10

Hazardous Materials

A hazardous material is any substance that poses a threat to human health or the environment if it creates an exposure pathway. Substances that can be of concern include, but are not limited to, heavy metals, volatile and semi-volatile organic compounds, methane, polychlorinated biphenyls (PCBs), and hazardous wastes (defined as substances that are chemically reactive, ignitable, corrosive, or toxic) which may create a dermal, inhalation or vapor exposure pathway if present in the environment and are left uncontrolled.

Introduction

According to the *2021 CEQR Technical Manual*, the potential for significant impacts from hazardous materials can occur when:

- hazardous materials exist on a site;
- an action would increase pathways to their exposure; or
- an action would introduce new activities or processes using hazardous materials.

This section presents the findings of the hazardous materials assessment and identifies potential issues of concern with respect to workers, the community, and/or the environment during construction and after implementation of the Proposed Project.

As indicated in the *CEQR Technical Manual*, a hazardous materials (E) Designation is an institutional control that may be placed on a site to establish a hazardous materials review and approval framework. It provides a mechanism to ensure that testing for and remediation of hazardous materials, if necessary, are completed prior to future development of an affected site, thereby eliminating the potential for a hazardous materials impact. (E) designated parcels are administered under the authority of the New York City Mayor's Office of Environmental Remediation (OER).

This section presents the findings of the hazardous materials assessment and identifies potential issues of concern with respect to workers, the community, and/or the environment during construction and after implementation of the Proposed Project and how such potential issues of concern will be mitigated.

Principal Conclusions

Environmental site assessments have been conducted in the Development Site, which have determined that the Development Site does require remediation prior to development. Subsurface investigations confirmed historic site uses, including landfilling activities associated with the placement of ash from city incinerators to level the land, were the source of this contaminated soil material. This material is known as "historic fill". To address the historic fill and other contamination based on the additional historic uses of a former gasoline filling station and former auto wrecking facility identified within the Development Site, Block 4430, Lot 1 and Block 4434, Lots 1 and 10, an (E) Designation (E-679) for hazardous materials is appropriate for the Development Site, which would be remediated in accordance with, at a minimum, the (E) Designation program administered by the New York City Mayor's Office of Environmental Remediation (OER).

Notably, Block 4434, Lot 10 has already been entered into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) and shall be remediated in accordance with the BCP requirements under NYSDEC regulatory oversight and pursuant to a Brownfield Cleanup Agreement (BCA) Index No. C224290-04-19 dated May 31, 2019. All reports generated for the benefit of NYSDEC will also be shared with OER. OER will generally accept the reports generated in the BCP for the purpose of complying with the (E) Designation (E-679) requirements on that lot once the State Remedial Action Work Plan is approved. Compliance with the respective remediation regulatory programs would provide for the protection of human health and the environment within the Development Site once a Certificate of Completion (COC) issued by NYSDEC or a Notice of Satisfaction (NOS) by OER, and any required long term institutional and engineering controls are in place. Therefore, the Proposed Actions would eliminate any significant adverse impacts related to hazardous materials through implementation of required regulatory remediation of the Development Site and long-term site management. Additional details relating to the subsurface investigations are provided, below.

The subsurface investigation conducted on the BCP portion of the Development Site (Block 4434, Lot 10) evaluated for the presence of contamination in soil/fill materials, groundwater and soil vapor based on historic uses, which included a gasoline filling station, automobile junkyard/vehicle dismantling facility, and historic ash landfilling by the city. Miscellaneous debris, including tires, porcelain, wire, plastic, fabric and shoes were found in test pits installed as part of the subsurface investigation. The results of the Phase II Environmental

Investigation (EI) Report indicated the presence of semi-volatile organic compounds (SVOCs) and heavy metals in soils that exceed NYSDEC soil cleanup objectives (SCOs) for residential, commercial, and industrial use and were attributed to historic site activities. Groundwater evaluated on Block 4434, Lot 10 also exhibited contamination—including SVOCs and heavy metals at concentrations exceeding NYSDEC groundwater standards and guidance values—attributed to historic site uses. While historic investigations in the early 2000's found some methane vapor, more recent field screening completed during the Environmental Investigation (EI) Report did not reveal methane exceedances.

To address these conditions during site redevelopment, a BCP application was submitted to the NYSDEC on December 14, 2018. A BCA was executed on May 15, 2019, and Block 4434, Lot 10 was entered into the NYSDEC BCP as of that date. As such, hazardous materials remedial requirements associated with Block 4434, Lot 10 shall be completed under the NYSDEC BCP with regulatory oversight provided by NYSDEC and NYSDOH. A comprehensive Remedial Investigation (RI) was implemented and the RI Report (RIR), submitted on July 23, 2021, was approved on February 1, 2022. Next, the NYSDEC-approved Remedial Action Work Plan (RAWP) and Construction Health and Safety Plan (CHASP) will be prepared and implemented. Upon completion of the approved remedial action, a Final Engineering Report (FER) shall be completed and submitted to NYSDEC for review and approval. Any potential institutional or engineering controls (ICs/ECs) relating to site management would be followed in accordance with an NYSDEC-approved Site Management Plan (SMP).

The remainder of the Development Site (Block 4430, Lot 1 and Block 4434, Lot 1) were evaluated in a recent July 2021 Phase II Environmental Investigation (EI) Report, which identified soil and groundwater contamination above applicable regulatory standards attributed to similar landfilling and petroleum related historic site activities and the presence of historic fill materials. Elevated SVOC, pesticides, PCBs and metals above applicable NYSDEC SCOs were identified in soils across the non-BCP portions of the Development Site, which were attributed to the presence of historic fill materials. SVOC, metal and PCB contamination in groundwater identified in the Phase II EI was attributed to sediment entrainment of fill material in the groundwater samples. Methyl tert-butyl ether (MTBE), a chemical additive to petroleum, was also identified.

To address the conditions identified on Block 4434, Lot 1, a BCP application and Remedial Investigation Work Plan (RIWP) were submitted to the NYSDEC on January 13, 2022 and were issued for public comment on March 23, 2022. ~~If~~As the site is accepted into the BCP on May 23, 2022, hazardous materials remedial requirements associated with Block 4434, Lot 1 shall be completed under the NYSDEC BCP with regulatory oversight provided by NYSDEC and NYSDOH, similar to Block 4434, Lot 10. A comprehensive RI will be implemented and documented in a RIR, followed by the preparation of a RAWP and CHASP. Upon completion of the approved remedial action, a FER shall be completed and submitted to NYSDEC and NYSDOH for review and approval. Any potential ICs/ECs relating to site management would be followed in accordance with an NYSDEC-approved SMP.

Given the conditions identified within the Development Site in the subsurface investigations, the Proposed Actions would include an (E) Designation for hazardous materials (E-679), which would be applied to the Development Site (Brooklyn Block 4430, Lot 1 and Block 4434, Lots 1 and 10). The (E) Designation provides a mechanism for regulatory oversight for future remedial action as a pre-construction requirement to ensure the potential risks or exposures

associated with the presence of hazardous substances shall be reduced or eliminated to the maximum extent possible as related to the hazardous materials present. The implementation of the preventative and remedial measures required under the (E) Designation would avoid the potential for significant adverse hazardous materials impacts due to the Proposed Actions. As previously indicated, Block 4434, Lot 10, and ~~potentially~~ Block 4434, Lot 1, shall be remediated under the BCA with regulatory oversight provided by NYSDEC. However, OER will generally accept the reports generated in the BCP for the purpose of complying with the (E) Designation requirements once the State RAWP is approved. Additionally, BCP eligibility may be explored in the future for the remaining portions of Development Site that are not currently entered in the BCP.

With regulatory oversight provided by NYSDEC under the BCA executed for Block 4434, ~~Lot 10 and potentially for Block 4434, Lot 1~~Lots 1 and 10, and the placement of an (E) Designation for the Development Site, the Proposed Actions would not result in any significant adverse impacts with respect to hazardous materials for the Development Site since the hazardous materials present will be properly remediated under the oversight of either or both State and City remediation agencies.

Methodology

As detailed in **Chapter 1, Project Description**, the Proposed Actions would facilitate the development of a mixed-use, purpose-built community on the campus of the Christian Cultural Center (CCC) comprised of income-based affordable housing (rental and home ownership); a performing arts center (PAC); local retail; and a variety of community facilities including trade school and daycare facility targeted to the civic, economic, educational, and cultural needs of the East New York neighborhood.

The Development Site consists of Block 4430, Lot 1 and Block 4434, Lots 1 and 10 in the East New York neighborhood of Brooklyn, Community District 5.

The potential for hazardous materials in the Development Site was evaluated in the following environmental documents:

- Phase I ESA, dated March 19, 2018/Updated July 2021, prepared by Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) for the Development Site.[1]
- Phase I ESA, dated August 24, 2018, prepared by Langan for Block 4434, Lot 10.[2]
- Phase II Environmental Investigation Report, dated August 24, 2018 prepared by Langan for Block 4434, Lot 10.
- Brownfield Cleanup Program Application, dated December 14, 2018, prepared by Knauf Shaw LLP for Block 4434, Lot 10.

[1] It should be noted the referenced parcels in the March 19, 2018 / Updated July 2021 Phase I ESA prepared by Langan reflect a previous parcel configuration that includes former Block 4430, Lots 1 and 200, Block 4432, Lot 1 and a demapped portion of Alabama Avenue, which have since been merged into the current Block 4430, Lot 1. The summary provided herein references former parcel configurations.

[2] It should be noted Lot 10 was previously part of Block 4434, Lot 1 and was subdivided into Lot 10 after the completion of the August 24, 2010 Phase I ESA. As such, the August 24, 2018 Phase I ESA prepared by Langan references Lot 10 as p/o Lot 1.

- Phase II Environmental Investigation Report, dated July 7, 2021, prepared by Langan for Block 4430, Lot 1, Block 4431, Lots 1 and 200, Block 4432, Lot 1 and Block 4434, Lot 1.[3]
- BCA, dated May 15, 2019 prepared by the NYSDEC for Block 4434, Lot 10.
- Brownfield Cleanup Program Application, dated January 13, 2022, prepared by Knauf Shaw LLP for Block 4434, Lot 1.

The goal of a Phase I ESA process is to identify Recognized Environmental Conditions (RECs), which means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. Per the ASTM Standard, a Phase I ESA reviews a variety of information sources, including current and historic Sanborn Fire Insurance Maps and aerial photographs; state and federal environmental regulatory databases identifying listed sites; and local environmental records. The Phase I ESA summarized herein also included reconnaissance of the Development Site and surrounding neighborhood and interviews with personnel.

As stated in Practice E1527-13, there may be environmental issues or conditions in the Development Site, which may be requested by the user to be addressed as part of the Phase I ESA, which are not covered within the scope of ASTM Practice E1527-13. These additional environmental issues (or non-scope considerations) could evaluate for the potential present of radon, lead-based paint (LBP), asbestos-containing materials (ACM), wetlands, and mold and water damage. Additional environmental issues, or non-scope considerations, are typically characterized in a Phase I ESA as Business Environmental Risks (BERs), which are risks that can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated.

To evaluate RECs and relevant BERs established in the Phase I ESAs, subsurface investigations were performed by Langan with the goal of evaluating subsurface conditions for the potential presence of contamination. The results of the investigations can be used to establish practical mitigation measures that would be implemented during construction, as well as to prevent future site occupants from risk of exposure to potential contaminants of concern. The Phase II ESAs were also performed in support of future enrollment into the NYSDEC BCP.

Assessment

Existing Conditions

The Development Site is currently improved with the two-story, 92,784-gross-square-foot (gsf) CCC—a large, non-denominational house of worship that was constructed in 1997. Situated on the western portion of the Development Site, the CCC is surrounded by a surface parking lot containing approximately 385 parking spaces accessed via a curb cut along Flatlands Avenue immediately opposite of Alabama Avenue and two existing curb cuts along

[3] It should be noted that since completion of the Phase II ESA, these parcels, along with a demapped portion of Alabama Avenue were merged into Block 4430, Lot 1. As such, the July 7, 2021 Phase II ESA prepared by Langan references parcel numbers prior to the merge.

Louisiana Avenue. The eastern portion of the Development Site is unimproved land, typically serving as a location for overflow parking during church services and other events at the CCC and otherwise not used. Due to the known methane vapors under the Development Site, the CCC house of worship was constructed with a methane venting system to prevent subsurface gasses from entering the structure.

An analysis of hazardous materials within the Development Site is provided below.

Phase I Environmental Site Assessment, March 19, 2018 / Updated July 2021

A Phase I ESA was prepared by Langan for the Development Site[4] dated March 19, 2018. Based on the Phase I ESA, a history of the Development Site was established dating back to 1908, when the Development Site was mostly vacant/undeveloped lots. A one-story shed and one-story wagon house were located on the western portions of current Block 4434 and remained present through at least 1928, along with the addition of a one-story shed and one-story residential building located on current Block 4431 with an additional one-story building of unspecified use. By 1950, the one-story buildings were no longer present, and Block 4434 (Lot 10) was improved with a one-story gasoline filling station on the northeastern corner, at the intersection of Pennsylvania Avenue and Flatlands Avenue, and a one-story garage building with frontage along Pennsylvania Avenue. In addition, the southeastern corner of the Development Site, south of the one-story storage building, was a vacant lot indicated as a portion of "Masons Materials" on historic Sanborn Fire Insurance Maps. By 1967, apparent auto junkyard uses along with two one-story office buildings were located at 12058 Flatlands Avenue (Block 4432, Lot 1) and 12096 Flatlands Avenue (Block 4434, Lot 1). The Development Site remained similar in configuration between 1969 and 1981, with the addition of a one-story building of unspecified use at 12048 Flatlands Avenue (Block 4431, Lot 1) depicted on the 1969 Sanborn map, a one-story office at 12026 Flatlands Avenue (Block 4431, Lot 1) constructed sometime between 1977 and 1981, and a one-story building of unspecified use located at 12120 Flatlands Avenue (Block 4434, Lot 1) in 1979. In 1983, Lots 4431 and 4432 became vacant and were no longer utilized as auto junkyards. By 1986, the gasoline filling station and one-story building located 12096 Flatlands Avenue were no longer present on Sanborn map depictions. By 1989, the one-story building on the southeastern portions of the Development Site was no longer present on Sanborn map depictions. The Development Site remained of similar configuration through at least 1996. The existing CCC was constructed in 1997; at this time, the one-story building of unknown use located at 12120 Flatlands Avenue was also no longer present on Sanborn map depictions. Furthermore, current Block 4430, along the northwestern portions of the Development Site, was no longer utilized as an auto junkyard. The Development Site remained similar through 2007.

In addition to the above, the Phase I ESA provided existing conditions noted during the site reconnaissance and study of the Development Site. According to the Phase I ESA, the Development Site, at the time of the Phase I ESA site reconnaissance, consisted of the CCC and on-grade accessory parking lot located on portions of Block 4430, Lot 1; Block 4431, Lots 1 and 200; Block 4432, Lot 1; and the de-mapped former Alabama Avenue roadway.

[4] As indicated in **Chapter 1, Project Description**, the Development Site consists of Block 4430, Lot 1 and Block 4434, Lots 1 and 10. References made in the summary reflect former parcel configurations prior to the merging of Block 4430 Lots 1 and 200, Block 4432 Lot 1 and a demapped portion of Alabama Avenue into Block 4430, Lot 1.

Block 4434, Lot 1 (along with current Lot 10) consisted of a large vacant and unpaved lot on the northeastern portions of the Development Site.

Based upon the information provided in the Phase I ESA, the following findings and features were identified for the Development Site:

- Groundwater beneath the Development Site is assumed to flow to the southeast, toward the North Channel of Jamaica Bay;
- Portions of the Development Site were identified on the Environmental Data Resources, Inc. (EDR) Gas Stations database as the ISO Auto Service gasoline filling station located at 12026 Flatlands Avenue, which operated between 1969 and 1975. There were no other EDR database listings identified for the Development Site;
- Based on a review of regulatory agency databases, the Phase I ESA concluded environmental impacts from the surrounding database listings are not anticipated. However, the number of nearby database listings, including nearby gasoline/auto repair facilities, may have contributed to the cumulative impacts on regional groundwater and/or soil vapor that were identified;
- There were no environmental concerns or conditions that were identified for the Development Site as part of a review of municipal records made available from local, State, and federal agencies;
- Approximately 12 storm drains were observed in the asphalt-paved parking area surrounding the CCC. Connective piping was observed during the Phase I ESA site reconnaissance. It was determined that the storm drains do not discharge to the municipal sewer system;
- The CCC is improved with two hydraulic piston-driven elevators, with hydraulic tanks mounted on top of finished floor areas and containing automatic leveling pumps submerged within each tank. The hydraulic pistons could not be inspected due to access constraints;
- The roof was equipped with five separate heating, ventilation, and air conditioning (HVAC) units; solar panels; and an eight-inch-diameter steel pipe connected to an exhaust blower. The exhaust blower is connected to a methane venting system that consists of horizontal piping installed below the CCC building slab;
- At the time of the Phase I ESA site reconnaissance, the northeastern portions of the Development Site (Block 4434, Lot 1 and present 10), consisted of a vacant lot used for additional parking and storage. The parking lot surface is compacted recycled concrete aggregate (RCA). One trash compactor; one 30-cubic-yard (cy) dumpster; and four metal storage trailers containing household lighting, decorations, wardrobe clothing, and audio equipment for CCC special events were observed at the southwestern portions of Block 4434, Lot 1.

Two previous reports were appended in the Phase I ESA and are summarized as follows:

Limited Geophysical Investigation, November 2017, prepared by Langan

On November 29, 2017, a limited geophysical investigation was completed by Langan on the northeastern portions of the Development Site, within the location of the former gasoline filling station (Block 4434, Lot 10). Five significant buried anomalies were identified in the approximate footprint of the former gasoline filling station; they were identified to be either buried foundations/concrete debris or abandoned underground storage tanks (USTs).

Phase I ESA, April 2003, prepared by Soil Mechanics Environmental Services

A previous Phase I ESA, dated April 2003, was prepared by Soil Mechanics Environmental Services (Soil Mechanics). The Phase I ESA prepared by Soil Mechanics included several historical investigations that were completed for the Development Site. According to the Phase I ESA prepared by Soil Mechanics, a Technical Memorandum for a previous Draft Environmental Impact Statement (DEIS) prepared by AKRF, Inc. (AKRF) indicated the Development Site originally consisted of marshlands and was filled during the early 1900s with ash and waste from a city solid waste incinerator. A geophysical investigation revealed two anomalies near Flatlands Avenue and one near Vandalia Avenue. Test pits, completed to approximately seven feet below grade (bg), identified the presence of automobile parts, such as gasoline tanks and tire rims, as well as a crushed drum in one location.

As described in the Phase I ESA, a soil gas survey completed in the area of the former gasoline station revealed the presence of methane gas that was attributed to the former marsh deposits and presence of historic fill. No volatile organic compounds (VOCs) associated with gasoline were detected. Soil sampling activities revealed the presence of elevated concentrations of total petroleum hydrocarbons and metals throughout the former gasoline station portions of the Development Site and elevated semi-volatile organic compounds (SVOCs) in several surficial and subsurface soil samples. Elevated metals, VOCs, and SVOCs detected in groundwater were attributed to the presence of historic fill impacted with the same compounds in contact with groundwater. AKRF recommended the implementation of a health and safety plan (HASP) during future construction activities and the construction of a soil capping system to prevent human exposure to remaining impacts in the soil.

In addition, the Phase I ESA prepared by Soil Mechanics also included a Subsurface Investigation Report prepared by SESI Consulting Engineers and dated March 1994. The investigation included the installation of eight soil borings between 36 and 51.5 feet bg. At depths ranging from 18.5 to 35 feet bg at each location, miscellaneous fill material was encountered. The fill reportedly consisted of cinders and ash mixed with sand, silt, gravel, and clay and various debris such as concrete, wood, rubble, metal, brick, glass, and asphalt. Groundwater was encountered between 17 and 23 feet bg.

The Phase I ESA prepared by Soil Mechanics concluded that the recommendations for the HASP and soil capping system be followed and noted a methane mitigation system may be required as part of any future building construction.

Based upon the results of the Phase I ESA, the following RECs were identified for the Development Site:

- REC-1: Former on-site gasoline filling station. A gasoline filling station was historically located on the northeastern portions of the Development Site. A limited geophysical survey completed at this location identified five subsurface anomalies, four of which may be indicative of potential USTs based on size, shape, and depth.
- REC-2: Former on-site automobile junkyards. Based upon a review of historical Sanborn Maps and New York City Department of Buildings (NYCDOB) certificates of occupancy (C/O's), automobile junkyards and/or auto dismantling operations were identified on the northern portions of the Development Site along Flatlands Avenue from 1967 to 2001.
- REC-3: Presence of methane in subsurface. An exhaust blower connected to eight-inch steel piping was observed on the roof of the CCC during the Phase I ESA site

reconnaissance and was determined to be the outlet of a methane venting/mitigation system installed below the building. Methane may be present in the subsurface within the remainder of the Development Site.

In addition to the aforementioned RECs, the following BERs were identified for the Development Site:

- BER-1: Potential presence of historic fill material. Based upon a review of historical topographic maps, an approximately 120,000-square-foot (sf) area along the southwestern portions of the Development Site were historically subject to periodic inundation. It is assumed this area was historically filled with material of unknown origin to raise the surface grade and prevent flooding.
- BER-2: Potential presence of undocumented heating oil storage tanks. Heating oil USTs may be present beneath the lots or adjacent sidewalks associated with small structures depicted on the Sanborn Maps and possibly in association with former auto junkyard/dismantling operations within the Development Site.
- BER-3: Potential impacts from current and historical operations conducted at adjacent and nearby properties. Auto junkyard/dismantling facilities, auto repair shops, and gasoline filling stations located adjacent to the north of the Development Site between 1950 and 1970 were identified on historical Sanborn Maps and in the regulatory agency database search.

Phase II Environmental Investigation Report, July 7, 2021

To investigate the RECs identified in the Phase I ESA prepared by Langan, dated March 19, 2018, a Phase II EI was conducted for portions of the Development Site (Block 4430, Lot 1; Block 4431, Lots 1 and 200; Block 4432, Lot 1 and Block 4434, Lot 1; which have since been merged into Block 4430, Lot 1 of the Development Site. The Phase II EI evaluated subsurface conditions based upon historical site use as automobile junkyards or dismantling facilities on the northern portions, as well as portions of the site subject to historical inundation which may have been filled with City incinerator waste, and the potential presence of methane in the subsurface. The scope of the Phase II EI was as follows:

- Performance of a geophysical utility clearance surrounding proposed sample locations.
- Installation of three test pits down to five-to-six feet below sidewalk grade on the eastern portions of the Development Site,
- Installation of 14 soil borings and collection and analysis of multi-depth soil samples from each soil boring.
- Installation of five (5) permanent groundwater monitoring wells, and associated collection and analysis of five (5) groundwater samples.
- Installation of temporary soil vapor/methane monitoring points, with methane monitoring occurring over a period of five minutes at each location. There were no soil vapor samples collected as part of the Phase II EI.

Based upon the results of the Phase II EI, odors and elevated PID readings up to 22.1 parts per million (ppm) were detected on the northern portion of the Development Site from eight-to-14 feet below sidewalk level (bsl), which were presumably associated with historical automobile/vehicle dismantling and junkyard operations.

Soil analytical results identified elevated concentrations of the VOC acetone (a common laboratory artifact) in seven samples collected. Elevated concentrations of polycyclic aromatic hydrocarbons (PAHs), pesticides, PCBs and metals in soil samples throughout the Site were attributed to the presence of fill materials and historic site operations. It should be noted certain regulatory exceedances for PAHs in soil samples were above NYSDEC Part 375 Industrial Restricted Use Soil Cleanup Objectives (SCOs), with additional exceedances of SVOCs, pesticides, PCBs and metals at varying above commercial, restricted residential, residential and unrestricted use SCOs depending on location.

Groundwater analytical results revealed exceedances of one VOC (methyl tert-butyl ether [MTBE]), a common fuel additive, above its applicable NYSDEC standard in one location. SVOCs, particularly PAHs were detected at concentrations exceeding their applicable NYSDEC groundwater quality standards/guidance values at several sample locations, as well as PCBs, and total and dissolved metal concentrations. Elevated concentrations of total PAHs, PCBs and metals were attributed to likely sediment entrainment of fill material of unknown origin in the groundwater samples. Dissolved metal exceedances were attributed to naturally occurring background concentrations.

Soil vapor/methane field screening results did not identify the presence of methane in the subsurface.

The Phase II EI Report indicates the subsurface has been impacted from historical site operations, and historic fill containing elevated concentrations of SVOCs, pesticides, PCBs and metals has been identified within the portions of the Development Site included in the Phase II EI. Although a methane monitoring system was previously installed for the CCC building, methane was not detected in the subsurface and does not appear to be a contaminant of concern under current site conditions.

Phase I Environmental Site Assessment, August 24, 2018

Although the Development Site was evaluated in the Phase I ESA prepared by Langan, dated March 19, 2018 and summarized above, Langan prepared a Phase I ESA specific to the northeastern portions of the Development Site (Block 4434, Lot 10 ["Lot 10"]), dated August 24, 2018. The Phase I ESA was prepared for the study area in support of a NYSDEC BCP Application (as later summarized).

Based on this Phase I ESA, a history of Lot 10 was established dating back to 1908, when the northeastern portions were vacant/undeveloped. According to historic Sanborn Maps, Lot 10 remained vacant through at least 1928. A one-story gasoline filling station was improved on the northern portions of Lot 10, and, by 1950, a one-story storage building was improved with frontage along Pennsylvania Avenue. By 1967, the northern frontage of Lot 10 east of Sheffield Avenue was shown as auto wrecking on historic Sanborn Maps. The study area remained similar through at least 1983. By 1986, the gasoline station was presumably demolished and was no longer depicted on historic Sanborn Maps. Lot 10 remained similar through at least 1996. By 2001, the one-story building was presumably demolished and Lot 10 became vacant.

In addition to the above, the Phase I ESA provided existing conditions noted during the site reconnaissance and study of Lot 10. According the Phase I ESA, Lot 10 was vacant, covered with compacted RCA, and was used for parking for the CCC.

Based upon the information provided in the Phase I ESA, the following findings and features were identified for Lot 10:

- Groundwater beneath Lot 10 is assumed to flow to the southeast, toward the North Channel of Jamaica Bay;
- Lot 10 was not identified in any databases according to the regulatory agency database report;
- Based on a review of regulatory agency databases, the Phase I ESA concluded environmental impacts were not anticipated from any specific database listings. However, the surrounding development density and numerous database listings may have contributed to cumulative impacts on regional groundwater and/or soil vapor were identified, including nearby gasoline/auto repair facilities;
- There were no environmental concerns or conditions that were identified for the Lot 10 part of a review of municipal records made available from local, State and federal agencies;
- At the time of the Phase I ESA site reconnaissance, Lot 10 consisted of a vacant lot used for additional parking and storage for the CCC. The parking lot surface consists of compacted RCA.

Two previous reports were appended in the Phase I ESA and are summarized as follows:

Limited Geophysical Investigation, November 2017, prepared by Langan

A limited geophysical investigation was completed for Lot 10 by Langan on November 29, 2017. The results of the geophysical survey were previously summarized as part of Langan's March 19, 2018 Phase I ESA for the larger Development Site.

Phase I ESA, April 2003, prepared by Soil Mechanics Environmental Services

A previous Phase I ESA, dated April 2003, was prepared by Soil Mechanics. The Phase I ESA prepared by Soil Mechanics was previously summarized as part of Langan's March 19, 2018 Phase I ESA for the larger Development Site.

Phase II Environmental Investigation Report, August 24, 2018, prepared by Langan

A Phase II Environmental Investigation Report (the Phase II EI Report) was prepared by Langan specific to Lot 10 in support of a NYSDEC BCP application. The Phase II EI Report was appended to Langan's Phase I ESA prepared for Lot 10. The following areas of concern (AOCs) were identified for Lot 10 in association with the Phase II EI:

- Former on-site gasoline filling station
- Former on-site automotive dismantling/wrecking
- Presence of historic fill
- Presence of methane in soil vapor

The scope of the Phase II EI involved the excavation of five test pits along the northern and western boundaries of Lot 10 to depths ranging between five and 6.50 feet bg; the installation of six soil borings; and the installation of one permanent flush-mounted, two-inch groundwater monitoring well. In addition, methane readings were collected within Lot

10 at approximately ten feet bg to evaluate subsurface methane levels. The following findings were provided in the Phase II:

Test Pit Investigation Results

Test pits excavated within Lot 10 identified historic fill in each location, including concrete, asphalt, wood, brick, metal, and slag. Additional miscellaneous debris, including tires, porcelain, wire, plastic, fabric, and shoes were also observed in certain test pits. No USTs or fill/distribution piping were identified during the test pit investigation. As such, due to the lack of competent subsurface structures identified during the test pit investigation, it was determined that concrete and metal debris within the historic fill layer were likely the source of the anomalies identified in the 2017 geophysical survey previously summarized.

Soil Boring Investigation Results

As previously indicated, six soil borings were installed in Lot 10 to evaluate subsurface soil conditions. A total of 12 soil samples were collected for laboratory analysis to evaluate fill material identified in the soil borings. Laboratory results identified SVOCs in soil on the northern portions of Lot 10 at concentrations exceeding NYSDEC soil cleanup objectives for residential, commercial, and industrial use. Heavy metals (barium, cadmium, copper, lead, and mercury) were detected in surficial soil samples at concentrations exceeding the NYSDEC SCOs for Restricted Residential Use, Restricted Commercial Use, and/or Restricted Industrial Use. The metals were likely attributable to historic site operations including automotive dismantling/wrecking.

Groundwater Investigation Results

As previously indicated, one groundwater monitoring well was installed within Lot 10 to evaluate groundwater conditions. Groundwater was recorded at approximately 14 feet bg. There were no VOCs, pesticides, or polychlorinated biphenyls (PCBs) detected in groundwater in exceedance of relevant NYSDEC groundwater standards and guidance values. However, several metals and one SVOC, benzo(a)anthracene, were detected at concentrations exceeding their relevant NYSDEC standards and guidance values. The presence of groundwater contaminated with SVOCs and metals on Lot 10 was likely attributable to historic filling operations, reportedly including the use of waste from the city incinerator in the 1900s.

Methane Monitoring

A temporary methane monitoring point was installed on Lot 10 at approximately 10 feet bg within the vadose zone of the historic fill layer. No measurable methane concentrations were detected over a five-minute monitoring period.

Based upon the results of the Phase II ESA, Langan indicated Lot 10 may be eligible for enrollment into the NYSDEC BCP.

Based upon the results of the Phase I ESA and Phase II EI included therein, the following RECs were identified for Lot 10:

› REC-1: Former on-site gasoline filling station. A gasoline filling station was historically located on Lot 10. Test pits and sampling completed as part of the May 2018 did not

identify the presence of UST and gasoline contamination in soil and groundwater. However, the investigation was limited in scope and may not be considered representative of conditions throughout Lot 10. As such, there remained a potential for adverse environmental impacts due to the use and storage of gasoline associated with former filling station operations.

- REC-2: Former on-site automobile junkyards. Based upon a review of historical Sanborn Maps and the City Directory Abstract, automobile wrecking operations were identified in the study area between 1967 and 1987.
- REC-3: Presence of historic fill. The May 2018 Phase II confirmed the presence of historic fill material. Furthermore, laboratory analytical results for soil revealed the presence of elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals above NYSDEC Restricted Residential, Commercial, and Industrial SCOs.

In addition to the aforementioned RECs, the following BERs were identified for Lot 10:

- BER-1: Potential presence of undocumented heating oil storage tanks. Heating oil USTs may be present beneath Lot 10 or adjacent sidewalks associated with small structures depicted on the Sanborn Maps and possibly in association with former auto junkyard/dismantling operations.
- BER-2: Potential impacts from current and historical operations conducted at adjacent and nearby properties. Auto junkyard/dismantling facilities, auto repair shops, dry cleaners, the use of USTs, spills, and the generation and disposal of hazardous waste within Lot 10.

Brownfield Cleanup Agreement, May 15, 2019

The Phase I ESA for Block 4434, Lot 10 and the appended Phase II ESA prepared by Langan were submitted to the NYSDEC in a Brownfield Cleanup Program Application, prepared by Knauf Shaw LLP on behalf of the applicant, Innovative Urban Living, LLC on December 14, 2018. On May 15, 2019, a BCA was executed between the applicant and NYSDEC, and Block 4434, Lot 10 entered into the NYSDEC BCP, ensuring regulatory oversight for remedial action of Block 4434, Lot 10 would be provided by NYSDEC.

Brownfield Cleanup Application and RIWP, January 13, 2022

To address the conditions identified on Block 4434, Lot 1, a BCP application and RIWP were submitted to the NYSDEC on January 13, 2022 and were issued for public comment on March 23, 2022. ~~If~~As the site ~~is~~was accepted into the BCP on May 23, 2022, hazardous materials remedial requirements associated with Block 4434, Lot 1 shall be completed under the NYSDEC BCP with regulatory oversight provided by NYSDEC and NYSDOH, similar to Block 4434, Lot 10. A comprehensive RI will be implemented and documented in a RIR, followed by the preparation of a RAWP and CHASP. Upon completion of the approved remedial action, a FER shall be completed and submitted to NYSDEC and NYSDOH for review and approval. Any potential ICs/ECs relating to site management would be followed in accordance with an NYSDEC-approved SMP.

Future No-Action Condition

Absent the Proposed Project, it is assumed that the Development Site would remain in its existing condition, with only the CCC operational in the Development Site, surrounded by accessory parking. Under the future No-Action condition, remedial action on Block 4434, ~~Lot~~Lots 1 and 10 would not be completed under the NYSDEC BCP. As such, confirmed contaminants on Block 4434, ~~Lot~~Lots 1 and 10 would go unmitigated and remain in-place. Furthermore, the Applicant would not pursue enrollment into the NYSDEC BCP or NYC OER programs for the remediation of the remaining non-BCP portions of the Development Site. Furthermore, an (E) Designation for hazardous materials would not be applied to non-BCP portions of the Development Site (Block 4430, Lot 1; Block 4431, Lots 1 and 200; Block 4432, Lot 1; Block 4434, Lot 1; and a demapped portion of Alabama Avenue). As such, potential subsurface contamination within these portions of the Development Site would go unmitigated without regulatory oversight.

Future With-Action Condition

The future With-Action condition would facilitate the Proposed Project in the Development Site with approximately 2.20 million gsf of development. The Proposed Project would include publicly accessible open space, with a campus quadrangle, recreational space on the roof of the public parking garage, and a playground, and would also provide private open space, including residential building courtyards. The With-Action condition would include pedestrian paths and a private street network that would run through the Development Site.

Based upon the results of the Phase II ESA, Block 4434, Lot 10 entered into the NYSDEC BCP under a BCA executed on May 15, 2019, and Block 4434, Lot 10 was entered into the NYSDEC BCP as of that date. As such, remedial action associated with Block 4434, Lot 10 shall be completed under the requirements of the NYSDEC BCP, with regulatory oversight provided by the NYSDEC and NYSDOH under the With-Action condition, including performance of a more comprehensive RI, and the generation and implementation of a NYSDEC-approved RAWP and CHASP. A comprehensive Remedial Investigation (RI) was implemented and the RI Report (RIR), submitted on July 23, 2021, was approved on February 1, 2022. Next, the NYSDEC-approved Remedial Action Work Plan (RAWP) and Construction Health and Safety Plan (CHASP) will be prepared and implemented. Upon completion of remedial action, a Final Engineering Report (FER) would be completed and submitted to NYSDEC for review and approval. Any potential institutional or engineering controls (ICs/ECs) relating to site management would be followed in accordance with an NYSDEC-approved SMP.

To address the conditions identified on Block 4434, Lot 1, a BCP application and RIWP were submitted to the NYSDEC on January 13, 2022 and were issued for public comment on March 23, 2022. ~~If~~As the site ~~is~~was accepted into the BCP on May 23, 2022, hazardous materials remedial requirements associated with Block 4434, Lot 1 shall be completed under the NYSDEC BCP with regulatory oversight provided by NYSDEC and NYSDOH, similar to Block 4434, Lot 10. A comprehensive RI will be implemented and documented in a RIR, followed by the preparation of a RAWP and CHASP. Upon completion of the approved remedial action, a FER shall be completed and submitted to NYSDEC and NYSDOH for review and approval. Any potential ICs/ECs relating to site management would be followed in accordance with an NYSDEC-approved SMP.

For the non-BCP portions of the remaining Development Site, a subsurface investigation identified soil and groundwater contamination relating to historic site activities. Given the conditions identified within the Development Site, the Proposed Actions would include an (E) Designation for hazardous materials (E-679), which would be applied to Brooklyn Block 4430, Lot 1 and Block 4434, Lots 1 and 10, which would provide a mechanism for regulatory oversight for future remedial action as a pre-construction requirement that would reduce or eliminate to the maximum extent possible the potential for future risk or exposure as it relates to hazardous materials.

The (E) Designation process generally begins with the evaluation of RECs and/or areas of concern (AOCs) that may require additional investigation based upon the results of a Phase I ESA. Any potential RECs or AOCs identified would follow the (E) Designation protocol for additional investigation and potential remedial action. Compliance with the (E) Designation protocols would utilize the information provided in the Phase I ESA to the maximum extent practicable. The applicable text for the (E) Designation (E-679) to be applied to Brooklyn Block 4430, Lot 1 and Block 4434, Lots 1 and 10 would be as follows:

Task 1: Sampling Protocol

Prior to construction, the Applicant submits to OER, for review and approval, a Phase II Investigation protocol, including a description of methods and a site map with all sampling locations clearly and precisely represented.

No sampling should begin until written approval of a protocol is received from OER. The number and location of sample sites should be selected to adequately characterize the site, the specific source of suspected contamination (i.e., petroleum-based contamination and non-petroleum-based contamination), and the remainder of the site's condition. The characterization should be complete enough to determine what remediation strategy (if any) is necessary after review of the sampling data. Guidelines and criteria for selecting sampling locations and collecting samples are provided by OER upon request.

Task 2: Remediation Determination and Protocol

A written report with findings and a summary of the data must be submitted to OER for review and approval after completion of the testing phase and laboratory analysis. After receiving such results, a determination is made by OER if the results indicate that remediation is necessary. If OER determines that no remediation is necessary, written notice shall be given by OER.

If remediation is indicated from the test results, a proposed RAWP must be submitted to OER for review and approval. The Applicant must complete such remediation as determined necessary by OER in accordance with the approved RAWP. The Applicant should then provide proper documentation that remedial action has been satisfactorily completed.

An OER-approved CHASP would be implemented during excavation and construction activities in order to protect workers and the community from potentially significant adverse impacts associated with contaminated soil and/or groundwater. This plan would be submitted to OER for review and approval prior to implementation.

Under the (E) Designation program, remedial action measures would be determined based upon the results of the remedial investigation. However, based upon the results of the Phase

II ESA, it is anticipated that remedial measures will require proper handling and off-site disposal of historic urban fill materials and soil vapor mitigation (i.e., below slab soil vapor mitigation system and/or a chemical vapor barrier).

Given the conditions identified within the Development Site in the subsurface investigations, the Proposed Actions would include an (E) Designation for hazardous materials (E-679), which would be applied to the Development Site (Brooklyn Block 4430, Lot 1 and Block 4434, Lots 1 and 10). The (E) Designation provides a mechanism for regulatory oversight for future remedial action as a pre-construction requirement to ensure the potential risks or exposures associated with the presence of hazardous substances shall be reduced or eliminated to the maximum extent possible as related to the hazardous materials present. The implementation of the preventative and remedial measures required under the (E) Designation would avoid the potential for significant adverse hazardous materials impacts due to the Proposed Actions.

As previously indicated, Block 4434, Lot 10 and ~~potentially~~ Block 4434, Lot 1, shall be remediated under the BCA with regulatory oversight provided by NYSDEC. However, OER will generally accept the reports generated in the BCP for the purpose of complying with the (E) Designation requirements once the State Remedial Action Work Plan is approved. Additionally, BCP eligibility may be explored in the future for the remaining portions of Development Site that are not currently entered in the BCP.

With regulatory oversight provided by NYSDEC under the BCA executed for Block 4434, Lot 10 and ~~potentially~~ for Block 4434, Lot 1, and the application of an (E) Designation for the remaining portions of the Development Site, the Proposed Actions would not result in any significant adverse impacts for the Development Site since the hazardous materials present will be properly remediated under the oversight of either or both State and City remediation agencies to levels allowing for the safe planned redevelopment of the Development Site.