

## **13.0 INFRASTRUCTURE**

### **13.1 Introduction**

An assessment of water supply and wastewater treatment are discussed in the following subsections to determine the impact of the employees, visitors, and patients expected to be generated from the proposed project. The water consumed and wastewater generated from the anticipated development of the proposed project in 2010 was compared with the water consumed and wastewater generated from the existing buildings.

### **13.2 Existing Conditions**

#### ***13.2.1 Water Supply***

Since 1842, New York City has relied on upstate reservoirs to meet potable water demand. Approximately nineteen (19) reservoirs and three (3) controlled lakes supply the City with water. Aqueducts, reservoirs, and tunnels are currently used to transport the pristine water supplied by the Croton, Catskill, and Delaware Watersheds from over 125 miles north of the City. The Catskill/Delaware Watersheds provide 90% of the water supply. In 2003, the City's surface water supply provided 1.2 billion gallons of water per day to over 8 million residents, 1 million residents living in Westchester, Putnam, Ulster, and Orange County, as well as millions of commuters and tourists. Approximately 350,000 people in southeastern Queens received ground water or a mixture of groundwater from the underground aquifer under Long Island and surface water.

Distribution of the water supply is facilitated by three (3) major tunnels, underground storage tanks, and water mains. The average consumption of water in the borough of Manhattan is estimated at 420 million gallons per day (mgd), with peak consumption at 500 mgd. The Catskill system supplies an average of 310 mgd to Manhattan. Locally, water in the vicinity of the project is supplied through the Croton System and is transmitted to the site via the New Croton Aqueduct and trunk mains. The water distribution grid near the proposed project consists of 12-inch water lines running under the east-west streets and a 48-inch water main running under First Avenue. Water is supplied to HSS via a 12-inch water main and a 20-inch water main located along E. 70<sup>th</sup> Street. According to the New York City Department of Environmental Protection (DEP), there are currently no problems with the water distribution or pressure in the area.

The estimated existing water usage of the Main Hospital, Belaire, and Caspary Buildings of the Hospital for Special Surgery (HSS) is approximately 48,600 gallons of water use per day (gpd) for domestic use and 91,196 gpd for air conditioning based on the rates recommended by Section 3L-300 of the CEQR Technical Manual (162 beds \* 300 gpd/bed + 536,449 SF \* 0.17 gpd/SF). The total existing water usage for the Main Hospital, Belaire and Caspary Buildings of the HSS is 139,796 gpd.

#### ***13.2.2 Sanitary Sewage***

The HSS campus is located within the Newtown Creek Wastewater Pollution Control Plant (WPCP), according to DEP. Sewage originating south of E. 73<sup>rd</sup> Street is conveyed to the

Newtown Creek WPCP. Sewage is transferred by combined sewers along E. 70<sup>th</sup> Street and E. 71<sup>st</sup> Street, which connect with the combined sewer along York Avenue. The Newtown Creek WPCP, with a rated design capacity of 310 mgd, discharges the effluent into the East River. The 2002 average dry weather flow of the Newtown Creek WPCP is 216 mgd and the average total flow is 229 mgd.

The water quality of the East River and New York Harbor is detrimentally affected by the presence of combined sewers, producing the condition known as combined sewer overflow during storm events. Combined sewers convey sanitary sewage and stormwater in a partially separated pipe, which during a storm event allows for high levels of stormwater to spill over the partition and mix with the sanitary sewage. During such storm events the WPCP is estimated to accommodate the increased flow. The result is the discharge of contaminated stormwater into the East River in the area of HSS. The City has implemented measures to control combined sewer overflow with the installation of combined sewer overflow retention tanks that hold the contaminated stormwater during a storm event and later conveys it to a wastewater treatment plant and with the initiation of the floatables control program which utilizes floating containment barriers at some outfalls and skimmers on the water bodies where the contaminated stormwater has been discharged. The floatables control program has been implemented in the area near HSS, thus reducing the impact of storm event discharge.

The Newtown Creek WPCP, constructed in 1967, was designed with a modified aeration system to reduce biological oxygen demand (BOD) levels and total suspended solids (TSS). The levels of treatment were designed with the intention of maintaining fish health and navigability. The effluent is below the required treatment levels set in the Clean Water Act of 1974 for full secondary wastewater treatment. As a result, the City has implemented interim steps of treatment at the Newtown Creek WPCP until the upgrade of the plant is completed, which is expected by the end of 2007.

Assuming the sewage generation is equivalent to the water demand, the estimated existing sewage generation of the Main Hospital, Belaire, and Caspary Buildings of the Hospital for Special Surgery (HSS) is approximately 48,600 gallons of water use per day (gpd) for domestic use and 91,196 gpd for air conditioning based on the rates recommended by Section 3L-300 of the CEQR Technical Manual (162 beds \* 300 gpd/bed + 536,449 SF \* 0.17 gpd/SF). The estimated total existing sewage generation for the Main Hospital, Belaire, and Caspary Buildings of HSS is 139,196 gpd.

### ***13.2.3 Stormwater Disposal***

As discussed in the previous section, combined sewers service HSS and the surrounding area. The stormwater sewers currently discharge into the East River. The existing site of the proposed project is entirely covered with impervious surfaces. Section 3L-230 of the CEQR Technical Manual states that an assessment of stormwater impact of the proposed action may be appropriate for the following actions:

- *Any of the industrial activities listed in the table at the end of this chapter, including manufacturing, processing, or raw materials storage areas at those sites....*

- *Actions that would be served by separate sewers, if the action would greatly increase the amount of paved area on the site (such as could occur if an undeveloped site were developed into a parking lot or paved area....*
- *Actions that would be served by a separate storm system and that would involve construction activities including clearing, grading, and excavation....*
- *Construction of a new stormwater outfall.*

The proposed project does not correspond with the aforementioned requirements for an assessment of stormwater. Therefore, no analysis of stormwater was conducted for the proposed project.

### **13.3 The Future Without the Proposed Project-2010**

If the proposed project were not approved, HSS is not expected to develop any additional buildings or floor areas, and therefore there would be no change in the number of certified beds.

#### **13.3.1 Water Supply**

Under the future without the proposed project, the estimated water usage would remain the same as the existing condition, which generates approximately 48,600 gallons of water use per day (gpd) for domestic use and 91,196 gpd for air conditioning based on the rates recommended by Section 3L-300 of the CEQR Technical Manual (162 beds \* 300 gpd/bed + 536,449 SF \* 0.17 gpd/SF). The total existing water usage for the Main Hospital, Belaire and Caspary Buildings of the HSS is 139,796 gpd.

Since 1990, the daily water consumption in New York City has been reduced from 1.40 billion gal to 1.09 billion gallons of water per day in 2003. These reductions have resulted in part from various City programs that include increased use of low flow devices as well as leak detection and repair. At the same time, the City has increased metering of water usage in all buildings with financial incentives to reduce water demand and wastewater generation. Therefore, the increase in water demand from the future without the proposed project would not result in significant adverse impacts to water supply.

#### **13.3.2 Sanitary Sewage**

Under the future without the proposed project, the estimated sewage generation would remain the same as the existing condition, which generates approximately 48,600 gallons of sewage generation per day (gpd) for domestic use and 91,196 gpd for air conditioning based on the rates recommended by Section 3L-300 of the CEQR Technical Manual (162 beds \* 300 gpd/bed + 536,449 SF \* 0.17 gpd/SF). The total existing sewage generation for the Main Hospital, Belaire and Caspary Buildings of the HSS is 139,796 gpd.

It is assumed that Newtown Creek WPCP has been upgraded to provide full secondary treatment as of December 31, 2007 as mandated by the Clean Water Act of 1974 and agreed to by New York City, through DEP. Therefore, the interim steps implemented by the City to achieve the required wastewater treatment levels designated by the Clean Water Act of 1974 would no longer be necessary. The increase in sewage from the future without the proposed project would not result in significant adverse impacts to sewage treatment facilities.

### **13.3.3 Stormwater Disposal**

No significant change is expected in the amount of impervious surface area on the subject site. In addition, the proposed project does not correspond with the aforementioned requirements for an assessment of stormwater disposal. Therefore, no significant adverse impact on stormwater disposal is expected and no analysis of stormwater was conducted.

## **13.4 The Future With the Proposed Project-2010**

The proposed project would add a net gain of twenty-six (26) new certified beds and approximately 137,869 SF of floor space. The potential demand for water and sewage generation from the proposed project of HSS is considered below.

### **13.4.1 Water Supply**

It is anticipated by 2010, the future development with the proposed project for the East Wing of the main hospital building and construction of the new River Building would increase the total water usage by 31,245 gpd to a total of 171,041 gpd for HSS.

With regard to determining the impact significance of a proposed action on the City's water supply, Section 3L-400 of the CEQR Technical Manual states the following:

*Because of the large volume of the City's water supply system, any given action's water consumption would not be likely to be significant relative to the total Citywide demand. Significant impacts on water supply could occur, however, if an action demanded enough water to reduce water pressure in a localized area to below acceptable levels.*

Therefore, the increased demand resulting from the proposed project would not significantly affect the New York City water supply and distribution system. The proposed project would allow the City to continue its commitment of maintaining "adequate water supply and pressure for all users", as stated in Section 3L-200 of the CEQR Technical Manual. In addition, assuming the reduction of water consumption continues at its present rate, the increase in water demand generated by the proposed project of HSS would not be expected to significantly affect the City's water supply system nor significantly reduce the water pressure. As the subject site is not located in a district where water pressure is low and the proposed project is not of a size that would generate an exceptionally large water demand it is expected that the existing municipal and private services have the capacity to adequately meet the new increases in demand for water.

### **13.4.2 Sanitary Sewage**

It is anticipated by 2010, the future development with the proposed project for the Main Hospital-East and West Wing would increase the total sewage generation by 31,245 gpd to a total of 171,041 gpd for HSS, assuming that the sewage generation would be equivalent to the total water use.

It is assumed that Newtown Creek WPCP has been upgraded to provide full secondary treatment as of December 31, 2007 as mandated by the Clean Water Act of 1974 and agreed to by New York City, through DEP. Therefore, the provisional steps implemented by the City to achieve

the required wastewater treatment levels designated by the Clean Water Act of 1974 would no longer be necessary.

Assuming the reduction of water consumption continues at its present rate, the increased sewage generation resulting from the proposed project would not significantly affect the New York City wastewater treatment plants. As stated in Section 3L-400 of the CEQR Technical Manual:

*Because of the large volumes of wastewater treated at the City's water pollution control plants relative to the incremental flows contributed by an action,...any given action would not likely have a significant impact on any of those plants.*

Therefore the proposed project would allow the City to continue its commitment to “maintaining adequate wastewater treatment”, as stated in Section 3L-400 of the CEQR Technical Manual. As the subject site is not located in a district where water pressure is low and the proposed project is not of a size that would generate an exceptionally large incremental wastewater flow, it is expected that the existing municipal and private services have the capacity to adequately meet the new increases in wastewater treatment.

#### ***13.4.3 Stormwater Disposal***

No significant change is expected in the amount of impervious surface area on the subject site. In addition, the proposed project does not correspond with the aforementioned requirements for an assessment of stormwater disposal. Therefore, no significant adverse impact on stormwater disposal is expected and no analysis of stormwater was conducted.