA subway stations and one (1) bus. During the AM peak period (6AM to 7AM) and the PM peak period (6PM to 7PM), a total of 37

additional passengers are anticipated to take the Metro North Railroad to and from the University Heights Bridge Station to the Harlem River Site during these hours. Three (3) MTA subway stations, including 207th Street and Marble Hill Stations of Routes 1 and 9, and the Fordham Road Station of Route 4 are anticipated to be utilized during construction. An additional 108 passengers would be anticipated to use each of these three (3) stations during the AM (6 am to 7 am) and PM (6 pm to 7 pm) peak periods.

In terms of the 2002 average ridership survey provided by the New York City Transit Authority, the 207th, Marble Hill, and Fordham Road stations have the following passenger volumes. During the period from 6AM to 7AM, a total of 269, 252 and 614 passengers utilize the above three subway stations, respectively. During the period from 6PM to 7PM, a total of 254, 151 and 447 passengers utilize the three stations, respectively. For these three subway stations, the AM peak period occurs later between 7AM to 8AM, and they provide service for 633, 555 and 1,162 passengers, respectively. The PM peak period for the three stations occurs earlier between 4PM to 5PM, and they provide service for 258, 204 and 654 passengers, respectively. Since the project's peak periods differ from the station's peak periods, the proposed plant's construction transit traffic would avoid the rush hours at both AM and PM peak periods and would not have a potential significant adverse impact on these transit services.

The site is not anticipated to generate a potential significant adverse impact for above-ground bus services. Route BX 12 would be the primary bus service to be utilized since it provides a connection to the above MTA subway stations. In terms of the 2002 average ridership survey provided by the New York City Transit Authority, during the AM peak period (6AM to 9AM) and PM peak period (4PM to 7PM), a total of 9,308 and 8,750 passengers have daily utilized the service of Route BX 12, respectively. The construction does not create a potential significant adverse impact since the bus commuters generated from the site would less than 1 percent of the total passengers.

Pedestrian access to the site would be from West Fordham Road along the existing Exterior Street ramp access. Temporary pedestrian improvements may be necessary along the access ramp to coincide with construction staging.

7.9.3.2.5. Pavement Infrastructure

Roadway pavements deteriorate with traffic loads, environmental conditions and time. Highways are typically able to carry a higher traffic load than arterials and other lower volume roadways. The principal measure of traffic loading is "equivalent 18,000 pounds single axle loads" (18 kip Equivalent Single Axle Load (ESAL)) over the useful life of the pavement, typically 20 years. As these loads are applied, over time, the pavement's serviceability declines to the point where it must be repaired. Different types of trucks affect pavement differently. Trucks that have concentrated wheel loads (*e.g.,* full concrete trucks) would have worse pavement effects than a flat-bed tractor-trailer combination carrying steel reinforcing rods. Highways can have design loads of 10,000,000 to 80,000,000 (or more) ESAL, arterials generally between 2,000,000 to 5,000,000 ESAL and low-volume roadways 50,000 to 500,000 ESAL.

The proposed project is anticipated to generate a total of approximately 33,800 truck entering/exiting truck trips over the approximately five and a half year construction period. These truck trips equate to a total of approximately 92,000 ESAL, 46,000 ESAL inbound and 46,000 ESAL outbound, respectively. Based on the anticipated distribution of trucks arriving/departing from the site and the primary access point from Major Deegan and West Fordham Road, the anticipated loads generated from the project are not anticipated to be adversely significant.