

5.14 CONTAMINATED MATERIALS

5.14.1 Introduction

Contaminated materials are toxic or potentially harmful substances that may be present in soil, groundwater, and building materials. Contaminated materials are frequently encountered during construction activities in urban areas that have been subject to past disturbance from construction, excavation, and industrial uses. This section discusses the potential presence and type of contaminated materials that may be encountered as a result of the Proposed Action. The analysis focuses on the portions of the study area where proposed construction activities would occur, including excavation of soil or dewatering, building alteration, deconstruction and/or demolition, and cut and cover construction. Potential sources of contamination would be identified and remediated prior to or during construction, thus reducing or avoiding the potential for adverse impacts during the operational phase of the Proposed Action.

5.14.2 Study Area and Methodology

The study area includes the project corridor itself, and an area defined by West Street and the Hudson River to the west, Whitehall Street to the east, Morris Street to the north, and New York Harbor to the south (see Figure 33). A hazardous materials screening study was performed for the area potentially affected by the Proposed Action; this document is on file with MTA/NYCT. This study was conducted to determine past and present uses within the study area, and to identify potential sources of contamination or prior use of contaminated building materials. The research involved examination of historic Sanborn maps, along with aerial photographs and other maps and reports, for land uses that historically could have resulted in the contamination of underlying soil or groundwater. Available Federal, State, and local agency environmental records were reviewed to identify sites with the potential for contamination.

The U. S. Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (NYSDEC) databases reviewed for this assessment include the:

- National Priority List (NPL);
- Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list;
- Resource Conservation and Recovery Act (RCRA) hazardous waste treatment, storage, and disposal facilities list;
- Inactive Hazardous Waste Disposal Sites list;
- Major Oil Storage Facilities list (sites storing more than 400,000 gallons of petroleum products);
- Hazardous Waste Generators and Transporters list;
- Historic Utility Facilities;

- Chemical and Petroleum Bulk Storage Facilities list (under 400,000 gallons storage capacity);
- Hazardous Material Spills database;
- Toxic Release Inventory Sites list;
- Air and Toxic Wastewater Discharge Sites; and
- Civil Enforcement Docket sites (sites involved in environmental litigation).

5.14.3 Existing Conditions

The study area is developed with public rights-of-way, Battery Park, Peter Minuit Plaza, and commercial properties consisting of high-rise office buildings to the north and east of Battery Park. Additionally, structures and roadways for the Brooklyn Battery Tunnel portal are present in the northern portion of the study area, while the tunnel itself is located beneath Battery Park. The Battery Park Underpass, linking West Street and South Street, is also located underneath Battery Park.

No evidence of unduly stressed vegetation or petroleum/chemical staining, leakage, or discharge was observed during a site reconnaissance conducted in October 2003. However, it was noted that unspecified pesticides had been applied to the vegetated portions of Battery Park. Pesticides are commonly applied in low concentrations on grassy areas of public parks. Additionally, there was no evidence of historic long-term or present storage or usage of petroleum product or hazardous materials within the project corridor. The site reconnaissance indicated the presence of underground storage tanks (USTs, i.e., fill and vent pipes) just north of the project corridor along Greenwich Street, at the rear of the 25 Broadway building.

Exhaust structures and gratings associated with the Brooklyn Battery Tunnel and Battery Park Underpass adjacent to and within vegetated areas are present within Battery Park. The presence of these exhaust structures and gratings associated with roadways is considered an area of environmental concern (AOC), since they have been present since the 1940s and may have vented emissions containing metals and polycyclic aromatic hydrocarbons (PAHs) into the air. It is possible that metals and PAHs were deposited in the surficial soils located in the vicinity of the exhaust structures and gratings.

Depth to bedrock in the study area ranges between five and 60 feet below ground surface, and a weathered bedrock surface exists beneath the unconsolidated deposits in some portions of the study area. Ground moraine, boulder zones, sand and gravel, and clay deposits overlie bedrock in the study area. Soils beneath the study area consist primarily of fill material. The fill ranges in thickness from 0 to 35 feet and characteristically contains sand, silt, clay, gravel, stone, macadam, river mud, cinders, brick and concrete. Overland runoff within the project corridor and study area either infiltrates in vegetated areas or discharges to catch basins that drain to the Hudson River or New York Harbor.

The water table within the study area is generally encountered at depths of five to 10 feet below ground surface. Review of topography indicates that shallow groundwater in the study area is anticipated to flow south and west towards the Hudson River and New York

Harbor. Because of the study area's proximity to these water bodies, it is anticipated that shallow groundwater may be tidally influenced. Deep groundwater within the study area may be present in the Manhattan Schist. The Manhattan Schist is generally considered to have a low permeability. Additionally, although this geologic unit contains joints, fractures and faults, chemical weathering has filled these openings with clays, thus reducing potential secondary permeability.

5.14.4 Locations of Potential Sources of Contaminants

Through a review of the history, environmental databases, agency files, and project corridor field reconnaissance, areas of environmental concern were identified relative to the Proposed Action. The AOCs are shown in Figure 33 and described below.

Areas of Environmental Concern

Within the project corridor, the following AOCs have the potential to impact the surface and/or subsurface of the South Ferry Terminal Project:

- Historic landfilling activities – The unknown physical and chemical composition of fill material within the project corridor may affect the handling, management and disposal requirements of excavated soil. Additionally, the characteristics of the groundwater within and in the vicinity of the project corridor may impact dewatering activities, such as treatment and disposal options.
- Historic surficial soils – The historic presence of ventilation structures for the Brooklyn Battery Tunnel and Battery Park Underpass indicates that metals and PAHs from vehicle emissions may have accumulated in surficial soil within the project corridor. The presence of such constituents in surficial soil could affect the handling, management and disposal requirements of excavated soil.
- Historic usage of Battery Park – A review of aerial photographs indicated that portions of the project corridor within the eastern edge of Battery Park were used for support areas during the construction of the Brooklyn Battery Tunnel from 1940 through 1952. Such historic use of the project corridor for staging and support of construction activities indicates the potential for usage, storage, and disposal of petroleum products and chemicals in a manner inconsistent with present day regulations.
- Regulatory database review – The regulatory database review indicated the presence of one listing within the project corridor; Battery Park was identified as having a release of petroleum or hazardous substances. The details of the release were not reported.

In addition to AOCs within the project corridor, three AOCs within the study area were identified. These include the presence of underground storage tanks underneath the sidewalk on Broadway (at One Broadway and 5-11 Broadway), and also at the rear of 25 Broadway along Greenwich Street. Although the Proposed Action would affect the underground concrete vaults at One Broadway (located at northeast corner of the Greenwich Street/Battery Place intersection), the vaults were not identified in the database research as an AOC.

Asbestos, Lead-Based Paints, PCBs, Mercury

The Proposed Action would involve demolition and reconstruction activities in some building structures, including the basement vaults at One Broadway, the existing South Ferry Station, the existing 19 approach tunnel, and the connection to the Whitehall Street Station of the N R subway line. Building materials used in the construction of existing buildings and subway stations, as well as insulated steam pipes beneath some of the City's streets, may contain asbestos. Asbestos fibers are potentially harmful if they become airborne and are inhaled. The EPA prohibited the use of asbestos in spray-on fire proofing in 1972 and in thermal insulation in 1978. The use of lead-based paint in residences was banned by the Consumer Products Safety Commission in 1978 and by New York City in 1960. Prior to these dates, the use of asbestos and lead-based paint was common in New York City. Polychlorinated biphenyls (PCBs) are present in transformers, electrical feeder cables, hydraulic equipment, and fluorescent light ballasts that were manufactured prior to 1978. Mercury light bulbs were historically used in light fixtures and may still be present in some of the subway stations.

5.14.5 Potential Environmental Impacts**5.14.5.1 Analysis Year 2005/2006 (Construction)***No Build Condition*

Under the No Build Condition, the South Ferry Terminal Project would not be constructed. There would be no change in the existing conditions in the study area associated with the project, and potential AOCs would remain in situ. Minor upgrades and maintenance to the existing station would be performed that could impact potential asbestos-containing materials and lead-based painted surfaces. These activities may also impact PCB-containing equipment and mercury-containing light bulbs. Prior to initiating these activities, surveys would be performed and asbestos-containing materials and lead-based painted surfaces would be identified, consistent with standard MTA/NYCT procedures, as well as all federal, State, and local guidelines and regulations. Suspect PCB-containing equipment and mercury-containing light bulbs would also be surveyed. Prior to initiating the work, the potentially contaminated materials, identified through the surveys, would be abated or removed consistent with MTA/NYCT specifications.

Proposed Action

The South Ferry Terminal Project would be constructed as described in Chapter 4: Construction Methods and Activities. The AOCs identified in the previous section indicate that contaminants (i.e., petroleum, metals, PAHs, etc.) may have impacted the project corridor and study area. Therefore, as part of project implementation, MTA/NYCT will prepare a Phase II Environmental Site Investigation (ESI) to determine the need for and type of construction health and safety measures necessary to protect construction workers and the general public from health risks associated with potential subsurface contamination encountered during construction activities, and to assess the handling of potentially contaminated soil, groundwater and/or other materials generated during construction. The Phase II ESI would include the following tasks as appropriate:

- Health and safety plan development/mobilization – to conform to customary practice and applicable requirements for protection of workers and the public during the implementation of Phase II ESI field investigation activities.
- Regulatory agency file review – to identify the regulatory status and details of sites located within the project corridor and study area.
- Geophysical investigation – to identify subsurface utilities or structures that may be sources of contamination, migratory pathways for contamination and/or interferes with investigation or construction activities.
- Surficial soil sampling and analyses – to assess the presence or absence of contamination (i.e., petroleum, metals, PAHs, etc.) in surficial soils located within the project corridor in the vicinity of Brooklyn Battery Tunnel and Battery Park Underpass ventilation structures.
- Subsurface soil sampling and analyses – to assess physical and chemical composition of fill and unconsolidated deposits throughout the project corridor and impacts from neighboring sites.
- Groundwater sampling and analyses – to assess physical and chemical composition of groundwater present within the project corridor. The results of the analyses would be used to assess the handling, treatment and disposal requirements for water generated by dewatering.
- Investigation-derived waste management and disposal – to comply with applicable requirements for the proper management of wastes generated during field investigation activities.
- Underground structures reconnaissance – to assess the presence or absence of hazardous materials in these structures (including existing subway stations and tunnels) that may be affected by bellmouth and terminal construction.

Health and Safety Plan

Subsequent to the Phase II ESI, a Health and Safety Plan (HASP) will be prepared for the project to present measures to prevent exposure to contaminated and hazardous materials. The HASP will include provisions for the handling of documented contamination, as well as contingency measures to be taken if unanticipated contamination is encountered. For many of the activities associated with the Proposed Action, the U.S. Occupational Health and Safety Administration (OSHA) provides regulations and guidelines that would be included in the HASP.

Implementation of the HASP would be the principal means of protecting the construction workers and general public from exposure to contaminated materials. Workers that have the potential to come into contact with contaminated materials would be required to read, understand, and implement the procedures specified in the HASP. In addition, they would be required to have specific training to assist them in identifying the presence of potential health and safety hazards. These procedures include health and safety guidelines and work practices to prevent exposure. The procedures would be developed through evaluation of the suspect contaminants and the work to be performed. Sampling and monitoring for the presence of contaminants may be included in the HASP and implemented during construction of the Proposed Action in accordance with OSHA regulations and guidelines.

Soil and Contaminated Material Management Plan

A soil and contaminated material management plan will be included in the project's Construction Environmental Protection Plan (CEPP), and would identify waste and soil handling and disposal procedures to be employed during construction activities. For the South Ferry Terminal Project, contaminated material and soils would be either isolated or disposed of off-site. Isolation of contaminated soil involves the construction of a barrier that prevents direct contact with, or migration of, contaminated materials. The use of impermeable barriers such as concrete and asphalt would also prevent percolation of surface water through subsurface soil, thus limiting the potential for the contaminants to leach from soil to groundwater. In-place isolation is a useful method of addressing contaminants such as metals and PAHs, which are generally immobile.

To protect workers and the public during the site preparation and construction activities, dust control measures will be implemented. Depending on site and atmospheric conditions, these could include fine sprays of water, a mist curtain, and/or chemical foam. Tarpaulins, plastic sheeting, or geofabric can be used to cover stockpiled or staged soils.

Contaminated material and soil that is excavated during construction of the Proposed Action would be removed from the site and disposed of or treated at facilities approved to accept the material. The off-site transport of petroleum-contaminated soils would be performed in accordance with Federal, State, and local regulations. These regulations pertain to types of vehicles and containers permitted to transport the waste, the preparation and maintenance of manifests that document the type and quantity of waste being transported, and the truck routes which may be used to transport the waste. The vehicles and containers are designed to prevent the release of waste material while it is being transported.

Groundwater Management Plan

The groundwater management plan would provide a description of the methods used to collect, store, treat (as appropriate) and dispose of contaminated groundwater that may be generated during the Proposed Action. Additionally, the groundwater management plan would identify the requirements of permits which must be obtained from NYCDEP and/or NYSDEC to discharge the water to either the City's sewers or surface waters, respectively. Prior to obtaining NYCDEP or NYSDEC discharge permits, groundwater would be sampled and analyzed to characterize its physical and chemical properties. Depending on the results of the analyses, the type of treatment prior to discharge, if required, would be determined.

Approval from the responsible regulatory agency, in the form of a permit, would be obtained prior to construction activities. Depending on the quantity of water to be discharged, the permits may require sampling on a regular basis to confirm that the treatment is effective. Discharging activities would be performed in accordance with the terms and conditions specified by the permit, including the discharge rate, the sampling frequency, and duration.

5.14.5.2 Analysis Year 2008 (Initial Operation)

No Build Condition

Under the No Build Condition, the South Ferry Terminal would not be operational in 2008, and potentially contaminated materials would remain in situ. Any asbestos-containing materials and/or lead-based painted surfaces encountered during upgrades and maintenance to the existing station would be identified and removed prior to the maintenance/upgrade activities consistent with MTA/NYCT specifications.

Proposed Action

No impacts associated with the initial operation of the South Ferry Terminal in 2008 are expected, as hazardous materials would be identified and managed prior to construction. Once construction activities are completed, remaining subsurface contaminated materials would be contained by paved areas or other barriers and would not present a hazard to the public. Asbestos or lead-based paint would be removed from structures prior to deconstruction/renovation. The operation of the South Ferry Terminal would not be expected to generate any contaminants.

5.14.5.3 Analysis Year 2025 (Long Term Operation)

No Build Condition

Under the No Build Condition, the South Ferry Terminal would not be operational in 2025, and potentially contaminated materials would remain in situ. Any asbestos-containing materials and/or lead-based painted surfaces encountered during upgrades and maintenance to the existing station would be identified and removed prior to the maintenance/upgrade activities consistent with MTA/NYCT specifications.

Proposed Action

No impacts associated with the initial operation of the South Ferry Terminal in 2025 are expected, as hazardous materials would be identified and managed prior to construction. Once construction activities are completed, remaining subsurface contaminated materials would be contained by paved areas or other barriers and would not present a hazard to the public. Asbestos or lead-based paint would be removed from structures prior to deconstruction/renovation. The operation of the South Ferry Terminal would not be expected to generate any contaminants.