



April 9, 2019

Ms. Polly Selkoe
Assistant Director of Regulatory Planning
Department of Planning and Community Development
Brookline Town Hall, 3rd Floor
333 Washington Street
Brookline, MA 02445

RE: Environmental Technical Review
Proposed Redevelopment
445 Harvard Street, Brookline MA
Fuss & O'Neill Reference No.: 20190145.A10

Dear Ms. Selkoe:

Fuss & O'Neill has prepared this letter to summarize our review of documents associated with the proposed redevelopment of the 445 Harvard Street property, referred to herein as the Site. The materials reviewed included the Planning and Community Development Department (PCDD) and Zoning Board of Appeals (ZBA) Application documents, and publically-accessible Massachusetts Department of Environmental Protection (MassDEP) case files.

The Site is currently developed with a one-story gasoline filling station and related improvements. We understand that the Brookline ZBA is reviewing a proposal to develop the Site as a five-story mixed-use development, proposed pursuant to Chapter 40B. The development will consist of ground-floor commercial space and twenty-five residential units over an enclosed underground parking garage.

The objective of our review was to evaluate whether existing environmental conditions at the site could pose risks or concerns to the proposed development of the Site. To the extent those conditions would warrant mitigation measures or development conditions, the objective was to provide recommendations for ZBA consideration in the permitting process.

We have provided below a summary of the environmental conditions and regulatory status, as well as a review of construction considerations and recommendations for the Zoning Board to consider in its deliberations of the proposed project.

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Executive Summary

The Site is currently improved with a gas station and automobile service facility and has been used for this purpose since the 1940s. The Site is associated with two closed Release Tracking Numbers (RTNs), including RTN 3-19979 and RTN 3-21525. Multiple other gas stations are located in the vicinity of the Site, and reportable petroleum releases to the subsurface have been identified in connection with those properties as described below.

The past releases at the Site are currently indicated as closed under the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). However, based on Fuss & O'Neill's review, soil managed during construction may be subject to additional regulation, given that the on-site cases have been closed without remediation activities and contaminants associated with these releases are still likely present in the subsurface at the release locations.

Based on the available records, Fuss & O'Neill identified the following three environmental concerns relevant to the proposed development at the Site:

- Potential contaminated soil management. As described further below, methyl tertiary butyl ether (MTBE) in groundwater, and arsenic and lead in soil, were previously identified above applicable standards. Both reportable releases were closed without complete removal of the contaminated soil. Therefore, contaminated media may be encountered and managed during redevelopment of the Site. If managed on-site or disposed as part of this redevelopment project, the soil should be managed as a regulated waste stream, and the Applicant should be prepared for that condition.
- Construction Safety Considerations. The proposed construction will involve excavation in close proximity (approximately 10 feet) to a property line and neighboring building. Furthermore, based on past well drilling activities, bedrock has been identified in the southern and eastern portion of the Site at depths of 20 to 29 feet, and at variable elevations in other portions of the Site. The applicant should develop a strategy to manage bedrock during construction, should it be encountered.
- Potential vapor migration. Multiple nearby properties, as well as the Site itself, contain releases of gasoline and related volatile organic compounds (VOCs). Due to the depth of excavation proposed at the Site, the Applicant should consider the potential for subsurface migration and incorporate vapor mitigation measures to the extent that vapor intrusion may be warranted.

In consideration of these conditions, Fuss & O'Neill recommends that the applicant evaluate the

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potential for soil, water, and vapor impacts from the subsurface at the Site and develop appropriate mitigation and permitting strategies to be incorporated into the development proposal.

Proposed Development Conditions

Fuss & O'Neill reviewed a Comprehensive Permit Application (the Application), dated July 2018, in reference to the Site. The Application included Site construction plans and a stormwater drainage report prepared by McKenzie Engineering Group. The proposed development involves the following elements:

- The proposed building will occupy the majority of the property lot, with property line and roadway setbacks generally less than 10 feet on all sides of the building. The building footprint will occupy approximately 8,130 square feet of the approximately 10,100 square foot footprint of the property lot.
- The perimeter of the building will be surrounded with permeable pavers on the northeast and southeast sides, and areas of permeable pavers will be incorporated on the street frontage on Thorndike Street (to the northwest) and Harvard Street (to the southwest). Roof drainage will be directed to an infiltration system beneath the permeable pavers.
- The building will feature an underground parking garage with a finished floor elevation of 45 feet. Existing Site ground surface level features are depicted at elevations of approximately 59 to 63 feet. Therefore, the foundation construction will warrant excavation of approximately 14 to 18 feet to achieve finished grade, as well as the additional depth for foundation slab thickness and subsurface preparation.

Environmental Document Review

In performing this environmental technical review, Fuss & O'Neill reviewed documents for the following environmental cases associated with the 445 Harvard Street property and nearby disposal sites:

RTN 3-19979 (445 Harvard Street)

During soil sampling activities in June 2000, methyl tertiary butyl ether (MTBE, a gasoline additive) was detected at a reportable concentration in a soil sample suggesting that a petroleum release to the subsurface had occurred at that Site. Soil and groundwater samples were collected across the Site and the concentrations of select petroleum related analytes were reported below the soil and groundwater standards in place at that time. No remediation was conducted. A Class B-1 Response

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Action Outcome (RAO) Statement, asserting that a condition of No Significant Risk existed at the Site, was submitted to MassDEP in September 2001.¹

We note that the MassDEP soil and groundwater standards have evolved since 2001, with particular emphasis on risks from volatile compounds such as those present in gasoline. While the Site may have achieved closure under the conditions applicable at that time, contaminated soil, groundwater, and vapors from the petroleum release may still be present at the Site and additional evaluation may be warranted to establish whether the past findings remain adequately protective of a proposed residential use. In addition, if residual petroleum contamination is still present in the subsurface the applicant should be prepared to permit and execute the management of contaminated media from the subsurface.

Based on drilling logs, the on-Site soils generally consisted of 20 feet of fine to medium grained sand with lesser quantities of silt and gravel. Bedrock was encountered at depths ranging from 20 to 29 feet below grade within the western and southern portion of the Site. Monitoring wells installed during the investigation were gauged for depths to groundwater in 2000 and 2001. The water table was encountered between 18 and 29 feet below the ground surface and regional groundwater flow was inferred to be to the southwest. The water table depth in several monitoring wells was measured in bedrock and therefore the groundwater flow direction and gradients may be influenced by bedrock characteristics and may be more complex than if located solely in overburden sediments.

RTN 3-21525 (445 Harvard Street)

During removal of an on-Site oil/water separator in November 2001, soil samples were collected from the sidewall and the bottom of the excavation area. The analytical results from these soil samples suggested that a release was present including associated contaminated soil in the subsurface. The soil sample collected from the bottom of the excavation basin exceeded MassDEP RCS-1 reportable concentrations for lead and arsenic, and constituted a reportable condition. Additional soil samples were collected around the former separator and arsenic and lead concentrations were the sole analytes detected above the applicable standards. During the oil/water separator removal, a hydraulic lift and 1,000-gallon UST were also removed.

A Class B1 RAO Statement was entered for the soil condition.² Generally, under the MCP, some level of averaging is allowable for soil concentrations in risk assessment. Based on the data set presented in the RAO Statement, one of the individual samples exceeded the soil standards as an

¹ Phase I – Initial Site Investigation Report and Class B-1 Response Action Outcome, RTN 3-19979, 445 Harvard Street, Brookline, prepared by Geologic Services Corporation, September 2001.

² Preliminary Response Action Completion Report and Class B-1 Response Action Outcome Statement, RTN 3-21525, 445 Harvard Street, prepared by Geologic Services Corporation, October 2002.

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individual concentration. Disturbance of this potentially contaminated soil may require permitting, reporting or tracking pursuant to the MCP.

MassDEP UST Facility #11646 (445 Harvard Street)

According to MassDEP records, three 12,000-gallon gasoline underground storage tanks (USTs) were installed in 1987 and remain in-use at the Site. The tanks are reportedly single-walled composite tanks with line leak detection.

We note that the most recent environmental testing results in the MassDEP disposal site case files were developed in 2001 and the fuel tanks have continued to be used over that timeframe.

Tank closure activities (per 310 CMR 80.00) would be required as part of the Site redevelopment. The Applicant should acknowledge the closure process, which requires an evaluation for releases of oil in connection with the UST system, and has the potential to trigger environmental response actions. The closure activities, if necessary, would likely pose impacts to the construction schedule and should be considered prior to construction at the Site.

Sunoco Gas Station (454 Harvard Street)

The Sunoco Gas Station located approximately 100 feet northwest of the Site has been developed with a gasoline station since 1959 and is associated with four MassDEP case files, designated RTNs 3-1057, 3-16714, and 3-19304:

- RTN 3-1057 was issued due to a petroleum odor emanating from a UST excavation pit in June 1988. Chlorinated volatile organic compounds (CVOCs) were reported in groundwater samples collected in June 1992, but were below applicable standards. The CVOCs were determined to have originated from the 473-481 Harvard Street property and MassDEP granted the RTN "No Further Action."
- RTN 3-16714 was assigned and eventually retracted in 1998 as a suspected threat of release at the Site from a UST, based on an inconclusive tightness test. The notification was retracted upon additional testing, as no evidence of tank failure or soil or groundwater impact was identified.
- RTN 3-19304 was assigned in 2000 when petroleum hydrocarbons were identified in the vicinity of a dispenser island during facility upgrades. Approximately 131 tons of impacted soil was excavated and disposed off site. A Class A-2 RAO was submitted in 2001 closing the site.

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- RTN 3-18383 was assigned in June 1999, after a surface release of approximately 10 gallons of gasoline occurred during automobile refueling. Gasoline migrated along the concrete surface downslope into a stormwater catch basin. Following cleanup activities, a Class A-1 RAO was submitted since the source of the release was eliminated and samples were consistent with background conditions.

While these records of off-site releases suggest the presence of contaminated subsurface media in the vicinity of the Site, given that these past off-site releases were closed with findings of no significant risk and the releases are not at the Site, these releases pose less risk to the proposed development at the Site than the environmental conditions documented on the Site.

Construction Impacts and Recommendations

Based on the information contained in the environmental case files and the Application materials, we offer the following pertinent environmental issues for the board's consideration:

- The finished floor elevation in the proposed garage would be approximately 15 to 18 feet below grade, and in close proximity to the historically observed depth of groundwater (18 feet and greater).
 - The Applicant should evaluate the potential for dewatering and groundwater management based on the proposed foundation depth. If dewatering is proposed, the Applicant should evaluate groundwater quality relative to the National Pollutant Discharge Elimination System (NPDES) General Permits and ensure that residual petroleum compounds, if present, may be appropriately managed during dewatering activities.
 - Due to the Site's history as a retail gasoline filling station, the potential exists for sources of volatile organic compounds (VOCs) in groundwater in the vicinity of the Site. Gasoline vapors can accumulate in low-lying areas, such as the proposed garage, and then migrate to indoor air spaces within the building. We therefore recommend that the foundation design incorporate a watertight, airtight, chemically-resistant vapor barrier system to eliminate potential risks associated with vapor migration.
- Assuming the proposed basement area footprint of 8,130 square feet and an excavation depth of 15 feet, the construction project may generate a minimum of approximately 4,500 cubic yards of soil for disposal. The following conditions should be considered as part of an approval for the project:

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- Excavation will occur within approximately 10 feet of the property lines at the east end of the property, and to a depth exceeding 15 feet below grade. The Applicant should provide ZBA with a strategy to ensure that the adjacent properties and utilities will be adequately protected during construction.
- The RAO Statement addressing lead and arsenic in soil noted that remediation was not conducted and that at least one sample exceeded the reportable concentrations in soil (RCS-1) for those metals. The Applicant should evaluate soil quality in the proposed excavation area and develop a Soil Management Plan for construction-phase excavation and disposal. To the extent that the soil must be managed as "Remediation Waste" due to the concentrations of metals or other hazardous materials, the Applicant should prepare a plan to address those conditions prior to breaking ground.
- Soil disposal on that scale would generate approximately 150 to 180 truckloads at a volume of 25 to 30 cubic yards per truck (30 to 40 tons per load). The Town should consider the potential for construction-phase truck traffic in an area with limited off-street parking for large vehicles. In addition, management of construction activities and soil management may result in logistical impacts to existing uses on public ways adjacent to the Site. The applicant should document how construction activities and soil management will be feasible without impacts to use of public ways and public safety.
- Because the redevelopment will involve the closure of multiple aged fuel tanks, the Applicant should indicate a commitment to perform the closures in accordance with 310 CMR 80.00, including a willingness to manage an environmental response action under the MCP, if required, upon closure of the USTs. The applicant should demonstrate how the permitting and execution of these activities is incorporated into construction schedule.
- During previous environmental activities, bedrock was encountered at depths as shallow as 22 feet below ground surface at the Site, and the depth to bedrock is variable. The finished floor is proposed approximately 15 to 19 feet below ground surface, near the observed bedrock depth. The Applicant should develop a plan to manage bedrock removal, as warranted, and the Town should consider the impact of bedrock removal techniques on the adjacent properties. We recommend that blasting be prohibited to mitigate potential risks to nearby property owners.

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Conclusions and Recommendations

Based on the information reviewed herein, we recommend the following:

- The Applicant should review the environmental files, and evaluate whether the subsurface release at the neighboring properties could potentially migrate into interior air of the proposed building at the Site. If a potential vapor intrusion risk cannot be ruled out by the existing data, then the applicant should consider additional investigative actions or mitigation measures to protect future occupants of the building from exposure to the subsurface vapor release.
- The proposed construction would disturb significant volumes of soil, including contaminated soil associated with closed RTNs, during construction. Groundwater and bedrock impacts may or may not be warranted based on our review of the initial plans. The Applicant should develop a plan to manage these media as part of the construction activity.

Sincerely,

Daniel LaFrance, PE, LSP
Senior Engineer / Project Manager



John Chambers, PG, LSP
Senior Vice President

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