SOUTH STATION
EXPANSION

South Station Expansion Project

Appendix 5 - Natural Resources Technical Report

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massDOT
Massachusetts Department of Transportation

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1. Introduction

The Massachusetts Department of Transportation (MassDOT), the Massachusetts Bay Transportation Authority (MBTA), and the National Railroad Passenger Corporation (Amtrak) have for decades identified the expansion of rail capacity at Boston South Station as a crucial transportation need, one that has been articulated in multiple local, regional, state, and Northeast Corridor (NEC)-wide planning documents.[1] In cooperation with the Federal Railroad Administration (FRA), Amtrak, and the MBTA, MassDOT is now pursuing the expansion of South Station to support existing NEC and commuter rail services and to provide for future Amtrak and MBTA service expansions. The current track capacity, layout, and operations of South Station limit the ability to accommodate projected future expanded services. In addition to expanding South Station terminal facilities, the South Station Expansion (SSX) project will also identify a solution to address existing and future intercity and commuter rail service layover needs. The SSX project includes planning, environmental reviews, and preliminary engineering for the five primary elements of the project:

1. **Expand the South Station terminal facilities**, including the addition of up to seven tracks and four platforms and construction of a new passenger concourse and other amenities.
2. **Acquire and demolish the U.S. Postal Service (USPS) General Mail Facility** located on Dorchester Avenue adjacent to South Station, which would provide an approximate 14-acre site on which to expand South Station. (Note that the relocation of the USPS facility will be the subject of a separate environmental review process by others.) Dorchester Avenue would be restored for public and station access.
3. **Create an extension of the Harborwalk along reopened Dorchester Avenue.**
4. **Provide for the possibility of future joint public/private development** adjacent to and over an expanded South Station.
5. **Provide adequate rail vehicle layover space** to address existing and future intercity and commuter rail service needs.

This Natural Resources Technical Report has been prepared in support of the Draft Environmental Impact Report (Draft EIR) and Environmental Assessment (EA) for the SSX project, in accordance with the Certificate of the Secretary of the Office of Energy and Environmental Affairs (EEA) on the Environmental Notification Form (ENF) for the SSX project (April 19, 2013), the Massachusetts Environmental Policy Act (MEPA) regulations, 301 CMR 11.00 (revised, May 10, 2013), and FRA's Procedures for Considering Environmental Impacts, 64 Federal Register (FR) 101 (26 May 1999), pp. 28545-28556.

2. Summary of Findings

This Technical Report documents the natural resource areas as they relate to the SSX project. The document presents the regulatory context, methodology for evaluation, existing conditions and potential environmental consequences to natural resources by the proposed project activities located within the study areas. For this project, the study area for the evaluation of natural resources is defined as one-half-

[1] Documents citing the need for an expanded South Station include: *Critical Infrastructure Needs on the Northeast Corridor* (2013), *The Northeast Corridor Infrastructure Master Plan* (2010); *The Amtrak Vision for High-Speed Rail in the Northeast Corridor* (2010), *A Vision for the Northeast Corridor* (2012), the Massachusetts Department of Transportation *Rail Plan* (2010), the Massachusetts Department of Transportation *Freight Plan* (2010), and the two most recent long range transportation plans of the Boston Region Metropolitan Planning Organization (2007, 2011).

mile surrounding the South Station headhouse and one-half-mile surrounding the three layover facility sites, as described in Section 3.

Resource impacts for this report are quantified based on preliminary project footprints, which represent the area within each site boundary where permanent or temporary construction is likely to take place. Regulatory resources reviewed include wetlands and surface waters, floodplains, threatened and endangered species, habitat, and ocean sanctuaries.

2.1. South Station Site

Massachusetts Wetland Protection Act (WPA) jurisdictional resources that would be affected within the South Station project footprint include approximately 129,200 square feet (2.9 acres) of land subject to coastal storm flowage (100-year floodplain). The project would also require construction in approximately 346,900 square feet (7.9 acres) of 100-foot jurisdictional buffer to coastal bank. In all locations of anticipated resource area effects, the resource area includes developed land such as pavement, sidewalks, and buildings. The project footprint would overlie approximately 823,200 square feet (18.9 acres) of 500-year floodplain. No impacts to the surface waters of Fort Point Channel are anticipated. The South Station site and adjacent terrestrial areas are densely developed urban land uses consisting of buildings, roadways and rail facilities. The project area has limited vegetation and mainly impervious surfaces. The site is not anticipated to be used as habitat other than by opportunistic and potentially nuisance wildlife, and common birds of urban settings. There are no Priority Habitats of Rare Species or Estimated Habitats of Rare Wildlife present in the South Station site or study area and no federal or state endangered or threatened species are known to be present. The Massachusetts Department of Marine Fisheries indicates that Fort Point Channel is considered habitat for larval settlement and juvenile development of winter flounder, and that the channel may serve as refuge for migrating diadromous fish, however it is not indicated as a spawning, feeding ground or a passageway for diadromous fish, and does not meet the definition of a fish run. No impacts to fisheries or other aquatic resources within Fort Point Channel are anticipated. The proposed South Station expansion is likely to meet the performance standards of the WPA. There are no Ocean Sanctuaries located near or within the study area.

2.2. Layover Facility Sites

2.2.1. Widett Circle

There are no WPA jurisdictional resources identified within the Widett Circle project footprint and no impacts to resource areas would occur. The project footprint at the Widett Circle layover facility site would not affect any 100-year floodplain but would overlie approximately 1,294,000 square feet (29.7 acres) of 500-year floodplain. Since the Widett Circle layover facility site and adjacent areas are densely developed urban land consisting of buildings, roadways and existing rail yards, the site is likely to support similar assemblages of terrestrial opportunistic urban wildlife as described for the South Station site. Developing this site for a layover facility is not anticipated to cause more than negligible effects on wildlife.

2.2.2. Beacon Park Yard

There are no WPA jurisdictional resources identified within the Beacon Park Yard project footprint and no impacts to resource areas would occur. There are no 100-year or 500-year floodplain areas located in the Beacon Park Yard layover facility site boundary. The Beacon Park Yard layover facility site is primarily an existing rail yard with considerable activity in portions carrying the MBTA's Framingham/Worcester Commuter Rail Line, and little activity in other unused portions of the rail yard. The site does not contain any extensive natural or vegetated areas, and it is likely to support similar

assemblages of terrestrial opportunistic urban wildlife as described for the South Station site. Developing this site for a layover facility is not anticipated to cause more than negligible effects on wildlife. The nearby Charles River riparian corridor provides different habitat and likely additional wildlife diversity; however, those wildlife assemblages are not anticipated to be affected.

2.2.3. Readville – Yard 2

The WPA jurisdictional resources that would be affected within the Readville - Yard 2 project footprint include approximately 2,100 square feet (0.05 acre) of riverfront area. In addition, the project would require construction in approximately 14,200 square feet (0.3 acre) of the 100-foot buffer associated with the Neponset River bank. Additionally, this facility would affect approximately 9,000 square feet (0.2 acre) of potential wetland area that is likely to be considered isolated and not subject to jurisdiction under the WPA. As design advances and pending selection of the preferred alternative, field delineation of resources would be required. Resource area characteristics at potentially affected locations include predominantly existing rail infrastructure, disturbed ground, sparsely vegetated grass and shrub patches among actively used areas for materials storage, and the disturbed edge of the wooded riparian buffer to the Neponset River. The two potential isolated vegetated wetland areas are characterized by emergent vegetation dominated by common reed (*Phragmites australis*). The project footprint would not directly impact either the 100-year floodplain or the 500-year floodplain of the river. The site does not contain any extensive natural or vegetated areas and is likely to support similar assemblages of terrestrial opportunistic urban wildlife as described for the South Station site. The nearby Neponset River riparian corridor may realize some additional wildlife diversity due to proximity and connectivity with the extensive nearby Fowl Meadow and Ponkapoag Bog Area of Critical Environmental Concern (ACEC); however, no impacts to those wildlife assemblages are anticipated. The proposed layover facility site would likely meet the performance standards of the WPA.

3. SSX Project Sites

Four sites are under consideration in the SSX project: the South Station site and three layover facility sites consisting of Widett Circle, Beacon Park Yard, and Readville – Yard 2. Figure 1 presents the location of the four SSX project sites.

3.1. South Station Site

The South Station site occupies approximately 49 acres located near Chinatown, Fort Point Channel, and the South Boston Waterfront/Innovation District. The site includes the following: South Station Rail/Transit Terminal and South Station Bus Terminal, the USPS General Mail Facility/South Postal Annex, including that portion of Dorchester Avenue fronting the site and running parallel to Fort Point Channel. The site extends along a portion of the NEC Main Line to the west, extending past Cove Interlocking, and along a portion of the MBTA's Fairmount Line/Old Colony Railroad to the south, extending just past Broad Interlocking. The site also includes a small park, Harborwalk area, and a portion of Fort Point Channel located at the southern end of the site.

The South Station Terminal area currently consists of 13 tracks, eight platforms, and a system of trackwork (also referred to as interlockings) that allow Amtrak and the MBTA trains to serve the station from the NEC and Framingham/Worcester Line from the north/west and the MBTA's Fairmount Line and Old Colony Railroad from the south/east. The future existing condition at the South Station site assumes completion of the South Station Air Rights (SSAR) project, consisting of approximate 1.8 million sf

mixed-use development to be located directly above the railroad tracks at the South Station headhouse.[2]

3.2. Layover Facility Sites

3.2.1. Widett Circle

The Widett Circle site, totaling approximately 29.4 acres, is located in South Boston along the MBTA's Fairmount Line, approximately one track-mile from South Station. It is comprised of two parcels, primarily in private ownership: Cold Storage and Widett Circle. Cold Storage, approximately 6.6 acres, located primarily at 100 Widett Circle, currently houses a temperature controlled food storage and distribution facility, owned by Art Mortgage Borrower Propco 2006 2 LP, and used by Americold/Crocker & Winsor Seafoods. The building has an active rail siding served by CSX Transportation, Inc. (CSXT) with space for six freight cars. A change in ownership of the Cold Storage parcel within the Widett Circle site is anticipated. In October 2013, Celtic Recycling, LLC received approval from the Massachusetts Environmental Policy Act (MEPA) Office (EEA No. 15070) to renovate and convert existing facilities at the Cold Storage parcel, located at 100 Widett Circle, into a material recycling facility. Widett Circle, located primarily at 1 and 2 Foodmart Road, is owned by The New Boston Food Market Development Corporation and is made up of approximately 30 units leased to multiple businesses in the food processing, food storage, and food logistics industry.

3.2.2. Beacon Park Yard

The Beacon Park Yard site, totaling approximately 30 acres, is located in Allston along the MBTA's Worcester Line approximately 3.8 track miles from South Station. The site served for many years as a major freight rail yard and intermodal terminal in Boston for CSXT, which recently relocated to central Massachusetts. It contains a number of buildings that formerly supported various railroad functions, including a freight rail yard, bulk transfer facility, intermodal facility, and engine facility. Beacon Park Yard is owned by Harvard University and remains encumbered by CSXT's operating rights. An agreement in principal has been reached between Harvard and MassDOT to use approximately 22 acres of Beacon Park Yard for a new commuter rail layover, maintenance facility and rail station.

3.2.3. Readville – Yard 2

Readville - Yard 2, totaling approximately 17.4 acres, is located in the Readville section of Hyde Park, in the northeast quadrant of the intersection of the NEC and the MBTA Fairmount Line, approximately 8.8 track-miles from South Station. Owned by the MBTA, Readville - Yard 2 is a maintenance repair facility and the largest layover yard used by the MBTA for its south side commuter service. The layover yard has a total of 12 tracks and it contains several railroad support structures. The MBTA currently uses Readville – Yard 2 for midday layover storage of 10 trainsets[3] of variable lengths.

[2] The South Station Air Rights Project was approved by the Secretary of the Executive Office of Energy and Environmental Affairs (EEA) in 2006 (EEA No. 3205/9131).

[3] A trainset describes the physical makeup of a combination of locomotives and coaches coupled together and operating as one unit.

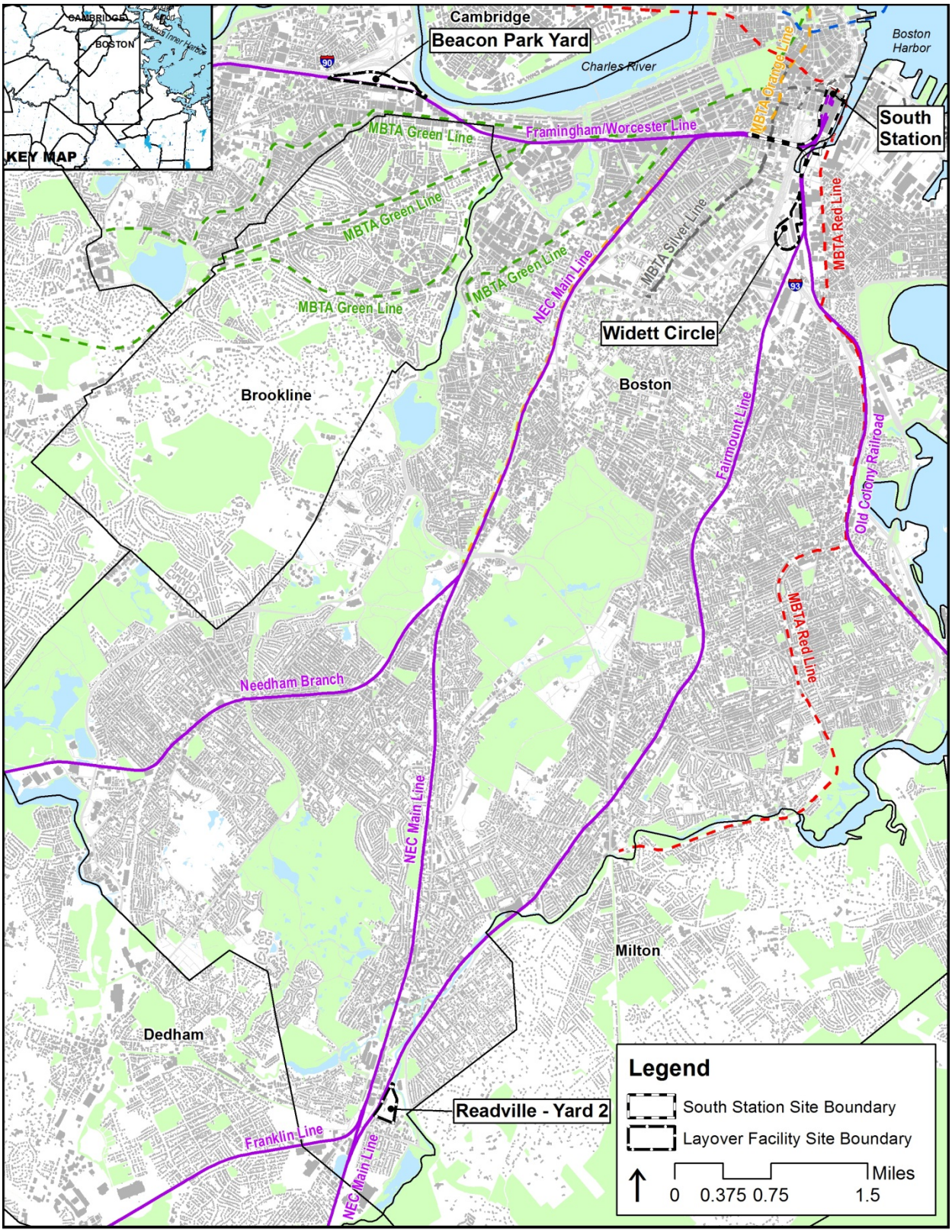

Figure 1—SSX Project Site Locations

4. Wetlands and Surface Waters

4.1. Regulatory Context

Wetlands and surface waters are important physical and ecological resources recognized and protected by federal and state laws. Wetlands and surface waters are protected by the Massachusetts Wetlands Protection Act,[4] Section 404 of the Clean Water Act,[5] Section 10 of the Rivers and Harbors Act of 1899 which regulates structures or work in navigable waters of the U.S.[6], and Executive Order 11990, Protection of Wetlands.[7] Executive Order 11990 for the protection of wetlands was an order given by President Carter in 1977 to avoid the adverse impacts associated with the destruction or modification of wetlands. To protect interests of the Commonwealth, the Massachusetts Department of Environmental Protection (MassDEP) generally administers the Wetlands Protection Act (WPA) through authorities of local conservation commissions including: protection of public and private water supply, protection of groundwater supply, flood control, storm damage prevention, prevention of pollution, protection of land containing shellfish, protection of fisheries, and protection of wildlife habitat. The WPA establishes jurisdiction over special areas including but not limited to freshwater wetlands, lakes, ponds, coastal wetlands, beaches, flats, marshes, rivers, streams, estuaries, oceans, land under water, land subject to flooding, and riverfront areas. The Boston Conservation Commission does not have additional wetlands bylaw regulations; however it is currently in the process of developing a local wetland ordinance that will provide greater resource area authority.[8]

The United States Army Corps of Engineers (U.S. ACE) administers Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act through its regulatory program. The U.S. ACE regulates work and structures that are located in, under, or over navigable waters of the United States; the discharge of dredged or fill material into waters of the U.S.; and the transportation of dredged material for the purpose of disposal in the ocean. Waters that are regulated under Section 404 include navigable waters of the U.S.; wetlands; tributaries to navigable waters of the U.S., including adjacent wetlands, lakes and ponds; interstate waters and their tributaries, including adjacent wetlands; and all other waters of the U.S. not identified above, such as *isolated wetlands*, intermittent streams, and other waters that are not part of a tributary system to interstate waters or to navigable waters of the U.S., where the use, degradation or destruction of these waters could affect interstate or foreign commerce.[9] In Massachusetts, in addition to its individual permit program, the U.S. ACE has established a General Permit for activities that have minimal individual and cumulative adverse effects on the aquatic environment.

In addition, wetlands and surface waters are protected by the Massachusetts Surface Water Quality Standards,[10] the Massachusetts Water Quality Certification Program,[11] and the Massachusetts Waterways Regulations.[12] The objective of the Massachusetts Water Quality Standards is the restoration and

[4] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[5] U.S. Clean Water Act/Water Quality Act of 1987, (33 U.S.C. 1251-1376) Sections 401 and 404, November 2007. Accessed October 2012. http://epw.senate.gov/water.pdf.
[6] Section 10 of the Rivers and Harbors Act of 1899 of 1899, (33 U.S.C 403), 1899.
[7] Protection of Wetlands, EO 11990 42 FR 26961, May 24, 1977. Accessed October 2012. http://environment.fhwa.dot.gov/guidebook/vol1/doc14u.pdf.
[8] City of Boston. *Wetlands*. Accessed March 17, 2014. http://www.cityofboston.gov/environment/Conservation/wetlands.asp.
[9] Corps of Engineers, Department of the Army, Department of Defense. 33 CFR Part 328, Page 465, November 1986. Accessed October 2012. http://www.gpo.gov/fdsys/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part328.pdf.
[10] Massachusetts Department of Environmental Protection. *Surface Water Quality Standards (310 CMR 4.00)*. January 2007. Accessed October 2012. http://www.mass.gov/dep/service/regulations/314cmr04.pdf.
[11] Massachusetts Department of Environmental Protection. *Water Quality Certification (314 CMR 9.00)*. June 2009. Accessed October 2012. http://www.mass.gov/dep/service/regulations/314cmr09.pdf.
[12] Massachusetts Department of Environmental Protection. *Waterways Regulations (310 CMR 9.00)*. June 2009. Accessed October, 2012. http://www.mass.gov/dep/service/regulations/310cmr09.pdf.

maintenance of the chemical, physical, and biological integrity of Massachusetts waters. The surface water quality standards designate the most sensitive use for which the waters of the Commonwealth shall be enhanced, maintained and protected. The Massachusetts Water Quality Certification regulations establish procedures and criteria for the administration of Section 401 of the federal Clean Water Act for the discharge of dredged or fill material, dredging, and dredged material disposal in waters of the United States. The Massachusetts Waterways Regulations serve to protect and promote the public's interest in tidelands, great ponds and non-tidal rivers and streams; ensure that tidelands are utilized only for water-dependent uses or serve a proper public purpose; protect the public health; and support public and private efforts to revitalize unproductive property along urban waterfronts. Compliance of the SSX project with these standards and regulations is addressed in the other SSX project technical reports.

Navigable waters of the U.S. are defined as waters that are subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce; and federally-designated navigable rivers.[13] Note that there are some exceptions to the extent of jurisdictionally navigable waters that are specifically excluded through Congressional Acts.[14] The U.S. ACE Massachusetts General Permit defines jurisdictional limits of navigable waters as the mean high water (MHW) line in tidal waters and the ordinary high water (OHW) mark in non-tidal portions of the federally designated navigable rivers.[15] Jurisdictionally, the U.S. ACE regulates the waters as navigable to their vertical limits at the MHW elevation, although higher tides may extend beyond the MHW area and those areas could be subject to permitting under Section 404.

4.2. Methodology

Wetlands, surface waters, and outstanding resource waters were identified in the study area using Massachusetts Geographic Information (MassGIS) layers including: the U.S. FWS National Wetlands Inventory, MassDEP Hydrography, MassDEP Wetlands, MassDEP 2010 Integrated List of Waters (305(b)/3030(d)) and Outstanding Resource Waters, aerial photographs, and, in some locations, on-site inspection. Navigability was assessed using information from the U.S. ACE federal navigation program, New England District, the National Oceanic and Atmospheric Administration's (NOAA's) Office of Coast Survey nautical charts 13270, 13272,[16] and federal regulations 33 United States Code (U.S.C.) 56, 33 U.S.C. 59f.

The MHW line of Fort Point Channel was determined using the published tidal datum range available from NOAA. The NOAA tidal datum records establish the mean high and low water over several years, which are then converted to elevations in a survey datum. For this project, the survey datum is North American Vertical Datum of 1988 (NAVD88).

Consultation letters were submitted to the U.S. ACE and the U.S. Coast Guard (USCG) to request information regarding navigation and jurisdiction of Fort Point Channel.

Potential impacts to resources were calculated using preliminary planning level footprints of the facilities, and WPA resource maps developed for this study using refined information from on-site inspections, aerial photographs, and available GIS resource information. The figures in Section 4.4 of this Technical

[13] Corps of Engineers, Department of the Army, Department of Defense. 33 CFR Part 329, Page 467, November 1986. Accessed October2012. http://www.gpo.gov/fdsys/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part329.pdf.
[14] U.S.C. Title 33. *Navigation and Navigable Waters*. January 2012. Accessed October 2012. http://uscode.house.gov/download/title_33.shtml.
[15] Department of the Army General Permit. *Commonwealth of Massachusetts, January 21, 2010- January 21, 2015*. Accessed October 2012. http://www.gpo.gov/fdsys/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part329.pdf.
[16] National Oceanic & Atmospheric Administration. *Office of Coast Survey*. http://www.nauticalcharts.noaa.gov/.

Report, Potential Impacts, show the refined resource areas and preliminary facility footprint at a different scale than the study area figures in Section 4.3, Existing Conditions, which show higher level GIS resource information. As design advances, field delineation of wetland resources would occur as needed.

The SSX project DEIR Appendix 7 -- *Water Quality and Stormwater Technical Report* provides information on water quality in the SSX project study areas and discusses water quality impacts associated with the SSX project.

4.3. Existing Conditions

4.3.1. South Station Study Area

Figure 3 presents existing wetlands and surface waters in the South Station Study area, which encompasses the area within one-half mile of the project site, based upon available GIS resource information. Fort Point Channel is the only surface water feature in the South Station study area, as shown in Figure 3. Approximately two acres of Fort Point Channel are located within the South Station site boundary. Fort Point Channel is identified as an Estuarine and Marine Deepwater Habitat according to the United States Fish and Wildlife Service (U.S. FWS) Wetlands and Deepwater Habitat Classification System.[17] The study area is a part of the Boston Harbor watershed and does not contain any outstanding resource waters. The Boston Harbor is classified as a Class SB water, designated suitable as a habitat for fish and other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation.[18] Boston Harbor is fully supporting the functions of aquatic life, primary contact recreation and secondary contact recreation, but is not supporting the uses of fish consumption or fish and shellfish harvesting due to the presence of Polychlorinated Biphenyls (PCBs) in fish tissue, and fecal coliform. The water is classified a Category 5 water (impaired for one or more designated uses) and requires the development of a Total Daily Maximum Load (TMDL), a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards, per Section 303(d) of the Clean Water Act.

The Fort Point Channel MHW elevation was determined to be 4.63 feet above mean sea level North American Vertical Datum of 1988 (NAVD 88) based upon the NOAA's National Ocean Service tidal datum record for Boston Harbor.[19] There are no vegetated federal wetlands located in the study area or site boundary. The U.S. FWS National Wetland Inventory indicates, as shown in Figure 3, that there is a small estuarine wetland at the southern end of Fort Point Channel, located approximately 250 feet west of the southern portion of the South Station site boundary. A site visit determined that an estuarine wetland resource does not exist at this location.

The U.S. ACE, New England District has determined that all tidal waters and their tributaries to the head of the tide are navigable waters of the United States in New England, and are jurisdictional with respect to Section 10 of the Rivers and Harbors Act of 1899.[20] Additionally, the U.S. Congress has removed by law certain portions of Fort Point Channel and Boston Inner Harbor from the U.S. ACE's and USCG's jurisdiction relative to navigation. The following portions of Fort Point Channel are deemed non-navigable waters of the United States:

[17] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. *Classification of Wetlands and Deepwater Habitats of the United States.* (FWS/OBS-79/31, 131pp,) December, 1979 Accessed October 2012. http://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf.
[18] Massachusetts Surface Water Quality Standards, 314 CMR 4.00.
[19] National Oceanic & Atmospheric Administration. *National Ocean Service, Elevations of Station Datum, Boston MA*. April 2003. Accessed October 2012. http://tidesandcurrents.noaa.gov/data_menu.shtml?stn=8443970 Boston, MA&type=Datums.
[20] U.S. Army Corps of Engineers. *Navigable Waters of the United States in New England Subject to Section 10, Rivers and Harbors Act Jurisdiction*. July 18, 2006. Accessed December 12, 2012. http://www.nae.usace.army.mil/Regulatory/Wetlands/NavigableWaters.pdf.

- *"Fort Point Channel and South Bay: that portion of the waterway lying above the easterly side of the highway bridge over Fort Point Channel at Dorchester Avenue,"* per 33 United States Code (U.S.C.) 56.

- *"Boston Inner Harbor and Fort Point Channel: that portion of the waterway extending from the northeasterly side of Northern Avenue and the westerly U.S. Pierhead Line of the Channel north to the U.S. Coast Guard base (at Hanover Street),"* per 33 U.S.C. 59f.

As shown in Figure 2, the federally designated non-navigable portions of Fort Point Channel are located north and south/southwest of the South Station site, but do not include that portion of the channel directly east of South Station. Additionally, the U.S. ACE has deferred final determination of the navigability status of Fort Point Channel at the South Station site, pending further review.[21] Pursuant to the Massachusetts Public Waterfront Act (Chapter 91), Fort Point Channel is a navigable public trust land of the Commonwealth.

The WPA provides jurisdictional authority over several resource areas within Fort Point Channel, as follows:

- Land under the ocean, which extends from the mean low water (MLW) line seaward to the boundary of the municipality's jurisdiction.[22]

- Land subject to tidal action, which extends from the MLW line to the MHW line.[23]

- Coastal bank, which is defined as seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland. [24,25]

- Land subject to coastal storm flowage, which is land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater.[26]

In Boston Harbor, according to the NOAA's National Ocean Service tidal datum record, the highest observable water level was recorded on February 7, 1978 at 9.59 feet (NAVD 88).[27] The base flood elevation for the Zone AE 100-year floodplain in Fort Point Channel, directly east of the South Station site is 12 feet (NAVD88).[28] Refer to Section 5 for the discussion about floodplains, land subject to flooding, and land subject to coastal storm flowage. The WPA provides jurisdictional authority to regulatory buffers extending 100 feet horizontally from resource areas, including banks, freshwater and coastal wetlands, beaches, dunes, flats, marshes, and swamps bordering on any ocean, estuary, creeks,

[21] O'Donnell, Edward, U.S. Army Corps of Engineers, *South Station*, Personal communication To Massachusetts Department of Transportation, November 5, 2012.
[22] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.25(2) pg 60, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[23] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.04 pg 21, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[24] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.30(2) pg 67, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[25] Massachusetts Department of Environmental Protection. *Wetlands Program Policy 92-1: Coastal Banks*. Accessed March 2014. http://www.mass.gov/eea/agencies/massdep/water/regulations/wetlands-program-policy-92-1-coastal-banks.html.
[26] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.04 pg 21, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[27] National Oceanic & Atmospheric Administration. *National Ocean Service, Elevations of Station Datum, Boston MA*. April 2003. Accessed October 2012. http://tidesandcurrents.noaa.gov/data_menu.shtml?stn=8443970 Boston, MA&type=Datums.
[28] Federal Emergency Management Agency. *Preliminary Flood Insurance Study, Suffolk County Massachusetts,* November 15, 2013.

river, stream, pond, or lake. At Fort Point Channel, a 100-foot buffer zone extends from the coastal bank of Fort Point Channel which coincides with the seawall along Fort Point Channel. The 2005 MassDEP Mouth of Coastal River Maps was reviewed to determine the applicability of riverfront area in the study area.[29] These maps clearly define the mouth of each river and serve as the limit of riverfront area jurisdiction.[30] All rivers converging in Boston Harbor (Mystic River, Chelsea River, and Charles River) end upstream from the South Station site, therefore no riverfront area occurs at the site. Fort Point Channel is not a Designated Port Area[31] or a fish run,[32] which are additional regulatory qualifiers within the WPA. Section 6 of this Technical Report provides further discussion of fisheries.

4.3.2. Widett Circle Layover Facility Study Area

The Widett Circle layover facility study area is located in the Boston Harbor watershed. It encompasses the area within one-half mile of the project site. Fort Point Channel (described in Section 3.2.1) is located within the northern most section of the study area and is the only water resource within the study area. The U.S. FWS National Wetland Inventory shows a small estuarine wetland at the southern end of Fort Point Channel, but as described for the South Station study area (and shown in Figure 4), this wetland was determined to not exist. There are no surface waters located in the Widett Circle site boundary.

4.3.3. Beacon Park Yard Layover Facility Study Area

The Beacon Park Yard Layover Facility study area encompasses the area within one-half mile of the project site. The only surface water present in the Beacon Yard layover facility study area is the Charles River, as shown in Figure 5, based upon available GIS resource information. According to the U.S. FWS National Wetlands Inventory, the Charles River is identified as a Lake due to its impoundment.[33] The Beacon Park Yard layover facility study area is located in the Charles River watershed and does not contain any outstanding resource waters. The Charles River is a Class B water designated suitable as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. The river is classified a Category 5 water (impaired for one or more designated uses) and requires the development of a TMDL. There are no surface waters present in the Beacon Park Yard layover facility site boundary.

The mouth of the Charles River is a tidal waterway to the locks at Charles River Dam near the Charlestown Bridge in Boston. Per the U.S. ACE's jurisdictional determination, the Charles River is navigable from Boston Harbor to the Watertown Dam, which is located just upstream of the Galen Street/Route 16 crossing of the Charles near Watertown Square, approximately 3.5 miles west and upstream from Beacon Park Yard. The Charles River is jurisdictional under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Wetlands along the bank of the river are jurisdictional under Section 404.

The Charles River is jurisdictional under the WPA as land under water bodies and waterways in the area between the mean annual high water lines on the Boston and Cambridge river banks,[34] and *bank* where

[29] Massachusetts Department of Environmental Protection. *Massachusetts Mouth of Coastal River Maps.* 2005. Accessed March 2014. http://www.mass.gov/eea/agencies/massdep/water/watersheds/wetlands-maps-mouth-of-coastal-river.html.
[30] Massachusetts Executive Office of Environmental Affairs. "Wetland Maps: Mouth of Coastal River." Accessed March 2014. http://www.mass.gov/eea/agencies/massdep/water/watersheds/wetlands-maps-mouth-of-coastal-river.html.
[31] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.35 (2) pg 73, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[32] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.26 (2) pg 62, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[33] Massachusetts Office of Geographic Information. *U.S. Fish and Wildlife Survey, National Wetlands Inventory, Newton and Boston South Quad.*
[34] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.58(2)(a)2, pg 98 June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.

the land abuts and confines the water body.[35] The Charles River is also considered a fish run under the WPA.[36] Section 6 provides further discussion of fisheries. The Charles River has a buffer zone that extends 100 feet from the bank, and a riverfront area that extends 25 feet from the mean annual high-water line.[37] The riverfront area is typically 200 feet from the mean annual high water line (MAHW); however, per 310 CMR 10.58(2)(a)(3)a, in Boston, the horizontal distance of the riverfront area is limited to 25 feet from MAHW. The Charles River is navigable relative to the Chapter 91 Waterways regulations of the Commonwealth.

4.3.4. Readville - Yard 2 Layover Facility Study Area

The Readville – Yard 2 Layover Facility study area encompasses the area within one-half mile of the project site. The only surface water present in the Readville - Yard 2 layover facility study area is the Neponset River, as shown in Figure 6. According to the U.S. FWS National Wetlands Inventory, the Neponset River is identified as a riverine wetland, and there are also extensive areas of freshwater wetland (palustrine emergent marsh) associated with the river in the southeast portion of the study area. There are no surface waters present in the Readville - Yard 2 layover facility site boundary. An initial site inspection found that there may be two isolated vegetated wetland areas located within the Readville - Yard 2 site boundary. Isolated vegetated wetlands are not jurisdictional under the WPA, but are jurisdictional under 314 CMR 9 for Water Quality Certification, and potentially jurisdictional under Section 404. The potential isolated vegetated wetlands are shown in Figure 10 where resources have been refined to reflect WPA categories and used for preliminary impact estimation. As design advances and pending selection of the preferred alternative, field delineation of resources would be required.

The study area is located in the Neponset River watershed and does not contain any outstanding resource waters. The Neponset River is a Class B water designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. The Neponset River is also listed as a Category 5 water requiring a TMDL. The Neponset River in this section is listed as impaired for dissolved oxygen, fecal coliform, turbidity, foam/flocs/scum/oil slicks, PCB in Fish Tissue, debris/floatables/trash, DDT, Escherichia coli, and other.[38]

The Neponset River is jurisdictional under the WPA as land under water bodies and waterways[39] in the area between the mean annual high water lines on the river banks, and bank[40] where the land abuts and confines the water body. The Neponset River has a jurisdictional buffer zone that extends 100 feet from the bank and a riverfront area that extends 25 feet from the MAHW. The 100-foot buffer zone and 25-foot riverfront area extend into the Readville - Yard 2 site boundary. There are four potential vernal pools located in the study area along the Neponset River (shown in Figure 6) south of the layover site boundary. Potential vernal pools are identified by the Massachusetts Division of Fisheries and Wildlife National

[35] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.54(2)(a) pg 86, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[36] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.35 pg 74, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[37] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.58 (2)(3)a. pg 98, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[38] Massachusetts Department of Environmental Protection. *Massachusetts Year 2012 Integrated List of Waters - Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act*. 2013. http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf.
[39] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.58(2)(a)2, pg 98 June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[40] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.54(2)(a) pg 86, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.

Heritage and Endangered Species Program using color infrared aerial imagery.[41] Vernal pools are classified as outstanding resource waters in the WPA[42] and as Class B outstanding resource waters in the Massachusetts Surface Water Quality Standards.[43] The Neponset River is jurisdictional under the Chapter 91 Waterways regulations of the Commonwealth. The Neponset River is a potential fish run[44] according to Massachusetts Coastal Zone Management's (CZM) Massachusetts Ocean Resource Information System (MORIS) Anadromous Fish layer, but data for fish access past the Lower East and Lower West Mills dams in Milton center are not available.

4.4. Potential Impacts

Potential impacts to wetlands and surface waters associated with the SSX project were estimated using the preliminary project footprints (approximate limit of work) and WPA-designated jurisdictional resources. Calculations were made using available GIS data and supplemental data derived from aerial imagery and site inspections. Measurements are reflective of planning level information for both the project footprint and resource area limits.

4.4.1. South Station

As shown in Figure 7, the South Station project footprint would affect approximately 346,900 square feet (7.9 acres) of 100-foot jurisdictional buffer to coastal bank. The only WPA Resource Area affected would be land subject to coastal storm flowage at Fort Point Channel which includes the land between MLW and the 100-year floodplain boundary and is described in Section 5. Coastal bank and land under the ocean are shown within the project footprint due to the inclusion of Dorchester Avenue and the rail bridge south of the station crossings of the channel. These resources are beneath the bridges and would not be impacted. Coastal bank is also defined by the Fort Point Channel seawall along Dorchester Avenue. Modifications to the seawall involving excavation or reconstruction are not anticipated but minor repairs to address mortar voids and shifted granite blocks may be conducted. The minor repairs would be considered maintenance activities with no impacts to resource areas of bank, land under the ocean, or land subject to tidal action.

In all locations of anticipated resource area effects at the site, the resource areas include developed land such as pavement, sidewalks, and buildings. Indirect impacts to adjacent resource areas such as Fort Point Channel are not anticipated.

4.4.2. Widett Circle Layover Facility

As shown in Figure 8, since there are no resources identified within the Widett Circle project footprint, the project footprint would not result in any direct resource area impacts.

[41] Massachusetts Office of Geographic Information. *NHESP Potential Vernal Pools, Natural Heritage Endangered Species Program*. December, 2000. Accessed October 2012. http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/acecs.html.
[42] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.04 (2) pg 73, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[43] Massachusetts Department of Environmental Protection. *Surface Water Quality Standards (310 CMR 4.00)*. January 2007. Accessed October 2012. http://www.mass.gov/dep/service/regulations/314cmr04.pdf.
[44] Massachusetts Office of Geographic Information. *Anadromous Fish Coastal Zone Management*. June 2012. Accessed October 2012. http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/morislayers.html.

4.4.3. Beacon Park Yard Layover Facility

As shown in Figure 9, since there are no resources identified within the Beacon Park Yard project footprint, the project footprint would not result in any direct resource area impacts.

4.4.4. Readville – Yard 2 Layover Facility

As shown in Figure 10, the only resources that would be affected within the Readville - Yard 2 project footprint include approximately 2,100 square feet (0.05 acre) of riverfront area. Construction would be required within approximately 14,200 square feet (0.3 acre) of the 100-foot buffer associated with the Neponset River *bank*. Additionally, project activities would affect approximately 9,000 square feet (0.2 acre) of potential wetland that is likely to be considered isolated and not subject to jurisdiction under the WPA. Following the selection of the preferred alternative and additional design, field delineation of resources would be required to determine the presence, limits, and jurisdictional applicability of on-site resources.

From preliminary information, the characteristics of the resource areas at the potentially affected locations include predominantly existing rail infrastructure, disturbed ground, sparsely vegetated grass and shrub patches among actively used areas for materials storage, and the disturbed edge of the wooded riparian buffer to the Neponset River.

4.5. Demonstration of Consistency with WPA Performance Standards

4.5.1. Land Subject to Coastal Storm Flowage [310 CMR 10.02]

There are no specific performance standards for land subject to coastal storm flowage in the WPA. Section 5.5 of this Technical Report provides a discussion about the regulations and considerations for land subject to coastal storm flowage as a jurisdictional area subject to protection under M.G.L. Chapter 131 Section 40.

In the regulations at 310 CMR 10.05(6)(k), there are stormwater considerations for projects in resource areas, and in particular, the reion identifies land subject to coastal storm flowage and other regulated areas as having allowable alteration for impoundment of stormwater, control of sedimentation or attenuation of pollutants in stormwater discharges. The regulations further identify the applicability and goals to control and improve stormwater discharges for runoff from all developments and transportation projects that are subject to regulation under M.G.L. Chapter 131, Section 40 or within the buffer zone, and that such projects require stormwater best management practices in accordance with the regulations in 310 CMR 10.05(6)(k)1-10. For more information about stormwater controls and standards, refer to the Appendix 7 – *Water Quality and Stormwater Technical Report*.

4.5.2. Buffer Zone to Coastal Bank [310 CMR 10.02(2)b]

The jurisdictional authority to activities within the 100 foot buffer zone to resource areas in 310 CMR 10.02(1)(a) is specified at 310 CMR 10.02(2)(b)(3), which includes among other resources, banks bordering on the ocean. This resource area occurs at the South Station site. Since the proposed work would involve actions that alter an area subject to protection under M.G.L. Chapter 131, Section 40 (land subject to coastal storm flowage), and occur within the 100 foot buffer of the bank, filing of a Notice of Intent is required. If proposed work were not in an area subject to protection and only within the buffer zone, it could be subject to preconstruction review through the filing of a Request for a Determination of Applicability only.

There are no specific resource area performance standards identified in the regulations for buffers. The regulations require through the General Provisions contained with 310 CMR 10.03, that an applicant intending to perform any work in the buffer zone must demonstrate that the proposed work within the buffer zone would contribute to the protection of the interests identified in M.G.L. Chapter 131, Section 40 for the adjacent resource area(s). Considering the existing characteristics of the 100 foot buffer to the bank, and the proposed project activities within the buffer, it is not anticipated that functional characteristics of the buffer would change as a result of the project and that work within the buffer zone would not have an adverse effect on the adjacent coastal bank. Based upon this finding, compliance with the General Provisions is anticipated.

4.5.3. Coastal Banks [310 CMR 10.30]

The regulations at 10.30(1) state relative to coastal bank, that when a proposed project involves dredging, removing, filling, or altering a coastal bank, the issuing authority shall presume that the area is significant to storm damage prevention and flood control. This presumption may be overcome only upon a clear showing that a coastal bank does not play a role in storm damage prevention or flood control, and if the issuing authority makes a written determination to that effect. When issuing authority determines that a coastal bank is significant to storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes or barrier beaches, the ability of the coastal bank to erode in response to wave action is critical to the protection of that interest(s). When the issuing authority determines that a coastal bank is significant to storm damage prevention or flood control because it is a vertical buffer to storm waters, the stability of the bank, i.e., the natural resistance of the bank to erosion caused by wind and rain runoff, is critical to the protection of that interest(s).

The performance standard for coastal bank at the South Station site is assumed to fall under the category of conditions where the bank is determined to be significant to storm damage prevention or flood control because it is a vertical buffer to storm waters, as defined in 310 CMR 10.30 (6) through (8):

> (6) Any project on such a coastal bank or within 100 feet landward of the top of such coastal bank shall have no adverse effects on the stability of the coastal bank.
>
> (7) Bulkheads, revetments, seawalls, groins or other coastal engineering structures may be permitted on such a coastal bank except when such bank is significant to storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes, and barrier beaches.
>
> (8) Notwithstanding the provisions of 310 CMR 10.30(3) through (7), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.

The proposed activities at the South Station site are not anticipated to adversely affect the stability of the coastal bank; would not detract from the coastal bank's ability to supply sediment to beaches, dunes or barrier beaches; and would not have an adverse effect on habitat of rare vertebrate or invertebrate species as described in Section 6 of this Technical Report. Therefore, the SSX project is likely to be found consistent with the performance standards for coastal banks as defined in the WPA.

4.5.4. Land Subject to Flooding [310 CMR 10.57]

Demonstration of consistency is addressed in Section 5.5 of this report.

4.5.5. Riverfront Area [310 CMR 10.58]

Riverfront area is the area of land between a river's mean annual high water line and a parallel line measured horizontally. The riverfront area may include or overlap other resource areas or their buffer zones. The riverfront area does not have a buffer zone. There is no riverfront area at the South Station site boundary, but riverfront area is present at both study areas of the Beacon Park Yard layover facility and Readville – Yard 2 layover facility. Potential direct impacts to the riverfront area would occur only at the Readville – Yard 2 layover facility site.

310 CMR 10.58 (3) states that when a proposed activity involves work within the riverfront area, the issuing authority shall presume that the area is significant to protect the private or public water supply; to protect the groundwater; to provide flood control; to prevent storm damage; to prevent pollution; to protect land containing shellfish; to protect wildlife habitat; and to protect fisheries.

The General Performance Standard for riverfront area 310 CMR 10.58 (4) states: where the presumption set forth in 310 CMR 10.58(3) is not overcome, the applicant shall prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. Chapter 131 Section 40 and that the work, including proposed mitigation, will have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. Chapter 131 Section 40.

The other interests considered in the performance standard include:

(a) Protection of Other Resource Areas. The work shall meet the performance standards for all other resource areas within the riverfront area, as identified in 310 CMR 10.30 (coastal bank), 10.32 (salt marsh), 10.55 (bordering vegetated wetland), and 10.57 (land subject to flooding). When work in the riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront area shall contribute to the protection of the interests of M.G.L. Chapter 131, Section 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within the riverfront area.

(b) Protection of Rare Species. No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent.

(c) Practicable and Substantially Equivalent Economic Alternatives. There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. Chapter 131 Section 40.

(d) No Significant Adverse Impact. The work, including proposed mitigation measures, must have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. Chapter 131, Section 40.

Notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d), the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation or expansion of existing structures, improvement of existing roads, or reuse of degraded or previously developed areas. A previously developed riverfront area contains areas degraded prior to August 7, 1996 by impervious surfaces from existing structures or pavement, absence of topsoil, junkyards, or abandoned dumping grounds.

Based upon the characteristics of the riverfront area at Readville – Yard 2, and the performance standards under 310 CMR 10.58, it is likely that a finding of compliance with the standards would occur. The riverfront area at the potential impact area is not floodplain, does not support important wildlife functions, does not show evidence of providing habitat for rare species, and partially occupies areas experiencing regular disturbance. It is anticipated that the expansion of the existing layover facility would not cause significant adverse impact to riverfront area or other protected resources, and is a reasonable and practicable alternative, considering the nature of the facility purpose and location.

5. Floodplain

5.1. Regulatory Context

Floodplains are lands adjacent to water bodies that may become inundated to various depths when the water body flow or storage capacity is exceeded. Floodplains also include areas in coastal environments that may become inundated during coastal storm events caused by storm surges. Floodplains are recognized and protected by both state and federal government agencies. Federally, floodplains are protected by Executive Order 11988: Floodplain Management.[45] Executive Order 11988 states that federal agencies have the responsibility to evaluate the potential effects of any actions it may take on floodplains and ensure that its programs take in to consideration flood hazards and floodplain management. The Federal Emergency Management Agency (FEMA) is responsible for determining and updating flood hazard areas in the United States. The FEMA 100-year floodplain area has been adopted as the base flood elevation for insurance purposes. The U.S. Department of Transportation Order 5650.2, Floodplain Management[46] establishes policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests.

In Massachusetts, floodplains are protected under Massachusetts Executive Order No. 149[47] and as a regulated resource under the WPA.[48] Massachusetts Executive Order 149 designates the Department of Conservation and Recreation (DCR) as the state coordinating agency to assist in the implementation of the National Flood Insurance Program (NFIP). The Order also requires all state agencies to consider potential flood hazards and avoid construction of state funded projects in floodplains. Additionally, to the extent possible, the Order directs state-administered grant and loan programs to avoid supporting construction in floodplains. Floodplains are protected and regulated under the WPA as bordering and isolated land subject to flooding and land subject to coastal storm flowage and impacts to these regulated areas must be minimized to the extent possible and mitigated.

5.2. Methodology

Floodplains and floodways in the study areas were identified using both the 2009 and preliminary 2013 FEMA Floodplain Flood Insurance Rate Maps (FIRMs) and the FEMA Flood Study.[49,50] The estimated

[45] Federal Emergency Management Agency. "Executive Order 11988 – Floodplain Management." May, 1977. Accessed October, 2012. http://www.fema.gov/library/viewRecord.do?id=1395.
[46] U.S. Department of Transportation Order 5650.2, "Floodplain Management and Protection." April 23, 1979. Accessed October 2012. http://isddc.dot.gov/OLPFiles/DOT/007652.pdf.
[47] Massachusetts Executive Order No. 149: "Federal Emergency Management Agency (FEMA) and Flood Plain Use, 1978." Accessed October 2012. http://www.lawlib.state.ma.us/source/mass/eo/eotext/EO149.txt.
[48] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[49] Federal Emergency Management Agency. "Flood Insurance Study, Suffolk County Massachusetts." September 25, 2009. Accessed October, 2012. https://msc.fema.gov/webapp/wcs/stores/servlet/FreeViewDigitalPOCmd?storeId=10001&catalogId=10001&langId=-1&catentry_id=10592947&af=0.
[50] Federal Emergency Management Agency. *Preliminary Flood Insurance Study, Suffolk County Massachusetts*, November 15, 2013.

date for these FIRMs to become effective is July 2015. The FEMA flood maps were available as a data layer on the MassGIS website and from the FEMA Map Service Center. The Flood Study for the South Station and layover facility study areas were also available from the FEMA Map Service Center. The areas of 100-year and 500-year floodplain, floodway and coastal flood hazard zone within the study areas were identified and characterized using aerial photographs, and in some locations, on-site inspection. It should be noted that the GIS level information shows an estimation of the base flood hazard elevation. To more accurately assess the potential reach of the coastal flood zone at the South Station site, site survey information from city-wide mapping was collected to compare existing elevations with the projected FEMA flood elevations and generate refined flood areas within the site boundary. Due to the proximity of the site to Fort Point Channel and the subtle elevation relief, it is appropriate to use actual ground elevations to provide higher resolution for projecting the potential reach of the floodwaters.

Consultation letters were sent to FEMA and DCR, Floodplain Management Division requesting information on the study area. The response from DCR Floodplain Management Division confirmed that FEMA is in the process of updating the Suffolk County flood insurance study, with new coastal analyses that could affect flood elevations in the South Station site and vicinity.

Potential impacts to floodplain resources were calculated using preliminary planning level footprints of the facilities. Refined floodplain limits for the South Station site were used to estimate potential impacts. Available GIS floodplain maps were used to estimate potential impacts for the layover facility sites. Figure 15 shows the floodplain areas and preliminary facility footprints for South Station at a different scale than the study area shown in Figure 11, which show higher level GIS resource information.

5.3. Existing Conditions

5.3.1. South Station Study Area

Figure 11 presents the floodplain existing conditions in the South Station study area. Fort Point Channel and some of the surrounding area contains both 100-year (zone AE) and 500-year (zone X) flood hazard areas. Zone AE is the flood insurance rate zone that corresponds to the 1% (100-year flood) annual chance flood, as determined in the Flood Insurance Study by detailed method. These areas have associated base flood elevations that were calculated using detailed evaluation methods. Based on wave interaction scenarios calculated for Fort Point Channel, Zone AE has varying base flood elevations. The base flood elevation for the Zone AE in Fort Point Channel is 10 feet (NAVD88) for the area south of the site boundary, beginning west of Dorchester Ave. East of South Station in Fort Point Channel, the Zone AE area has a base flood elevation of 12 feet (NAVD88). Just south of the Northern Avenue Bridge, the Zone AE has a base elevation of 13 feet (NAVD88).

The South Station study area also contains an area of Zone VE, which is the flood insurance rate zone that also corresponds to the 1% annual chance coastal flood, but has additional hazards associated with storm waves. The VE area in Boston Harbor ends at the mouth of Fort Point Channel and has a base flood elevation of 14 feet (NAVD88) immediately northeast of the Northern Avenue Bridge.

Within the study area, there are several areas of Zone X flood hazard areas. Zone X (500-year) is defined as the flood insurance rate zone that corresponds to areas located within the 0.2% annual chance floodplain, areas of 1% annual chance flooding where average depths are less than one foot, areas of 1% annual chance flooding where the contributing drainage areas is less than one-square-mile, and areas protected from the 1% annual chance flood by levees. These Zone X areas do not have base flood elevations associated with them. Zone X areas occur in the southern part of the study area, extending beyond the Massachusetts Turnpike and Foundry Street, completely inundating the Widett Circle site boundary.

The majority of the South Station study area floodplain extending beyond the surface water of Fort Point Channel is developed land, consisting of roads and commercial development. Using the city-wide survey information for the South Station site, the extent of the 100-year coastal flood hazard zone includes portions of the site along Dorchester Avenue between the USPS General Mail Facility/South Postal Annex and the Fort Point Chanel, and extending to the I-90 ventilation building. One additional area of 100-year coastal flood zone occurs west of and adjacent to the Fairmount Line/Old Colony Railroad Bridge over Fort Point Channel. From site inspections, it appears that the vertical seawall/bulkheads along the channel predominantly contain the flood waters. The seawall/bulkheads are not a consistent elevation through the site, however, and locations where the 100-year coastal flood zone encroaches upon the site correlate with seawall/bulkheads with less height.

Investigating the probable effects of a rise in sea level is also an important consideration in determining the potential risks due to both 100-year and 500-year flood scenarios for South Station. Another important consideration is the susceptibility of the South Station site to inundation resulting from a hurricane scenario. DEIR chapter section 5.3.3 provides additional information about sea level rise, hurricane scenarios, and their potential impacts upon the South Station site.

5.3.2. Widett Circle Layover Facility Study Area

Figure 12 presents the floodplain existing conditions in the Widett Circle layover facility study area. The outer limit of the study area contains areas of Zone AE and Zone X flood hazard areas associated with Fort Point Channel. The 100-year flood zone does not encroach upon the Widett Circle site boundary. The Zone AE base flood hazard elevation is 10 feet (NAVD 88). Areas of Zone X extend south of Zone AE in Fort Point Channel to completely cover the Widett Circle site and much of the area immediately to the south.

A two-foot sea level rise would increase the vulnerability of the site to a 100-year flood. DEIR chapter section 5.3.3 provides more detailed information about sea level rise and its potential impacts upon the Widett Circle layover facility site.

5.3.3. Beacon Park Yard Layover Facility Study Area

Figure 13 presents the floodplain existing conditions in the Beacon Park Yard layover facility study area. The Charles River contains both Zone AE and Zone X base flood hazard areas. Within the Beacon Park Yard layover facility study area, the Zone AE flood hazard area associated with the Charles River follows along the banks of the Charles River and has a base flood elevation of four feet (NAVD 88). There is a Zone X area located in the northern part of the study area between the Charles River and Soldiers Field Road. There is no floodplain areas located in the Beacon Park Yard layover facility site boundary.

DEIR chapter section 5.3.3 provides more detailed information about sea level rise and its potential impacts upon the Beacon Park Yard layover facility site.

5.3.4. Readville - Yard 2 Layover Facility Study Area

Figure 14 presents the floodplain existing conditions in the Readville - Yard 2 layover facility study area. The Neponset River contains areas of Zone AE and Zone X base flood hazard areas. Within the Readville - Yard 2 layover facility study area, the Zone AE flood hazard areas associated with the Neponset River coincide with the banks of the water body. Areas of Zone X adjacent to the Neponset River extend into the Readville – Yard 2 site boundary at the northeast portion of the site boundary. To the northwest of the Readville - Yard 2 layover facility site, a Zone AE area associated with Mother Brook northwest of the site extends beyond the banks of the river and into the site study area. At the

same location extending from Mother Brook, there are areas of Zone X that extend south, into the layover facility study area.

DEIR Section 5.3.3 provides more detailed information about sea level rise and its potential impacts upon the Readville – Yard 2 layover facility site.

5.4. Potential Impacts

5.4.1. South Station

The proposed project would include construction and development in areas of both 100-year and 500-year floodplain within the South Station site boundary. Footprint areas overlying both 100-year and 500-year floodplains were calculated using data gathered from preliminary 2013 FEMA Flood Insurance Study and its associated Flood Insurance Rate Maps. As shown in Figure 15, using refined limits of the floodplain based upon city-wide survey information, the area of 100-year floodplain affected by the project footprint would be approximately 129,200 square feet (2.9 acres). Based on the preliminary data released by FEMA in 2013, the area of 500-year floodplain affected by the project footprint would be approximately 823,200 square feet (18.9 acres). All areas of floodplain occurring at the site are currently developed land; therefore SSX project activities at the South Station site would not convert natural ground floodplains into floodplain representative of developed land. Impacts to floodplains at the South Station site would likely include redevelopment of existing developed areas.

5.4.2. Widett Circle

The project footprint at the Widett Circle layover facility site would not affect the 100-year floodplain. Based upon FEMA mapping, the Widett Circle site is not at risk during a 100-year flood event, but it would be completely covered during a 500-year flood event. The area of 500-year floodplain within the proposed layover footprint impact area is approximately 1,294,000 square feet (29.7 acres). Using existing site elevations and comparing the elevation with the 100-year flood at Fort Point Channel, it should be noted that portions of the site occur at a similar elevation to the 100-year flood at Fort Point Channel. It may be possible that flooding within the site could occur through indirect flow connections (such as storm drains) to the floodwaters of Fort Point Channel. FEMA has not designated a direct overland connection with Fort Point Channel, and the indirect connection has not been investigated.

5.4.3. Beacon Park Yard

The project footprint at the Beacon Park Yard layover facility site would not directly impact either the 100-year floodplain or the 500-year floodplain. The 100-year and 500-year floodplain of the Charles River is separated from the proposed layover facility by both I-90 and Soldiers Field Road. Construction of the proposed facility is not anticipated to affect the function or quality of the existing adjacent floodplains of the Charles River.

5.4.4. Readville - Yard 2

The project footprint at the Readville - Yard 2 layover facility site would not directly impact either the 100-year floodplain or the 500-year floodplain. Portions of the 100-year floodplain within the site boundary are natural, particularly along the banks of the Neponset River. The proposed layover facility is not anticipated to affect the function or quality of the existing adjacent floodplains of the Neponset River.

5.5. Demonstration of Consistency with WPA Performance Standards

Floodplains in coastal areas as defined under M.G.L. Chapter 131, Section 40 are: land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater, and termed "land subject to coastal storm flowage." There are no specific performance standards for land subject to coastal storm flowage in the WPA. As a jurisdictional area, alteration within the land subject to coastal storm flowage requires filing of a Notice of Intent to the local conservation commission. The WPA regulations are intended to ensure that development along the coastline is located, designed, built and maintained in a manner that protects the public interests in the coastal resources listed in M.G.L. Chapter 131, Section 40. The WPA regulations in 310 CMR 10.24: General Provisions; links the coastal floodplain jurisdiction with a degree of unspecified performance review through the following:

> "If the issuing authority determines that a resource area is significant to an interest identified in M.G.L. Chapter 131, Section 40 for which no presumption is stated in the Preamble to the applicable section, the issuing authority shall impose such conditions as are necessary to contribute to the protection of such interests."

Since the proposed work at the South Station site is unlikely to alter the characteristics of land subject to coastal storm flowage, or to potential flood storage capacity, it is likely that the proposed project would be considered consistent with the public interests.

Floodplains (land subject to flooding) as an inland water resource as defined under M.G.L. Chapter 131, Section 40, and 310 CMR 10.57 are regulated resources and subject to protection. The regulation is applicable to 100-year flood zones and not 500-year flood zones, and there is no regulatory protective buffer extending beyond the floodplain. Since none of proposed layover facility sites are within or would encroach upon 100-year floodplain, compliance with the performance standards would be met.

6. Habitat

6.1. Regulatory Context

The Massachusetts Natural Heritage Endangered Species Program (NHESP) protects endangered species and habitat through the Massachusetts Endangered Species Act.[51] Projects proposed in priority habitats of rare species or estimated habitats of rare wildlife are reviewed by NHESP to determine if a "take" of a species will occur. A "take" of an endangered species includes any activity that will disrupt the nesting, breeding, feeding or migratory activity of a protected species. The U.S. FWS and NOAA, National Marine Fisheries Service (NMFS) protect endangered species through the Endangered Species Act (ESA).[52] According to Section 7 of the ESA, federal agencies must consult with the U.S. FWS or NMFS when the federal agency may directly or indirectly affect a listed species through its activities or actions. Federal agency projects include projects that are permitted, funded or authorized through a federal agency.

[51] Massachusetts Executive Office of Environmental Affairs. *Massachusetts Areas of Critical Environmental Concern 301 CMR 12. 1974.* Accessed October 2012. http://www.mass.gov/eea/docs/dcr/stewardship/acec/acecregs.pdf.
[52] U.S. Endangered Species Act (16 U.S.C. 1531-1543), Section 7 requirements at 16 U.S.C. 1536, December 1973. Accessed October 2012. http://epw.senate.gov/esa73.pdf.

Essential Fish Habitat (EFH) is protected under the U.S. Magnuson-Stevens Fisheries Conservation and Management Act.[53] Activities in major waterways/water bodies must be evaluated for impacts to EFH based on information available from NMFS. The Magnuson-Stevens Fisheries Conservation and Management Act protects waters that may be used for the spawning, breeding, feeding or growth of marine, estuarine, and anadromous finfish. The Massachusetts Division of Marine Fisheries (MDMF) protects fish habitat through the in-water time of year restrictions[54] which are used by permitting agencies. Additionally projects that require work in water during a time of year restriction cannot qualify as a U.S. ACE Category 1[55] General Permit project and are subject to further review.

The Commonwealth of Massachusetts, Secretary of Energy and Environmental Affairs designates Areas of Critical Environmental Concern (ACECs).[56] DCR administers the program and works closely with other agencies to review project designs and permits to protect ACECs.

6.2. Methodology

NHESP maintains a Natural Heritage Atlas and provides MassGIS layers showing the geographical extent for all priority habitat and estimated habitat. These layers were reviewed to determine if consultation with NHESP would be required. The U.S. FWS online review process was used to identify potential impacts to endangered species from federal projects or projects with federal funding, or authorization. Each state has a list identifying listed, proposed and candidate species and their habitat by town. U.S. FWS also identifies areas where specific endangered species are known to occur. Endangered marine mammals, fish, turtles and marine plants and invertebrates are protected under Section 7 by NMFS. Maps of endangered species habitat are maintained by NMFS and can be consulted to determine if a project is likely to affect endangered species.

NMFS also provides information through an EFH "mapper" online tool that can be used to determine the presence of fish species in a study area. The EFH mapper and the corresponding EFH text descriptions were used to determine the presence of EFH in the study area.

ACECs in Massachusetts are identified in two ways: a map showing the approximate boundary line, and by text describing how the boundary was defined. There are approximately 268,000 acres of ACECs in the Commonwealth of Massachusetts. The DCR list of ACECs and the MassGIS ACEC layer were reviewed to determine whether any ACECs occur in the vicinity of the project.

Consultation letters were submitted to U.S. FWS, NMFS, MDMF, and NHESP requesting information about the study area.

[53] U.S. Magnuson Stevens Fisheries Conservation and Management Act, October 1996. Accessed October 2012. http://www.nmfs.noaa.gov/sfa/magact/.
[54] Massachusetts Division of Marine Fisheries. "Recommended Time of Year Restrictions (TOYS) for Coastal Alterations Projects to Protect Marine Fisheries Resources in Massachusetts." Massachusetts Division of Marine Fisheries Technical Report TR-47, April 2011. Accessed December 2012. http://www.mass.gov/dfwele/dmf/publications/tr_47.pdf.
[55] Department of the Army General Permit. "Commonwealth of Massachusetts, January 21, 2010- January 21, 2015." Accessed October 2012. http://www.gpo.gov/fdsys/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part329.pdf.
[56] Massachusetts Executive Office of Environmental Affairs. *Massachusetts Areas of Critical Environmental Concern 301 CMR 12. 1974*. Accessed October 2012. http://www.mass.gov/eea/docs/dcr/stewardship/acec/acecregs.pdf.

6.3. Existing Conditions

6.3.1. South Station Study Area

The South Station site and adjacent terrestrial areas are densely developed urban land uses consisting of buildings, roadways and rail facilities. The area has limited vegetation and mainly impervious surfaces. The site is not anticipated to be used as habitat other than by opportunistic and potentially nuisance wildlife, and common birds of urban settings. Examples include gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), house mouse (*Mus musculus*), brown bat (*Eptesicus fuscus*) Virginia opossum (*Didelphis virginiana*), Norway rat (*Rattus norvegicus)*, pigeon (*Columba livia*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), European starling (*Sturnus vulgaris*), gulls (*Larus spp*.), and occasionally red-tailed hawk (*Buteo jamaicensis*), and peregrine falcon (*Falco peregrinus*). Fort Point Channel is likely used by birds such as gulls (*Larus spp*.), many types of ducks (*Anas spp*., *Bucephala spp*., *Mergus spp*.), mute swan (*Cygnus olor*), Canada goose (*Branta canadensis*), belted kingfisher (*Ceryle alcyon*), and potentially by wading birds such as great blue heron (*Ardea herodias*). Reptiles and amphibians are unlikely to use the South Station site as habitat.

The latest available MassGIS data for Priority Habitats of Rare Species and Estimated Habitat of Rare Wildlife released in 2008 did not show any species present in the South Station site or study area. A review of the federal and state endangered species for the study area showed that no federal or state endangered or threatened species are present in the site or study area. There are no species listed in Boston for Suffolk County under the U.S. FWS Massachusetts State List. Because the South Station study area is not located within a town with a listed, proposed or candidate species, no further consultation with the U.S. FWS is required and a "no species present" letter was downloaded from the U.S. FWS website for documentation.[57] The U.S. FWS indicated in correspondence[58] that there are no federally listed or proposed threatened or endangered species or critical habitat in the site boundary and that no further consultation is required.

The NMFS maintains maps of critical habitat for species listed under the federal ESA.[59] Two species were listed as present in the Northeast Region: Atlantic salmon (*Salmo salar*) and right whale (*Eubalaena glacialis*). The NMFS habitat maps for Atlantic salmon[60] and right whale[61] did not show any habitat near the site or study area. The MassGIS layer of ACECs updated in April 2009 shows that there are no ACECs in the study area. The Mass GIS layers of Potential (December 2000) and Certified (June 2012) *Vernal pool*s show that the site and study area do not include any *vernal pools*.

According to the NMFS summary EFH designations,[62] there are several species that have the potential to be present in Massachusetts Bay and Boston Harbor, including: Atlantic cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), pollock (*Pollachius virens*), whiting (*Merluccius bilinearis*), red hake (*Urophycis chuss*), white hake (*Urophycis tenuis*), winter flounder (*Pseucopleuronectes americanus*), yellowtail flounder (*Limanda ferruginea*), windowpane flounder (*Scophthalmus aquosus*), American plaice (*Hippoglossoides platessoides*), ocean pout (*Macrozoarces americanus*), Atlantic halibut,

[57] U.S. Fish and Wildlife Service. *Federally Listed Endangered And Threatened Species In Massachusetts*. October 2011. Accessed October 2012. http://www.fws.gov/newengland/pdfs/MA%20species%20by%20town.pdf.
[58] Chapman, R. Thomas. United States Fish and Wildlife Service. Personal communication. December 11, 2012.
[59] U.S. Endangered Species Act (16 U.S.C. 1531-1543), Section 7 requirements at 16 U.S.C. 1536, December 1973. Accessed October 2012. http://epw.senate.gov/esa73.pdf.
[60] National Marine Fisheries Service. *Critical Habitat Map – Atlantic Salmon*. Office of Protected Resources, August 2009. Accessed October 2012. http://www.nmfs.noaa.gov/pr/pdfs/criticalhabitat/atlanticsalmon.pdf.
[61] Meadows, Dwayne. National Marine Fisheries Service, *Northern Right Whale Critical Habitat Northeast Atlantic, Office of Protected Resources*. October 2007. Accessed October 2012. http://www.nmfs.noaa.gov/pr/pdfs/criticalhabitat/n_rightwhale_ne.pdf.
[62] National Marine Fisheries Service. *Guide to Essential Fish Habitat Descriptions*. Accessed October 2012. http://www.nero.noaa.gov/hcd/list.htm.

(*Hippoglossus hippoglossus*) American sea scallop (*Placopecten magellanicus*), Atlantic sea herring (*Clupea harengus*), long finned squid (*Loligo pealeii*), short finned squid (*Illex illecebrosus*), Atlantic butterfish (*Peprilus triacanthus*), Atlantic mackerel (*Scomber scombrus*), summer flounder (*Paralichthys dentatus*), scup (*Stenotomus chrysops)*, black sea bass (*Centropristis striata*), surf clam (*Spisula solidissima*), and bluefin tuna (*Thunnus thynnus*). Site specific species use of habitat areas in Fort Point Channel is not available from the listing. Based upon the setting, however, the most likely species to use the channel would include: pollock, winter flounder, yellowtail flounder, windowpane flounder, American plaice, summer flounder, and scup. Should the SSX project involve direct work within Fort Point Channel, a more detailed analysis of species and utilization would be needed to determine the potential for effects to an EFH species.

The MDMF indicates that Fort Point Channel is considered habitat for larval settlement and juvenile development of winter flounder, and that the channel may serve as refuge for migrating diadromous fish (fish that spend portions of their lifecycles in both fresh and saltwater).[63] According to the MDMF time of year restrictions, the only target species that may be present and spawning in Fort Point Channel is winter flounder. Although the channel may be used as a refuge by diadromous fish, because it is not indicated as a spawning, feeding ground or a passageway for anadromous or catadromous fish, Fort Point Channel does not appear to meet the definition of a fish run.[64] A fish run is specific to use by anadromous species (fish that migrate from salt water to fresh water to spawn) or catadromous species (fish that migrate from fresh water to salt water to spawn) for spawning, feeding, or passageway.

6.3.2. Widett Circle Layover Facility Study Area

The Widett Circle layover facility site and adjacent areas are densely developed urban land consisting of buildings, roadways and existing rail yards. The site has minimal vegetation and is comprised mainly of impervious surfaces. The site is likely to support similar assemblages of terrestrial opportunistic urban wildlife as described for the South Station site. Since the setting is highly developed, the site is not anticipated to provide high value habitat. The Widett Circle layover facility site and study area do not contain any Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife or EFH. The site and study area also do not contain any federal or state endangered species, ACECs, or vernal pools.

6.3.3. Beacon Park Yard Layover Facility Study Area

The Beacon Park Yard layover facility site is primarily an existing rail yard with considerable activity in portions carrying the MBTA's Framingham/Worcester Line, and little activity in other unused portions of the rail yard. The site does not contain any extensive natural or vegetated areas, and it is likely to support similar assemblages of terrestrial opportunistic urban wildlife as described for the South Station site. The adjacent terrestrial areas are densely developed, consisting of buildings, roadways and existing rail yard, and likely support similar wildlife assemblages. The site is not anticipated to be used as important wildlife habitat. The Beacon Park Yard layover facility site and study area do not contain any Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. The site and study area also do not contain any federal or state endangered species, ACECs, or vernal pools. According to the NMFS EFH mapper[65] the adjacent Charles River is not designated as EFH. Wildlife use of the layover facility site is anticipated to be similar to that identified for the South Station site and adjacent Fort Point Channel, having mostly disturbance-tolerant species.

[63] Evans, N. Tay. Commonwealth of Massachusetts Division of Marine Fisheries. Personal communication. December 5, 2012.
[64] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00, 10.35 (2) pg 73, June 2009. Accessed October 2012. http://www.mass.gov/dep/water/laws/regulati.htm#wl.
[65] National Oceanic & Atmospheric Administration. *Essential Fish Habitat (EFH) Mapper*. http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html.

The MDMF time of year restrictions lists several target species that may be present and spawning in the Charles River including: alewife (*Alosa pseudoharengus)*, blueback herring (*Alosa aestivalis)*, shad (*Alosa sapidissima)*, rainbow smelt (*Osmerus mordax)*, American eel (*Anguilla rostrata)*, white perch (*Morone Americana)* and Atlantic tomcod (*Microgadus tomcod)*. The Charles River provides habitat for anadromous and catadromous fish and is protected as a fish run under the WPA. The Charles River and river banks provide different habitat and likely wildlife diversity than the layover facility site. The Charles River corridor, separated from the layover facility site by I-90 and Soldiers Field Road, may potentially support other species that typically occupy very narrow freshwater woody riparian corridors. Examples of species include shrews (*Sorex spp.*), moles (*Parascalops breweri*, *Scalopus aquaticus, Condylura cristata)*), eastern cottontail (*Sylvilagus floridanus*), voles (*Microtus spp*.), bats (*Myotis spp*.), Pipistrelle (*Pipistrellus subflavus*), muskrat (*Ondatra zibethicus*), striped skunk (*Mephitis mephitis*), and a much greater diversity of common songbirds, waterfowl, and wading birds than would be expected at the South Station site. Common reptiles and amphibians are more likely to be found along the river corridor and potentially venturing within the site including, eastern American toad (*Bufo americanus*), spring peeper (*Pseudacris crucifer*), grey treefrog (*Hyla versicolor*) green frog (*Rana clamitans melanota*), pickerel frog (*Rana palustris*), garter snake (*Thamnophis s. sirtalis*), water snake (*Nerodia s. sipedon*), eastern painted turtle (*Chrysemys picta*) and snapping turtle (*Chelydra serpentina*).

6.3.4. Readville - Yard 2 Layover Facility Study Area

The Readville - Yard 2 layover facility site is primarily an existing rail yard. The site does not contain any extensive natural or vegetated areas and is likely to support similar assemblages of terrestrial opportunistic urban wildlife as described for the South Station site. Within the site boundary, small areas of disturbed and sparsely vegetated habitat were observed between the rail yard and adjacent materials recycling operations. The cover type is predominantly grass and shrubs with occasional young trees. As shown in Figure 10, two areas were noted within the sparsely vegetated area that may be isolated vegetated wetland. As design advances, field delineation of resources would be required. Due to the size, composition and on-going human activities, the vegetated area is likely to have limited wildlife use.

The nearby Neponset River likely supports a riparian wildlife assemblage similar to the Charles River riparian area near the Beacon Park Yard layover facility site. This area may realize some additional wildlife diversity due to proximity and connectivity with the extensive nearby Fowl Meadow and Ponkapoag Bog ACEC, which contains approximately 8,350 acres of wetland and floodplain area in the Neponset River basin. The Fowl Meadow and Ponkapoag Bog ACEC is located approximately 600 feet south of the site at its closest point and within the study area, as shown in Figure 16. There are 13 state-listed rare species in the ACEC, represented by eight animal and five plant species, as well as historical and archaeological resources.[66] These nearby extensive natural areas are noted for the great diversity of wildlife and plant habitats, within a location surrounded by dense urban development. These natural resource values as well as the recreational and educational values contribute to its significance. The study area also contains a designated area of Estimated Habitats of Rare Wildlife and Priority Habitats of Rare Species located within the Fowl Meadow and Ponkapoag Bog ACEC. Four potential vernal pools are shown on NHESP maps, south of the layover facility site.

[66] Massachusetts Department of Conservation and Recreation. *Designation of the Fowl Meadow and Ponkapoag Bog Area of Critical Environmental Concern*. August 20, 1992. Accessed February 2013. http://www.mass.gov/eea/docs/dcr/stewardship/acec/acecs/fm-des.pdf.

6.4. Potential Impacts

6.4.1. South Station

The South Station project footprint would not impact any ACECs, Estimated Habitats of Rare Wildlife, or Priority Habitats of Rare Species. The site has no natural habitat important for wildlife. During SSX project construction, it is anticipated that effects on wildlife would be negligible. Existing wildlife are using developed areas that experience regular human activity within the project footprint and site boundary. Temporary disruption of the wildlife may occur; however, the completed project is expected to provide similar habitat and would likely have similar use by wildlife. Wildlife using the adjacent Fort Point Channel is expected to similarly respond to the construction activity and conditions at completion of the project.

6.4.2. Widett Circle

The Widett Circle project footprint would not impact any ACECs, Estimated Habitats of Rare Wildlife, or Priority Habitats of Rare Species. The site has no natural habitat important for wildlife. During construction of the proposed layover facility, it is anticipated that effects on wildlife would be negligible. Existing wildlife use is minimal and species currently occupying the site are experiencing regular human activity within the project footprint. Temporary disruption of the wildlife may occur; however, the completed project is expected to provide similar habitat and would likely have similar use by wildlife.

6.4.3. Beacon Park Yard

The Beacon Park Yard project footprint would not impact any ACECs, Estimated Habitats of Rare Wildlife, or Priority Habitats of Rare Species. The site has no natural habitat important for wildlife. During construction of the proposed layover facility, it is anticipated that effects on wildlife would be negligible. Existing wildlife use is minimal and species currently occupying the site are experiencing regular human activity within the project footprint. Temporary disruption of the wildlife may occur; however, the completed project is expected to provide similar habitat and would likely have similar use by wildlife. No impacts to the Charles River riparian wildlife assemblages are anticipated.

6.4.4. Readville - Yard 2

The Readville - Yard 2 project footprint would not impact any ACECs, Estimated Habitats of Rare Wildlife, or Priority Habitats of Rare Species. The site has no natural habitat important for wildlife. Although ACEC and rare species habitat occur within the study area, none of these areas falls within 500 feet of the site boundary, and thus are not anticipated to be impacted. The proposed layover facility would not isolate any potential wildlife corridors joining the Fowl Meadow and Ponkapoag Bog ACEC with other important wildlife habitats. During construction of the proposed layover facility, it is anticipated that effects on wildlife in adjacent areas along the Neponset River would be negligible. Existing wildlife use within the site is likely minimal and species currently occupying the site are experiencing regular human activity within the project footprint. Conversion of the small areas of disturbed and sparse vegetation into the proposed layover facility infrastructure could displace some common wildlife species to adjacent areas. Because these areas appear to provide limited habitat opportunities, impacts to wildlife would be considered minor. As design advances and pending selection of the preferred alternative, field delineation of resources would be required.

6.5. Demonstration of Consistency with WPA Performance Standards

Habitat, as described here is focused on the WPA performance standards relative to wildlife habitat. M.G.L. Chapter 131, Section 40 specifically notes eight particular interests that are to be considered relative to activities affecting resources subject to protection under the act. One of the interests is protection of wildlife habitat [310 CMR 10.01(2)].[67]

The wetland regulations in 310 CMR 10.60 (1) require an assessment of the adverse effects on wildlife habitat when a proposed project on inland resource areas including banks, land under water, riverfront area or land subject to flooding will alter *vernal pool* habitat or alter other wildlife habitat beyond the thresholds permitted under 310 CMR 10.54(4)(a)5, 10.56(4)(a)4, 10.57(4)(a)3, and 10.58(4)(d)1. For such alterations, they may be permitted only if there will be no adverse effects on wildlife habitat. Adverse effects on wildlife habitat mean the alteration of any habitat characteristic listed in 310 CMR 10.60(2). The only inland resource area potentially to be affected by the SSX project would be riverfront area at the Readville – Yard 2 layover facility location.

The wildlife habitat characteristics listed CMR 10.60 (2) for *riverfront area* states the topography, soil structure, plant community composition and structure, and hydrologic regime can provide important wildlife habitat functions including:

- *"Food, shelter, overwintering and breeding areas for wildlife, including turtle nesting areas, nesting sites for birds which typically reuse specific nesting sites, cavity trees, and isolated depressions that function as vernal pools."*
- *"Migratory areas along the riparian corridor including the movement of wildlife unimpeded by barriers within the riverfront area."*

From the initial inspection of riverfront area at the Readville – Yard 2 layover facility site and a review of aerial pictures of the site, the riverfront area at the potential project footprint is partially comprised of non-vegetated soils used for track access and storage, and bounded by a chain-link fence at the edge of the tree line. The regular human use of the area reduces the wildlife use, and the fence affects the mobility/migratory access of wildlife to and through the potential impact area. The potential impacts are not likely to affect the important wildlife functions in 310 CMR 10.60(2), such as food, shelter, overwintering and breeding areas, nesting for birds, or depressions that function as vernal pools, or migratory patterns along the riparian corridor. Although not observed, one potential function of the gravel/sandy soils could be for turtle nesting. Turtles often use embankments along roadways and railroads when in close proximity to water bodies or watercourses. However, at the potential impact area, turtle access may be impaired by the fence and regular human uses are likely to restrict or eliminate nesting by turtles.

Based upon the existing conditions and proposed impact location, it is likely that the performance standard for wildlife habitat would not be exceeded by the expansion of layover facilities at Readville – Yard 2.

[67] Massachusetts Wetlands Protection Act Regulations 310 CMR 10.01(2), June 2009. Accessed March 2014. http://www.mass.gov/dep/water/laws/regulati.htm#wl.

7. Ocean Sanctuaries

7.1. Regulatory Context

Ocean Sanctuaries are defined in Massachusetts by the Ocean Sanctuaries Act[68] and its regulations. The National Marine Sanctuaries Act[69] protects the ecology of oceans by prohibiting building structures on the seabed, construction or operation of offshore or floating electrical generating substations, drilling or removal of materials, dumping or discharge of wastes, commercial advertising and incineration of solid waste.

The National Marine Sanctuaries Act federally protects areas of marine environment that are ecologically, culturally or esthetically significant. Each area has its own regulations depending on those activities that can take place within the sanctuary.

7.2. Methodology

Ocean Sanctuaries were identified using the Massachusetts Ocean Sanctuaries layer available from MORIS and the Ocean Sanctuaries Act Regulations. National Marine Sanctuaries were identified using the National Marine Sanctuaries layer available from MORIS.

7.3. Existing Conditions

7.3.1. South Station Study Area

There are no Ocean Sanctuaries located near or within the study area. The five Massachusetts-designated Ocean Sanctuaries are Cape Cod, Cape Cod Bay, Cape and Islands, North Shore and South Essex Ocean. There is one National Marine Sanctuary located in ocean waters near Massachusetts, the Stellwagen Bank National Marine Sanctuary, which is located approximately 25 miles east of Boston.

7.3.2. Widett Circle Layover Facility Study Area

There are no Ocean Sanctuaries located near or within the study area.

7.3.3. Beacon Park Yard Layover Facility Study Area

There are no Ocean Sanctuaries located near or within the study area.

7.3.4. Readville - Yard 2 Layover Facility Study Area

There are no Ocean Sanctuaries located near or within the study area.

7.4. Environmental Consequences

Since there are no ocean sanctuaries located near or within any of the proposed SSX project sites or study areas, no impacts to Ocean Sanctuaries will occur as a result of the proposed project.

[68] Massachusetts Ocean Sanctuaries Act M.G.L. c. 132A, §§ 12A-16F, 1970. Accessed October 2012. http://www.malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter132a/Section13.
[69] National Marine Sanctuaries Act U.S.C. Title 16 c. 32 §§ 1432, November 2000. Accessed October 2012. http://sanctuaries.noaa.gov/library/national/nmsa.pdf.

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8. Figures

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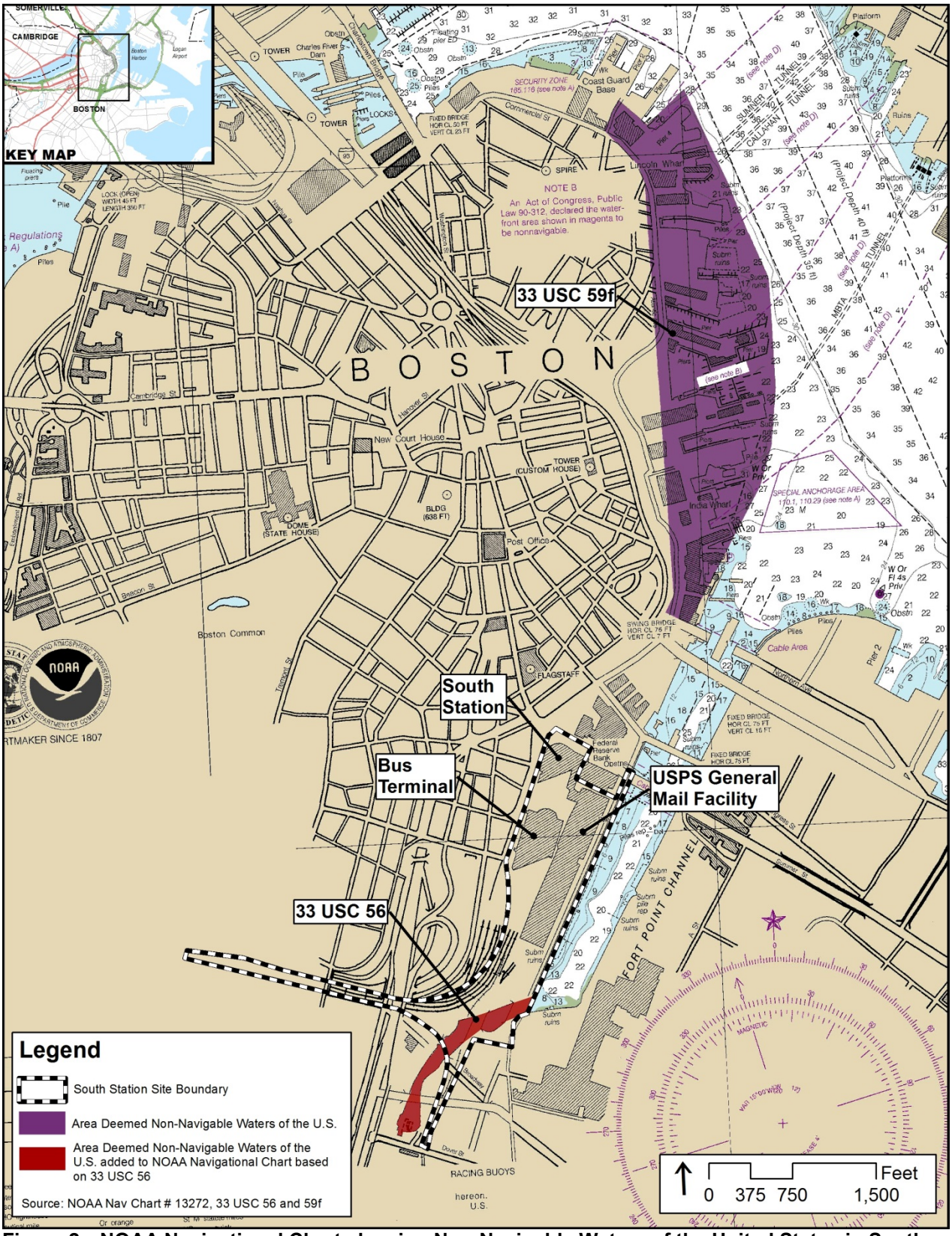

Figure 2—NOAA Navigational Chart showing Non-Navigable Waters of the United States in South Station Site Vicinity

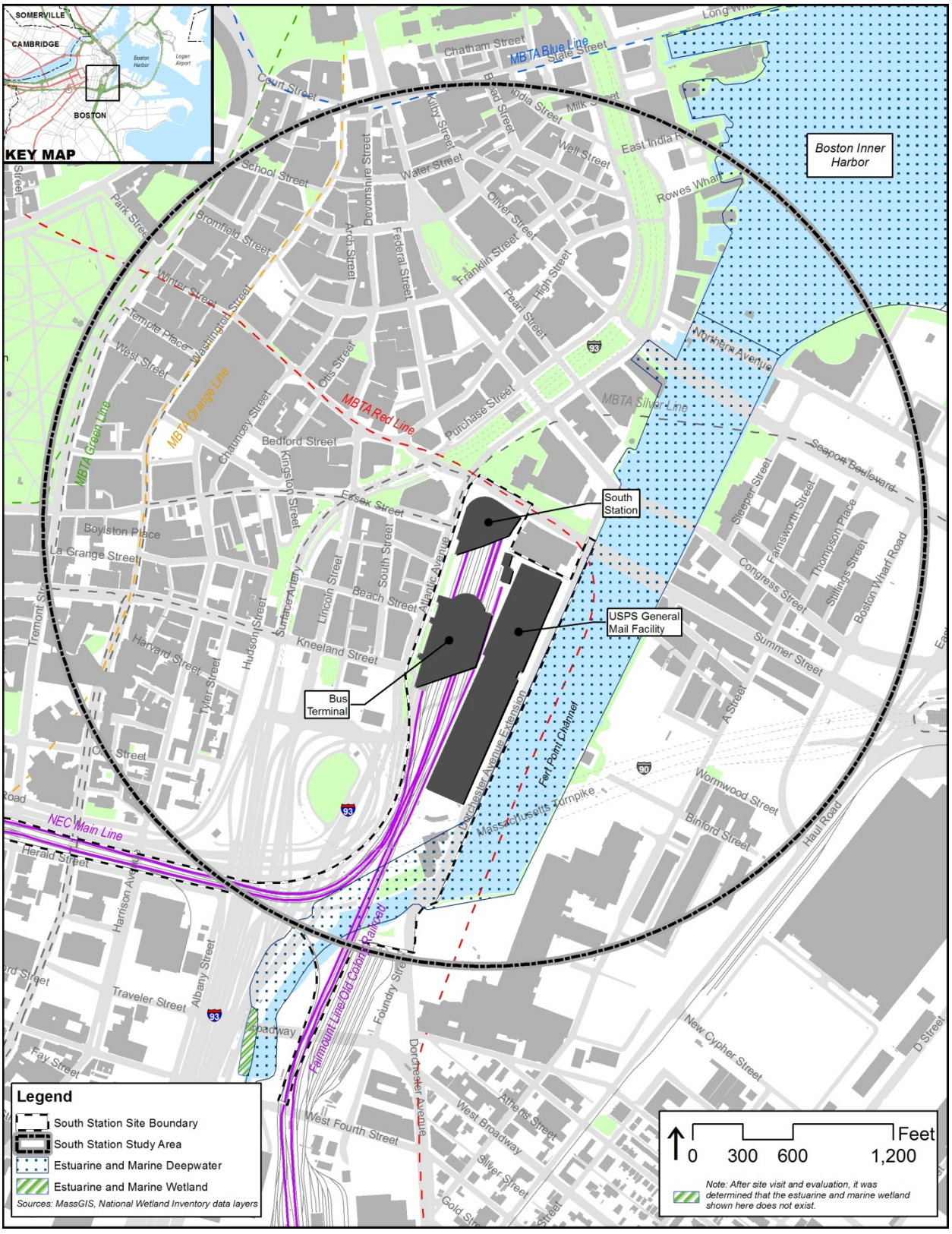

Figure 3—Wetland and Surface Waters Existing Conditions - South Station Study Area

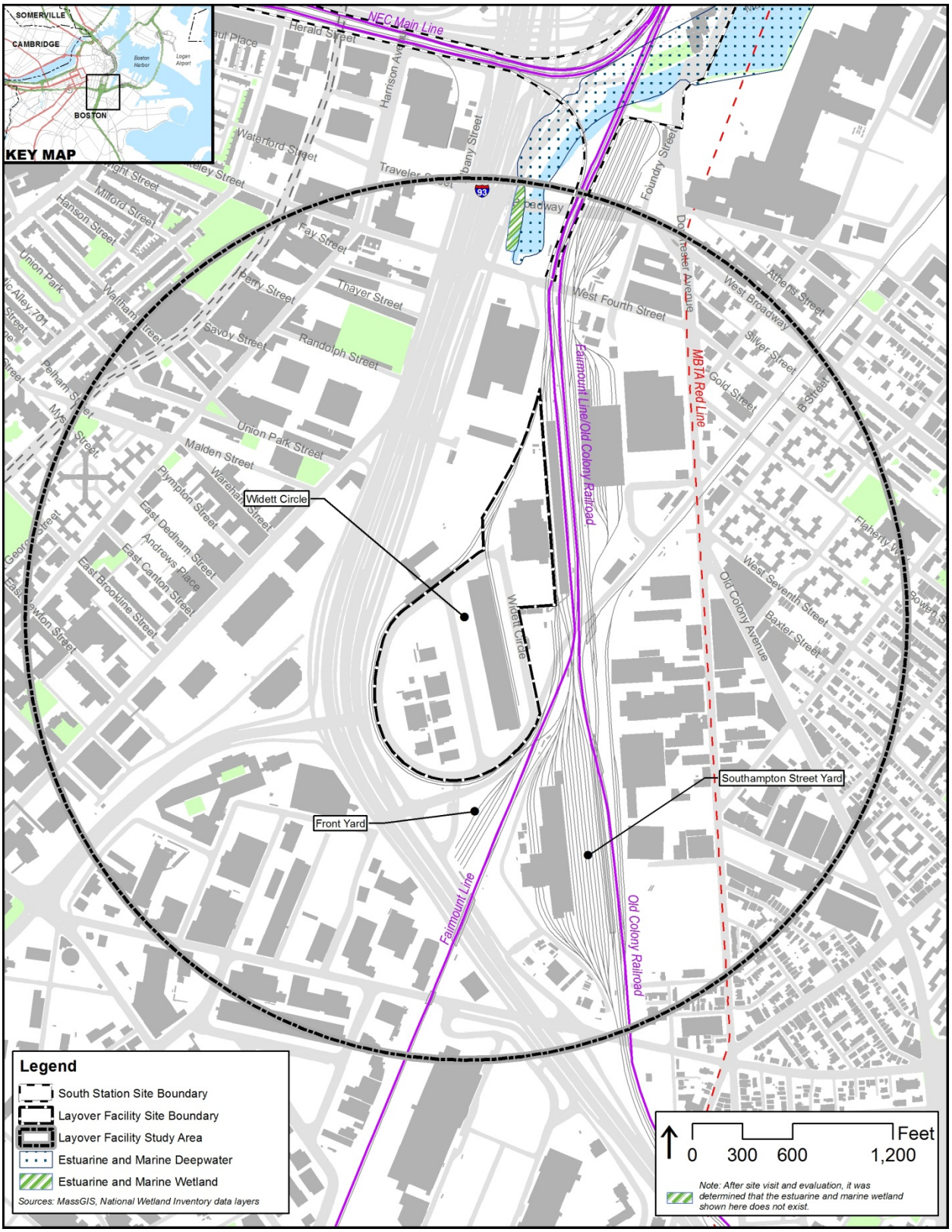

Figure 4—Wetland and Surface Waters Existing Conditions - Widett Circle Layover Facility Study Area

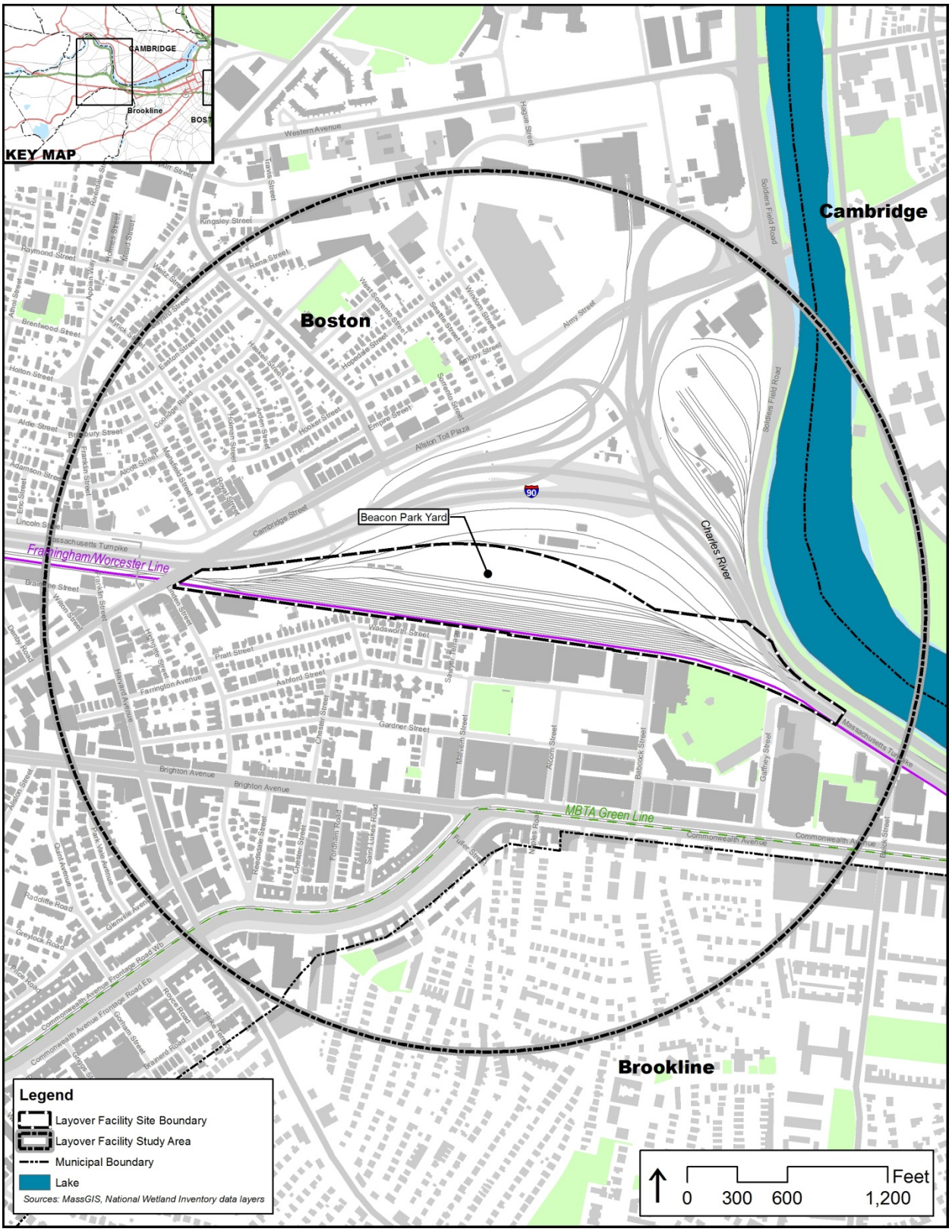

Figure 5—Wetland and Surface Waters Existing Conditions - Beacon Park Yard Layover Facility Study Area

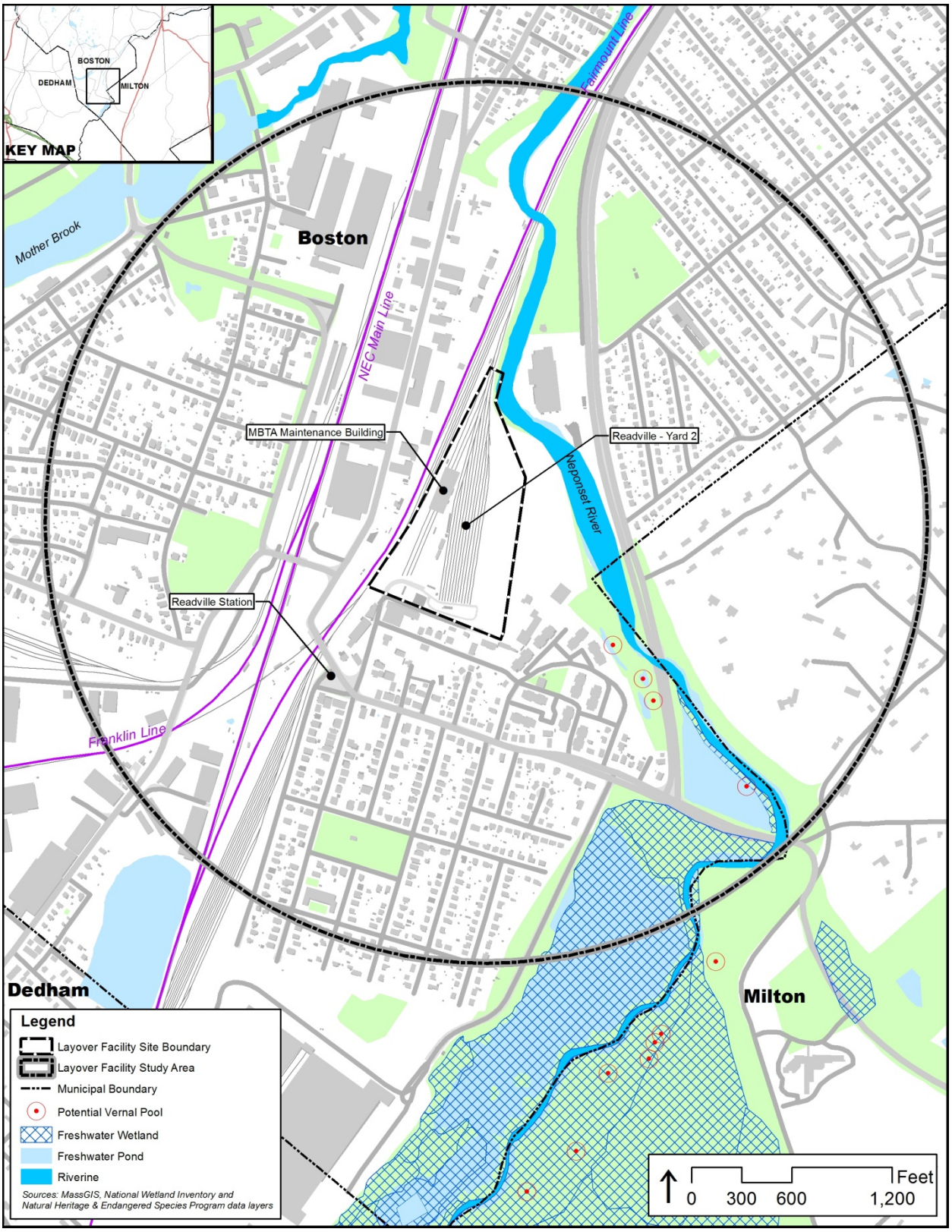

Figure 6—Wetland and Surface Waters Existing Conditions - Readville - Yard 2 Layover Facility Study Area

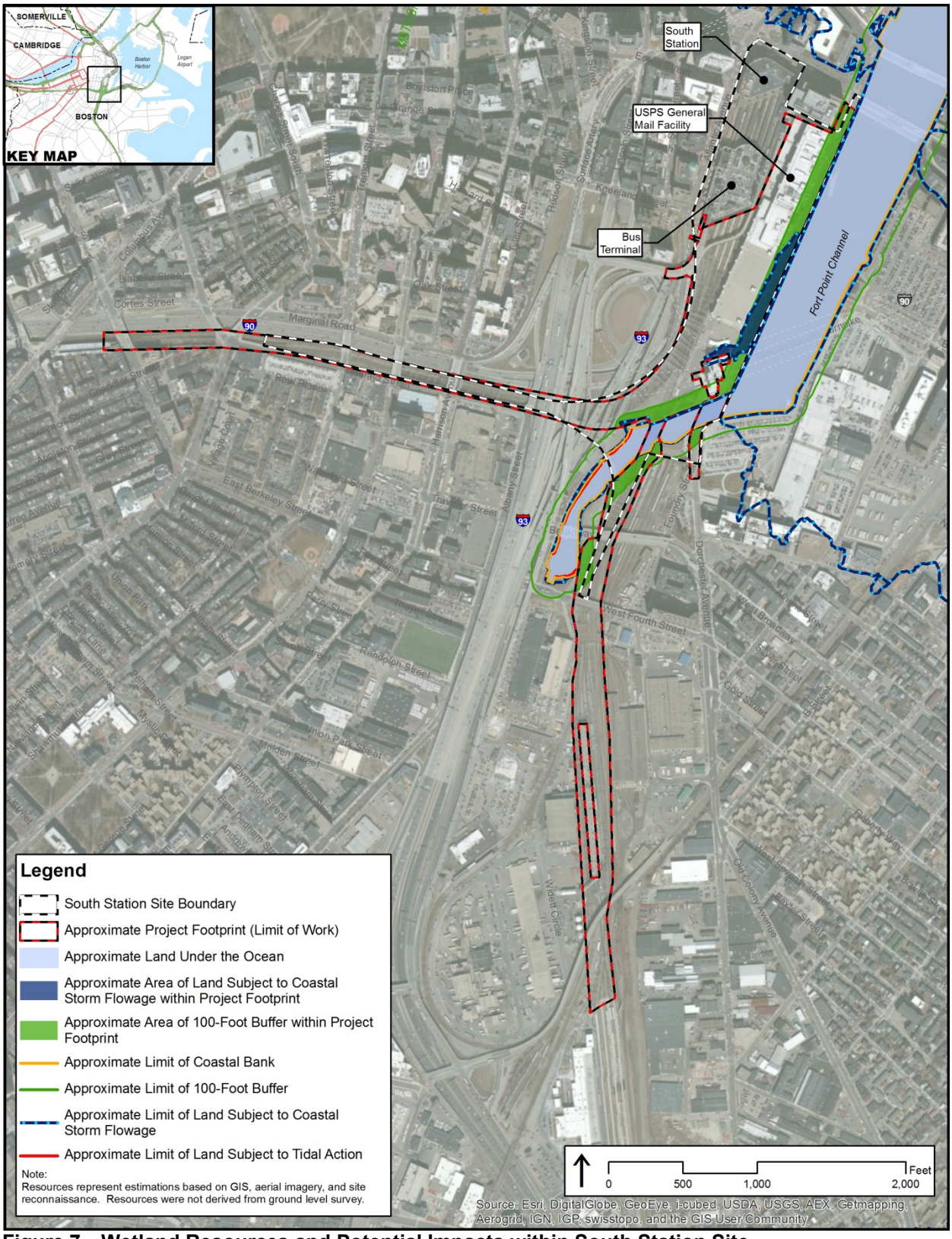

Figure 7—Wetland Resources and Potential Impacts within South Station Site

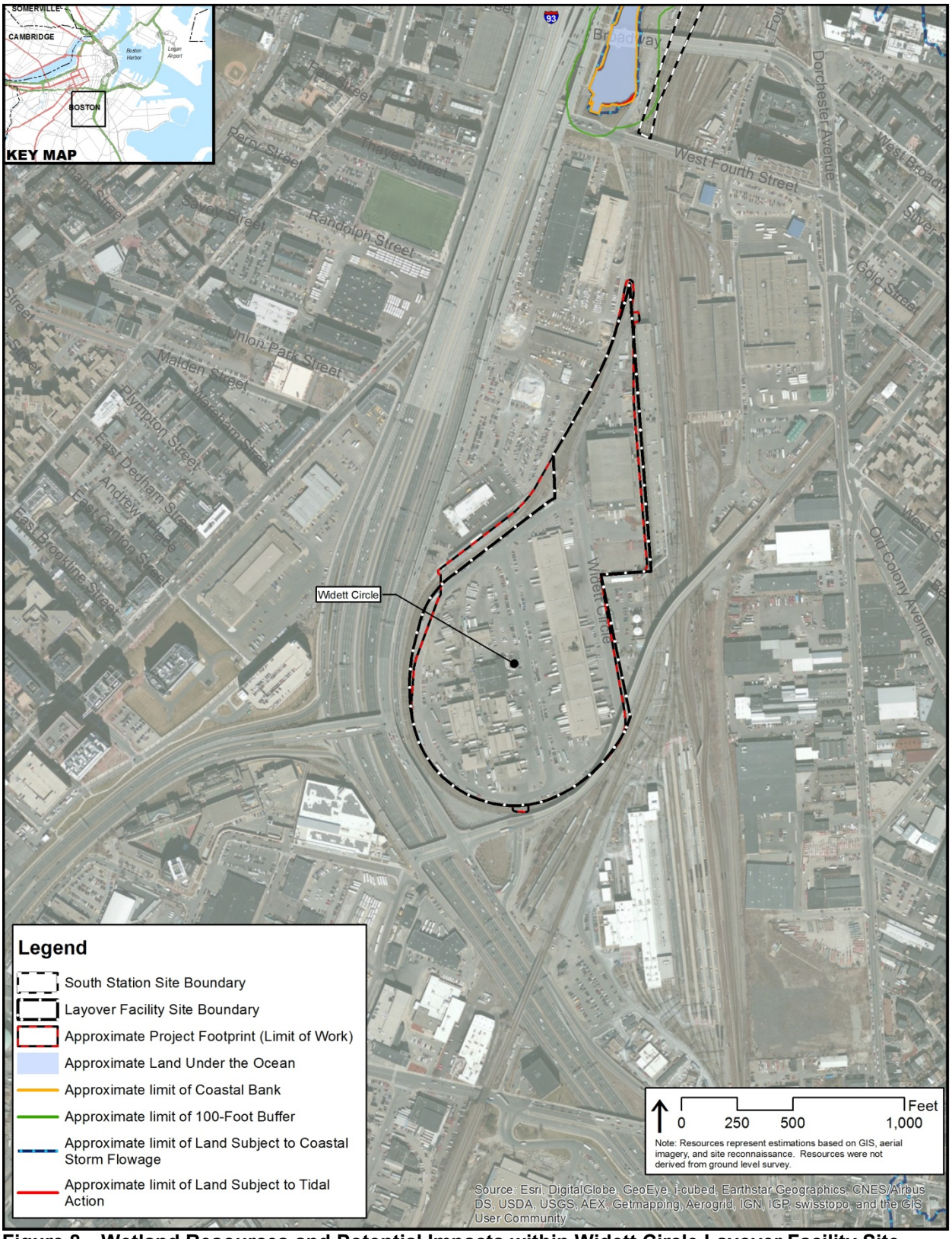

Figure 8—Wetland Resources and Potential Impacts within Widett Circle Layover Facility Site

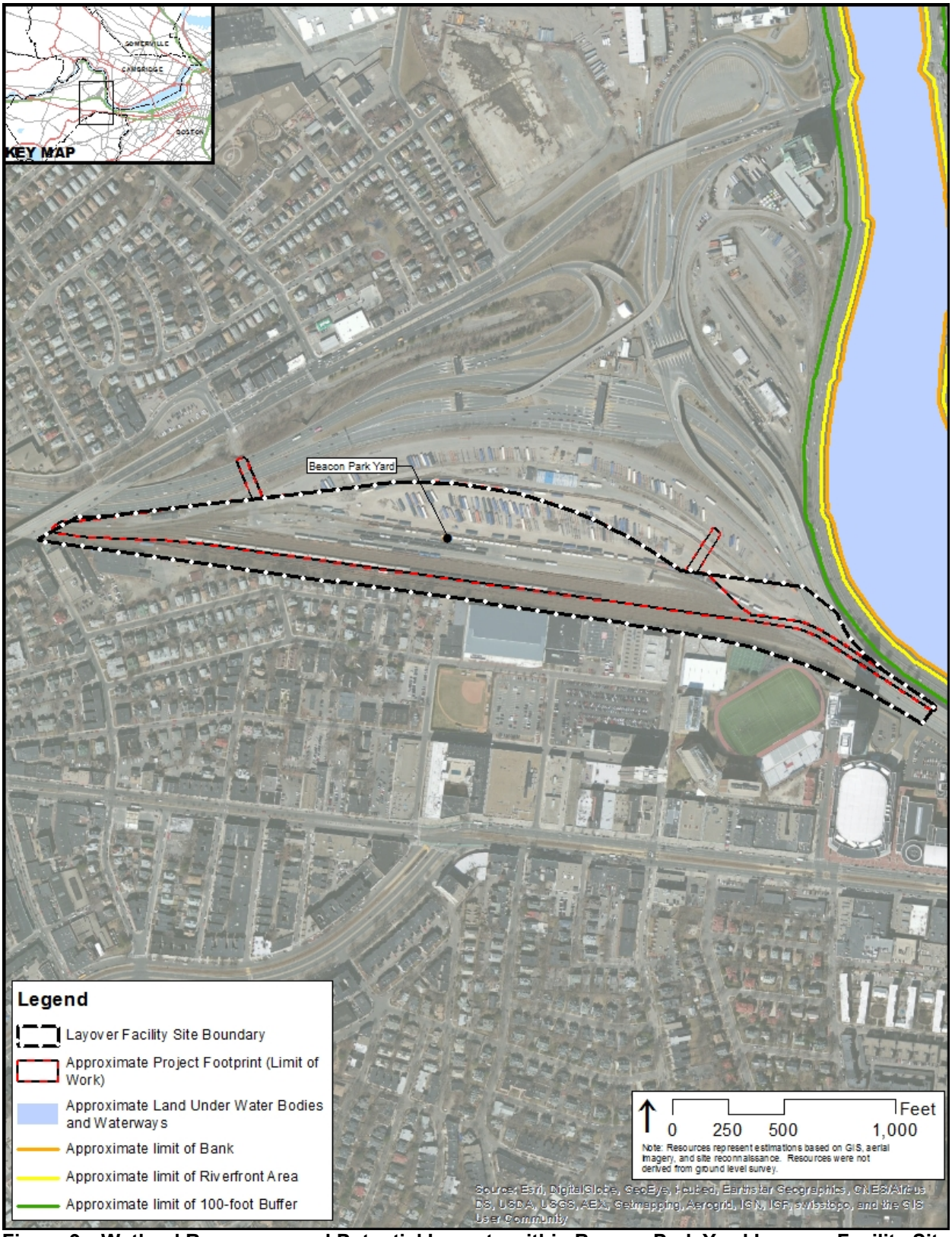

Figure 9—Wetland Resources and Potential Impacts within Beacon Park Yard Layover Facility Site

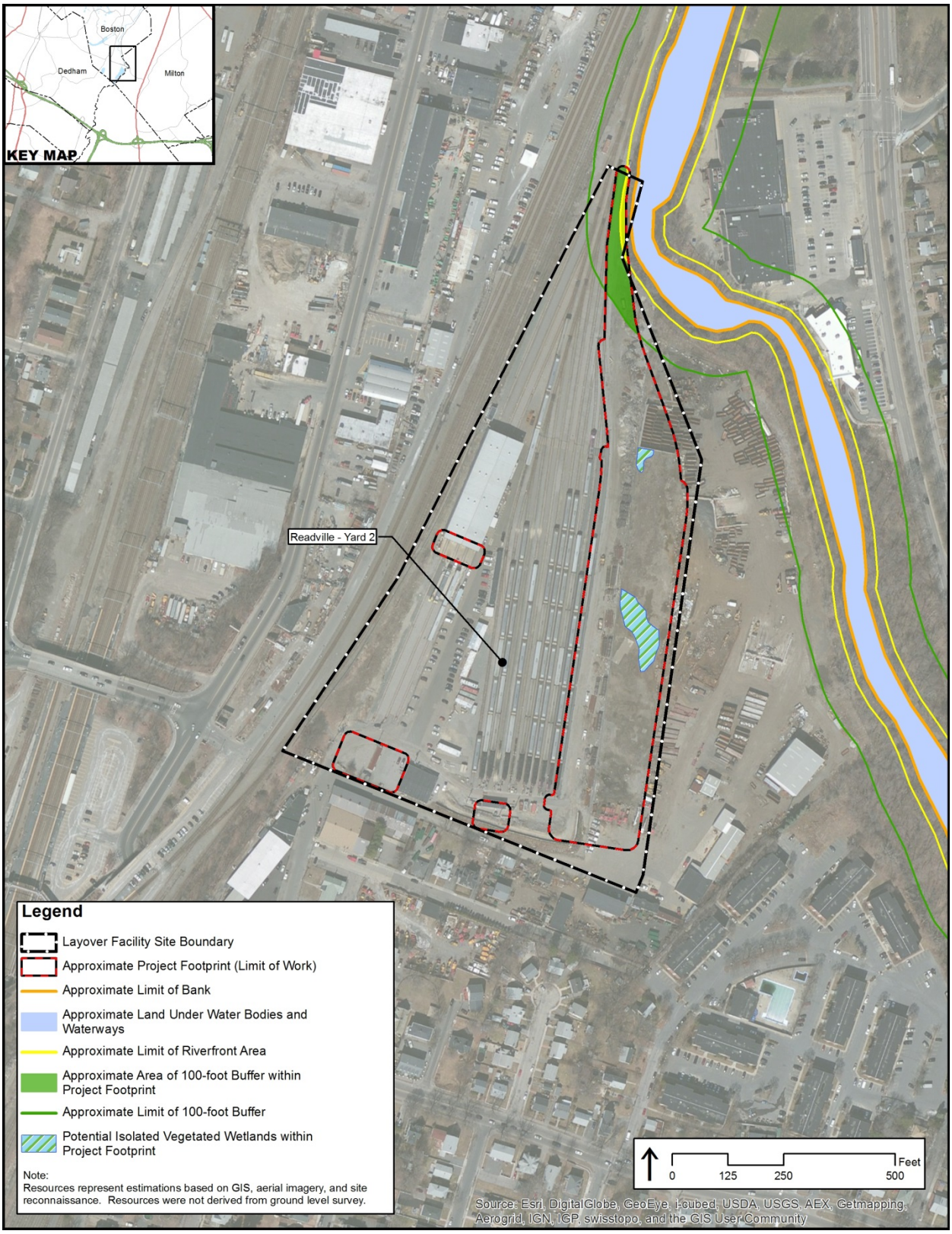

Figure 10—Wetland Resources and Potential Impacts within Readville - Yard 2 Layover Facility Site

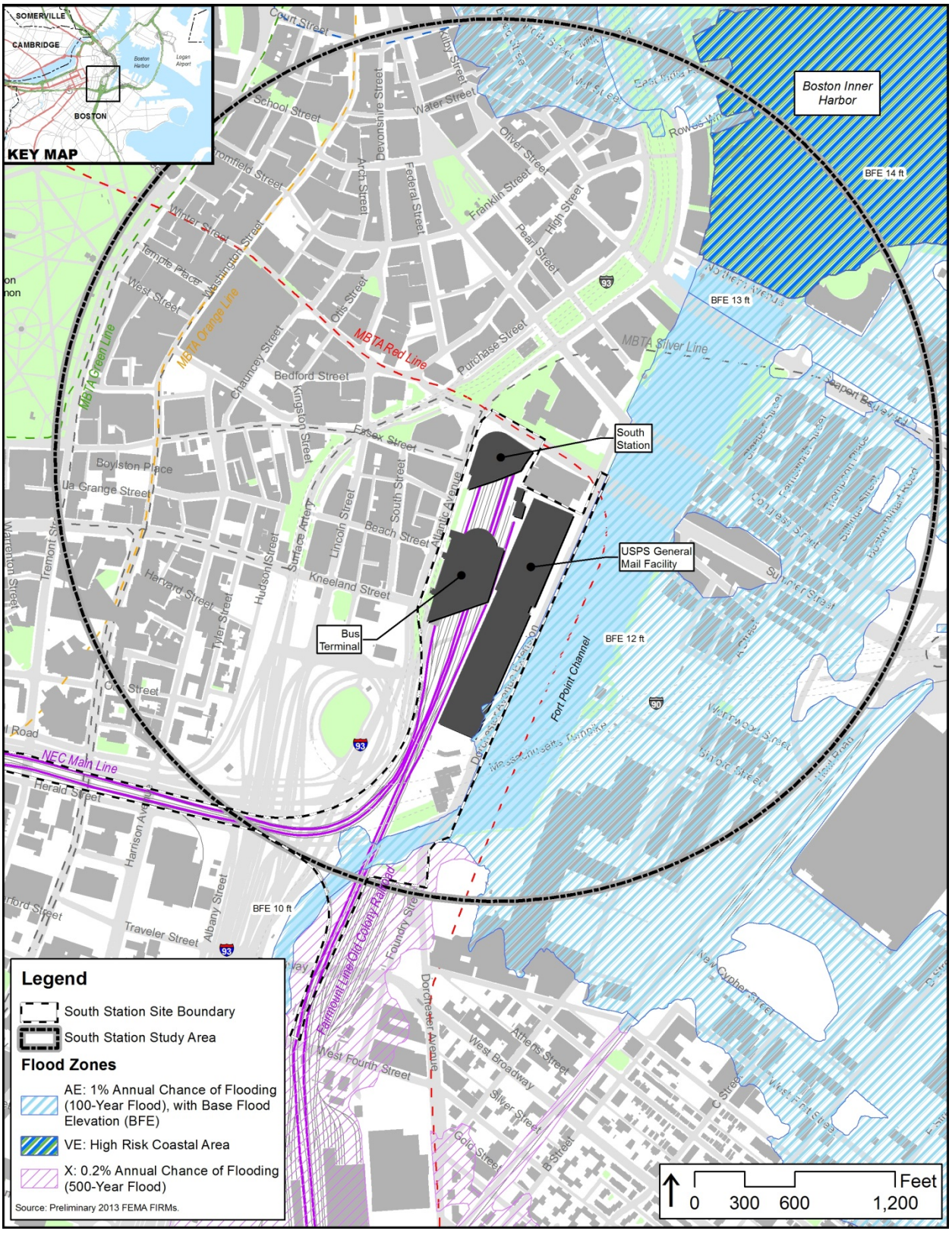

Figure 11—Floodplain Existing Conditions - South Station Study Area

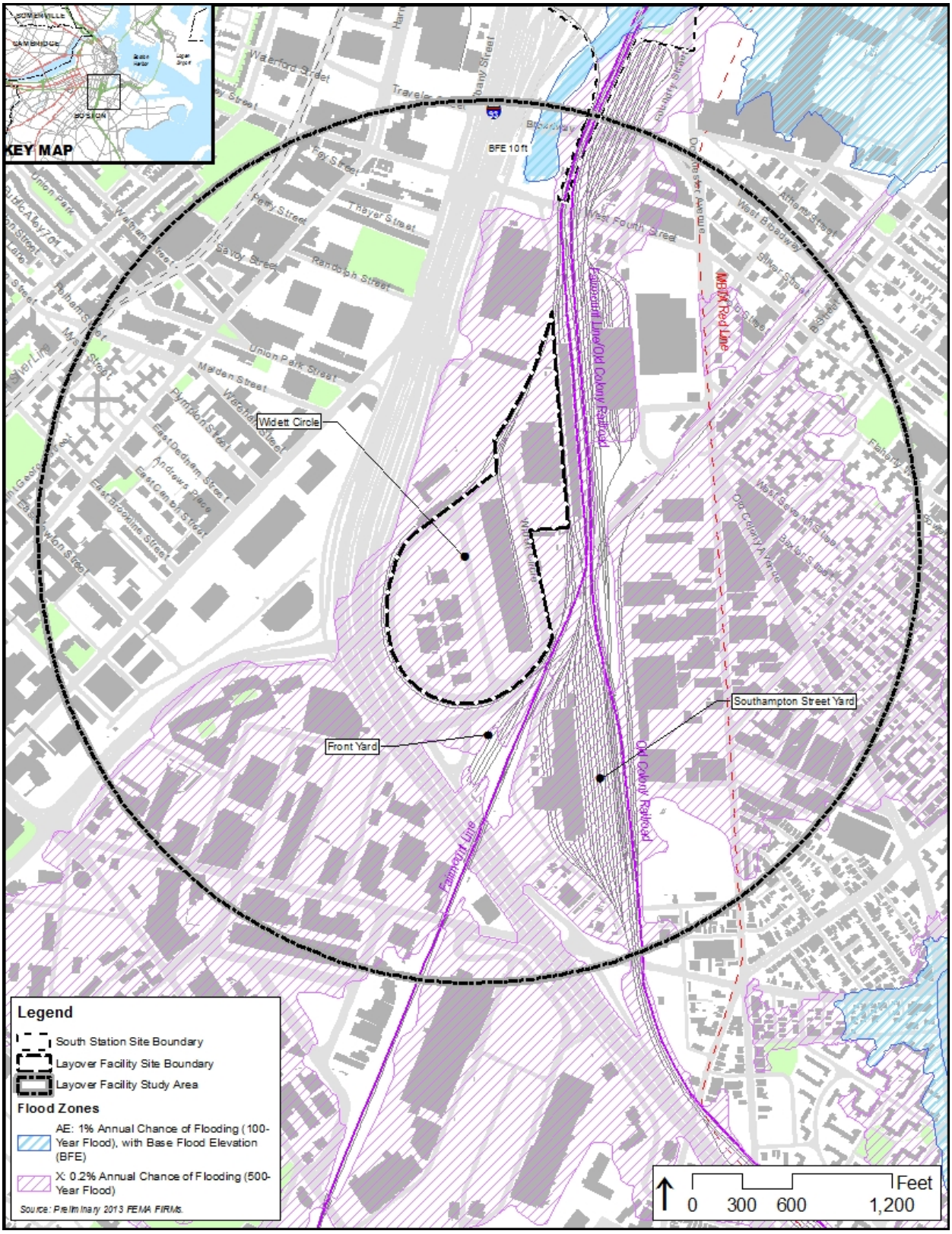

Figure 12—Floodplain Existing Conditions - Widett Circle Layover Facility Study Area

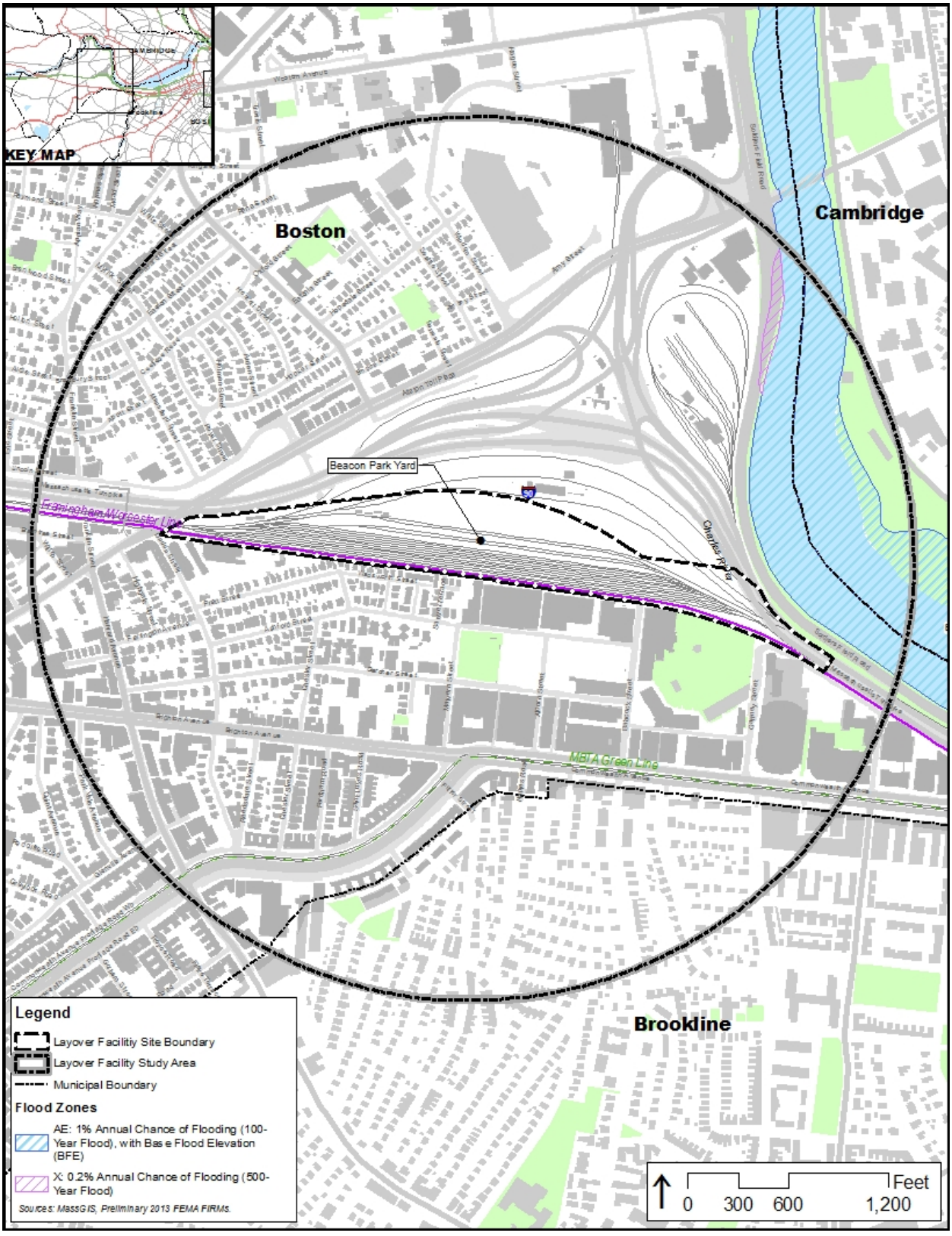

Figure 13—Floodplain Existing Conditions - Beacon Park Yard Layover Facility Study Area

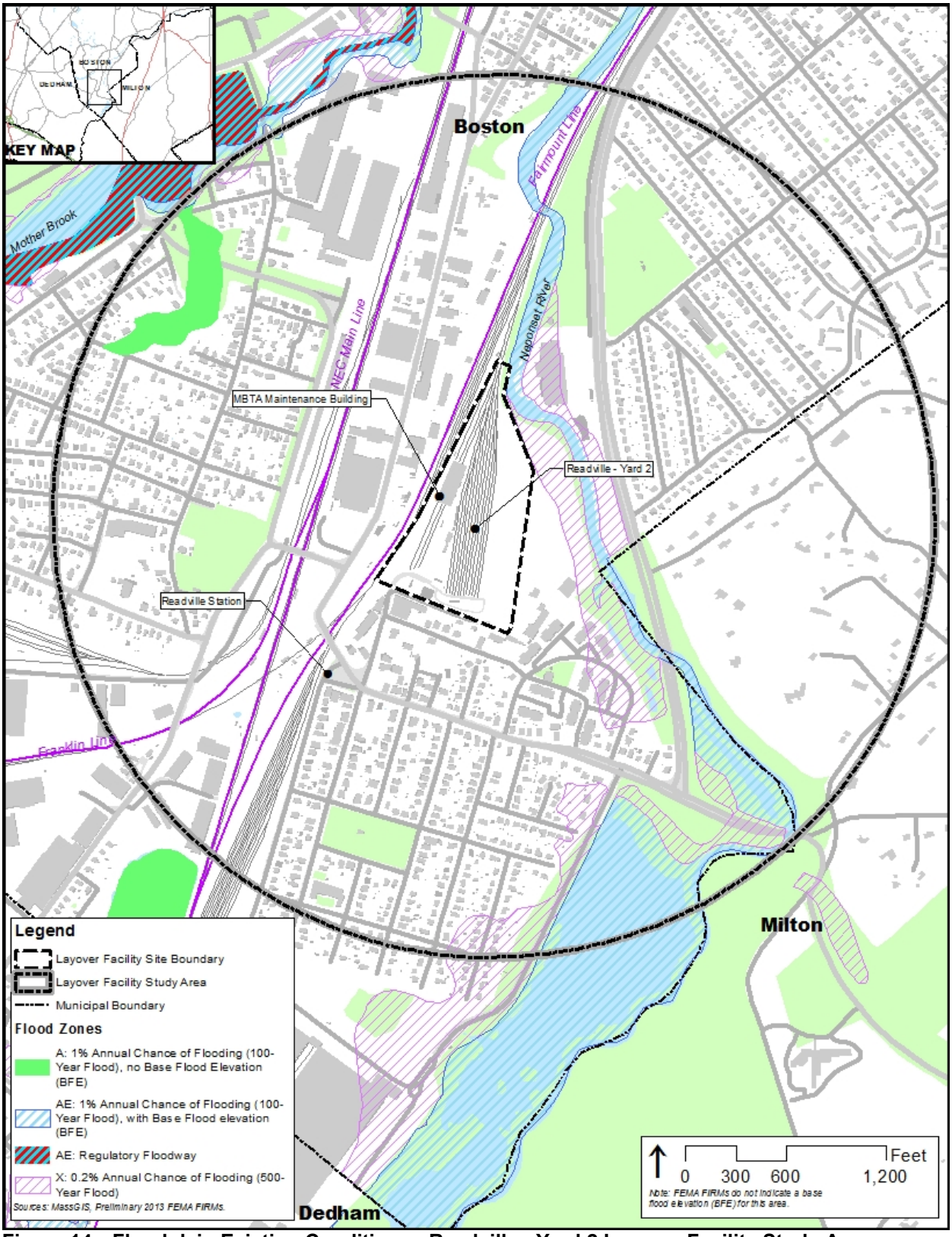

Figure 14—Floodplain Existing Conditions - Readville - Yard 2 Layover Facility Study Area

Figure 15—Potential Floodplain Impacts within South Station Site and Vicinity

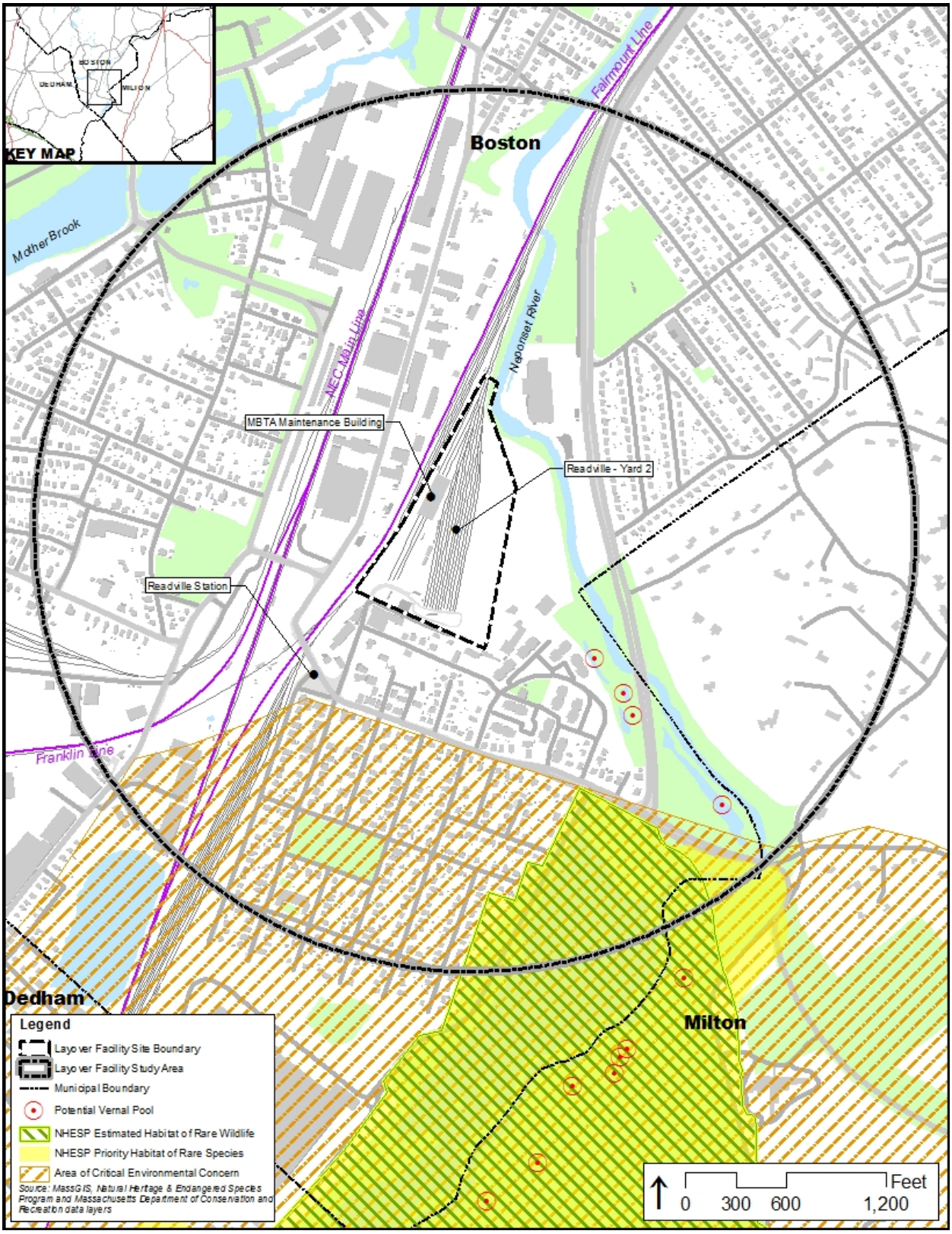

Figure 16—Habitat Existing Conditions - Readville - Yard 2 Layover Facility Study Area

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