3.15 PUBLIC HEALTH

3.15.1 Introduction

This Section describes the methodology used to determine the public health impacts from activities related to the construction and operation of Shaft 33B and the associated water main connections. The methodology for determining existing conditions, future conditions without the project, and potential public health impacts associated with the construction and operation of the project is provided.

Public health is defined by the *CEQR Technical Manual* as "the activities that society undertakes to create and maintain conditions in which people can be healthy." While the operation of Shaft 33B would provide the City with a more effective long term means of supplying water to local users, the potential effects of the project on public health was considered with regard to direct effects on the project site and surrounding communities during construction.

The public health in the vicinity of the Shaft Sites and associated water main connections would be potentially affected by the construction of these project elements. These localized potential effects would largely be influenced by air quality, noise, traffic and transportation, and handling of hazardous materials during construction and activation of Shaft 33B of City Tunnel No. 3.

The increased risk from exposure to environmental pollutants together with an estimate of the severity of the impact, studying the distribution and determinants of diseases and injuries in human populations, and a determination of potential for human diseases and injuries were included in this assessment. This assessment focused on the influence of the following areas of concern on public health: vehicular traffic and emissions, air quality, exposure to hazardous materials, asthma conditions, and noise emissions. The assessment was made based on criteria in the *CEQR Technical Manual* and all analysis was conducted in accordance with public and human health standards and guidelines set forth by federal, state and local agencies.

3.15.2 Existing Conditions Methodology

Urban public health issues require special attention with regard to the construction of the project. In general, these concerns are closely related to air quality, noise, traffic and transportation, and hazardous materials.

Potential localized impacts on public health were analyzed to determine if the construction of the Shaft Site and water main connections would adversely impact the human populations near such construction activities. To make these determinations, predicted exposure levels considered relevant local, state, and federal regulations, guidelines, and action levels.

The analysis of existing conditions near the affected areas for the Study Areas of concern included the identification of special local populations that are sensitive to environmentally induced stresses. These include populations in nearby medical facilities and extremely young,

old, and immune-compromised people. Existing conditions for traffic, air quality, noise and hazardous materials for the preferred Shaft Site Study Area are discussed within their respective Sections in Chapter 4, "Preferred Shaft Site." In Section 4.15, "Public Health," additional information on the health effects related to the emissions of particulate matter is provided.

Impact Assessment

Traffic

To assess the potential public health impacts associated with the traffic conditions from construction of the Shaft Site and water main connections as they relate to increased air pollution, the methodology described in Section 3.9, "Traffic and Parking," was followed. The effects of construction and operation of the project on the levels of service (LOS) of traffic and resultant increased traffic, congestion, and delays around the potential construction areas were determined. This information was used to support the air quality component on this assessment (see discussion below and Section 3.11, "Air Quality").

Air Quality

Air quality is based on the analysis of air emissions coming from two types of sources: mobile and stationary. Each factor can contribute to causing significant adverse air quality impacts. Following the methodology described in Section 3.11, the concentration of the pollutants of concern was compared to the National Ambient Air Quality Standards (NAAQS) and interim guidance criteria for $PM_{2.5}$ to determine the potential public health impacts. Incidences of asthma are also a related concern to air quality conditions. These predictions were also used as the basis for determining the potential impacts on known respiratory concerns with particulate matter, such as asthma, from the project.

Noise

As described in Section 3.12, "Noise," baseline noise levels were monitored and future levels during construction of the Shaft Site and water main connections were determined. Established thresholds were used to determine the potential significance of such predicted impacts on local populations.

Hazardous Materials

Hazardous materials are of concern due to their harmful nature. Section 3.14, "Hazardous Materials," describes the methodology employed to evaluate potential impacts from hazardous materials for the construction of the Shaft Site and water main connections.

Federal, State, and Local Regulations

Regulations promulgated by the federal, state, or local governments serve as a basis for the identification and classification of potential public health issues. The following regulations apply:

Federal

- U.S. Environmental Protection Agency (USEPA): USEPA's Federal Clean Air Act—This federal act regulates the National Ambient Air Quality Standards (NAAQS), and Section 304(a) of the Clean Water Act (CWA) regulates water quality (www.epa.gov).
- Resource Conservation and Recovery Act (RCRA): This federal act regulates the generation, treatment, storage, disposal, and transport of hazardous wastes. Under RCRA, hazardous wastes are substances that are chemically reactive, ignitable, corrosive, or toxic as measured by the Toxicity Characteristic Leaching Procedure.
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): More commonly known as Superfund, this federal act established prohibitions and requirements concerning closed and abandoned hazardous waste sites. The act provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. The law authorizes two kinds of response actions: 1) short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response; and 2) long-term remedial response actions that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on USEPA's National Priorities List (NPL).
- Occupational Safety and Health Administration (OSHA) Regulations: This agency was created by Congress in 1970 and promulgates regulations and standards to ensure worker safety in the workplace.
- U.S. Department of Transportation (USDOT): USDOT relates to public health through its mission of ensuring that various modes of transportation operate safely on an individual basis and together as an interlinked transportation system. The USDOT provides numerous transportation safety organizations and programs to protect public health (http://www.dot.gov/safety.html).

State

- New York State Department of Transportation (NYSDOT): The NYSDOT provides an Environmental Procedure Manual (http://www.dot.state.ny.us/eab/epm.html) with the mission that those who live, work and travel in New York State are entitled to a safe, efficient, balanced and environmentally sound transportation system. They can provide important environmental enhancements through close coordination with municipalities and state and federal resource agencies (i.e., NYSDEC & USEPA). However, their initiative is to encourage construction and maintain practices above and beyond permit and mitigation requirements.
- New York State Department of Health (NYSDOH): The NYSDOH maintains public and human health standards (www.health.state.ny.us/home.html). NYSDOH also regulates

drinking water. While the USEPA distinguishes between health-based (primary) and aesthetic (secondary) water standards, the NYSDOH considers them equally.

Local

- New York City Department of Environmental Protection (NYCDEP): NYCDEP is responsible for the installation and maintenance of the water and sewer system for the City of New York. Through procedures and agreements outlined in the Watershed Rules and Regulations (established in 1997) the City protects the system from contamination, degradation, and pollution.
- New York City Department of Health and Mental Hygiene (NYCDOHMH): NYCDOHMH's mission is to protect and promote the health of New York City residents. NYCDOHMH has taken the lead in developing programs to reduce asthmatic related hospitalizations and deaths in New York City by undertaking initiatives, and providing public health information for doctors and the public on asthma treatments and effects on health.

3.15.3 Future Conditions Without the Project Methodology

The potential for changes in exposure to environmental pollutants that may have an effect on public health was evaluated in light of any land use changes proposed for the Study Area. Improvements in environmental conditions resulting from regulatory enforcement of air and water quality regulations were considered.

3.15.4 Future Conditions With the Project Methodology

A thorough assessment of potential public health issues was undertaken to determine the potential impacts from the project. Identified potential impacts on air quality, noise, traffic and hazardous materials that could affect public health were evaluated based on their likelihood of adversely affecting public health. The factors considered include: the characteristics of the affected population; the time frame of the impact and its latency; the seriousness of a potential health effect and its duration; the number of people involved; and the reversibility of the impact. Incidences of asthma were evaluated separately because air quality standards alone do not explain the epidemiology of asthma.

The potential impacts associated with the shaft sites and water main connections were identified and evaluated with an estimate of the severity of impact..

Air Quality

Air pollutants emitted by mobile (e.g., vehicles), stationary (e.g., on-site equipment), and fugitive (e.g., construction) sources pose public health risks especially when combined with congested traffic conditions. The pollutants that could have the greatest effect on public health are sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), and small particulates. These pollutants can result in potential significant adverse air quality impacts when

future predicted levels result in new exceedances of NAAQS or the interim guidance criteria for $PM_{2.5}$. The project incorporates measures to ensure that construction of Shaft 33B is conducted in a manner protective of the local air quality. NYCDEP will require that the contractor for Shaft 33B reduce particulate matter emissions by employing relatively new equipment (model years 2003 and newer), install emissions controls on diesel equipment greater than 50 horsepower, such as diesel particulate filters or diesel oxidation catalysts, and use alternate means of powering the equipment, such as electricity where possible.

Noise

Details of noise monitoring and modeling are described in Section 3.12. The potential for increases in ambient noise levels that could cause public health impacts were evaluated.

Traffic

Potential public health impacts associated with vehicular traffic included the potential for increased congestion, and increased pollution from vehicle emissions as a result of such congestion. Traffic impacts were based on the methodology described in Section 3.9. The potential public health risks associated with increased air pollution from construction-related vehicular traffic for shaft sites, and in addition, the potential surface disruption effect of the construction of the water main connections was evaluated following the methodology described in Section 3.11.

Hazardous Materials

The risk from hazardous materials was evaluated following the methodology described in Section 3.14. This included a determination of the potential presence of hazardous materials at all of the Shaft Sites or along the water main connections, and the testing and other protective measures that will be undertaken prior to and during construction to protect workers and the surrounding population. In addition, potential hazardous materials that would be used on-site during construction were identified and protective measures that would be employed were addressed. In the event that de-chlorination of shaft water must occur prior to discharge into the sewer system, potential impacts of the type and quantities of water treatment chemicals that would be used at the site were considered. All chemicals being used would have safety and handling issues evaluated before use. Right-To-Know regulations that identify hazardous wastes and inform the public of hazardous waste being produced in the vicinity of their residences would be followed. Compliance with other federal and state regulations would help protect local citizens and reduce risks to the public.

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