Chapter 8: Hazardous Materials

A. INTRODUCTION

As described in Chapter 1, "Project Description," based on projections issued by the national Centers for Disease Control, Memorial Sloan Kettering Cancer Center (MSKCC) expects that new cancer cases in New York City will increase from the current rate of 40,000 annually to 60,000 annually by 2050. While this increase is a projection among all age groups, this rise is being driven by two populations: older patients, whose cases are more acute and require more complex treatment, and younger patients who are being diagnosed with prostate, colon, and breast cancer at alarming rates. To meet this increase in patient volume and the new interventions that are needed to treat the growing number of acute cases, MSKCC will need to supplement its existing capacity with a purpose-built structure with 28 operating rooms (with four dedicated to interventional radiology procedures) and up to 206 patient beds including intensive care units (ICUs) and single rooms for immunocompromised patients, as well as medical support areas.

To fulfill this need, MSKCC is requesting a series of zoning actions to establish a building zoning envelope to facilitate the development of a new 31-story (up to 598.3 feet including mechanical bulkhead), approximately 903,065 gross square foot (gsf) inpatient hospital building (the Proposed Project), also referred to as the "MSK Pavilion." It would be located on York Avenue between East 66th and East 67th Streets and, in addition to operating rooms and private patient rooms, would include recovery and intensive care facilities, clinical support floors, a double-height lobby and 5 mechanical floors to house intensive technologies and air exchange systems. A two-story patient bridge across East 67th Street (Patient Bridge) connecting floors 5 and 6 of the Proposed Project with floors 8 and 9 of the Memorial Hospital building would serve as the primary connector for patients in either building to access medical services in the other building.

This chapter presents the findings of the hazardous materials assessment and identifies potential issues of concern that could pose a hazard to workers, the community, and/or the environment during or after implementation of the Proposed Project. The potential for hazardous material conditions within the Development Site was evaluated based on a Phase I Environmental Site Assessment (ESA) of the Development Site, prepared by AKRF in June 2023, and a Subsurface (Phase II) Investigation, conducted by AKRF in September 2023.

The Phase I ESA (conducted in accordance with standard ASTM E1523-13 and ASTM E1527-21) included: a visual inspection of the Development Site and surrounding area; review of available records and historical maps; and an evaluation of federal and state environmental regulatory databases. The Phase II investigation included: a geophysical survey to screen accessible portions of the Development Site for underground storage tanks (USTs) and subsurface utilities; the advancement of 9 borings throughout the Development Site for the collection of soil and groundwater samples for laboratory analysis; and the installation of five temporary sub-slab vapor probes for the collection of sub-slab vapor samples for laboratory analysis.

The Proposed Project would result in the demolition of two existing buildings on the Development Site—Scholars and Sloan—and their replacement with a new multistory medical facility, which

would entail soil disturbance. The rezoning proposed to facilitate the Proposed Project would include the western portion of Block 1461, Lot 21, as well as Block 1461, Lot 13 (the Rockefeller Research Labs building), which is also Applicant-owned but is located largely outside the Development Site. Lot 13 and the western portion of Lot 21 would be rezoned to expand the permitted zoning floor area on the Development Site, and the Proposed Project would not entail a change in use in RRL (although the common parking garage below Lots 13 and 21 would be modified). Thus, this hazardous materials assessment focuses on Lot 21.

Absent the Proposed Project (the No Action condition), it is anticipated that the Development Site will remain in its current condition.

PRINCIPAL CONCLUSIONS

The ESA identified potential sources of contamination on, or in close proximity to, the Development Site. The identified concerns included: a closed-status petroleum spill which may have occurred on or near the Development Site; reported hazardous waste generation on the MSKCC campus (potentially including the Development Site) and in the surrounding area; and on-site chemical storage in the vicinity of floor drains.

Based on ESA findings, a Phase II investigation of the Development Site was conducted in accordance with a New York City Department of Environmental Protection (DEP)-approved Work Plan. The Phase II investigation indicated that existing structures on the Development Site are underlain by a thin layer (approximately 1.5 to 5 feet) of soil above bedrock. Primary contaminants of concern identified by the Phase II included somewhat elevated concentrations of selected metals, polychlorinated biphenyls (PCBs), and the pesticide 4,4-DDE in selected soil samples, and petroleum- and solvent-related volatile organic compounds in sub-slab vapor samples. Elevated concentrations of acetone, ethanol, and the chlorinated solvent-related VOC tetrachloroethene (PCE) were detected in one sub-slab vapor sample each. PCE was not detected in on-site soil or groundwater. The vapor detections appeared to be isolated and not indicative of a wide-spread condition, though the detected concentration of PCE would require mitigation based on New York State Department of Health (NYSDOH) guidance.

To reduce the potential for adverse impacts associated with demolition and construction resulting from the Proposed Project, subsurface disturbance would be conducted in accordance with a DEP-approved site-specific Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP). Following construction, a Remedial Closure Report (RCR) would be prepared to document compliance with the RAP/CHASP and submitted to DEP for review and approval.

The ESA also identified the potential for hazardous materials in existing buildings (such as asbestos-containing materials (ACM), lead-based paint (LBP), and PCB-containing equipment and lighting fixtures). Regulatory requirements for maintenance and (if necessary) disposal of such materials prior to or during demolition would continue to be followed.

With the implementation of the above measures, the Proposed Actions would not result in any significant adverse impacts with respect to hazardous materials.

B. POTENTIAL CONTAMINANTS OF CONCERN

Soil and groundwater can become contaminated as a result of past or current activities either at a site or nearby. Such contamination can remain undetected for many years without posing a threat to health or the environment. Excavation, earthmoving, dewatering, and other construction or demolition activities can, however, expose the contaminants, provide a pathway of exposure and,

if such contaminants are not properly managed, introduce potential risk to construction workers and others.

Demolition of existing structures that have ACM, LBP, or equipment containing PCBs also has the potential to release contaminants if these materials are not properly managed.

Based on the types of contaminants that are typically found in NYC and past and present uses on the Development Site, some of the potential contaminants of concern are described below. The list provides a summary of categories of contaminants but is not a comprehensive list of all contaminants that could be encountered:

- ***Volatile organic compounds (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 tricholoroethene, which are common ingredients in solvents, degreasers, and cleansers. VOCs represent the greatest potential for concern since, in addition to contaminating soil and groundwater, they can generate vapors that migrate into buildings.
- ***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 present in NYC urban fill materials. In addition, petroleum-related SVOCs could be associated with petroleum storage tanks currently or formerly located on-site.
- ***PCBs*:** Historically used in transformers (as a dielectric fluid), some underground high-voltage electric lines, hydraulically operated machinery, and fluorescent lighting ballasts. PCBs tend to travel only short distances in soil.
- ***Pesticides, herbicides, and rodenticides:*** These are commonly used to control rodents, insects, and vegetation in vacant structures or in vegetated areas.
- ***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 frequently present in fill material throughout the New York metropolitan area. However, metals tend not to migrate far in soil; therefore, they would be of greatest concern near the location where they were generated. In addition, the age of the existing buildings on the Development Site indicates that they may contain lead-based paint, which was allowed for use in NYC residential buildings until 1960.
- ***Fill materials of unknown 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, or other contaminants.
- ***Asbestos:*** Asbestos is a generic name for a group of naturally occurring minerals. Before 1990, these minerals were commonly used in various building materials, such as insulation, fireproofing, roofing, plaster, and floor and ceiling tiles, due to their excellent fire resistance and insulating properties. ACM are classified as friable or non-friable. Friable ACM, such as spray-applied fireproofing and thermal system insulation, are those which when dry can be crumbled, pulverized, or reduced to powder by hand or other mechanical pressure and present a greater health concern than non-friable ACM (such as vinyl floor tiles and some asphaltic roofing materials), as they more readily release asbestos fibers. In 1990, use of most ACM, except some non-friable ACM, was banned by the federal Clean Air Act, but buildings on the

study sites are likely to contain them because they were built before 1990. In addition to materials within existing structures, subsurface utility lines may be coated with asbestos or encased in the ACM "transite."

C. EXISTING CONDITIONS

SUBSURFACE CONDITIONS

The Development Site is approximately 40 feet above mean sea level, with surface topography sloping down toward the southeast. Bedrock is anticipated to be approximately 10 feet below grade. Existing structures on the Development Site are underlain by a thin layer (approximately 1.5 to 5 feet) of soil above bedrock. The soil consists of sand with some gravel and silt, with small amounts of localized fill materials.

Based on United Stated Geological Survey (USGS) mapping, groundwater is anticipated to be approximately 40 feet below street grade. However, the Phase II and a previous geotechnical investigation (GZA GeoEnvironmental of New York [GZA], April 5, 2023]) encountered groundwater, which appeared to be perched on bedrock, approximately 3 to 17 inches below the existing structures' cellar/sub-cellar slabs. Groundwater likely flows in a generally easterly or southeasterly direction towards the East River, approximately 800 feet away. Actual groundwater depth and flow direction may be influenced by tides, subway tunnels and other subsurface openings or obstructions, bedrock geology, and other factors. Groundwater in Manhattan is not used as a source of potable water.

PHASE I ENVIRONMENTAL SITE ASSESSMENT

The Phase I ESA included: a visual inspection of the Development Site and surrounding area; a review of available records and historical maps; and an evaluation of federal and state environmental regulatory databases. The Phase I ESAs also included interviews with personnel knowledgeable about the Development Site. At the time of the reconnaissance, the Development Site was occupied by two community facility buildings (the Scholars and Sloan buildings) with contract housing units and some administrative offices/support spaces for MSKCC, and part of a below-grade parking garage which extends to the west of the Development Site onto the adjacent Lot 13.

The ESA identified the following, including Recognized Environmental Conditions (RECs) (first two bullets):

- Spill No. 0006107 was reported to the New York State Department of Environmental Conservation (NYSDEC) at 440 East 67th Street, located within the bounds of the Development Site, in August 2001. The listing indicated that the spill occurred due to equipment failure while filling up heating oil tanks. Approximately 3 gallons of #6 fuel oil were reportedly released. There was no description of a remedial action. The spill listing was closed on August 23, 2001. Based on the listing details, and the known conditions at the Development Site (which contains no known petroleum storage tanks), it is possible that this spill number does not correlate to the Subject Property address, as heating services at the Subject Property are derived from steam service from an off-site building, and no petroleum storage tanks are known to be present on the Development Site.
- The collective address for MSKCC at 1275 York Avenue (Memorial Hospital), on the north-adjacent block, is listed in the regulatory database 19 times as a Large Quantity Generator and three times as a Small Quantity Generator regulated under the Resource Conservation and

Recovery Act (RCRA) between 1981 and 2019 for various types of wastes. Additionally, the surrounding area included multiple RCRA generator facilities, facilities with petroleum tanks and spills, NY MANIFEST and NJ MANIFEST sites, and properties with manufacturing and light industrial uses with the potential to affect conditions at the Development Site.

- Floor drains were present throughout the basement and sub-basement areas of the on-site buildings where chemicals were observed to be stored. Although the drains reportedly discharge to the municipal sewers, there is some potential for releases to the drains to have leaked into the subsurface.
- The potential for the presence of LBP, PCB- and/or mercury-containing equipment and lighting fixtures, and/or ACM in the existing on-site buildings was identified.

SUBSURFACE (PHASE II) INVESTIGATION

A Phase II investigation was conducted by AKRF on August 23 and 24, 2023 in accordance with a Work Plan prepared by AKRF in June 2023, and approved by DEP in a letter dated July 19, 2023 (see **Appendix C**). The Phase II included: a geophysical survey; the installation of nine borings with collection and laboratory analysis of 11 soil samples; the installation of one temporary monitoring well with collection and laboratory analysis of one groundwater sample; and the installation of five sub-slab vapor points with collection and laboratory analysis of five sub-slab vapor samples. The Phase II Investigation identified the following:

GEOPHYSICAL SURVEY

- Due to access limitations, including numerous parked cars in the garage and various storage and equipment in the Sloan cellar, the survey was limited to an approximately 10-foot by 10-foot area around each proposed boring location. The geophysical survey did not identify any anomalies potentially indicative of USTs in the surveyed areas.

SOIL

- Borings advanced as part of the Phase II generally encountered sand, gravel, and traces of silt. Fill materials (sand, gravel, silt, and brick) were encountered throughout one boring. Refusal on apparent bedrock was encountered in each boring at depths ranging from 1.5 to 5 feet below floor grade. Field screening detected slightly elevated photoionization detector (PID) readings (ranging from 0.2 to 5.4 ppm) in borings SB-02, SB-04, and SB-07. A chemical-like odor was noted in boring SB-01. Petroleum-like odors were noted in borings SB-03, SB-04, and SB-07. Groundwater was first encountered at approximately 2 inches below floor grade in one boring. The groundwater appeared to be perched on bedrock and may not be representative of a continuous shallow aquifer or regional groundwater conditions.
- Eleven soil samples were collected from the nine borings advanced across the Site and analyzed for VOCs, SVOCs, PCBs, pesticides, and metals. The laboratory analytical results were compared to New York State Department of Environmental Conservation (NYSDEC) Soil Cleanup Objectives for Unrestricted Use (UUSCOs) and Restricted-Residential Use (RRSCOs) presented in Sections 6.8(b) of 6 NYCRR Part 375.

  No VOCs or SVOCs were detected in exceedance of UUSCOs or RRSCOs. The PCB Aroclor 1254 was detected in two soil samples at concentrations above the respective UUSCO; the concentration in one sample also exceeded the respective RRSCO. Three metals (manganese, nickel, and zinc) exceeded their respective UUSCOs in one sample each, with manganese also exceeding its RRSCO in one soil sample. One pesticide (4,4-DDE) was detected in one soil sample at a concentration above its UUSCO, but well below its RRSCO.

GROUNDWATER

- One groundwater sample was collected from a temporary monitoring well and analyzed for VOCs, SVOCs, PCBs, pesticides, and metals (total and dissolved). The laboratory analytical results were compared to the NYSDEC Class GA ambient water quality standards and guidance values (AWQSGVs) as presented in the NYSDEC Division of Water TOGS 1.1.1.
- No VOCs, SVOCs, PCBs, or pesticides were detected above laboratory reporting limits. Three metals (iron, manganese, and sodium) were detected in the unfiltered (total) groundwater sample above their AWQSVGVs. Metal concentrations were generally lower in the filtered (dissolved) groundwater sample. Three metals (manganese, sodium, and mercury) were above their AWQSGVs in the filtered sample.

Sub-Slab Vapor

- Five sub-slab vapor samples were collected from temporary sub-slab vapor points, and analyzed for VOCs.
- The petroleum-related VOCs benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX) were detected in select sub-slab vapor samples at concentrations ranging from non-detectable to 398 micrograms per cubic meter ($\mu g/m^3$).
- Acetone was detected in all sub-slab vapor samples at generally low concentrations. However, one sample (SV-02_20230823) had significantly higher concentration of 5,960 $\mu g/m^3$. Ethanol was detected in two sub-slab vapor samples, with a significantly higher concentration of 2,240 $\mu g/m^3$ in sample SV-02_20230823.
- The chlorinated VOC ~~trichloroethene~~ tetrachloroethene (PCE) was detected in sample SV-07_20230823 at a concentration of 1,120 $\mu g/m^3$. PCE was not detected in any other sub-slab vapor samples, and PCE was not detected in soil or groundwater samples. The detected concentration of PCE exceeded its NYSDOH Air Guidance Value (AGV) of 30 $\mu g/m^3$.
- Of the VOCs for which NYSDOH decision matrices have been developed, only two (methylene chloride and PCE) were detected in one to two sub-slab vapor samples each. The detected concentration of PCE would require mitigation based on NYSDOH guidance.

Based on field observations and the Development Site history, the elevated metal, PCB, and pesticide concentrations in soil were most likely attributable to some combination of historical fill, historical Site uses, regional soil conditions and prior pesticide use at the Development Site. Nonetheless, the data does not indicate a significant release or source area.

The detected metal concentrations in the total and dissolved groundwater samples were likely attributable to some combination of fill materials in surrounding soil, prior use at the Development Site and/or surrounding properties, and regional groundwater conditions. As such, the concentrations do not appear to indicate a significant release or source area.

The VOCs detected in soil vapor are likely attributable to some combination of laboratory, medical, and maintenance uses on-site, and/or an off-site source. Furthermore, hazardous waste generators of solvents were identified in the immediate vicinity of the Site by the ESA. The vapor detections appear to be isolated and not indicative of a wide-spread condition, though based on NYSDOH guidance, remediation is recommended with respect to the detected concentration of PCE. The Proposed Project would require excavation into bedrock, and into the perched water table. Thus, a sub-slab depressurization system (SSDS) would not be feasible. Remediation measures would consist of the installation of a vapor barrier/waterproofing below the proposed

building's foundations and behind below-grade sidewalls, along with ventilation in the below-grade parking levels (as required by New York City code).

D. THE FUTURE WITHOUT THE PROPOSED PROJECT (NO ACTION CONDITION)

In the No Action condition, no change in use of the Development Site is anticipated. Legal requirements, such as those relating to handling and disposal of ACM, LBP, mercury-containing fluorescent light bulbs, and PCBs, would continue to be applicable.

E. THE FUTURE WITH THE PROPOSED PROJECT (WITH ACTION CONDITION)

The Proposed Project would involve demolition of existing buildings on the Development Site and soil disturbance for new building construction. Based on the depth to bedrock, the soil disturbance is anticipated to be minimal.

As noted above, the potential for subsurface contamination has been identified for the Development Site. Although the demolition and construction activities associated with the Proposed Project could increase pathways for human exposure, impacts would be avoided by performing site development activities in accordance with the following measures:

- Based on the findings of the Phase II investigation, a site-specific RAP and CHASP have been prepared for implementation during construction. The RAP and CHASP were submitted to DEP for review and were approved by DEP in a letter dated October 23, 2023 (see **Appendix C**). The RAP and CHASP were subsequently revised in November 2023 to incorporate minor revisions requested in the DEP approval letter. The RAP addresses requirements for items such as: vapor control measures; soil stockpiling, soil disposal and transportation; dust control; quality assurance; and contingency measures should petroleum storage tanks or contamination be unexpectedly encountered. The CHASP includes measures for worker and community protection, including personal protective equipment, dust control, and air monitoring. DEP approval of the RAP and CHASP is required prior to soil disturbance. Following the completion of soil disturbance, an RCR would be submitted to DEP for review and approval. The RCR would document proper performance of all procedures required by the RAP and CHASP.
- No petroleum storage tanks are known to be present on the Development Site. However, if any petroleum storage tanks are unexpectedly encountered during redevelopment, such tanks would be removed, along with any contaminated soil, in accordance with applicable regulatory requirements including NYSDEC requirements relating to spill reporting and tank registration.
- If dewatering is necessary as part of the proposed construction activities, water would be discharged to sewers in accordance with DEP requirements (if discharging to a combined/sanitary sewer) or NYSDEC requirements (if discharging to sewers connected directly to waterways).
- An asbestos survey of the areas to be demolished ~~would be~~has been conducted, and any ACM that would be disturbed would be removed and disposed of prior to demolition in accordance with local, state, and federal requirements.

- Any activities with the potential to disturb lead-based paint would be performed in accordance with applicable requirements (including federal Occupational Safety and Health Administration [OSHA] regulation 29 CFR 1926.62—*Lead Exposure in Construction*).
- Unless there is labeling or test data indicating that suspect PCB-containing electrical equipment, hydraulic equipment and fluorescent lighting fixtures do not contain PCBs, and that fluorescent lighting bulbs do not contain mercury, if disposal is required, it would be conducted in accordance with applicable federal, state and local requirements.
- Any stored chemicals would be properly disposed of prior to demolition in accordance with applicable requirements.
- The work plan and implementation for the safe removal of hazardous materials would be monitored by two separate independent Environmental Health and Safety Risk Management companies.

With the implementation of the above measures, no significant adverse impacts related to hazardous materials would be expected to be associated with the Proposed Project. ✷