

DRAFT

Analysis of Brownfields
Cleanup Alternatives (ABCA)
Preliminary Evaluation

GLX VMSF Site
20 Third Avenue, Somerville,
Massachusetts

Massachusetts DEP
Release Tracking Number:
3-0030048

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Section 1: Introduction and Background

1.1 Site Location

The Massachusetts Bay Transportation Authority (MBTA) has acquired two parcels in Somerville for the development of a Vehicle Maintenance and Storage Facility (VMSF) in support of the planned Green Line Extension light rail project (GLX). The property is located at 20 Third Avenue, Somerville, Massachusetts (herein referred to as “the Site”). A Site Location Plan is presented as Figure 1.

1.1.1 Forecasted Climate Conditions

According to the US Global Change Research Program (USGCRP), climate trends for the northeast region of the United States include increased temperatures, increased precipitation with greater variability, increased extreme precipitation events, and rises in sea level (see attached summary included in Attachment A). Some of these factors, most specifically increased precipitation that may affect flood waters and stormwater runoff, are most applicable to the cleanup of the site.

According to FEMA Flood Zone Map 25017C0439E, the Site is located within a Zone X of the Mystic River and the Charles River (see Attachment B), where minimal flooding is expected. However, greater storm frequency and intensity in a changing climate may result in more frequent and more powerful flood waters within the Mystic River and the Charles River, which may result in changes to the flood zone and increased risk of flooding of the Site.

The Site does not currently receive stormwater discharge from the adjacent properties. Under current Site conditions, increased precipitation and extreme weather could result in additional stormwater runoff and potential erosion to the Site from the roof stormwater collection systems associated with the onsite structure, as well as the mostly impermeable parking lot area surrounding the structure.

The proposed Site improvements include a large underground stormwater storage chamber with onsite treatment. The treated stormwater would ultimately connect into the Fitchburg Main Drain at VMSF-DMH-1 located within the Fitchburg Commuter Line rail corridor. The drainage system located within the rail corridor ultimately discharges to the Millers River Outfall in Cambridge, Massachusetts.

Based on the nature of the Site and its proposed reuse, changing temperature, rising sea levels, wildfires, changing dates of ground thawing/freezing, changing ecological zone, saltwater intrusion and changing groundwater table are not likely to significantly affect the Site.

1.2 Previous Site Use(s) and Any Previous Cleanup/ Remediation

The Site is located at 20 Third Avenue, Somerville, Massachusetts. The area surrounding the Site is industrially zoned and has over 100 years of commercial and industrial use, including use

as a railroad yard. The property is located within the Inner Belt District of Somerville, Massachusetts. The Inner Belt District is bounded by Interstate 93, Route 28, and the Lowell and Fitchburg rail lines. Inner Belt Road traverses the center of the Inner Belt District intersecting with 3rd Avenue to connect to the existing MBTA commuter rail maintenance facility to the southeast. In the early 1800s this area was primarily a marshland and part of the Millers River, which has since been filled-in.

1.2.1 20 Third Avenue, Somerville, Massachusetts

The 20 Third Avenue parcel was first developed in the late 1800s as a railroad yard which operated at the property until approximately 1963. The property was then vacant between 1963 and 1984 when it was developed as an M.S. Walker alcohol distillery and distribution facility. M.S. Walker currently operates at this property; however they are relocating to a new “state of the art” facility in Dedham to make the Somerville property available to the MBTA for the planned GLX project.

As a side note--the new M.S. Walker facility is being developed on a blighted property that will bring jobs and revitalization to the area of Dedham. The Town of Dedham’s Economic Development Director said that “this is a long-term distressed site and people understood what a fantastic opportunity this is”. This is a ripple-effect of the GLX project that provides economic benefits to another area of Greater Boston.

In 2010 and 2011, the MBTA worked with an environmental consultant to collect soil samples from twelve soil borings advanced on the 20 Third Avenue property as part of the GLX project assessment. Soil sample results indicated arsenic concentrations above the applicable Massachusetts Contingency Plan (MCP) Reportable Concentration (RCS-2) of 20 milligrams per kilogram (mg/Kg) and polychlorinated biphenyl (PCB) concentrations in the soil above the RSC-2 of 3 mg/Kg. Upon notification of these soil concentrations, the Massachusetts Department of Environmental Protection (MassDEP) assigned Release Tracking Number (RTN) 3-30048 to the property. Groundwater samples were also collected from six monitoring wells on the property; however, contaminant levels were below the applicable Reportable Concentrations (RCs) for groundwater.

1.3 Site Assessment Findings

Prior to taking ownership of the parcels, the MBTA performed ASTM Phase I Environmental Site Assessments (ESAs) for this parcel.

1.3.1 20 Third Avenue, Somerville, Massachusetts

Prior to taking ownership of the parcel, the MBTA hired Kleinfelder, Inc. (Kleinfelder) to prepare an ASTM Phase I Report for the property, dated July 19, 2013. The ASTM Phase I Report identified the following Recognized Environmental Concerns (RECs) for the Site: 1) the presence of PCBs and arsenic in soil; 2) the historical use of the property and surrounding properties as a rail yard, 3) three, 30,000-gallon aboveground storage tanks (ASTs) reportedly used for the storage of 190-proof alcohol; 4) historical industrial property use; 5) a historical release (RTN 3-0974) and ongoing storage of diesel fuel (for emergency generators) at an abutting property; 6) use of an abutting property as a commuter rail vehicle maintenance facility

and associated releases; and 7) nearby historical releases of 13,000 gallons of phosphorous trichloride (1980) and PCBs and petroleum (1993) both reported at the abutting rail road yard location known as “Yard 8”.

In September 2015, the Isosceles Group (Isosceles) prepared a Phase II Comprehensive Site Assessment (Phase II CSA) and a Permanent Solution with Conditions (PSC) Statement for RTN 3-30048. The additional subsurface investigations included the advancement of 11 additional soil borings, including an additional boring beneath the building, and the collection of 32 soil samples. Concentrations of total PCBs ranged between the laboratory detection limit and 35.6 mg/kg, and the average concentration of PCBs detected was 5.3 mg/kg. Isosceles concluded that the disposal site for the release is the entire property boundary (4.6 acres), based on the identified placement of historical fill.

A risk characterization concluded that the levels of PCBs in the heterogeneous soil fill at the Property, at depths of up to 7 feet below the current grade, could pose an unacceptable risk to human health under future activities (possibly including exposure to children). Isosceles also concluded that an Activity and Use Limitation (AUL) deed restriction is required to ensure that such exposures do not occur for future activities and uses. An AUL for the property was recorded with the Middlesex County, Southern District Registry of Deeds on September 3, 2015.

The redevelopment of this property would include the management of displaced, impacted soils and potentially the installation of clean material and/or engineered barriers to be consistent with the exposure scenarios assumed in the AUL.

1.4 Project Goal (Site Reuse Plan)

The two parcels will be redeveloped as an MBTA GLX light rail VMSF. The GLX project will provide fast, reliable, and affordable transportation for area residents to get to work and other places. The new light rail system will also lead to the revitalization of these areas of Somerville with new Transit Oriented Development (TOD) projects. These TOD projects provide the extended benefit of a sustainable work, live, and play community that is interconnected to other communities. Additional benefits of a TOD project typically include improved quality of life and increased economic vitality and jobs. New light rail service will also provide direct environmental benefits by reducing the number of buses and cars on the road. The GLX project has local, state and federal support.

Section 2: Applicable Regulations and Cleanup Standards

2.1 Cleanup Oversight Responsibility

The cleanup will be overseen by a Massachusetts Licensed Site Professional (LSP) under the MassDEP regulations. In addition, all documents prepared for this site will be submitted to the MassDEP under Release Tracking Number 3-0030048.

2.2 Cleanup Standards for Major Contaminants

The MBTA currently anticipates that the MassDEP MCP Method 1 standards applicable for non-residential use (children present at low frequency and low intensity) will be used as the cleanup standards for this parcel. However, the contaminated soil that is excavated as part of site redevelopment, including foundations, footings, utilities, etc. will need to be managed as “remediation waste”.

2.3 Laws and Regulations Applicable to the Cleanup

Laws and regulations that are applicable to this cleanup include the MassDEP Massachusetts Contingency Plan and City of Somerville local by-laws. Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will be followed. In addition, all appropriate permits (e.g., DigSafe, soil transport/disposal manifests) will be obtained prior to the work commencing.

Section 3: Cleanup Alternatives

3.1 Cleanup Alternatives Considered

To address contamination at the Site, three different alternatives were considered, including Alternative #1: No Action, Alternative #2: Comprehensive Soil Excavation, and Alternative #3: Limited Soil Excavation with Engineered Barriers.

3.2 Evaluation of Cleanup Alternatives

To satisfy EPA requirements, the effectiveness, implementability, and cost of each alternative must be considered prior to selecting a recommended cleanup alternative.

3.2.1 Effectiveness – Including Climate Change Considerations

- Alternative #1: No Action is not an effective alternative to control or prevent the exposure of Site contamination to receptors.
- Alternative #2: Comprehensive soil excavation is an effective way to prevent exposure to contaminated soils since contamination will be removed and the exposure pathways will no longer exist. This measure would eliminate direct contact risk for future employees, residents, trespassers, and/or utility workers at the Site.
- Alternative #3: Limited soil excavation with engineered barriers is an effective way to limit exposure to contaminated soils at the Site. In addition, an institutional control (land use restriction) would need to be recorded on the deed to maintain the engineered barriers and prevent the future residential use of the property (in order to meet the objective of eliminating the direct contact pathway for residents).

General Climate Consideration Notes:

As discussed in Section 1.1, the redevelopment of the GLX corridor involves system-wide stormwater drainage improvements. Therefore, the stormwater management at the Site will be able to accommodate increased stormwater runoff volume and rates related to predicted, increased storm intensity. Alternative #1 (No Action) will be difficult to implement at the Site along with drainage improvements because soil will need to be excavated to install stormwater management features. Alternatives #2 and #3 would support these drainage improvements at the Site.

3.2.2 Implementability

- Alternative #1: No Action would be easy to implement since no actions would be performed.
- Alternative #2: Comprehensive excavation and off-site disposal of soil would be relatively easy to implement. During cleanup activities, short-term disturbances to the

community (e.g., trucks transporting contaminated soils and backfill) are anticipated. However, given the industrial/commercial nature of the surrounding properties, this disturbance to the community would be limited. Additionally, the soil contamination appears to be limited to historical fill material deposited in the top 7 feet which could be excavated across the Site, leaving native material at the Site. The shallow nature of these soils would limit the amount of dewatering necessary. By removing all of the fill material at the Site, the remediation activities can be completed independent of the redevelopment activities.

- Alternative #3: Limited excavation and off-site disposal of soil would be moderately difficult to implement. During cleanup activities, short-term disturbances to the community (e.g., trucks transporting contaminated soils and backfill) are anticipated. However, given the industrial/commercial nature of the surrounding properties, this disturbance to the community would be limited. The shallow nature of these soils would limit the amount of dewatering necessary. Additionally, the volumes of soil would be limited to areas where soil will need to be excavated to support future construction activities. This alternative takes planning and coordination with redevelopment activities to limit exposure of the impacted-soils left in-place with the placement of buildings and/or paved drives and parking.

3.2.3 Cost

- There would be no costs associated with Alternative #1: No Action.
- Alternative #2: The cost of comprehensive soil excavation and off-site disposal of soil would be high. The parcel area is 200,972 square feet. Excavating the top 7-feet of fill material would generate approximately 53,000 cubic yards of material for offsite disposal. At an average cost of \$50 per cubic yard, the cost to excavate, transport, and dispose of this volume of soil would be approximately \$2,650,000. The costs for coordinating engineered barriers, preparing a land use deed restriction, and filing the remediation plan are anticipated to be approximately \$50,000 for a total estimated cost of approximately \$2,700,000.
- Alternative #3: Limited soil excavation with engineered barriers and a land use deed restriction is estimated to be a more cost-effective option. Approximately 10% of the parcel would need to be excavated for PCB hot spot removal and to support the construction of drainage, subsurface utilities, footings, foundations, etc. Therefore the cost of disposing 5,300 cubic yards of material for offsite disposal is estimated to be approximately \$270,000. Preliminary planning, assessment, and characterization is estimated at \$70,000. The costs for coordinating engineered barriers, preparing a land use deed restriction, and filing the remediation plan are anticipated to be approximately \$50,000 for a total estimated cost of approximately \$390,000.

3.3 Recommended Cleanup Alternative

The recommended cleanup alternative is Alternative #3: Limited soil excavation with engineered barriers and a land use deed restriction. Alternative #1: No Action is not a recommended alternative because it does not address the risk of exposure to Site contamination. Alternative

#2: Comprehensive excavation and off-site disposal would address exposure risks but is cost-prohibitive (several times the cost of Alternative #3). Alternative #3 will also be able to be implemented for a shorter duration and with less disruption to the community.

Alternative #3: Limited soil excavation with engineered barriers and a land use deed restriction is the recommended cleanup alternative.

3.4 Green and Sustainable Remediation Measures for Selected Alternative

To make the selected alternative greener, or more sustainable, several techniques are planned. The most recent Best Management Practices (BMPs) issued under ASTM Standard E-2893: Standard Guide for Greener Cleanups will be used as a reference in this effort.

By leaving a majority of the impacted-soils on-Site there will be less of a carbon footprint involved with transportation of soils. There will also be less material taking up space in a landfill or other disposal facility. The MBTA will require the cleanup contractor to follow an idle-reduction policy and use heavy equipment with advanced emissions controls operated on ultra-low sulfur diesel. The excavation work will be performed during the dry-weather months, if possible, to minimize groundwater infiltration into the excavation area, in turn reducing dewatering needs and the amount of dewatering liquids requiring disposal/treatment. The number of mobilizations to the Site would be minimized and erosion control measures would be used to minimize runoff into environmentally sensitive areas. In addition, the MBTA plans to ask bidding cleanup contractors to propose additional green remediation techniques in their response to the Request for Proposals for the cleanup contract.

References

1. ASTM Phase 1 – 20 Third Ave Somerville MA, Kleinfelder, 19 July 2013.
2. 48 Third Ave Phase 1 Environmental Site Assessment, Kleinfelder, 19 July 2013.