**FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE CROTON WATER TREATMENT PLANT**

# 9. MITIGATION OF POTENTIAL IMPACTS

## 9.2. MOSHOLU SITE

### 9.2.1. Introduction

As design of the proposed Croton water treatment plant (WTP) at the Mosholu Site evolved, many mitigating features have been incorporated into the design of the project based on advanced judgment and public input. For example, the proposed project at the Mosholu Golf Course Site would be built substantially below existing grade and fully covered, allowing the replacement and enhancement of existing park uses. Relocating the existing Golf Club house, replacing the existing driving range, rebuilding and enhancing the existing golf course, and landscaping enhancement are all possible and included in the project design. A vibration prevention and monitoring program would also be implemented during construction. Similarly, noise barriers, paving of some of the interior construction roadways and dust suppression techniques are incorporated in construction plans to eliminate air and noise quality nuisances to the extent feasible. Additionally, some of the planned improvements to traffic conditions would improve the entrance to the Mosholu Golf Course and would improve the 233rd Street/Jerome Avenue/Major Deegan interchange based on the traffic analysis.

This section details mitigation measures that have been developed to address the potential significant impacts that could not simply be avoided. No significant adverse impacts were identified in the following impacts categories and are therefore not considered in this section: Land Use, Zoning, and Public Policy; Open Space; Visual Character; Community Facilities; Neighborhood Character; Infrastructure and Energy; Growth Inducement; Air Quality, Water Resources; EMF/ELF; Solid Waste; Public Health; and Socioeconomic Analysis. The potential impacts on these parameters are described in the appropriate construction and project impact sections.

Below is a listing of potential significant impacts that may occur. Where feasible, mitigation is proposed. Typically, construction-related impacts are not classified as significant because of their temporary nature and because of the impracticability of mitigating them. They are, however, identified below along with mitigation measures where impacts are determined to be severe or to persist for an extended period of time.

### 9.2.2. Traffic Mitigation

The need for potential traffic improvements for the proposed plant at the Mosholu Site was based on an analysis of the potential for significant adverse traffic impacts in Section 6.9.3, Mosholu Site, Traffic and Transportation, Potential Impacts. The potential traffic improvements for the water treatment plant site are described as follows:

No significant traffic impacts are anticipated during the operation of the proposed facility. However, the construction phase of the proposed project is anticipated to result in traffic impacts at the 233rd Street and Jerome Avenue and Jerome Avenue and the Mosholu Golf Course entrance. A plan has been developed that would require the construction related truck traffic to

use the Major Deegan Expressway 233rd Street exit, and travel south along Jerome Avenue to enter the site. Construction truck traffic exiting the site would be required to travel north along Jerome Avenue to 233rd Street. Combined with the improvements proposed at 233rd Street/Jerome Avenue and the 233rd Street off-ramp of the Major Deegan Expressway, this designated truck route plan is projected to improve current congested conditions and eliminate the potential for the proposed project to adversely affect this intersection.

In order to maximize capacity of these intersections, and to mitigate the potential impacts of the construction traffic and the Future with the Project traffic, the following mitigations measures are recommended and would be committed to by the NYCDEP to be part of the project at the Mosholu Site. Each of these intersection mitigation plans would be based upon the potential construction impacts that would occur during peak construction periods even with the proposed mitigation plan.

It should be noted that the following proposed mitigation plans contemplate the re-apportioning of the "green light time" for critical approaches at different intersections in the study area. This measure is intended to improve the overall intersection LOS and delay in certain intersection. These plans would improve the LOS and reduce delays back to the Future Without the Project conditions. However, in some cases these improvements might actually worsen other approaches to the same intersection (i.e., increase delay or worsen LOS) but overall would improve the intersection conditions and LOS.

1. *East 233rd Street/Jerome Avenue*: The analyses, as well as field inspections, show that there is severe traffic congestion at this location that would worsen with or without the proposed project. Although there is a right-turn channel at Jerome Avenue, queuing prevents vehicles from utilizing the channel because it is located too close to the intersection. This problem can be resolved by widening the ramp, to provide an exclusive, temporary right-turn lane leading into the existing channel. This would allow right-turning vehicles to clear the ramp quickly and also improve the overall queuing condition on this ramp. Since this area was included as part of the alienation legislation authorizing the use of the Mosholu Golf Course as a site for the Croton WTP, if the New York City Department of Parks and Recreation (NYCDPR), New York City Department of Transportation (NYCDOT), and the community make an official request that NYCDEP make this improvement permanent, NYCDEP would endeavor to do so.

   The southbound left-turn at this intersection has restricted capacity due to the high opposing volume. During PM peak conditions, field inspections have shown left turning drivers utilize one of the southbound through lanes as a second left turn lane. This illegal maneuver is allowing additional southbound lefts to get through the intersection then would otherwise occur with the current intersection configuration and signal phasing. To improve the delay for southbound lefts, a left-turn signal phase would be added.

   Another problematic approach at this intersection is the westbound left-turn movement on E. 233rd Street. As there are a limited number of east-west roadways in

this area, many vehicles heading south use westbound E. 233rd Street and then make a left-turn at Jerome Avenue. The high number of vehicles and limited green signal time results in delays during rush hours. To address this problem, it is proposed to widen E. 233rd Street and to add a second left-turn travel lane on the westbound approach.

After the physical changes, a signal timing warrant analysis would be conducted and submitted to NYCDOT for review and approval to make the intersection more efficient.

2. *Gun Hill Road and Jerome Avenue*: Optimize signal timing, transfer one second from eastbound/westbound phase to northbound/southbound phase. With mitigation, this intersection would operate at LOS D in the AM peak hour and LOS C in the PM peak hour. The AM peak hour southbound approach would remain at LOS E, but would have reduced delays of 1.7 seconds. The remaining approaches would remain at mid-LOS D or better. All approaches during the PM peak hour would be at mid-LOS D or better.

3. *Jerome Avenue and Bainbridge:* Although this intersection is not predicted to result in potentially significant adverse impacts based on the traffic capacity analysis, it would be used as the primary site access. The existing entrance to Mosholu Golf Course is at a complex intersection where Jerome Avenue and Bainbridge Avenue join at an acute angle. There is limited sight visibility at this intersection because of the columns that support the elevated No. 4 IRT Woodlawn train station. Construction traffic would not likely choose to use Jerome Avenue for access from the south, but several steps would be taken to insure that truck traffic does not use this route. The existing entrance to Mosholu Golf Course would be converted to a one-way exit. The right turn would be marked "No Trucks." A new entrance would be created approximately 150 ft. north of the existing entrance. The northbound approach to this entrance would be marked "No Trucks." Finally, a Traffic Control person would be placed on duty at this intersection during peak traffic periods and to enforce the ban on project-generated truck traffic traveling to and from the south along Jerome Avenue. This would also enhance pedestrian safety.

These traffic improvements primarily call for optimizing signal timings to reduce the potential increase in delay created by construction traffic volumes. The construction volume peaks were predicted conservatively since they were anticipated to arrive during the AM and PM peak hours. The optimum signal timings utilized are approximate. It is routine for counts to be performed at these locations after construction begins to provide actual traffic patterns to support the request for the modification of the signal timings. The potential traffic improvements would be developed in accordance with NYSDOT and NYCDOT design guidelines for approval. In addition, the potential traffic improvement designs would need to be reviewed and approved by the NYSDOT, NYCDOT, and/or other roadway jurisdictional bodies prior to being implemented. If these signal optimization plans to reduce the predicted increases in delay at the intersections in the study area are not adopted, these potential significant adverse traffic impacts would remain unmitigated. The potential significant adverse impacts from the proposed

construction-related activity would be short-term and mainly related to peak construction periods.

Table 9.2-1 shows the comparison of LOS results for these intersections for the Future Without the Project, the Construction Year, and the same year with the mitigation measures.

**TABLE 9.2-1. 2008 TRAFFIC CONDITIONS WITH PROPOSED MITIGATION MEASURES**

| SIGNALIZED INTERSECTIONS | LANE GROUP | FUTURE WITHOUT THE PROJECT | | | | | | POTENTIAL CONSTRUCTION IMPACTS | | | | | | PROPOSED MITIGATION MEASURES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WEEKDAY AM PEAK HOUR | | | WEEKDAY PM PEAK HOUR | | | 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 | V/C RATIO | DELAY (SEC/ VEH) | LOS | V/C RATIO | DELAY (SEC/ VEH) | LOS |
| 233rd Street (E-W) at Jerome Avenue (N-S) | EB – LTR | 0.92 | 52.3 | E | 0.91 | 52.7 | D | 1.03 | 74.6 | E | 0.92 | 53.6 | D | --- | --- | --- | --- | --- | --- |
| | EB-LT | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.80 | 46.7 | D | 0.89 | 56.8 | E |
| | EB-R | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.77 | 51.1 | D | 0.28 | 38.3 | D |
| | WB – L | 0.66 | 40.3 | D | 0.59 | 45.2 | D | 0.70 | 42.0 | D | 0.60 | 45.3 | D | 0.38 | 33.8 | C | 0.37 | 45.6 | D |
| | WB – R | 0.88 | 15.3 | B | 0.79 | 16.1 | B | 0.92 | 20.1 | C | 0.79 | 16.1 | B | 1.01 | 44.4 | D | 0.90 | 34.2 | C |
| | NB – T | 0.46 | 38.3 | D | 0.63 | 35.5 | D | 0.47 | 38.5 | D | 0.80 | 41.1 | D | 0.52 | 41.6 | D | 0.80 | 44.5 | D |
| | NB – R | 0.27 | 6.3 | A | 0.36 | 6.9 | A | 0.26 | 6.2 | A | 0.38 | 7.1 | A | 0.29 | 11.2 | B | 0.44 | 14.8 | B |
| | SB – L | 0.86 | 84.1 | F | 1.15 | >150 | F | 0.86 | 85.3 | F | 2.29 | >150 | F | 0.60 | 42.5 | D | 1.06 | 114.9 | F |
| | SB – T | 0.52 | 39.4 | D | --- | --- | --- | 0.63 | 41.9 | D | -- | -- | -- | 0.52 | 34.5 | C | 0.27 | 26.1 | C |
| | SB - LT | --- | --- | --- | 0.54 | 35.7 | D | --- | --- | --- | 0.64 | 38.6 | D | -- | -- | -- | -- | -- | -- |
| | **Intersection** | | **36.0** | **D** | | **38.9** | **D** | | **44.9** | **D** | | **58.7** | **E** | | **40.2** | **D** | | **43.7** | **D** |
| | | | | | | | | | | | | | | | | | | | |
| Gun Hill Road (E-W) at Jerome Avenue (N-S) | EB – LTR | 0.74 | 27.0 | C | 0.53 | 26.1 | C | 0.76 | 27.8 | C | 0.53 | 26.5 | C | 0.78 | 29.4 | C | 0.55 | 28.1 | C |
| | WB – LTR | 0.78 | 29.9 | C | 0.70 | 24.4 | C | 0.67 | 33.5 | C | 0.70 | 24.4 | C | 0.69 | 36.0 | D | 0.71 | 25.7 | C |
| | NB – LTR | 0.60 | 24.3 | C | 0.80 | 31.9 | C | 0.64 | 25.5 | C | 0.81 | 32.6 | C | 0.63 | 24.3 | C | 0.80 | 30.7 | C |
| | SB – LTR | 1.01 | 64.0 | E | 0.80 | 32.1 | C | 1.03 | 69.3 | E | 0.94 | 47.8 | D | 1.00 | 62.3 | E | 0.92 | 43.6 | D |
| | **Intersection** | | **37.3** | **D** | | **28.2** | **C** | | **39.7** | **D** | | **32.5** | **C** | | **38.9** | **D** | | **31.8** | **C** |

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

### 9.2.3. Noise Mitigation

No significant mobile or stationary noise impacts were anticipated as a result of future normal operations of the proposed plant. Predicted construction-generated noise level increases generally exceed the acceptable 3-5 dBA noise increase threshold established by CEQR to define significant adverse noise level increases that would result from a proposed project. Noise sensitive receptors in the vicinity of the proposed water treatment plant at the Mosholu Site would be affected by these noise level increases at four sites (Saturn Playground, Mosholu Golf Course, Shandler Recreation Area, and residences at Jerome Avenue and 213th Street). These noise level increases would last long enough to constitute a significant adverse impact and, therefore, would warrant mitigation. Mitigation would be required due to the long construction period and the potential for subsequent lost enjoyment for the Van Cortlandt Park users and prolonged nuisance from noise that may occur to residential receptors and elsewhere. Woodlawn Cemetery (MGC-S4) may also experience some increased noise levels during the excavation and rock drilling phases of construction. However, the short duration of the noise level increases would be temporary and therefore not significant.

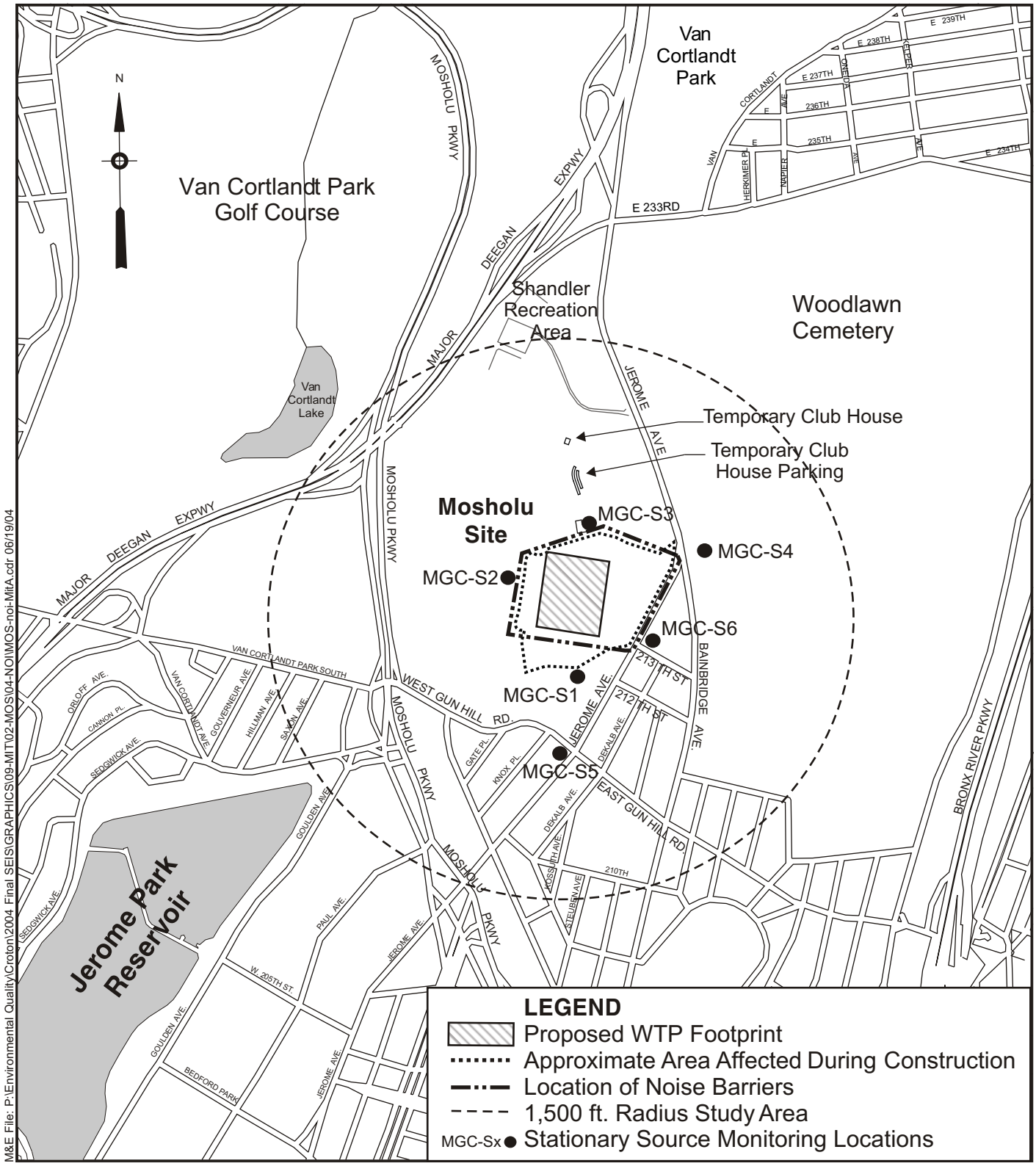
Measures to mitigate potential construction-generated noise impacts at sensitive receptors in the vicinity of the water treatment plant at the Mosholu Site were studied. For each noise-sensitive receptor, predicted project-induced noise levels for the peak construction-noise year (2006) were compared to the predicted future baseline noise levels for 2006. For those receptors that would experience a significant impact, attenuation measures were identified and the noise level at sensitive receptors following implementation of mitigation was estimated.

#### *9.2.3.1. Mobile Source Noise*

No significant noise impacts are anticipated from mobile sources as a result of operation or construction at the water treatment plant site. The results of the potential proposed plant operations and construction impacts analysis are presented in Section 6.10. Mitigation measures were not required along noise sensitive route segments.

#### *9.2.3.2. Stationary Source Noise*

Mitigation measures required for stationary noise impacts at sensitive receptors were analyzed. Table 9.2-2 presents information regarding the sensitive receptors. Figure 9.2-1 shows the location of the receptors in relation to the proposed construction site.




NOTE: S1 and S2 are also 24-hour monitoring locations.

# Mosholu Site
# Stationary Noise Source
# Potential Noise Barrier Configuration

Croton Water Treatment Plant

**Figure 9.2-1**

**TABLE 9.2-2. DESCRIPTION OF NOISE SENSITIVE RECEPTORS FOR STATIONARY NOISE SOURCE ANALYSIS**

| Receptor Name | Description of Receptors |
|---|---|
| MGC-S1 | Saturn Playground (Van Cortlandt Park) |
| MGC-S2 | Mosholu Golf Course (west of proposed construction zone) |
| MGC-S3 | Shandler Recreation Area (Van Cortlandt Park) |
| MGC-S4 | Woodlawn Cemetery |
| MGC-S5 | Residences at intersection of West Gun Hill Road and Jerome Avenue |
| MGC-S6 | Residences at intersection of Jerome Avenue and 213th Street |

Predicted noise levels resulting from construction activities would produce increased noise levels requiring mitigation at receptors MGC-S1, MGC-S2, MGC-S3, and MGC-S6. Significant adverse impacts were anticipated only during weekday construction hours (7:00 AM – 6:00 PM). As discussed in Section 6.10, the residences to the south of the site at the intersection of Jerome Avenue and East Gun Hill (MGC-S5) were not considered in the construction-noise impacts. Saturn Playground (MGC-S1) is located to the south of the site and between the site and MGC-S5. It was assumed that if potentially significant adverse impacts from construction noise were mitigated for MGC-S1, which is much closer to the site than MGC-S5, then the impacts also would be mitigated for MGC-S5.

An analysis was performed to determine what equipment used at what times was responsible for producing the greatest incremental change in noise levels. The maximum noise levels from construction activities would occur during the early phases of the construction period (from approximately April 2006 until July 2007). This period corresponds with earth excavation and removal activities at the site. Equipment most responsible for the increased noise levels would be the rock drills and the large volume of excavators and trucks that would be on site during that period. However, noise levels would exceed the 3-5 dBA threshold used to define significance for the duration of the construction schedule at some receptors (MGC-1, MGC-S2, and MGC-S3).

Site contractors would be required to mitigate construction noise to acceptable levels at each receptor in the vicinity of the Mosholu Site. Required standards to which contractor must adhere are those minimum standards of acceptability as established by the NYC Noise Code and as prescribed by CEQR. The precise mitigation methods employed by the contractor to adhere to acceptable levels would be left to their discretion (subject to NYCDEP review and approval). The following discussion, however, presents some of the more common mitigation techniques that may be employed to reduce noise to acceptable levels.

Noise attenuation systems that would mitigate the noise impacts from construction activities at sensitive receptors neighboring the site were identified. Receptors experiencing significant impacts are predicted to be on all sides of the site. The most affected receptor would be Mosholu Golf Course immediately to the west of the site (MGC-S2). Noise barriers facing the potentially impacted receptors would be installed at fixed locations along the boundaries of the construction site (recommended locations are shown in Figure 9.2-1). Noise barriers placed in a fixed location would not restrict the movement of on-site workers and equipment during construction.

The exact amount of sound transmission loss from a barrier is a function of its height, thickness, material of construction, and precise location with respect to the noise source and noise sensitive receptor. The barriers would act as an acoustical curtain enclosure, effectively shielding the receptors from noise emanating from construction equipment. A barrier approximately 20 feet in height would minimize the noise reaching sensitive receptors due to absorption and diffraction (i.e., bending of the sound waves over the top of the barrier). This type of noise barrier could achieve approximately 13 dBA of sound transmission loss (again, depending on the variables listed above).

The greatest predicted noise level increase due to construction would be 24.5 dBA above the CEQR threshold at receptor MGC-S2. Additional mitigation requirements for this receptor would be discussed in greater detail below. The other receptors (MGC-S1, MGC-S3, MGC-S4, and MGC-S6) each would experience noise level increases ranging from 4.5 dBA to 14.3 dBA above the CEQR threshold. The noise barrier would be capable of attenuating approximately 13 dBA of noise. With the noise barrier in place, the total predicted noise level during construction at MGC-S3 (which is the receptor that may experience 14.3 dBA increase) would be approximately 59.5 dBA. This level represents a 6.1 dBA increase over the lowest Future Without the Project level at this receptor and a 1.3 dBA over the CEQR threshold. As discussed below, additional mitigation measures, such as barriers and mufflers applied to individual pieces of equipment, would be capable of reducing construction-related noise an additional 1.3 dBA to within the 5 dBA threshold used to judge significant adverse noise increases in CEQR. However, with the noise barrier in place, construction related noise exceeding the 3-5 dBA threshold would only be experienced during the period of construction associated with rock excavation and removal (April 2006 – July 2007) and sporadically thereafter. With the noise barrier in place, therefore, the remaining construction noise exceeding the CEQR threshold would be temporary and not significant.

Table 9.2-3 shows the anticipated noise levels at impacted sensitive receptors with and without mitigation measures. With the exception of MGC-S2, construction-related noise would be attenuated to acceptable levels with the noise barriers in place. The residences along Jerome Avenue and the more distant residences on East Gun Hill Road would be mitigated by the installation of the noise barrier. These receptors would not experience a significant adverse impact from the proposed construction following mitigation.

Construction-generated noise still would result in a significant impact at the Mosholu golf course immediately to the west of the construction site (Receptor MGC-S2). With a noise barrier in place, the receptor would experience an increase in noise levels of approximately 11.5 dBA above the CEQR threshold. The future without the project noise levels at this receptor is 52.2 dBA (at its quietest) and the CEQR threshold noise level for this receptor is 57.1 dBA.

A number of options are available to further attenuate noise at this receptor. A noise barrier constructed of a more highly sound absorbent material, such as concrete, masonry, or rock, could be used along the west boundary of the construction site. These materials give a transmission loss of upwards to 25 dBA, which would be enough to attenuate construction noise to an

acceptable level[1]. This option has the advantage of not restricting access and movement of construction workers and equipment around the site.

Another option is to identify noise-generating equipment on site that is stationary (such as air compressors, rock drills, welding machines, cranes, etc.) and place portable noise barriers around them. These types of curtains are generally capable of approximately 11 dBA of sound transmission loss (i.e., attenuation) for each piece of equipment to which it is applied. A full 11-dBA reduction would not be observed in the total noise levels experienced at the receptors because there are other pieces of construction equipment on site that also would be generating noise. The disadvantage to this approach is that portable barriers restrict the movement of workers on a construction site and are not considered practicable.

As a supplement to the noise abatement systems that are proposed for the water treatment plant site, NYCDEP would establish a monitoring program and dedicated complaint response system to address any unforeseen construction- or operations-related noise impacts.

[1] US Department of Housing and Urban Development, The Noise Guidebook, June 2002.

**TABLE 9.2-3. NOISE LEVELS AT SENSITIVE RECEPTORS BEFORE AND AFTER MITIGATION MEASURES AT MOSHOLU SITE**
**(Leq, dBA)**

| Proximate Receptor | Monitoring Period | Future Without the Project Noise Level (2006) | Total Noise During Construction Without Mitigation (2006) | Incremental Change Without Mitigation | Incremental Change above CEQR Threshold Without Mitigation | Approximate Attenuation Due to Noise Barrier | Incremental Change above CEQR With Mitigation | Total Noise Levels During Construction With Mitigation (2006) |
|---|---|---|---|---|---|---|---|---|
| MGC-S1 | 8-9 AM | 64.8 | 73.1 | 8.3 | **5.4** | 13 | 0 | 60.1 |
| | 2-3 PM | 60.0 | 72.6 | 12.6 | **7.7** | 13 | 0 | 59.6 |
| MGC-S2 | 11AM-2PM | 55.1 | 81.6 | 26.5 | **21.6** | 13 | 8.6 | 68.6 |
| | 7-8 AM | 52.2 | 81.6 | 29.4 | **24.5** | 13 | 11.5 | 68.6 |
| MGC-S3 | 8-9AM | 56.4 | 72.5 | 16.2 | **11.3** | 13 | 0 | 59.5 |
| | 2-3 PM | 53.4 | 72.5 | 19.2 | **14.3** | 13 | 1.3 | 59.5 |
| MGC-S4 | 8-9 AM | 64.8 | 68.6 | 3.8 | 0 | 13 | 0 | 55.6 |
| | 12-1 PM | 59.1 | 68.6 | 9,5 | **4.5** | 13 | 0 | 55.6 |
| MGC-S6 | 8-9 AM | 66.1 | 70.1 | .4.0 | 1.0 | 13 | 0 | 57.1 |
| | 12-1 PM | 65.5 | 70.1 | 4.6 | 1.0 | 13 | 0 | 57.1 |

### 9.2.4. Natural Resources Mitigation

#### *9.2.4.1. Vegetation and Trees*

The necessary clearing and grading for the proposed water treatment plant facilities would result in the direct loss of 278 trees.

In addition, trees immediately adjacent to the proposed limit of construction line or close to the proposed infiltration trench (described in the Stormwater Pollution Prevention Plan (SWPPP) described below and in Appendix G) could be threatened by compaction of soils over their roots, changes in surface or groundwater drainage patterns, or accidental damage, if special care is not taken to protect them. There are 166 trees that would fall into this category. Even though the NYCDEP plans to protect these trees by placing Jersey barriers at least twenty feet from their canopies and by other means described below, for the purpose of this environmental analysis, the trees are considered potentially lost and part of the characterization of potentially significant adverse impacts on natural resources.

Finally, a group of 16 trees, mostly white pines (*Pinus alba*), would be threatened by the proposed temporary widening of the Major Deegan off-ramp at 233rd Street proposed as a temporary traffic improvement measure.

Trees of this nature and associated vegetation in a preserved park environment are rare in New York City and, since it is not possible to regain lost value promptly by replanting since trees need several years to mature, their loss would represent a potentially significant adverse impact.

In order to mitigate this impact and the potential adverse impact to the five-acre floodplain forest wetland area discussed below, a comprehensive reforestation and monitoring program has been developed in conjunction with the NYCDPR. The NYCDPR reforestation program would consist of the planting of trees to replace the trees that would be lost during the construction of the proposed water treatment plant, to preserve the forested wetland area discussed below, and to restore and preserve other natural resources of Van Cortlandt Park. Funds are also available for parks improvements throughout the Bronx. The monitoring program would start prior to construction and extend for at least three years after the proposed water treatment plant operations commence, representing a ten-year effort.

#### *9.2.4.2. Wetlands*

The dewatering of the water treatment plant foundation would locally lower the water table. This could result in a potential change in the stormwater and groundwater hydrology of the site area that could adversely affect the five-acre floodplain forest wetland north of the site entrance roadway in the Shandler Recreation Area. The change to this forested wetland would represent a potential significant adverse impact.

To mitigate this impact, a number of actions would be taken. First, during excavation, any fractures that leak water into the excavation would be sealed with grout under pressure. This

would seal rock fractures and reduce the potential for water to flow from the wetland to the excavation site. Second, a SWPPP would be implemented to maintain the existing hydrology, to the extent possible.

The SWPPP calls for the construction of infiltration structures adjacent to the site access road and to the south of the forested wetland. The infiltration structure would extend from near Jerome Avenue westward parallel to the western side of the proposed water treatment plant footprint. Water would be collected along the west and northwestern side of the proposed water treatment plant at an elevation of 180 feet, along the top of the bedrock. This is the flow, which currently drains toward the wetland. This flow would be supplemented with tap water as needed based on the monitoring of water levels at monitoring wells adjacent to the wetland. These flows would maintain a base flow equal to the volume that would migrate through bedrock toward the bottom of the foundation. This water would be passed to a series of infiltration galleries (horizontal underground diffusion devices) north of the water treatment plant footprint. The galleries would be about 10-15 ft. below grade so that the existing grade would not be altered. Overflow from the galleries would be channeled to an infiltration trench adjacent to the site access road. The infiltration trench would be an open structure that would be adjacent to the site entrance. Storm flows would be collected from rooftop drain lines on the water treatment plant after the water would pass through the soil that would be on the roof. This infiltration trench would also receive storm flows from the parking area after it passes through an oil/water separator. The reasons why storm flows would be channeled to the infiltration trench are: 1) to mitigate discharges to the combined sewer system and 2) to temporarily raise the groundwater levels during storm events around the forested wetland in order to mimic existing conditions. Excess storm flow would pass through a weir to the combined sewer on Jerome Avenue. These devices would replenish groundwater and produce a mound of water, which would prevent flows from leaving the wetland area to travel toward the proposed water treatment plant facilities. Once built and calibrated, these stormwater/groundwater control devices would require no pumping, active control devices, or extensive maintenance. None of the water in the infiltration system would be discharged to the wetland. Instead, the water would infiltrate to groundwater, preventing the lowering of the water levels in the wetland.

During construction of the water treatment plant, water collected in the excavated areas would be pumped to the combined sewer on Jerome Avenue. The infiltration galleries and trench would be constructed and connected to the city water supply system and calibrated to preserve the local hydrologic conditions as described above while construction dewatering operations are taking place.

Initial operation of this system would be monitored by NYCDEP in conjunction with NYCDPR. Additional numerical modeling would be utilized to adjust the rate of flow, if necessary. Once the flow to the infiltration device is shown to be maintaining the existing hydrology, no additional adjustments or maintenance would be required except for periodic cleanout of the infiltration trench.

The efforts described above would minimize impacts to the floodplain forest wetland area by providing a base flow that would allow the existing groundwater characteristics to be maintained at the existing average standing water elevation during dry weather. It would also provide storm

flow that would replicate stormwater events thereby providing wet weather and seasonal variability. This would be a passive system, requiring no pumping or active control devices.

However, even with these measures in place, the hydrologic regime would change to some extent leading to natural resource changes. It is likely soils near the infiltration trench may become over-saturated leading to the loss of trees unable to adjust to this condition. The number of threatened trees would be approximately thirty-six. (This estimate is included in the total number of 166 threatened trees discussed above under vegetation and tress.) In addition, the understory of the wetland would likely change in character because of the changes in hydrology. The understory changes are not anticipated to be significant. Overall, the potential loss of trees and changes to the wetland understory are not anticipated to be significant if the SWPPP is properly functioning and the area is monitored and actively managed. Monitoring of the system would include the following for two years pre-construction, during construction, and three years post-construction:

- Monthly groundwater levels at five monitoring wells in and around the wetland;
- Annual monitoring of tree health and growth in and adjacent to the wetland and around the entire excavation site;
- Twice annual surveys for rare, threatened, and endangered species;
- Twice annual surveys of vegetation plots; and
- Spring, summer, and fall recording of soil moisture at 200 ft. intervals around the excavation.

In summary, the combination of constructing the control devices and the implementation of the NYCDPR/NYCDEP reforestation and monitoring program is anticipated to mitigate any potential significant adverse impacts to natural resources. However, should the monitoring and reforestation programs prove less successful than predicted in this Final SEIS, the NYCDEP would work with the NYCDPR to adjust the mitigation program and would be responsible for replacing any unforeseen natural resource losses.

### 9.2.5. Public Health Mitigation

In response to public concerns about the potential for construction activities to increase movement of nuisance rodents, NYCDEP has developed a rodent control and monitoring plan that would be implemented at this site if it is selected for the proposed water treatment plant. An active program would be instituted to control the existing population, prevent the opening of conduits for rodents to and from the site, and a hygiene program during construction to prevent the creation of new food sources. This type of program has been proven to be successful on other large construction sites (e.g., “the Big Dig” in Boston) where very extensive tunneling and deep excavation occurred.