8.1.4. New Croton Aqueduct Shaft No. 18

8.1.4.1. Introduction

New Croton Aqueduct (NCA) Shaft No. 18 is an above grade structure in the City of Yonkers, Westchester County, NY. The City of New York (City) currently owns approximately 13 acres of open space at the Shaft Site. Private residences and a commercial solid waste handling facility surround the Shaft Site. The Shaft building is a rock-faced granite structure with a stone base set into the slope that straddles the NCA at a section that is also above grade. The shaft building is approximately 40 by 43 foot and 20 feet tall stone superstructure that extends approximately 18.8 feet below the surface. The structure contains a blow-off with gates and a weir that allows water to flow from the NCA to Tibbett's Brook. Two 6-foot conduits below the superstructure convey the brook through the structure. The blow-off is currently not in operation. The NCA remains above grade for 300 feet to the south, where the terrain rises and the NCA passes below Yonkers Avenue.

Originally designed as a gravity flow tunnel that would collect additional water through ground infiltration, the NCA would require grouting to repair existing cracks (grouting work would be conducted by the NYCDEP under the Future Without the Project as general maintenance and repair) and lining to prevent the contamination of treated water and ensure the ability of delivering a pressurized treated water conveyance (part of the proposed project). The NCA baseline rehabilitation work is a separate action that would be conducted regardless of where the proposed Croton project is located. The NCA Baseline Rehabilitation would be conducted in two phases; the first phase (which was subject to an independent environmental review that resulted in a Negative Declaration being issued on June 7, 2004) is scheduled to begin in Fall 2004 and continue to Spring 2006, and the second phase (which would be subject to a future environmental review once the scope and need for the work is defined) is anticipated to begin in Summer 2006 and continue to Spring 2007. Currently two sections of the NCA are pressurized, between Shaft Nos. 11A and 11C where the NCA drops below Gould's Swamp in the Town of Greenburgh, and south of Gate House No. 1 in the Bronx to its terminus at the 135th Street Pumping Station in Manhattan. Under the proposed project the existing pressurized section would be increased to 143 psig while the remainder of the NCA (gravity flow portion) would be pressurized to 92 psig.

NCA Shaft No. 18 would be used as a construction staging area and access point by workers and materials for the proposed pressurization work on the NCA if the Eastview Site alternative is selected and the NCA is used to convey treated water. Under the proposed project, in low rock cover and cut-and-cover sections of the NCA a steel lining would be installed and in the high rock cover sections of the NCA reinforced concrete lining would be installed. The steel lined sections would be circular and backfilled with unreinforced concrete 12-inches thick. The concrete lined section would also be circular and have reinforced concrete 12 inches thick. Contact grouting would be performed at the steel lining (with concrete reinforcement) and at concrete/brick and mortar lining interfaces, to seal any voids resulting from concrete shrinkage or temperature changes in the steel lining.

A study area of up to one mile was established from the Shaft Site in conducting the following analyses. The methodology used to prepare these analyses is presented in Section 4, Data Collection and Impact Methodologies.

After construction, there would be no changes to the site or to operations at NCA Shaft No. 18. Therefore, the analyses presented below focus on those parameters influenced by construction.

8.1.4.2. Baseline Conditions

8.1.4.2.1. Existing Conditions

Land Use, Zoning and Public Policy. There would be no change to Land Use, Zoning, or Public Policy as part of this project. Because of this, a detailed analysis of the potential impacts of the project on this parameter was not conducted. Potential impacts during construction are discussed in the Potential Construction Impacts section below.

Visual Character. There would be no change to the visual character of the area as part of this project. Because of this, a detailed analysis of the potential impacts of the project on this parameter was not conducted. Potential visual character impacts during construction are discussed in the Potential Construction Impacts section below.

Community Facilities. No impacts to the area community facilities are anticipated as part of this project. Because of this, a detailed analysis of the potential impacts of the project on this parameter was not conducted. Potential community facilities impacts during construction are discussed in the Potential Construction Impacts section below.

Open Space. No impacts to open space resources are anticipated as part of this project. Therefore, a detailed open space analysis was not conducted for this site.

Neighborhood Character. There would be no change to neighborhood character in the vicinity of NCA Shaft No. 18 as part of this project. Because of this, a detailed analysis of the potential impacts of the project on this parameter was not conducted. Potential impacts during construction are discussed in the Potential Construction Impacts section below.

Socioeconomic Analysis. No impacts to the study area socioeconomic conditions are anticipated as part of this project. Because of this, a detailed analysis of the potential impacts of the project on this parameter was not conducted. Potential impacts during construction are discussed in the Potential Construction Impacts section below.

Water Rate Structure. For this information, refer to the Water Rate Structure discussion for the Eastview Site (Section 5.7, Socioeconomic Analysis).

Growth Inducement. This analysis addresses the proposed NCA work, which would be conducted in conjunction with the proposed Croton Water Treatment Plant project. Therefore, the analysis of any growth inducement effects related to improvements to the NCA is addressed

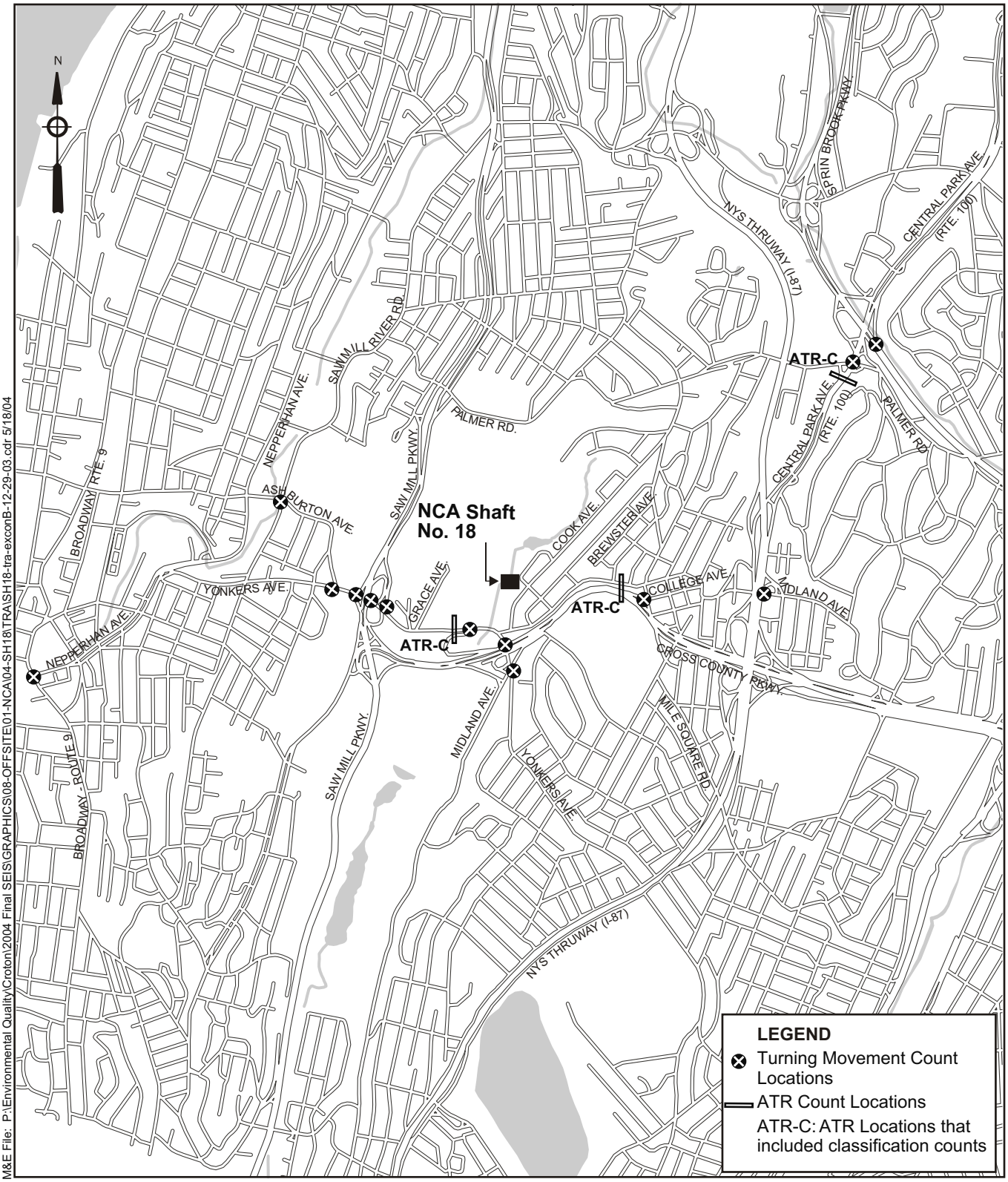
in the Growth Inducement analysis prepared for the Eastview Site (Section 5.8, Growth Inducement).

Traffic and Transportation. 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 volumes, logical traffic routes, and potentially problematic areas.

Traffic Study Area. This study area has been selected to encompass those roadways most likely to be used by the majority of vehicular traffic traveling to and from the Shaft Site. The study area around NCA Shaft No.18 is primarily bounded by Palmer Road to the north, Yonkers Avenue and Midland Avenue to the south, Broadway (Route 9) to the west, and Sprain Brook Parkway to the east. Major arterial roadways adjacent to the study area are the Cross County Parkway, New York State Thruway (I-87), Sprain Brook Parkway and Bronx River Parkway.

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 (see Figure 8.1.4-1). The data collection included manual turning movement counts, 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:

- Midland Avenue and Central Park Avenue Northbound Ramp
- Midland Avenue and Central Park Avenue Southbound Ramp
- Palmer Road and Central Park Avenue Northbound On-ramp
- Palmer Road at Central Park Avenue Southbound Off-ramp (and Sprain Brook Parkway Northbound and Southbound Off-ramps)
- Yonkers Avenue and Midland Avenue/Cook Avenue
- Midland Avenue South and Yonkers Avenue
- Midland Avenue and Cross County Parkway Off-ramp
- Yonkers Avenue and Cross County Parkway Off-ramp
- Yonkers Avenue and Saw Mill River Parkway Northbound Ramp
- Yonkers Avenue and Saw Mill River Parkway Southbound Ramp
- Yonkers Avenue and Ashburton Avenue
- Ashburton Avenue (Route 9A) and Saw Mill River Road (Route 9A)
- Nepperhan Avenue and Broadway (Route 9)



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Not To Scale

Traffic Count Study Locations for NCA Shaft No. 18

Croton Water Treatment Plant

Figure 8.1.4-1

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

In addition to TMCs, automated traffic recorder (ATR) counts have been performed for a 24-hour period for seven days at the following locations:

- Yonkers Avenue – East of Grace Avenue
- Midland Avenue – East of Brewster Avenue
- Central Park Avenue – South of Palmer Road

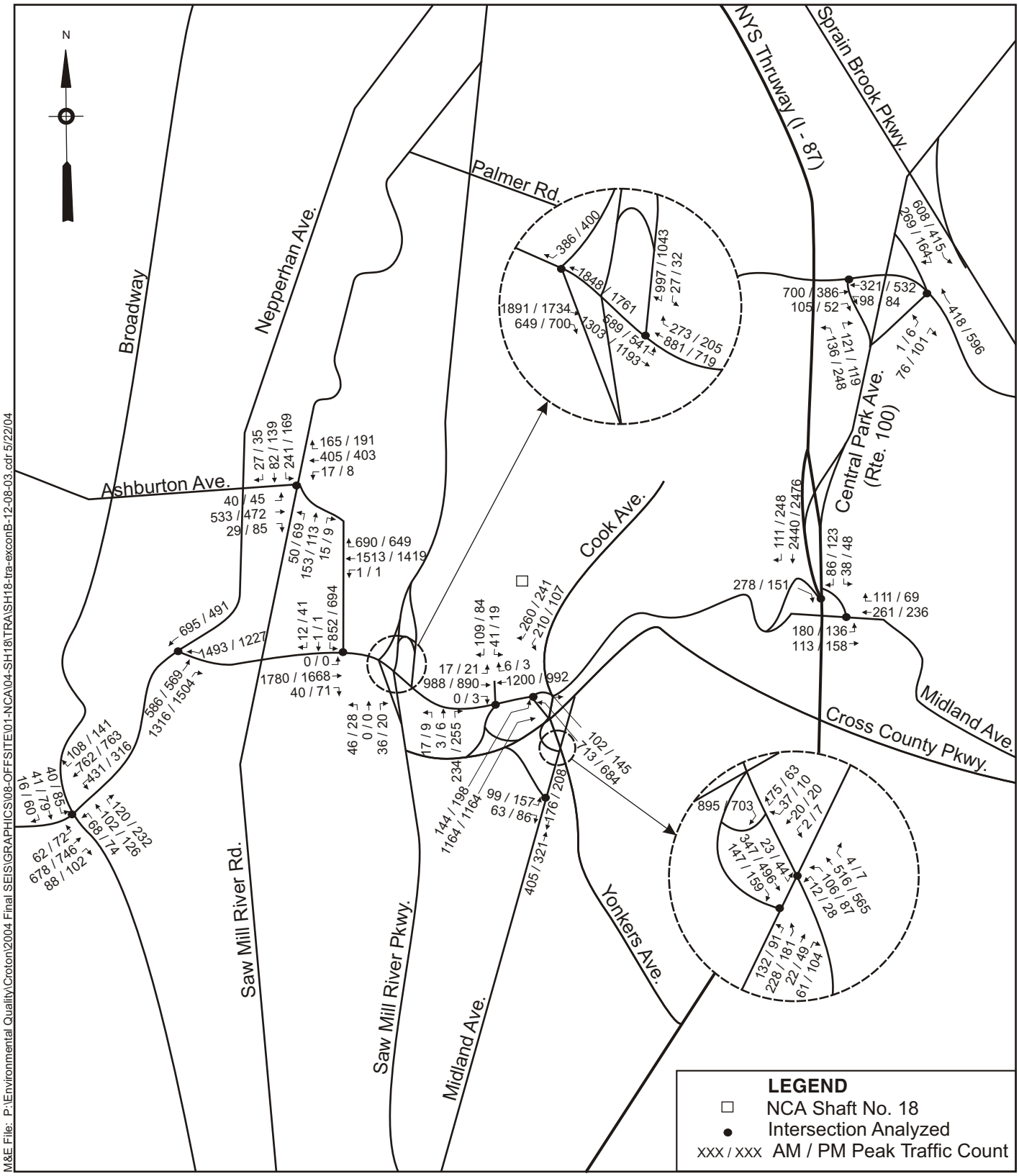
The vehicle classification counts were performed from 7 AM to 10 AM and 2 PM to 8 PM. These hours, as well as those for which the turning movement counts were performed, were chosen as representative of the periods of heaviest traffic volumes during the construction period. It has been assumed that construction would typically commence at 7 AM and finish no later than 6 PM.

To develop year 2002 traffic volumes for the study intersections, the traffic volumes from the turning movement counts were factored utilizing adjacent ATR counts. The resultant intersection turning movement volumes represent an average mid-weekday volume. Since the study intersections represent only a portion of the roadway networks in the study area, the turning movement volumes may not balance. This is due to 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. The year 2002 traffic volumes for the AM and PM peak hours are illustrated in Figure 8.1.4-2.

As noted above, each study area intersection was analyzed in terms of its capacity to accommodate existing traffic volumes and its resulting LOS using the HCM procedures. A summary of findings is presented in Table 8.1.4-1 with the key findings discussed below. See Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation for the procedural details.

Currently, two of the seven signalized intersections in the study area operate at an overall marginally acceptable LOS D in the AM and/or PM peak hours. In all of these instances, a change in signal timing or phasing would possibly allow for sufficient green times to process existing traffic demands and improve the level of service. The remaining five signalized intersections all operate at LOS C or better. Three of the six unsignalized intersections also currently operate at unacceptable LOS E or F condition.

The intersection of Yonkers Avenue and Saw Mill River Parkway Northbound Ramp experiences marginally acceptable LOS D conditions during PM peak hours. These congestion conditions are due to the high expressway interchange volumes and limited number of lanes to carry this traffic (one lane in each direction on the mainline). The traffic exiting southbound, turning right onto Yonkers Avenue, and the eastbound Yonkers Avenue traffic turning left onto northbound Saw Mill River Parkway experiences LOS E conditions in the PM peak hour.



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Not To Scale

New Croton Aqueduct Shaft No. 18
Existing Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 8.1.4-2

TABLE 8.1.4-1. 2002 EXISTING TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

SIGNALIZED INTERSECTIONS	LANE GROUP	EXISTING CONDITIONS					
		WEEKDAY AM PEAK			WEEKDAY PM PEAK		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Palmer Road North at Central Park Ave. NB On Ramp	EB – T	0.67	14.9	B	0.35	9.5	A
	EB – R	0.12	7.6	A	0.06	7.2	A
	WB – L	0.32	10.9	B	0.16	8.2	A
	WB – T	0.32	9.3	A	0.49	11.2	B
	NB – LR	0.59	33.5	C	0.79	42.6	D
	Intersection		**16.1**	**B**		**18.5**	**B**
Yonkers Ave. at Midland Ave. (and Cook Ave.)	WB – L	0.51	36.4	D	0.26	31.6	C
	WB – LR	0.00	28.1	C	0.00	28.1	C
	WB – R	0.74	47.0	D	0.70	44.5	D
	NB – T	0.50	20.7	C	0.48	20.3	C
	NB – R	0.17	16.9	B	0.22	17.5	B
	SB – L	0.66	53.5	D	0.81	64.1	E
	SB – T	0.58	10.9	B	0.55	10.6	B
	Intersection		**21.9**	**C**		**21.9**	**C**
Midland Ave. South at Yonkers Avenue	EB – L	1.02	86.6	F	0.73	37.9	D
	EB – TR	0.16	25.9	C	0.32	27.4	C
	WB – LTR	0.27	26.9	C	0.21	26.3	C
	NB – L	0.26	9.4	A	0.28	9.9	A
	NB – TR	0.26	9.8	A	0.29	10.0	B
	SB – L	0.05	12.9	B	0.12	13.4	B
	SB – TR	0.31	15.3	B	0.41	16.5	B
	Intersection		**29.5**	**C**		**18.5**	**B**
Yonkers Ave. at Saw Mill River Parkway NB Ramps	EB – L	0.70	17.3	B	1.02	59.5	E
	EB – T	0.51	4.4	A	0.56	11.5	B
	WB - T	0.93	47.5	D	0.55	23.0	C
	WB – R	0.57	32.5	C	0.31	20.4	C
	SB – L	0.14	36.5	D	0.07	24.0	C
	SB – R	0.95	33.6	C	1.05	66.2	E
	Intersection		**24.6**	**C**		**35.8**	**D**

TABLE 8.1.4-1. 2002 EXISTING TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

SIGNALIZED INTERSECTIONS	LANE GROUP	EXISTING CONDITIONS					
		WEEKDAY AM PEAK			WEEKDAY PM PEAK		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Yonkers Ave. at Ashburton Ave/Apartment Driveway	EB – TR	1.01	48.4	D	0.90	24.9	C
	WB – LT	1.00	46.3	D	0.76	18.2	B
	WB – R	0.42	0.1	A	0.39	0.7	A
	NB – LR	0.13	16.2	B	0.10	21.1	C
	SB – L	1.05	70.3	E	1.02	68.5	E
	SB – LTR	0.02	15.1	B	0.08	20.8	C
	Intersection		**44.9**	**D**		**26.3**	**C**
Ashburton Ave. (Rt. 9A) at Saw Mill River Road (Rt. 9A)/Cemetery Driveway	EB – LTR	0.69	20.6	C	0.69	17.5	B
	WB – LT	0.47	15.4	B	0.45	12.2	B
	WB – R	0.20	11.9	B	0.24	9.9	A
	NB – LTR	0.42	27.1	C	0.56	31.9	C
	SB – L	0.69	38.1	D	0.56	32.3	C
	SB – TR	0.20	23.4	C	0.37	26.1	C
	Intersection		**21.9**	**C**		**19.3**	**B**
Nepperhan Ave. at Broadway (Rt. 9A)	EB – L	0.31	20.1	C	0.35	20.4	C
	EB – TR	0.61	24.2	C	0.69	25.9	C
	WB – L	0.91	50.0	D	0.78	37.9	D
	WB – T	0.49	18.8	B	0.52	19.2	B
	WB – R	0.14	15.2	B	0.19	15.8	B
	NB – LTR	0.60	27.3	C	0.91	49.4	D
	SB – LTR	0.21	21.7	C	0.67	30.4	C
	Intersection		**26.8**	**C**		**28.8**	**C**

TABLE 8.1.4-1. 2002 EXISTING TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

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
Midland Ave. at Central Park Ave. NB Ramps	EB-L	0.19	9.1	A	0.12	8.3	A
	SB-L	0.19	23.8	C	0.15	17.6	C
	SB-R	0.15	11.3	B	0.17	10.9	B
Midland Ave. at Central Park Ave. SB Ramps	EB-R	1.29	>150	F	0.79	67.9	F
Palmer Road South at Central Park Ave. SB Off Ramp (and Sprain Brook Pkwy NB & SB Off Ramps)	WB-LT	0.00	9.9	A	0.00	8.7	A
	NB-LR	0.22	17.0	C	0.21	13.7	B
Midland Ave. at Cross County Parkway Off Ramp	SB-L	0.26	16.4	C	0.36	16.7	C
	SB-R	0.08	9.7	A	0.12	10.0	B
Yonkers Ave. at Cross County Parkway Off Ramp	EB-LT	0.03	11.8	B	0.03	10.7	B
	NB-LTR	0.99	92.0	F	0.77	40.7	E
	SB-LR	0.81	73.4	F	0.83	100.8	F
Yonkers Ave. at Saw Mill River Parkway SB Ramps	SB-R	0.96	64.6	F	0.92	56.1	F

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

The Yonkers Avenue at Ashburton Avenue intersection experiences marginally acceptable LOS D conditions during the AM peak hour. This congestion is due to the high traffic volumes on both Yonkers Avenue and Ashburton Avenue traveling to and from the Saw Mill River Parkway and Route 9 located just east and west of this intersection, respectively. In particular the southbound left turning movement experiences LOS E conditions in both the AM and PM peak hours, though the overall intersection operates at acceptable LOS C in the PM peak hour.

In addition to the signalized intersections described above, three of the six unsignalized intersections also experience congested conditions during the AM and PM peak hours. The conditions of these intersections are provided below.

The intersection of Midland Avenue and Central Park Avenue Southbound Off-Ramp experiences LOS F conditions in the AM peak hours. Though the number of conflicting movements is few at this intersection, Central Avenue carries extremely high traffic volumes in three lanes traveling southbound and the southbound right turning movement is in a shared use lane with the through movement.

The Yonkers Avenue and Cross County Exit Ramp intersection experiences LOS F conditions in the AM and PM peak hours. The stop-controlled approaches, northbound and southbound, carry traffic volumes high enough to cause such levels of service. The eastbound approach experiences LOS B in both peak hours.

The Yonkers Avenue and Saw Mill River Parkway Southbound Ramps intersection experiences LOS E conditions in the AM and PM peak hours. These congestion conditions are due to the heavy southbound right turning volumes exiting the Parkway onto Yonkers Avenue.

Safety. Accident data information was obtained from the period from May 1, 1998 to April 30, 2001. Table 8.1.4-2 below summarizes the accident data. Within the study area, there were a total of 92 reportable accidents that occurred between May 1, 1998 and April 30, 2001, of which none involved fatalities and 73 involved injuries.

Parking. There are no posted parking regulations on the local streets near the study locations, and because the area is generally commercial in nature, on-street parking demand is very low. Off-street lots provide parking for all of the offices and municipal buildings with ample parking-space supplies for employees and visitors.

Transit. The Shaft No. 18 site is served by three bus lines of the Westchester County Bee-Line Bus System. The #7, #25, and #91 buses all have stops within the study area.

TABLE 8.1.4-2. NCA SHAFT NO. 18 INVENTORY OF ACCIDENTS

Intersection	Total # of Reportable Accidents[1]	Total # of FTL	Total # of INJ	Total # of PDO
Midland Avenue and Central Park Avenue North Ramps	7	0	6	1
Midland Avenue and Central Park Avenue South Ramps	5	0	3	2
Palmer Road and Central Park Avenue NB On Ramp	2	0	1	1
Palmer Road and Central Park Avenue SB Off Ramp	0	0	1	1
Yonkers Avenue at Midland Avenue and Cook Avenue	12	0	9	3
Midland Avenue South and Yonkers Avenue	10	0	7	3
Midland Avenue and Cross County Parkway Ramps	4	0	4	0
Yonkers Avenue and Cross County Parkway Ramps	2	0	1	1
Yonkers Avenue and Saw Mill River Parkway NB Ramps	7	0	7	0
Yonkers Avenue and Saw Mill River Parkway SB Ramps	2	0	2	0
Yonkers Avenue and Ashburton Avenue	18	0	17	1
Yonkers Avenue and Nepperhan Avenue	4	0	2	2
Ashburton Avenue (Rt. 9A) and Saw Mill River Road (Rt. 9A)	8	0	7	1
Nepperhan Avenue and Broadway (Rt. 9A)	9	0	6	3

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

Noise Analysis.

Preliminary Noise Screening for Mobile Source Noise Analysis. As outlined in the methodologies section (Section 4.10, Data Collection and Impact Methodologies, Noise), and as the initial step in the mobile source noise analysis, a preliminary noise screening using passenger car equivalence (PCE) values was performed. The screen was used to determine whether identified noise-sensitive route segments may experience a significant adverse impact as a result of the additional vehicular traffic generated as part of the proposed project. Existing and projected future traffic data for the noise-sensitive route segments in the vicinity of NCA Shaft No. 18 were analyzed to determine a PCE value of each segment for the morning peak hour, the afternoon peak hour, and the lowest traffic-volume off-peak (i.e. quietest) hour for the existing condition. The preliminary noise screening was performed by comparing the existing PCEs with the existing PCEs plus the addition of anticipated future project generated PCEs. The equation below was used for the comparison. Future PCEs would be from additional traffic resulting from the proposed project.

$$\text{If } \frac{\text{Existing PCEs + Future Project-Generated PCEs}}{\text{Existing PCEs}} > 2.0 \text{ then an impact may occur.}$$

This comparative analysis of existing PCEs and future PCEs was used to determine whether the identified noise-sensitive route segments would potentially experience a doubling or more. Three decibels (dBA) is used for screening purposes since it correlates to an increase that is perceptible to human auditory sensitivity. This threshold is used as a guideline to determine whether anticipated project impacts warrant further field measurements and subsequent Traffic Noise Model (TNM) analysis. A doubling of PCEs corresponds to this critical noise increase of three dBA. CEQR has established a project-induced noise level threshold of 3-5 dBA at receptors. Changes in noise levels of less than three dBA therefore were not considered significant, and route segments that did not experience a doubling of PCEs would not require further analysis.

The time period representing the largest increase in future PCEs resulting from the proposed project was used for comparative analysis. The traffic generated by construction activities was not anticipated to change over the course of the construction period. As a result, mobile source noise levels would not fluctuate substantially over the course of the construction phase. The year 2013 was selected as a representative construction year because it falls at the approximate midpoint of the construction schedule.

Following the preliminary noise screening using the comparative PCE analysis, it was found that none of the route segments required a detailed analysis of potential impacts from mobile source noise. Table 8.1.4-3 presents the comparison of existing PCEs to anticipated future maximum PCEs resulting from project related activities along route segments.

TABLE 8.1.4-3. COMPARISON OF EXISTING PCES TO FUTURE PCES FROM CONSTRUCTION IN VICINITY OF NCA SHAFT NO. 18 (2013)

	Location	Period of Analysis (Weekday)	Existing PCEs	Time	New Passenger Car	New Trucks	New PCEs	PCE Ratio	Incremental Change in dbA	Further Analysis Required?
1	Nepperhan Ave btw Broadway & Yonkers Ave	AM Peak	17210	07:30 - 08:30	7	3	148	1.01	0.04	No
		PM Peak	11118	16:30 - 17:30	7	3	148	1.01	0.06	No
		Quietest Period	9373	10:00 - 11:00	0	4	188	1.02	0.09	No
2	Ashburton Ave btw Broadway & Saw Mill River Road	AM Peak	4625	07:30 - 08:30	2	0	2	1.00	0.00	No
		PM Peak	3239	16:30 - 17:30	2	0	2	1.00	0.00	No
		Quietest Period	2385	10:00 - 11:00	0	0	0	1.00	0.00	No
3	Ashburton Ave btw Saw Mill River Road Ave & Yonkers Ave.	AM Peak	5886	07:30 - 08:30	2	0	2	1.00	0.00	No
		PM Peak	3646	16:30 - 17:30	2	0	2	1.00	0.00	No
		Quietest Period	2991	10:00 - 11:00	0	0	0	1.00	0.00	No
4	Yonkers Ave btw Nepperhan Ave and Ashburton Ave.	AM Peak	11886	07:30 - 08:30	7	3	148	1.01	0.05	No
		PM Peak	7973	16:30 - 17:30	7	3	148	1.02	0.08	No
		Quietest Period	6596	10:00 - 11:00	0	4	188	1.03	0.12	No
5	Yonkers Ave. btw Ashburton Ave and Saw Mill River Parkway	AM Peak	19515	07:30 - 08:30	9	3	150	1.01	0.03	No
		PM Peak	10314	16:30 - 17:30	9	3	150	1.01	0.06	No
		Quietest Period	9477	10:00 - 11:00	0	4	188	1.02	0.09	No
6	Yonkers Ave btw Saw Mill River Pkwy & Cook Ave	AM Peak	10514	07:30 - 08:30	104	3	245	1.02	0.10	No
		PM Peak	6271	16:30 - 17:30	29	3	170	1.03	0.12	No
		Quietest Period	6271	10:00 - 11:00	0	4	188	1.03	0.13	No
7	Yonkers Ave btw Midland Ave and NYS Thruway	AM Peak	4448	07:30 - 08:30	0	0	0	1.00	0.00	No
		PM Peak	3872	16:30 - 17:30	4	0	4	1.00	0.00	No
		Quietest Period	2793	10:00 - 11:00	0	4	188	1.07	0.28	No
8	Midland Ave btw Yonkers Ave & Central Park Ave.	AM Peak	3374	07:30 - 08:30	3	0	3	1.00	0.00	No
		PM Peak	2836	16:30 - 17:30	3	0	3	1.00	0.00	No
		Quietest Period	1810	11:00 - 12:00	0	0	0	1.00	0.00	No
9	Central Park Ave btw NYS Thruway & Sprain Brook Pkwy	AM Peak	7759	07:30 - 08:30	1	0	1	1.00	0.00	No
		PM Peak	7807	16:30 - 17:30	3	0	3	1.00	0.00	No
		Quietest Period	6542	11:00 - 12:00	0	0	0	1.00	0.00	No

Notes:
New PCEs = (no. of cars + no. of trucks(47))
PCE ratio = (Existing PCEs + Project generated PCEs) / Existing PCEs
Incremental change in dBA = 10 log (PCE ratio)

Methodology to establish AM/PM peak hour existing and project-induced PCEs discussed in Data Collection and Impact Methodologies, Section 4.10, Noise

Quietest hour existing PCEs calculated from traffic data (automatic traffic recorders, vehicle classifications, and turning movement counts). ATRs and VCs were used to establish traffic volume and mix along a route segment. Where ATRs were not available, the TMC count from the peak hour for the adjacent intersection was used to establish the trip assignment for the route segment. ATR and VC data from the nearest physically similar route sement for the quietest hour was used to establish volume and mix.

Quietest hour project-induced PCEs derived by assuming deliveries constant between 7 AM and 5 PM. Route segments established in Traffic Analysis Section.

Mobile Source Noise. The roadways considered for mobile source noise analysis at the Shaft Site are those presented in Table 8.1.4-4 and Figure 8.1.4-3. The roadways considered for analysis were those local routes identified as proposed transportation routes that connect the major thoroughfares to the Shaft Site. Sensitive receptors along the proposed project's transportation routes were identified. Route segments that did not contain sensitive receptors along them were not considered for further noise analysis. The major thoroughfares for commercial vehicles to the Shaft Site are Route 9 to the west and the NYS Thruway (I-87) to the east. In addition, major thoroughfares for commuter traffic (i.e. passenger cars) to access the Shaft Site are the Saw Mill River Parkway located to the west, the Sprain Brook Parkway to the east, and the Cross County Expressway to the east. Therefore, the potential for noise impacts along those proposed transportation routes connecting Route 9, I-87, the Saw Mill River Parkway, the Sprain Brook Parkway, and the Cross County Parkway to the Shaft Site was evaluated.

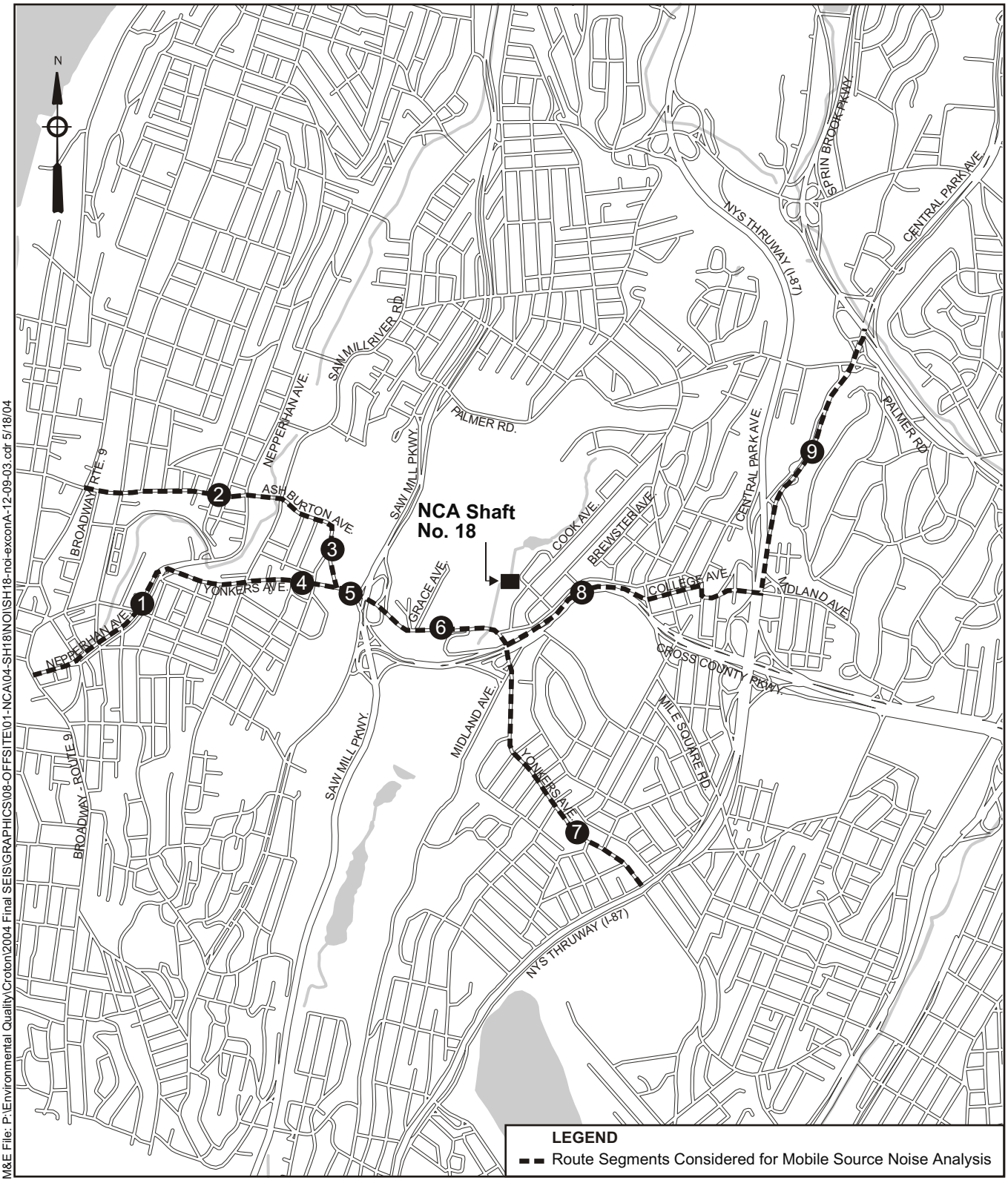
TABLE 8.1.4-4. ROUTE SEGMENTS CONSIDERED FOR MOBILE SOURCE NOISE ANALYSIS AT NCA SHAFT NO. 18

No.	Route Segment
1	Nepperhan Ave between Broadway and Yonkers Ave
2	Ashburton Ave between Broadway and Saw Mill River Road
3	Ashburton Ave between Saw Mill River Road Ave and Yonkers Ave.
4	Yonkers Ave between Nepperhan Ave and Ashburton Ave.
5	Yonkers Ave. between Ashburton Ave and Saw Mill River Parkway
6	Yonkers Ave between Saw Mill River Pkwy and Cook Ave
7	Yonkers Ave between Midland Ave and NYS Thruway
8	Midland Ave between Yonkers Ave and Central Park Ave.
9	Central Park Ave between NYS Thruway and Sprain Brook Parkway

As shown in Table 8.1.4-3, none of the noise-sensitive route segments would experience a doubling of PCEs. Therefore, it was concluded that the noise contribution from project-generated mobile sources would not prove significant. Route segments were not examined further.

Stationary Source Noise. Stationary source noise monitoring was performed at the Shaft Site in order to establish existing baseline conditions. Noise monitoring was performed to reflect the construction and completed-project operation times, and to account for the receptor types that were within 1,500 feet of the Shaft Site. Twenty-four-hour baseline noise monitoring was performed at the Shaft Site immediately to the west of a local residence (see Figure 8.1.4-4). This location was chosen because it was the closest point on the property to a sensitive receptor. The dominant noise source at this location was traffic from Yonkers Avenue to the south.

Noise level measurements were collected for 24 hours on a weekday and on a Sunday. Monitoring was performed in order to establish the period of the day with the potential for the greatest incremental change in noise. Monitoring periods were chosen to reflect planned construction activity, which may require 24-hour usage of a ventilation system. Construction activities were anticipated to take place on Monday through Friday from 7:00 AM to 6:00 PM.



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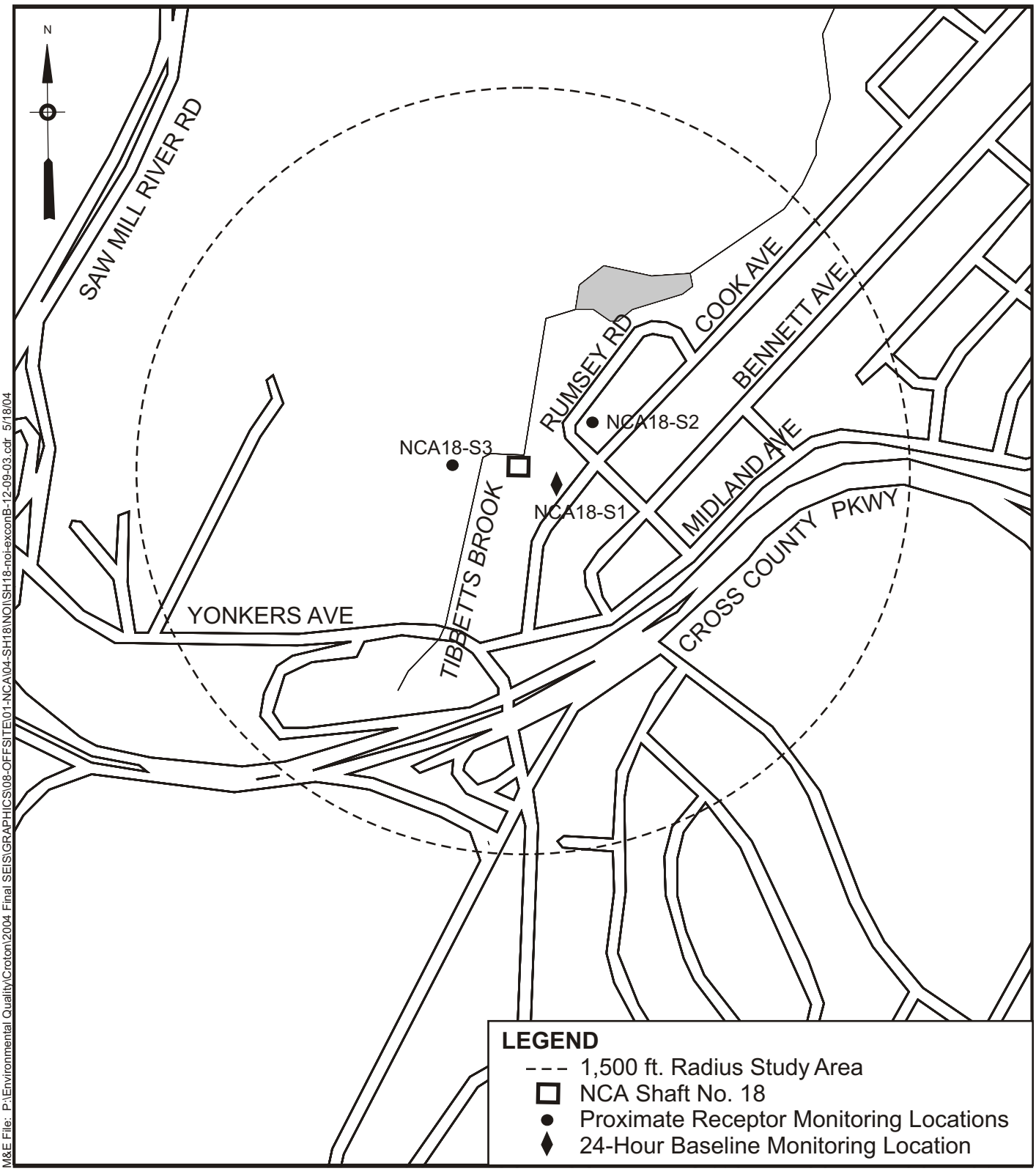
NOTE: Numbers correspond to route segments listed in Table 8.1.4 - 10.

New Croton Aqueduct Shaft No. 18
Route Segments
Mobile Source Noise Analysis

Croton Water Treatment Plant

Figure 8.1.4-3



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500 0 500

SCALE IN FEET

Note: NCA18-S1 monitoring location same as baseline monitoring location.

New Croton Aqueduct Shaft No. 18 Stationary Noise Source Monitoring Locations

Croton Water Treatment Plant

Figure 8.1.4-4

Weekday Baseline Monitoring.

The 24-hour baseline noise levels measured on a weekday are presented in Table 8.1.4-5. The quietest period (between 11:00 PM and 12:00 AM) had a Leq of 49.9 dBA and the noisiest period (between 11:00 AM and 12:00 PM) had a Leq of 55.3 dBA.

TABLE 8.1.4-5. MEASURED 24-HOUR NOISE LEVELS (Leq) AT NCA SHAFT NO. 18 ON A WEEKDAY
(Leq, dBA)

	Hourly Noise Level											
TIME	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
AM	52.4	53.2	53.1	52.4	52.9	53.1	53.8	55.1	53.2	55.0	55.2	**55.3**
PM	53.1	54.2	53.9	54.8	53.2	52.9	54.5	53.1	53.9	52.4	50.8	**49.9**

Sunday Baseline Monitoring.

The 24-hour noise levels measured on a Sunday are presented in Table 8.1.4-6. The quietest period (between 5:00 AM and 6:00 AM) had a Leq of 52.9 dBA and the noisiest period (between 1:00 PM and 2:00 PM) had a Leq 57.7 dBA.

TABLE 8.1.4-6. MEASURED 24-HOUR NOISE LEVELS AT NCA SHAFT NO. 18 ON A SUNDAY
(Leq, dBA)

	Hourly Noise Level											
TIME	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
AM	53.9	53.7	53.2	53.2	54.1	**52.9**	53.2	54.0	54.2	54.4	55.5	56.5
PM	56.1	**57.7**	54.2	54.9	55.5	55.6	55.4	55.1	56.2	55.2	53.7	55.3

Following the initial 24-hour baseline monitoring, 20-minute measurements were taken at proximate noise-sensitive receptors. Table 8.1.4-7 presents relevant information regarding the receptors. Measurements were conducted at each receptor during those hours that the receptor was sensitive to noise contributions. Residences were assumed to be occupied (and therefore sensitive to noise occupations) at all times.

TABLE 8.1.4-7. DESCRIPTION OF NOISE SENSITIVE RECEPTORS FOR STATIONARY SOURCE ANALYSIS

Receptor Name	Description of Receptor
NCA18-S1	Private residence on Cook Street
NCA18-S2	Private residence on Summerfield Street
NAC18-S3	Dunwoodie Public Golf Course

Weekday Monitoring at Receptors.

The 20-minute measurements were performed at the receptors during the noisiest and quietest times as determined by the initial 24-hour monitoring. The proximate receptor location and associated monitoring periods for weekdays are presented in Table 8.1.4-8.

TABLE 8.1.4-8. TWENTY-MINUTE MEASURED WEEKDAY NOISE LEVELS AT SENSITIVE RECEPTORS NEAR NCA SHAFT NO. 18
(Leq, dBA)

Monitoring Location	Monitoring Period	Monitoring Time	Noise Level
NCA18-S1	Noisiest Daytime	9-10 AM	55.3
	Quietest Daytime	12-1 PM	53.1
	Quietest Nighttime	10 PM-12 AM	49.9
NCA18-S2	Noisiest Daytime	9-10 AM	51.3
	Quietest Daytime	12-1 PM	50.2
	Quietest Nighttime	10 PM-12 AM	48.2
NCA18-S3	Noisiest Daytime	9-10 AM	55.1
	Quietest Daytime	12-1 PM	51.0
	Quietest Nighttime	9-10 PM	44.2

Sunday Monitoring at Receptors.

Twenty-minute monitoring periods and noise levels for a Sunday at proximate receptors are presented in Table 8.1.4-9.

TABLE 8.1.4-9. TWENTY-MINUTE MEASURED SUNDAY NOISE LEVELS AT SENSITIVE RECEPTORS NEAR NCA SHAFT NO. 18
(Leq, dBA)

Monitoring Location	Monitoring Period	Monitoring Time	Noise Level
NCA18-S1	Noisiest	1-2 PM	57.7
	Quietest Daytime	5-7 AM	52.9
NCA18-S2	Noisiest	1-2 PM	48.1
	Quietest Daytime	5-7 AM	46.2
NCA18-S3	Noisiest	1-2 PM	49.6
	Quietest Daytime	5-7 AM	45.5

Air Quality. A screening level analysis was performed based on the anticipated level of construction activity at NCA Shaft No. 18. No operational impacts to the air quality within the study area are anticipated as part of this project. Potential impacts during construction are discussed in the Potential Construction Impacts section below.

Historic and Archaeological Resources. No impacts to historic and archaeological resources within the study area are anticipated as part of this project. Potential impacts during construction are discussed in the Potential Construction Impacts section below.

Hazardous Materials. There is the potential for hazardous materials to exist at NCA Shaft No. 18. These materials could consist of asbestos-containing materials (ACM) or lead-based paint. A hazardous material evaluation would be conducted within NCA Shaft No. 18 in order to ensure environmental safety for construction workers and NYCDEP personnel and to ensure compliance with all applicable hazardous material rules and regulations. In addition, potential contamination within NCA Shaft No. 18 would not pose a threat to public health or safety since the facility is a restricted use facility. The information gathered as part of this evaluation would be used to develop a Construction Contamination Management Plan (CCMP) and to determine the proper disposal requirements for material removed from the facility as part of the rehabilitation conducted as part of this project. The hazardous materials investigation to determine the appropriate level of material handling in accordance with a detailed CCMP would ensure the safety of public health. Therefore, no potential hazardous material impact is anticipated.

Natural Resources. No impacts to natural resources are anticipated as part of the operations of this project. Therefore, a detailed analysis of natural resources was not conducted for this site.

Water Resources. No impacts to water resources are anticipated as part of this project. Therefore, a detailed analysis of water resources was not conducted for this site.

Infrastructure and Energy. No impacts to infrastructure or energy resources within the study area are anticipated as part of this project. Potential impacts during construction are discussed in the Potential Construction Impacts section below.

Electric and Magnetic Fields (EMF) and Extremely Low Frequency Fields (ELF) Analysis. No impacts related to electric and magnetic fields or extremely low frequency fields are anticipated as part of this project. Therefore, a detailed analysis of these parameters was not conducted for this site.

Solid Waste. No impacts related to solid waste handling or facilities are anticipated as part of this project. Potential impacts during construction are discussed in the Potential Construction Impacts section below.

8.1.4.2.2. Future Without the Project

The Future Without the Project considers the future through the year 2015. The peak construction year for work related to pressurization of the NCA at Shaft No. 18 is 2013; the operation year is 2015.

Shaft Site. In the Future Without the Project, the Shaft Site would remain largely unchanged from the existing conditions. The existing buildings would remain and their current operation patterns would continue. Independent of the proposed project, the NYCDEP has plans to conduct general maintenance and repair on the 115-year old NCA and its access locations. Necessary repairs to cracks and leaks would be conducted following an inspection of the NCA. In addition, new security measures (i.e., doors, windows, roof and camera and lighting) would be installed. These improvements would assist to protect the public utility and ensure its operation well into the future. This work would take place over the three available shutdown seasons between October 2004 and April 2007 and is subject to a separate environmental review. The shaft building, the conduit for Tibbet's Brook that passes beneath the building, and the NCA are all eligible for listing on the National Register of Historic Places and attention would be made to ensure that new installation are consistent with the design patterns of the structures and special care is made to protect the historical structures.

Study Area. In the Future Without the Project, the predominantly open space and high-density residential character of the area surrounding the Shaft Site would be preserved. Although there remains one parcel of undeveloped land within the study area interests have been made to the City of Yonkers and therefore, it is likely that this parcel would be developed by 2013. Development on this property would not affect the visual character on or around the Shaft Site since current zoning limits the building height to 35 feet, and the elevated Cross County Parkway and existing vegetation would obstruct views. Based on potential developments and anticipated population changes within the study area, the potential increased demands on community facilities would be re-evaluated and the local municipality would provide additional services where appropriate.

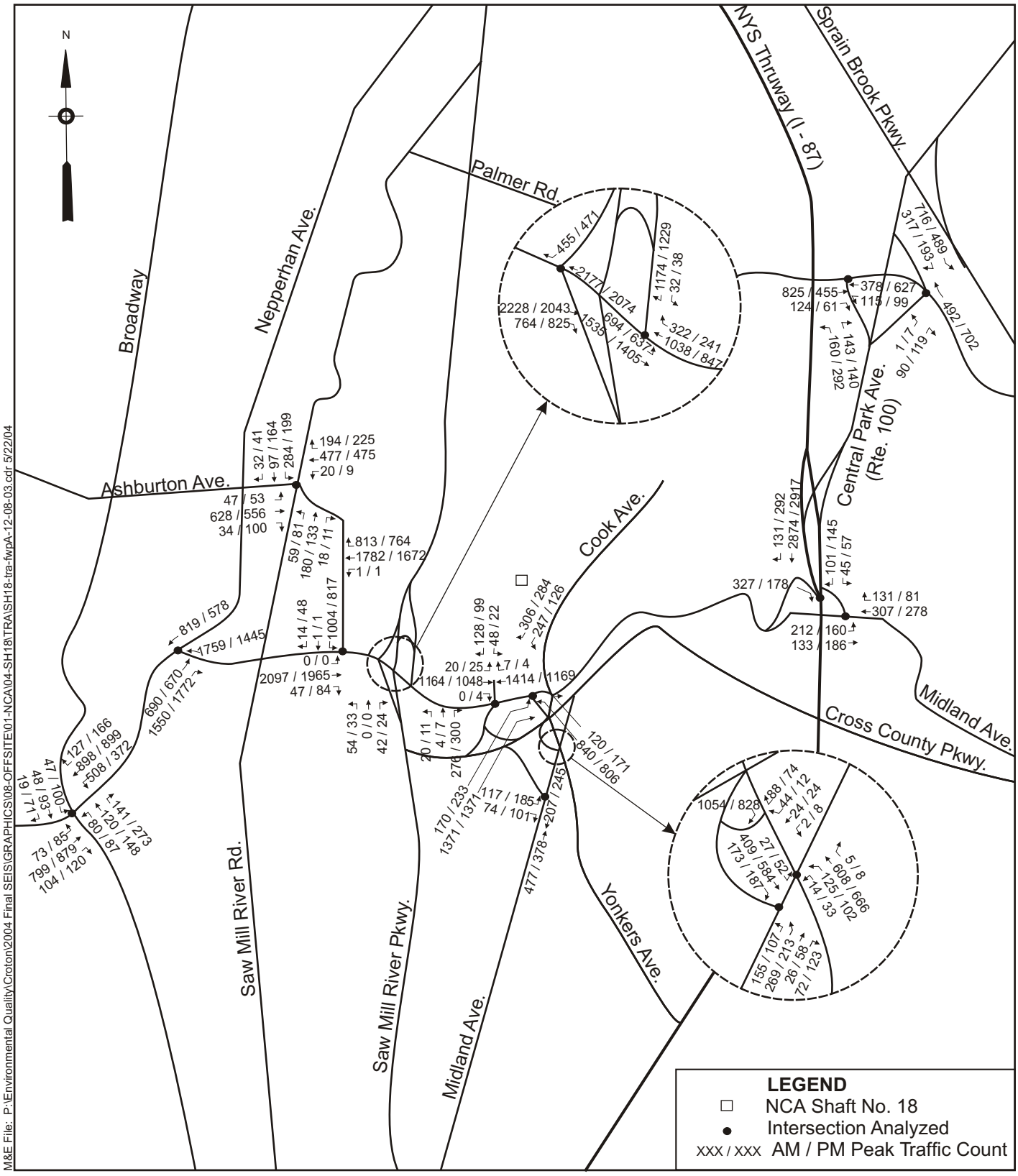
Traffic and Transportation. Existing traffic volumes are anticipated to increase between 2002 and the 2013 Future Without the Project analysis year. Furthermore, to account for the potential general traffic increases in Westchester County, an annual growth rate of 1.5 percent per year was applied to the 2002 Existing Traffic Volumes. Any proposed area developments have been accounted for in the general traffic background growth rate.

The traffic volumes due to the background growth would increase traffic congestion in the project area. Figure 8.1.4-5 illustrates the 2013 Future Without the Project traffic volumes. Results of the 2013 analysis are presented in Table 8.1.4-10. In the 2013 analysis year, seven intersections would experience unacceptable overall LOS D, E, or F conditions for the AM and/or PM peak hours. These intersections are as follows:

1. Midland Avenue South at Yonkers Avenue
2. Yonkers Avenue and Saw Mill River Parkway Northbound Ramps
3. Yonkers Avenue and Ashburton Avenue
4. Nepperhan Avenue and Broadway (Route 9A)
5. Midland Avenue at Central Park Avenue Southbound Ramps
6. Yonkers Avenue at Cross County Parkway Off Ramp
7. Yonkers Avenue at Saw Mill River Parkway Southbound Ramp

Of these seven intersections, four intersections have increased overall congestion LOS from the 2002 Existing Conditions to the 2013 Future Without the Project conditions. The remaining intersections would continue to operate at unacceptable levels of service that are unchanged from the 2002 Existing Conditions.

Under 2013 Future Without the Project conditions, the Midland Avenue South and Yonkers Avenue intersection would experience marginally unacceptable LOS D conditions in the AM peak hour, a change from LOS C. In the PM peak hour, the conditions would experience an acceptable LOS C, a change from LOS B.



Not To Scale

New Croton Aqueduct Shaft No. 18
2013 Future Without the Project
Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 8.1.4-5

TABLE 8.1.4-10. 2013 FUTURE WITHOUT THE PROJECT TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

SIGNALIZED INTERSECTIONS	LANE GROUP	2013 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
Palmer Road North at Central Park Ave. NB On Ramp	EB – T	0.79	19.1	B	0.42	10.3	B
	EB – R	0.14	7.8	A	0.07	7.2	A
	WB – L	0.44	14.5	B	0.21	8.7	A
	WB – T	0.38	9.9	A	0.57	12.6	B
	NB – LR	0.69	37.3	D	0.93	58.4	E
	Intersection		**19.1**	**B**		**23.4**	**C**
Yonkers Ave. at Midland Ave. (and Cook Ave.)	WB – L	0.60	39.0	D	0.31	32.3	C
	WB – LR	0.00	28.1	C	0.00	28.1	C
	WB – R	0.87	59.2	E	0.82	53.7	D
	NB – T	0.59	22.2	C	0.56	21.7	C
	NB – R	0.20	17.3	B	0.26	18.0	B
	SB – L	0.78	62.6	E	0.95	87.1	F
	SB – T	0.68	12.7	B	0.65	12.1	B
	Intersection		**25.1**	**C**		**25.7**	**C**
Midland Ave. South at Yonkers Avenue	EB – L	1.28	>150	F	0.90	57.1	E
	EB – TR	0.19	26.2	C	0.37	28.1	C
	WB – LTR	0.32	27.5	C	0.24	26.7	C
	NB – L	0.34	10.0	A	0.38	10.9	B
	NB – TR	0.31	10.2	B	0.34	10.5	B
	SB – L	0.07	13.0	B	0.15	13.7	B
	SB – TR	0.37	16.0	B	0.49	17.5	B
	Intersection		**50.0**	**D**		**21.9**	**C**
Yonkers Ave. at Saw Mill River Parkway NB Ramps	EB – L	0.82	23.7	C	1.32	177.7	F
	EB – T	0.60	5.2	A	0.66	13.1	B
	WB - T	1.10	90.9	F	0.65	24.9	C
	WB – R	0.68	36.7	D	0.37	21.4	C
	SB – L	0.17	36.6	D	0.08	24.1	C
	SB – R	1.13	90.5	F	1.26	147.4	F
	Intersection		**48.9**	**D**		**75.9**	**E**

TABLE 8.1.4-10. 2013 FUTURE WITHOUT THE PROJECT TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

SIGNALIZED INTERSECTIONS	LANE GROUP	2013 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
Yonkers Ave. at Ashburton Ave/Apartment Driveway	EB – TR	1.19	116.7	F	1.06	58.4	E
	WB – LT	1.17	109.8	F	0.93	28.6	C
	WB – R	0.50	1.2	A	0.46	1.0	A
	NB – LR	0.15	16.5	B	0.12	21.4	C
	SB – L	1.23	141.5	F	1.20	132.2	F
	SB – LTR	0.02	15.1	B	0.09	20.9	C
	Intersection		**102.1**	**F**		**52.1**	**D**
Ashburton Ave. (Rt. 9A) at Saw Mill River Road (Rt. 9A)/Cemetery Driveway	EB – LTR	0.82	26.8	C	0.83	23.7	C
	WB – LT	0.56	17.1	B	0.53	13.5	B
	WB – R	0.24	12.3	B	0.28	10.4	B
	NB – LTR	0.50	28.9	C	0.76	43.1	D
	SB – L	0.87	56.2	E	0.69	39.0	D
	SB – TR	0.23	23.9	C	0.43	27.3	C
	Intersection		**27.2**	**C**		**23.8**	**C**
Nepperhan Ave. at Broadway (Rt. 9A)	EB – L	0.37	21.2	C	0.40	21.6	C
	EB – TR	0.72	26.8	C	0.81	30.1	C
	WB – L	1.19	139.6	F	1.03	89.0	F
	WB – T	0.58	20.2	C	0.61	20.8	C
	WB – R	0.17	15.5	B	0.23	16.2	B
	NB – LTR	0.72	31.7	C	1.10	101.9	F
	SB – LTR	0.26	22.2	C	0.89	54.1	D
	Intersection		**44.1**	**D**		**46.3**	**D**

TABLE 8.1.4-10. 2013 FUTURE WITHOUT THE PROJECT TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

UNSIGNALIZED INTERSECTIONS	LANE GROUP	2013 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
Midland Ave. at Central Park Ave. NB Ramps	EB-L	0.24	9.7	A	0.14	8.6	A
	SB-L	0.30	34.0	D	0.22	21.8	C
	SB-R	0.19	12.3	B	0.22	11.6	B
Midland Ave. at Central Park Ave. SB Ramps	EB-R	>1.50	>150	F	1.27	>150	F
Palmer Road South at Central Park Ave. SB Off Ramp (and Sprain Brook Pkwy NB & SB Off Ramps)	WB-LT	0.00	10.7	B	0.00	9.0	A
	NB-LR	0.31	21.4	C	0.28	16.1	C
Midland Ave. at Cross County Parkway Off Ramp	SB-L	0.36	20.4	C	0.49	21.8	C
	SB-R	0.10	10.0	A	0.14	10.5	B
Yonkers Ave. at Cross County Parkway Off Ramp	EB-LT	0.05	13.5	B	0.05	11.9	B
	NB-LTR	>1.50	>150	F	1.23	>150	F
	SB-LR	>1.50	>150	F	>1.50	>150	F
Yonkers Ave. at Saw Mill River Parkway SB Ramps	SB-R	1.34	>150	F	1.28	>150	F

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

Under 2013 Future Without the Project conditions, the intersection of Yonkers Avenue and Saw Mill River Parkway Northbound Ramp would experience marginally unacceptable LOS D and E conditions during the AM and PM peak hours, a change from LOS C and marginally acceptable D in the 2002 Existing Conditions.

Under the 2013 Future Without the Project conditions, the Yonkers Avenue and Ashburton Avenue intersection would experience increased congestion from the 2002 Existing Conditions. In the AM peak hour, the intersection would operate at LOS F, reduced from marginally acceptable LOS D in 2002. In the PM peak hour, the intersection would experience marginally unacceptable LOS D conditions, reduced from acceptable LOS C in 2002.

Under 2013 Future Without the Project conditions, the Nepperhan Avenue at Broadway (Route 9A) intersection would experience marginally acceptable LOS D conditions during the AM peak hour, a change from acceptable LOS C in the 2002 Existing Conditions. The intersection would operate at marginally acceptable LOS D in the PM peak, a change from LOS C in the 2002 Existing Conditions.

Under the 2002 Existing Conditions and 2013 Future Without the Project conditions, the following intersections experience LOS F conditions during both the AM and PM peak hours: Midland Avenue at Central Park Avenue Southbound Ramps, Yonkers Avenue at Cross County Parkway Off Ramps, and Yonkers Avenue at Saw Mill River Parkway Southbound Ramp.

Noise Analysis.

Mobile Source Noise. Based on the results of the PCE screening analysis previously discussed, none of the identified noise-sensitive route segments in the vicinity of the Shaft Site required further analysis. As a result, the Future Without the Project traffic volumes and related noise levels along the transportation roadways leading to and from the Shaft Site were not needed in order to conclude that contributions to total construction noise would not be significant.

Stationary Source Noise. Future baseline noise levels at proximate receptor locations for the construction phase of the proposed NCA work was determined for the peak year of construction. A review of future planned developments in the study area for the year ending 2013 revealed no new stationary noise sources that would significantly increase the existing background noise levels at proximate receptor locations. Therefore, the Future Without the Project noise levels at nearby stationary source receptors are not anticipated to change from existing noise levels measured during the noise-monitoring program.

No changes in stationary sources were anticipated for the operation year (2015) in the vicinity of the Shaft Site. Since the Future Without the Project for the stationary source noise was anticipated to remain unchanged, no further analysis of the build year was included.

Hazardous Materials. If the hazardous materials assessment indicates that contaminants are present at NCA Shaft No. 18, these contaminants would be remediated prior to initiation of the NCA baseline rehabilitation work.

8.1.4.3. Potential Impacts

8.1.4.3.1. Potential Project Impacts

The anticipated year of completion of the proposed pressurization work is 2015. Therefore, potential project impacts have been assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2015.

In the anticipated year of completion (2015), NCA Shaft No. 18 would continue to operate as described in the Future Without the Project. The land use would not change as a result of the proposed pressurization work. The improvements made would not result in any permanent employment or other types of new activity on-site. The existing shaft building and driveway would not be expanded and natural resources on the site would remain. No employees would be assigned to this location therefore, no services would be required and no additional infrastructure would be needed. There would be no impact on public health from the operation of Shaft No. 18 during operations. With the end of the construction process no additional truck or vehicle trips to the Shaft Site would be required nor would the upgraded facility generate air emissions or noise. If the Eastview Site is selected and the NCA is pressurized, the base of Shaft No. 18 where it joins the NCA would be sealed to contain water under pressure. This would result in a significant adverse impact to the historic resources of the NCA and the base of the Shaft structure.

8.1.4.3.2. Potential Construction Impacts

The anticipated year of peak construction of the proposed pressurization work is 2013. Therefore, potential construction impacts have been assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2013.

For most parameters, a general analysis is presented below, because no significant impacts would result from proposed construction activities. Detailed analyses are presented at the end of this section for Traffic and Transportation and Noise.

Land Use. During the proposed pressurization work, land use on the Shaft Site would change temporarily in terms of the overall level of activity occurring on-site. The proposed construction activities would not have any significant adverse land use impacts on sensitive land uses surrounding the Shaft Site, namely the residences along Cook Avenue and Summerfield Street, and Redmond Park. Construction activities would be confined to the cleared areas of the Shaft Site; therefore, the existing vegetation would be preserved and would continue to serve as a buffer between the Shaft Site and the surrounding land uses. Construction equipment would be located southeast of the shaft building and parking for staff would be provided in the clear area south of the shaft building.

Although the lawn area would be disturbed, taller vegetation, including the trees and shrubs along adjacent streets would not be removed. The undeveloped wetland area and thick vegetation on the western side of the Shaft Site would also be preserved. In order to secure the construction site and provide a safe working environment, a temporary chain-link fence would surround the construction area during the ten-year construction period. Additionally, if determined to be practical and feasible, portable noise barriers or walls would be installed as part of the final design along the eastern perimeter of the Shaft Site during the construction period (see noise analysis discussion).

Community Facilities. The City of Yonkers Emergency Services representatives would work with the NYCDEP and its contractors to establish a safety and emergency response plan that would adequately assess the construction activities and identify potential needs. In the event of an emergency, the construction workers at the Shaft Site would activate the response plan. It is not anticipated that these needs would result in a significantly adverse impact to services provided in the study area.

Socioeconomic Analysis. During the peak construction year a maximum of 133 construction workers and approximately 15 trucks would visit the Shaft Site on any given weekday. These construction workers would have a median salary of approximately $42,200 (based on the salaries of the types of construction workers that would be on-site); this median salary was used to determine examples of income tax benefits the City of Yonkers and NYC could realize. If the construction worker were a City of Yonkers resident, the worker would pay approximately $125 in taxes per year to the City of Yonkers. If the construction worker were not a City of Yonkers resident, the worker would pay approximately $106 in taxes per year to the City of Yonkers. Finally, if residing in NYC, the construction worker would pay approximately $1,400 in taxes per year to NYC (see Appendix A).

The 133 construction workforce would likely add money to the local economy through their visits to area businesses. The RIMS II multipliers for the construction industry indicate that the sectors that would benefit most during construction are retail trade and business services. It is not possible to determine exactly where the workers may conduct business, but it is likely that they would visit nearby gas stations, convenience stores, and restaurants. It is likely that some of the economic benefits from the construction activity would spill over to nearby counties. The costs of construction activities for the proposed pressurization work would be included in overall costs for the proposed project. For the complete analysis of indirect effects, refer to the socioeconomic Analysis for the Eastview Site, Section 5.7.

Historic and Archaeological Resources. As discussed in the existing conditions, the stone superstructure and the underground aqueduct are eligible for listing on the National Register of Historic Places. The base of the Shaft where it joins the NCA would be sealed to contain pressurized water. This action would significantly adversely impact the historic character of the NCA and the base of the Shaft structure. The Shaft structure and historic spillway above the NCA connection would be preserved and not adversely impacted. Prior to construction, New York State Office of Parks, Recreation, and Historic Preservation in addition to the Secretary of the Interior's Standards for the Treatment of Historic Properties would be consulted. There

would not be any work conducted that would affect archaeological resources; therefore, no adverse impacts to archaeological resources would occur as part of this proposed work.

Traffic and Transportation. Transportation data and planning assumptions for the construction workers as well as the construction trucks during the 2013 peak construction period were presented previously in Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation. As described under Existing Conditions (Section 5.9), there are limited transit facilities in the vicinity of the NCA Shaft No. 18 site. For the purpose of traffic analysis, it was assumed that all construction workers would arrive in private vehicles. Table 8.1.4-11 shows the anticipated 2013 peak year construction resources based on preliminary engineering design for the pressurization work. Table 8.1.4-12 shows the resulting peak construction generated traffic based on preliminary engineering design. Typically, each construction vehicle is considered to be equivalent to 1.5 passenger cars for 2-axle trucks and 2.0 passenger cars for 3-axle trucks. For conservative analysis results, however, it was assumed that all construction trucks would be 3-axle trucks, or equivalent to 2.0 passenger vehicles.

TABLE 8.1.4-11. CONSTRUCTION RESOURCE REQUIREMENTS

Potential Construction Impacts	NCA Shaft No. 18
Peak Year	2013
Construction Hours	7:00AM to 6:00 PM
Construction Shifts	1
Construction workers on a peak day	133
Construction vehicles on a peak day	15
Peak Time of arrival (workers)	6:00 AM to 7:00 AM
Peak 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 8.1.4-12. CONSTRUCTION TRIP GENERATION

	AM Peak Hour			PM Peak Hour		
	In	**Out**	**Total**	**In**	**Out**	**Total**
Auto	105	6	111	6	105	111
Trucks	2	1	3	1	2	3
Total	107	7	114	7	107	114
PCE Total	**109**	**8**	**117**	**8**	**109**	**117**

Traffic assignment of construction workers to and from the Shaft Site determined through the use of population densities from census information within a 5-mile radius of the Shaft Site. 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 project-generated construction traffic was added to the year 2013 Future Without the Project volumes in the AM and PM peak hours and capacity analyses were performed for these combined conditions. Figure 8.1.4-6 shows the pressurization construction generated traffic. Figure 8.1.4-7 shows the total combined traffic under construction conditions.
Table 8.1.4-13 shows a comparison of the traffic conditions for the 2013 Future Without the Project and the 2013 Potential Construction Impacts.

The following is a summary of potential impacts at the NCA Shaft No. 18 associated with constructing the proposed project.

Traffic. Applying the potential traffic impact criteria described in the Potential Construction Impacts, Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation, three (3) signalized intersections and one (1) unsignalized intersection would experience adverse impacts due to construction traffic in the AM and/or PM peak hours. These intersections are described below. Section 9.4, Mitigation of Potential Impacts, presents possible mitigation measures. If these mitigation measures were not implemented, these potentially significant adverse impacts would remain unmitigated.

At the Yonkers Avenue at Midland Avenue/Cook Avenue intersection, the southbound left turning movement would experience an increase in delay from 62.6 seconds (LOS E) to greater than 150 seconds in the AM peak hour and from 87.1 seconds (LOS F) to 94.1 seconds (LOS F) in the PM peak hour. Additionally, in the PM peak hour the westbound right turning movement would experience an increase in delay from 53.7 seconds (LOS D) to 63.5 seconds (LOS E). These impacts result from a potential increase in traffic due to 114 construction vehicles (passenger car equivalents) in both the AM and PM peak hours.

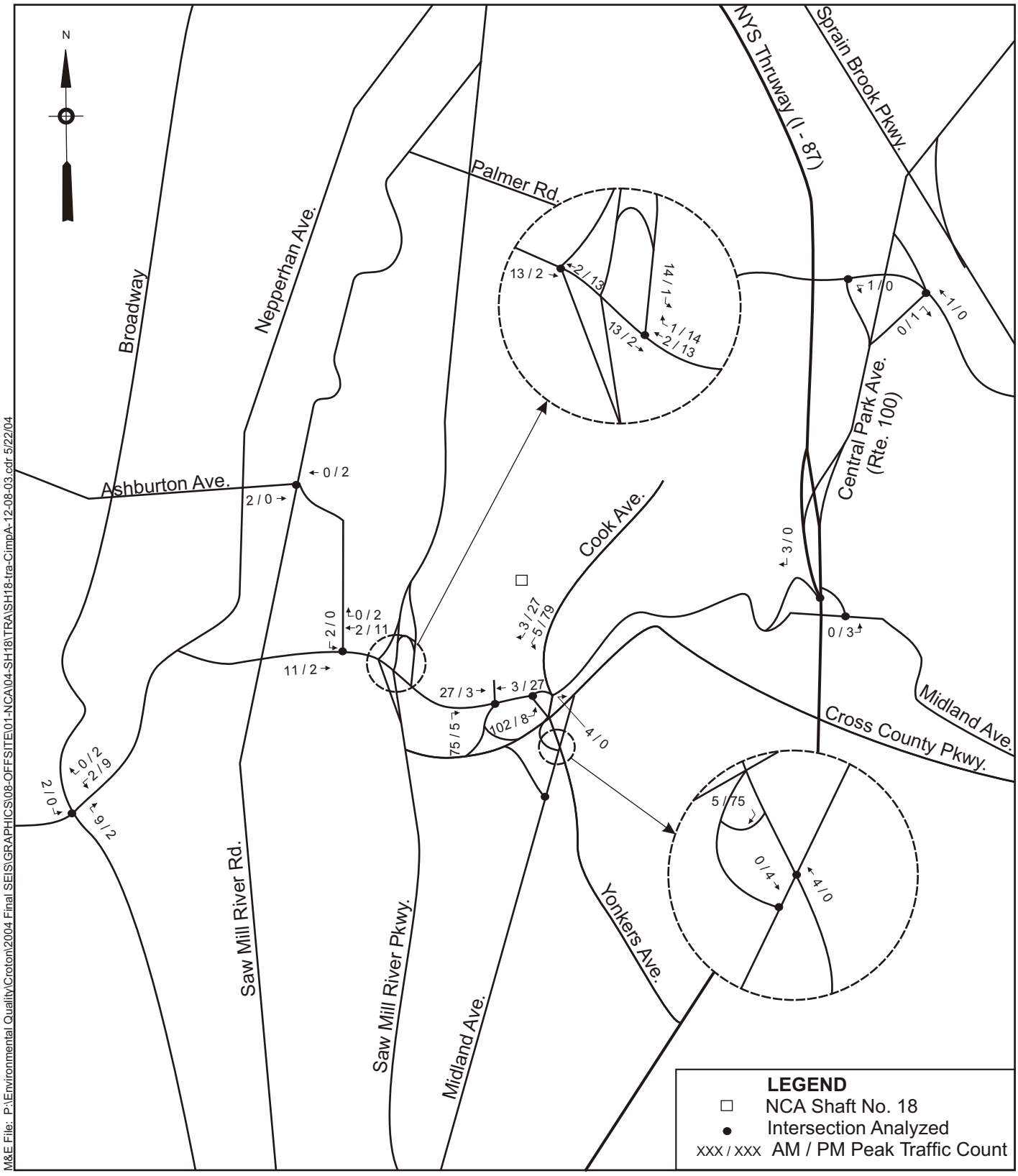
At the Nepperhan Avenue and Broadway (Route 9) intersection, the westbound left turn lane would experience an increase in delay from 89.0 seconds (LOS F) to 96.0 seconds (LOS F) in the PM peak hour. The low volume of construction generated traffic at this intersection, however, would not cause a noticeable change to the overall volumes or delays at the study intersection in the PM peak hour.

At the Yonkers Avenue and Ashburton Avenue intersection, the eastbound approach would experience an increase in delay from 116.7 seconds (LOS F) to 120.6 seconds (LOS F) in the AM peak hour. The low volume of construction generated traffic at this intersection, however, would not cause a noticeable change to the overall volumes or delays at the study intersection in the PM peak hour.

At the intersection of Yonkers Avenue Exit and Cross County Parkway Off Ramp, the northbound approach would experience delays greater than 150 seconds in the AM and PM peak hours. The major eastbound & westbound approaches on Yonkers Avenue remain at good LOS B or better throughout. Only the minor northbound stopped approach is adversely affected by the construction generated traffic. The installation of a traffic signal at this location would improve the LOS on the northbound approach, but would also increase delays on the higher volume primary eastbound and westbound approaches. The temporary nature of the construction

generated traffic combined with the fact that this would fall outside of the AM and PM peak hours does not justify a traffic improvement that would adversely affect the major approaches.

Parking. Construction at the Shaft Site is anticipated to provide on-site parking facilities for construction vehicles and workers during project construction. Based on the transportation data and planning assumptions presented in Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation, this on-site parking facility would need to accommodate 111 construction worker vehicles. Since the Shaft Site would accommodate these parked vehicles, no parking impacts are anticipated to occur to the public and private parking facilities in the vicinity of the Shaft Site.



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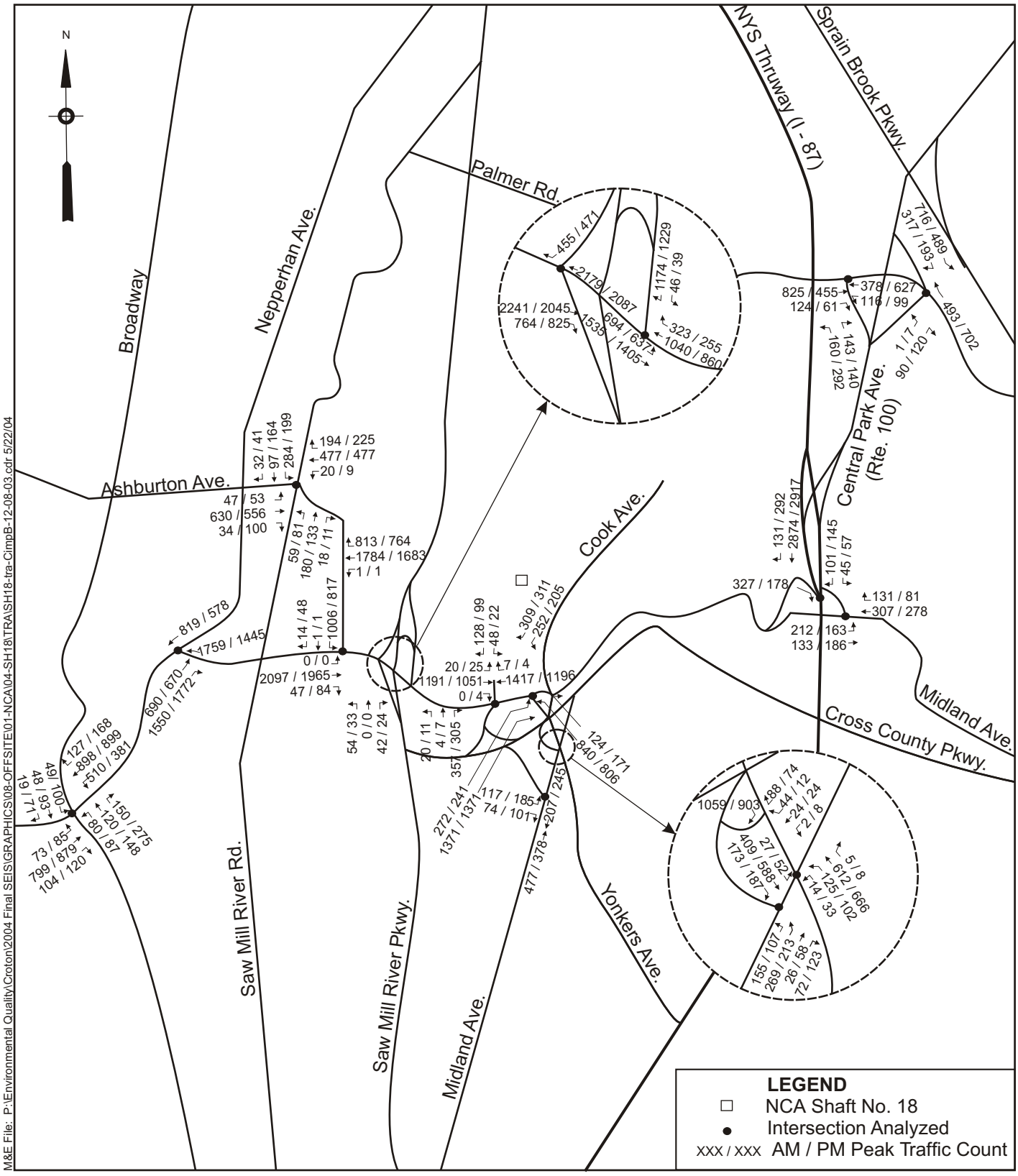
Not To Scale

New Croton Aqueduct Shaft No. 18
Construction Traffic Distribution - AM / PM Hour

Croton Water Treatment Plant

Figure 8.1.4-6



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Not To Scale

New Croton Aqueduct Shaft No. 18
2013 Future Without the Project
Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 8.1.4-7

TABLE 8.1.4-13. 2013 POTENTIAL CONSTRUCTION IMPACTS TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

SIGNALIZED INTERSECTIONS	LANE GROUP	2013 FUTURE WITHOUT THE PROJECT						2013 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
Palmer Road North at Central Park Ave. NB On Ramp	EB – T	0.79	19.1	B	0.42	10.3	B	0.79	19.1	B	0.42	10.3	B
	EB – R	0.14	7.8	A	0.07	7.2	A	0.14	7.8	A	0.07	7.2	A
	WB – L	0.44	14.5	B	0.21	8.7	A	0.45	14.6	B	0.21	8.7	A
	WB – T	0.38	9.9	A	0.57	12.6	B	0.38	9.9	A	0.57	12.6	B
	NB – LR	0.69	37.3	D	0.93	58.4	E	0.69	37.3	D	0.93	58.4	E
	Intersection		**19.1**	**B**		**23.4**	**C**		**19.2**	**B**		**23.4**	**C**
Yonkers Ave. at Midland Ave. (and Cook Ave.)	WB – L	0.60	39.0	D	0.31	32.3	C	0.61	39.4	D	0.50	36.2	D
	WB – LR	0.00	28.1	C	0.00	28.1	C	0.00	28.1	C	0.00	28.1	C
	WB – R	0.87	59.2	E	0.82	53.7	D	0.88	60.3	E	0.90	63.5	E
	NB – T	0.59	22.2	C	0.56	21.7	C	0.59	22.2	C	0.56	21.7	C
	NB – R	0.20	17.3	B	0.26	18.0	B	0.20	17.4	B	0.26	18.0	B
	SB – L	0.78	62.6	E	0.95	87.1	F	1.24	>150	F	0.98	94.1	F
	SB – T	0.68	12.7	B	0.65	12.1	B	0.68	12.7	B	0.65	12.1	B
	Intersection		**25.1**	**C**		**25.7**	**C**		**36.5**	**D**		**28.0**	**C**
Midland Ave. South at Yonkers Avenue	EB – L	1.28	>150	F	0.90	57.1	E	1.28	>150	F	0.90	57.1	E
	EB – TR	0.19	26.2	C	0.37	28.1	C	0.19	26.2	C	0.37	28.1	C
	WB – LTR	0.32	27.5	C	0.24	26.7	C	0.32	27.5	C	0.24	26.7	C
	NB – L	0.34	10.0	A	0.38	10.9	B	0.34	10.0	A	0.38	10.9	B
	NB – TR	0.31	10.2	B	0.34	10.5	B	0.31	10.2	B	0.34	10.5	B
	SB – L	0.07	13.0	B	0.15	13.7	B	0.07	13.1	B	0.15	13.7	B
	SB – TR	0.37	16.0	B	0.49	17.5	B	0.37	16.0	B	0.49	17.6	B
	Intersection		**50.0**	**D**		**21.9**	**C**		**49.9**	**D**		**21.9**	**C**
Yonkers Ave. at Saw Mill River Parkway NB Ramps	EB – L	0.82	23.7	C	1.32	177.7	F	0.82	23.7	C	1.33	184.1	F
	EB – T	0.60	5.2	A	0.66	13.1	B	0.61	5.3	A	0.66	13.1	B
	WB - T	1.10	90.9	F	0.65	24.9	C	1.10	91.7	F	0.66	25.1	C
	WB – R	0.68	36.7	D	0.37	21.4	C	0.69	36.8	D	0.39	21.8	C
	SB – L	0.17	36.6	D	0.08	24.1	C	0.24	37.2	D	0.08	24.1	C
	SB – R	1.13	90.5	F	1.26	147.4	F	1.13	90.5	F	1.26	147.4	F
	Intersection		**48.9**	**D**		**75.9**	**E**		**48.9**	**D**		**76.5**	**E**

TABLE 8.1.4-13. 2013 POTENTIAL CONSTRUCTION IMPACTS TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

SIGNALIZED INTERSECTIONS	LANE GROUP	2013 FUTURE WITHOUT THE PROJECT						2013 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
Yonkers Ave. at Ashburton Ave./Apartment Driveway	EB – TR	1.19	116.7	F	1.06	58.4	E	1.20	120.6	F	1.06	58.7	E
	WB – LT	1.17	109.8	F	0.93	28.6	C	1.18	111.7	F	0.94	29.3	C
	WB – R	0.50	1.2	A	0.46	1.0	A	0.50	1.2	A	0.46	1.0	A
	NB – LR	0.15	16.5	B	0.12	21.4	C	0.16	16.6	B	0.12	21.4	C
	SB – L	1.23	141.5	F	1.20	132.2	F	1.24	144.0	F	1.20	132.2	F
	SB – LTR	0.02	15.1	B	0.09	20.9	C	0.02	15.2	B	0.09	20.9	C
	Intersection		**102.1**	**F**		**52.1**	**D**		**104.6**	**F**		**52.4**	**D**
Ashburton Ave. (Rt. 9A) at Saw Mill River Road (Rt. 9A)/Cemetery Driveway	EB – LTR	0.82	26.8	C	0.83	23.7	C	0.82	27.0	C	0.83	23.7	C
	WB – LT	0.56	17.1	B	0.53	13.5	B	0.56	17.1	B	0.53	13.5	B
	WB – R	0.24	12.3	B	0.28	10.4	B	0.24	12.3	B	0.28	10.4	B
	NB – LTR	0.50	28.9	C	0.76	43.1	D	0.50	28.9	C	0.76	43.1	D
	SB – L	0.87	56.2	E	0.69	39.0	D	0.87	56.2	E	0.69	39.0	D
	SB – TR	0.23	23.9	C	0.43	27.3	C	0.23	23.9	C	0.43	27.3	C
	Intersection		**27.2**	**C**		**23.8**	**C**		**27.3**	**C**		**23.8**	**C**
Nepperhan Ave. at Broadway (Rt. 9A)	EB – L	0.37	21.2	C	0.40	21.6	C	0.37	21.2	C	0.40	21.6	C
	EB – TR	0.72	26.8	C	0.81	30.1	C	0.72	26.8	C	0.81	30.1	C
	WB – L	1.19	139.6	F	1.03	89.0	F	1.20	141.5	F	1.06	96.0	F
	WB – T	0.58	20.2	C	0.61	20.8	C	0.58	20.2	C	0.61	20.8	C
	WB – R	0.17	15.5	B	0.23	16.2	B	0.17	15.5	B	0.23	16.3	B
	NB – LTR	0.72	31.7	C	1.10	101.9	F	0.74	32.7	C	1.11	103.4	F
	SB – LTR	0.26	22.2	C	0.89	54.1	D	0.27	22.3	C	0.89	54.7	D
	Intersection		**44.1**	**D**		**46.3**	**D**		**44.5**	**D**		**47.5**	**D**

TABLE 8.1.4-13. 2013 POTENTIAL CONSTRUCTION IMPACTS TRAFFIC CONDITIONS FOR NCA SHAFT NO. 18

UNSIGNALIZED INTERSECTIONS	LANE GROUP	2013 FUTURE WITHOUT THE PROJECT						2013 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
Midland Ave. at Central Park Ave. NB Ramps	EB-L	0.24	9.7	A	0.14	8.6	A	0.24	9.7	A	0.15	8.6	A
	SB-L	0.30	34.0	D	0.22	21.8	C	0.30	34.0	D	0.22	22.1	C
	SB-R	0.19	12.3	B	0.22	11.6	B	0.19	12.3	B	0.22	11.6	B
Midland Ave. at Central Park Ave. SB Ramps	EB-R	>1.50	>150	F	1.27	>150	F	2.03	>150	F	1.27	>150	F
Palmer Road South at Central Park Ave. SB Off Ramp (and Sprain Brook Pkwy NB & SB Off Ramps)	WB-LT	0.00	10.7	B	0.00	9.0	A	0.00	10.7	B	0.00	9.0	A
	NB-LR	0.31	21.4	C	0.28	16.1	C	0.31	21.4	C	0.29	16.1	C
Midland Ave. at Cross County Parkway Off Ramp	SB-L	0.36	20.4	C	0.49	21.8	C	0.36	20.4	C	0.49	21.8	C
	SB-R	0.10	10.0	A	0.14	10.5	B	0.10	10.0	A	0.14	10.5	B
Yonkers Ave. at Cross County Parkway Off Ramp	EB-LT	0.05	13.5	B	0.05	11.9	B	0.05	13.5	B	0.05	12.1	B
	NB-LTR	>1.50	>150	F	1.23	>150	F	>1.50	>150	F	1.27	>150	F
	SB-LR	>1.50	>150	F	>1.50	>150	F	>1.50	>150	F	>1.50	>150	F
Yonkers Ave. at Saw Mill River Parkway SB Ramps	SB-R	1.34	>150	F	1.28	>150	F	1.34	>150	F	1.29	>150	F

ABBREVIATION:
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

Safety. One intersection experienced a high rate of accidents between May 1998 and April 2001, and that is Yonkers Avenue at Ashburton Avenue.

At the intersection of Yonkers Avenue and Ashburton Avenue, there are projected to be 5,853 vehicles entering the intersection in the AM peak hour and 5,409 vehicles entering in the PM peak hour. The construction activities would increase these volumes by 15 vehicles in the AM and PM peak hours, or by 0.26 percent and 0.28 percent. With 6 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.

Transit. The construction at this location is not anticipated to generate any transit ridership.

Pavement Infrastructure. The construction at this location is not anticipated to generate any construction truckloads.

Noise Analysis. The traffic generated by construction activities and the construction equipment tally was not anticipated to change over the course of the construction period. As a result, mobile and stationary source noise levels resulting from construction would not fluctuate substantially over the course of the construction phase. Construction activities would occur between 7:00 AM and 6:00 PM on weekdays. The work would take place from 2011 to 2015. The year 2013 was selected as a representative analysis year because it falls at the approximate midpoint of the construction schedule.

An electric fan would be placed at the shaft access and may operate continuously (24 hours a day, seven days a week) for the duration of construction activities. The fan would discharge through ventilation louvers that would be placed on top of the existing access shaft. Even though construction would not take place on weekends, analysis of construction impacts from stationary sources included both weekdays and weekends to account for possible continuous use of the fan.

The Shaft Site falls within the jurisdiction of the City of Yonkers. Table 8.1.4-14 presents noise standards for construction activity in the City of Yonkers.

TABLE 8.1.4-14. NOISE LIMITS FOR CONSTRUCTION ACTIVITY IN CITY OF YONKERS (L_{eq}, dBA)

Daytime		Nighttime	
Residential	**Commercial**	**Residential**	**Commercial**
75	75	50	75

Source: City of Yonkers Code. Part VII, Chapter 66: Noise.

In addition to those standards presented above, the City of Yonkers prohibits construction activity between the hours of 6:00 pm and 7:00 am on weekdays, and at any time on weekends and legal holidays.[1] Applicable standards relating to single-family residences were applied as

[1] City of Yonkers Code. Part VII, Chapter 66: Noise.

the area surrounding the Shaft Site is zoned for single-family residences. Standards from CEQR that govern construction noise were used also to evaluate any impacts to the Shaft Site. According to CEQR, a project-generated increase of 5 dBA or more over the baseline noise level recorded at a sensitive receptor during the daytime is considered a significant impact if the existing noise level is less than 60 dBA. If the existing noise level is 62 dBA or more, a 3 dBA incremental change constitutes a significant impact. A 3 dBA incremental threshold applies during the nighttime.[2]

Mobile Source Noise. Potential impacts from mobile sources during the construction phase of the proposed pressurization work were determined. As previously discussed, on the basis of the PCE screening analysis, it was determined that none of the identified noise-sensitive route segments in the study area required further analysis. Therefore, it was concluded that the proposed construction activities would not result in noise levels that exceed the 3-5 dBA threshold used to define impact significance.

Stationary Source Noise. Potential noise impacts from construction activities were determined for the sensitive receptors. As discussed above, stationary source noise created during the construction phase was quantified using equipment data.

An algorithm (that considered equipment noise levels, usage factors, and distances from source to receptor) was used to calculate the average noise level for a typical hour during peak construction (see Section 4.10, Data Collection and Impact Methodologies, Noise). Noise levels for construction equipment were determined from industry and governmental publications. Usage factors accounted for intermittent utilization, and subsequent noise generation, of construction equipment throughout the course of a normal workday. The horizontal and vertical distances from construction equipment to the receptors being studied were measured in order to calculate the line-of-sight distance used in the algorithm.[3] The noise levels from construction activity was then added to the 2013 Future Without the Project noise level to arrive at a future construction noise level. Table 8.1.4-15 presents construction equipment, including associated noise levels and usage factors.[4] Equipment noise levels (at their associated reference distances) and the usage factors are standard values established through noise studies. The usage factors are not anticipated to change because the scope of work would not change significantly over the construction duration.

TABLE 8.1.4-15. CONSTRUCTION EQUIPMENT DATA FOR NCA SHAFT NO. 18 (dBA)

Equipment	Equipment Noise Level	Reference Distance (feet)	Usage Factor
Ventilation Fans	59	5	1.0
20-Ton Crane	83	50	0.08
Concrete Pump	82	50	0.4
Trucks	88	50	0.16

[2] City of New York. October 2001. CEQR Technical Manual.
[3] City of New York. October 2001. CEQR Technical Manual.
[4] City of New York. October 2001. CEQR Technical Manual

TABLE 8.1.4-15. CONSTRUCTION EQUIPMENT DATA FOR NCA SHAFT NO. 18 (dBA)

Equipment	Equipment Noise Level	Reference Distance (feet)	Usage Factor

Source: Bolt, Beranek, and Newman, Inc. December 1971. Noise from Construction Equipment and Operations, Buildings Equipment, and Home Appliances.

Table 8.1.4-16 compares noise levels for weekday construction hours for the Future Without the Project (2013) to noise levels for year 2013 including contributions from project construction activities. The comparison determined whether construction would result in noise increasing to a level that exceeds the 3-5 dBA threshold.

Private Residence on Cook Street (NCA18-S1). Noise levels predicted to occur as a result of the proposed construction at the residence on Cook Street (NCA18-S1) would exceed the 3-5 dBA threshold used to define significance. The largest incremental change at this receptor (located to the north of the Shaft Site) over the Future Without the Project level would be 19.6 dBA. Predicted noise levels would exceed the acceptable threshold during the construction period from 2011 to 2015 for this receptor. This predicted noise level increase would constitute a significant adverse impact that would require mitigation. Section 9.4, Mitigation of Potential Impacts, presents a discussion of possible mitigation measures. If these mitigation measures are not implemented, the potential significant impact would remain unmitigated. It is unlikely, however, that all of the construction equipment would be operating simultaneously over the course of a construction day (as was assumed for this analysis). It was therefore concluded that the construction noise would be significant only at certain times.

An analysis was performed to determine the total distance beyond the residence (and further to the north) that noise levels exceeding the 3-5 dBA threshold would extend. This was performed to determine both the maximum distance that the noise levels would extend and to what extent local noise-sensitive receptors would be affected. Noise levels that exceed the 3-5 dBA threshold would extend from the north of the site to a maximum distance of approximately 825 feet to the north of the residence. This area is a residential area (see Figure 8.1.4-22).

Private Residence on Summerfield Street (NCA18-S2). Noise levels predicted to occur as a result of the proposed construction at the residence on Summerfield Street (NCA18-S2) would exceed the 3-5 dBA threshold used to define significance. The largest incremental change at this receptor (located to the east of the Shaft Site) over the Future Without the Project level would be 18.0 dBA. Predicted noise levels would exceed the acceptable threshold during the construction period from 2011 to 2015 for this receptor. This noise level increase would constitute a significant adverse impact that would require mitigation. Section 9.4, Mitigation of Potential Impacts, presents a discussion of possible mitigation measures. If this mitigation measures are not implemented, the potential significant impact would remain unmitigated. It is unlikely, however, that all of the construction equipment would be operating simultaneously over the course of a construction day (as was assumed for this analysis). It was therefore concluded that the construction noise would be significant only at certain times.

TABLE 8.1.4-16. NOISE LEVELS FROM CONSTRUCTION ACTIVITIES AT RECEPTORS NEAR NCA SHAFT NO. 18 WEEKDAYS CONSTRUCTION HOURS (Leq, dBA)

Proximate Receptor	Monitoring Period	Future Without Project Noise Level (2013)	Predicted Construction Noise Level	Total Noise Level During Construction[1] (2013)	Incremental Change	Exceed Threshold (Yes/No)
NCA18-S1	Quietest (12-1pm)	53.1	72.7	72.7	19.6	Yes
	Noisiest (9-10 am)	55.3	72.7	72.8	17.5	Yes
NCA18-S2	Quietest (12-1pm)	50.2	68.1	68.2	18.0	Yes
	Noisiest (9-10 am)	51.3	68.1	68.2	16.9	Yes
NCA18-S3	Quietest (12-1pm)	51.0	60.7	61.1	10.1	Yes
	Noisiest (9-10 am)	55.1	60.7	61.8	6.7	Yes

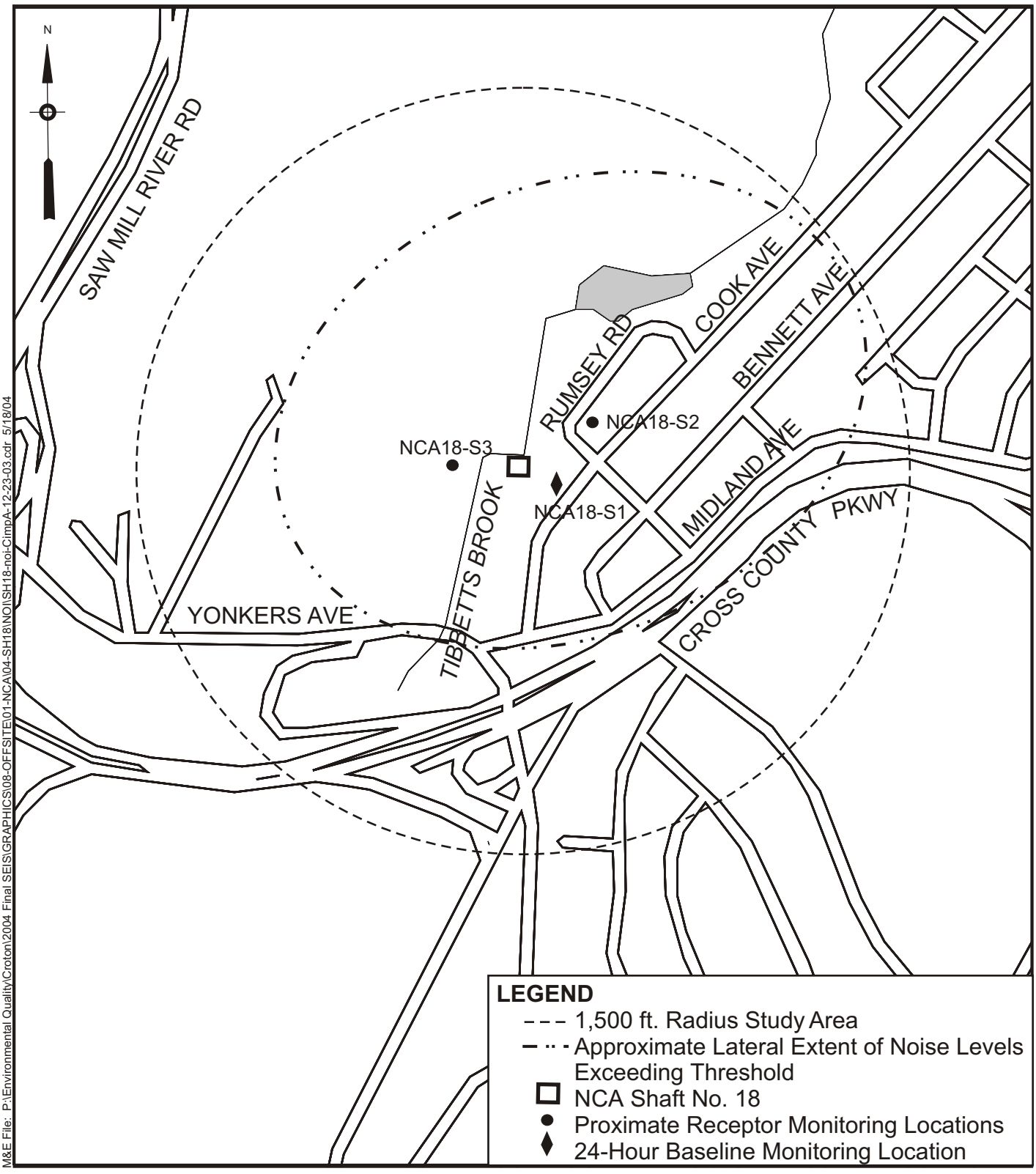
Total Noise Level = Logarithmic addition of Future Without Project and Predicted Construction Noise Level

An analysis was performed to determine the total distance beyond the residence (and further to the east) that noise levels exceeding the 3-5 dBA threshold would extend. This was performed to determine both the maximum distance that the noise levels would extend and to what extent local noise-sensitive receptors would be affected. Noise levels that exceed the 3-5 dBA threshold would extend from the east of the site to a maximum distance of approximately 1175 feet to the east of the residence. This area is a residential area (see Figure 8.1.4-8).

Dunwoodie Public Golf Course (NCA18-S3). Noise levels predicted to occur as a result of the proposed construction at the Dunwoodie Golf Course (NCA18-S3) would exceed the 3-5 dBA threshold used to define significance. The largest incremental change at this receptor (located to the west of the Shaft Site) over the Future Without the Project level would be 10.1 dBA. Predicted noise levels would exceed the acceptable threshold during the construction period from 2011 to 2015 for this receptor. This noise level increase would constitute a significant adverse impact that would require mitigation. Section 9.4, Mitigation of Potential Impacts, presents a discussion of possible mitigation measures. If these migration measures are not implemented, the potential significant impact would remain unmitigated. It is unlikely, however, that all of the construction equipment would be operating simultaneously over the course of a construction day (as was assumed for this analysis). It was therefore concluded that the construction noise would be significant only at certain times.

An analysis was performed to determine the total distance beyond the residence (and further to the west) that noise levels exceeding the 3-5 dBA threshold would extend. This was performed to determine both the maximum distance that the noise levels would extend and to what extent local noise-sensitive receptors would be affected. Noise levels that exceed the 3-5 dBA threshold would extend from the west of the site to a maximum distance of approximately 800 feet to the east of the residence. This area extends further into the golf course (see Figure 8.1.4-8).

Table 8.1.4-17 compares noise levels for Sundays and weekdays during quietest non-working hours for the Future Without the Project (year 2013) to noise levels for year 2013 levels including contributions from project construction activities. Whereas no construction would occur outside of 7:00 AM – 6:00 PM on weekdays, a ventilation fan positioned at the entrance to the Shaft and potentially left on at all times during construction may produce noise noticeable noise emissions. Construction-related noise from activities on Sundays and weekday during evening hours (“non-construction”) hours only includes noise emissions due to operation of the ventilation fan.



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SCALE IN FEET

Note: NCA18-S1 monitoring location same as baseline monitoring location.

New Croton Aqueduct Shaft No. 18 Lateral Extent of Noise Levels Exceeding Threshold (Before Mitigation)

Croton Water Treatment Plant

Figure 8.1.4-8

TABLE 8.1.4-17. NOISE LEVELS FROM CONSTRUCTION ACTIVITIES AT RECEPTORS NEAR NCA SHAFT NO. 18 SUNDAYS AND NON-WORKING HOURS (Leq, dBA)

Proximate Receptor	Monitoring Period	Future Without Project Noise Level (2013)	Predicted Construction Noise Level	Total Noise Level During Construction[1] (2013)	Incremental Change	Exceed Threshold (Yes/No)
NCA18-S1	Sunday Quietest	52.9	32.0	52.9	0.0	No
	Sunday Noisiest	57.7	32.0	57.7	0.0	No
	Non-work Quietest	49.9	32.0	50.0	0.1	No
NCA18-S2	Sunday Quietest	46.2	26.5	46.2	0.0	No
	Sunday Noisiest	48.1	26.5	48.1	0.0	No
	Non-work Quietest	48.2	26.5	48.2	0.0	No
NCA18-S3	Sunday Quietest	45.5	19.3	45.5	0.0	No
	Sunday Noisiest	49.6	19.3	49.3	0.0	No
	Non-work Quietest	44.2	19.3	44.2	0.0	No

Total Noise Level = Logarithmic Addition of Future Without Project and Predicted Construction Noise Level

The only receptor that was predicted to experience any incremental change on Sundays and weekdays (during the non-working hours) was the residence on Cook Street. However, this incremental change of 0.1 is negligible, and none of the monitoring locations showed a noise level increase that would exceed the 3-5 dBA or more threshold value.

Combined Mobile and Stationary Source Noise: None of the receptors analyzed for this Shaft Site would be both adjacent to the site and lie on a route segment connecting major thoroughfares to the site. The receptors, therefore, would not be exposed to both mobile and stationary noise sources. Receptors at this site already would have noise level increases in excess of the CEQR impact threshold used to determine significance due to contributions from stationary source noise.

Practical and feasible mitigation measures would be considered in the final design of the project to decrease to 5 dBA or less the incremental change experienced at the receptors near NCA Shaft No. 18. Section 9.4, Mitigation of Potential Impacts, presents a discussion of possible mitigation measures.

Air Quality.

Shaft Site. Work at NCA Shaft No. 18 would result in emissions of air pollutants associated with exhaust from construction activity. The construction activities at the Shaft Site would involve the use of one crane, one backhoe/loader, and supply delivery trucks. In general, diesel-powered equipment and trucks are mainly a concern because of the potential particulate matter that they can emit. Also, a 200 hp electric-powered fan would provide ventilation for workers located below ground. Construction activities are also a source of fugitive dust emissions that may have a substantial, but temporary effect on local air quality. Therefore, the construction at the Shaft Site was examined for its potential to create a significant adverse impact from emissions of PM_{10} and $PM_{2.5}$.

Mobile Sources. As described in Section 4.11, Data Collection and Impact Methodologies, Air Quality, the screening threshold for carbon monoxide is 100 vehicles per hour and 21 trucks per hour for $PM_{2.5}$. At the completion of the construction activity, the shaft would be unmanned, and there would not be any vehicle trips. During construction, the number of construction-related vehicle trips during peak hours (111 construction worker cars and three construction trucks) would slightly exceed the 100 vehicle screening threshold. Since most of the daily construction trips (133 construction workers and 15 trucks) would occur during the two peak hours, there would be six hours with little or no construction-induced trips. Over an 8-hour period, the effect of the construction would be substantially lower. In addition, the number of construction trucks is also anticipated to be lower than 21 trucks. Therefore, no significant mobile source impact is anticipated and no further mobile source analysis is required.

Stationary Sources. As mentioned above, the shaft would not be manned after the completion of the construction activity, and there would not be any sources of stationary sources. During construction, there would be a crane and a backhoe on-site. Since this equipment would be used only as needed, the construction stationary sources at the Shaft Site would not be anticipated to have any significant or adverse impacts on the air quality.

Hazardous Materials. The environmental assessment undertaken confirmed the presence of hazardous materials at the Shaft Site and determined that the hazardous materials may have originated from both on-site and off-site sources. Some sources may still be present in the area. Based on soil and groundwater testing data, environmental contaminants of potential concern found at the Shaft Site are identified in Table 8.1.4-18.

TABLE 8.1.4-18. POTENTIAL ENVIRONMENTAL CONTAMINANTS OF CONCERN AT NCA SHAFT NO. 18

Media	Contaminant Class	Contaminants of Concern
Soil	Semi-volatile Organic Compounds	Benzo (b) Fluoranthene, Benzo (k) Fluoranthene, Chrysene
	Total Petroleum Hydrocarbons	Diesel-range TPH
Groundwater	Metals	Aluminum, Arsenic, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Zinc

It is likely that the semi-volatile organic compounds found in the soil as well as the total petroleum hydrocarbons are the result of one or more environmental releases of petroleum hydrocarbon fuels (e.g., spills, tank leaks) in the area. The metals detected in the groundwater may be a combination of site background conditions and inputs from off-site sources. The presence of hazardous or contaminated materials at the Shaft Site may threaten human health or the environment only when exposure to those materials occurs. The scope of construction work planned at Shaft Site is not likely to include the excavation of soil around the shaft building, the blow-off structure, and adjacent sections of the NCA.

For solid materials that would not be reused on-site, testing would be required to determine appropriate off-site disposal options. In addition, testing may also be required for reuse of solid materials on-site either to confirm that contaminants are not present or to demonstrate that selected management techniques are suitable for the contaminant concentration levels present. The testing data for either the on-site or off-site management of contaminated materials would be specifically generated for each lot of material requiring disposition.

The off-site disposal of solid wastes generated as a result of the proposed action would depend on the nature of the construction activity (e.g., quantity of material to be excavated) and the bulk chemical characteristics of the waste materials to be managed. Wastes containing contaminants at concentration levels above applicable action levels, regulatory thresholds, or risk-based limits would require specialized disposal.

Based on testing data, the groundwater in the vicinity of the Shaft Site does not contain any organic contaminants of concern that would require specialized management if encountered during construction activities. Metals are present in the groundwater, which may be above site background and regulatory threshold levels. The CCMP would include provisions to manage contaminated groundwater.

Hazardous Materials Used During Construction. During the construction activities at the Shaft Site, the Contractor may introduce a variety of hazardous materials to the Shaft Site to support the construction activity. The specific types and quantities of hazardous materials stored and used on the construction site would depend on the nature and extent of activities being performed. In general, various hazardous materials would be used to support the operation of vehicles and heavy equipment (e.g., diesel fuel, gasoline, lubricants, glycol) as well as hazardous materials used in the construction process itself (e.g., concrete release agents, adhesives, paints and coatings). Each contractor would provide Material Safety Data Sheets (MSDS) for the construction-related hazardous materials that they would introduce to the Shaft Site.

No impacts are anticipated from hazardous materials within NCA Shaft No. 18. These materials, if they were found within the structure, would have been remediated as part of the NCA baseline rehabilitation work.

Infrastructure and Energy. The introduction of 133 construction employees would require the availability of utilities to service the employees and the construction-related activities.

Water Supply. During construction, the contractor would likely select a method of supplying water from alternate sources to best suit their method of working. Using an independent source of water for construction ensures that water supply usage at the Shaft Site does not exceed that of the Future Without the Project; therefore, no significant adverse impact would be created.

Sanitary Sewage. Throughout the construction period, portable rest rooms would be made available for the construction personnel. The sanitary sewage would be collected and properly disposed of through a contract with a private hauler. As in the Future Without the Project, no connection or discharge to the existing sanitary sewer system would be made; therefore, no significant adverse impact is anticipated.

Stormwater System. Construction staging would be limited to cleared areas around the Shaft Site and a new access road from Yonkers Avenue; therefore no soil disturbance is anticipated at the Shaft Site. A row of hay bales would be installed inside the construction fence to prevent the minimal dust and soil anticipated from the equipment wash-water from the staging area entering the existing water courses. Tibbetts Brook would continue to serve as storm water drainage for surface runoff during construction; therefore, no significant adverse impact is anticipated on the existing stormwater drainage system in the study area.

Energy Demand. The proposed pressurization work would involve installation of some minor ventilation equipment and placement of an office trailer on the Shaft Site. The ventilation equipment and the office trailer are anticipated to require a temporary 500 to 1,000-kVA service that would be hard wired directly to the existing Con Edison grid, and would operate independently of the existing electrical system. The existing electrical system; therefore, would not be altered from the Future Without the Project. Con Edison would be responsible for

supplying this temporary power independently of the existing system; therefore, no significant adverse impact is anticipated on the existing electric utilities in the study area.

Gas Demand. As in the Future Without the Project analysis, natural gas would not be utilized during construction. No connection to the existing gas main would be made; therefore, no deviation from the Future Without the Project conditions would occur. No significant adverse impact is anticipated.

Natural Resources. The Shaft No. 18 site is adjacent to a wetland associated with Tibbets Brook. No construction is planned in the wetland. The wetland would be protected with a fence prior to construction and BMPs would be implemented to protect the wetland from silt and debris. These BMPs would include silt fencing to restrict surface runoff, and "Protected Area" signage and worker training. No adverse impact on the wetland would be anticipated.

Water Resources. No impacts to water resources are anticipated as part of this project. Therefore, a detailed analysis of water resources was not conducted for this site. The groundwater is high adjacent to the site. As described in the previous section, the wetlands would be protected. Despite high groundwater, no dewatering would be required at this site because the NCA is above grade and higher than the groundwater. No adverse impact to water resources would be anticipated from the proposed construction.

Solid Waste. Construction activities would generate worker generated solid waste and miscellaneous construction debris. All worker-generated and miscellaneous construction debris would be removed from the Shaft Site by a private hauler, and brought for disposal to the Westchester County Sanitation System.

During the proposed pressurization work the estimated manpower would be 133 individuals, whom would each generate 13 lbs/week of solid waste. This would make the total employee generated solid waste during construction 1,729 lbs/week of solid waste. Additional miscellaneous solid waste would be generated as a byproduct of construction. This material would be highly variable in nature; it would include concrete forms, packaging, scraps of pipe, ductwork, sheetrock, and electrical materials. This amount of waste would be added to the worker-generated waste described above. The Future Without the Project considerations do not anticipate future solid waste generation at the Shaft Site. However, the quantity of solid waste generated during construction would be negligible compared to the amount handled by the County solid waste disposal system, and would be easily handled by the existing Westchester County Sanitation System. It is anticipated that the solid waste produced by construction workers would not result in a significant adverse impact on local or regional solid waste.

Public Health. The presence of a crane and concrete pump, as well as a few delivery trucks, would not constitute a public health risk from air emissions or traffic. Therefore, there is no potential for significant impacts from the proposed construction activity at the Shaft Site.

Permits and Approvals.

The following table lists the discretionary approvals that would be required for the proposed project at the NCA Shaft No. 18 Site.

TABLE 8.1.4-19. POSSIBLE APPROVALS AND PERMITS REQUIRED FOR NCA SHAFT NO. 18

DEPARTMENT	PERMIT TITLE
U.S. Federal Government	
Army Corps of Engineers	• General Permit; NWP (Clean Water Act, Section 404)
New York State	
Department of Environmental Conservation	• State Pollution Discharge Elimination System (Environmental Conservation Law, Article 17, Title 8; 6 NYCRR Parts 750 through 757) • Water Quality Certification (Clean Water Act, Section 401) • Protection of Waters Permit (Environmental Conservation Law, Article 15, Title 15; 6 NYCRR Part 608)
Department of Health	• State Environmental Review Certification for New York Revolving Fund Program (Public Health Law, Sections 1161 and 1162; 21 NYCRR Part 2604)
NYSOPRHP	• State Historic Preservation Office Approval
City of Yonkers	
Director of the Bureau of Housing and Buildings	• Building Permit (Yonkers Town Code, Section 43-105)
Planning Board	• Site Plan Approval