EXPANDED ENVIRONMENTAL NOTIFICATION FORM

Green Line C Branch Station Accessibility Upgrades Project

Brookline, MA

PROPONENT

Massachusetts Bay Transportation Authority
10 Park Plaza
Boston, Massachusetts 02116

SUBMITTED BY

vhb
99 High Street, 13th Floor
Boston, Massachusetts 02110

SUBMITTED TO

Executive Office of Energy & Environmental Affairs MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

December 2024

December 16, 2024

Secretary Rebecca Tepper
Executive Office of Energy and Environmental Affairs
Attn: Tori Kim, MEPA Director
100 Cambridge Street
Boston MA 02110

Re: **Green Line C Branch Accessibility Upgrades Project**
Expanded Environmental Notification Form/Proposed Environmental Impact Report

Dear Secretary Tepper and Director Kim:

The Massachusetts Bay Transportation Authority (MBTA) is pleased to submit the attached dual Expanded Environmental Notification Form/Proposed Environmental Impact Report (EENF/PEIR) for the Green Line C Branch Accessibility Upgrades Project (the "Project") to allow public review under the Commonwealth's Massachusetts Environmental Policy Act (MEPA) process.

In accordance with the American Disability Act, the Project proposes accessibility improvements at several above-ground MBTA Green Line C Branch stations located along Beacon Street in the Town of Brookline, Massachusetts (the "Project Area"). These improvements will provide accessible boarding, increase pedestrian access and egress at the subject stations, along with wayfinding, lighting, and other enhancements to rider experience.

The MBTA will hold a public meeting during the EENF/PEIR public review and comment period.

The MBTA respectfully requests a Rollover Environmental Impact Report, in accordance with 301 CMR 11.06(13) so that the PEIR is reviewed as a Final EIR. If the Secretary finds that this filing does not meet the criteria allowing a Rollover EIR, per 301 CMR 11.13(a-e), the MBTA requests that the Secretary allow a Single EIR, in accordance with 301 CMR 11.06(8).

Please publish notice of availability of the EENF/PEIR for public review in the December 23, 2024, edition of the Environmental Monitor. If adequate, please publish notice of the Rollover EIR in the February 7, 2025, edition of the Environmental Monitor.

Thank you for your consideration of this request. We look forward to continuing to work with EEA through the planning process for this important project.

Respectfully,

Tess Paganelli
Director of Environmental Review and Permitting
Massachusetts Bay Transportation Authority
TPaganelli@MBTA.com
617-549-4357

Cc: Desiree Patrice, Chief of Capital Transformation
Matthew Fuccillo, MBTA Project Manager
Matt Conover, MBTA Deputy Chief of Green Line & Blue Line Transformation
Matt Fuccillo, Mott MacDonald Project Manager
Mark Shamon, Green Line Design Manager
Kristen Bergassi, VHB Director of Environmental Planning

December 16, 2024

Re: **Expanded Environmental Notification Form/Proposed Environmental Impact Report, Green Line C Branch Accessibility Upgrades Project**

Dear Reviewer:

The Massachusetts Bay Transportation Authority (MBTA) is pleased to submit the attached dual Expanded Environmental Notification Form/Proposed Environmental Impact Report (EENF/PEIR) for the Green Line C Branch Accessibility Upgrades Project (the "Project") to allow public review under the Commonwealth's Massachusetts Environmental Policy Act (MEPA) process.

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The MBTA will hold a public meeting during the EENF/PEIR public review and comment period.

Written comments should be submitted by January 22, 2025, to:

Secretary Rebecca Tepper
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office, MEPA Analyst
100 Cambridge Street, Suite 900
Boston, MA 02114

Comment letters may be submitted by U.S. mail to the above address, emailed to the MEPA Analyst, or submitted on the MEPA Environmental Monitor located at website here:
https://eeaonline.eea.state.ma.us/EEA/PublicComment/Landing/

The MBTA respectfully requests a Rollover Environmental Impact Report, in accordance with 301 CMR 11.06(13) so that the PEIR is reviewed as a Final EIR. If the Secretary finds that this filing does not meet the criteria allowing a Rollover EIR at 301 CMR 11.13(a-e), the Proponent requests that the Secretary allow a Single EIR, in accordance with 301 CMR 11.06(8). If adequate, the PEIR will be published in the February 7, 2025, edition of the Environmental Monitor for a 30-day comment period. The comment period on the PEIR, if granted, would end on March 10, 2025.

Sincerely,

Tess Paganelli
Director of Environmental Review and Permitting
Massachusetts Bay Transportation Authority
TPaganelli@MBTA.com
617-549-4357

cc: Desiree Patrice, Chief of Capital Transformation
Matthew Fuccillo, MBTA Project Manager
Matt Conover, MBTA Deputy Chief of Green Line & Blue Line Transformation
Matt Fuccillo, Mott MacDonald Project Manager
Mark Shamon, Green Line Design Manager
Kristen Bergassi, VHB Director of Environmental Planning

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

SUBMITTED TO **Executive Office of Energy and Environmental Affairs**
100 Cambridge Street, Suite 900 (9th Floor)
Attn: MEPA Office
Boston, MA 02114

PROPONENT **Massachusetts Bay Transportation Authority**
10 Park Plaza, 6th Fl.
Boston, MA 02116

PREPARED BY **VHB**
99 High Street, 13th Floor
Boston, MA 02110

December 16, 2024

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only

EEA#: Click or tap here to enter text.

MEPA Analyst: Click or tap here to enter text.

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **Green Line C Branch Station Accessibility Upgrades Project (the Project)**		
Street Address: **Beacon Street**		
Municipality: **Brookline**	Watershed: **Charles River**	
Universal Transverse Mercator Coordinates: **324464.52 Easting, 4689714.97 Northing**	Latitude: **42.34111** Longitude: **-71.12579**	
Estimated commencement date: **12/1/2025**	Estimated completion date: **12/1/2026**	
Project Type: **Station Improvements and Consolidation**	Status of project design: **30** % Complete	
Proponent: **Massachusetts Bay Transportation Authority (MBTA)**		
Street Address: **State Transportation Building, 10 Park Plaza**		
Municipality: **Boston**	State: **MA**	Zip Code: **02116**
Name of Contact Person: **Tess Paganelli**		
Firm/Agency: **MBTA**	Street Address: **10 Park Plaza, suite 5720**	
Municipality: **Boston**	State: **MA**	Zip Code: **02116**
Phone: **617-549-4357**	Fax: Click or tap here to enter text.	E-mail: **tpaganelli@mbta.com**

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)? ☐Yes ☒**No**;

An EIR is required due to the proximity of the Project to Environmental Justice populations, per 301 CMR 11.06(7)(b).

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8))	☐ Yes	☒ **No**
a Rollover EIR? (see 301 CMR 11.06(13))	☒ **Yes**	☐ No
a Special Review Procedure? (see 301CMR 11.09)	☐ Yes	☒ **No**
a Waiver of mandatory EIR? (see 301 CMR 11.11)	☐ Yes	☒ **No**
a Phase I Waiver? (see 301 CMR 11.11)	☐ Yes	☒ **No**

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?

- **310 CMR 11.03(6)(b)2.b - Construction, widening or maintenance of a roadway or its right-of-way that will cut five or more living public shade trees of 14 or more inches in diameter at breast height**

Which State Agency Permits will the project require?

- **Massachusetts Water Resources Authority – 8(m) Permit**

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

Funding of the preliminary engineering and environmental review phase of the Project is provided by the Commonwealth of Massachusetts. Funding for final design and project construction is anticipated to include a combination of Commonwealth and federal funding sources.

Summary of Project Size & Environmental Impacts

	Existing	Change	Total
LAND			
Total site acreage	**17.5 acres**	**-0-**	**17.5 acres**
New acres of land altered	**-0-**	**-0-**	**-0-**
Acres of impervious area	**15.3**	**+0.3**	**15.6**
Square feet of new bordering vegetated wetlands alteration	**-0-**	**-0-**	**-0-**
Square feet of new other wetland alteration	**-0-**	**-0-**	**-0-**
Acres of new non-water dependent use of tidelands or waterways	**-0-**	**-0-**	**-0-**
STRUCTURES			
Gross square footage	**NA**	**NA**	**NA**
Number of housing units	**NA**	**NA**	**NA**
Maximum height (feet)	**NA**	**NA**	**NA**
TRANSPORTATION			
Vehicle trips per day	**NA**	**NA**	**NA**
Parking spaces	**1,349**	**(-69)[1]**	**1,280**
WASTEWATER			
Water Use (Gallons per day)	**50**	**-10**	**40[2]**
Water withdrawal (GPD)	**NA**	**NA**	**NA**
Wastewater generation/treatment (GPD)	**NA**	**NA**	**NA**
Length of water mains (miles)	**NA**	**NA**	**NA**
Length of sewer mains (miles)	**NA**	**NA**	**NA**
Has this project been filed with MEPA before? ☐ Yes (EEA #) ☒ **No**			
Has any project on this site been filed with MEPA before? ☐ Yes (EEA #) ☒**No**			

NA Not Applicable

1 **Effected parking spaces are owned by the Town of Brookline and include a mixture of metered and accessible parking spaces. All accessible parking spaces will be replaced.**

2 **Water usage will be generated for occasional station washdown and is anticipated to be minimal.**

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION

Existing Conditions

Describe the existing conditions and land uses on the project site:

The entire C Branch corridor includes 13 stations within dedicated reservations along Beacon Street between the portal near Saint Mary's Street Station and its terminus at Cleveland Circle Station. There are 12 stations within Brookline, and one, Cleveland Circle Station, within the City of Boston. Refer to Figure 1-1 for the site location map, which represents the portions of the C Branch corridor that are a part of this Project (the "Project Area").

The Project includes work at the following Green Line C Branch stations all of which are within the Town of Brookline:

1. **Hawes Street Station (to be upgraded)**
2. **Kent Street Station (to be decommissioned)**
3. **Saint Paul Street Station (to be upgraded)**
4. **Summit Avenue Station (to be upgraded)**
5. **Fairbanks Street Station (to be consolidated at a new location with Brandon Hall Station)**
6. **Brandon Hall Station (to be consolidated at a new location with Fairbanks Street Station)**
7. **Tappan Street Station (to be upgraded)**
8. **Dean Road Station (to be upgraded)**
9. **Englewood Avenue Station (to be upgraded)**

Refer to Section 1.1.2 of Chapter 1, *Project Description*, for detailed description of the existing site conditions at each station. Refer to Figure 1.2 for the location of the existing stations and Figures 1.3a through 1.3f for the environmental constraints of each segment of the Project Area.

Project Description

Describe the proposed project and its programmatic and physical elements:
NOTE: The project description should summarize both the project's direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

The Massachusetts Bay Transportation Authority (MBTA) (the "Proponent") proposes accessibility upgrades to several Green Line C Branch stations along the Beacon Street corridor in Brookline, Massachusetts, in compliance with the American with Disabilities Act (ADA) (the "Project"). The proposed upgrades achieve accessible status by raising platform heights, which in combination with extendable ramps built into certain low-floor train cars in the fleet, would make these stations accessible to people with mobility limitations. Accessibility improvements also entail widening platforms, and improving pedestrian access and egress from the stations to the public right-of-way (ROW).

In addition to complying with ADA requirements, the Project aims to bring the subject stations into compliance with the Federal Transit Administration (FTA), National Fire Protection Association (NFPA) standard for emergency egress, Massachusetts Architectural Access Board (MAAB), and all applicable MBTA regulations, guidelines, and design directives.

Approximately 32 public shade trees of 14 or more inches at breast height are required to be removed for the Project. And upon completion approximately 69 parking spaces will be lost due to the Project.

It is anticipated that work would be limited to early evening/overnight, extended weekend outages and multi-day surges with daytime and nighttime construction shifts as needed. During construction, temporary station closures may be required if construction equipment must be positioned within rail infrastructure. The construction period will also result in short-term traffic and parking impacts along Beacon Street. Refer to Section 3.3 of Chapter 3, Environmental Impacts for further information on the construction period.

There will be minimal water service required for station washdown, thus minor changes to the storm drain system are anticipated.

Refer to Figures 1.3a through Figure 1.3f for the proposed conditions.

Project Alternatives

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

NOTE: The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.

Due to the complexity of the Project and the public's reliance on the Green Line C Branch, the MBTA undertook a detailed alternatives analysis to examine various station consolidation options and their impact on accessibility, travel time, and walk time.

The No Build Alternative would not modify the locations of any of the subject stations. The No Build Alternative would maintain several C Branch stations as inaccessible, due to the low station platform heights.

Build Alternative 1 proposes the decommissioning of Englewood Avenue Station, Brandon Hall Station, and Kent Street Station.

Build Alternative 2 proposes the decommissioning of Dean Road Station, Brandon Hall Station, and Kent Street Station.

Build Alternative 3 proposes consolidation of the Fairbanks Street Station and Brandon Hall Station at a new location between the two existing stations, and the decommissioning of Kent Street Station with the construction of an upgraded station at the existing Saint Paul Street Station location. As a result of ongoing discussions with the Town of Brookline, Build Alternative 3A to further redesign the consolidated Fairbanks Street/Brandon Hall Station to reduce the Project's impacts related to tree removal and the loss of parking spaces. Build Alternative 3A represents the Preferred Alternative.

Refer to Chapter 2, *Alternative Analysis*, for full descriptions of the project alternatives considered and the associated impacts related to travel time, walk time, and accessibility.

Proposed Mitigation Measures

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

Transportation and Parking

- **The Proponent conducted a tree survey in collaboration with Town of Brookline to determine the health of existing trees and extent of tree removal impacts.**
- **Plant new trees along the C Branch corridor or elsewhere to compensate tree loss.**
- **Implement a tree maintenance plan to protect all planted trees along the shared road and rail ROW (to be developed collaboratively between the MBTA and the Town of Brookline).**
- **Replace all impacted (removed) accessible parking spaces in proximity to the existing locations.**
- **Locate all new accessible parking spaces near the accessible station entrances.**
- **Maintain existing bicycle lanes along Beacon Street.**

Climate Change Resiliency

- **Adhere to the MBTA vegetation management plan during site construction and operation to reduce impacts associated with tree removal, such as urban heat island effect and flooding.**
- **Elevate both critical and non-critical assets to the flood design elevations.**
- **Implement floodproofing design solutions for those assets that cannot be elevated.**

Land/Stormwater Management/Water Quality

- **Implement/install stormwater management measures to protect water quality, including Best Management Practices, such as good housekeeping practices, spill control procedures, and deep sump catch basins.**

Hazardous Materials

- **Manage/handle any hazardous materials encountered during construction in compliance with applicable regulations.**
- **Maximize diversion opportunities for discarded materials; prioritize waste reduction and reuse opportunities, and recycling and/or composting where applicable.**

Temporary Construction Impacts

- **Develop a temporary traffic control and detour plan to facilitate traffic flow.**
- **Maintain transit service throughout construction through temporary station bypasses or diversions, including shuttle bus services for any temporary disruption to C Branch service.**
- **Implement a Construction Management Plan consisting of measures that address construction period impacts related to noise, air emissions/dust, odor, rodents, water quality, hazardous materials, waste, truck traffic, pedestrian and bicycle access, on-street parking access, and emergency access to local businesses and residences.**

Refer to Ch. 5, *Mitigation Summary*, for a comprehensive list and description of the proposed mitigation measures and beneficial commitments proposed for the Project.

Phasing

If the project is proposed to be constructed in phases, please describe each phase:
Construction is anticipated to begin in late 2025 or early 2026 and be substantially completed in 2026. Finishes and punch-list work may extend into early 2027.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Is the project within or adjacent to an Area of Critical Environmental Concern?
☐Yes (Specify: **Click or tap here to enter text.**) ☒**No**

If yes, does the ACEC have an approved Resource Management Plan? ☐Yes ☐No; If yes, describe how the project complies with this plan.

Will there be stormwater runoff or discharge to the designated ACEC? ☐Yes ☒**No**; If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

RARE SPECIES

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)
☐Yes (Specify: **Click or tap here to enter text.**) ☒**No**

HISTORICAL /ARCHAEOLOGICAL RESOURCES

Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth? ☒**Yes** (Specify: **BKL.K, Beacon Street Historic District**) ☐No; If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☐Yes (Specify: **Click or tap here to enter text.**) ☒**No**;

WATER RESOURCES

Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? ☐Yes ☒**No**; If yes, identify the ORW and its location.

NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.

Are there any impaired water bodies on or within a half-mile radius of the project site? ☐Yes ☒**No**; If yes, identify the water body and pollutant(s) causing the impairment:

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? ☐Yes ☒**No**

STORMWATER MANAGEMENT

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

Due to the MBTA's need to install hose bib or ground hydrant connections for station washdowns, coordination with the Town of Brookline Department of Public Works Water and Sewer is required prior to construction. Since the Project will require work in the vicinity of MWRA water lines, an MWRA 8(m) permit will be required. Minor changes to the storm drain system, such as catch basin relocations, are anticipated due to curb realignments.

The Project does not require compliance with the Massachusetts Stormwater Standards as the work does not require the issuance of an Order of Conditions per the Massachusetts Wetlands Protection Act for work within wetland resource area.

The Project includes the disturbance of over an acre of soil, so a NPDES CGP is required, and a SWPPP will be developed.

As the Project operations will involve stormwater discharge associated with station janitorial actions, a NPDES 2021 Multi-Sector General permit (MSGP) may be required. If coverage is required under the MSGP, stormwater Best Management Practices (BMPs) such as good housekeeping practices, spill control procedures, and deep sump catch basins, will be implemented or installed to minimize stormwater pollution as required.

MASSACHUSETTS CONTINGENCY PLAN

Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? ☒**Yes** ☐No; If yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome Classification):

Due to the developed nature of the Project Area and presence of a railroad right-of-way, undocumented releases and non-native urban fill may be present, which may require special handling and management during construction.

The shared road and railroad right-of-way may be contaminated with Oil and/or Hazardous Material (OHM) from a variety of sources, some of which may be exempt from the release reporting requirements of the MCP. However, MCP Response Actions could be required to facilitate soil management during construction, which typically consist of the screening and sampling of soil for laboratory analysis of constituents of concern (COCs), and potentially risk reduction methods such as off-site export of contaminated soil. Soil would be characterized prior to being shipped off-site to a licensed receiving facility and be accompanied by shipping documentation. Contaminated soil removal would only occur under an appropriate regulatory mechanism such as a Release Abatement Measure (RAM) Plan or Utility-related Abatement Measure (URAM) Plan. MCP Response Actions would be overseen by a Licensed Site Professional (LSP).

Is there an Activity and Use Limitation (AUL) on any portion of the project site? ☐Yes ☒**No**; If yes, describe which portion of the site and how the project will be consistent with the AUL:

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN? ☐Yes ☒**No**; If yes, please describe:

SOLID AND HAZARDOUS WASTE

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:

The Project will maximize diversion opportunities for discarded materials, prioritizing waste reduction and reuse opportunities and recycling and/or composting where applicable. Proper containers for waste and garbage collection will be provided on-site and stormwater will be protected by properly storing hazardous materials and chemicals.

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? ☐Yes ☒**No**; If yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

Describe anti-idling and other measures to limit emissions from construction equipment:

The contractor will develop and implement a Construction Management Plan to address impacts from fugitive dust, construction equipment exhaust, and any additional dust control considerations.

DESIGNATED WILD AND SCENIC RIVER

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? ☐Yes ☒**No**; If yes, specify name of river and designation: Click or tap here to enter text.

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River? ☐Yes ☐No; If yes, specify name of river and designation: Click or tap here to enter text.

If yes, will the project result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River? ☐Yes ☐No; If yes, describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures proposed.

ATTACHMENTS:

1. List of all attachments to this document.

   Attachment 1 – EENF/PEIR Distribution List

   Attachment 2 – Regulatory Requirements

   Attachment 3 – Climate Change Supporting Documentation

   Attachment 4 – Stormwater Management Supporting Documentation

   Attachment 5 – Environmental Justice Supporting Documentation

2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries.

   Refer to Figure 1.1 for the U.S.G.S map showing the project location and boundaries.

3. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities.

   Refer to Figure 1.2 and Figure 1.3a – Figure 1.3f for site context and existing conditions.

4. Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts.

   Refer to Figure 1.3a - Figure 1.3f for a map of environmental constraints.

5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase).

   Refer to Figure 1.3a – Figure 1.3f for the proposed conditions plan.

6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2).

   Refer to Attachment 1 for the EENF/PEIR distribution list, which includes the EJ Reference List, in accordance with the MEPA EJ Protocols.

7. List of municipal and federal permits and reviews required by the project, as applicable.

   Refer to Attachment 2 for the list of anticipated permits and approvals.

8. Printout of output report from RMAT Climate Resilience Design Standards Tool, available here.

   Refer to Attachment 3 for the RMAT Climate Resilience Design Standards Tool report.

9. Printout from the EEA EJ Maps Viewer showing the project location relative to Environmental Justice (EJ) Populations located in whole or in part within a 1-mile and 5-mile radius of the project site.

   Refer to Figure 4.1 for the Environmental Justice Population Map.

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1) ☐Yes ☒**No**; If yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	**N/A**	**N/A**	**N/A**
Internal roadways	**9.2**	**(-0.1)**	**9.1**
Parking and other paved areas	**4.1**	**+ 0.4**	**4.5**
Other altered areas	**1.9**	**-0-**	**1.9**
Undeveloped areas	**2.2**	**(-0.3)**	**1.9**
Total: Project Site Acreage	**17.5**	**-0-**	**17.5**

B. Has any part of the project site been in active agricultural use in the last five years? ☐Yes ☒**No**; If yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

Click or tap here to enter text.

C. Is any part of the project site currently or proposed to be in active forestry use? ☐Yes ☒**No**; If yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

Click or tap here to enter text.

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ☐Yes ☒**No**; If yes, describe:

Click or tap here to enter text.

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? ☐Yes ☒**No**;If yes, does the project involve the release or modification of such restriction? ☐Yes ☐No; If yes, describe:

Click or tap here to enter text.

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ☐Yes ☒**No**; If yes, describe:

Click or tap here to enter text.

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? ☐Yes ☒**No**; If yes, describe:

Click or tap here to enter text.

III. Consistency

A. Identify the current municipal comprehensive land use plan.

Title: **Brookline Comprehensive Plan 2005-2015**
Date: **1/13/2005**

B. Describe the project's consistency with that plan with regard to:
   1) Economic development: **Economic development is spurred by the ability to move people around, and the Project will improve the connectivity of Brookline and Boston while promoting economic activity throughout neighborhoods by providing greater transit access for individuals of all abilities along the corridor, including the addition of accessible parking spaces.**
   2) Adequacy of infrastructure: **The Project includes accessibility upgrades and modernization of existing station platforms along the Green Line C Branch. Existing stations that will be improved by the Project are inaccessible to many people with mobility limitations. Proposed stations will improve platform conditions so that riders can roll on-and-off the trains using wheeled devices. Platform amenities such as new benches, lighting, and designated customer assistance areas with emergency call boxes on each platform will improve customer safety and security. New traffic barriers located between the platforms and adjacent traffic lanes will also enhance customer safety.**
   3) Open space impacts: **The Project will not impact open space as improvements will occur along shared rail and road ROW.**
   4) Compatibility with adjacent land uses: **The Project does not alter the existing land use.**

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)
   RPA: **MAPC**
   Title: **MetroCommon 2050**
   Date: **July 2021**

D. Describe the project's consistency with that plan with regard to:
   1) Economic development: **This plan outlines the importance of connecting workers with job opportunities, and this Project will improve the existing transportation conditions, making the Green Line accessible to people of all abilities**.
   2) Adequacy of infrastructure: **This plan describes transportation as a key for growth in the region. The Project will correct numerous station and access deficiencies and thus greatly improve upon the existing infrastructure of the Green Line C Branch.**
   3) Open space impacts: **The Project will not impact open space as improvements will occur within the shared road and rail ROW.**

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? ☐Yes ☒**No**; If yes, specify, in quantitative terms:

Click or tap here to enter text.

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? ☐Yes ☒**No**

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ☐Yes ☒**No**

D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ☐Yes ☐No; If yes:

1) Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)? ☐Yes ☐No; If yes, have you received a determination as to whether the project will result in the "take" of a rare species ☐Yes ☐No; If yes, attach the letter of determination to this submission.

2) Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ☐Yes ☐No;If yes, provide a summary of proposed measures to minimize and mitigate rare species impacts.

Click or tap here to enter text.

3) Which rare species are known to occur within the Priority or Estimated Habitat?

Click or tap here to enter text.

4) Has the site been surveyed for rare species in accordance with the Massachusetts Endangered Species Act? ☐Yes ☐No

5) If your project is within Estimated Habitat, have you filed a Notice of Intent or received an Order of Conditions for this project? ☐Yes ☐No; If yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations? ☐Yes ☐No

B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ☐Yes ☐No; If yes, provide a summary of proposed measures to minimize and mitigate impacts to significant habitat:

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? ☐Yes ☒**No**; If yes, specify, in quantitative terms:

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? ☐Yes ☒**No**;If yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? ☐Yes ☐No
If yes, has a Notice of Intent been filed? ☐Yes ☐No; If yes, list the date and MassDEP file number:
Click or tap here to enter text.
If yes, has a local Order of Conditions been issued? ☐Yes ☐No
Was the Order of Conditions appealed? ☐Yes ☐No
Will the project require a Variance from the Wetlands regulations? ☐Yes ☐No

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

	Area (square feet) or Length (linear feet)	Temporary or Permanent Impact?
Coastal Wetlands		
Land Under the Ocean		
Designated Port Areas		
Coastal Beaches		
Coastal Dunes		
Barrier Beaches		
Coastal Banks		
Rocky Intertidal Shores		
Salt Marshes		
Land Under Salt Ponds		
Land Containing Shellfish		
Fish Runs		
Land Subject to Coastal Storm Flowage		
Inland Wetlands		
Bank (lf)		
Bordering Vegetated Wetlands		
Isolated Vegetated Wetlands		
Land Under Water		
Isolated Land Subject to Flooding		
Bordering Land Subject to Flooding		
Riverfront Area		

D. Is any part of the project:
   1) proposed as a **limited project**? ☐Yes ☐No; if yes, what is the area (in sf)?
   2) the construction or alteration of a **dam**? ☐Yes ☐No; If yes, describe: Click or tap here to enter text.
   3) fill or structure in a **velocity zone** or **regulatory floodway**? ☐Yes ☐No
   4) dredging or disposal of dredged material? ☐Yes ☐No; if yes, describe the volume of dredged material and the proposed disposal site: Click or tap here to enter text.
   5) a discharge to an Outstanding Resource Water (ORW) or an Area of Critical Environmental Concern (ACEC)? ☐Yes ☐No
   6) subject to a wetlands restriction order? ☐Yes ☐No; if yes, identify the area (in sf):
   7) located in buffer zones? ☐Yes ☐No; if yes, how much (in sf) Click or tap here to enter text.

E. Will the project:
   1) be subject to a local wetlands ordinance or bylaw? ☐Yes ☐No
   2) alter any federally-protected wetlands not regulated under state law? ☐Yes ☐No o; if yes, what is the area (sf)? Click or tap here to enter text.

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? ☐Yes ☐No
   If yes, is there a current Chapter 91 License or Permit affecting the project site? ☐Yes ☐No
   If yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands: Click or tap here to enter text.

C. Does the project require a new or modified license or permit under M.G.L.c.91? ☐Yes ☐No;
   If yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use?
   Current: Change: Total:
   If yes, how many square feet of solid fill or pile-supported structures (in sf)? Click or tap here to enter text.

D. For non-water-dependent use projects, indicate the following:
   Area of filled tidelands on the site:
   Area of filled tidelands covered by buildings:
   For portions of site on filled tidelands, list ground floor uses and area of each use:
   Does the project include new non-water-dependent uses located over flowed tidelands?
   ☐Yes ☐No
   Height of building on filled tidelands: Click or tap here to enter text.

   Also show the following on a site plan: Mean High Water, Mean Low Water, Water-dependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

E. Is the project located on landlocked tidelands? ☐Yes ☐No; If yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

   Click or tap here to enter text.

F. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ☐Yes ☐No; If yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

Click or tap here to enter text.

G. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? ☐Yes ☐No
(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)

H. Does the project include dredging? ☐Yes ☐No; If yes, answer the following questions:
What type of dredging? ☐Improvement ☐Maintenance ☐Both
What is the proposed dredge volume, in cubic yards (cys)
What is the proposed dredge footprint:
length (ft): Click or tap here to enter text.
width (ft): Click or tap here to enter text.
depth (ft): Click or tap here to enter text.
Will dredging impact the following resource areas?
Intertidal ☐Yes ☐No; if yes, Click or tap here to enter text. sq ft
Outstanding Resource Waters ☐Yes ☐No; if yes, Click or tap here to enter text. sq ft
Other resource area (i.e. shellfish beds, eel grass beds) ☐Yes ☐No; if yes Click or tap here to enter text. sq ft

If yes to any of the above, have you evaluated appropriate and practicable steps to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation?
Click or tap here to enter text.

If no to any of the above, what information or documentation was used to support this determination? Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis.
Click or tap here to enter text.

Sediment Characterization
Existing gradation analysis results? ☐Yes ☐No; if yes, provide results.
Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? ☐Yes ☐No; if yes, provide results.
Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? ☐Yes ☐No

If yes, check the appropriate option:
☐Beach Nourishment
☐Unconfined Ocean Disposal
☐Confined Disposal:
☐Confined Aquatic Disposal (CAD)
☐Confined Disposal Facility (CDF)
☐Landfill Reuse in accordance with COMM-97-001
☐Shoreline Placement
☐Upland Material Reuse
☐In-State landfill disposal
☐Out-of-state landfill disposal
(NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? ☐Yes ☐No; If yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

   Click or tap here to enter text.

B. Is the project located within an area subject to a Municipal Harbor Plan? ☐Yes ☐No; If yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

   Click or tap here to enter text.

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ☐Yes ☒**No**; If yes, specify, in quantitative terms:

Click or tap here to enter text.

B. Does the project require any state permits related to **water supply**? ☒**Yes** ☐No; If yes, specify which permit:

Massachusetts Water Resources Authority – 8(m) Permit

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

	Existing	Change	Total
Municipal or regional water supply	**50 gpd**	**(-10 gpd)**	**40 gpd**
Withdrawal from groundwater	**-0-**	**-0-**	**-0-**
Withdrawal from surface water	**-0-**	**-0-**	**-0-**
Interbasin transfer	**-0-**	**-0-**	**-0-**

(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ☒**Yes** ☐No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? ☐Yes ☒**No**; If yes, attach a map of the drilling sites and a summary of the alternatives considered and the results:

Click or tap here to enter text.

C. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? **50** Will the project require an increase in that withdrawal? ☐Yes ☒**No**; If yes, then how much of an increase (gpd)?

Click or tap here to enter text.

D. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? ☐Yes ☒**No**; If yes, describe existing and proposed water supply facilities at the project site:

	Permitted Flow	Existing Avg Daily Flow	Project Flow	Total
Capacity of water supply well(s) (gpd)				
Capacity of water treatment plant (gpd)				

D. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

N/A

E. Does the project involve:

1) new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district? ☐Yes ☒**No**
2) a Watershed Protection Act variance? ☐Yes ☒**No**; if yes, how many acres of alteration? Click or tap here to enter text.
3) a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? ☐Yes ☒**No**

III. Consistency

Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

Since water use will be limited to intermittent janitorial activities, the Project will contribute to water conservation efforts by minimizing water consumption.

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? ☐Yes ☒**No**; If yes, specify, in quantitative terms:

Click or tap here to enter text.

B. Does the project require any state permits related to **wastewater**? ☐Yes ☒**No** ; If yes, specify which permit:
Click or tap here to enter text.

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	Existing	Change	Total
Discharge of sanitary wastewater			
Discharge of industrial wastewater			
TOTAL			

	Existing	Change	Total
Discharge to groundwater			
Discharge to outstanding resource water			
Discharge to surface water			
Discharge to municipal or regional wastewater facility			
TOTAL			

B. Is the existing collection system at or near its capacity? ☐Yes ☐No; If yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

Click or tap here to enter text.

C. Is the existing wastewater disposal facility at or near its permitted capacity? ☐Yes ☐No; If yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

Click or tap here to enter text.

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ☐Yes ☐No; if yes, describe as follows:

	Permitted	Existing Avg Daily Flow	Project Flow	Total
Wastewater treatment plant capacity (in gallons per day)				

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

Click or tap here to enter text.

(NOTE: Interbasin Transfer approval may be needed if the basin and community where wastewater will be discharged is different from the basin and community where the source of water supply is located.)

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district ☐Yes ☐No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? ☐Yes ☐No; If yes, what is the capacity (tons per day):

	Existing	Change	Total
Storage			
Treatment			
Processing			
Combustion			
Disposal			

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal:

Click or tap here to enter text.

III. Consistency

A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

Click or tap here to enter text.

B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ☐Yes ☐No; If yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

Click or tap here to enter text.

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? ☐Yes ☒**No**; If yes, specify, in quantitative terms:

B. Does the project require any state permits related to **state-controlled roadways**? ☐Yes ☒**No**; If yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces			
Number of vehicle trips per day			
ITE Land Use Code(s):			

B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change	Total
1.			

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement:

D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

E. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? ☐Yes ☐No; If yes, describe if and how the project will participate in the TMA:

F. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities?

G. ☐Yes ☐No;If yes, generally describe:

H. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

Click or tap here to enter text.

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

Click or tap here to enter text.

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ☒**Yes** ☐No; If yes, specify, in quantitative terms:

As a result of the Project, approximately 32 public shade trees of 14 or more inches in diameter at breast height are anticipated to be cut down, triggering *Massachusetts Environmental Policy Act (MEPA) 301 CMR 11.03 (6)(b).*

T

B. Does the project require any state permits related to **roadways or other transportation facilities**? ☐Yes ☒**No**; If yes, specify which permit:

Click or tap here to enter text.

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site:

The C Branch operates at surface level in the median of Beacon Street in the Town of Brookline and City of Boston. Stops on the C Branch, 13 total, are provided every 500-to-1,500 feet between Cleveland Circle Station at the west end and Saint Mary's Street Station at the east end of the branch. Nine (9) of these stations, all in Brookline, are inaccessible, meaning that the station platforms and pathways leading to the platforms were not built to accommodate individuals using wheeled mobility devices wanting to ride the train. These platforms are too low below the train floor level, obstructed, too narrow to maneuver, feature severe cross slopes and are rough and uneven. These deficiencies impact all riders' use of the Green Line. The Project will rebuild seven (7) of these platforms to comply with the Americans with Disabilities Act and following the adopted *Public Right-of-Way Access Guidelines* (PROWAG) authored by the US Access Board. One of the 7 new stations will be a consolidation of two existing closely-spaced stations located within a treed landscape. Another of the existing stations will be closed to allow for accessibility improvements at another nearby station, minimizing roadway, parking and shade tree impacts. No track construction is proposed.

The eastbound roadway of Beacon Street is located south of the C Branch tracks and the westbound roadway of Beacon Street is located north of the C Branch tracks. Beacon Street provides two general travel lanes per direction, except for the westbound direction between Marion Street and Westbourne Terrace, where one travel lane is provided next to a buffered bicycle lane. Dedicated left-turn lanes are provided at most signalized intersections and left-turns and U-turns are prohibited from crossing the C Branch tracks at locations where dedicated left-turn lanes are not provided. Metered and unmetered parallel on-street parking spaces are provided on the north and south sides of Beacon Street, and metered angled parking spaces are provided in the median of Beacon Street next to the C Branch tracks along most of the alignment. Crosswalks are provided at all station locations allowing pedestrians to cross the Beacon Street eastbound and westbound roadways to access the stations.

At many station locations, roadway travel lanes are proposed to be adjusted to accommodate wider station platforms. The Project would not result in a permanent reduction in the number of travel lanes on Beacon Street. All existing parking in the Project Area is public and most

spaces are metered. Forty-seven (47) parallel, mostly metered parking spaces would be lost where traffic lane shifts impact these spaces to accommodate wider platforms. Parking lanes approaching station platforms would be restriped to match existing lane arrangements beyond the stations to the greatest extent feasible. Approximately 22 metered angled parking spaces, owned by the Town of Brookline, are proposed to be eliminated due to the inclusion of points of safety or curb island reconstruction in the median. Where an existing accessible space is impacted, either parallel or angled, a new accessible space would be included at the closest space to the existing. New accessible parking spaces will be added near to the new egress curb ramps into the angled parking areas.

B. Will the project involve any:
   1) Alteration of bank or terrain (in linear feet)? **No**
   2) Cutting of living public shade trees (number)? **Yes, approximately 32 trees of 14 or more inches at breast height will be cut as a result of the Project.**
   3) Elimination of stone wall (in linear feet)? **No**

III. Consistency

Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

The Project is not included in the adopted Metropolitan Planning Organization (MPO) plan, nor is it included in the Transportation Improvement Plan (TIP). However, the Project is not expected to be a substantial source of emissions during operations. Minor emissions would occur from the use of standby generators during emergencies. Since the Green Line is electrified, direct emissions are not expected from the train movements. As emissions from the operation of the Project would be minor, the Project is not expected to cause substantial air quality impacts or conflict with the State Implementation Plan.

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))? ☐Yes ☒**No**; If yes, specify, in quantitative terms:

Click or tap here to enter text.

B. Does the project require any state permits related to **energy**? ☐Yes ☒**No**; If yes, specify which permit:

Click or tap here to enter text.

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

	Existing	Change	Total
Capacity of electric generating facility (megawatts)			
Length of fuel line (in miles)			
Length of transmission lines (in miles)			
Capacity of transmission lines (in kilovolts)			

B. If the project involves construction or expansion of an electric generating facility, what are:
   A. the facility's current and proposed fuel source(s)?
   B. the facility's current and proposed cooling source(s)?

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way? ☐Yes ☐No; If yes, please describe:

Click or tap here to enter text.

D. Describe the project's other impacts on energy facilities and services:

Click or tap here to enter text.

III. Consistency

Describe the project's consistency with state, municipal, regional, and federal plans and policies for enhancing energy facilities and services:

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ☐Yes ☒**No**; If yes, specify, in quantitative terms:

Click or tap here to enter text.

B. Does the project require any state permits related to **air quality**? ☐Yes ☒**No**; If yes, specify which permit:

Click or tap here to enter text.

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)? ☐Yes ☐No
If yes, describe existing and proposed emissions (in tons per day) of:

	Existing	Change	Total
Particulate matter			
Carbon monoxide			
Sulfur dioxide			
Volatile organic compounds			
Oxides of nitrogen			
Lead			
Any hazardous air pollutant			
Carbon dioxide			

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

Click or tap here to enter text.

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

Click or tap here to enter text.

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

Click or tap here to enter text.

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ☐Yes ☒**No**; If yes, specify, in quantitative terms:

Click or tap here to enter text.

B. Does the project require any state permits related to **solid and hazardous waste**? ☐Yes ☒**No**; If yes, specify which permit:

Click or tap here to enter text.

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste? ☐Yes ☐No; If yes, what is the volume (in tons per day) of the capacity:

	Existing	Change	Total
Storage			
Treatment, processing			
Combustion			
Disposal			

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste? ☐Yes ☐No If yes, what is the volume (in tons or gallons per day) of the capacity:

	Existing	Change	Total
Storage			
Recycling			
Treatment			
Disposal			

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:
Click or tap here to enter text.

D. If the project involves demolition, do any buildings to be demolished contain asbestos?
☐Yes ☐No

E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):
Click or tap here to enter text.

III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:
Click or tap here to enter text.

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? ☒**Yes** ☐No; if yes, attach correspondence.
Section 106 consultation is in progress with MHC and other agencies.
For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? ☐Yes ☒**No** if yes, attach correspondence.

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ☒**Yes** ☐No; If yes, does the project involve the demolition of all or any exterior part of such historic structure? ☐ Yes ☒ **No**; If yes, please describe:

Twenty-three (23) resources recorded in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth are located wholly or partially in the Project site or within 150 feet of the Project Area. Please see Section 3.1.9 "Historic and Archaeological Resources" for more information.

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ☐Yes ☒**No**; If yes, does the project involve the destruction of all or any part of such archaeological site? ☐Yes ☒**No**; If yes, please describe:
Click or tap here to enter text.

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

II. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

The Project is located within the boundaries of the Beacon Street Historic District (BKL.K). The Project limit of disturbance is bounded to the north by Cottage Farm Historic District (BKL.A / BKL.B), the Arthur - Shaw House, and Kilsyth Terrace (BKL.1748) and to the south by Longwood Historic District (BKL.T), Beaconsfield Terraces Historic District (BKL.S), Strathmore Road Historic District (BKL.R), Richmond Court Apartments (BKL.1446), the Austin W. Benton House (BKL.1717), and the Gorfinkle and Barkin Rowhouse (BKL.3865).

The proposed Project-wide improvements will not physically impact existing buildings or other character defining features of the Beacon Street Historic District. Beacon Street which was originally designed to accommodate a streetcar line in the center of boulevard and therefore upgrades in-keeping with the existing scale and design of the rail improvements will not introduce a new, incompatible element to the setting, character, or association of the Beacon Street Historic District. The nine historic resources that are outside of the Project limit of disturbance, but in the vicinity of the Project, have views toward the railroad corridor but the improvements to the road surface and utilities along with track adjustment beyond the rail ROW will not introduce new elements, therefore allowing any resulting changes to be subtle when viewed from within historic properties' boundaries. The proposed Project activities will not detract from the setting, character, or association of the Cottage Farm Historic District, the Arthur - Shaw House, Kilsyth Terrace, Longwood Historic District, Beaconsfield Terraces Historic District, Strathmore Road Historic District, Richmond Court Apartments, the Austin W. Benton House, and the Gorfinkle and Barkin Rowhouse. Therefore, FTA has determined there will be no adverse effect to historic properties.

III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

The Massachusetts Historical Commission (MHC) will receive a copy of this Proposed EIR, which will also initiate review of the Project under State Register Review (M.G.L. Chapter 9, Sections 27-27c, as amended by Chapter 254 of the Acts of 1988). Due to involvement of the Federal Transit Administration (FTA), the Project is undergoing consultation under Section 106 of the National Historic Preservation Act (36 CFR 800). If it is determined that the Project will result in an adverse effect to historic properties, consultation with the MHC will continue to identify ways to avoid, minimize, or mitigate these adverse effects.

CLIMATE CHANGE ADAPTATION AND RESILIENCY SECTION:

This section of the Environmental Notification Form (ENF) solicits information and disclosures related to climate change adaptation and resiliency, in accordance with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency (the "MEPA Interim Protocol"), effective October 1, 2021. The Interim Protocol builds on the analysis and recommendations of the 2018 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) and incorporates the efforts of the Resilient Massachusetts Action Team (RMAT), the inter-agency steering committee responsible for implementation, monitoring, and maintenance of the SHMCAP, including the "Climate Resilience Design Standards and Guidelines" project. The RMAT team recently released the RMAT Climate Resilience Design Standards Tool, which is available here.

The MEPA Interim Protocol is intended to gather project-level data in a standardized manner that will both inform the MEPA review process and assist the RMAT team in evaluating the accuracy and effectiveness of the RMAT Climate Resilience Design Standards Tool. Once this testing process is completed, the MEPA Office anticipates developing a formal Climate Change Adaptation and Resiliency Policy through a public stakeholder process. Questions about the RMAT Climate Resilience Design Standards Tool can be directed to rmat@mass.gov.

All Proponents must complete the following section, referencing as appropriate the results of the output report generated by the RMAT Climate Resilience Design Standards Tool and attached to the ENF. In completing this section, Proponents are encouraged, but not required at this time, to utilize the recommended design standards and associated Tier 1/2/3 methodologies outlined in the RMAT Climate Resilience Design Standards Tool to analyze the project design. However, Proponents are requested to respond to a respond to a user feedback survey on the RMAT website or to provide feedback to rmat@mass.gov, which will be used by the RMAT team to further refine the tool. Proponents are also encouraged to consult general guidance and best practices as described in the RMAT Climate Resilience Design Guidelines.

Climate Change Adaptation and Resiliency Strategies

Has the project taken measures to adapt to climate change for all of the climate parameters analyzed in the RMAT Climate Resilience Design Standards Tool (sea level rise/storm surge, extreme precipitation (urban or riverine flooding), extreme heat)? ☒**Yes** ☐No

Note: Climate adaptation and resiliency strategies include actions that seek to reduce vulnerability to anticipated climate risks and improve resiliency for future climate conditions. Examples of climate adaptation and resiliency strategies include flood barriers, increased stormwater infiltration, living shorelines, elevated infrastructure, increased tree canopy, etc. Projects should address any planning priorities identified by the affected municipality through the Municipal Vulnerability Preparedness (MVP) program or other planning efforts, and should consider a flexible adaptive pathways approach, an adaptation best practice that encourages design strategies that adapt over time to respond to changing climate conditions. General guidance and best practices for designing for climate risk are described in the RMAT Climate Resilience Design Guidelines*.*

A. If no, explain why.

Click or tap here to enter text.

B. If yes, describe the measures the project will take, including identifying the planning horizon and climate data used in designing project components. If applicable, specify the return period and design storm used (e.g., 100-year, 24-hour storm).

As noted in the August 30, 2019, MBTA's *Green Line Transformation Design Criteria* document, this Project will follow the design principles and guidelines that advance sustainability and enhance the Green Line's resiliency in this changing climate.

All rail infrastructure components will be subject to increased average ambient temperature, increased precipitation, and increased frequency of extreme storm events.

The Project's design will align with the MBTA climate guidelines and climate vulnerabilities will continue to be evaluated as design progresses. Refer to Section 3.2.5 of Chapter 3, *Environmental Considerations*, for a description of potential design solutions to be considered.

C. Is the project contributing to regional adaptation strategies? ☒**Yes** ☐No; If yes, describe.

Knowledge about climate change impacts is likely to change over time, requiring a dynamic decision-making process that can adapt to new information and accommodate feedback. The MBTA will regularly monitor, reassess, and update this report to assure that it is meeting its intended objectives and to re-examine key factors, including availability of improved climate data; new information on infrastructure impacts from observed events in the region or analogues elsewhere; and new adaptation measures resulting from advancements in technology, materials science, engineering, and regulatory changes, and/or from actions by other units of government.

II. Has the Proponent considered alternative locations for the project in light of climate change risks? ☐Yes ☒**No**

A. If no, explain why.

No alternative locations could have been considered for the Project location as the Project's specific purpose is to upgrade several existing Green Line C Branch Stations in accordance with ADA requirements to promote accessibility for MBTA users.

B. If yes, describe alternatives considered.

Click or tap here to enter text.

III. Is the project located in Land Subject to Coastal Storm Flowage (LSCSF) or Bordering Land Subject to Flooding (BLSF) as defined in the Wetlands Protection Act? ☐Yes ☒**No**; If yes, describe how/whether proposed changes to the site's topography (including the addition of fill) will result in changes to floodwater flow paths and/or velocities that could impact adjacent properties or the functioning of the floodplain. General guidance on providing this analysis can be found in the CZM/MassDEP Coastal Wetlands Manual, available here.

Click or tap here to enter text.

ENVIRONMENTAL JUSTICE SECTION

I. Identifying Characteristics of EJ Populations

A. If an Environmental Justice (EJ) population has been identified as located in whole or in part within 5 miles of the project site, describe the characteristics of each EJ populations as identified in the EJ Maps Viewer (i.e., the census block group identification number and EJ characteristics of "Minority," "Minority and Income," etc.). Provide a breakdown of those EJ populations within 1 mile of the project site, and those within 5 miles of the site.

Refer to Chapter 4, *Environmental Justice and Public Health,* Section 4.2, for a detailed table (Table 4-1) of all EJ populations located within the established designated geographic area (DGA), or within 1 mile of the Project Area. Refer to Section 4.2.1 for a list of all EJ populations located within 5 miles of the Project Area, not including the 1-mile block groups. Figure 4.1 shows the EJ block groups within the DGA. Within the 1-mile DGA of Brookline, Boston, Cambridge, and Newton, 92 block groups meet the Minority EJ criterion; 25 block groups meet the Minority and Low-Income criteria; 3 block groups meet the Minority and English Isolation criteria; and 7 block groups meet the criteria for Minority, Low-Income, and English Isolation.

B. Identify all languages identified in the "Languages Spoken in Massachusetts" tab of the EJ Maps Viewer as spoken by 5 percent or more of the EJ population who also identify as not speaking English "very well." The languages should be identified for each census tract located in whole or in part within 1 mile and 5 miles of the project site, regardless of whether such census tract contains any designated EJ populations.

Refer to Chapter 4, *Environmental Justice and Public Health,* Section 4.2 for a detailed table (Table 4-1) of all languages by census tract within the established DGA. There are 13 census tracts where at least 5 percent of the population speak a language other than English within the DGA and do not speak English well or at all. These languages include Chinese, Russian, and Spanish/Creole.

C. If the list of languages identified under Section I.B. has been modified with approval of the EEA EJ Director, provide a list of approved languages that the project will use to provide public involvement opportunities during the course of MEPA review. If the list has been expanded by the Proponent (without input from the EEA EJ Director), provide a list of the additional languages that will be used to provide public involvement opportunities during the course of MEPA review as required by Part II of the MEPA Public Involvement Protocol for Environmental Justice Populations ("MEPA EJ Public Involvement Protocol"). If the project is exempt from Part II of the protocol, please specify.

N/A

II. Potential Effects on EJ Populations

A. If an EJ population has been identified using the EJ Maps Viewer within 1 mile of the project site, describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

This Project will allow the MBTA to improve station accessibility for all riders and communities, including EJ populations, served by the C Branch. With the specified minimization and mitigation measures detailed in Section 4.5 and summarized in Section 4.5.3, the Project is not anticipated to have disproportionate adverse effects on EJ populations. This finding will be reassessed throughout design and construction.

B. If an EJ population has been identified using the EJ Maps Viewer within 5 miles of the project site, will the project:
(ii) meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b) ☐Yes ☒**No**; or
(iii) generate 150 or more new average daily trips (adt) of diesel vehicle traffic, excluding public transit trips, over a duration of 1 year or more. ☐Yes ☒**No**

C. If you answered "Yes" to either question in Section II.B., describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

N/A

III. Public Involvement Activities

A. Provide a description of activities conducted prior to filing to promote public involvement by EJ populations, in accordance with Part II of the MEPA EJ Public Involvement Protocol. In particular:

1. If advance notification was provided under Part II.A., attach a copy of the Environmental Justice Screening Form and provide list of CBOs/tribes contacted (with dates). Copies of email correspondence can be attached in lieu of a separate list.

Refer to Attachment 5 for a copy of the EJ Screening Form. Refer to Attachment 1 for the EENF/PEIR Distribution List, which includes the CBOs, Tribes, and tribal organizations (the EJ Reference List) contacted.

2. State how CBOs and tribes were informed of ways to request a community meeting, and if any meeting was requested. If public meetings were held, describe any issues of concern that were raised at such meetings, and any steps taken (including modifications to the project design) to address such concerns.

The EJ Screening Form, which was electronically delivered to the EJ Reference List contacts, including CBOs, Tribes, and tribal organizations, provided the MBTA's contact information with methods to request a meeting, additional language services, and other accommodation requests. Refer to Section 4.6 for the full list of outreach and engagement measures taken by the MBTA.

3. If the project is exempt from Part II of the protocol, please specify.

N/A

B. Provide below (or attach) a distribution list (if different from the list in Section III.A. above) of CBOs and tribes, or other individuals or entities the Proponent intends to maintain for the notice of the MEPA Site Visit and circulation of other materials and notices during the course of MEPA review.

Refer to Attachment 1, EENF/PEIR Distribution List.

C. Describe (or submit as a separate document) the Proponent's plan to maintain the same level of community engagement throughout the MEPA review process, as conducted prior to filing.

Refer to Section 4.6 and Attachment 5 for details regarding the MBTA's public involvement plan and planned engagement prior to and following the filing of this EENF.

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

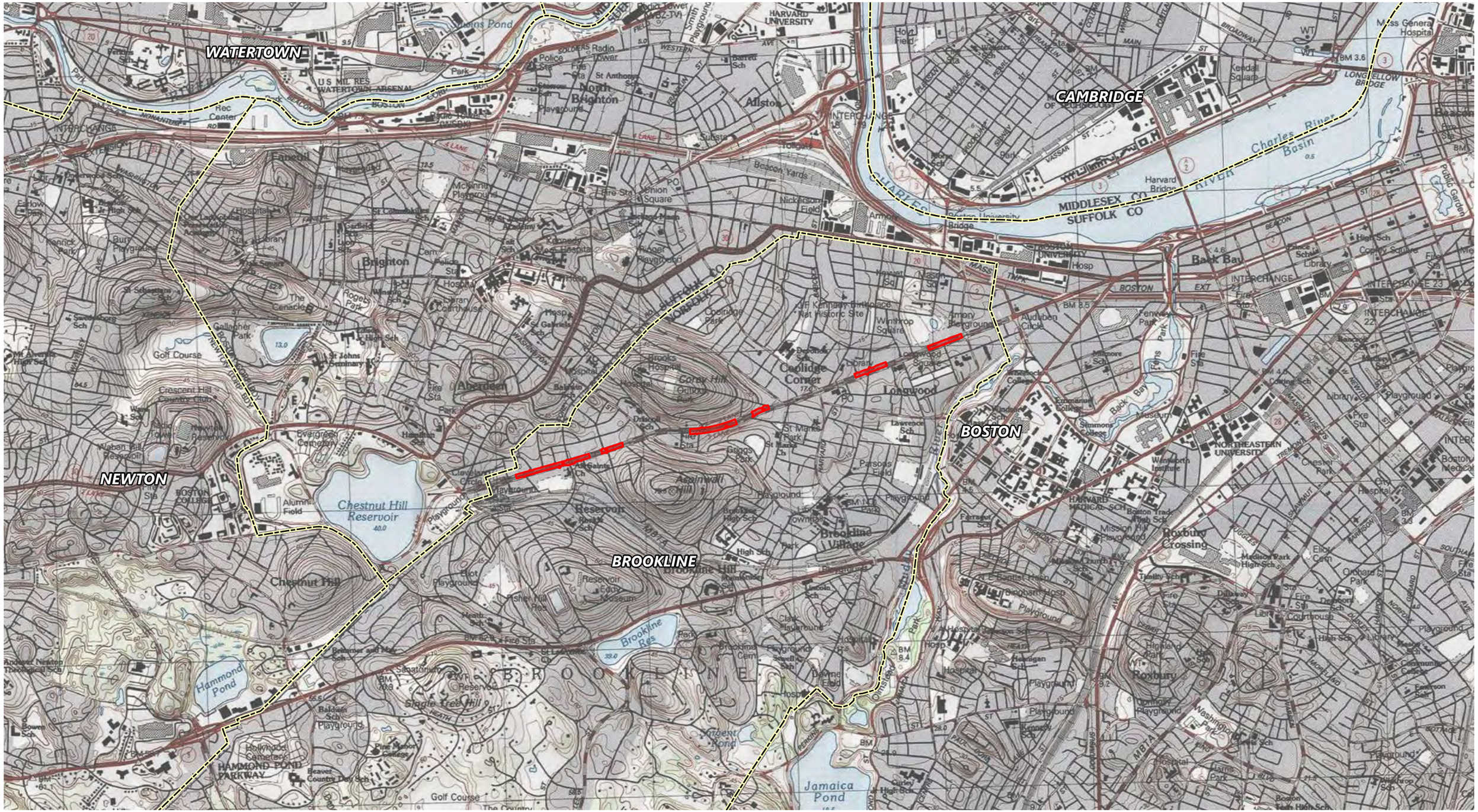
   Name: **Boston Globe, El Mundo, Sampan** Date: **12/23/2024**

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

12/10/2024		**12/10/2024**	
Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing ENF (if different from above)

Tess Paganelli	**Kristen Bergassi**
Name	Name
MBTA	**VHB**
Firm/Agency	Firm/Agency
10 Park Plaza, suite 5720	**260 Arsenal Street #2**
Street	Street
Boston, MA, 02116	**Watertown, MA 02471**
Municipality/State/Zip	Municipality/State/Zip
617-549-4357	**617-607-2989**
Phone	Phone



Massachusetts Bay Transportation Authority

0 1000 2000 4000 Feet

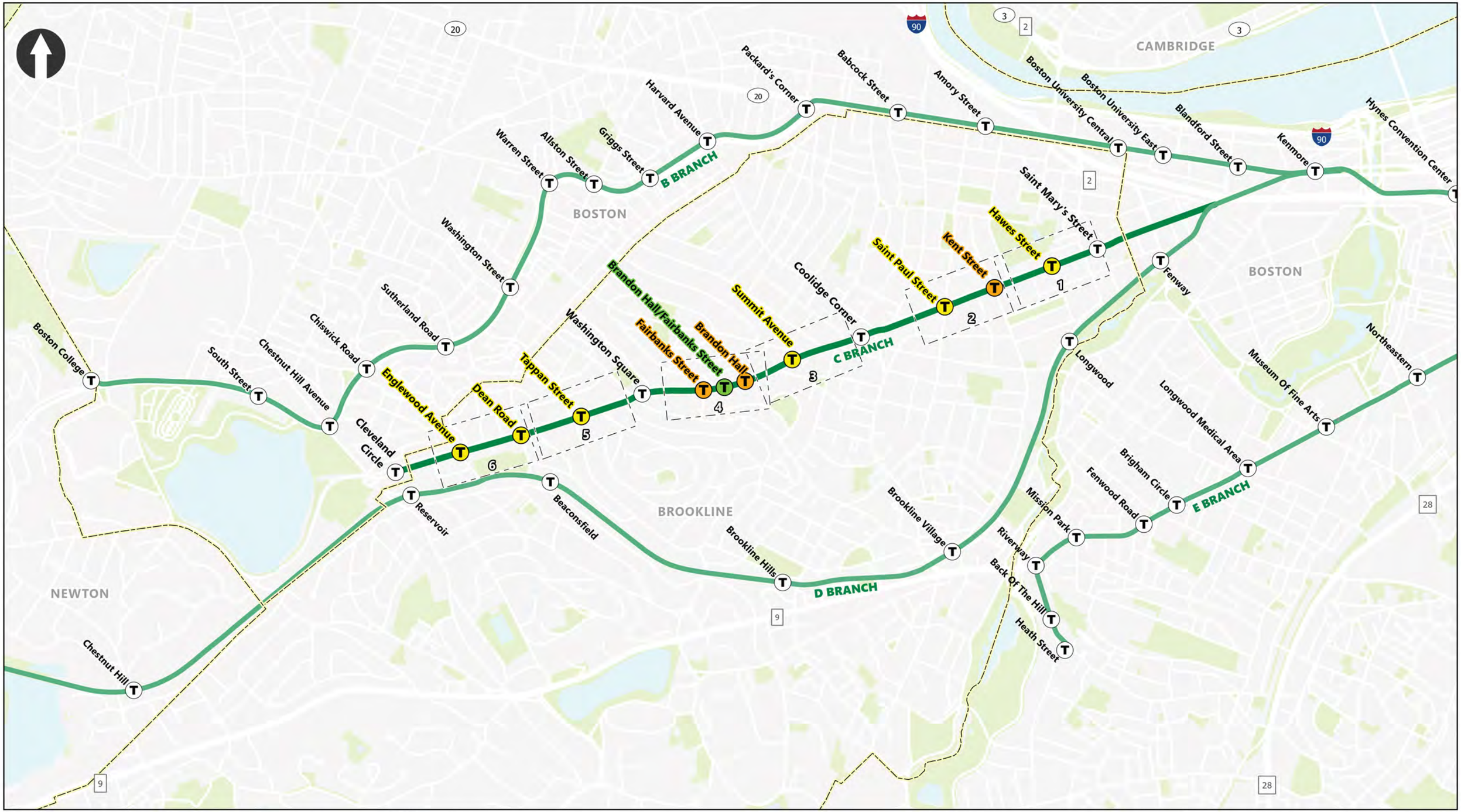
Source: MassGIS, USGS

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 1.1

USGS Location Map



Massachusetts Bay Transportation Authority

0 700 1400 2800 Feet

Source: MassGIS

Accessibility Upgrades
- Proposed New Station
- Station to be Decomissioned
- Station to be Upgraded
- Green Line Station

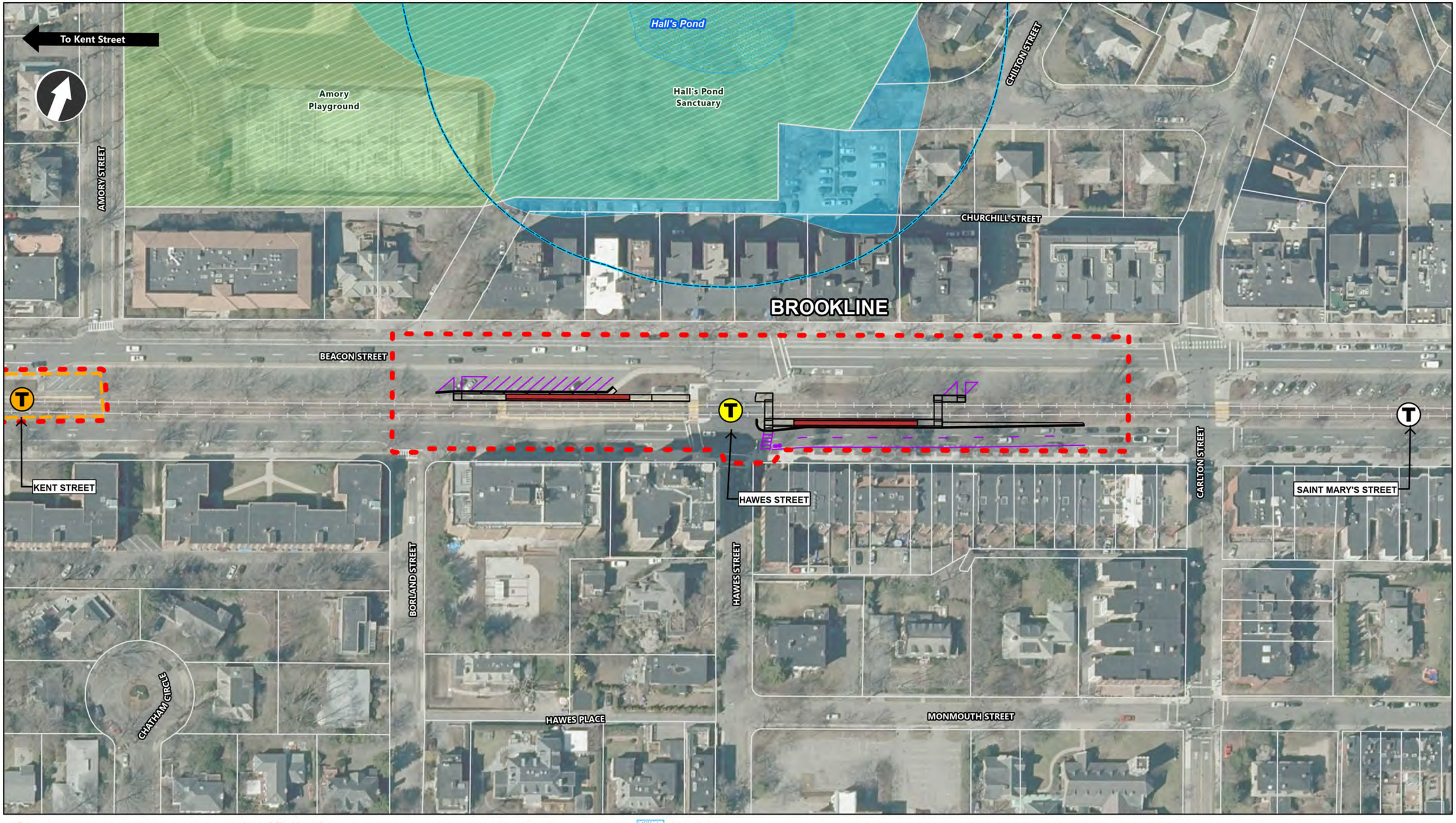
- Page Index
- Municipal Boundary
- MBTA Green Line

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 1.2

Environmental Constaints Index Map



Massachusetts Bay Transportation Authority

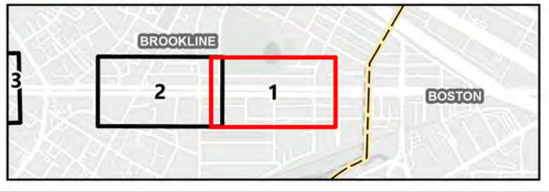
0 50 100 200 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station

- MBTA Green Line
- Limit of Disturbance
- Limits of Station to be Decommissioned
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- Open Water
- 100' Buffer Zone
- Conservation/Recreation Areas Protected Under Article 97
- 1% Annual Chance of Flooding
- Parcel Boundary



Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 1.3a

Environmental Constraints

PLEASANT STREET
To Coolidge Corner
JAMES STREET
SAINT PAUL STREET
PARKMAN STREET
POWELL STREET
Amory Playground
To Hawes Street
AMORY STREET
BROOKLINE
BEACON STREET
SAINT PAUL STREET
KENT STREET
MOSAIC BOSTON CHURCH
MARSHAL STREET
KENT STREET
SEWALL AVENUE
CHAUNCY CIRCLE

Massachusetts Bay Transportation Authority

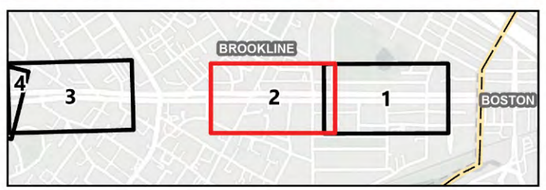
0 50 100 200 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station

- MBTA Green Line
- Limit of Disturbance
- Limits of Station to be Decommissioned
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- Conservation/Recreation Areas Protected Under Article 97
- Places Of Worship
- Parcel Boundary



Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 1.3b

Environmental Constraints

MASON TERRACE
To Brandon Hall
SUMMIT AVENUE
ATHERTON ROAD
WELLMAN STREET
To Coolidge Corner
SHORT STREET
WINCHESTER STREET
CENTRE STREET
BROOKLINE
MARION STREET
SUMMIT AVENUE
BEACON STREET
WEBSTER STREET
PARK STREET
MARION STREET
VERNON STREET
GRIGGS TERRACE
Griggs Park
Crowley Park
MARION TERRACE

Massachusetts Bay Transportation Authority

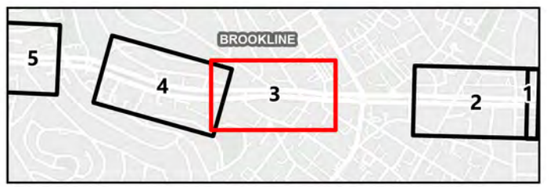
0 50 100 200 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station

- MBTA Green Line
- Limit of Disturbance
- Limits of Station to be Decommissioned
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- 100' Buffer Zone
- Conservation/Recreation Areas Protected Under Article 97
- Parcel Boundary

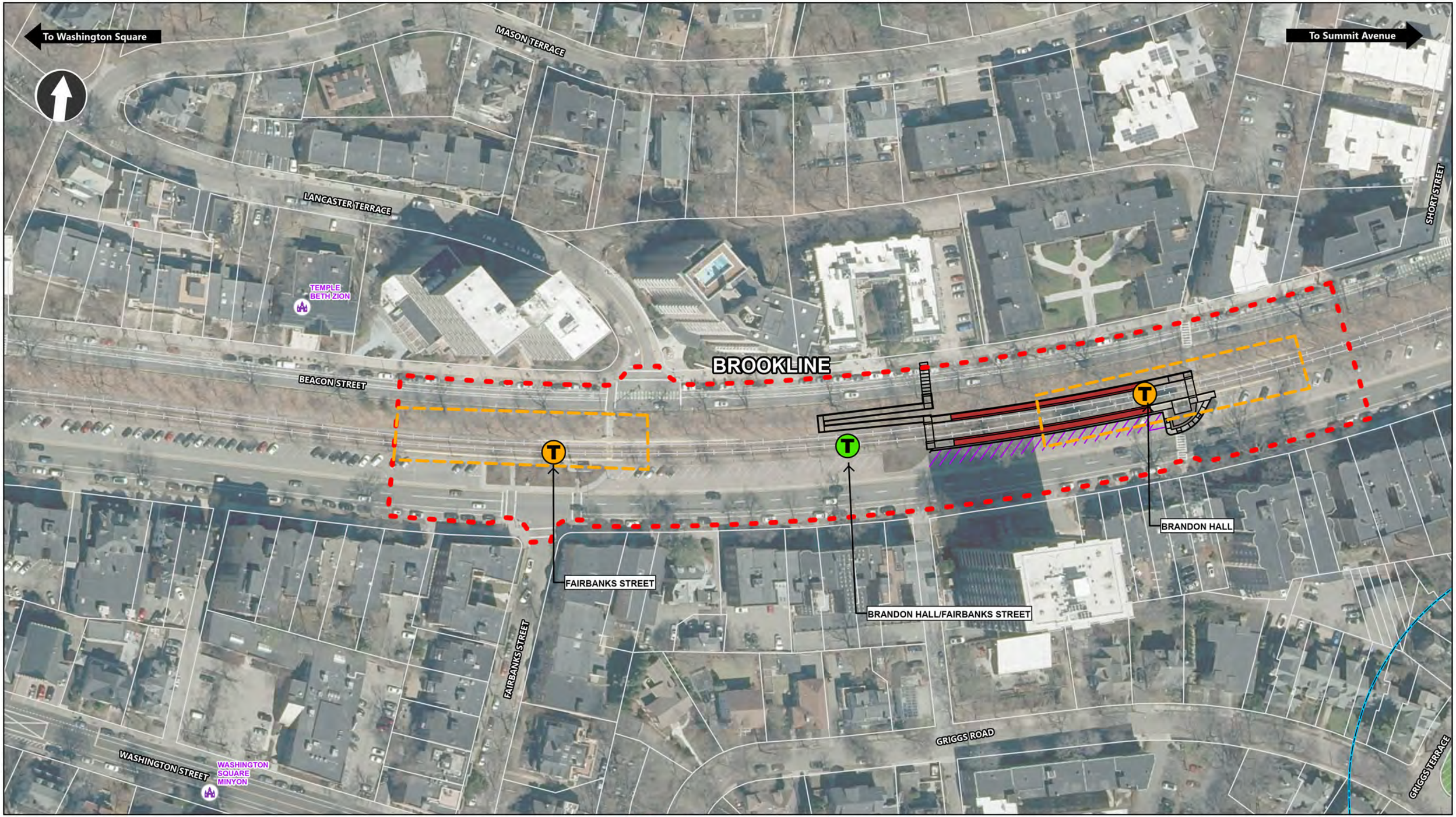


Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 1.3c

Environmental Constraints



Massachusetts Bay Transportation Authority

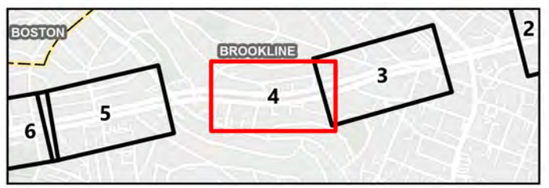
0 50 100 200 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station

- MBTA Green Line
- Limit of Disturbance
- Limits of Station to be Decommissioned
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- 100' Buffer Zone
- Conservation/Recreation Areas Protected Under Article 97
- Places Of Worship
- Parcel Boundary



Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 1.3d

Environmental Constraints

Massachusetts Bay Transportation Authority

0 50 100 200 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station

- MBTA Green Line
- Limit of Disturbance
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- Conservation/Recreation Areas
- School
- Parcel Boundary

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 1.3e

Environmental Constraints

To Cleveland Circle

BOSTON

ENGLEWOOD AVENUE

KILSYTH ROAD

WARWICK ROAD

SALISBURY ROAD

COREY ROAD

To Tappan Street

BEACON STREET

BROOKLINE

ENGLEWOOD AVENUE

CLINTON PATH

STRATHMORE ROAD

DEAN ROAD

THE EVERGREEN CHURCH OF BOSTON INC

DEAN ROAD

Waldstein Playground

Massachusetts Bay Transportation Authority

0 50 100 200 Feet

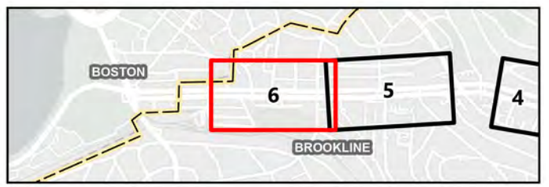
Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades

- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station

- MBTA Green Line
- Limit of Disturbance
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- Conservation/Recreation Areas Protected Under Article 97
- Places Of Worship
- Parcel Boundary

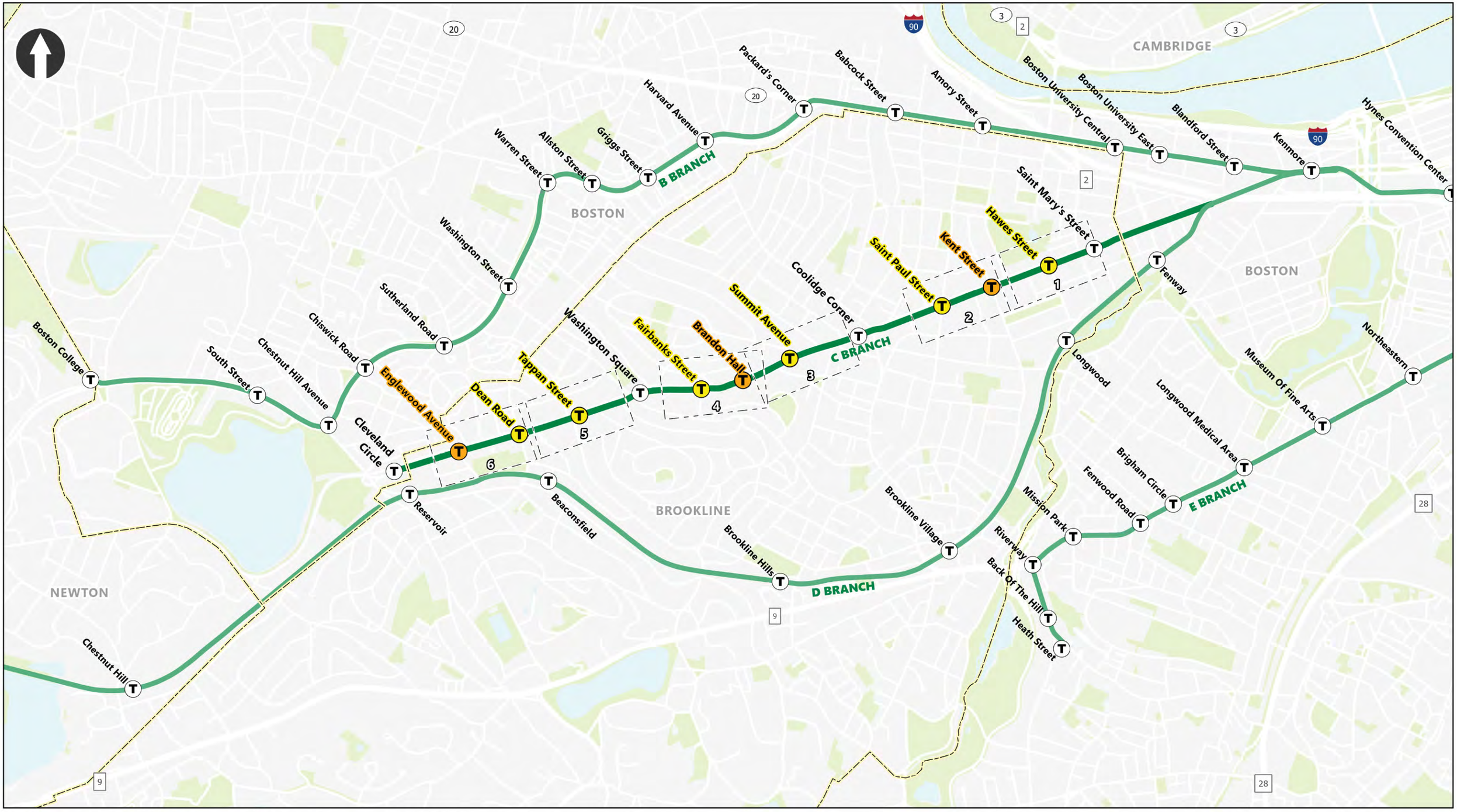


Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 1.3f

Environmental Constraints



Massachusetts Bay Transportation Authority

0 700 1400 2800 Feet

Source: MassGIS

Accessibility Upgrades
- Proposed New Station
- Station to be Decomissioned
- Station to be Upgraded
- Green Line Station

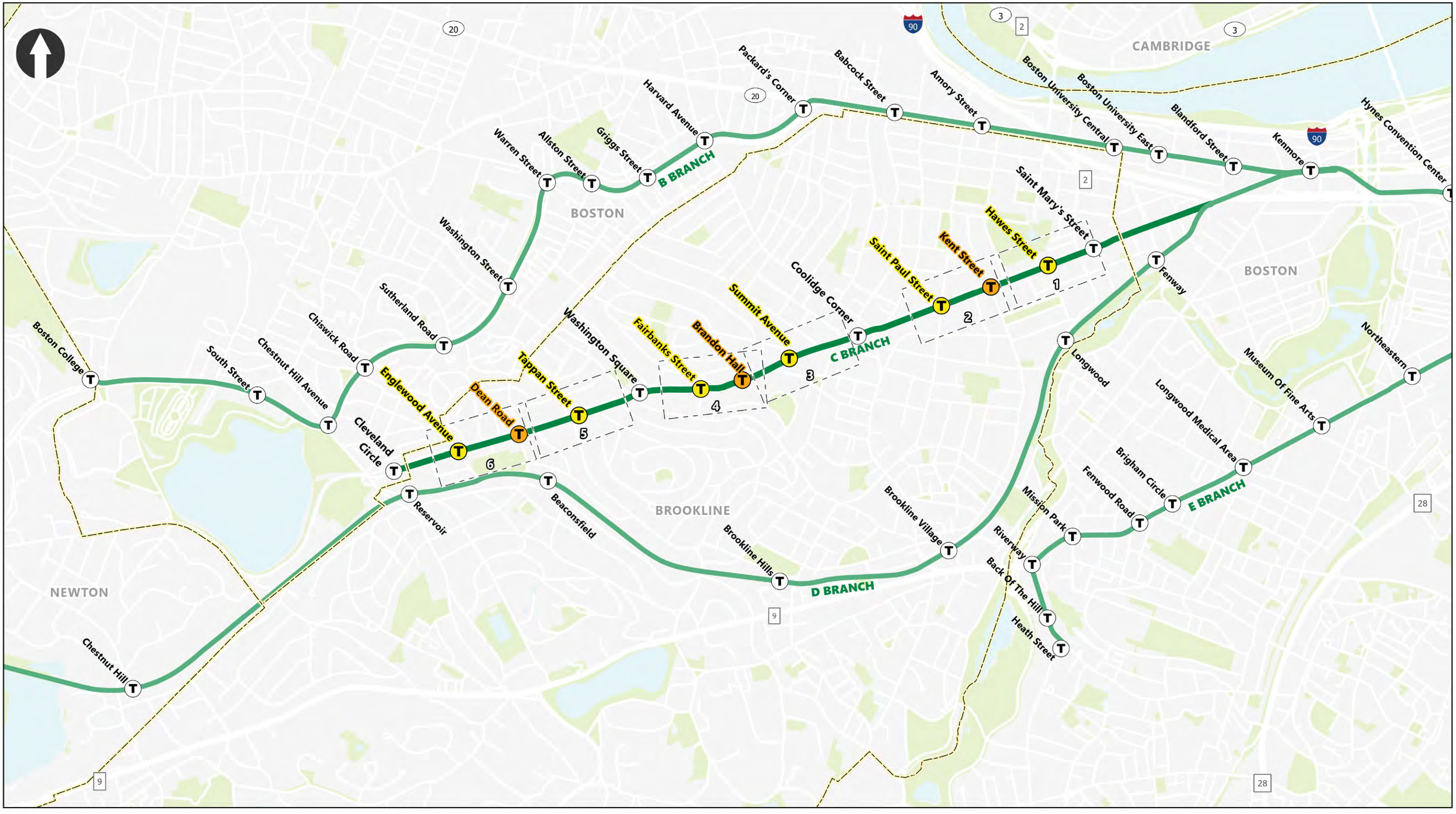
- Page Index
- Municipal Boundary
- MBTA Green Line

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 2.1

Build Alternative 1 Station Locations



Massachusetts Bay Transportation Authority

0 700 1400 2800 Feet

Source: MassGIS

Accessibility Upgrades
- Proposed New Station
- Station to be Decomissioned
- Station to be Upgraded
- Green Line Station

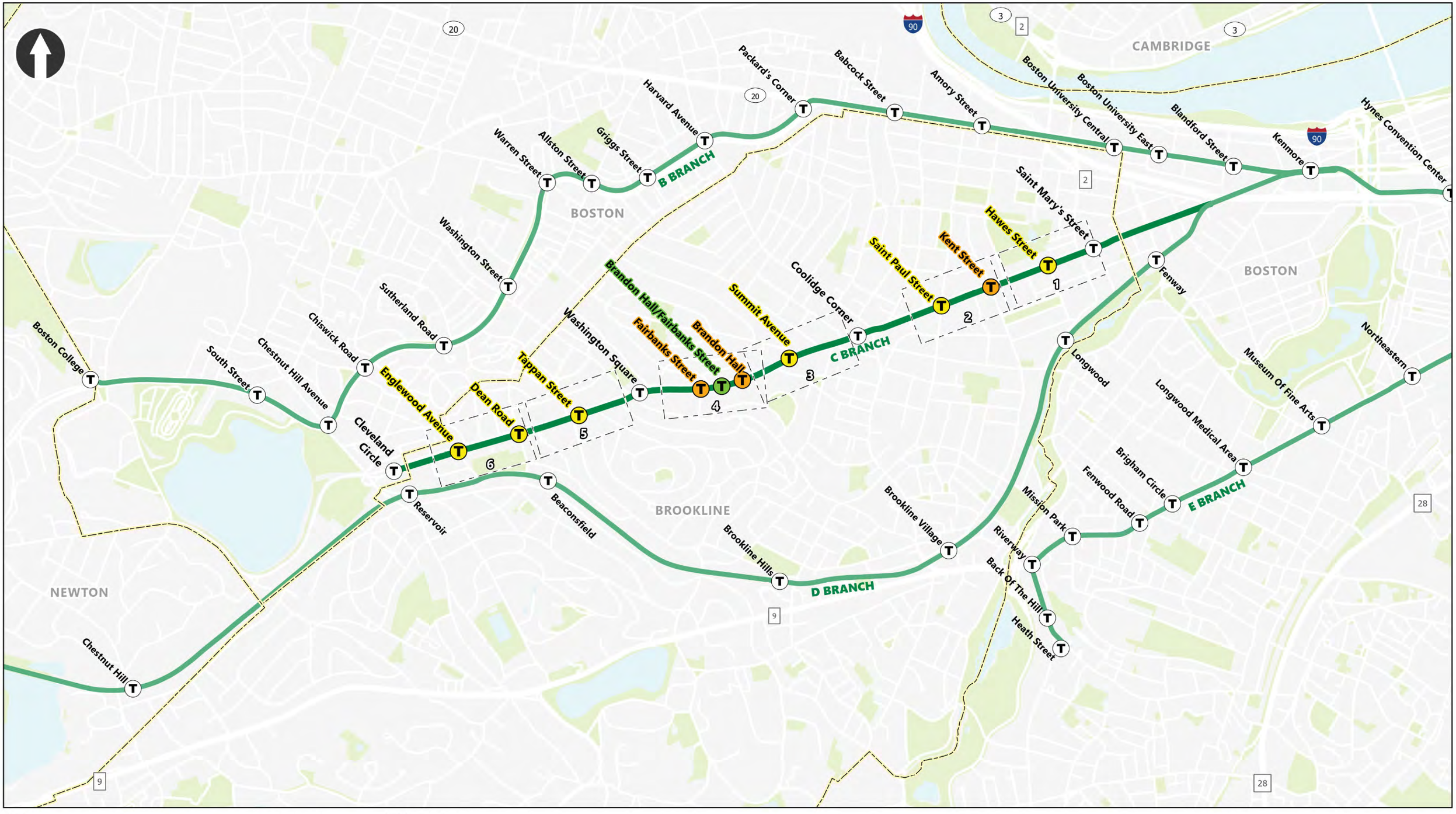
- Page Index
- Municipal Boundary
- MBTA Green Line

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 2.2

Build Alternative 2 Station Locations



Massachusetts Bay Transportation Authority

0 700 1400 2800 Feet

Source: MassGIS

Accessibility Upgrades
- Proposed New Station
- Station to be Decomissioned
- Station to be Upgraded
- Green Line Station

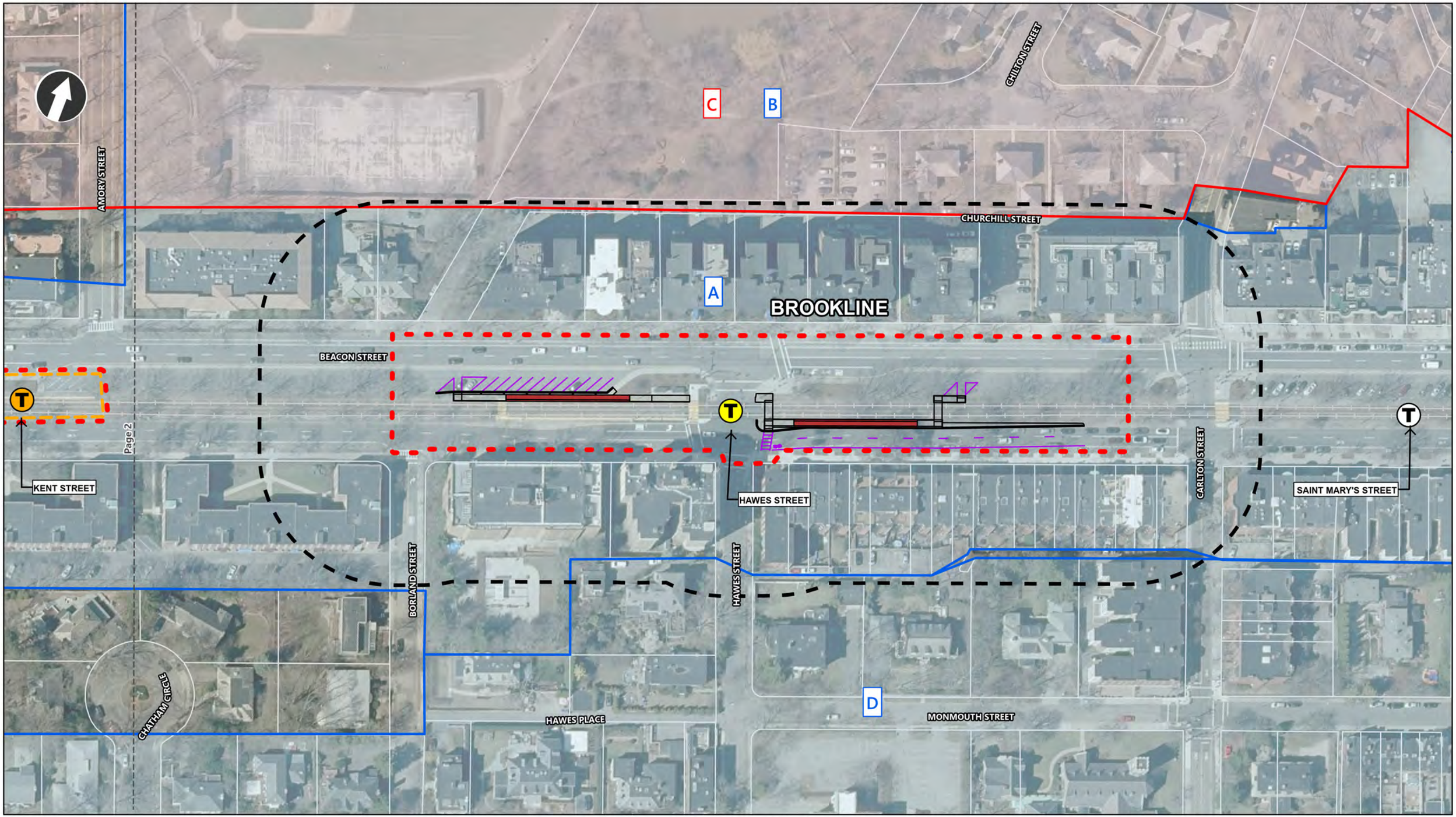
- Page Index
- Municipal Boundary
- MBTA Green Line

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 2.3

Build Alternative 3 Station Locations



Massachusetts Bay Transportation Authority

0 50 100 200 Feet

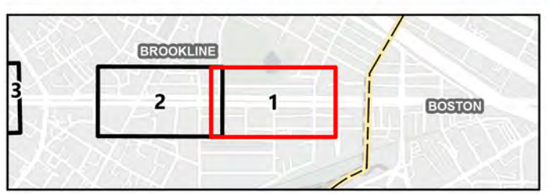
Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station
- Page Match Lines

- MBTA Green Line
- Limit of Disturbance
- Limits of Station to be Decommissioned
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- 150-Ft APE
- Properties Recommended Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing

- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Parcel Boundary

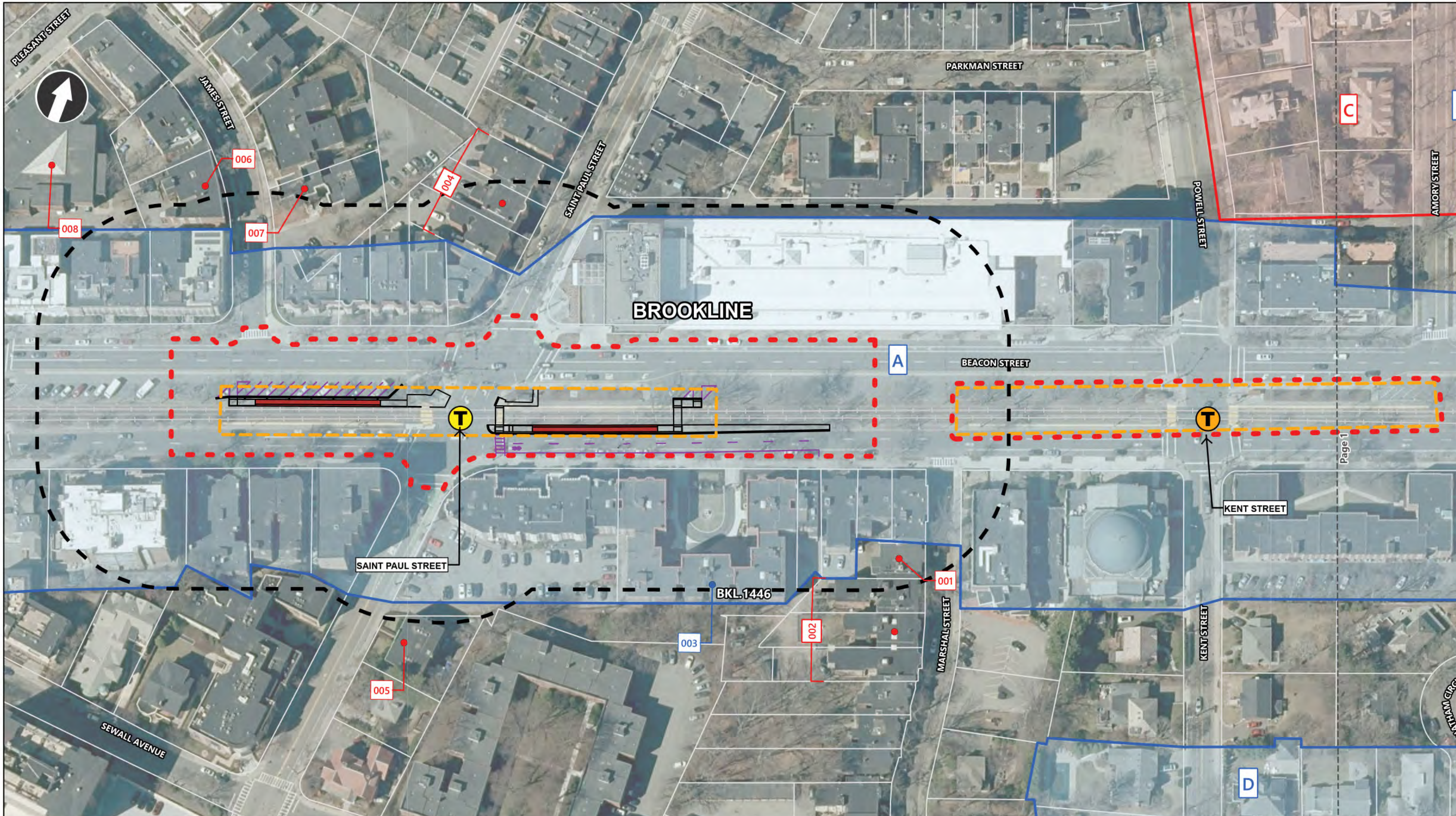


Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 3.1a

Cultural Resources - Englewood Avenue/Dean Road

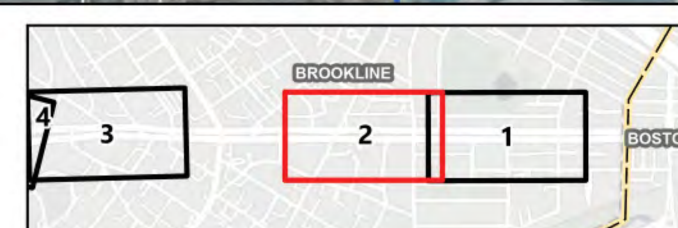


Massachusetts Bay Transportation Authority

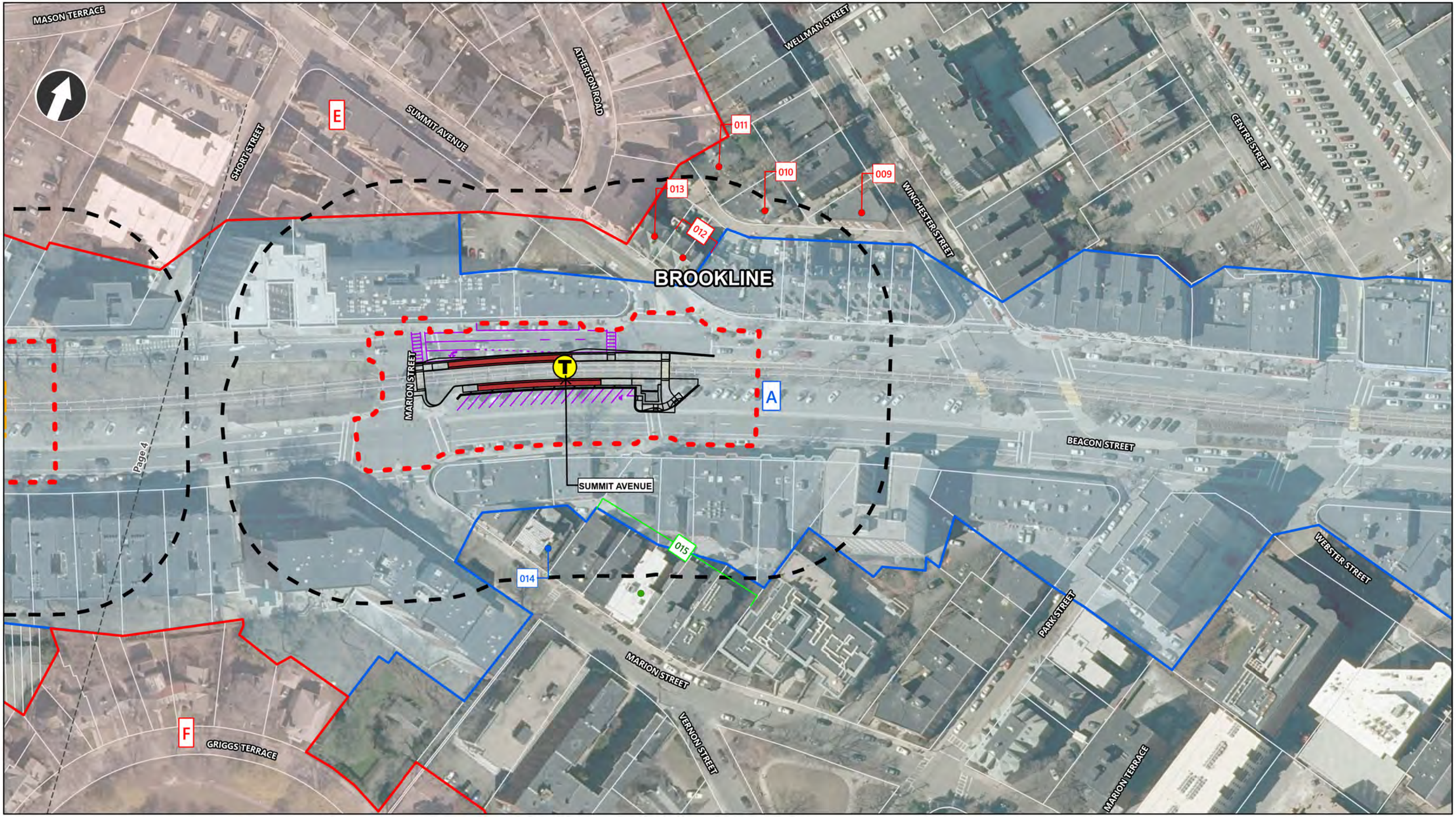
0 50 100 200 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station
- Page Match Lines
- MBTA Green Line
- Limit of Disturbance
- Limits of Station to be Decommissioned
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location
- 150-Ft APE
- Properties Recommended Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Parcel Boundary



Green Line C Branch Station Accessibility Upgrades Project
Brookline, Massachusetts
Figure 3.1b
Cultural Resources - Englewood Avenue/Dean Road



Massachusetts Bay Transportation Authority

0 50 100 200 Feet

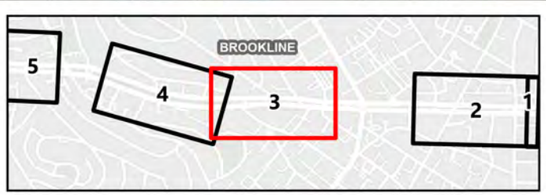
Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station
- Page Match Lines

- MBTA Green Line
- Limit of Disturbance
- Limits of Station to be Decommissioned
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- 150-Ft APE
- Properties Recommended Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing

- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Parcel Boundary



Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 3.1c

Cultural Resources - Englewood Avenue/Dean Road

MASON TERRACE

LANCASTER TERRACE

SHORT STREET

E

A

BROOKLINE

BEACON STREET

Page 3

BRANDON HALL

FAIRBANKS STREET

BRANDON HALL/FAIRBANKS STREET

FAIRBANKS STREET

016

017

F

GRIGGS ROAD

WASHINGTON STREET

GRIGGS TERRACE

Massachusetts Bay Transportation Authority

0 50 100 200 Feet

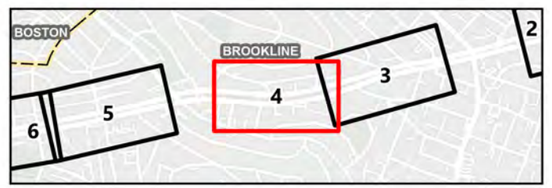
Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station
- Page Match Lines

- MBTA Green Line
- Limit of Disturbance
- Limits of Station to be Decommissioned
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location

- 150-Ft APE
- Properties Recommended Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing

- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Parcel Boundary



Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 3.1d

Cultural Resources - Englewood Avenue/Dean Road

Massachusetts Bay Transportation Authority

0 50 100 200 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station
- Page Match Lines
- MBTA Green Line
- Limit of Disturbance
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location
- 150-Ft APE
- Properties Recommended Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Parcel Boundary

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 3.1e

Cultural Resources - Englewood Avenue/Dean Road

BOSTON

BROOKLINE

SALISBURY ROAD

KILSYTH ROAD

ENGLEWOOD AVENUE

WARWICK ROAD

COREY ROAD

BEACON STREET

CLINTON PATH

STRATHMORE ROAD

DEAN ROAD

BKL.411

I

A

J

027

026

025

024

023

021

022

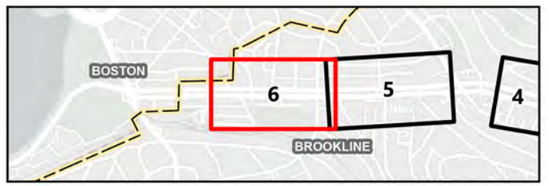
Page 5

Massachusetts Bay Transportation Authority

0 50 100 200 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Accessibility Upgrades
- Proposed New Station
- Station to be Decommissioned
- Station to be Upgraded
- MBTA Station
- Page Match Lines
- MBTA Green Line
- Limit of Disturbance
- Proposed Station Details
- Proposed Pavement Marking
- Platform Location
- 150-Ft APE
- Properties Recommended Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Properties Listed or Determined Eligible for Listing in the National Register
- Properties Recommended Not Eligible for National Register Listing
- Parcel Boundary

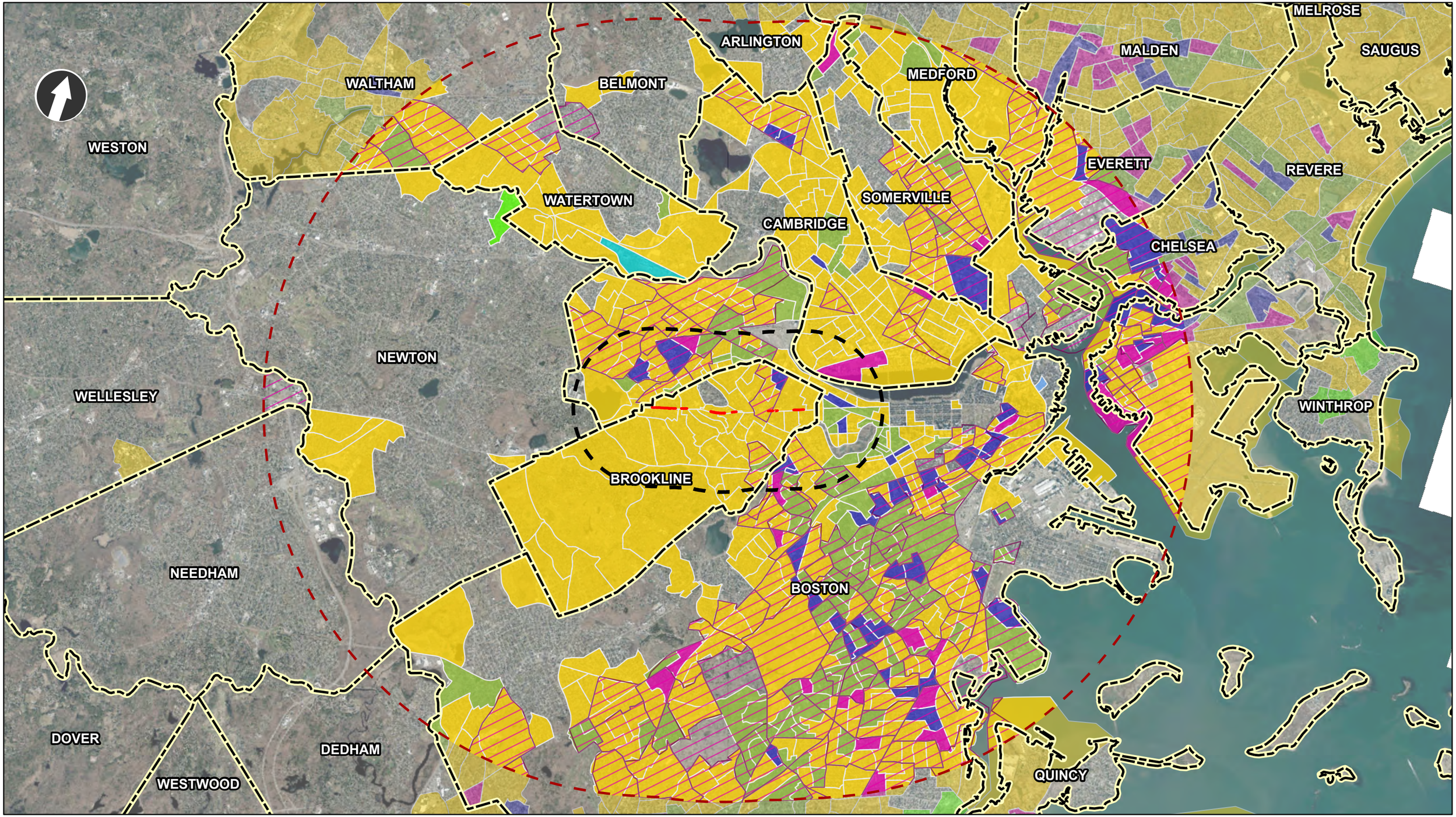


Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Figure 3.1f

Cultural Resources - Englewood Avenue/Dean Road



Massachusetts Bay Transportation Authority

Project Area
Municipal Boundary
Study Area (1-Mile Radius)
Study Area (5-Mile Radius)

MA 2020 Environmental Justice Block Groups
Language isolation
Income
Income and English isolation
Minority
Minority and English isolation
Minority and Income
Minority, Income and English isolation
Census Tract where >5% of the population speaks a language other than English

0 3000 6000 12000 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Green Line C Branch Station Accessibility Upgrades Project
Brookline, Massachusetts
Figure 4.1
Environmental Justice Populations

Attachment 1: EENF/PEIR DISTRIBUTION LIST

EENF/PEIR Distribution List

Below is a list of state and municipal agencies from whom the Proponent will seek permits or approvals, and other parties, as specified in 301 CMR 11.16. Environmental Justice (EJ) Community Based Organizations provided by the MEPA Office as part of the Project-specific EJ Reference List dated July 16, 2024, are also listed below.

State and Regional Agencies and Officials

Executive Office of Energy and Environmental Affairs Attn: Tori Kim, Director of the Massachusetts Environmental Policy Act Office 100 Cambridge Street Boston, MA 02114 MEPA@mass.gov tori.kim@mass.gov	Executive Office of Energy and Environmental Affairs Attn: Environmental Justice Director 100 Cambridge Street Boston, MA 02144 MEPA-EJ@mass.gov
Massachusetts Department of Transportation Public/Private Development Unit 10 Park Plaza Boston, MA 02116 MassDOTPPDU@dot.state.ma.us	Massachusetts Water Resource Authority 100 First Avenue Charlestown Navy Yard Boston, MA 02129 Hillary.Monahan@mwra.com
Department of Environmental Protection One Winter Street Boston, MA 02108 helena.boccadoro@mass.gov	Metropolitan Area Planning Council 60 Temple Place Boston, MA 02111 afelix@mapc.org mpillsbury@mapc.org
Massachusetts Department of Transportation District #6 185 Kneeland Street Boston, MA 02111 michael.garrity@dot.state.ma.us	Department of Environmental Protection Northeast Regional Office 150 Presidential Way Woburn, MA 01801 john.d.viola@mass.gov
Massachusetts Historical Commission[1] 220 Morrissey Boulevard Boston, MA 02125 brona.simon@sec.state.ma.us	

[1] A hardcopy of the EENF/Proposed EIR will be mailed to the Massachusetts Historical Commission.

Town of Brookline

Planning and Community Development Department 333 Washington Street Brookline, MA 02445 kbrewton@brooklinema.gov	Select Board 333 Washington Street Brookline, MA 02445 SelectBoard@brooklinema.gov
Public Health Department 11 Pierce Street Brookline, MA 02445 publichealth@brooklinema.gov	Conservation Commission 333 Washington Street Brookline, MA 02445 tbrady@brooklinema.gov
Department of Public Works 333 Washington Street Brookline, MA 02445 aingles@brooklinema.gov	Preservation Commission 333 Washington Street Brookline, MA 02445 tmccarthy@brooklinema.gov

Environmental Justice Community Based Organizations

Unitarian Universalist Mass Action Network	Chinatown Resident Association
The Trust for Public Land	Browning the Green Space
Community Action Works	Appalachian Mountain Club
Conservation Law Foundation	Environmental League of Massachusetts
Environment Massachusetts	Mass Land Trust Coalition
Clean Water Action	Neighbor to Neighbor Massachusetts
Ocean River Institute	Sierra Club Massachusetts
Mass Audubon	Mystic River Watershed Association
Boston Farms Community Land Trust	Save the Harbor/Save the Bay
Boston Harbor Now	Chinese Progressive Association
Mass Community Labor United	Chinatown Community Land Trust
New England United for Justice	Allston Brighton Health Collaborative
Fairmount/Indigo Line Community Development Corporation Collaborative	Codman Square Neighborhood Development Corporation
Harbor Point Community Task Force	Upham's Corner Main Street
Vietnamese American Initiative for Development	Southwest Boston CDC
GreenRoots, Inc.	Mass Rivers Alliance
Alternatives for Community & Environment	Nuestra Comunidad CDC
Dudley Street Neighborhood Initiative	Charles River Conservancy
Charles River Watershed Assoc.	Neponset River Watershed Association
Coalition for Social Justice	

Federal and State Tribal Organizations

Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan	Chappaquiddick Tribe of the Wampanoag Nation
Wampanoag Tribe of Gay Head (Aquinnah)	Massachusetts Commission on Indian Affairs
Nipmuc Nation (Hassanamisco Nipmucs)	Pocassett Wampanoag Tribe
North American Indian Center of Boston	Massachusetts Tribe at Ponkapoag
Herring Pond Wampanoag Tribe	Mashpee Wampanoag Tribe

Attachment 2 – Regulatory Requirements

Agency/Department	Permit/Approval/Action
Federal	
Federal Transit Administration	National Environmental Policy Act (NEPA) Undocumented Categorical Exclusion
	Section 106 Review
U.S. Environmental Protection Agency	National Pollutant Discharge Elimination System (NPDES) Construction General Permit (if applicable)
	National Pollutant Discharge Elimination System Sector Specific Industrial Multi-Sector General Permit (if applicable)
U.S. Fish and Wildlife Service	Endangered Species Act (Section 7) Determination
State	
Massachusetts Department of Environmental Protection	Massachusetts Contingency Plan Review/Preliminary Determination (if required)
	Environmental Results Program Certification for Emergency Generators
	Asbestos, lead, and PCBS Notification (if required)
Massachusetts Department of Labor and Workforce Development and Division of Occupational Safety	Asbestos, lead, and PCBS Notification (if required)
Executive Office of Energy and Environmental Affairs	Massachusetts Environmental Policy Act Filing
Massachusetts Historical Commission	State Register Review
Massachusetts Water Resources Authority	8(m) Permit
Local	
Town of Brookline	Water, Sewer, or Drain Permit (if required)

Attachment 3 - Climate Change Supporting Documentation

RMAT Reports

- **Hawes Street Station**
- **Saint Paul Street Station/Kent Street Station**
- **Summit Avenue Station/Fairbanks Station/Brandon Hall Station**
- **Tappan Street Station/Englewood Avenue Station/Dean Road Station**

Climate Resilience Design Standards Tool Project Report

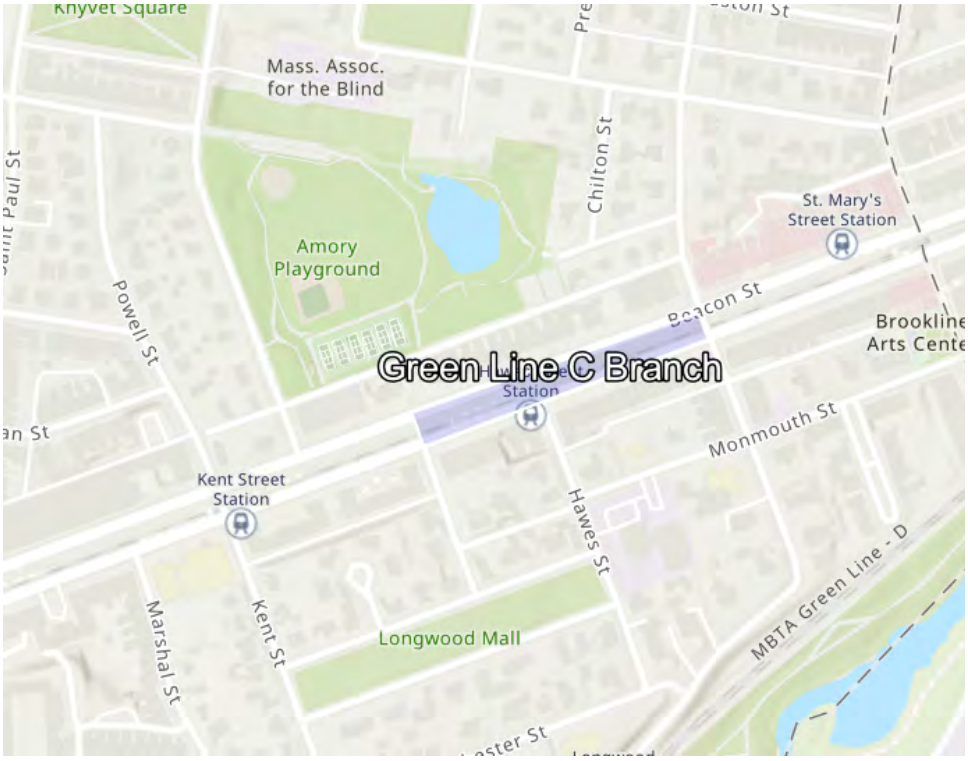
Green Line C Branch Hawes Street
Date Created: 7/15/2024 9:25:28 AM
Created By: MKarasik
Date Report Generated: 9/18/2024 7:37:24 PM
Tool Version: Version 1.2
Project Contact Information: Michael Karasik (mkarasik@vhb.com)

Project Summary

Link to Project

Estimated Capital Cost: $5000000.00
End of Useful Life Year: 2078
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	Moderate Exposure
Extreme Heat	High Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
MBTA Facilities	Low Risk	High Risk	Moderate Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
MBTA Facilities					
Extreme Precipitation					
MBTA Facilities	2070			25-yr (4%)	Tier 3
Extreme Heat					
MBTA Facilities	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- Existing impervious area of the project site is greater than 50%
- No historic flooding at project site
- No increase to impervious area

Extreme Precipitation - Riverine Flooding

This project received a "Moderate Exposure" because of the following:

- Part of the project is within 500ft of a waterbody and less than 20ft above the waterbody
- No historic riverine flooding at project site
- The project is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)]
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Not located within 100 ft of existing water body
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is greater than 50%
- No increase to the impervious area of the project site

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - MBTA Facilities
Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Less than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would be expected to cause a loss of confidence in government agency
- Cost to replace is less than $10 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: MBTA Facilities — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 25-yr (4%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
MBTA Facilities	2070	25-Year (4%)	8.6	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	Green Line C Branch Hawes Street
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2078
Location of Project:	Brookline
Estimated Capital Cost:	$5,000,000
Who is the Submitting Entity?	State Agency Massachusetts Department of Transportation Michael Karasik (mkarasik@vhb.com)
Is this project identified as an agency priority project, such as in the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP)?	No
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	The Project will improve conditions for seven station locations on the C Branch in the Town of Brookline to achieve accessibility by widening platforms and improving pedestrian access and egress from the stations. The project requires MEPA review.

Project Submission Comments:

Project Ecosystem Service Benefits

No Ecosystem Service Benefits are provided by this project

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that improve water quality
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Identify opportunities to remediate existing sources of pollution
- ✓ Provide opportunities for passive and/or active recreation through open space
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No

Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: MBTA Facilities
Asset Type: Transportation
Asset Sub-Type: Railways (rail and rapid transit)
Construction Type: Major Repair/Retrofit
Construction Year: 2028
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be limited to local area and/or municipality

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Less than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Minor – Inoperability will not likely affect other facilities, assets, or buildings

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Less than $10 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure is not expected to reduce the ability to maintain government services

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Loss of confidence in government agency

Report Comments

N/A

Climate Resilience Design Standards Tool Project Report

Green Line C Branch St.Paul/Kent
Date Created: 7/16/2024 1:56:05 PM
Date Report Generated: 9/18/2024 7:39:20 PM
Project Contact Information: Michael Karasik (mkarasik@vhb.com)

Created By: MKarasik
Tool Version: Version 1.2

Project Summary

Link to Project

Estimated Capital Cost: $5000000.00
End of Useful Life Year: 2078
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	Not Exposed
Extreme Heat	High Exposure

Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
MBTA Facilities	Low Risk	High Risk	Low Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
MBTA Facilities					
Extreme Precipitation					
MBTA Facilities	2070			25-yr (4%)	Tier 3
Extreme Heat					
MBTA Facilities	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- Existing impervious area of the project site is greater than 50%
- No historic flooding at project site
- No increase to impervious area

Extreme Precipitation - Riverine Flooding

This project received a "Not Exposed" because of the following:

- No historic riverine flooding at project site
- The project is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)]
- Project is more than 500ft from a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Not located within 100 ft of existing water body
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is greater than 50%
- No increase to the impervious area of the project site

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - MBTA Facilities
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Less than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would be expected to cause a loss of confidence in government agency
- Cost to replace is less than $10 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: MBTA Facilities — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 25-yr (4%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
MBTA Facilities	2070	25-Year (4%)	8.6	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: NOT APPLICABLE

Extreme Heat — High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	Green Line C Branch St.Paul/Kent
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2078
Location of Project:	Brookline
Estimated Capital Cost:	$5,000,000
Who is the Submitting Entity?	State Agency Massachusetts Department of Transportation Michael Karasik (mkarasik@vhb.com)
Is this project identified as an agency priority project, such as in the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP)?	No
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	The Project will improve conditions for seven station locations on the C Branch in the Town of Brookline to achieve accessibility by widening platforms and improving pedestrian access and egress from the stations. The project requires MEPA review.
Project Submission Comments:	

Project Ecosystem Service Benefits

No Ecosystem Service Benefits are provided by this project

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that improve water quality
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Identify opportunities to remediate existing sources of pollution
- ✓ Provide opportunities for passive and/or active recreation through open space
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No

Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: MBTA Facilities
Asset Type: Transportation
Asset Sub-Type: Railways (rail and rapid transit)
Construction Type: Major Repair/Retrofit
Construction Year: 2028
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be limited to local area and/or municipality

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Less than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Minor – Inoperability will not likely affect other facilities, assets, or buildings

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Less than $10 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure is not expected to reduce the ability to maintain government services

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Loss of confidence in government agency

Report Comments

N/A

Climate Resilience Design Standards Tool Project Report

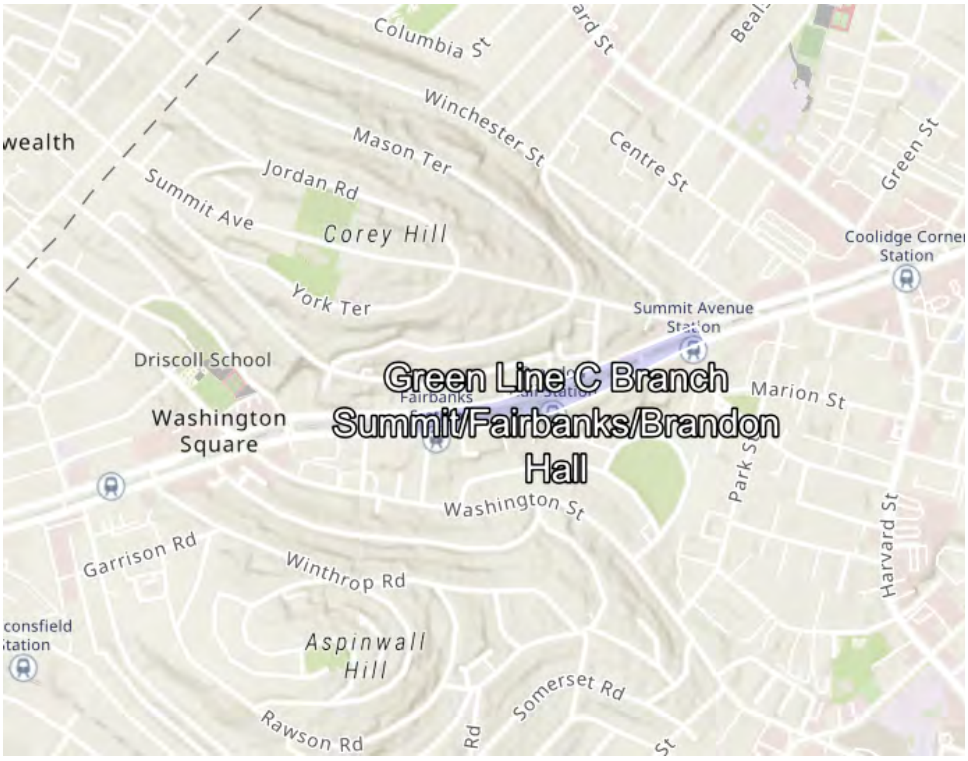
Green Line C Branch Summit/Fairbanks/Brandon Hall
Date Created: 7/16/2024 1:59:09 PM
Created By: MKarasik
Date Report Generated: 9/18/2024 7:38:15 PM
Tool Version: Version 1.2
Project Contact Information: Michael Karasik (mkarasik@vhb.com)

Project Summary

Link to Project

Estimated Capital Cost: $5000000.00
End of Useful Life Year: 2078
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	Not Exposed
Extreme Heat	High Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
MBTA Facilities	Low Risk	High Risk	Low Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
MBTA Facilities					
Extreme Precipitation					
MBTA Facilities	2070			25-yr (4%)	Tier 3
Extreme Heat					
MBTA Facilities	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- Existing impervious area of the project site is greater than 50%
- No historic flooding at project site
- No increase to impervious area

Extreme Precipitation - Riverine Flooding

This project received a "Not Exposed" because of the following:

- No historic riverine flooding at project site
- The project is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)]
- Project is more than 500ft from a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Not located within 100 ft of existing water body
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is greater than 50%
- No increase to the impervious area of the project site

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - MBTA Facilities
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Less than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would be expected to cause a loss of confidence in government agency
- Cost to replace is less than $10 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: MBTA Facilities — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 25-yr (4%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
MBTA Facilities	2070	25-Year (4%)	8.6	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: NOT APPLICABLE

Extreme Heat — High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	Green Line C Branch Summit/Fairbanks/Brandon Hall
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2078
Location of Project:	Brookline
Estimated Capital Cost:	$5,000,000
Who is the Submitting Entity?	State Agency Massachusetts Department of Transportation Michael Karasik (mkarasik@vhb.com)
Is this project identified as an agency priority project, such as in the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP)?	No
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	The Project will improve conditions for seven station locations on the C Branch in the Town of Brookline to achieve accessibility by widening platforms and improving pedestrian access and egress from the stations. The project requires MEPA review.
Project Submission Comments:	

Project Ecosystem Service Benefits

No Ecosystem Service Benefits are provided by this project

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that improve water quality
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Identify opportunities to remediate existing sources of pollution
- ✓ Provide opportunities for passive and/or active recreation through open space
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No

Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: MBTA Facilities
Asset Type: Transportation
Asset Sub-Type: Railways (rail and rapid transit)
Construction Type: Major Repair/Retrofit
Construction Year: 2028
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be limited to local area and/or municipality

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Less than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Minor – Inoperability will not likely affect other facilities, assets, or buildings

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Less than $10 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure is not expected to reduce the ability to maintain government services

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Loss of confidence in government agency

Report Comments

N/A

Climate Resilience Design Standards Tool Project Report

Green Line C Branch Tappan/Englewood/Dean
Date Created: 7/16/2024 3:01:51 PM
Created By: MKarasik
Date Report Generated: 9/18/2024 5:21:48 PM
Tool Version: Version 1.2
Project Contact Information: Michael Karasik (mkarasik@vhb.com)

Project Summary

Link to Project

Estimated Capital Cost: $5000000.00
End of Useful Life Year: 2078
Project within mapped Environmental Justice neighborhood: Yes

Ecosystem Service Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	Not Exposed
Extreme Heat	High Exposure

Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
MBTA Facilities	Low Risk	High Risk	Low Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
MBTA Facilities					
Extreme Precipitation					
MBTA Facilities	2070			25-yr (4%)	Tier 3
Extreme Heat					
MBTA Facilities	2070		50th		Tier 3

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- Existing impervious area of the project site is greater than 50%
- No historic flooding at project site
- No increase to impervious area

Extreme Precipitation - Riverine Flooding

This project received a "Not Exposed" because of the following:

- No historic riverine flooding at project site
- The project is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)]
- Project is more than 500ft from a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Not located within 100 ft of existing water body
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is greater than 50%
- No increase to the impervious area of the project site

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - MBTA Facilities
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Less than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would be expected to cause a loss of confidence in government agency
- Cost to replace is less than $10 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: MBTA Facilities — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 25-yr (4%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
MBTA Facilities	2070	25-Year (4%)	8.6	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: NOT APPLICABLE

Extreme Heat — High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	Green Line C Branch Tappan/Englewood/Dean
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2078
Location of Project:	Brookline
Estimated Capital Cost:	$5,000,000
Who is the Submitting Entity?	State Agency Massachusetts Department of Transportation Michael Karasik (mkarasik@vhb.com)
Is this project identified as an agency priority project, such as in the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP)?	No
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	The Project will improve conditions for seven station locations on the C Branch in the Town of Brookline to achieve accessibility by widening platforms and improving pedestrian access and egress from the stations. The project requires MEPA review.
Project Submission Comments:	

Project Ecosystem Service Benefits

No Ecosystem Service Benefits are provided by this project

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that improve water quality
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Identify opportunities to remediate existing sources of pollution
- ✓ Provide opportunities for passive and/or active recreation through open space
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No

Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: MBTA Facilities
Asset Type: Transportation
Asset Sub-Type: Railways (rail and rapid transit)
Construction Type: Major Repair/Retrofit
Construction Year: 2028
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be limited to local area and/or municipality

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Less than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?
No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Minor – Inoperability will not likely affect other facilities, assets, or buildings

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Less than $10 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure is not expected to reduce the ability to maintain government services

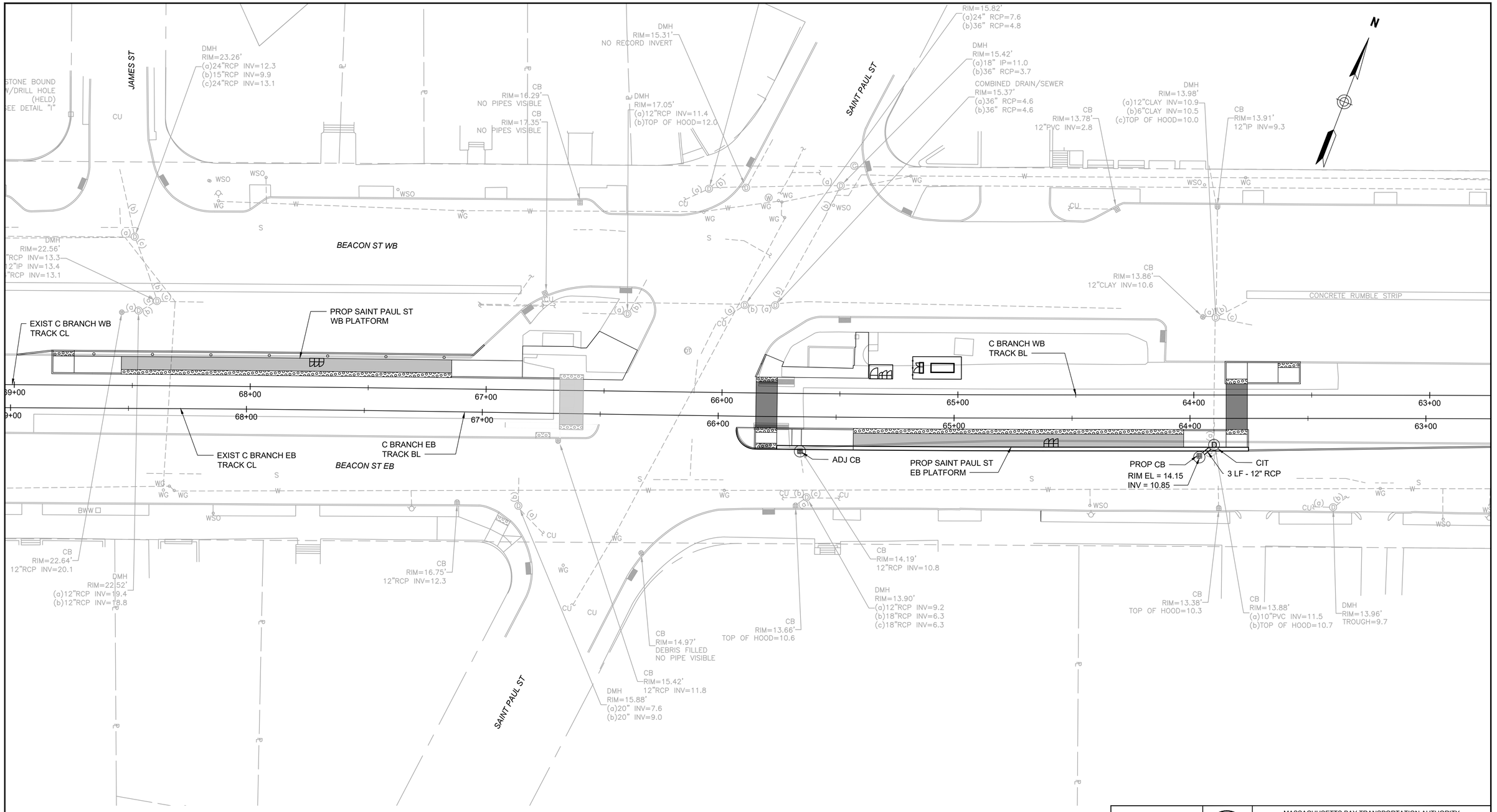
What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Loss of confidence in government agency

Report Comments

N/A

Attachment 4: Stormwater Management Supporting Documentation

- **Saint Paul Street Station**
- **Tappan Street Station**
- **Dean Road Station**



0 20 50 100

SCALE: 1" = 20'

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

GREEN LINE

C BRANCH STATION ACCESSIBILITY UPGRADES PROJECT
MBTA CONTRACT NO. Z91PS25, TASK ORDER 11

DRAINAGE PLAN
SAINT PAUL ST STATION

ISSUE	DATE	DESCRIPTION	BY	CHKD.	APP.

PRELIMINARY DESIGN

HORIZ: AS NOTED	DES. BY	DR. BY	CHK. BY	PLAN NO.	ISSUE
VERT: AS NOTED	JS	AG	EM		
DATE: 5/23/2024				SHEET: C-110	

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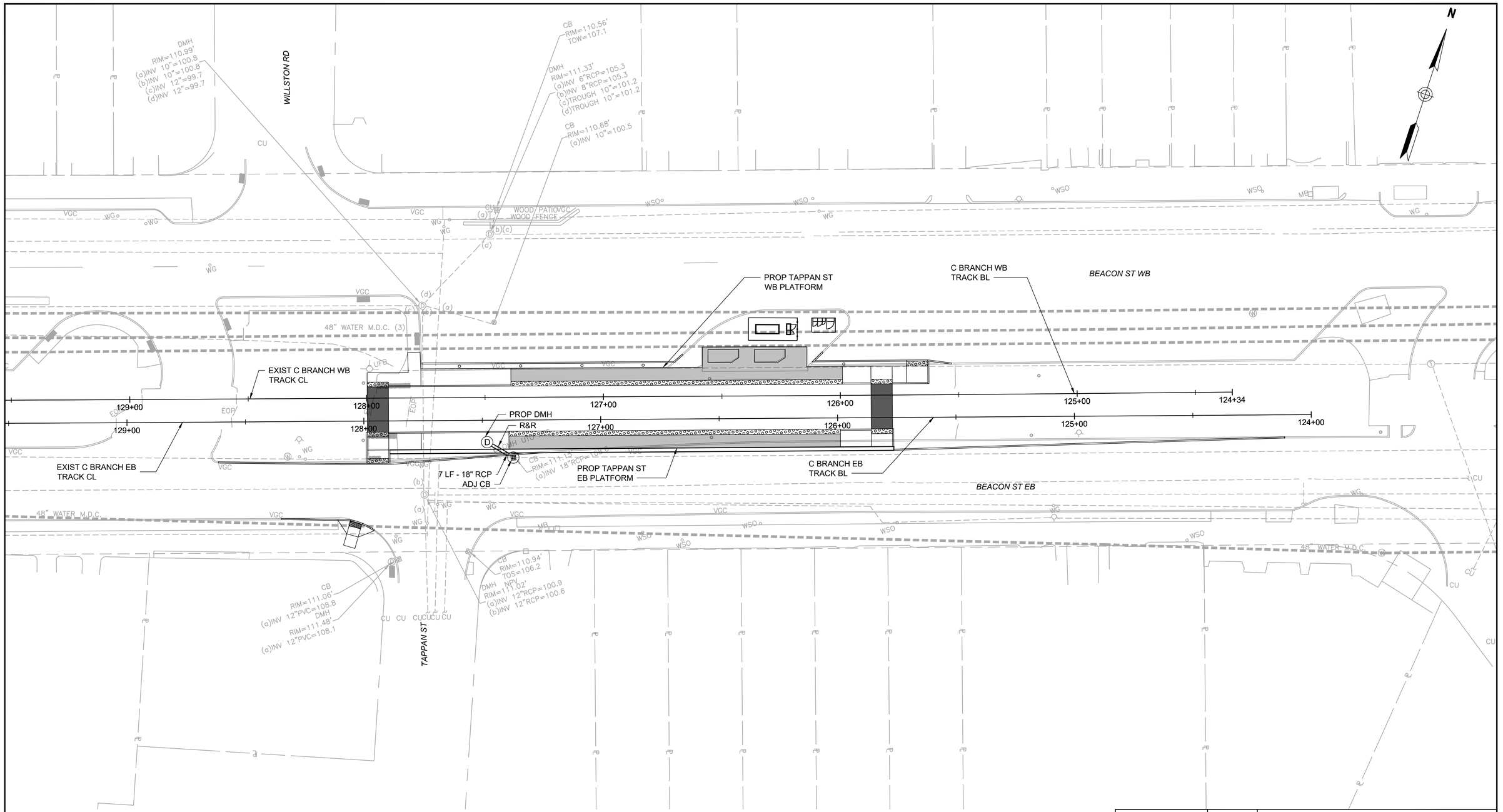

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

GREEN LINE

C BRANCH STATION ACCESSIBILITY UPGRADES PROJECT
MBTA CONTRACT NO. Z91PS25, TASK ORDER 11

DRAINAGE PLAN
TAPPAN ST STATION

ISSUE	DATE	DESCRIPTION	BY	CHKD.	APP.

PRELIMINARY DESIGN

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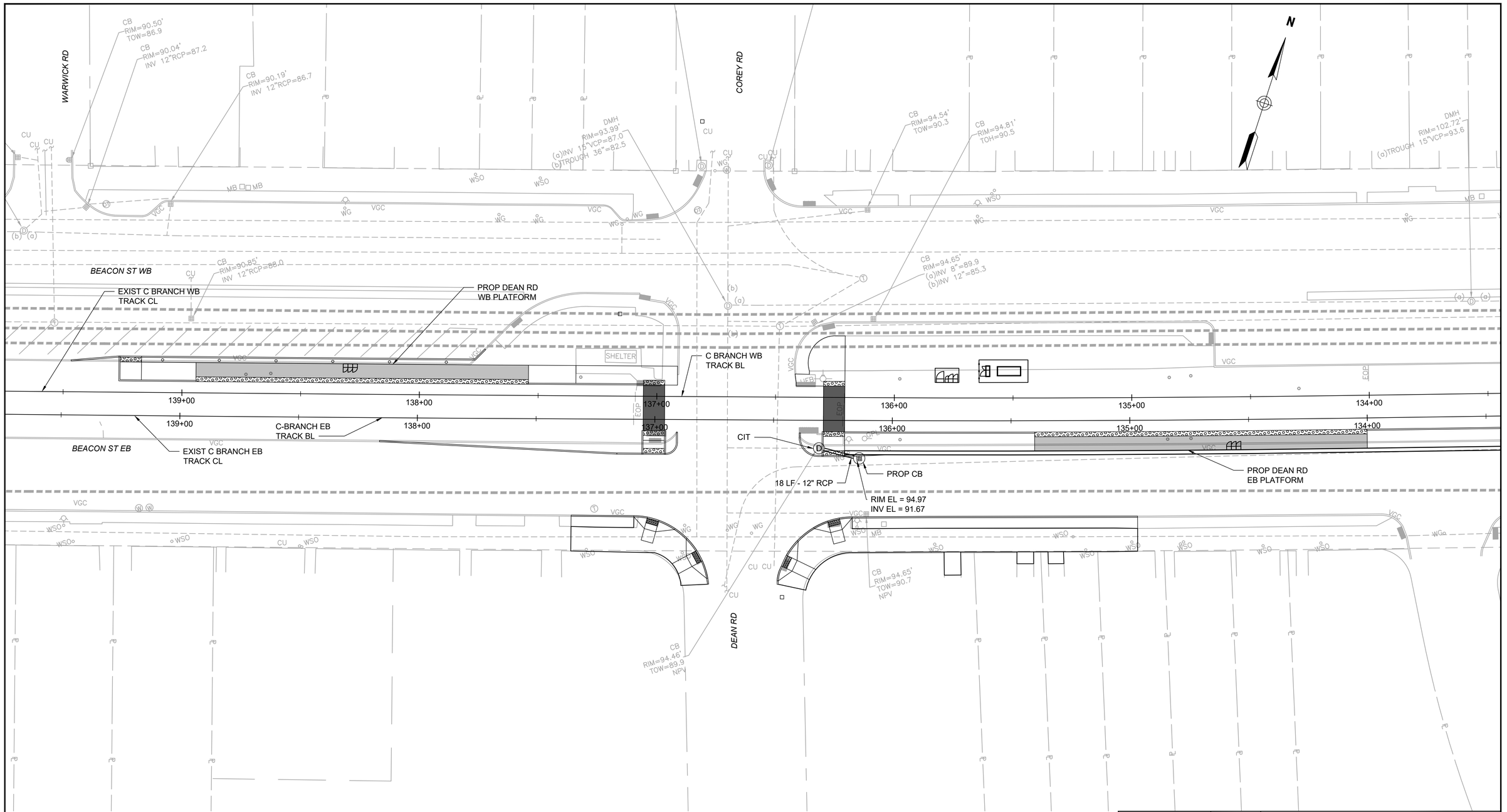

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

GREEN LINE

C BRANCH STATION ACCESSIBILITY UPGRADES PROJECT
MBTA CONTRACT NO. Z91PS25, TASK ORDER 11

DRAINAGE PLAN
DEAN RD STATION

ISSUE	DATE	DESCRIPTION	BY	CHKD.	APP.

PRELIMINARY DESIGN

HORIZ: AS NOTED	DES. BY: JS	DR. BY: AG	CHK. BY: EM	PLAN NO.	ISSUE
VERT: AS NOTED					
DATE: 5/23/2024				SHEET: C-112	

Attachment 5: Environmental Justice and Public Health Supporting Documentation

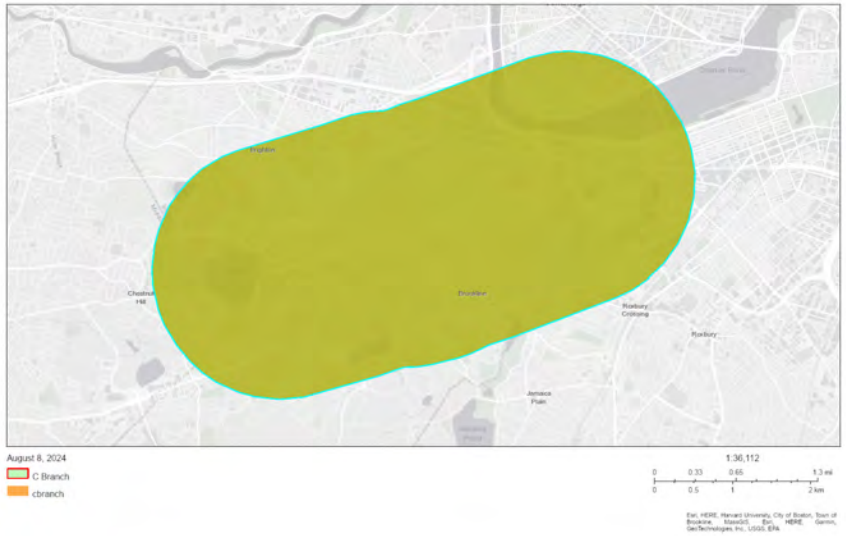
- **EPA EJ Screen Community Report**
- **EJ Screening Form**
- **Public Involvement Plan**

EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

Brookline, MA

the User Specified Area
Population: 156,875
Area in square miles: 8.13



COMMUNITY INFORMATION

- Low income: 30 percent
- People of color: 40 percent
- Less than high school education: 4 percent
- Limited English households: 10 percent
- Unemployment: 6 percent
- Persons with disabilities: 9 percent
- Male: 47 percent
- Female: 53 percent
- 82 years — Average life expectancy
- N/A — Per capita income
- Number of households: 62,631
- Owner occupied: 25 percent

BREAKDOWN BY RACE

- White: 60%
- Black: 5%
- American Indian: 0%
- Asian: 19%
- Hawaiian/Pacific Islander: 0%
- Other race: 1%
- Two or more races: 5%
- Hispanic: 10%

BREAKDOWN BY AGE

LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	65%
Spanish	8%
French, Haitian, or Cajun	2%
German or other West Germanic	1%

Russian, Polish, or Other Slavic	3%
Other Indo-European	6%
Korean	1%
Chinese (including Mandarin, Cantonese)	8%
Vietnamese	1%
Other Asian and Pacific Island	3%
Arabic	1%
Other and Unspecified	2%
Total Non-English	35%

From Ages 1 to 4	3%
From Ages 1 to 18	9%
From Ages 18 and up	91%
From Ages 65 and up	10%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	11%
Speak Other Indo-European Languages	38%
Speak Asian-Pacific Island Languages	49%
Speak Other Languages	1%

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2018-2022. Life expectancy data comes from the Centers for Disease Control.

Report for the User Specified Area

Report produced August 8, 2024 using EJScreen Version 2.3

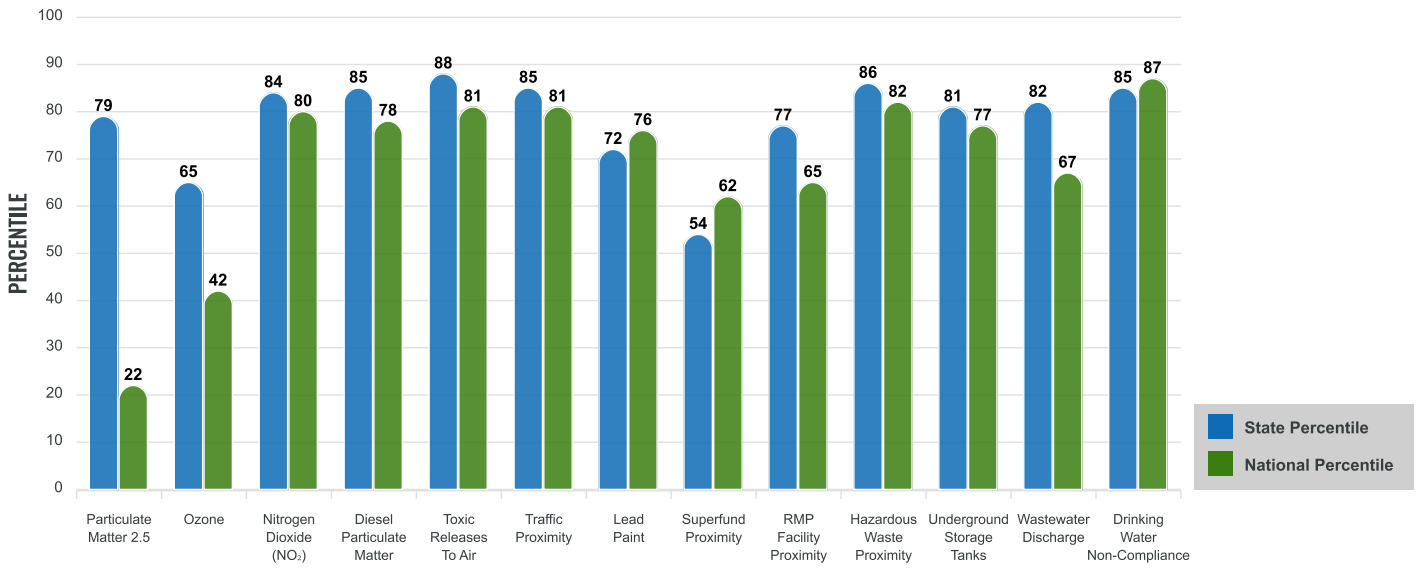
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

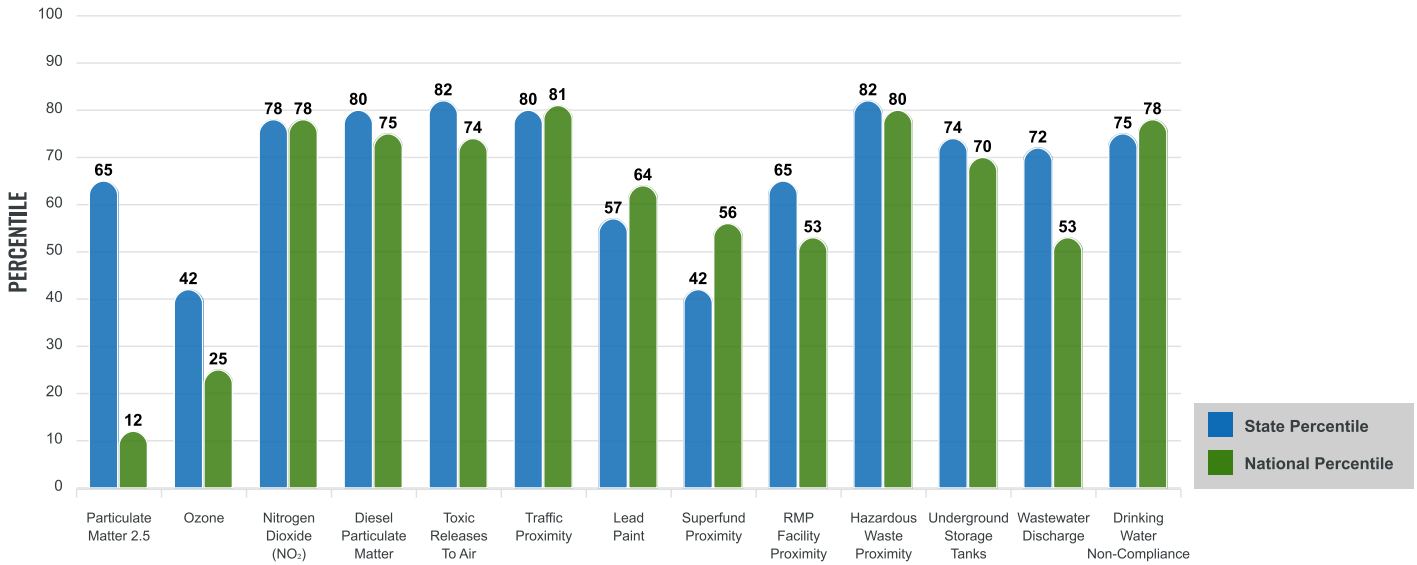
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low income, percent persons with disabilities, percent less than high school education, percent limited English speaking, and percent low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



Report for the User Specified Area

Report produced August 8, 2024 using EJScreen Version 2.3

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
ENVIRONMENTAL BURDEN INDICATORS					
Particulate Matter 2.5 ($\mu g/m^3$)	6.63	6.52	59	8.45	12
Ozone (ppb)	55.7	56.7	36	61.8	26
Nitrogen Dioxide (NO_2) (ppbv)	16	8.8	94	7.8	97
Diesel Particulate Matter ($\mu g/m^3$)	0.341	0.176	91	0.191	88
Toxic Releases to Air (toxicity-weighted concentration)	4,500	2,800	88	4,600	85
Traffic Proximity (daily traffic count/distance to road)	16,000,000	6,100,000	94	1,700,000	99
Lead Paint (% Pre-1960 Housing)	0.58	0.51	56	0.3	79
Superfund Proximity (site count/km distance)	0.052	0.34	40	0.39	56
RMP Facility Proximity (facility count/km distance)	0.35	0.37	65	0.57	55
Hazardous Waste Proximity (facility count/km distance)	47	11	96	3.5	99
Underground Storage Tanks (count/km^2)	9.5	3.3	91	3.6	89
Wastewater Discharge (toxicity-weighted concentration/m distance)	110	760	73	700000	56
Drinking Water Non-Compliance (points)	6.7	3.2	79	2.2	91
SOCIOECONOMIC INDICATORS					
Demographic Index USA	1.39	N/A	N/A	1.34	59
Supplemental Demographic Index USA	1.33	N/A	N/A	1.64	36
Demographic Index State	1.62	1.19	74	N/A	N/A
Supplemental Demographic Index State	1.41	1.52	54	N/A	N/A
People of Color	40%	31%	70	40%	58
Low Income	30%	22%	73	30%	56
Unemployment Rate	6%	5%	69	6%	68
Limited English Speaking Households	10%	6%	78	5%	84
Less Than High School Education	4%	9%	41	11%	31
Under Age 5	3%	5%	36	5%	31
Over Age 64	10%	18%	24	18%	26

*Diesel particulate matter index is from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund 0

Other community features within defined area:

Schools 23

Hazardous Waste, Treatment, Storage, and Disposal Facilities	27
Water Dischargers	125
Air Pollution	85
Brownfields	0
Toxic Release Inventory	6

Hospitals	23
Places of Worship	69

Other environmental data:

Air Non-attainment	Yes
Impaired Waters	Yes

Selected location contains American Indian Reservation Lands*	No
Selected location contains a "Justice40 (CEJST)" disadvantaged community	Yes
Selected location contains an EPA IRA disadvantaged community	Yes

Report for the User Specified Area

Report produced August 8, 2024 using EJScreen Version 2.3

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS

INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	9%	17%	0	20%	0
Heart Disease	2.8	5.2	4	5.8	3
Asthma	11.1	11.2	52	10.3	74
Cancer	3.9	6.9	4	6.4	7
Persons with Disabilities	8.8%	12.1%	27	13.7%	21

CLIMATE INDICATORS

INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	22%	12%	85	12%	86
Wildfire Risk	0%	0%	0	14%	0

CRITICAL SERVICE GAPS

INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	8%	9%	55	13%	43
Lack of Health Insurance	2%	3%	53	9%	14
Housing Burden	Yes	N/A	N/A	N/A	N/A
Transportation Access Burden	Yes	N/A	N/A	N/A	N/A
Food Desert	Yes	N/A	N/A	N/A	N/A

Report for the User Specified Area

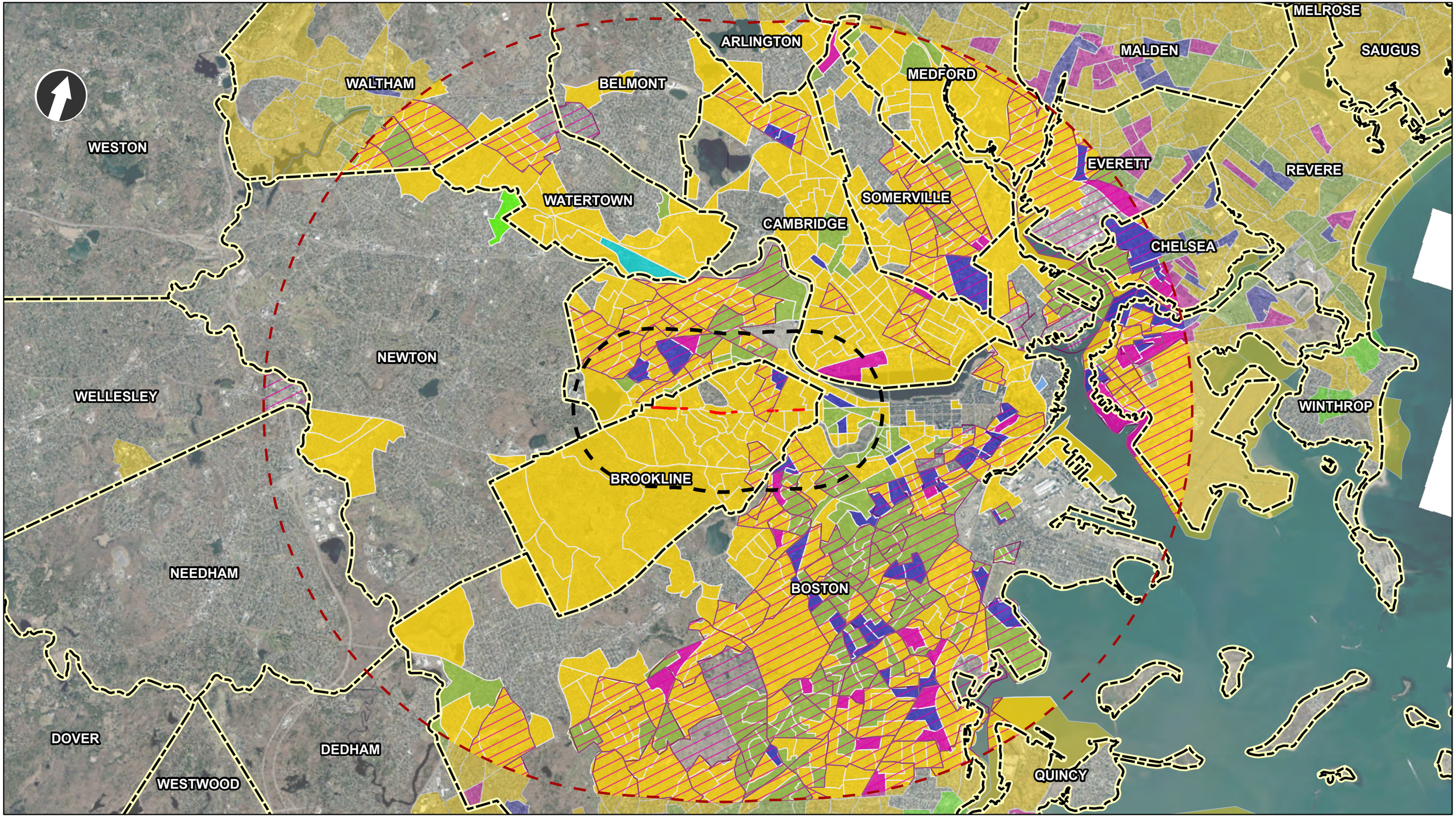
Report produced August 8, 2024 using EJScreen Version 2.3

ENVIRONMENTAL JUSTICE SCREENING FORM

Project Name	Green Line C Branch Station Accessibility Upgrades Project (Project)
Anticipated Filing Date	December 16, 2024
Proponent Name	Massachusetts Bay Transportation Authority (MBTA)
Contact Information	Tess Paganelli (tpaganelli@mbta.com)
Project Website	C Branch Station Accessibility Improvements | Projects | MBTA https://www.mbta.com/projects/c-branch-station-accessibility-improvements
Municipality	Within Limit of Disturbance (LOD): Town of Brookline Within 1 Mile of the LOD, or the Designated Geographic Area (DGA): Boston, Brookline, Cambridge, and Newton
Project Type	Transportation – Roadways/Transit
Project Description	The purpose of the Project is to create accessible station platforms for seven station locations along Beacon Street in the Town of Brookline on the MBTA Green Line C Branch. The stations included are Hawes Street, Kent Street (to be consolidated at the existing Saint Paul Street station location), Saint Paul Street, Summit Avenue, Fairbanks Street (consolidated with Brandon Hall at a midpoint between stations), Brandon Hall (consolidated with Fairbanks Street at a midpoint between stations), Tappan Street, Dean Road, and Englewood Avenue. The Project involves accessibility improvements at these C Branch station platforms. Measures include raising platform heights to 8 inches above the rail and extending platforms to a minimum 140 feet in length. Platform widths will be increased to a minimum of 7 feet 6 inches, and sloped walkways will ensure access to the raised platforms. Safety enhancements include constructing at least two means of egress from each platform, adjusting roadway and street parking layouts, and installing wayfinding and lighting consistent with MBTA standards.
MEPA Review Threshold	The Project exceeds the following Environmental Notification Form review threshold: *310 CMR 11.03(6)(b)2.b. – Construction, widening or maintenance of a roadway or its right-of-way that will cut five or more living public shade trees of 14 or more inches in diameter at breast height.* An Environmental Impact Report (EIR) is required as the Project Area is within 1 mile of EJ populations.
FEMA Floodplain	The Project Area is not within the FEMA-mapped Floodplain.
Estimated Building GHG Emissions	The Project will not alter operations that generate GHG emissions. The Project involves creating accessible station platforms and making infrastructure adjustments on the MBTA Green Line C Branch, which will not affect the frequency or capacity of transit operations, thus not influencing GHG emissions.
Anticipated Permits and Approvals	• U.S. Environmental Protection Agency (EPA) – National Pollutant Discharge Elimination System (NPDES) Construction General Permit (if applicable) • U.S. EPA –National Pollutant Discharge Elimination System Sector Specific Industrial Multi-Sector General Permit (if applicable)

	• Federal Transit Administration (FTA) – Section 106 Review and Finding • FTA – National Environmental Policy Act (NEPA) Undocumented Categorical Exclusion • FTA and U.S. Fish and Wildlife Service – Endangered Species Act (Section 7) • Massachusetts Historical Commission (MHC) – Section 106 Review and Finding • Massachusetts Department of Environmental Protection (MassDEP) – Massachusetts Contingency Plan Review/Preliminary Determination • MassDEP – Environmental Results Program Certification for Emergency Generators • Massachusetts Water Resources Authority – 8(m) Permit
Environmental Justice Populations	There are 157 Environmental Justice (EJ) populations within a 1-mile radius of the Project, as listed below by EJ criteria. Please refer to the attached EJ Map for the EJ populations within the DGA (a 1-mile radius) and a 5-mile radius. *Block group is abbreviated as BG and Census Tract is abbreviated as CT.*
Vulnerable Health EJ Criteria	The Massachusetts Department of Public Health (DPH) EJ Tool indicates that census block groups within 1 mile of the Project Site meet the Vulnerable Health EJ criteria for elevated blood lead (13) or low birth weight (12). The Massachusetts DPH EJ Tool indicates that within the DGA, the City of Boston does not meet the Vulnerable Health EJ criteria for heart attack or childhood blood lead, but does meet the criteria for childhood asthma and low birth weight. does not meet any Vulnerable Health EJ Criteria. The Town of Brookline, City of Cambridge, and the City of Newton do not exhibit any Vulnerable Health EJ Criteria.
Project Benefits	The following anticipated Project benefits are expected to affect both EJ and non-EJ populations: • Accessible stations that offer light rail train boarding platforms that support roll-on access between the platforms and the train floor; • Improved reliability and overall quality of service for all riders and communities served by the Green Line C Branch; • Enhanced station accessibility across the ROW for all riders and communities; • Sidewalk and crosswalk improvements will provide better access for pedestrians; and • Improved safety and accessibility for passengers by constructing at least two ways to exit each platform to nearby public areas, providing more exit routes in emergencies, and enhancing overall station accessibility for all riders.
Potential Impacts to EJ Populations	The following Project impacts could affect both EJ and non-EJ populations: • Roadway lanes will be adjusted to accommodate wider station platforms; • Loss of Town of Brookline parking spots is anticipated, with replacement of all impacted accessible parking spaces;

	• Parking impacts along Beacon Street during construction are anticipated. Potential temporary impacts to traffic operations due to construction, including station closures or bypasses, bus diversions, and short-term (workday) lane restrictions, will be minimized through a diversion service plan and a traffic control and detour plan; • Construction will be within MBTA property, with no long-term increase in vehicle traffic anticipated,; • Encounters with contaminated soil and groundwater may occur during construction but will be properly managed with a soil and groundwater management plan; • Temporary air quality impacts due to construction may occur but will be kept to a minimum through an emissions control plan; and • Temporary noise impacts due to construction may occur but will be kept to a minimum through abatement measures.
How to Request Additional Information	Community members can request: • A meeting to discuss the Project; • Additional language translation and interpretation services; and/or • Other accommodations, including meetings after business hours and/or at locations near public transportation. Please call (617) 549-4357 or email Tess Paganelli (tpaganelli@mbta.com) to make a request.



Massachusetts Bay Transportation Authority

Project Area
Municipal Boundary
Study Area (1-Mile Radius)
Study Area (5-Mile Radius)

MA 2020 Environmental Justice Block Groups
Language isolation
Income
Income and English isolation
Minority
Minority and English isolation
Minority and Income
Minority, Income and English isolation
Census Tract where >5% of the population speaks a language other than English

0 3000 6000 12000 Feet

Source: MassGIS, Nearmap
Aerial Date: October 2023

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Environmental Justice Populations

Green Line C Branch Station Accessibility Upgrades Project

Brookline, Massachusetts

Public Involvement Plan

Introduction

The Massachusetts Bay Transportation Authority (MBTA) has developed this Public Involvement Plan (PIP) for the Green Line C Branch Station Accessibility Upgrades Project (Project) that frames the outreach by the MBTA to the Town of Brookline, local stakeholders, environmental justice (EJ) populations, and other interested parties. The PIP has been created to outline the outreach strategies of the Project as it is reviewed by the Massachusetts Environmental Policy Act (MEPA) Office. In accordance with the *MEPA Public Involvement Protocol for Environmental Justice Populations,* this PIP identifies enhanced public engagement with local community organizations and EJ populations in proximity to the Project.

Project Overview

According to a letter from the Federal Transit Administration (FTA) dated October 2020, the track replacement work that the MBTA performed at several inaccessible Green Line station platforms triggered an Americans with Disabilities Act (ADA) compliance requirement, including nine C Branch stations listed below. This Project aims to bring those nine station locations into compliance with FTA, ADA, National Fire Protection Association (NFPA), Massachusetts Architectural Access Board (MAAB), and all applicable MBTA regulations, guidelines, and design directives.

The Project will improve conditions for nine station locations located in the Town of Brookline to achieve accessibility by widening platforms and improving pedestrian access and egress from the stations.

The following Green Line C Branch stations will undergo accessibility improvements:

- Hawes Street Station
- Kent Street (to be decommissioned)
- Saint Paul Street Station
- Summit Avenue Station
- Fairbanks Street Station (consolidated with Brandon Hall Station)
- Brandon Hall Station (consolidated with Fairbanks Street Station)
- Tappan Street Station
- Dean Road Station
- Englewood Avenue Station

Public Involvement Plan Framework

The MBTA has developed a robust public involvement and outreach plan that is inclusive and welcomes participation from communities, riders, and abutters. The Project's outreach will prioritize **municipal coordination**, **notification and communication**, **public meetings**, and **physical signage**.

Multiple strategies and tools for communicating information and gathering input will broaden the reach of this Project and offer community members ways to participate at times and in locations that are convenient. The outreach program is designed to meet the needs of the public, stakeholders, and the EJ communities affected by the Project.

Municipal Coordination

The MBTA has performed outreach with the Town of Brookline to discuss major aspects of the Project including, but not limited to, station consolidation, MBTA station design, roadway cross section, and construction sequencing.

Starting in 2020, the MBTA has held monthly meetings with Town of Brookline officials, including the Department of Public Works and the Transportation Board, to drive the design of the Project and goals of the Town of Brookline.

The MBTA has also held the following public meetings on the Green Line activities:

- Brookline Transportation Board, open meeting (virtual), February 14, 2024
  - A presentation on the Project was provided during this meeting by MBTA staff. There were board member and public comments on tree removal, accessible parking spaces, platform height in relation to the future Type 10 train cars, construction period impacts, and community engagement.
- Open House at Brookline Public Library, Coolidge Corner, (in-person) February 15, 2024
  - This meeting was attended by approximately 22 residents and discussed travel time, tree removal, user-friendly signage, lighting improvements, seating, and the construction period impacts.
- Brookline Transportation Board, open meeting (virtual), July 17, 2024
  - This meeting included a presentation and discussion on the Project including station consolidation and impacts to parking and trees on Beacon Street.
  - The Project team responded to comments on tree removal, parking space impacts, pedestrian safety, changes in travel time, and heat island effect.
- Commission on Disabilities (virtual) September 11, 2024

The MBTA will continue to identify the most effective strategies for reaching interested parties. Additional input from the Town of Brookline and stakeholders will be needed to finalize the design. The final designer will coordinate with the Town of Brookline on an ongoing basis and hold a public meeting at each major phase of design.

Notification and Communications Strategy

The Project's outreach effort aims to engage the public on various fronts, including:

- Local and state officials
- Community Based-Organizations (CBOs), federal Tribes, and Indigenous organizations, as identified in the EJ Reference List provided by the MEPA Office
- Targeted local community groups, particularly in Brookline and Boston
- Transportation advocacy groups
- Green Line customers
- Bike and pedestrian groups
- Abutters, local residents, and business owners affected by construction
- Educational institutions

- Agencies and organizations related to accessibility
- Individuals who request to be added to the database as part of the MEPA review process

To reach the greatest number of interested parties, the MBTA will use various methods of outreach listed below.

- Development of clear and targeted printed and electronic materials that describe the Project and provide opportunities to learn about it. Such materials can be shared in briefings, public meetings, and through email.
- Employment of a Project-specific email address as the primary contact for all Project-related questions and comments.
- Distribution of the EJ Screening Form to the EJ CBO List on November 1, 2024.
- Translation of Project documents into appropriate languages as identified by the Languages Spoken in Massachusetts tab of the Environmental Justice Populations in Massachusetts map.
    - Languages identified include Spanish, Chinese, and Russian.
- Publication of public notices in local newspapers.
- Development of a Project website with information pertaining to design elements, construction schedule, transit service impacts, public filings, as well as a mechanism to collect feedback. The website can be accessed through the following link: https://www.mbta.com/projects/c-branch-station-accessibility-improvements
- Distribution and translation of babel notices with contact information and ways to obtain more information.
- Real-time Project information/updates to be posted on the MBTA social media sites, including Facebook, X (formerly known as Twitter), Blog, YouTube, and Flickr, as directed by the MBTA.
- Circulation of notices of the MEPA Site Visit and any other relevant notices.
- Virtual and in-person public meetings that include interpreters for locally spoken languages to be held.
- Development of a public engagement survey that targets populations who cannot make public meetings, or people of certain demographics that do not typically attend public meetings (younger population). This survey could be shared through a QR code on Green Line trains or through a ride-along where a person has a tablet with the survey.
    - Survey or other project information can be shared via Facebook ads which allows for filtering of demographic groups (ex. age, geographical location, etc.).
- Pop-up booths to be held along the C Branch corridor to engage Green Line users and provide information on the Project as well as answer questions.

Public Meetings

The MBTA will hold public meetings throughout the MEPA process to provide public agencies and interested parties access to the Project team.

- The MBTA will maintain communication with the local community, community organizations, abutters and stakeholders. To ensure accessibility of public meetings, the MBTA will employ the following tactics:

- Hold meetings after work hours and in locations accessible by public transit and with building accessibility.
- Interpreters will be made available at public meetings, as required, for languages that are spoken above ten percent in the Project's designated geographic area.

Physical Signage

- Flyers will be posted at convenient locations along the Green Line C Branch corridor with information on the Project, construction updates, and notice of public meetings.
- Flyers will be distributed at key community locations in advance of public meeting dates and other key milestones.
- Flyers will be provided in Spanish, Chinese, and Russian.
- Prior to construction, information will be disseminated regarding construction impacts (such as interruptions in C Branch schedule, dust, vibration, noise and truck traffic).

Appendix A: Project Stakeholder List

Local and Regional Stakeholders

Town of Brookline

- Department of Public Works
- Department of Planning and Community Development
- Health Department
- Preservation Commission
- Select Board
- Conservation Commission

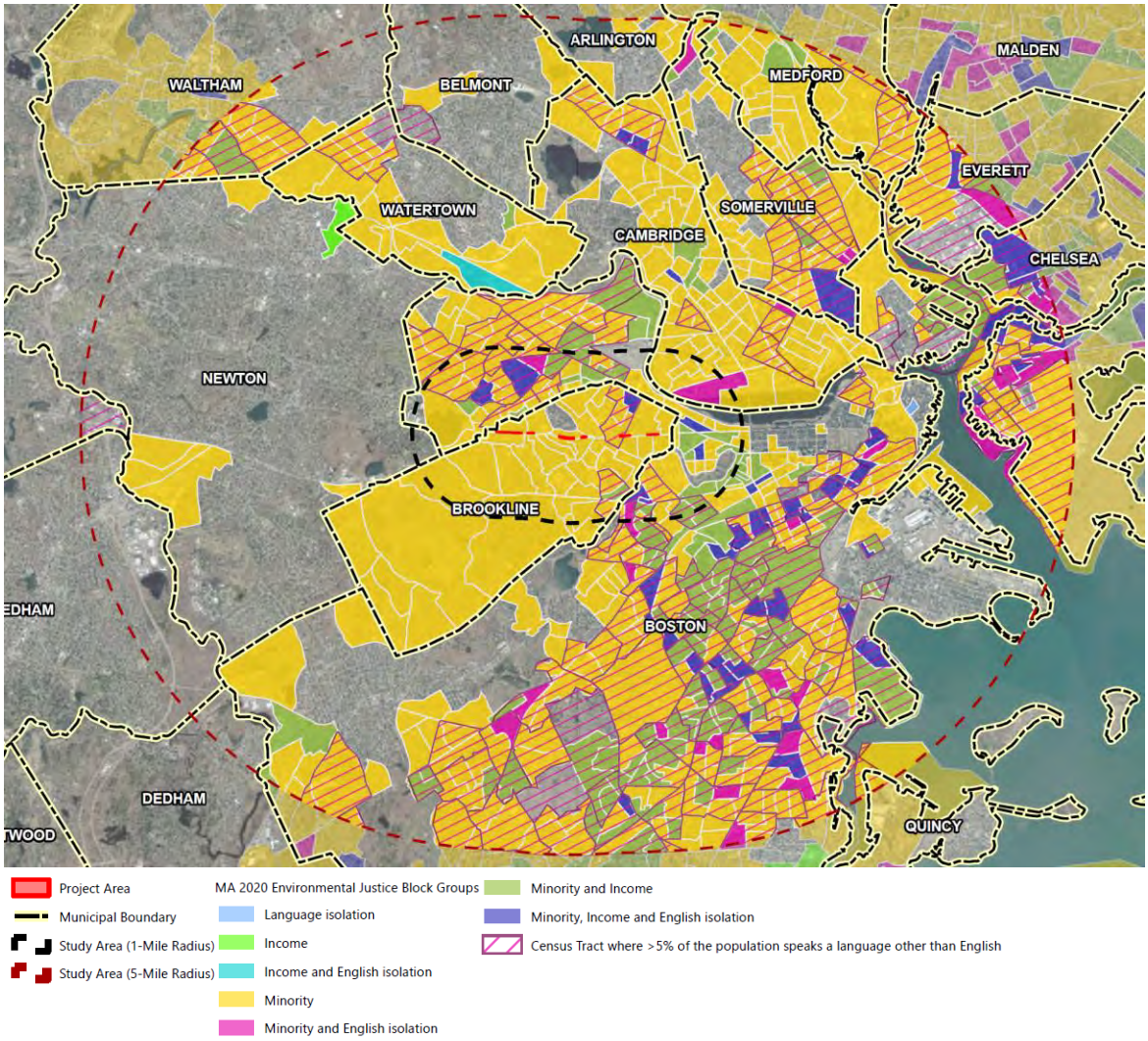
Regional

- Metropolitan Area Planning Council

Environmental Justice Community Based Organizations

Unitarian Universalist Mass Action Network	GreenRoots, Inc.
Mass Rivers Alliance	Pocassett Wampanoag Tribe
The Trust for Public Land	Alternatives for Community & Environment
Browning the GreenSpace	Chappaquiddick Tribe of the Wampanoag Nation
Community Action Works	Nuestra Comunidad CDC
Appalachian Mountain Club	Dudley Street Neighborhood Initiative
Conservation Law Foundation	Charles River Conservancy
Charles River Watershed Assoc.	New England United for Justice
North American Indian Center of Boston	Neponset River Watershed Association
Environmental League of Massachusetts	Coalition for Social Justice
Environment Massachusetts	Wampanoag Tribe of Gay Head (Aquinnah)
Mass Land Trust Coalition	Mashpee Wampanoag Tribe
Clean Water Action	Chinatown Community Land Trust
Neighbor to Neighbor Mass.	Chinatown Resident Association
Ocean River Institute	Mystic River Watershed Association
Sierra Club MA	Chinese Progressive Association
Mass Audubon	Boston Farms Community Land Trust
Save the Harbor/Save the Bay	Boston Harbor Now
Nipmuc Nation (Hassanamisco Nipmucs)	Air, Inc.
Codman Square Neighborhood Development Corporation	Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan
Herring Pond Wampanoag Tribe	Massachusetts Tribe at Ponkapoag
Harbor Point Community Task Force	Mass Community Labor United
Upham's Corner Main Street	Allston Brighton Health Collaborative
Vietnamese American Initiative for Development	Massachusetts Commission on Indian Affairs
Fairmount/Indigo Line CDC Collaborative	Southwest Boston CDC

Appendix B: Environmental Justice and Language Access



Language access information was provided by examining mapping and data from the Massachusetts Energy and Environmental Affairs, as well as data from both the American Community Survey (ACS) and Department of Early and Secondary Education (DESE). Within the 1-mile radius there are languages spoken by 5% of the population or more for Spanish, Chinese, and Russian.

The MBTA will continue to tailor outreach to the needs of this specific Project; preparing materials that are accessible and comply with federal and state standards; meet the standards of MEPA's Environmental Justice policy; and organize meetings and events that meet Massachusetts Department of Transportation's Office of Diversity and Civil Rights (ODCR) Public Participation Plan, Language Access Plan and Accessible Meeting Policy, and Engage tool.