

A. INTRODUCTION

This chapter assesses the potential for the presence of hazardous materials at the project sites.¹ It examines the potential for both human and environmental exposure to hazardous materials in the current condition, or existing conditions; the future without the proposed project (No-Action condition); and the future with the proposed project (With-Action condition) during and following construction, and outlines specific measures that would be employed to protect public health, worker safety, and the environment. Hazardous materials are generally defined as any substance that poses a threat to human health or the environment. The term is often used interchangeably with “contaminated material,” but should not be confused with the term “hazardous waste,” which is a regulatory term.² The assessment methodology was consistent with Chapter J., “Hazardous Materials” of the 2012 *City Environmental Quality Review (CEQR) Technical Manual*.

Pursuant to CEQR, certain types of industrial, manufacturing, and commercial facilities and their activities (listed in “Hazardous Materials Appendix 1” of the *CEQR Technical Manual*) require assessment for hazardous materials. These facility categories include railroad freight terminals, yards, and rights-of-way, i.e., the past and current uses of the project sites.

The North Site and the northern half of the South Site were previously remediated under a Voluntary Cleanup Agreement (VCA) (Site Number V-00228) with the New York State Department of Environmental Conservation (NYSDEC) as a part of the stadium project. This “VCA Site” was in railroad use (including maintenance and servicing facilities) from 1883 to 1994. Following the New York City Economic Development Corporation’s (NYCEDC) purchase of the VCA Site in 1998, several phases of environmental investigation were completed before remediation was conducted. Remediation included removal of discrete hotspots of contamination from soil and sediments, capping any remaining contamination (associated with the historical fill material) with a combination of structures, pavement, rip-rap and clean soil. Based on the detection of methane in some soil gas samples, a passive sub-slab venting system was installed beneath the stadium. The VCA Site remains subject to an August 31, 2005 Restrictive Declaration which includes requirements that material beneath the cap not be disturbed without the prior consent of NYSDEC. As such, procedures for redevelopment of this portion of the project site will be subject to NYSDEC approval.

¹ A discussion of sediment quality and surface water quality of the Upper New York Harbor is provided in Chapter 9, “Natural Resources.” Therefore, the potential waterborne transit landing is not addressed in this chapter.

² “Hazardous waste” is defined in both the U.S. Environmental Protection Agency (EPA) regulations (40 CFR Part 261) and New York State regulations (6 NYCRR Part 371) and refers to a subset of solid wastes that are either specific wastes listed in the regulations (listed wastes) or solid wastes possessing the characteristic of ignitability, reactivity, corrosivity, or toxicity (characteristic wastes).

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For the remainder of the project area—the southern portion of the South Site (south of the Wall Street Ramp)—a June 28, 2012 Phase I Environmental Site Assessment (ESA) was conducted by URS Corporation that identified that this portion of the project area was also historically in railroad use and therefore a Phase II ESA (e.g., soil, soil gas and groundwater sampling) was conducted. URS's October 2012 Phase II ESA did not identify any hotspots of contamination in soil or groundwater; however, consistent with the remainder of the project site, levels of contaminants were consistent with the identified historical fill materials. Low levels of volatile organic contaminants (VOCs), specifically those typically associated with gasoline and solvents were found in the soil gas sampling.

The presence of hazardous materials threatens human health only when exposure to those materials can occur. Human exposure is most likely to occur through inhalation during excavation and construction activities; direct contact with contaminated material during and after construction; and ingestion of contaminated material (fill/soil or groundwater) during and after construction. Construction of the proposed project would therefore include health and safety procedures during the soil disturbing portion of construction (including dust suppression and worker/community air monitoring); remedial strategies (such as removal and/or capping of contaminated soils); and engineering/institutional controls (such as installing vapor controls under new buildings) to reduce or eliminate these exposure pathways.

PRINCIPAL CONCLUSIONS

Since a portion of the project sites were previously remediated under a VCA with NYSDEC, continued compliance with the August 2005 *Restrictive Declaration* would require NYSDEC approval of project plans relating to that portion as they relate to soil disturbance, handling of materials beneath the existing cap, and the need for vapor control beneath new buildings. As such, a comprehensive plan would be prepared for approval by NYSDEC that would describe appropriate health and safety procedures, soil management procedures, and new building vapor control designs, and would also include procedures for avoiding the generation of dust that could affect the surrounding community, as well as the monitoring necessary to ensure that no such impacts would occur. Following construction, the VCA Site would remain subject to NYSDEC oversight in accordance with an updated VCA Site Operation, Maintenance, and Monitoring Plan (OM&M) Plan.

For the North Site and South Site, impacts would be avoided by performing subsurface disturbance in accordance with a Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP). These documents would be subject to New York City Department of Environmental Protection (NYCDEP) approval (and NYSDEC jurisdiction for the portion previously remediated). The RAP would provide criteria for: appropriate clean fill importation; allowable reuse of excavated site soils; and handling, stockpiling, testing, transportation, and disposal of excavated materials, including any unexpectedly encountered contaminated soil and petroleum storage tanks, in accordance with applicable regulatory requirements. The RAP would also set out the requirements for vapor control beneath new buildings (i.e., a vapor barrier and a passive sub-slab depressurization system convertible to an active system if warranted based on future conditions). The CHASP would ensure that subsurface disturbance would be performed in a manner protective of workers, the public, and the environment including requirements for dust control and air monitoring.

For both sites, a Stormwater Pollution Prevention Plan (SWPPP) would be implemented during construction in accordance with New York State Pollutant Discharge Elimination System

(SPDES) General Permit for Stormwater Discharges from Construction Activity. During all dewatering required during subsurface work, water would be discharged in accordance with NYSDEC SPDES permitting requirements or NYCDEP Sewer Use Regulations. If necessary, the water would be pretreated prior to discharge. Finally, all excavated soil and fill materials requiring off-site disposal would be handled and disposed of in accordance with applicable regulatory requirements. Should contaminated soil and/or petroleum tanks be encountered, applicable regulatory requirements would be followed to address removal of the tanks and any associated soil or groundwater contamination. If petroleum tanks are discovered, they would be properly registered, if required, with NYSDEC and/or the New York City Fire Department.

Following completion of the subsurface disturbance in accordance with the above procedures and continued implementation of the engineering and institutional controls set out by the RAP and the VCA Site OM&M Plan, operation of the proposed project would not be associated with any significant potential for adverse effects.

B. METHODOLOGY

POTENTIAL AREAS AND CONTAMINANTS OF CONCERN

Soil and groundwater can become contaminated as a result of past or current activities on a project site or in adjacent areas. Many commercial and industrial activities use, store, or generate materials that can be spilled, dumped, or buried nearby, causing contamination. Common categories of contaminants are listed below:

- **VOCs:** These include aromatic compounds—such as benzene, toluene, ethylbenzene, xylene (BTEX), and methyl tertiary butyl ether (MTBE), which are found in petroleum products (especially gasoline)—and chlorinated compounds, such as tetrachloroethene (also known as perchloroethylene or “perc”) and trichloroethene, which are common ingredients in solvents, degreasers, and cleansers that are often used in automobile or train repair. VOCs represent the greatest potential for exposure since, unlike most other contaminants, they can also generate vapors that can migrate from the subsurface into buildings if proper controls are not present.
- **Semivolatile organic compounds (SVOCs):** The most common SVOCs in urban areas are polycyclic aromatic hydrocarbons (PAHs), which are constituents of partially combusted coal- or petroleum-derived products, such as coal ash and fuel oil. PAHs are commonly found in New York City urban fill material. In addition, petroleum-related SVOCs—associated with engine fluids (including fuels) and former or current aboveground storage tanks (ASTs) and/or underground storage tanks (USTs)—could be present.
- **Polychlorinated biphenyls (PCBs):** Commonly used as a dielectric fluid in stationary or railroad transformers, some underground high-voltage electric pipelines, and hydraulically operated machinery, PCBs are of special concern at maintenance locations where leakage into soil may have occurred. PCBs and/or PCB-containing materials were once widely used in manufacturing and industrial applications (e.g., hydraulic lifts, transformers, light ballasts, and plastics manufacturing). PCBs tend to travel only short distances in soil, except under unusual circumstances (e.g., large spills of PCB-containing oils over many years), and are not generally found in significant concentrations in groundwater.

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- Pesticides, herbicides, and rodenticides: These are commonly used to control rodents and/or insects and vegetation in vacant structures, railroad yards and rights-of-way or in vegetated lots.
- Metals (including lead, arsenic, cadmium, chromium, and mercury): Metals are often used in smelters, foundries, and metal works, and are found as components in paint, ink, petroleum products, and coal ash. Metals are also associated with pressure-treated wood (e.g., railroad ties), building components (e.g., mercury thermostats) and lead acid automotive batteries. Metals tend not to migrate far in soil; therefore, they would be of greatest concern at or near the site where they were handled. Metals at levels above natural background levels are frequently present in fill material throughout the New York metropolitan area.
- Fuel oil, waste oil, and gasoline from storage tanks: Numerous businesses in former industrial areas of New York City have, or once had, both known and undocumented ASTs and/or USTs for fuels, including heating oil, waste oil, motor oil, diesel and gasoline. Some of these tanks may have been removed; others, although no longer in use, may remain buried in place. Some of the tanks are known to have leaked, and others may have leaked despite no record of a spill. Some of the spills have been cleaned up in accordance with state regulations but others have not, either because they have not yet been discovered or because cleanup, which can take several years, is ongoing.
- Fill materials of unknown or historic origin: In the past, waste materials, including coal and incinerator ash, demolition debris, and industrial wastes, were commonly used as fill in urban areas. Even fill material consisting primarily of soil may exhibit elevated levels of PAHs, metals, PCBs, and other contaminants. Such materials are potentially present at the project site.
- Methane: Methane is formed from the decomposition of organic materials—both natural organic deposits (e.g., peat) and/or municipal wastes. Methane represents a concern since it can migrate through the subsurface into buildings, causing an explosion hazard.

Excavation, earthmoving, dewatering, and other construction activities can expose subsurface contaminants and provide a pathway of exposure. If such contaminants are not properly managed they can introduce potential risk to construction workers and others nearby.

As stated above, for the VCA Site, the existing studies were used to determine the existing conditions and measures necessary to prevent the potential for significant adverse effects.

The Phase I ESA that was conducted identified the potential for subsurface contamination based on historical information, regulatory databases and a site inspection. Because of this, a subsurface (or Phase II) investigation was conducted which consisted of laboratory analysis of site soil, groundwater and soil gas samples.

C. EXISTING CONDITIONS

VCA SITE

As described in TRC Environmental's March 2008 *Final Engineering Report*, investigations conducted between 1989 and 2000 identified a variety of necessary remedial activities including removal of soils containing elevated levels of arsenic; removal of sediments (the VCA Site included both upland areas and lands under water) containing elevated levels of lead; removal of transformers and petroleum storage tanks (one aboveground and one underground) and associated contaminated soil; capping with a combination of structures, pavement, rip-rap, and

clean soil; and ongoing groundwater monitoring. Based on the detection of methane in some soil gas samples, a passive sub-slab venting system was installed beneath the concrete slab of the new stadium and institutional controls were established, including the August 2005 Restrictive Declaration and the March 2006 OM&M Plan, which sets out the requirements for maintaining the site cap and building methane venting systems as well as health and safety requirements.

REMAINDER OF THE PROJECT AREA

For the remainder of the project area, i.e., the southern portion of the South Site (south of the North Ramp), the June 28, 2012 Phase I ESA identified that this area was also historically in railroad use and therefore a Phase II investigation (of soil, soil gas, and groundwater sampling) was conducted. The October 2012 Phase II ESA included: a geophysical survey to look for anomalies that could indicate underground storage tank; installation of 13 soil borings with collection and laboratory analysis of 27 soil samples, 7 additional waste characterization soil samples, and 4 groundwater samples; and collection and laboratory analysis of 4 soil gas samples.

No signs of storage tanks were identified by the geophysical survey. The borings identified an approximately 5-foot layer of historical fill material over sand with bedrock encountered at 8 to 10 feet below grade. The groundwater table was found at a depth of 6 to 10 feet. When compared to the NYSDEC Restricted Residential Soil Cleanup Objectives (6 NYCRR 375-6.4(b)(2)), the only exceedances in the soil samples were for certain PAHs, consistent with the historical fill materials. No soil samples exceeded hazardous waste thresholds. The groundwater samples had no exceedances of drinking water standards (note that groundwater in Staten Island is not used as a source of drinking water) except for one SVOC which is a common constituent of plastic (and frequently is a laboratory artifact) and certain common metals consistent with saltwater intrusion. The soil gas samples did identify higher than typical background concentrations of a variety of VOCs including BTEX and perc. However, the levels did not exceed the air guidelines contained in New York State Department of Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006.

D. FUTURE WITHOUT THE PROPOSED PROJECT

In the No-Action condition, the project sites would continue in their current uses. The VCA Site would remain subject to NYSDEC oversight (including annual certification requirements) in accordance with the OM&M Plan. Without excavation and redevelopment on the remainder of the project area, there would be no potential for exposure to its subsurface contaminants. As such, in the No-Action condition, although there would be no additional clean-up of hazardous materials, there would be no potential for human or environmental exposure and therefore no potential for significant adverse impacts.

E. THE FUTURE WITH THE PROPOSED PROJECT

Construction of the proposed project would involve a variety of earthmoving/excavating activities that could encounter subsurface contamination and dewatering.

For the VCA Site, compliance with the August 2005 *Restrictive Declaration* would require NYSDEC approval of project plans as they relate to soil disturbance, handling of materials beneath the existing cap, and the need for vapor control beneath new buildings. As such, a comprehensive plan would be prepared for approval by NYSDEC that would describe

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appropriate health and safety procedures, soil management procedures (including stockpiling, testing and disposal), and new building vapor control designs (which could include vapor barriers and/or passive venting systems). It would also include procedures for avoiding the generation of dust that could affect the surrounding community, as well as the monitoring necessary to ensure that no such impacts occur. Following construction, the VCA Site would remain subject to NYSDEC oversight (including annual certification requirements) in accordance with an updated OM&M Plan.

For the North Site and South Site, impacts would be avoided by performing subsurface disturbance in accordance with a RAP and CHASP. These documents would be subject to NYCDEP and/or NYSDEC jurisdiction. The RAP would provide the appropriate clean fill importation criteria and criteria for allowable reuse of excavated site soils (whether in the uppermost layer of landscaped areas or elsewhere), handling, stockpiling, testing, transportation, and disposal of excavated materials, including any unexpectedly encountered contaminated soil and petroleum storage tanks, in accordance with applicable regulatory requirements. The RAP would set out the requirements for vapor control beneath new buildings (i.e., a vapor barrier and a passive sub-slab depressurization system convertible to an active system if warranted based on future conditions). The CHASP would ensure that subsurface disturbance would be performed in a manner protective of workers, the public, and the environment.

For the North Site and South Site:

- A SWPPP would be implemented during construction in accordance with New York State SPDES General Permit for Stormwater Discharges from Construction Activity.
- During all dewatering required during subsurface work, water would be discharged in accordance with NYSDEC SPDES permitting requirements (for discharges directly to the harbor) or NYCDEP Sewer Use Regulations (for discharges to sanitary/combined sewers). If necessary, the water would be pretreated prior to discharge.
- All excavated soil and fill materials requiring off-site disposal would be handled and disposed of in accordance with applicable regulatory requirements. Should contaminated soil and/or petroleum tanks be encountered, applicable regulatory requirements (e.g., those relating to spill reporting) would be followed to address removal of the tanks and any associated soil or groundwater contamination. If historical petroleum tanks are discovered, they would be properly registered, if required, with NYSDEC and/or the New York City Fire Department.

Following completion of the subsurface disturbance in accordance with the above procedures and continued implementation of the engineering and institutional controls set out by the VCA Site OM&M Plan, operation of the proposed project would not be associated with any significant potential for adverse effects. *