

# **Coastal Resilience Solutions for East Boston and Charlestown (Phase II)**

## **Task 1 Memo: Review & Synthesis of Existing Information**

February 2, 2021



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# Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

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February 2, 2021

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30055432

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## **Boston Planning & Development Authority Neighborhood Profiles**

# 1 Introduction

The City of Boston's Climate Ready Boston team has launched the next neighborhood coastal resilience planning process for East Boston and Charlestown. This study will expand the City's previous analysis of these neighborhoods in 2017 to additional areas not covered in the prior Phase I study. For this reason, the project is being called *Coastal Resilience Solutions for East Boston and Charlestown (Phase II)*. The areas covered by this phase are described in Section 2.

During this process, the team will analyze the timing and location of coastal flooding in each neighborhood and will work alongside communities to develop solutions to protect the neighborhoods from the impacts of coastal flooding. The project will be developed through frequent and inclusive engagement of the East Boston and Charlestown communities using a variety of activities to provide meaningful, mutually valuable opportunities to participate and inform the work. The study will ensure health and safety of all who participate by adhering to all public health protocols during the COVID-19 pandemic.

This document is one of the first steps of the study and is intended to set the stage for further work by summarizing the findings of the project team's preliminary investigations into community histories and experiences, previous and ongoing planning and development projects, and the data and analysis we will draw upon.

***The memorandum does not include new information generated for this project related to risk analysis, technical documentation, or assessment of prior projects or plans.***

The findings of this document will be refined in close collaboration with the East Boston and Charlestown communities over the course of the project. As this information is refined, it will be included in future project products, including the study's final report anticipated in summer 2021.

## 2 Project Area in East Boston

The Phase II study will examine areas of the East Boston coastline not addressed during the Phase I study in 2017. As shown in Figure 2-1, the study area will extend from the Andrew McArdle Bridge between East Boston and the City of Chelsea, along Chelsea Creek, to the border with the City of Revere. The study boundaries extend along the Revere border and include the Suffolk Downs site, Belle Isle Marsh, Constitution Beach, and Wood Island Marsh, before connecting through Eagle Hill. Neighborhoods within the study area include Eagle Hill and Orient Heights. Adjacent areas include Central and Maverick Squares, as well as the Jefferies Point neighborhood. Neighboring communities include the Cities of Revere, to the north, Chelsea, to the west across Chelsea Creek, and the Town of Winthrop to the east.

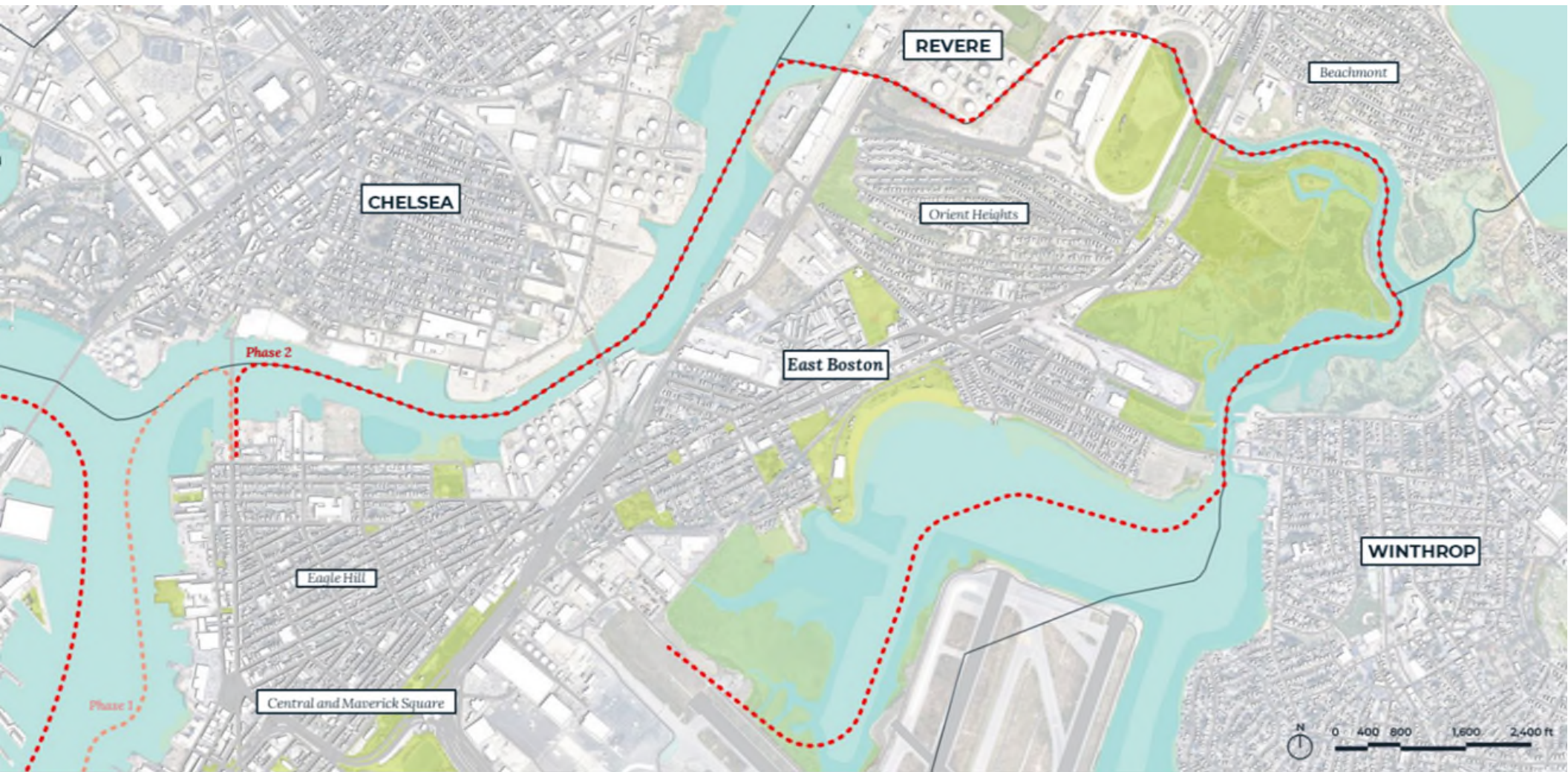


Figure 2-1: East Boston study area

### **3 Project Area in Charlestown**

The Phase II study in Charlestown will examine areas of the Charlestown coastline not addressed during the Phase I study in 2017. As shown in Figure 3-1, the study area wraps the Charlestown waterfront from approximately the base of the Lower Mystic Greenway on Medford Street, around the Boston Harbor Autoport and Little Mystic Channel, along the Navy Yard and historic Charlestown waterfront to the Charles River Dam and up New Rutherford Avenue. The Boston neighborhoods of East Boston and the North and West Ends are located across Boston Harbor from the study area. Neighboring communities include the Cities of Cambridge and Somerville, as well as Chelsea and Everett across the Mystic River.



Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

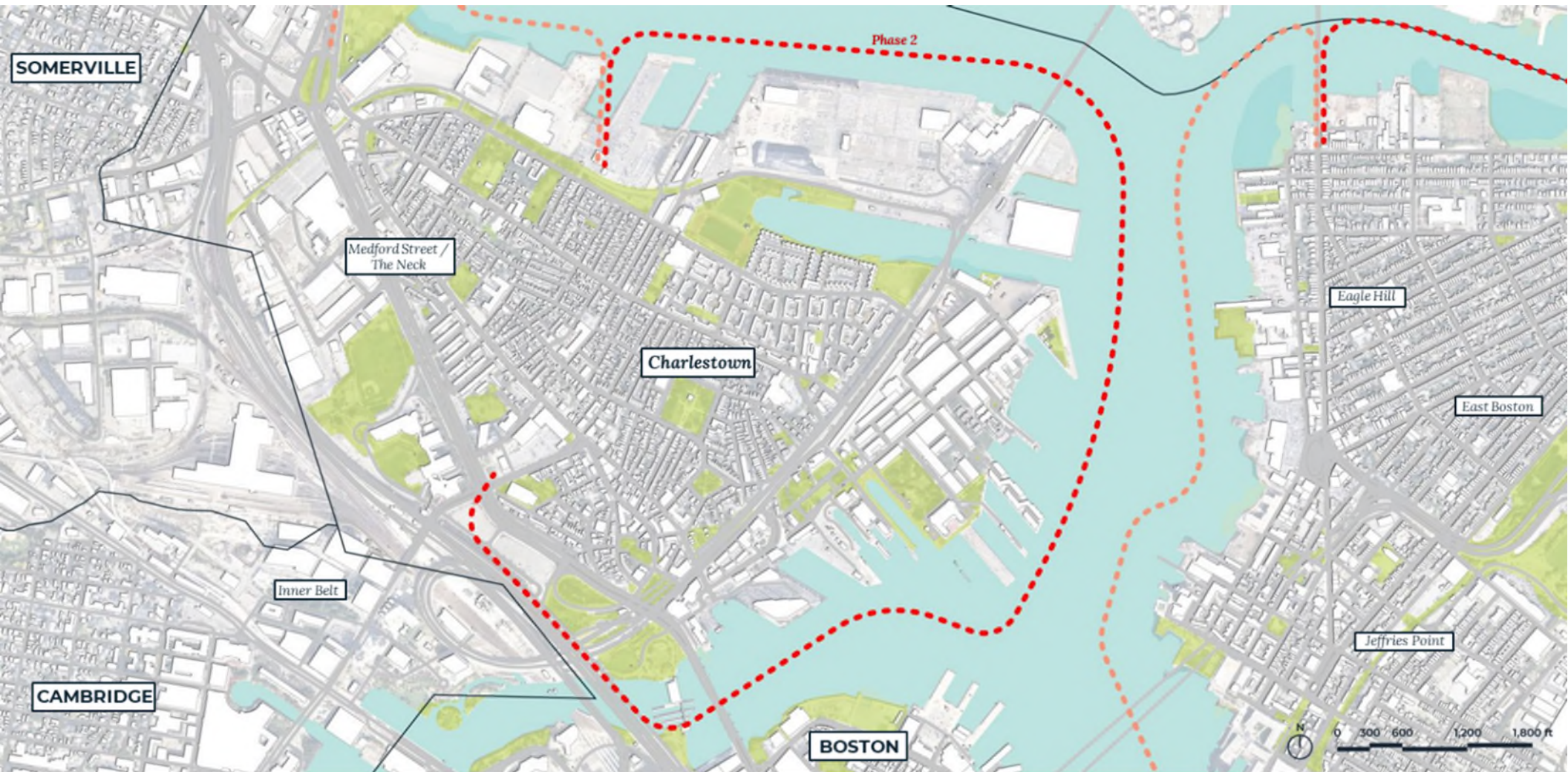


Figure 3-1: Charlestown study area

## 4 Project Intention Statements

In consultation with the Climate Ready Boston team, the project team developed draft “intention statements” to help center the project on common ground and ensure that the team, community members, and project stakeholders are frequently reminded of the project’s overarching goals and areas of focus. These statements will be further refined with the project’s Community Advisory Boards and with other community members. They are included below in draft form.

### East Boston

“The City of Boston will work closely with the community to co-develop a series of layered flood defense and coastal adaptation approaches that provide protection from rising sea levels and storm surges. Together, we will draw on prior planning and local knowledge to propose buildable projects and responsive policies and programs with lasting social, environmental, and economic benefits realized by those most in need. We will seek to produce a coastal resilience roadmap that protects and creates value for the East Boston community and all who share in the health of the City and the Harbor.”

### Charlestown

“The City of Boston will work closely with the community to co-develop a series of layered flood defense and coastal adaptation approaches that provide protection from rising sea levels and storm surges. Together, we will draw on prior planning and local knowledge to propose buildable projects and responsive policies and programs with lasting social, environmental, and economic benefits realized by those most in need. We will seek to produce a coastal resilience roadmap that protects and creates value for the Charlestown community and all who share in the health of the City and the Harbor.”

## 5 Project Scope and Schedule

The objective of the project is to develop a comprehensive coastal resilience plan and implementation roadmap for the Phase II study areas in East Boston and Charlestown. The process of developing the plan involves the following steps:

- Analyze the communities' risk of flooding, including to residences and businesses, community services, infrastructure, and ecological and recreational resources
- Develop a toolkit of options for reducing risk and increasing long-term resilience to flooding and sea level rise using new infrastructure and policies
- Narrow the range options to a set of short- and long-term solutions that are supported by the communities and other stakeholders, are feasible and cost effective, and that offer adaptable multilayered protection with multiple public benefits
- Create a prioritized implementation roadmap the guides the City, communities, and other stakeholders in the process of bringing the plans to reality
- Throughout, the process will involve frequent and inclusive community engagement with goals of building community capacity, listening to and learning from community concerns and priorities, and co-creating solutions that will benefit those most in need.<sup>1</sup>

The planning process began in September 2020 and is expected to extend through summer 2020. Due to the uncertainties stemming from the COVID-19 pandemic, the schedule will be treated flexibly to ensure that the City and project team can adapt the process in response to emerging community needs. Figure 5-1 summarizes the preliminary project schedule.

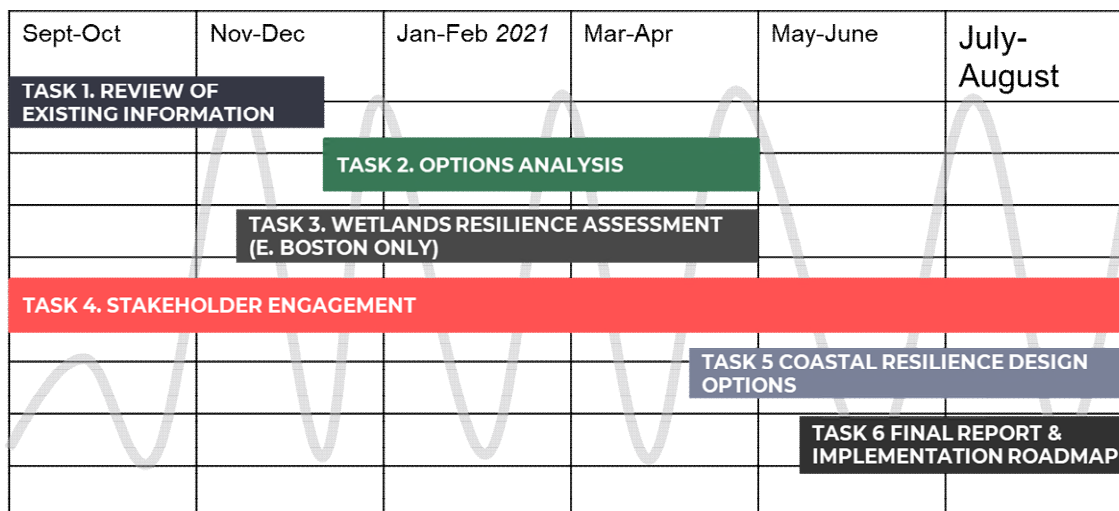


Figure 5-1: Preliminary project schedule

<sup>1</sup> A "living" Community Engagement Plan for the project has been provided to the Climate Ready Boston program management team under separate cover



## 6 Setting the Stage

The intent of this section, which includes a community overview and existing conditions mapping for each neighborhood, is to begin to identify the community strengths and dynamics at play in East Boston and Charlestown. This will help inform the questions we will discuss with community members and how we will work toward a set of achievable and acceptable coastal resilience solutions.

The purpose of beginning to identify the distribution of infrastructure, characteristics of the built environment, and demographic factors like wealth and educational attainment, among other factors, is not to label certain populations as ‘vulnerable’ but rather to identify areas of inequity so that the team can investigate the physical and policy conditions that created it, with the ultimate goal of creating a plan that resists recreating the same patterns.

The community overviews below are a starting point that will be changed over the duration of the project in partnership with the community. Through the project process, the community overview will be bolstered by community input of local knowledge, lived experiences, and memories, so that more meaningfully representative maps and narratives can be included in the final plans for Charlestown and East Boston. In conversation with the community, the team will seek to understand characteristics like cultural identity, gaps in access to housing, healthcare, and education, using categories and geographic boundaries that resonate with Charlestown and East Boston residents, rather than national survey designated categories and boundaries.

### 6.1 Flood Risk and Regional Infrastructure

#### Coastal Hazards

Both East Boston and Charlestown are exposed to a variety of coastal hazards. This section introduces the key terms and concepts related to these hazards and preliminary description of how they will impact the neighborhoods over time. Additional detailed risk and vulnerability analysis will be produced later during the study and be shared with the communities and other stakeholders.

#### Historic Shoreline

Boston’s historic shoreline is found much further inland than the current one, which has been created by filling in land over time. Much of the land that was created through fill is now vulnerable to flooding, as it exists at a lower elevation than the surrounding areas that were once islands. When coastal storms and extreme hightides occur, the water naturally flows to the lowest lying areas, trying to reclaim space that has been converted by human intervention.

East Boston was once a collection of small islands that have been joined together into one landmass through episodes of filling tidal areas over time. To the neighborhood’s north, East Boston was connected to the mainland in the late nineteenth century. The historic waterway and tidal estuary between Noddles Island and Hog Island (later called Breed’s Island), called Crooked Creek, is the most significant flood pathway: flooding here will occur the soonest and be the most severe.

Charlestown has long been its own island, but significant portions of its water-adjacent areas are filled land, which is now most vulnerable. Notably, the area along Mystic River and Little Mystic Channel, which was filled to serve waterfront industries, is expected to see high-frequency flooding in the future.

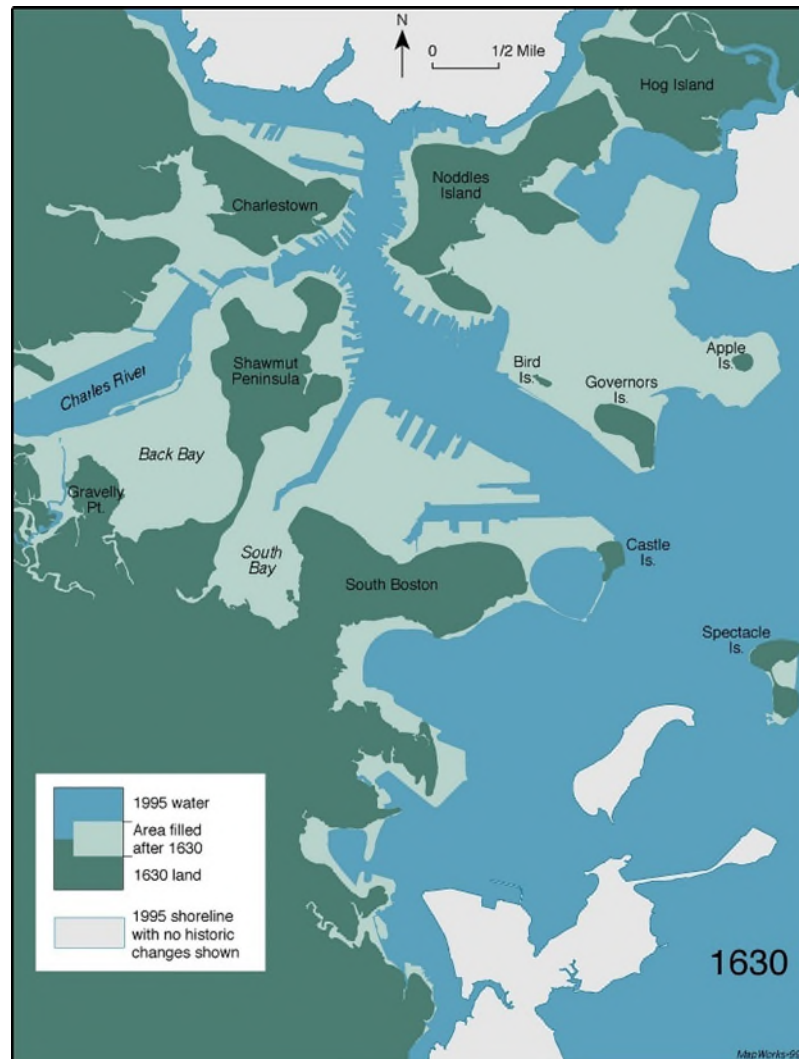


Figure 6-1: Historic shoreline of Boston<sup>2</sup>

## Storm Surge

Storm surge occurs when water levels rise higher than the predicted astronomical tides due to a storm. These elevated water levels can cause extreme flooding, particularly if the storm surge occurs at the same time as high tide. Storm surge occurs because water is being pushed onshore by the winds that accompany a storm. Storm surge in the northeast is typically caused by nor'easters and hurricanes. When these storms hit East Boston, water can cause fringe flooding to waterfront properties, submerge natural resources such as wetlands and marshes, and flow inland through flood pathways to affect inland areas.

<sup>2</sup> [Source: Norman B. Leventhal Map & Education Center](#)

## Waves and Erosion

Waves associated with storms can severely damage buildings and infrastructure located along the coast. Any structures not designed to withstand forces associated with waves will likely be damaged. Waves and the associated currents also erode unprotected shorelines, which can undermine building foundations and destroy roads and other forms of infrastructure. When water is deeper, waves can make their way further inland; storm surge and sea level rise lead to deeper water and more favorable conditions for waves. Most of Boston Harbor is sheltered from large waves by virtue of its harbor setting and the natural barriers created by the Boston Harbor Islands. Nevertheless, smaller (short period) waves do occur in the Harbor, particularly during large storms, and can still cause damage to waterfront structures.

## Sea Level Rise

One significant effect of climate change is an increase in the mean sea level. Sea Level Rise (SLR) increases the risk of flooding posed to buildings, infrastructure, and ecosystems resulting from both coastal storm events and astronomical high tides. SLR also introduces a factor of uncertainty in planning for future flood risk in addition to traditional challenges in predicting the frequency of flood events.

The City of Boston's *Climate Ready Boston* vulnerability assessment and report uses the 2015 Boston Harbor Flood Risk Model (BH-FRM) to project future SLR and correlated flood risk in Boston. Created as part of the Massachusetts Department of Transportation (MassDOT) and Federal Highway Administration (FHWA) Resilience Pilot Project, the BH-FRM was developed by UMass-Boston, Woods Hole Group Inc., and the University of New Hampshire. The project uses climate projections, agreed upon in [Climate Ready Boston](#), to simulate flooding from extreme weather and sea level rise and predicts that Boston's sea levels will likely rise by 9 inches (from 2000 levels) as soon as 2030 if emissions continue at their current pace, 21 inches as soon as 2050<sup>3</sup>, and 40 inches<sup>4</sup> as soon as 2070.

The SLR projections that will be used for this study are based on the Climate Ready Boston assessment and are consistent with those used for the BH-FRM. Specifically, this project will examine two primary SLR scenarios: 9 inches of SLR assumed for 2030 and 40 inches assumed for 2070.

As emphasized in the *Climate Ready Boston* report, the pace of relative sea level rise in Boston is accelerating, driven by global mean SLR in large part due to melting Arctic and Antarctic ice sheets and ocean thermal expansion, as reported with high confidence in the Intergovernmental Panel on Climate Change's (IPCC's) 2019 Special Report on the ocean and Cryosphere in a Changing Climate. It is also important to note there is an element of uncertainty involved in predicting SLR, and this uncertainty should be considered when evaluating potential impacts, as well as a community's tolerance for risk over time.

## Wetlands

Wetlands can serve as powerful tools for flood abatement. They can store large amounts of water and help slow the speed of floodwater approaching the coastline. In coastal areas that are vulnerable to hurricanes and other powerful storms, such as Boston, wetlands serve as barriers that reduce the

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<sup>3</sup> *Climate Ready Boston* interpolates 2050 projections based on BH-FRM 2030 and 2070 projections.

<sup>4</sup> Note that 36 inches of SLR in *Climate Ready Boston* maps correlate to 40 inches of SLR from the BH-FRM

destructive potential of floodwaters. In many coastal settings, protecting and restoring wetlands is a cost-effective flood mitigation measure (EPA).

SLR threatens existing wetlands and other environmentally sensitive coastal areas. As water rises, the wetlands need to migrate; the wetland space in the deepest water will become permanently underwater, and new wetland will develop further inland in response. However, in developed areas, where the upland side of wetlands is occupied by buildings and other types of hardened infrastructure such roads, sidewalks, and seawalls and bulkheads, there is often not sufficient upland area for wetlands to migrate. This means the wetland will gradually become permanently flooded, reducing the coastal flood resilience and ecological benefits of the resource.

## Flood Risk

Flood risk can be understood as the correlation of two components: the probability of a flood event happening and its consequences on an asset, system, or population. The probability of flooding is generally correlated with an associated surface water elevation. As the expected magnitude of a flood event increases, the probability decreases. For example, a 100-year flood event has a 1% probability of happening every year while a more severe 500-year flood event has a 0.2% probability of happening every year. Understanding flood risk allows stakeholders to decide whether they can tolerate the risk. If risk is higher than the tolerance for flooding, stakeholders may decide that adaptation, relocation, or other plans are needed to reduce risk.

FEMA correlates flood depths to the probability of flooding using maps called Flood Insurance Rate Maps (FIRMs). FIRMs illustrate areas in Special Flood Hazard Areas (SFHAs), or areas that are at risk of flooding due to coastal storm events. These maps, in most cases, are based on backwards-looking data and are created for the purposes of flood insurance rating under the National Flood Insurance Program (NFIP). For these reasons, they are not always the best available data to support a community's decisions about coastal risk and resilience.

The BH-FRM, as discussed above, has been widely considered to be the best-available flood hazard data for Boston to represent coastal storm events and sea level rise. These data have been consistently used by the City since 2016 in its coastal resilience planning efforts, including during the prior phase of neighborhood resilience planning in East Boston and Charlestown.

While climate science points to an increased number of stronger storm events (storminess) in the future, the current understanding of how this will impact future storm probability is not well understood. In many cases, the practice is to add projections for future SLR directly to infrequent flood events elevations for a given storm probability. However, the BH-FRM did attempt to account for this effect.

The BH-FRM provides a range of probabilities of possible flood conditions for the years 2013, 2030, and 2070, including water surface elevations across the city for 10-percent (10-year), 2-percent (50-year), 1-percent (100-year), and 0.1-percent (1,000-year) annual chance flood events for each year projected. These can be used to understand the current (2013) and future (2030 and 2070) flood risk in East Boston and Charlestown and are critical to determining target flood mitigation design elevations at the site.



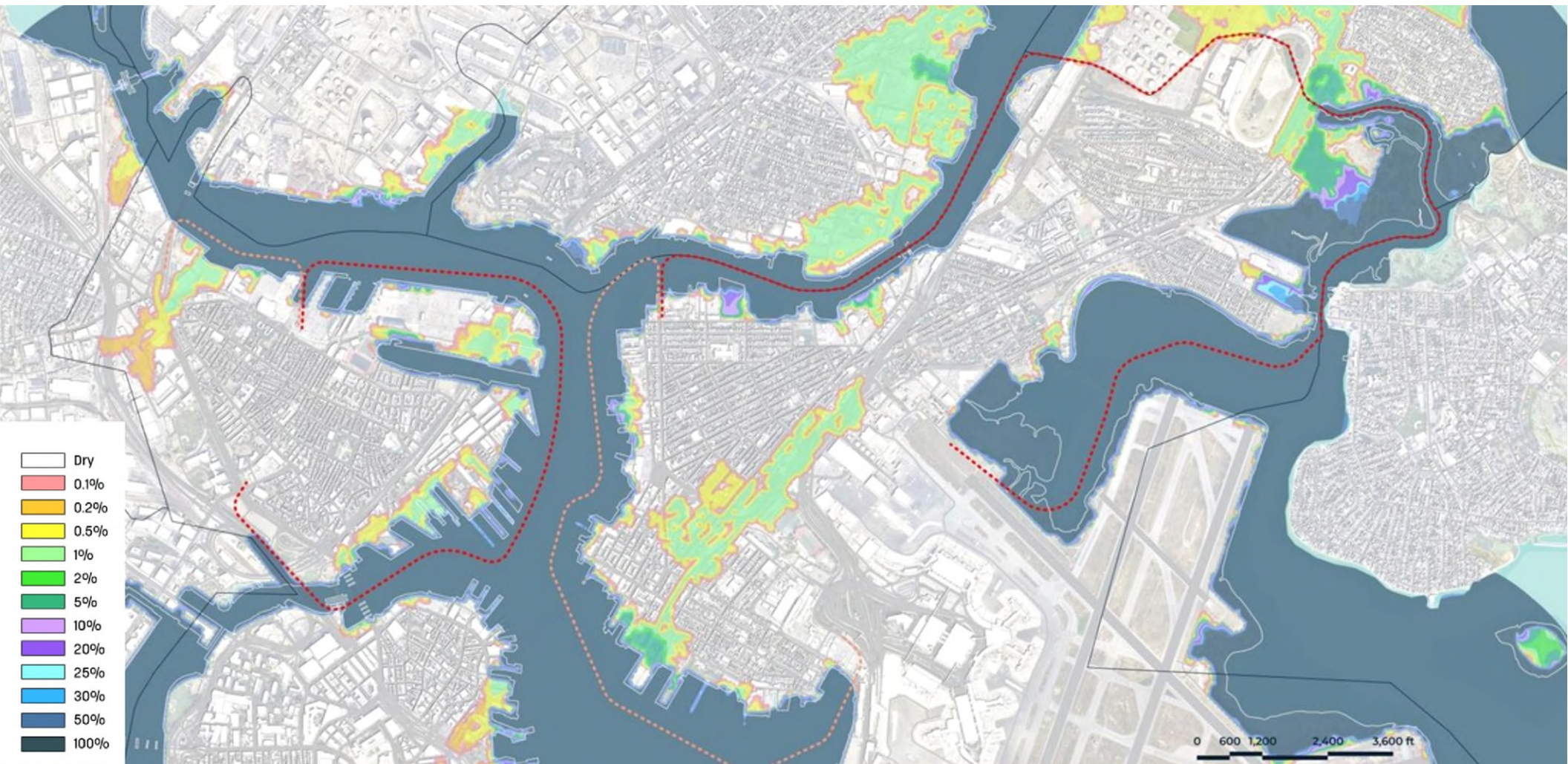


Figure 6-2: Annual probabilities of flooding in East Boston and Charlestown under 0 inches of sea level rise (2013)



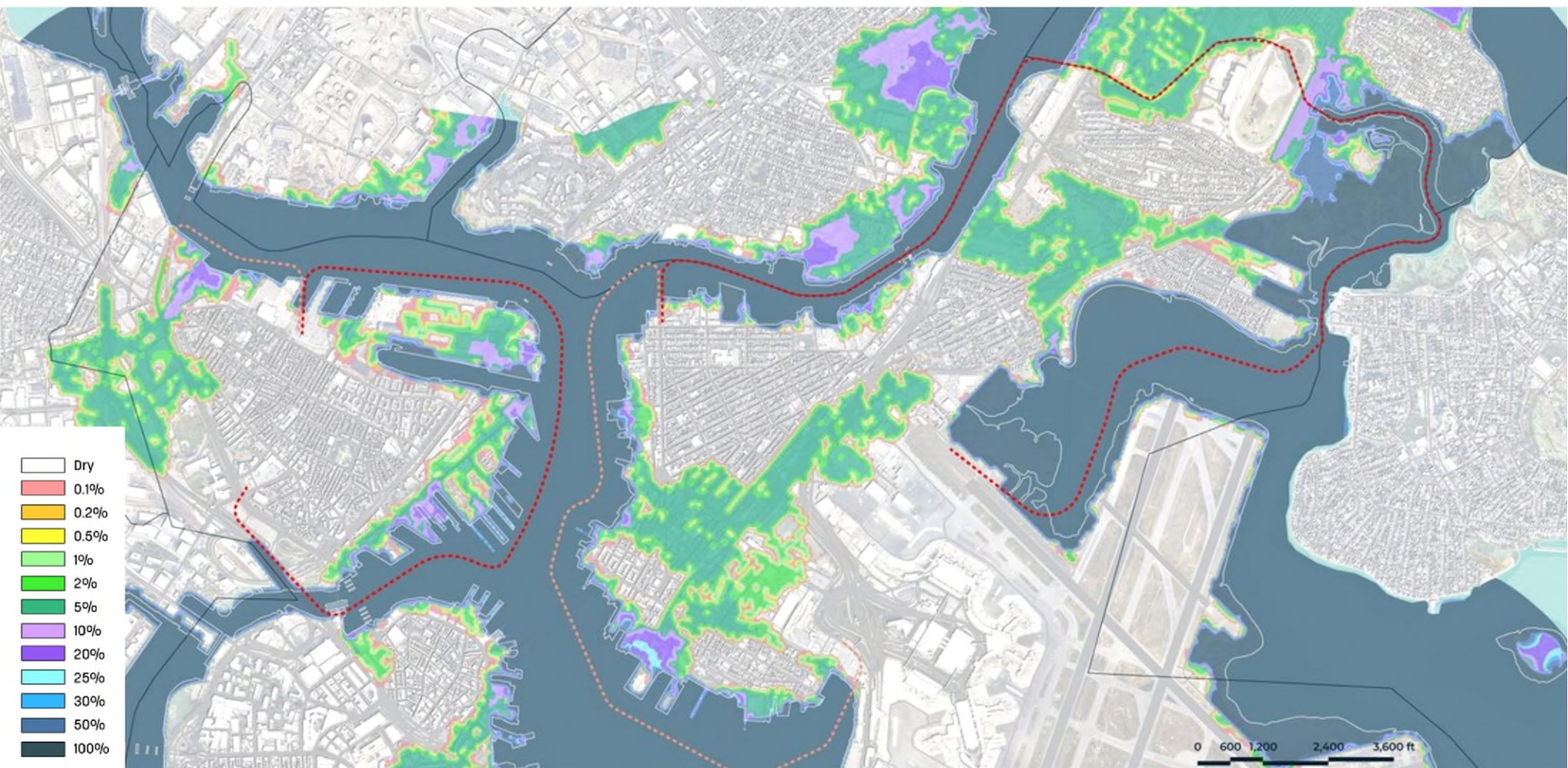


Figure 6-3: Annual probabilities of flooding in East Boston and Charlestown under 9 inches of sea level rise (2030)



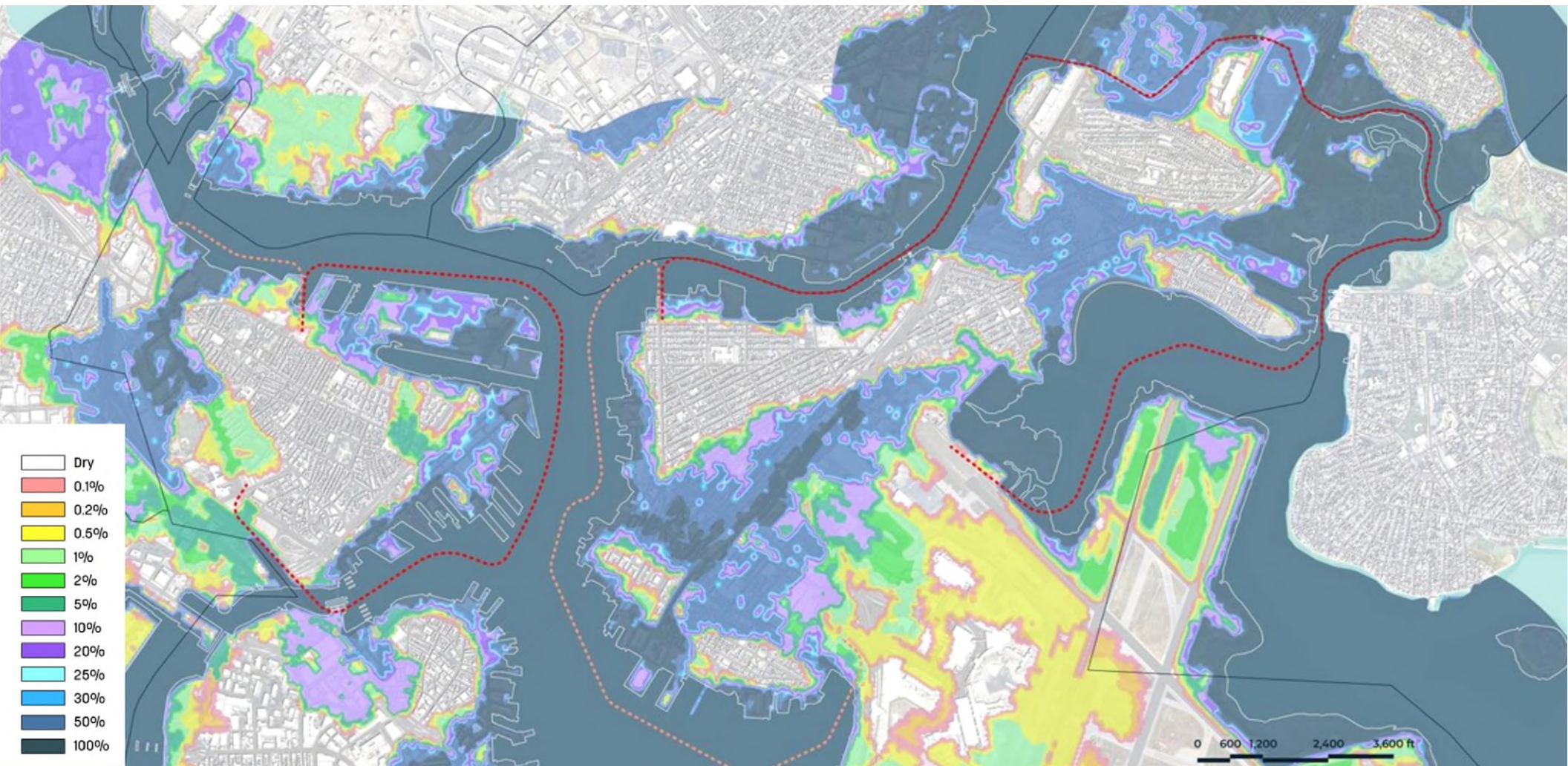


Figure 6-4: Annual probabilities of flooding in East Boston and Charlestown under 40 inches of sea level rise (2070)

## Regional Infrastructure & Transportation

State and local roadways, bus routes, and railways all travel through East Boston. This transportation infrastructure system serves the local community and connects to the rest of Boston, as well as Chelsea, Revere, Winthrop, and the larger region. The MBTA Blue Line connects East Boston and Revere, as well as Logan Airport, to the rest of the city. The Silver Line provides additional access to Logan Airport and to Chelsea. The MBTA owns a rail yard adjacent to the Orient Heights T Station.

Interstate 90, the Massachusetts Turnpike, enters East Boston from the south before becoming Route 1A, providing vehicular access to north shore communities. The William F McClellan Highway connects to Revere in the north. These highways serve as major connector between East Boston and its neighbors. Route 45, Bennington Street, serves as a major arterial that carries bus traffic from Eagle Hill through to Orient Heights and beyond.

Two tunnels and three bridges connect East Boston to neighboring municipalities. The Sumner Tunnel and Ted Williams Tunnel connect East Boston to Downtown and South Boston. The Andrew McArdelle Bridge and Chelsea Street bridge cross Chelsea Creek to the north. Finally, the Saratoga Street/Main Street Bridge connects to Winthrop in the west.

Charlestown is primarily served by State and local roads and bus routes. The MBTA Orange Line runs along the southwest border of our area and connects to Somerville and Malden to the north and downtown Boston to the south. US-1 runs through Charlestown along Chelsea Street as a limited access elevated highway leading to the Maurice J. Tobin Memorial Bridge, which connects to Chelsea. The primary through streets, which bus lines follow, are Bunker Hill Street and Main Street. In the southeast corner of Charlestown, two bridges connect the neighborhood to downtown Boston via N. Washington Street and I-93/US-1.

Both Charlestown and East Boston have infrastructure that supports water-dependent industrial uses. Some of these port facilities offer important berthing for ships and other vessels that transport goods to Boston and the region.



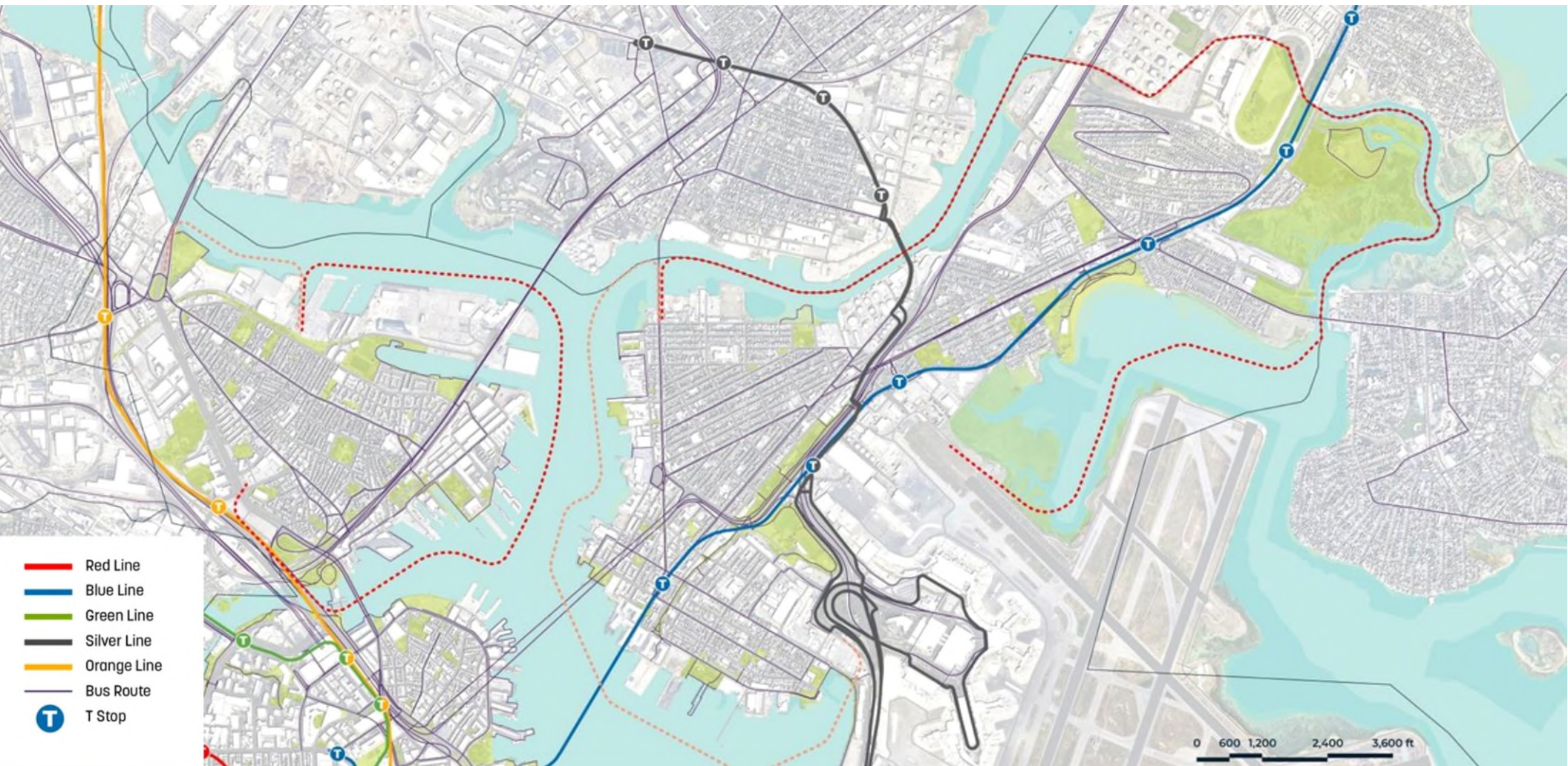


Figure 6-5: Transportation network in East Boston and Charlestown

## 6.2 East Boston Overview

The vibrant and eclectic neighborhood of East Boston (or “Eastie”) is home to approximately 46,000 people. In keeping with its storied past of being a welcoming community for immigrants – East Boston was once the second-largest point of immigration in the United States after Ellis Island - today, over 50% of the population is foreign-born, the highest of any neighborhood in Boston. According to PLAN: East Boston, the majority of the foreign-born population hails from Spanish-speaking countries, such as El Salvador, Columbia, Guatemala, and the Dominican Republic.

East Boston’s history is marked by industries that thrived and triggered the rapid growth of the neighborhood in the early 20<sup>th</sup> century due to its siting along the waterfront, specifically the shipbuilding industry. Its success, and that of related and supporting industries, led to the development of Maverick Square and Central Square as key commercial and retail districts in East Boston - which remains the case to this day – and the eventual construction of Boston Logan Airport, which opened in 1923. According to the American Community Survey, most East Boston residents hold occupations in the service and hospitality sector (26%), followed by the educational and healthcare (16%) and professional industries (16%).<sup>5</sup>

The residents of East Boston have developed a strong sense of community over the years through a robust history of organizing and activism in defense of community assets and quality of life. In the 1960s, local activism focused on noise and air pollution caused by the airport and the Blue Line. Today, the struggle focuses, in part, on gentrification and displacement caused by rapid growth and development within the past decade. As East Boston has grown, several changes have accompanied this growth, including a 22% increase in population (twice the citywide average), a 42% increase in average rents, and an annual growth rate of 1.3% for weekday boarding of the Blue Line in all East Boston stations. As of December 2020, there are 13 projects currently permitted and under construction, of which 12 are partly or completely residential ([East Boston Today](#)).

Over many decades, in the face of, often drastic, neighborhood changes and economic disparities, residents of East Boston have come together to create a tight knit, dedicated, and eclectic community, defined by numerous neighborhood associations and groups, community gardens, the last major salt marsh in Boston, longtime residents and new homeowners, young professionals and families, and so much more. This planning process will seek to learn from and amplify these characteristics, which form the foundations of building a truly resilient community.

The City of Boston, like many around the country, has implemented many public health restrictions aimed at curtailing the spread of COVID-19. According to the Boston Public Health Commission, as of Wednesday, December 23, Boston had seen almost 37,000 cases and almost 1000 deaths due to the coronavirus. COVID-19 is impacting everyone’s lives right now, but the effects are not the same everywhere. The pandemic has exposed systemic inequities in the access to basic human needs, including healthcare, food, housing, and employment. Furthermore, the pandemic has exposed the lacking social safety net for those most in need.

COVID-19 has struck East Boston most severely out of all the neighborhoods in the city. The virus is rampant here for many structural reasons – for example, the fact the many East Boston residents cannot work from home, as many of them work in service industries or construction, leading to increased risk of

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<sup>5</sup> Note that a complete overview of the neighborhood is available in the appendices via the Neighborhood Profiles developed by the Boston Planning & Development Agency Research Division.

exposure through interaction with coworkers and clients. Crowded housing such as multigenerational apartments and living with roommates leads to “family spread” due to a lack of space for isolation when one member of the household is diagnosed with COVID-19. The presence of Boston Logan International Airport and a major highway running through East Boston means the community also suffers from elevated rates of respiratory illnesses, further elevating the risk that a case of COVID-19 becomes a severe case ([Boston Globe](#)).

Climate and environmental justice are a serious concern in East Boston, which is a designated Environmental Justice Community. One present concern that has been debated within the community is a proposed substation planned by the utility Eversource. Community advocates argue that this would locate a significant energy project in an already overburdened area without meaningful input from the community. On December 8, 2020, sixteen officials directed a letter to the Energy Facilities Siting Board asking for a re-evaluation of the need for the substation and postponement of an upcoming public hearing. Signatories included many Federal, State, and City elected officials. Community members also argue that the siting is inappropriate due to flood vulnerability.

Building on this community overview, the following pages will provide summaries and maps describing the existing built and natural environment of East Boston. Throughout the project, the team will work with the community to further define community infrastructure, assets, and value on the community’s terms and to respond to community concerns as they relate to coastal resilience.



## Open Space and Recreational Resources

East Boston has a number of cherished parks and greenways. With the COVID-19 pandemic, these open spaces have become all the more vital as community assets, providing the ability for people to safely leave their homes for exercise and fresh air. In the study area, much of this open space is concentrated on the waterfront, especially at Constitution Beach and Belle Isle Marsh (both under the stewardship of the Massachusetts Department of Conservation and Recreation). Belle Isle Marsh is a large area of salt marsh and tidal flats, which is a reservation open to the public with trails, fields, and viewing platforms. Constitution Beach Park is also accessible to the public and includes athletic fields, playgrounds, an ice rink, and a large beach for swimming and sunbathing. Additional tidal flats and salt marshes border Logan Airport, but are not accessible to the public. Linear open space is limited but increasing. The existing East Boston Greenway, which connects from Piers Park to Constitution Beach, is an important connection for pedestrian and bicycle traffic. Along Chelsea Creek, open space is more limited. The Condor Street Urban Wild is a public park located along Condor Street on a site that once used for industrial purposes but has been converted into a dynamic passive recreational setting with trails and sweeping views of Chelsea Creek. Throughout East Boston, a number of smaller pocket parks, plazas, malls, and squares offer respite to the community.

The recreational and open space resources of East Boston, particularly along the waterfront, are vulnerable to flooding. Steps will need to be taken to protect these valuable community and ecological resources, as well as seek opportunities to use them as naturalized buffers to protect inland areas.

# Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

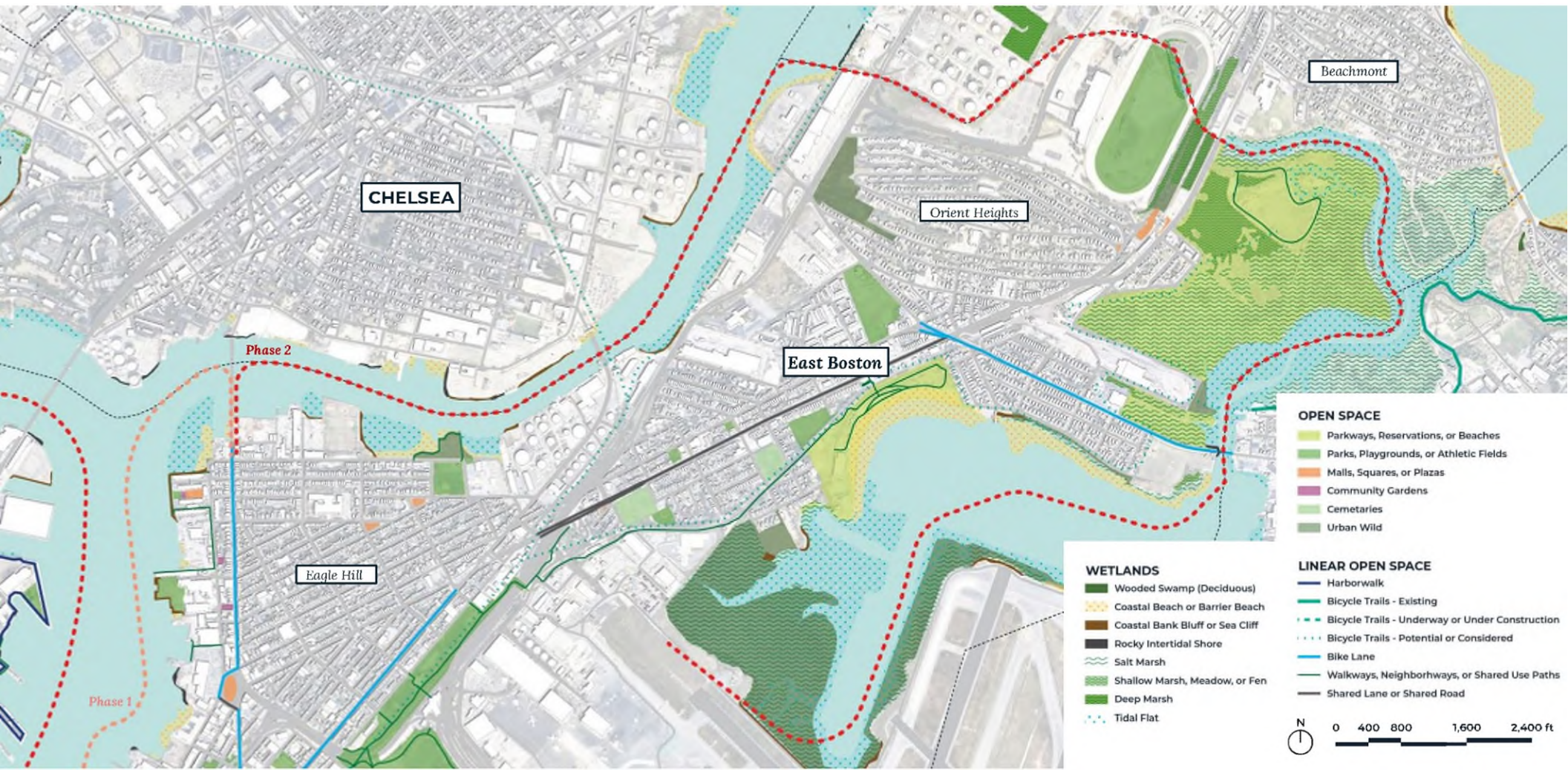


Figure 6-6: East Boston open space & connectivity

## **Infrastructure - MassDEP Major Facilities**

Waste management facilities can create extra risk during flood events. According to publicly available data from the Massachusetts Department of Environmental Protection (MassDEP), there are a limited number of facilities containing or managing waste in East Boston. There are seven large quantity generators of hazardous waste in the project area: three are EPA/RCRA regulated, three are regulated by the Commonwealth of Massachusetts, and one is regulated by both entities. Additionally, there is one facility with air operating permits in the area.

Contaminated lands and sites with the presence of hazardous substances are vulnerable to sea level rise. Rising groundwater and storm events may cause flooding and/or the release of contaminants. Publicly available GIS data indicate there are five Chapter 21E sites and nine locations with Activity Use Limitations (AULs) in the study area. Chapter 21E sites are locations where a release of oil and/or hazardous materials has been reported to MassDEP's Bureau of Waste Site Cleanup in accordance with the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000. Under the MCP and M.G.L. Chapter 21E, the Potentially Responsible Parties are responsible for the timely assessment and cleanup of disposal sites in Massachusetts. An AUL is a document recorded at the Registry of Deeds to provide notice to current and future property owners and other interested parties of uses or activities that may not be appropriate at a property where contamination remains in the environment.



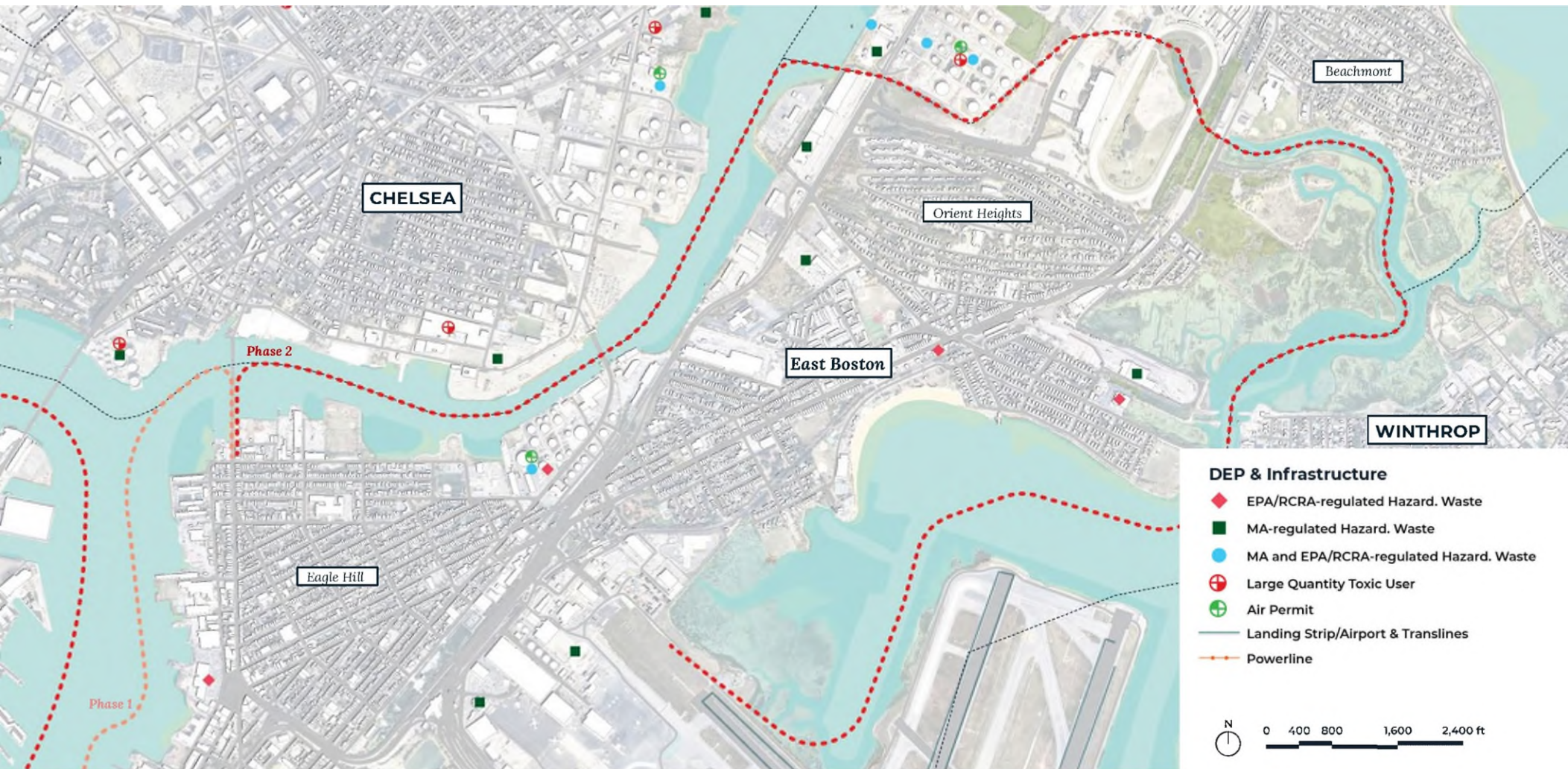


Figure 6-7: East Boston infrastructure and DEP facilities

## **Built Environment - Land Use**

The built environment in East Boston is characterized by a residential and mixed-use core, an industrial waterfront along Chelsea Creek, and open space flush with natural resources along Belle Isle Inlet. Dense pockets of residences and businesses create vibrant urban districts at the heart of the neighborhood, supporting community needs with shops, restaurants, markets, community uses, schools, houses of worship, and other public amenities. Over time, flooding is expected to have significant impacts on this mixture of uses that make East Boston special, particularly in lower Orient Heights, around Constitution Beach, and in the vicinity of the Suffolk Downs redevelopment.



## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)



Figure 6-8: East Boston land use

## **Built Environment - Land Ownership**

Land ownership along the waterfront in East Boston is varied. Along Chelsea Creek, ownership includes a patchwork of private property owners, the City of Boston, and the Commonwealth of Massachusetts. The lack of continuous ownership will make implementing a continuous unbroken line of coastal flood defense challenging. Along Belle Isle Inlet, significant portions of the shoreline are owned by Massachusetts Port Authority (Massport) and the Commonwealth of Massachusetts, including Constitution Beach and Belle Isle Inlet. This presents an opportunity for enhancing publicly owned land while weaving in flood resilience infrastructure. Between the two shores and pockets along the waterfront, East Boston is owned by many different private and public property owners, potentially complicating the alignment of flood protection measures where coordination between multiple property owners may be necessary to achieve unbroken protection.



## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

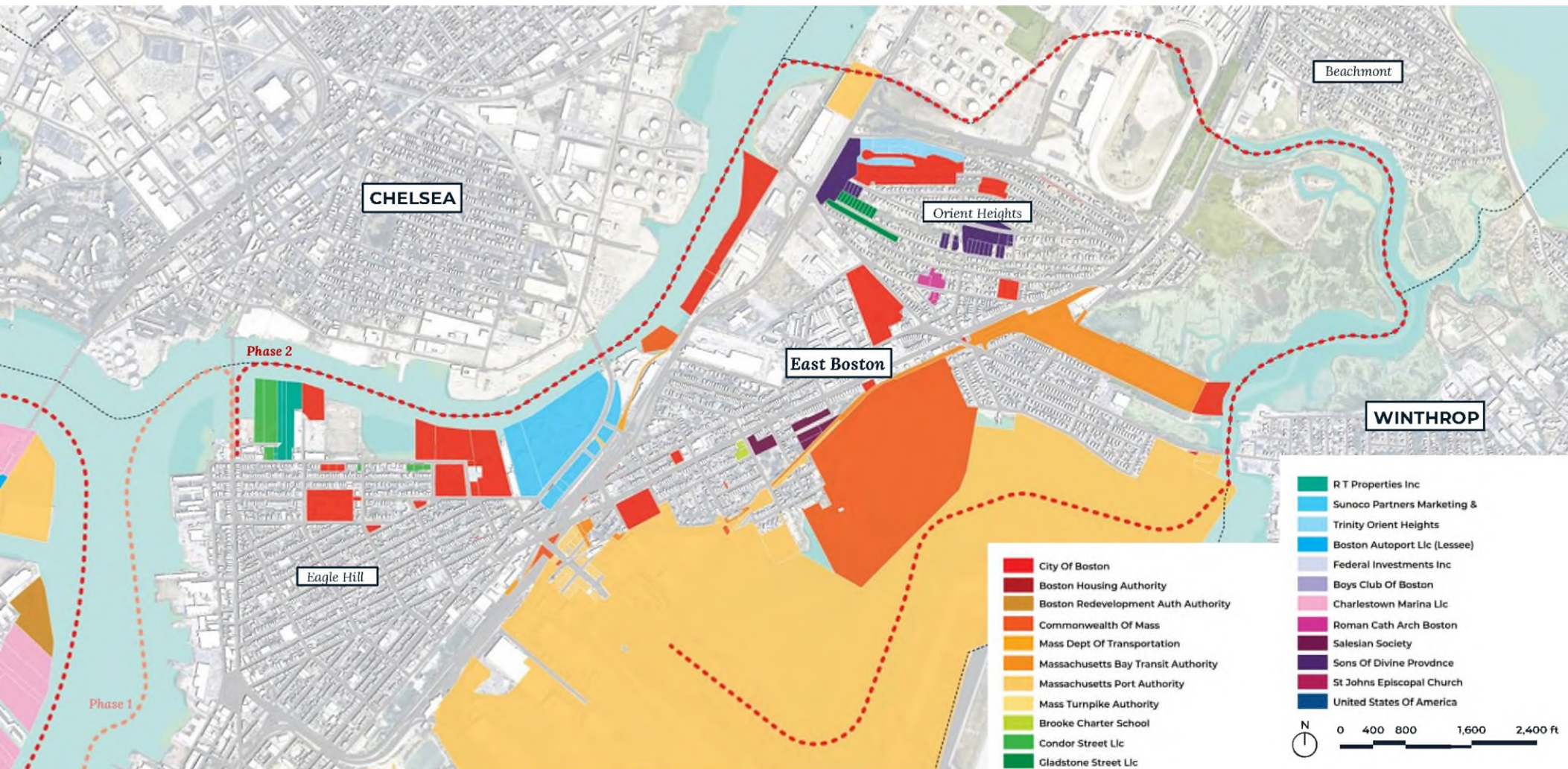


Figure 6-9: Major property owners in the East Boston Phase II Study Area

(note: Belle Isle Marsh is owned by the Commonwealth of Massachusetts)

## **Community Assets**

The neighborhood assets shown on the following page reflect preliminary mapping of community assets based on publicly available data. Community assets include amenities and services that support community well-being and quality of life, ranging from houses of worship to community gardens. The maps will be further refined and developed with the community to ensure that all key assets are included and that the importance of each asset to the community is recorded.



## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

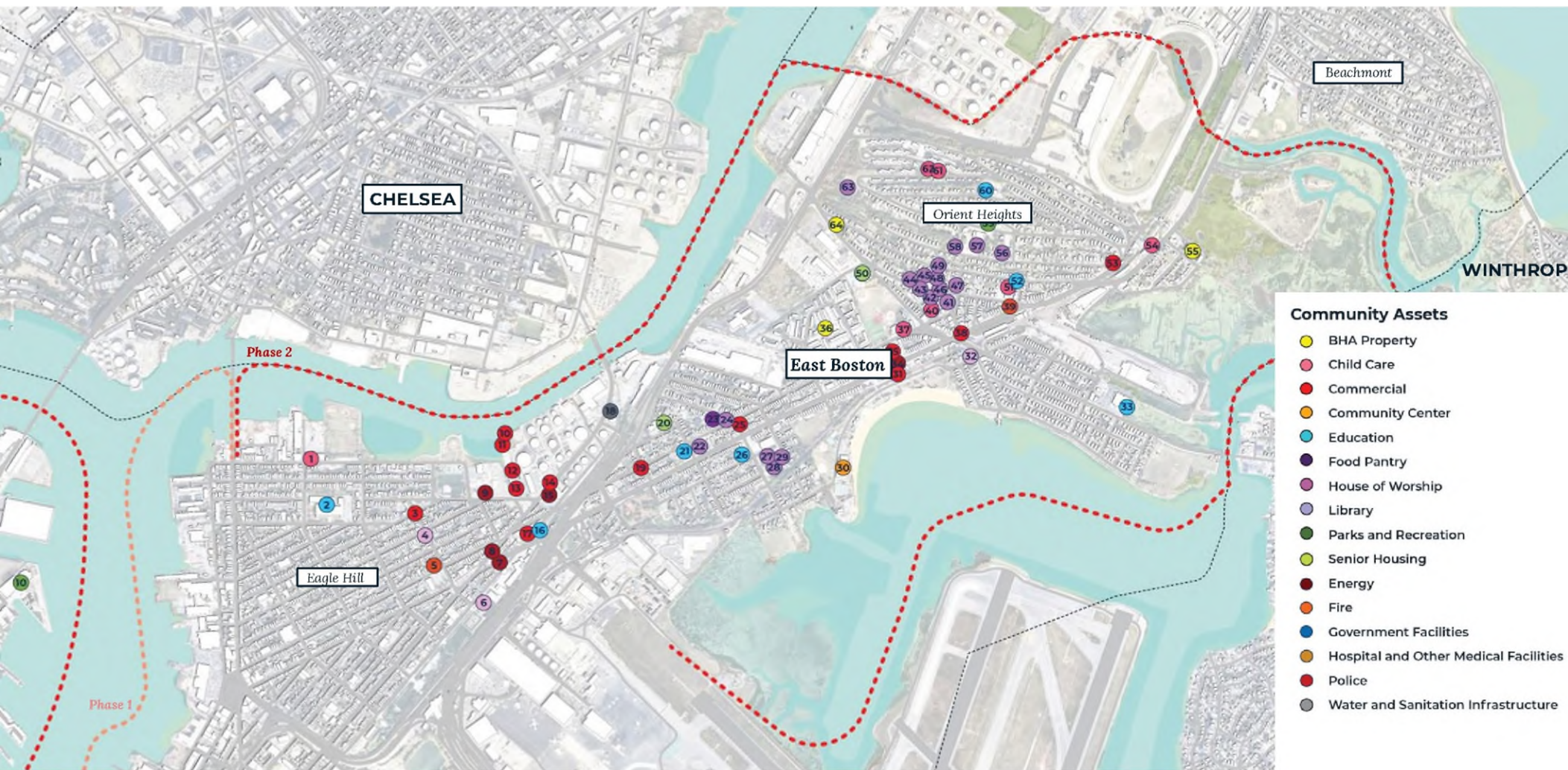


Figure 6-10: East Boston preliminary community assets

## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

- |  |  |   |
|--|--|---|
| 1. East Boston Head Start                            | 25. Richdale's                                       | 47. Saint Lazarus Roman Catholic Church           |
| 2. East Boston High School                           | 26. Edward W. Brooke Charter School                  | 48. Roman Cath Arch of Bos                        |
| 3. 777 Convenience Store                             | 27. Ohabei Shalom Cemetery – Cohen Urn               | 49. Saint Lazarus Roman Catholic Church           |
| 4. Fine Arts Library                                 | 28. Temple Ohabei Shalom Cemetery                    | Convent   |
| 5. City of Boston Engine Co 5                        | 29. Temple Ohabei Shalom Cemetery Chapel             | 50. Pino Center                                   |
| 6. East Boston Branch of the Boston Public Library   | 30. Porrazzo Ice Rink                                | 51. East Boston YMCA @ Curtis Guild               |
| 7. Lukoil 331 Bennington Street                      | 31. Lanzilli's Grocery                               | 52. Curtis Guild School                           |
| 8. Mobil 396 Chelsea St                              | 32. Orient Heights Library                           | 53. E S Variety                                   |
| 9. Eagle Street Power Station                        | 33. Excel Academy Charter 3                          | 54. East Boston Head Start-Bennington             |
| 10. Channel Fish Co., Inc.                           | 34. Lanzilli's Grocery 931 Bennington St Stop N Fuel | 55. Boston Housing Authority, Park Place Condo Tr |
| 11. Channel Fish Co., Inc.                           | 35. Neptune Launderette                              | 56. Sons of Divine Providence                     |
| 12. Channel Fish Co., Inc.                           | 36. 508 Orient Heights                               | 57. Madonna, Queen of the Universe Shrine         |
| 13. Channel Fish Co., Inc.                           | 37. East Boston Montessori School                    | 58. Sons of Divine Providence                     |
| 14. Cumberland Farms                                 | 38. El Paisa Butchery                                | 59. Don Orione Nursing Home                       |
| 15. East Boston Terminal Company Oil Storage         | 39. Engine 56, Ladder 21                             | 60. Manassah E. Bradley School                    |
| 16. East Boston Beauty Academy                       | 40. YMCA East Boston @ Ashley Street Camp            | 61. Orient Heights Center                         |
| 17. Neptune Convenience & Liquor                     | 41. Roman Catholic Arch of Bos                       | 62. Oh Yes Orient Heights Young Explorers         |
| 18. Caruso Pump Station                              | 42. Toma, Rev. Louis Roman Catholic Youth Center     | 63. Sons of Divine Providence                     |
| 19. Condor Market East Boston                        | 43. Our Lady of Fatima Roman Catholic Shrine         | 64. Boston Housing Authority, Skyview Condo Trust |
| 20. Chevrus Apartments                               | 44. Saint Lazarus Roman Catholic Church Rectory      |   |
| 21. Excel Academy Charter School                     | 45. Saint Lazarus Roman Catholic Church School       |   |
| 22. Universal Church Inc                             | 46. Roman Cath Arch of Bos                           |   |
| 23. Grace Federated Church / Emergency Food Cupboard |  |   |
| 24. Baker Congregational Church                      |  |   |

Figure 6-11: East Boston preliminary community assets (list)

## Coastal Edge Typologies

In order to understand the types of shoreline improvements that may be necessary and desirable for improving coastal resilience, it is important to begin by assessing the types of shorelines conditions found along the waterfront today. In East Boston, a variety of shoreline types exist, from hardened structures to natural areas. Chelsea Creek is typically contained by stone revetments and bulkheads, which are both hard shorelines that address erosion and help keep water off property. In some cases, bulkheads also provide the conditions necessary for shipping and water-borne transportation. However, hard shoreline solutions, which are often expensive and require regular maintenance, alter natural shoreline processes, and can damage a waterway and its neighboring properties in the long term. Along Belle Isle Inlet, the shoreline is predominantly tidal wetlands, vegetated shorelines, and beach, which are soft or nature-based edge conditions. Soft shorelines allow for most natural processes to continue, generally require less maintenance over time, and can serve to naturally attenuate, or reduce the energy of, waves.



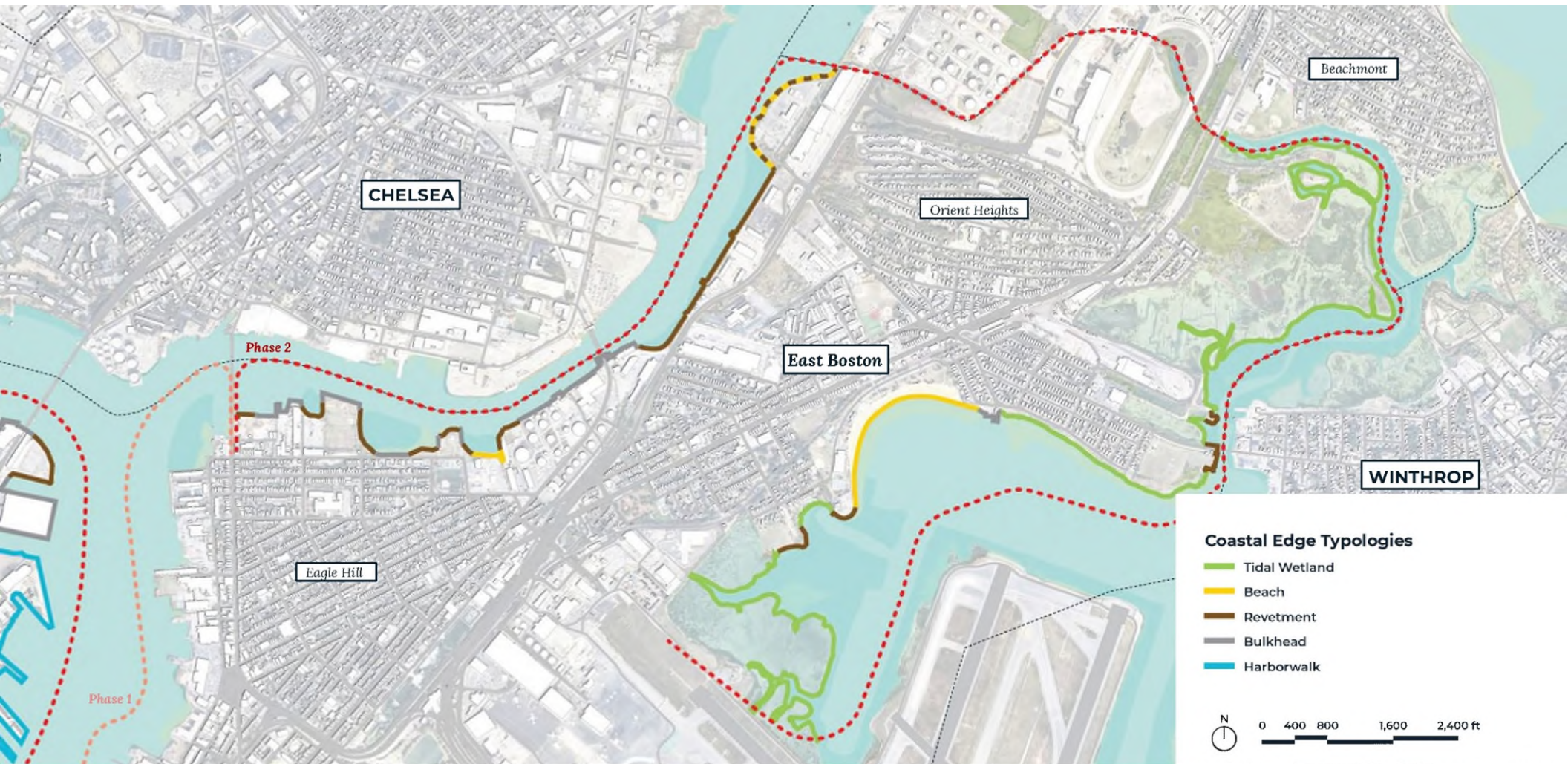


Figure 6-12: East Boston coastal edge typologies



## 6.3 Charlestown

Originally called Mishawum (Great Springs) by the Massachusetts tribe, Charlestown is home to 19,890 people according to the American Community Survey (ACS) 2019. Charlestown boasts a wide variety of assets that provide benefits to its residents, including historic icons like Bunker Hill and the Navy Yard, multiple play areas with views of the water, and housing dedicated to keeping residential options available for people of all incomes.

Charlestown has been growing in racial and cultural diversity: over the last 20 years, a growing number of Black, Chinese, and Dominican residents have set roots in the neighborhood, as reflected in ACS 2010 and 2019. Compared to Boston citywide, Charlestown is home to many young children: over 9% of Charlestown's population is under 5 years old, compared to 5% of Boston as a whole. With the presence of anchor industries related to research and healthcare, Charlestown has a higher concentration of residents who are highly educated compared to the city as a whole.<sup>6</sup>

Charlestown residents are seeing growth, with new developments planned for their neighborhood. 18 projects are currently in various stages of city review and construction according to information available from the Boston Planning & Development Agency (BPDA). While the introduction of new projects can bring an opportunity for wealth building, the opportunities have not been evenly distributed. While the median income has increased for the 02129 zip code as a whole, the gap between the blocks with the highest median income and the blocks with the lowest median income is around \$90,000 (ACS, adjusted for inflation). Since 2010, the gap in median rent between the blocks with the highest and lowest rents has grown by around \$450 ((ACS, adjusted for inflation). There is a roughly \$122,000 disparity in median income between white and Black households in Charlestown.

These discrepancies fall along a geographic divide between the higher income blocks on higher ground, "up the hill," south of Bunker Hill Street and the blocks on lower ground north of Bunker Hill Street, closer to the water and higher flood risk areas. This suggests that the Charlestown residents most exposed to the effects of climate change are often those also dealing with other factors. On the blocks surrounding the Bunker Hill Memorial, for example, between zero and 7% of residents are coping with factors related to living with an income below the poverty level. In contrast, on the blocks around the Little Mystic Channel north of Route 1, between 33% and 80% of residents are impacted by the needs and stressors of living with an income below the poverty level.

In the face of neighborhood change and economic disparities, residents of Charlestown have demonstrated self-determination, innovative community assets, and inspiring social cohesion. Home to lifelong residents and new Bostonians alike, all of whom are dedicated to supporting and protecting their neighbors from the effects of climate change, Charlestown has the power to build meaningful community resilience. This planning process will seek to learn from and amplify these characteristics, which form the foundations of building a truly resilient community.

The City of Boston, like many around the country, has implemented many public health restrictions aimed at curtailing the spread of COVID-19. According to the Boston Public Health Commission, as of Wednesday, December 23, Boston had seen almost 37,000 cases and almost 1000 deaths due to the coronavirus. COVID-19 is impacting everyone's lives right now, but the effects are not the same everywhere. The pandemic has exposed systemic inequities in the access to basic human needs,

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<sup>6</sup> Note that a complete overview of neighborhood demographics is included in Appendix A based on the City of Boston's neighborhood profiles

including healthcare, food, housing, and employment. Furthermore, the pandemic has exposed the lacking social safety net for those most in need.

In Charlestown, the Charlestown Coalition, launched in response to the opioid epidemic, states that the stressors of the pandemic have exacerbated substance abuse disorders and complicated recovery. The organization has faced challenges that include COVID outbreaks in treatment programs, difficulty engaging with people remotely, and lack of compliance with the eviction moratorium from sober living houses ([Massachusetts General Hospital](#)).

Building on this community overview, the following pages will provide summaries and maps describing the existing built and natural environment of Charlestown. Throughout the project, the team will work with the community to further define community infrastructure, assets, and value on the community's terms and to respond to community concerns as they relate to coastal resilience

## **Open Space and Recreational Resources**

Charlestown has many cherished parks, landmarks, monuments, and greenways, including Bunker Hill Monument, City Square Park, the Boston National Historic Park, Thomas M. Menino Park, Barry Playground, the Charlestown Community Center athletic fields, and the Little Mystic Access Area. With the COVID-19 pandemic, these open spaces have become more vital as community assets, providing the ability for people to safely leave their homes for exercise and fresh air. Open space in Charlestown is concentrated along the waterfront; the location of these parks makes them inherently vulnerable to flooding. However, along with that vulnerability comes the opportunity to improve public space while incorporating flood protection measures. The Harborwalk meanders along much of the shoreline, connecting many of the larger open spaces to each other. Further inland, public squares provide additional public open space. Linear open space exists in the form of one dedicated bike lane that follows Main Street.



# Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

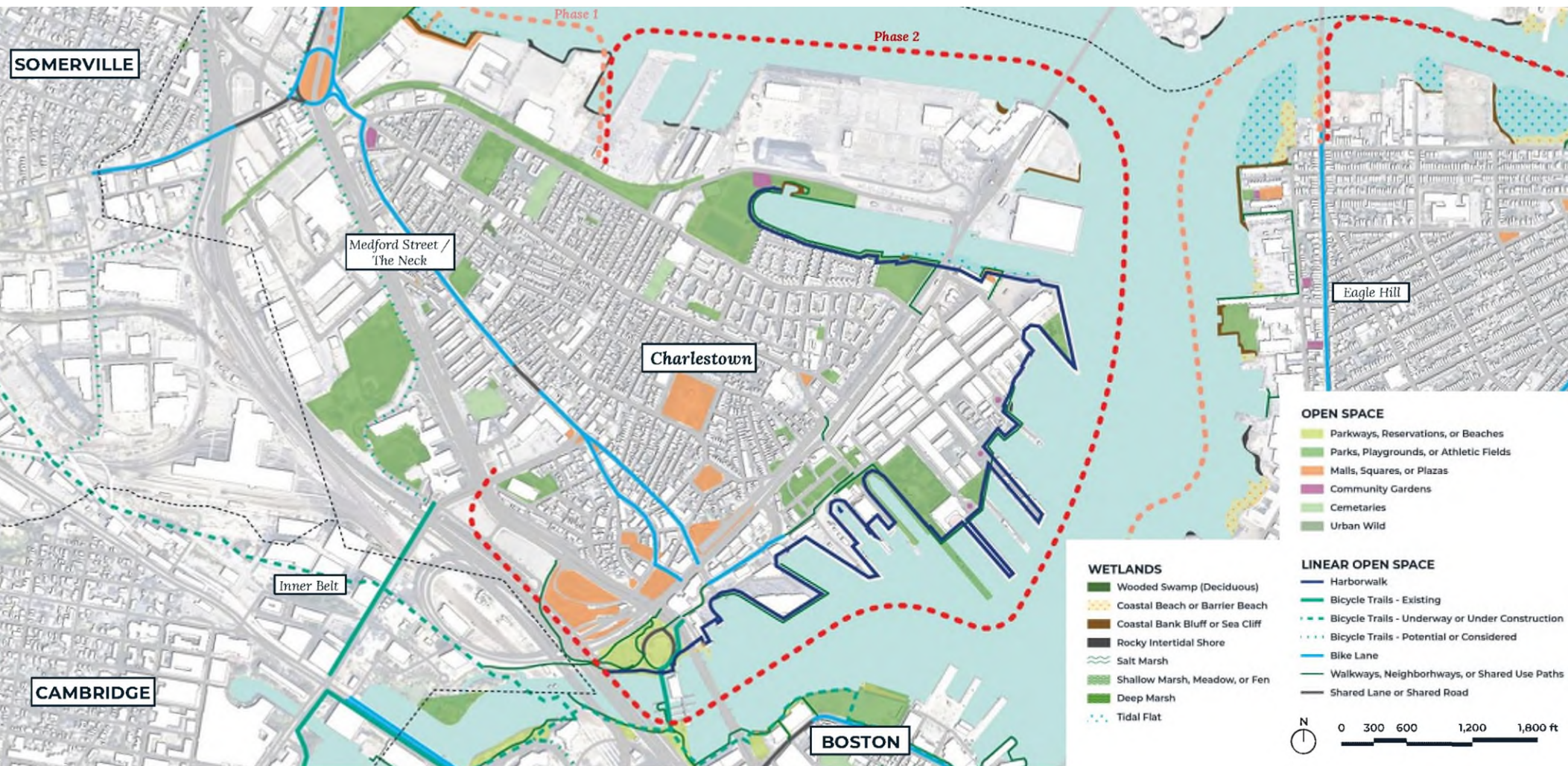


Figure 6-13: Charlestown open space & connectivity



## **Infrastructure – MassDEP Major Facilities**

Waste management facilities can create extra risk during flood events. According to publicly available data from the Massachusetts Department of Environmental Protection (MassDEP), there are very few facilities containing or managing waste in Charlestown. There are three large quantity generators of hazardous waste in the project area: two are EPA/RCRA regulated and the third is regulated by the Commonwealth of Massachusetts. Additionally, there is large quantity toxic user in the area.

Contaminated lands and sites with the presence of hazardous substances are vulnerable to sea level rise. Rising groundwater and storm events may cause flooding and/or the release of contaminants. Publicly available GIS data indicate there are five Chapter 21E sites and eleven locations with Activity Use Limitations (AULs) in the Charlestown study area. Chapter 21E sites are locations where a release of oil and/or hazardous materials has been reported to MassDEP's Bureau of Waste Site Cleanup in accordance with the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000. Under the MCP and M.G.L. Chapter 21E, the Potentially Responsible Parties are responsible for the timely assessment and cleanup of disposal sites in Massachusetts. An AUL is a document recorded at the Registry of Deeds to provide notice to current and future property owners and other interested parties of uses or activities that may not be appropriate at a property where contamination remains in the environment.

# Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

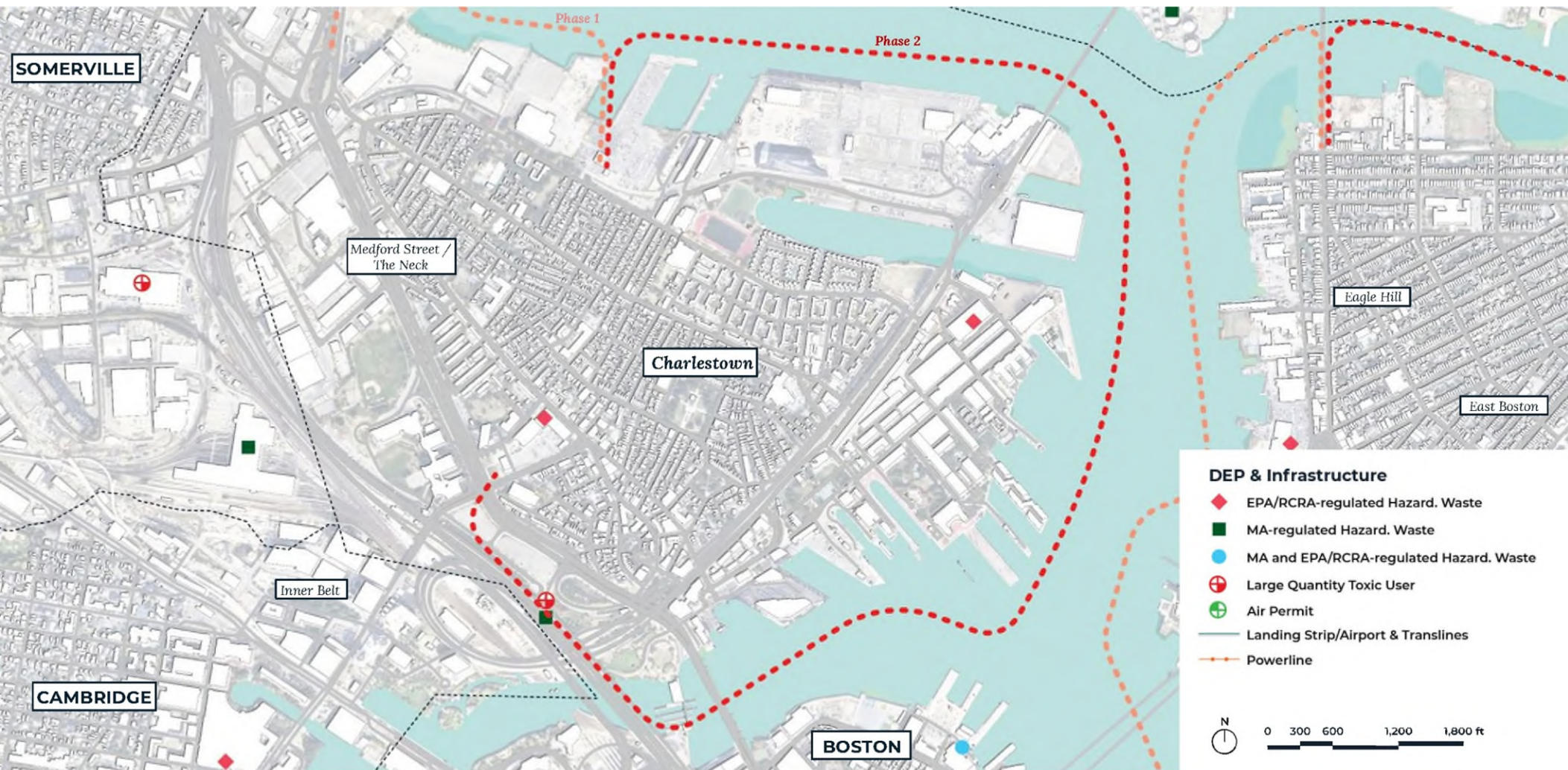


Figure 6-14: Charlestown MassDEP Major Facilities

## **Built Environment - Land Use**

The built environment in Charlestown is characterized by a historic residential core, an industrial waterfront along the Mystic River, and a mixed-use district along the Boston Harbor waterfront extending from the mouth of the Little Mystic Channel to the Charles River Dam. The Harbor-front is also characterized by overwater structures such as piers and wharfs, some of which have housing and other uses on them and others serving as marinas and other maritime purposes. The Boston National Historic Park and USS Constitution Museum are significant landmarks in this area with unique built and use-related concerns. Flood risk in Charlestown is concentrated in the historic waterfront area and the industrial waterfront along the Mystic River through the 2030s (9 inches SLR) but with 40 inches of SLR a flood pathway allows water to enter the residential core and flow between Little Mystic Channel and the historic waterfront.



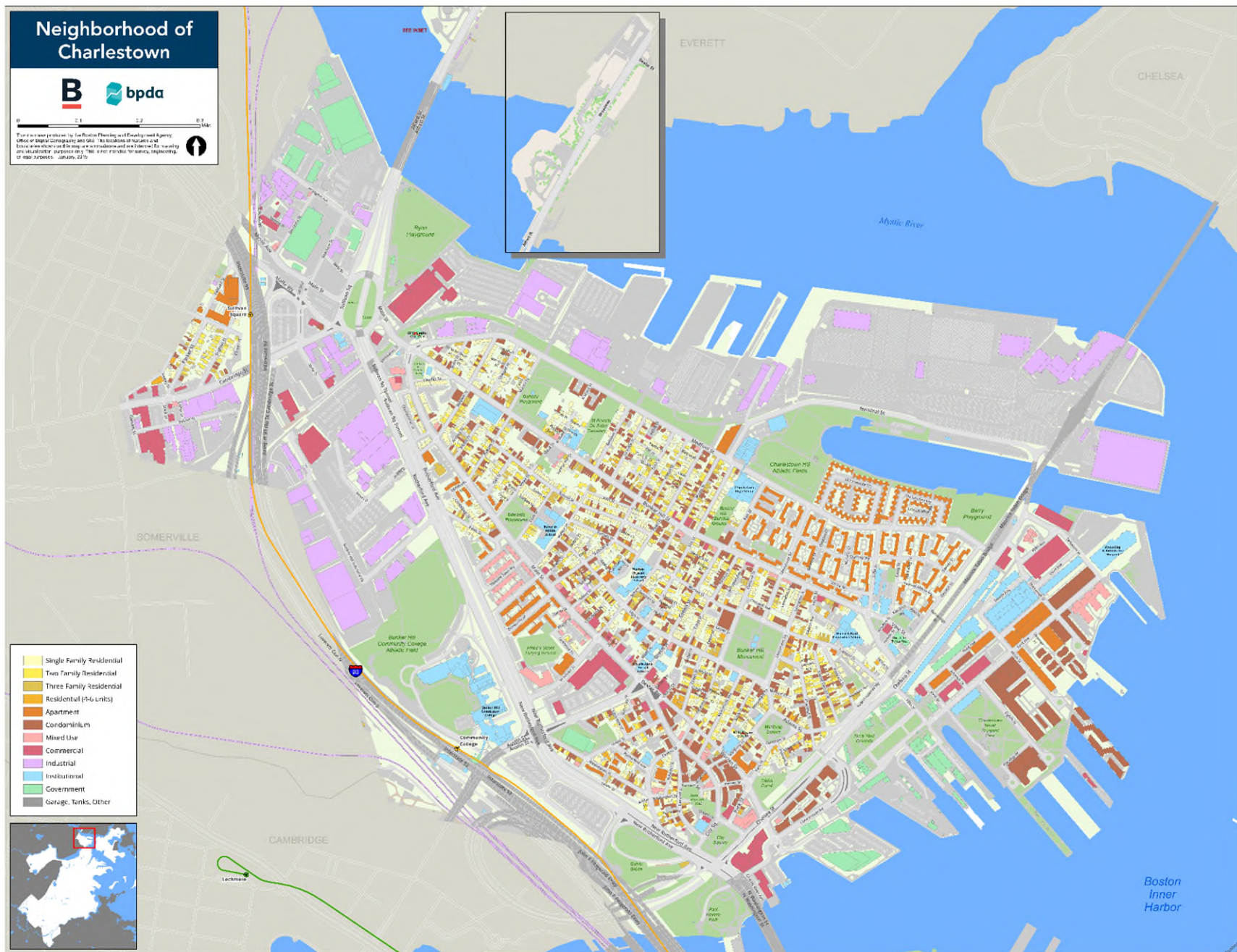


Figure 6-15: Charlestown land use

## **Built Environment - Land Ownership**

Major land ownership in Charlestown is concentrated in the hands of the following owners: MassPort, City of Boston, Boston Redevelopment Authority, Charlestown Marina LLC, the federal government, and the MBTA. That most properties along the waterfront are tied to a public or government entity may facilitate the implementation of flood protection measures due to those entities responsibility to respond to what is best for the public. Nevertheless, robust intergovernmental cooperation will be necessary to ensure that resilience objectives are being met in a way that is supported by the community and that is consistent with other public objectives.



## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

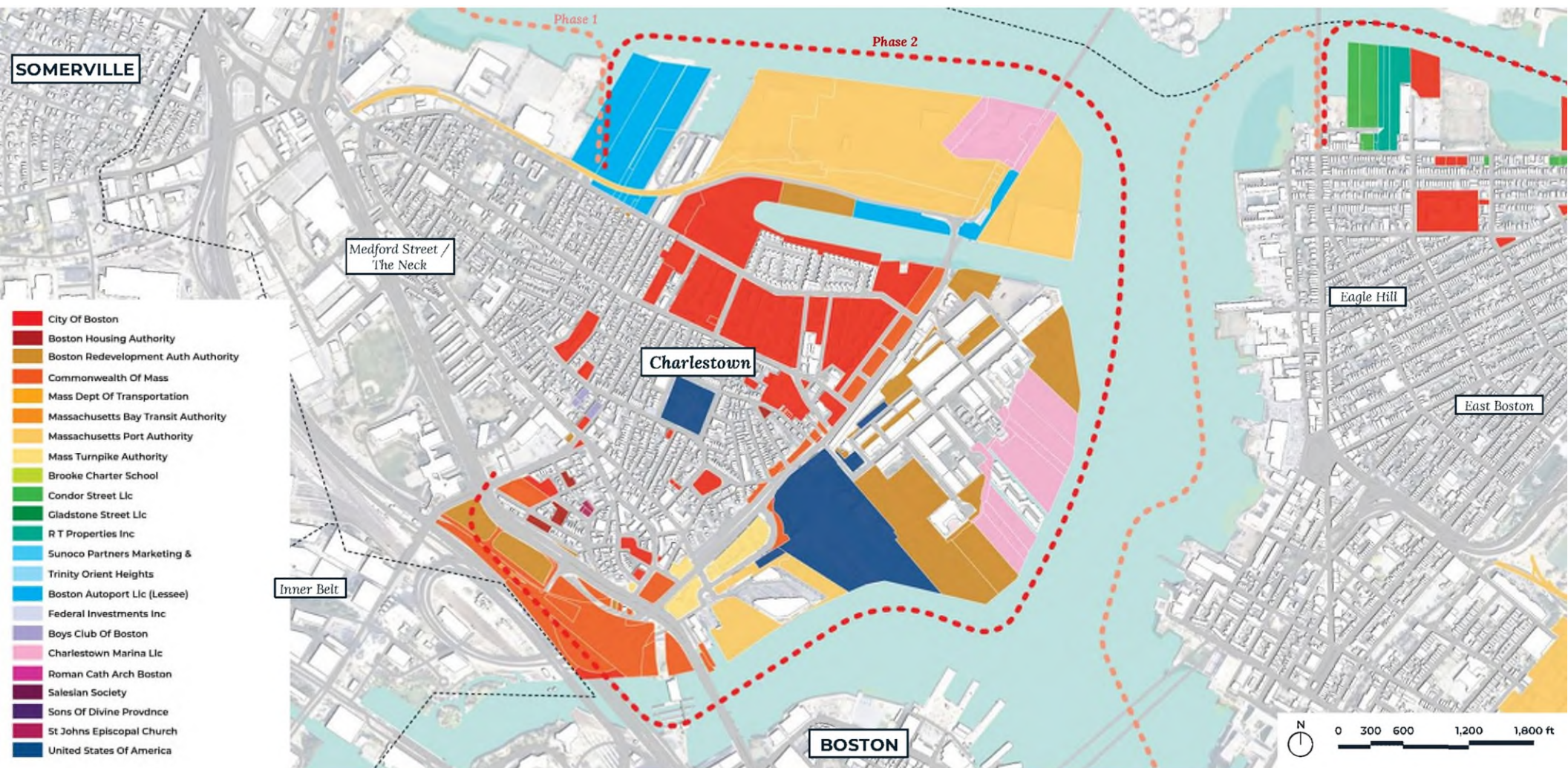


Figure 6-16: Charlestown land ownership



## **Neighborhood Assets**

The neighborhood assets shown reflect preliminary mapping of community assets based on publicly available data. Community assets include amenities and services that support community well-being and quality of life, ranging from houses of worship to community gardens. The maps will be further refined and developed with the community to ensure that all key assets are included and that the importance of each asset to community well-being is recorded.

# Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

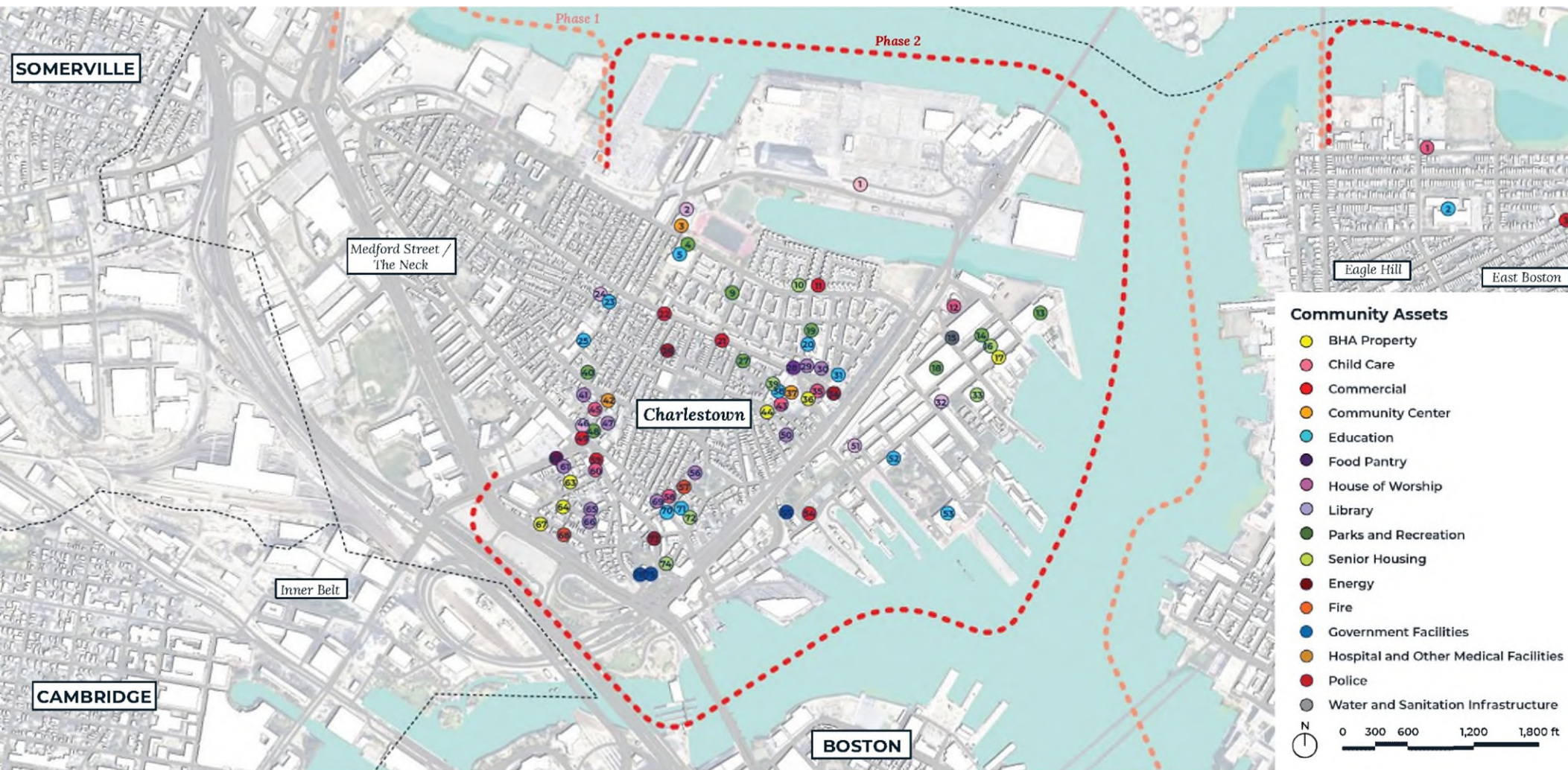


Figure 6-17: Charlestown community assets

## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

- |   |  |   |
|---|--|---|
| 1. Massachusetts Port Authority Police              | 26. Bunker Hill Market                             | 51. Good Shepherd Preschool                                       |
| 2. Charlestown High School                          | 27. Greater Egleston Community High                | 52. Saint Mary's Roman Catholic Church                            |
| 3. Charlestown Community Center                     | 28. Central Square Branch Library                  | 53. Good Shepherd School  |
| 4. Charlestown High School Health Center            | 29. Warren Prescott K-8 School                     | 54. Saint Mary's Roman Catholic Parochial School                  |
| 5. Charlestown High School                          | 30. Citgo 199 Concord Ave                          | 55. Constitution Co-Op Development                                |
| 6. MGH Charlestown Monument St Co                   | 31. MGH Charlestown Health Care Center             | 56. Mobil 30 Main Street  |
| 7. Charles Newtown                                  | 32. Trinity Methodist Episcopal Church             | 57. John F. Kennedy Family Service Center, Inc.                   |
| 8. Newtowne Foodmart                                | 33. Boys & Girls Club of Boston @ Charlestown Club | 58. Charlestown Division – Boston Municipal Court Department      |
| 9. MGH Children's Center                            | 34. Charlestown Boy's Club                         | 59. Charlestown Municipal Building                                |
| 10. Spaulding Rehabilitation CNY                    | 35. First Church of Charlestown                    | 60. Ferrin Street Apartments                                      |
| 11. Basilica Leashold, BHA                          | 36. Charlestown Library                            | 61. Harvard-Kent School   |
| 12. Basilica  | 37. Shram Neil I Et Al                             | 62. Kent Center   |
| 13. Mass Biomedical Research, BHA                   | 38. Charlestown Commercial                         | 63. 101 Charlestown   |
| 14. Bos 019 / Mysis CSO Facility                    | 39. USPS Post Office – Charlestown                 | 64. J.F.K. Head Start and Day Care Program                        |
| 15. Constitution Office Park LE                     | 40. First Baptist Church                           | 65. Mobil 12 Vine Street  |
| 16. Building 104                                    | 41. Store 42                                       | 66. Kent After School Program                                     |
| 17. Massachusetts Water Resources Authority Library | 42. Charlestown Cooperative Nursery School         | 67. Boston Housing Authority                                      |
| 18. New Health Charlestown                          | 43. Boston Housing Authority                       | 68. Patrick J Kelly Park Inc                                      |
| 19. Saint Catherine of Siena Roman Catholic School  | 44. 247 General Warren                             | 69. Cambridge Library – East Cambridge                            |
| 20. Kent, William Henry Primary School              | 45. Saint John's Episcopal Church Chapel           | 70. MGH Institute of Health Professions                           |
| 21. Saint Catherine of Siena Roman Catholic Church  | 46. Saint John's Episcopal Church                  | 71. Boston National Historic Park, Charlestown Navy Yard Facility |
| 22. Roman Catholic Arch of Bos                      | 47. Boston Housing Authority                       | 72. Store 24  |
| 23. The Harvest on Vine                             | 48. Boston Fire Department, Engine 24, Ladder 23   | 73. Seaport Academy School  |
| 24. EHDOD   | 49. Saint Mary's Roman Catholic Church Parish Hall |   |
| 25. United National Market                          | 50. Boston Fire Department, Engine 50              |   |

*Figure 6-18: Charlestown community assets (list)*



## Shoreline Typologies

To understand the types of shoreline improvements that may be necessary and desirable for improving coastal resilience, it is important to begin by assessing the types of shorelines conditions found along the waterfront today. Charlestown is surrounded by a hardened shoreline consisting of revetment, bulkhead, and Harborwalk which is generally located on bulkhead structures. While hard shorelines address erosion and can help keep water off property, they are generally expensive and require maintenance, alter natural shoreline processes, and can damage a waterway and its neighboring properties in the long term. Additionally, the hardened shoreline has narrowed the interface between developed property and the water, limiting the on-land space for future coastal protection investments.

## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

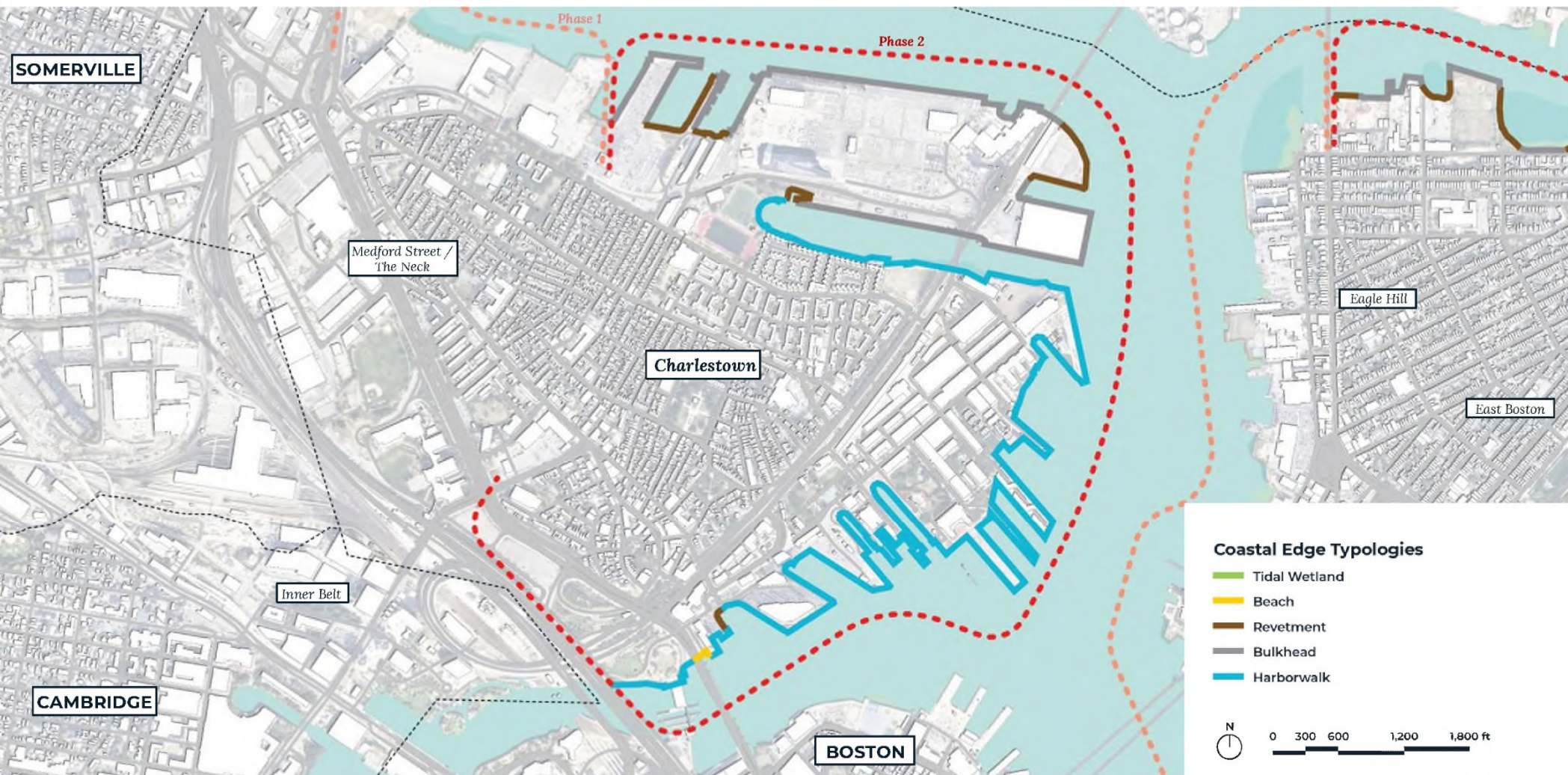


Figure 6-19: Charlestown shoreline typologies

## 7 Planning and Regulatory Context

This project will build on a substantial body of work that has been undertaken by the City, State, and community at both the neighborhood and citywide level. As a team, we recognize that our work should honor, leverage, and advance, but not supplant, disrupt, or duplicate other resilience efforts in East Boston and Charlestown. This section provides a summary of the key previous and upcoming planning studies that will inform our work.

In addition to those described in detail in this section, the project team has reviewed and will build on, as appropriate, the studies listed below.

- Coastal Resilience Solutions for South Boston ([Link](#))
- Coastal Resilience Solutions for Downtown/North End ([Link](#))
- Coastal Resilience Solutions for Dorchester ([Link](#))
- Boston Harbor Islands Management Plan ([Link](#))
- Housing A Changing City 2030 ([Link](#))
- Climate Action Plan Update ([Link](#))
- Go Boston 2030 ([Link](#))
- Open Space Recreation Plan 2015-2021 ([Link](#))
- MassDOT-FHWA Climate Vulnerability Assessment for the Central Artery ([Link](#))
- Climate Resilient Design Standards & Guidelines for Public Rights-of-Way ([Link](#))
- UMass Boston Sustainable Solutions Lab Climate Adaptation Finance, Governance, Harbor Barrier, and Race and Opinions on Climate Change studies ([Link](#))

### 7.1 Key Publicly-Led Planning Initiatives

#### Coastal Resilience Solutions for East Boston and Charlestown (Phase I)

*Coastal Resilience Solutions for East Boston and Charlestown (Phase I)* studied the context and coastal flooding risk of East Boston and Charlestown and proposed coastal resilience solutions and implementation roadmaps.

**Relevancy:**

- Helped establish community knowledge and understanding of coastal risk and resilience concepts in East Boston and Charlestown
- Established a resilience toolkit, evaluation criteria, and other planning process baselines that serve as a foundation to build upon during this study
- Created a plan and high-level implementation approach for addressing flood pathways in the Jefferies Point, Maverick Square, and Border Street areas in East Boston and the Ryan Playground area of Charlestown. These recommended investments, once complete, will reduce the volume of flood waters entering the Phase II study areas.
- Provides lessons-learned for effective community engagement approaches and activities in East Boston and Charlestown. This project will use these lessons to inform our team's approach to equitable and inclusive engagement of the communities.



## **Resilient Boston Harbor Vision**

*Resilient Boston Harbor Vision* is a long-term visioning exercise for the City of Boston waterfront that synthesized findings from various studies. The vision pushes for social and economic equity while protecting the city from storm surge and sea level rise through a network of waterfront open spaces.

## **Climate Ready Boston**

*Climate Ready Boston (CRB)* studied the climate hazards affecting Boston, executed vulnerability assessments, and developed resilience strategies. Notably, CRB developed a consensus around sea level rise projections that this project will continue to use: 9 inches of SLR by 2030 and 40 inches of SLR by 2070. The plan also outlined a recommendation for further study of flood vulnerability neighborhoods, which has led to the current study of East Boston and Charlestown.

## **Resilient Boston: An Equitable and Connected City**

*Resilient Boston: An Equitable and Connected City* is a city-wide plan developed in collaboration with the now concluded 100 Resilient Cities initiative. It outlines strategies in four areas: (1) reflective city and stronger people, (2) collaborative, proactive governance, (3) equitable economic activity, and (4) connected, adaptive city. The goal was to ensure that planning efforts underway in the City are integrated and implemented in a way that maximizes benefits for all Bostonians.

## **Imagine Boston 2030**

*Imagine Boston 2030* is a city-wide planning initiative published in 2017 that combines place-based initiatives with policy recommendations for growth in Boston. The initiative set goals for housing and affordability, land use planning, transportation, the environment, and coastal resilience.

## **Urban Heat Island Study**

The City is in the process of beginning a study of Urban Heat Island effects and strategies for reducing these effects, particular on populations most likely to be impacted. The plan is launching in winter 2020-2021 and will be conducted in parallel to Coastal Resilience Solutions for East Boston and Charlestown (Phase II).

## **PLAN: East Boston**

*PLAN: East Boston* is an area plan driven by the community and guided by Imagine Boston 2030 and other city-wide plans. The plan aims to identify opportunities to preserve, enhance, and grow East Boston. It will address housing, climate and the environment, transportation, jobs and the economy, and urban form. East Boston Today, an interim report detailing existing conditions, was released in September 2020.

## **PLAN: Charlestown**

*PLAN: Charlestown* will examine the neighborhood to determine a shared future vision for Charlestown that focuses on land use, future development, and historic asset preservation. It also aims to develop a coordinated plan for transportation, parks and open space, climate resilience, education, and affordable housing.

## **Building Resilience in Massachusetts' Designated Port Areas (MassCZM)**

The *Building Resilience in Massachusetts' Designated Port Areas* study, led by Massachusetts Office of Coastal Zone Management, will study flood risks and vulnerabilities in the Chelsea Creek and Gloucester Designated Port Areas and develop a set of recommendation strategies and best practices for improving the resilience of water-depending industrial uses in these areas. The plan commenced in November 2020 and will extend through spring 2021.

## **Suffolk Downs Redevelopment**

The HYM Investment Group proposes approximately 10.5 million square feet of development on the approximately 109 acres of the Suffolk Downs site. The multi-phased proposal will include development of a new mixed-use neighborhood, a 40-acre publicly accessible open space system, and two retail squares at Suffolk Downs and Beachmont stations. The initial project phase will include approximately 1.39 million square feet of development consisting of the Phase 1 Project (520,000 square feet of corporate use and amenity space), three residential buildings, a portion of the townhomes proposed along Waldemar Avenue totaling over 800 housing units and construction of the Horseshoe Pond landscaped wetland enhancements and Belle Isle Square public plaza with over 100,000 square feet of ground floor retail. ([BPDA](#))

## **Ordinance Protecting Local Wetlands and Promoting Climate Change Adaptation**

This ordinance gives the City of Boston greater authority to protect wetlands, which can reduce flooding and protect neighborhoods and open space. The ordinance values protection of public and private water and groundwater supply quality, short- and long-term coastal and stormwater flood control, erosion and sedimentation control, storm damage prevention, flood conveyance and storage, and more. The goal is to protect the health, safety, and welfare of the public while mitigating the impacts of climate change.

## **Coastal Flood Risk Design Guidelines and Flood Resilience Zoning Overlay District (Proposed)**

In 2019, the BPDA developed and adopted Coastal Flood Risk Design Guidelines for new construction and building retrofits, as well as recommendations for a Flood Resiliency Zoning Overlay District. The Guidelines provide best practices for flood resistant design and are intended to be administered by BPDA staff for the review of projects within a proposed Flood Resilience Zoning Overlay District.

In late 2020, the BPDA proposed a new Coastal Flood Resilience Overlay District (CFROD), Article 25A, and related updates to existing zoning articles. The CFROD and zoning map will relate to areas of the City of Boston anticipated to be flooded with a 1% chance storm event in 2070 with 40-inches of sea level rise, formalize the implementation of the Guidelines, and establish sea level rise design flood elevations for new construction and retrofits. ([BPDA](#))

## **Waterfront Activation Network Plan for the Charlestown Navy Yard**

In 2007, the Boston Redevelopment Authority (BRA) and the Charlestown community developed a plan to improve public spaces and access to the Harbor in the Charlestown Navy Yard. The plan focuses on year-round public use of the waterfront. In 2019, three proposals were approved by the Boston Planning & Development Agency: (1) an outdoor pop-up community gathering space, (2) additional historical exhibits and signage outside of the USS Constitution Museum, and (3) a floating restaurant.

## 7.2 Key Community-Led and Planning Initiatives

### East Boston

#### Vision Chelsea Creek

Led by the Harborkeepers, a local grassroots coastal and resilience-building non-profit, Vision Chelsea Creek is a community-driven “visioning, planning, and engagement process to re-imagine the abandoned MBTA/MassDOT-owned railway site” along the East Boston shoreline ([Harborkeepers](#)). The process emphasizes a transparent, open community and stakeholder engagement process.

#### SCALE-UP East Boston

Led by Neighborhood of Affordable Housing (NOAH), SCALE UP developed a snapshot of what East Boston residents think about climate change and extreme weather events, their readiness for emergencies and disasters, their sense of community and political efficacy, and opportunities for action. The project is a collaboration of NOAH and the NYU School of Global Public Health. The goals are to increase the neighborhood’s capacity to deliver solutions related to climate risk, and to help prepare individuals of diverse backgrounds to survive and thrive in the face of climate change and extreme weather events.

#### Mystic River Watershed Association – Healthy Estuaries Grant & Belle Isle Marsh

In July 2020, the Mystic River Watershed Association (MyRWA) was awarded a Healthy Estuaries Grant to conduct an inventory of environmental conditions in Belle Isle Marsh. In partnership with the Massachusetts Department of Conservation and Recreation, Woods Hole Group, Friends of Belle Isle Marsh, and the Nature conservancy, conducting this inventory will serve as the first step in developing a resource management plan for the one of the last remaining salt marshes in Boston. This project will serve as a model for salt marsh restoration in urban areas.

#### Climate Ready East Boston Coalition Memo

A passionate group of East Boston residents and community advocates, striving for equity and transparency, shared comments on Coastal Resilience Solutions for East Boston Phase I and recommendations for Coastal Resilience Solutions for East Boston Phase II with the City of Boston and the project team. The memo noted shortfalls in the Phase I work with respect to meaningful community engagement and implementation of recommendations.

### Charlestown

#### Mystic River Watershed Association – Little Mystic Channel

Mystic River Watershed Association (MyRWA) seeks to enhance the community’s connectedness with the Mystic River in Charlestown. Currently, MyRWA is creating a community-driven design for Little



## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

Mystic Channel Park. Little Mystic Channel is home to the Charlestown High School & Community Center, Sprouts Community Garden, and Charlesnewtown. Potential areas for enhancement of community space include Barry Field, Newtown Plaza, Little Mystic boat ramp, and the Harborwalk path.

## **7.3 Major Recent and Ongoing Developments**

### **Article 80 Projects**

Article 80 is administered by the Boston Planning and Development Agency and is the formal public process through which new development is reviewed by the City. Its purpose is to provide clear, predictable, and unified requirements for the review of development projects throughout the City. It also provides important opportunities for community involvement in development review activities that affect the quality of life in the city. Article 80 provides various standards for project review. A significant number of Article 80 projects are planned for Charlestown, presenting the opportunity for flood protection measures to be woven into these existing plans at the site and potentially district scales. Similarly, in East Boston several projects are under review or have been recently permitted. Many of these projects are located away from the waterfront and do not present an opportunity for integrating district-scale flood protection measures, but the recently approved Suffolk Downs redevelopment is a major investment and will provide opportunities for new flood resilience infrastructure, including resilient new buildings, pump stations, flood protection berms, and additional studies.

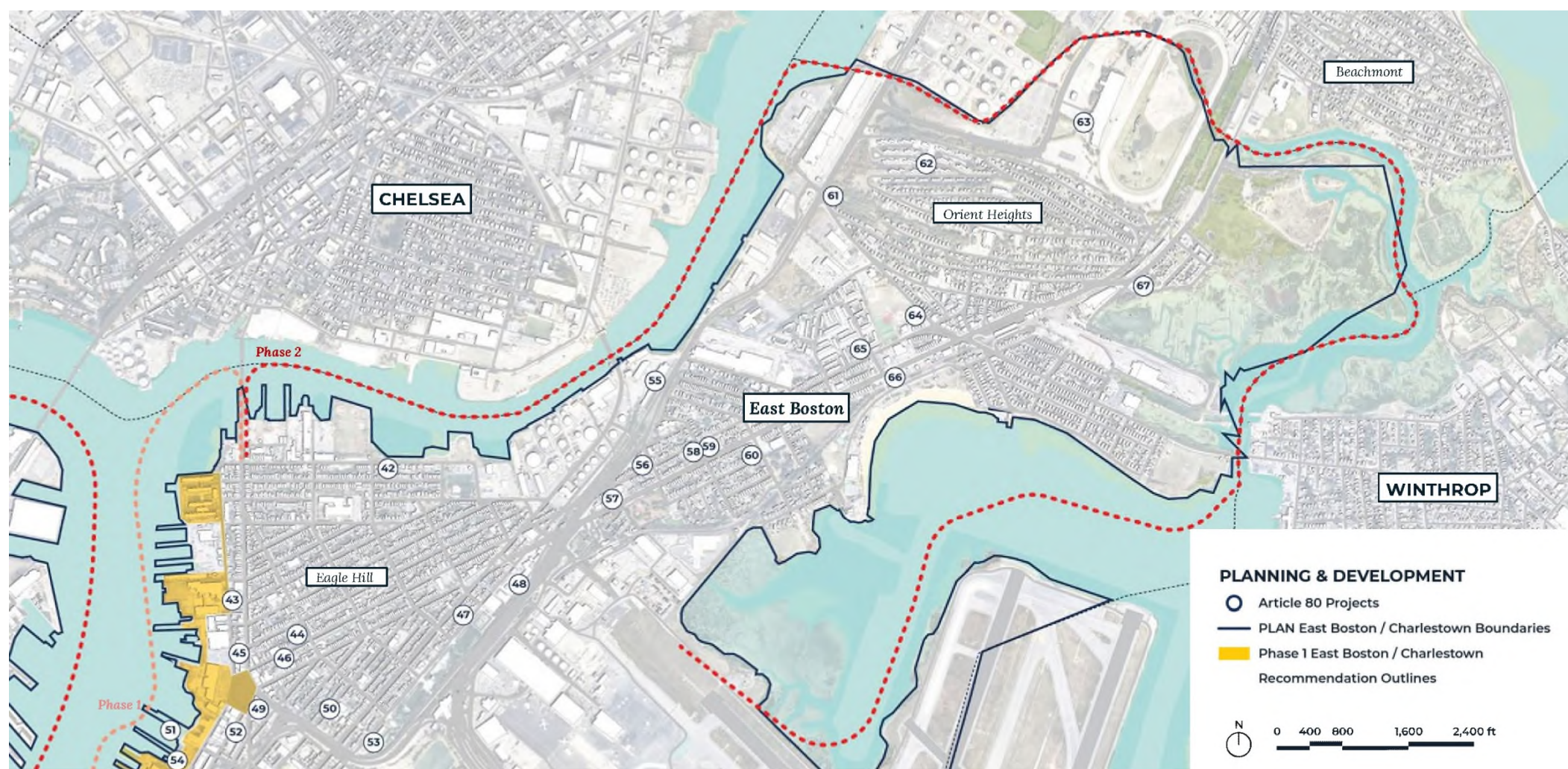


Figure 7-1: East Boston Article 80 projects



## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

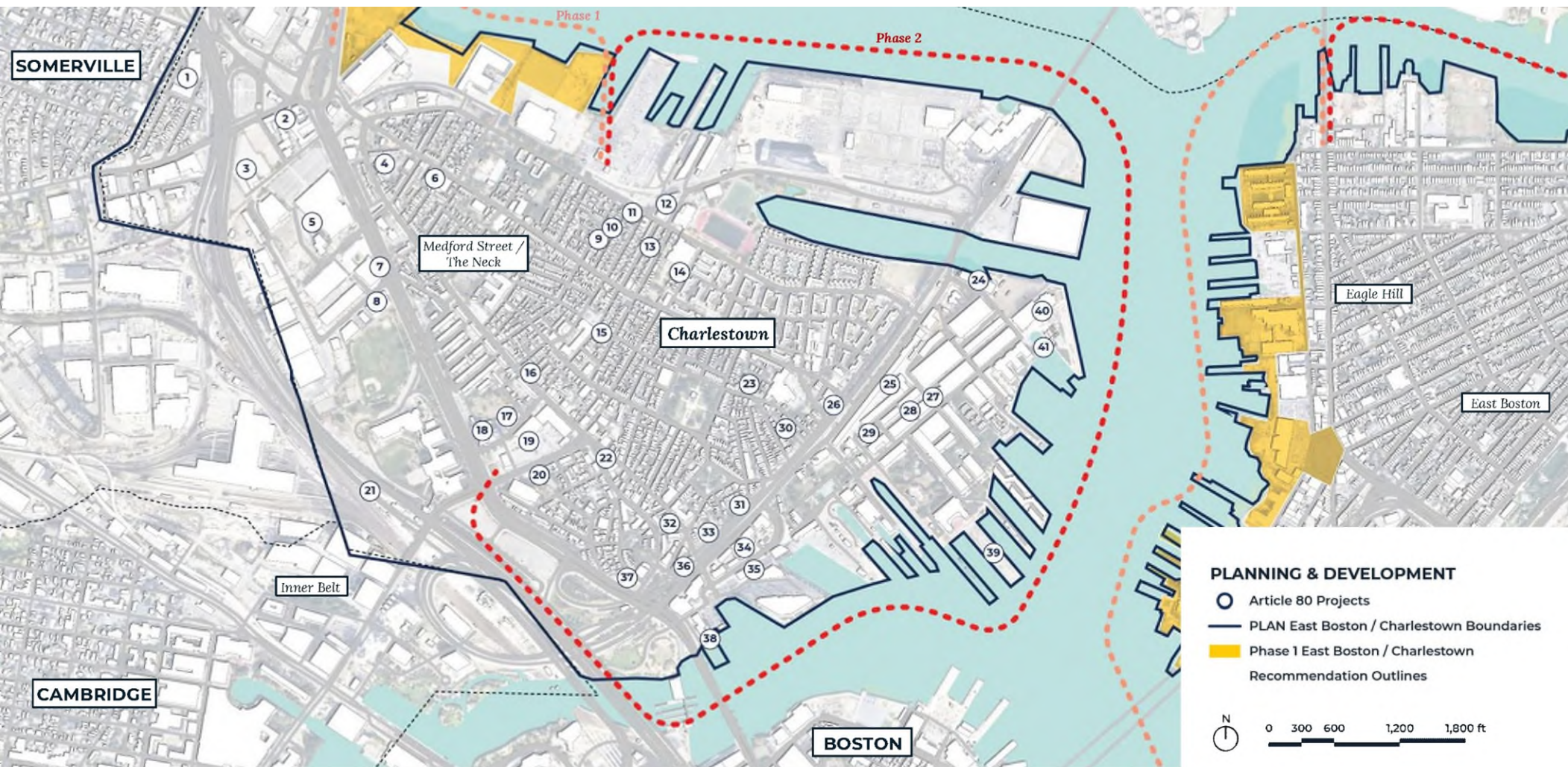


Figure 7-2: Charlestown Article 80 projects

## Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

- |   |  |  |
|---|--|--|
| 1. Mezzo Design Lofts                   | 24. Building 114                       | 47. 319-327 Chelsea Street                     |
| 2. 32 Cambridge Street                  | 25. Ropewalk Complex                   | 48. Excel Academy Charter Middle & High School |
| 3. 66 Cambridge Street Apartments       | 26. Charlestown Police Station         | 49. Walgreens - East Boston                    |
| 4. Charles Street Gardens P-2           | 27. Chain Forge Building 105           | 50. Paris Village                              |
| 5. Hood Business Park LLC               | 28. Parcel 39A                         | 51. Boston East                                |
| 6. Charlestown Armory                   | 29. Building 33                        | 52. 151 Liverpool Street                       |
| 7. Rutherford Landing                   | 30. Parcel R-87 Frothingham            | 53. East Boston YMCA                           |
| 8. Bridgeview Center                    | 31. 10 Chestnut Street                 | 54. 80 Border Street - Atlantic Works          |
| 9. 23 Cooke Street                      | 32. 40 Warren Street                   | 55. 150 McClellan Highway - Belle Steel        |
| 10. 34 Allston Street Parcel R-28D      | 33. Warren Green                       | 56. 648-656 Saratoga Street                    |
| 11. 300 Medford Street                  | 34. Nautica CANA Parcel 1              | 57. East Boston Credit Union                   |
| 12. Nancy Sales - Charlestown           | 35. 3 Constitution Center              | 58. Excel Academy                              |
| 13. 29 Mystic St. Condo Project         | 36. CANA Parcels 2 and 4               | 59. St. Mary Star of the Sea Parish            |
| 14. 30 Polk Street                      | 37. CANA Parcel 6a - City Square Place | 60. Edward W. Brooke Charter School            |
| 15. 5 School Street                     | 38. Tudor Wharf Hotel                  | 61. 415 McClellan Highway                      |
| 16. 257-259 Main Street                 | 39. Pier 5 - Charlestown Navy Yard     | 62. Orient Heights Redevelopment Project       |
| 17. Mishawum Assisted Living Facility   | 40. Spaulding Rehabilitation CNY       | 63. Suffolk Downs                              |
| 18. 75 West School Street               | 41. Harborview Point - Parcel 4        | 64. 16 Boardman Street                         |
| 19. Bunker Hill Mall - Retail Expansion | 42. 211 Condor Street                  | 65. 910 Saratoga Street Project                |
| 20. 40 Austin Street                    | 43. 301-323 Border Street Development  | 66. 917 Bennington Street                      |
| 21. North Point Project                 | 44. Barnes School                      | 67. 1181 Bennington Street                     |
| 22. Thompson Square Phase II            | 45. 248 Meridian Street (East Boston)  |  |
| 23. Parcel X-46                         | 46. 41-43 Saratoga Street              |  |

*Figure 7-3: Article 80 projects (list)*



## 7.4 Regulatory Context

### Waterfront Regulations

Several sets of regulations relating to waterways are in place across East Boston and Charlestown. Designated Port Areas (DPA) promote and protect water dependent industrial uses. Much of Charlestown's shoreline along the Mystic River and East Boston's shoreline along Chelsea Creek are governed by DPA regulations. Charlestown's shoreline is also governed by a Municipal Harbor Plan, which "establishes a community's objectives, standards, and policies for guiding public and private use of land and water within the jurisdiction of the Public Waterfront Act (Chapter 91)" ([Port and Harbor Planning Program](#)). The MHP includes an allowance for making amplifications and substitutions to the Chapter 91 regulatory requirements to meet local planning objectives. A Municipal Harbor Plan also exists for East Boston, but its limits fall outside the bounds of this project. The proposed Flood Resilience Zoning Overlay District and associated design guidelines also impact significant portions of the project area. This initiative consists of a toolkit that enables specific resilience strategies to be implemented at the building- and site-scale, empowering developers and property owners to implement flood protection measures for their buildings. In addition to these State and City regulations, the U.S. Army Corp of Engineers has oversight of filling and dredging operations for the purposes of protecting water quality and maintaining navigable waterways.



Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

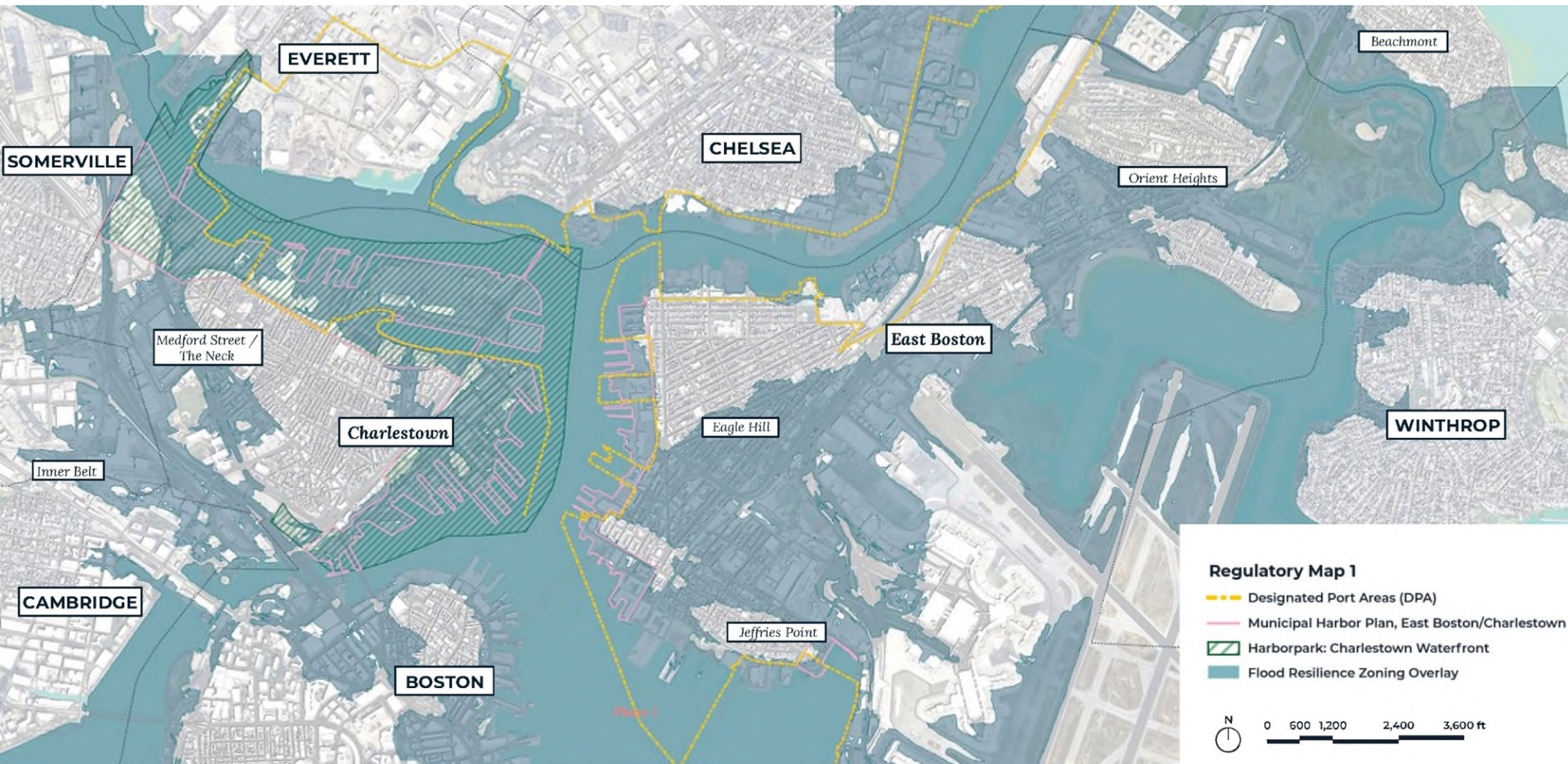


Figure 7-4: Waterway regulation areas

## **Chapter 91, the Massachusetts Public Waterfront Act**

In Massachusetts, private property ownership is recognized to the low tide line. Chapter 91 (310 CMR 9.00) guarantees public access to tidelands (the land between the mean low and mean high tide water marks) and bodies of water through a public easement for navigation, fishing, fowling, and passing over or through the water.

Chapter 91 jurisdiction applies to flowed tidelands to the mean high water (MHW) line, filled tidelands to the further of the first public way or 250 feet from the mean high water, great ponds, and non-tidal rivers and streams. Activities subject to Chapter 91 include construction, placement, excavation, addition, improvement, maintenance, repair, replacement, reconstruction, demolition or removal of any fill or structures not previously licensed, or a change in use or structural alteration of fill or structures authorized under a prior license.

Chapter 91 requires that new buildings for nonwater- dependent uses are designed and constructed to incorporate projected sea level rise during the design life of the buildings. At a minimum, projections must be based on historical rates of increase in sea level in New England coastal areas. Enforcement of Chapter 91 has resulted in, among other things, the creation of Boston's Harborwalk, a continuous 40-mile public walkway along the water's edge.

As referenced in earlier sections, much of the East Boston and Charlestown waterfront has been developed through historic episodes of filling waterways. Such filling would not be allowed under current regulations that are intended to protect water quality and habitat. These areas of filled tidelands extend across the waterfront in both neighborhoods and, in most cases, will mean that new development and capital investment account for public access, as required under Chapter 91 and the Municipal Harbor Plan.



Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

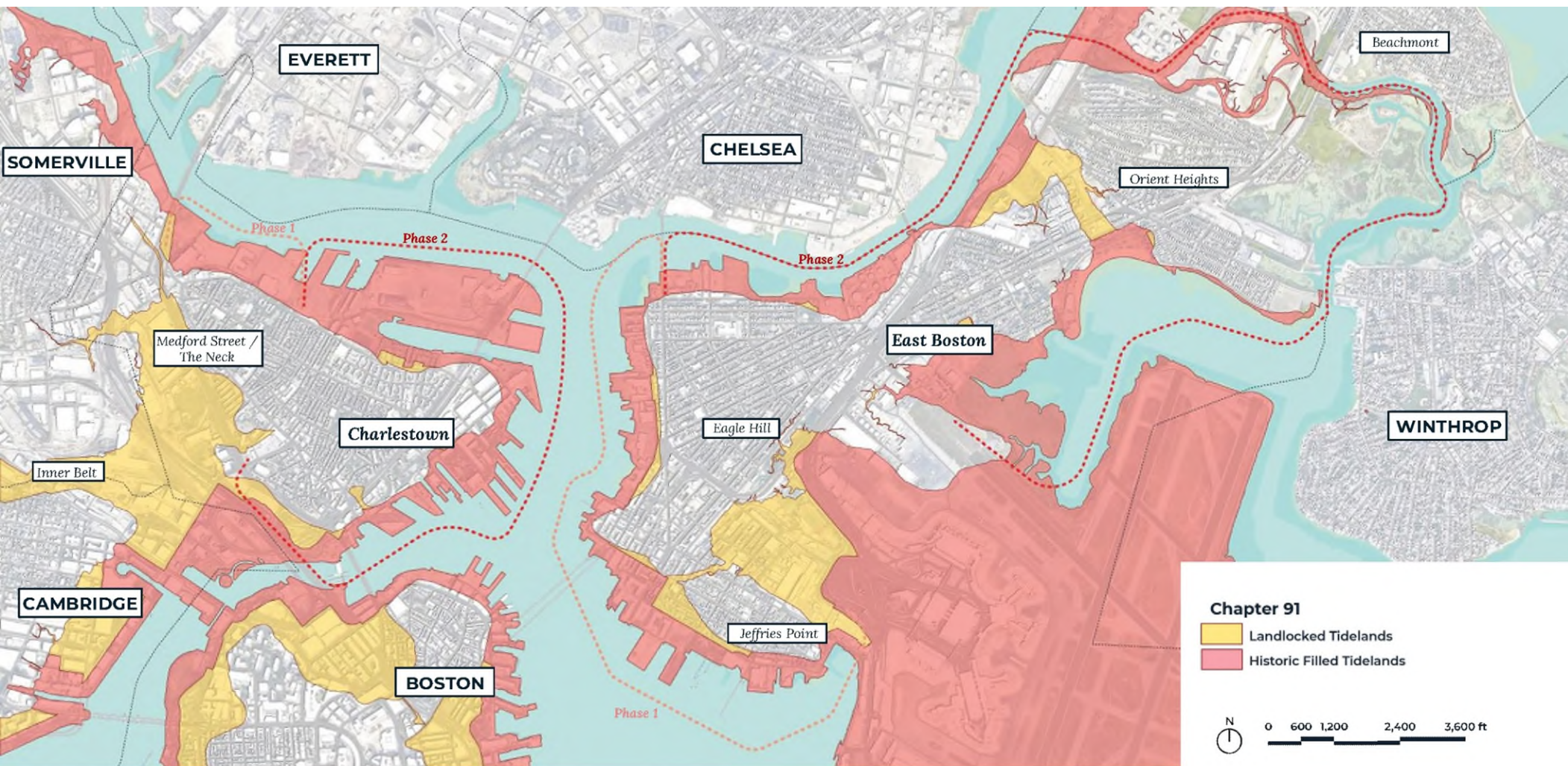


Figure 7-5: Filled tidelands potentially subject to Chapter 91 regulations



## **Zoning**

Zoning is a tool used to regulate the built environment by dividing land into different zones or districts. Each district is associated with a particular purpose and regulates the location, size, and use of buildings.

Charlestown is zoned primarily for residential uses at its core and flanked by industrial uses along Mystic River and mixed uses along the historic waterfront. Open space zoning is located along Little Mystic Channel.

East Boston is also zoned for primarily residential uses at its core, with pockets of mixed use and commercial zoning. East Boston's shore along Chelsea Creek is zoned for industrial uses except for the open space occupied by the American Legion Playground and Condor Street Urban Wild. East Boston's interface with Belle Isle Inlet is almost exclusively zoned as open space, characterized by Belle Isle Marsh and Constitution Beach. Logan Airport, controlled by Massport, is not subject to the City's zoning.

# Coastal Resilience Solutions for East Boston and Charlestown (Phase II)

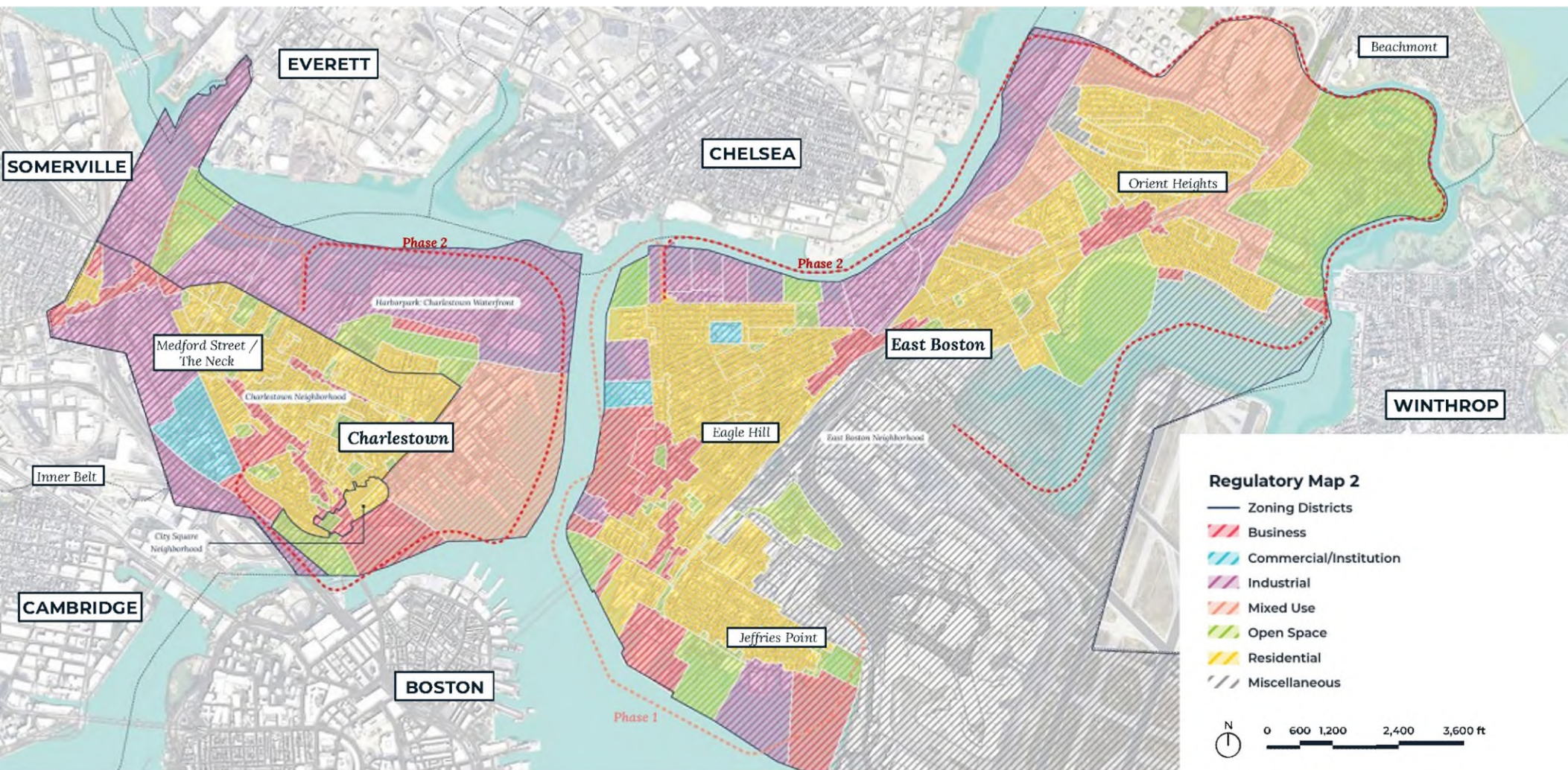


Figure 7-6: Zoning

## **8 Note on the Cocreation of Data with the Communities**

Community participation will be integral as we develop and refine our data and understanding of existing conditions prior to moving forward with the development of coastal resilience solutions. We will work with the community to help define essential infrastructure and facilities. This process is important because proposed coastal resilience solutions must strive to protect places that serve essential community functions, and these essential functions are best understood based on local knowledge and values.

We will also conduct interactive mapping surveys with the community to determine patterns of community use of existing facilities. This goes beyond just identifying critical facilities; rather, the focus is on understanding specific uses and the qualitative value of a place to the community. For example, a school may be identified as a critical facility, and through interactive mapping surveys we could learn that it is also used as a location for community meetings in the evenings.

Finally, we will collect qualitative data around community experiences and perceptions of flooding. The community's perspective on flood risk will allow us to create strategies that really work for them. Furthermore, it will give us insight into the level of public education and readiness regarding coastal flooding, which in turn could help shape the proposed solutions.



# **Appendix A**

## **Boston Planning & Development Authority Neighborhood Profiles**



# Neighborhood Profiles

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Produced by the Boston Planning & Development Agency Research Division, August 2017

## Information

For more information about Boston's demographics or economy, please visit [bostonplans.org/research-maps](http://bostonplans.org/research-maps)

Please contact us at [research@boston.gov](mailto:research@boston.gov) with any additional questions.



# Neighborhood Profile | Charlestown

## People

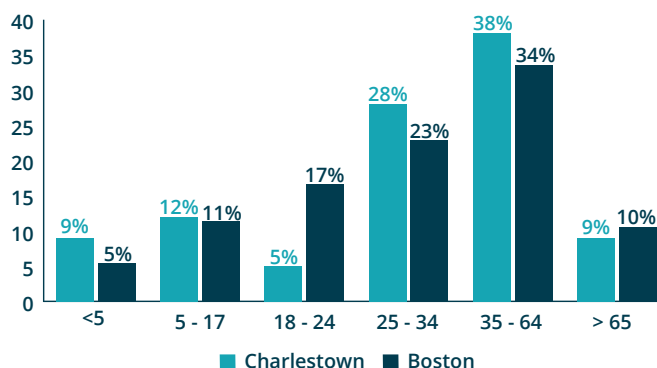
### Population Growth

- Charlestown had a population of 18,058 in 2015, 2.8% of Boston's total population.<sup>1</sup>
- Charlestown's population has increased by 19% from 2000 to 2015, faster than the city's growth of 10%.

### Age Distribution

- Only 5% of Charlestown residents were aged 18 to 24 in 2015, compared to 19% of the Boston population.
- Charlestown has the highest share of young children of any neighborhood.

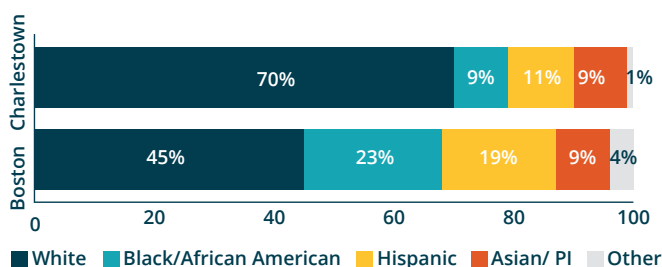
**Charlestown & Boston Residents by Age**  
2015



## Diversity

- Only about 17% of residents in Charlestown were foreign born in 2015, compared with about 27% of Boston residents.
- About 70% of Charlestown residents were non-Hispanic Whites in 2015, a higher share than Boston.

**Charlestown & Boston Residents by Race**  
2015



## Economy

### Jobs

- Charlestown had 16,626 payroll jobs in 2014, about 35% of which were in Health Care and Social Assistance.<sup>2</sup>
- Charlestown has 1.85 payroll jobs for every resident worker, compared to 2.05 for Boston.

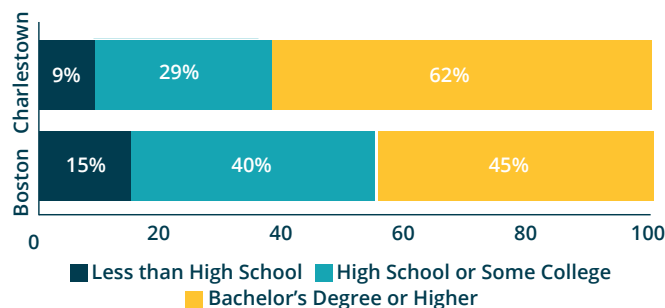
### Labor Force

- Charlestown's resident labor force had 11,193 people in 2015, almost 3% of the city's resident labor force.
- 76% of Charlestown residents ages 16 and over participate in the labor force, compared to 68% for Boston.
- The top occupations of Charlestown residents in 2015: Management, Business and Finance, and Sales.

### Education

- Only 6% of Charlestown residents were enrolled in college or university in 2015, a lower share than the city as a whole (17%).
- In 2015, 62% of Charlestown residents aged 25 and older had a Bachelor's degree, compared with 45% of Boston residents.

**Educational Attainment (Age 25+)**  
2015



## Income

- Charlestown has a median household income of \$91,067, higher than the city's median household income of \$55,777.



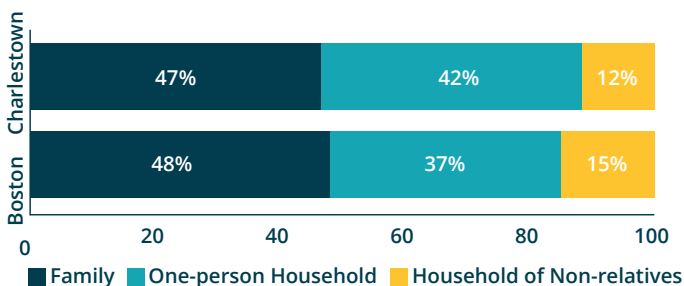
# Neighborhood Profile | Charlestown

## Place

### Households and Dorms

- Over 99% of Charlestown residents live in households, 46% of which are families.
- Almost half of Charlestown households have only one person.

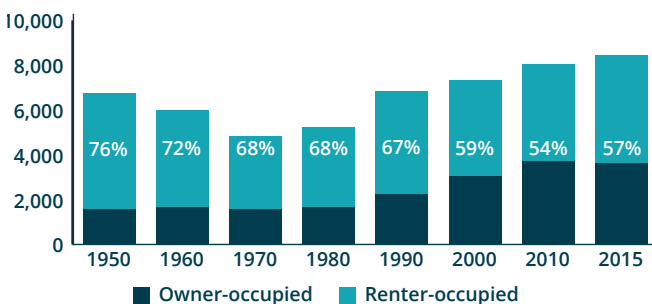
**Household Type**  
2015



### Renters and Owners

- In 2015, Charlestown had 3,298 condos, 70% of which were owner occupied.<sup>3</sup>
- Charlestown's median rent in 2015 was \$1,127, lower than the city's median rent of \$1,320.

**Charlestown Occupied Housing Units**  
1950-2010



### Vehicles

- 75% of Charlestown's households own at least one car, higher than the city average of 65%.
- The ratio of vehicles to households in Charlestown was 1.04 in 2015, higher than the city ratio of 0.91.

## Trends

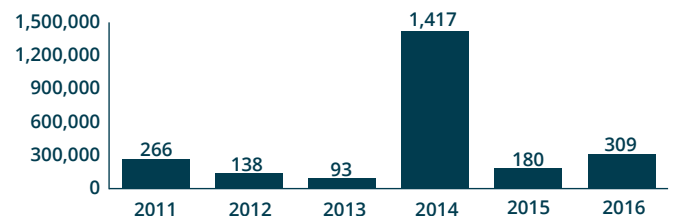
### Historical Trends in Charlestown

- The population grew by 19% and occupied housing units grew by 15% from 2000 to 2015.
- The share of the population under age 5 grew from 6% in 2000 to 9% in 2015.
- From 2000 to 2015, the Asian population share grew from 5% to 9%, and the Black/African-American share grew from 4% to 9%.
- The share of Charlestown adults with at least a Bachelor's degree grew from 51% in 2000 to 62% in 2015.
- Charlestown has become more residential: while the population grew, payroll jobs in Charlestown fell by 6% from 2011 to 2014.
- The owner-occupancy rate in Charlestown has increased slightly from 41% in 2000 to 43% in 2015.
- The share of Charlestown households with cars has increased from 72% in 2000 to 75% in 2015.

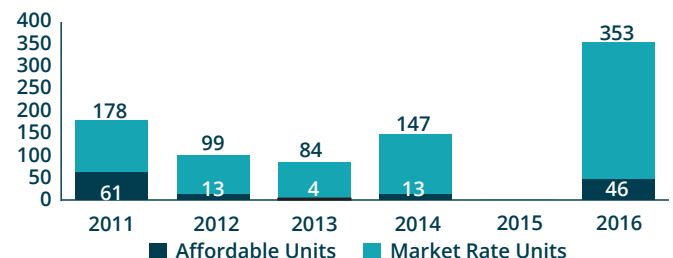
### The Future for Charlestown

- Charlestown's growth is poised to continue with 861 new units of housing approved for construction since 2010.<sup>4</sup>

**BPDA Board-Approved Development (in Thousands of Feet<sup>2</sup>)**  
2010-2016



**BPDA Board-Approved Housing Units**  
2010-2016



# Neighborhood Profile | East Boston

## People

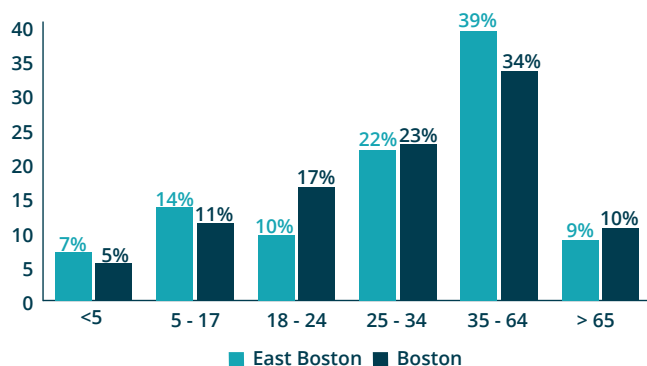
### Population Growth

- East Boston had 44,989 residents in 2015, 7% of Boston.<sup>1</sup>
- East Boston grew by 17% from 2000 to 2015, faster than the city's growth of 10% over the same time period.

### Age Distribution

- 21% of East Boston residents are children, compared to 17% in Boston as a whole.
- The 5-17 age group decreased from 16% in 2000 to 14% in 2015.

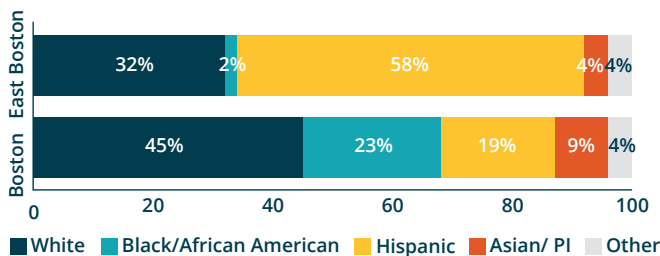
**East Boston & Boston Residents by Age**  
2015



### Diversity

- In 2015, more than half of East Boston's population was foreign born, compared to 23% in 1990.
- The Hispanic/Latino population has increased dramatically from 1% in 1970 to 58% in 2015.

**East Boston & Boston Residents by Race**  
2015



## Economy

### Jobs

- East Boston had 21,076 jobs in 2014, 44% of which were in transportation and warehousing.<sup>2</sup>
- The number of East Boston payroll jobs has grown 6% since 2011.

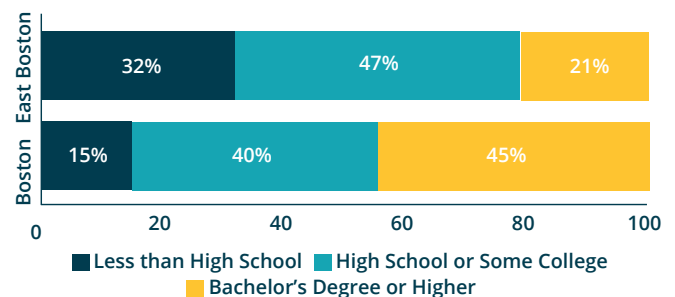
### Labor Force

- East Boston's labor force had 27,736 people in 2015.
- 75% of East Boston residents age 16 and older participated in the labor force, compared to 68% for Boston.
- The top occupations of East Boston residents in 2015: Food Preparation/Serving, Building & Grounds Maintenance, and Administrative Support

### Education

- 6% of total East Boston residents in 2015 were enrolled in a college or university.
- About a fifth of East Boston residents age 25 and older in 2015 had obtained a bachelor's degree or higher.

**Educational Attainment (Age 25+)**  
2015



### Income

- The median household income in East Boston in 2015 was \$51,549, compared to the Boston median of \$55,777.

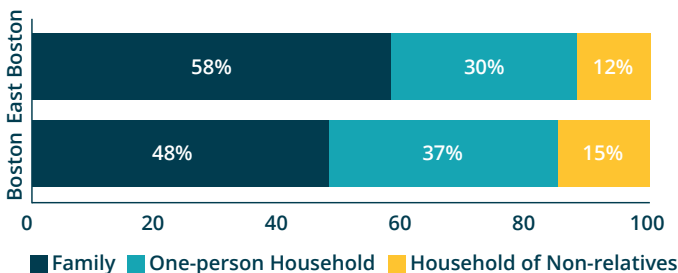
# Neighborhood Profile | East Boston

## Place

### Households and Dorms

- More than 99% of East Boston residents live in households, 58% of which are families.

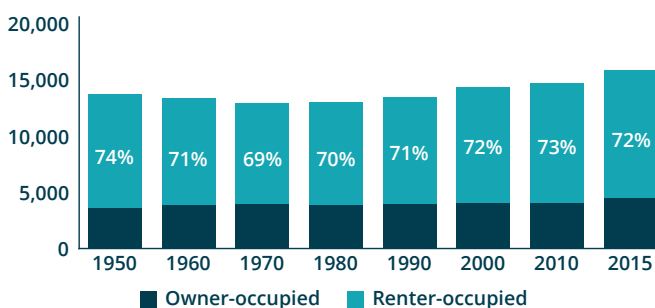
#### Household Type 2015



### Renters and Owners

- Since 1950, approximately 70-75% of East Boston households have been rentals, about the same as Boston as a whole.
- The median rent in East Boston in 2015 was \$1,139, compared to \$1,320 for Boston as a whole.

#### East Boston Occupied Housing Units 1950-2015



### Vehicles

- 63% of East Boston households in 2015 had at least one vehicle, compared to 65% of all Boston households.
- The ratio of vehicles to households in East Boston grew from 0.79 in 2000 to 0.84 in 2015.

## Trends

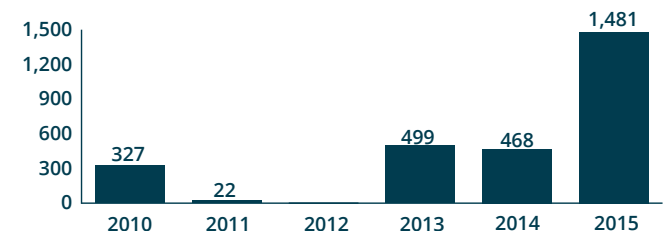
### Historical Trends in East Boston

- The population grew 17% and occupied housing units grew 10% from 2000 to 2015.
- Transportation and warehousing are the largest industries in East Boston, accounting for nearly half of all payroll jobs.
- From 2000 to 2015, the share of East Boston residents age 16 and older participating in the labor force grew from 59% to 75%.
- In 1970, East Boston had less than 500 Hispanic residents. By 2015 more than half of the population was Hispanic.
- In 2015, more than half of East Boston's population was foreign born, compared to just 16% in 1970.
- The percentage of East Boston residents age 25 and over with a Bachelor's degree doubled between 2000 and 2015.

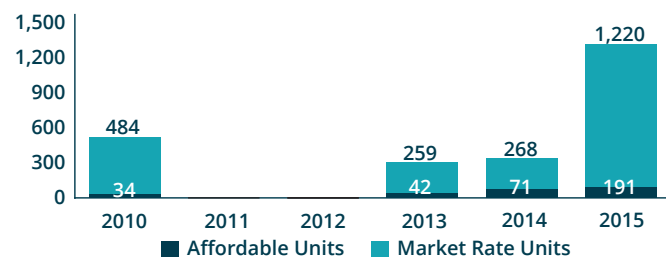
### The Future for East Boston

- East Boston's growth is poised to continue with 2,828 new units of housing approved between 2010 and 2015.<sup>4</sup>

#### BPDA Board-Approved Development (in Thousands of Feet<sup>2</sup>) 2010-2015



#### BPDA Board-Approved Housing Units 2010-2015





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