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City of Cambridge
Open Space and Recreation Plan
2025-2032

(reserved)

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Section 1: Plan Summary

Cambridge's parks and open spaces are important places for community life, access to nature, active and passive recreation, and are important areas for mitigation of risks of climate change.

In a dense, largely built-out city like Cambridge, the strategic use of open spaces and public realm is critical. The City's parks and open spaces serve as important community infrastructure, and serve as direct avenues where the City can work toward climate resilience and community well-being. It is also paramount that investment in and use of this infrastructure is done equitably, and that the benefits of open space can be broadly enjoyed by all members of the community.

This plan outlines priorities toward more strategic use of our public spaces—how to use them well to serve the needs of the Cambridge community. A series of goals and actions speak to how the City of Cambridge can approach the design, operation, maintenance, and education and engagement of and around these spaces to further how these spaces can benefit the Cambridge community. These actions range from capital improvements to actions the City can take working with community partners to get the most benefit we can out of our parks and open spaces for our dynamic and diverse community.

Section 2: Introduction

Statement of Purpose

The Open Space and Recreation Plan (OSRP) builds on recent planning efforts and ongoing community processes, and brings them together to develop an action plan to improve our community's access to open space.

Open spaces are vital spaces that support livability, community life, and community wellbeing. They are also spaces that play an important role toward reducing our contributions to (and mitigating impacts of) climate change, as well as supporting physical health and learning. At the same time, recognizing the urban context of Cambridge and its surroundings, it is critical to be strategic in how to best utilize limited open space.

Open space planning in Cambridge is an ongoing, collaborative process with participation from several different City departments. This plan examines our current open space system and identifies a vision and goals that reflect our community's core values, and charts an action plan for the City to protect, enhance, and leverage Cambridge's open space resources for the benefit of current and future community members.

Planning Process and Public Participation

This planning process provided an opportunity to coordinate our efforts around open space planning in light of recent work that the City has undertaken, from the Envision Cambridge comprehensive planning process, to recent work in climate resilience through the Climate Change Vulnerability Assessment and Resilience Plan, to the development of the City's Urban Forest Master Plan.

As a part of this process, the City conducted a public process around the update of the City's Open Space Plan. The framework of this planning process built on the core values that informed the Envision Cambridge process and through the lens of the broader public realm, which includes consideration of spaces beyond dedicated open spaces, including spaces in the public rights-of-way. Though not part of the park system, in a densely populated city like Cambridge, these public spaces can contribute to community life, and can be considered as spaces to extend some of the benefits that open spaces can provide beyond the bounds of parks themselves.

The community process leveraged a mix of different engagement tools, including virtual community meetings, in-person tabling, online surveys, and focused events with groups such as young people and English-language learners.

A more detailed description of community engagement is included in **Section 6, Community Vision**.

The actions that are outlined overlap with how the City contemplates management of its public open spaces, but also recommendations that extend beyond public open space lands toward broader efforts the City can undertake to support the broader public realm. At the staff level, an interdepartmental Open Space Committee leads the coordination around open space work in Cambridge. Departments represented by the Open Space Committee developed and will carry out the implementation of the action plan.

Section 3: Community Setting

Regional Context

The City of Cambridge is located in Middlesex County, bordered by the Charles River to the south and southwest, Watertown and Belmont to the west, the Alewife Brook and Arlington to the north, Somerville to the northeast and a small portion of the Charlestown section of Boston at the far east. Cambridge's location within the surrounding region is illustrated in **Map 3-1**.

The areas that make up Cambridge vary greatly in character, and include residential neighborhoods ranging from lower-density single-family to higher-density multifamily housing, lively mixed-use squares, former industrial areas evolving into high-tech employment centers, and a few large open spaces including Fresh Pond and its surrounding reservation area, Danehy Park, and the banks of the Charles River. Overall, the feel of Cambridge is that of a densely-populated, urbanized area adjacent to a metropolitan downtown. According to information from the U.S. Census (2020), Cambridge has the second-highest population density among cities and towns in Massachusetts.

Cambridge has also long served as a regional employment center, once for industrial manufacturing and more recently for technological and life sciences businesses. A variety of factors, including proximity to Boston, excellent transportation infrastructure, and top-tier academic and research institutions have made Cambridge an attractive location for employers. Alongside the benefits of its place as a regional employment center means, Cambridge also faces the challenge of providing high-quality services for a mix of residents, employees, students and visitors alike.

Cambridge is linked with its regional neighbors not just by transportation infrastructure, commerce and education, but also by the larger regional system of open spaces and natural areas. Perhaps the most significant part of Cambridge's "green infrastructure" is the Charles River, which forms part of Cambridge's border, while also linking it ecologically and recreationally with Boston and the Boston Harbor to the east, and with up-river communities such as Watertown, Waltham, Newton, Weston, Wellesley, Needham and beyond.

While many of the industrial and agricultural threats to river quality faced in the past have diminished, new patterns of development within the thirty-five communities of the Charles River aquifer could have potential impacts on water quality. Likewise, Cambridge is linked to communities in the Mystic River Watershed by way of the Alewife Reservation, so impacts to that watershed have an effect on all communities within it regardless of where the impacts are caused. Moreover, the infrastructure that provides potable water to the Cambridge population draws from watershed areas in Lincoln, Weston, Waltham and Lexington. Cambridge officials confer with other communities on specific issues regarding these shared resources as they arise.

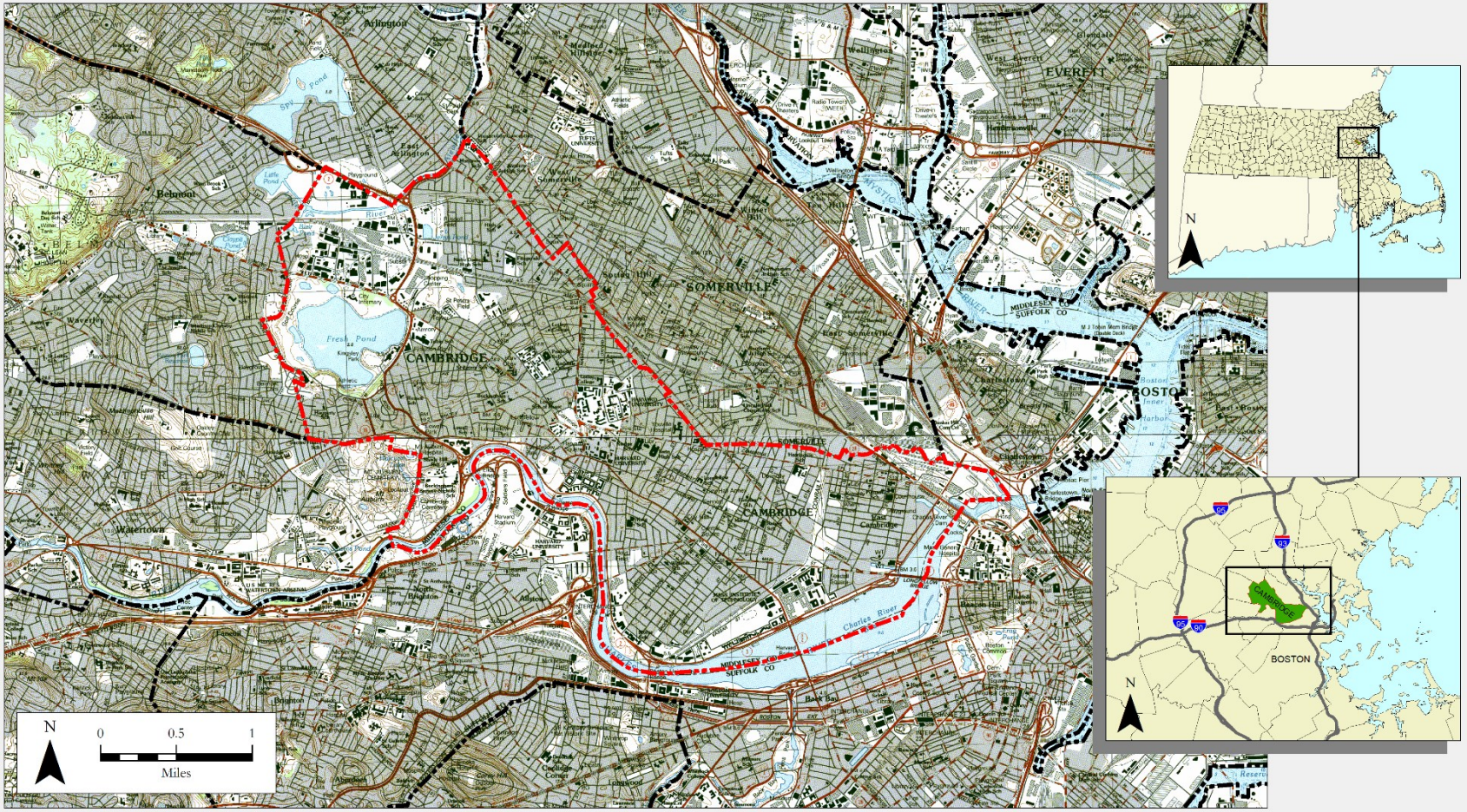
Cambridge also interacts with its neighbors through the Inner Core Committee of the Boston region's Metropolitan Area Planning Council, a group of 21 communities that discusses planning issues of regional interest.

History of the Community

Cambridge History

Prior to European settlement, the land that is now Cambridge was an important focal point for Native American activities, especially during the summer when it became a staging area for food gathering. The only surviving features from that time are several trails that have since become major transportation and commercial corridors throughout the city, including Massachusetts Avenue and the Charlestown-Watertown Path, comprising Kirkland,

Map 3.1: Regional Context Map



Sources: USGS Topographic Maps via MassGIS; MassGIS.

Mason and Brattle Streets. The first European settlement occurred in 1630 when English settlers came to what is now Harvard Square, and which was then the confluence of several major native trails. The settlement, called Newtowne, had been founded to be the capital of the Massachusetts Bay Colony.

The village quickly became the focal point for all economic, religious, and civic activities in the new town. Settlers were not allowed to live outside the village, resulting in a small, nucleated settlement with house lots in town and fields beyond the village. In 1634, Newtowne lost its civic pre-eminence when the capital of the Massachusetts Bay Colony was relocated to Boston. Two years later, Newtowne became the educational center of the colony when Harvard College was established just to the north of the village. The village was renamed Cambridge in 1638, after the esteemed college in England. The original street grid of the 1630s village and the Harvard College Yard remain today.

Throughout the 17th and 18th centuries, the town's focus remained in the Harvard Square area, later known as “Old Cambridge.” Drawn by the cachet of Harvard College and the idyllic quaintness of village life, Boston's elite built summer houses along Brattle Street to the west of the square. Elsewhere there were scattered farms and an occasional tavern along a main road.

In the late 18th century the focus of the town's activities began to shift. The construction of the West Boston Bridge (currently the Longfellow Bridge) in 1793 opened the town up to Boston real estate developers and manufacturing concerns. As a result, the beginnings of new villages in East Cambridge, Central Square and Cambridgeport emerged during the early years of the 19th century. Most notably, the developers of East Cambridge persuaded the Middlesex County government to move from Harvard Square to East Cambridge with the promise of a new courthouse. The county seat remains in East Cambridge today.

Cambridge's industries took root in the 19th century, with glassmaking, soap-making and candle-making in East Cambridge, rope-making and tanneries in Cambridgeport. Pipe organs were also manufactured in Cambridge. Industrial growth was slow at first because of the War of 1812, but starting in 1820, the economy boomed. Soap-making and candle-making continued as the leading industries, followed by brick-making in North and West Cambridge and glassmaking in East Cambridge. Carriage manufacturing was supported by numerous lumberyards. Food processing and furniture industries grew during this period as expanding railroad networks provided access to regional and national markets. By mid-century, manufacturing of boilers, engines and heavy machinery as well as industries like ironworks, metal presses and stamping took hold in Cambridge, boosted in part by the Civil War. Industry expanded into what is now Kendall Square, lower Cambridgeport, parts of Riverside and North Cambridge. During the latter part of the 19th century, refined sugar, candy, caskets, twine and netting, hoses, reinforced concrete, petroleum products and bitulithic pavement were added to the already long list of products manufactured in Cambridge.

Population growth closely followed the industrial boom. Between 1820 and 1830 the number of people living in Cambridge doubled, and between 1830 and 1870 the population increased six-fold. Immigrant groups included the Irish, Polish, Italians, Portuguese and French-Canadians along with other ethnic and national groups. By 1865, 20 percent of Cambridge’s population was Irish-born, with the total immigrant population making up about 28 percent of the city. Cambridge became a city in 1846 when Old Cambridge, East Cambridge and Cambridgeport were unified.

Housing development boomed as well. While Old Cambridge retained its status as a quiet home for the intellectual and economic elite, dense new residential development for workers occurred in

East Cambridge and Cambridgeport and near the brick yards in North Cambridge and West Cambridge. Little thought was given to open space. Between roughly the 1850s and the 1930s, the Cambridge landscape was dramatically altered as developers filled tidal marshes along the Charles and freshwater marshes at Fresh Pond and Alewife. Central Square, located along the street railroad line from Boston, emerged as the commercial center of Cambridge, and eventually became its civic center when City Hall was built there in 1890. A comfortable middle class suburb developed north of Massachusetts Avenue between Central and Harvard Squares, and a more affluent suburb grew north of Harvard Square on Avon Hill.

Industrial, demographic, and residential growth continued almost unabated into the 20th century. World War I gave a substantial boost to Cambridge's already robust industrial base. The Massachusetts Institute of Technology relocated to the Cambridge riverfront in 1916, which in addition to establishing a second educational anchor, began to bring electronic, engineering, scientific instrument and industrial research firms to Cambridge. The household population (not including university students) passed the 100,000 mark during this time, increasing from 91,886 in 1900 to 104,836 in 1910, to 109,694 in 1920, and to its peak of 113,643 in 1930 (Source: Cambridge Historical Commission).

The influx of residents prompted more residential development, which resulted in the city becoming a series of interlocking street grids from east to west, leaving virtually no undeveloped land remaining, and no great expanses of open space. Today’s neighborhoods take their architectural character largely from pre-1930 Cambridge. The extension of the subway to Harvard Square in 1912 and trolley lines along major roads resulted in the construction of some larger apartment buildings. The subway extension also allowed Harvard Square to thrive again as a commercial center.

Industrial growth peaked in 1929. The Great Depression stifled industrial development in the city, as the value of goods produced in Cambridge dropped from $175 million in 1929 to $97 million in 1933, then recovered somewhat to $129 million by 1940. Industrial growth was spurred again during World War II and the post-war years, especially for heavy industry producing durable goods. The universities also begin to play a greater role in the economy, particularly through defense-related work at MIT. Advances in electronics and communications, including the development of radar, shaped high technology industries for the next half-century. The chemical industry also expanded, and the founding of Polaroid made the city notable in the field of photographic equipment. The recovery, however, was short lived, and during the 1950's there was a sharp decline in the value, quantity and diversity of goods produced, as Cambridge fell victim to industrial competition from the suburbs, the South and foreign countries. Both large and small manufacturers closed or moved from Cambridge, and the firms that remained employed fewer and fewer workers.

Population figures similarly began to fall during this period. The household population of Cambridge fell from 113,643 in 1930 to 110,879 in 1940 and to 107,676 in 1950. (In 1950, when the U.S. Census began including university students as part of the city’s population, the total population of Cambridge was 120,740, a figure that has not been reached since.) The first major out-migration of people occurred in the early 1950s as working- and middle-class families left the inner city for the suburbs.

The ethnic and racial composition of the city changed as well. Some new industries, particularly the defense industry, brought many black jobseekers from the South. Portuguese-speaking people from the Azores, Cape Verde and occasionally Brazil migrated to the eastern part of the city, joining extended family networks already in place. Many of those migrating from Cambridge to

the suburbs were of European descent, particularly Irish.

By 1960, the declines in population and jobs had resulted in an erosion of the tax base. At that time, Cambridge revised its zoning ordinance to permit taller, more dense development in order to draw development and growth back to Cambridge. Much of the existing industrial fabric of Kendall Square was razed under the federal urban renewal program in the 1960s in hopes of attracting new uses. The federal government had initially planned to locate NASA in this area but ultimately chose Houston, and later a portion of this land became a research center for the U.S. Department of Transportation (now called the Volpe Center). However, as more businesses moved away, the remaining vacant or under-utilized industrial buildings contributed to what was considered to be urban blight. At the time, the state proposed to construct a six-lane expressway (known as the Inner Belt) through the heart of the city. This plan was abandoned in 1972 after much public opposition; however, considerable economic damage had already occurred, especially in Central Square.

As the strength of industry diminished, both the physical size and economic prowess of MIT and Harvard expanded. The system of government-supported defense research pioneered by Vannevar Bush, an MIT professor and science advisor to the President, contributed to university growth and technological advancement. The university research labs, and their technology-based "spinoff" firms, eventually superseded traditional manufacturing as the driving force of the Cambridge economy. Enrollment at Harvard and MIT also grew, fed in part by the “baby boom” of the post-war years and by foreign students seeking an American education. Expansion of ancillary and support services at the universities resulted in them becoming major employers in the city, and commercial and retail operations, especially in Harvard Square, shifted their emphasis to serve the young student population. Meanwhile, the construction of new suburban shopping malls pulled clientele away from Central Square, adding to the disinvestment in Cambridge's traditional downtown.

With the exception of the major universities, Cambridge continued to suffer from disinvestment and declining growth through the 1970s. In that depressed economic environment, the city began to search for a strategy to revitalize its economy, secure a tax base to ease the burden on homeowners, and stem the decline of the city's financial health. These initiatives formed the foundation for Cambridge’s current planning, which are discussed in part “D” of this section, “Growth and Development Patterns.”

History of Open Space in Cambridge

For most of the 19th century, the villages of old Cambridge, Cambridgeport and East Cambridge consisted of compact urban settlements surrounded by marshes and fields. People saw little need for public open space until the villages began to grow together after the Civil War. By the end of the 19th century, most of Cambridge was entirely developed.

Early public open spaces in Cambridge were largely created by concerned citizens acting on behalf of the general welfare, and not by the municipality. The movement to enclose and landscape Cambridge Common, which began in the 1820s, was initiated by Old Cambridge residents who accomplished this civic improvement at their own expense; a few years later, some of the same individuals successfully pursued a similar initiative at Winthrop Square. In 1831, members of the Massachusetts Horticultural Society pioneered the concept of the “garden cemetery” and made Mount Auburn the most popular pleasure ground in New England. Longfellow Park was set aside by the heirs of Henry Wadsworth Longfellow, who resided in the adjacent house, in 1883. Lowell Park was protected by the same family in 1898. In

Cambridgeport, Sennott Park had been set aside as a burying ground in 1811 and became a public park in 1865. Also, in 1856, Edmund Trowbridge Dana donated the land on Magazine Street that is now called Dana Park; the park was enlarged to its current size after the adjacent Willard School was demolished in 1957.

At the end of the 19th century, the innovative ideas of landscape architect Charles Eliot were put into effect by the Cambridge Park Commission, established in 1892, which carried out one of the greatest municipal park development programs in America at the time. The Commissioners hired Eliot and his firm, Olmsted, Olmsted & Eliot, to improve existing parks and to plan new ones in the city's working-class neighborhoods. The Park Commission also took responsibility for improved maintenance of open spaces and began to provide public recreation programs.

In 1894, the City acquired the land for Donnelly Field in eastern Cambridge, Rindge Field in North Cambridge, and the entire Cambridge frontage of the Charles River. The new Charles River Park transformed the city. When the City acquired the land by eminent domain, it was 800 acres of mud flat and degraded salt marsh. By 1914, it had been transformed into a linear park running the length of Cambridge. In 1921, Cambridge's riverfront parks were transferred to the Metropolitan District Commission, but the Cambridge Park Commission continued to operate extensive recreational programs at its parks and swimming facilities, along with other facilities throughout the city.

In order to protect the drinking water supply, the City acquired all of the lands surrounding Fresh Pond in 1889. From 1894 to 1909, the area was graded and landscaped under the direction of the Olmsted, Olmsted & Eliot firm. Other parks that were developed during the tenure of the Cambridge Park Commission included Hoyt Field (created on the site of a mill pond in 1907), Ahern Field (established on a former salt marsh in 1911), Russell Field (acquired in 1912 for high school athletic uses), Glacken Field (created in a section of the Fresh Pond Reservation in 1924) and Tobin Field/Father Callanan Playground (formerly a brick yard, acquired in 1927 and developed in 1938 under the Works Progress Administration). After World War II, the responsibilities of the Park Commission were divided between the Department of Public Works and the present Department of Human Service Programs.

Since the 1940s, a number of new parks have been developed at various points in time. In 1946, the municipal-acquired land that is now St. Peter's Field was transferred to recreational use after it was determined it would not be needed for veteran's housing. Gold Star Mothers Park and the Simoni Staking Rink on Gore Street began development in 1968, having been acquired and constructed with federal grant funding. In the 1980s, the City acquired the land to create Riverside Press Park, Sacramento Field and Clement Morgan Park (Columbia Street). Perhaps most notably, the City created the 50-acre Danehy Park in 1992 by covering and converting a former municipal landfill.

Also for the first time, the City established an agreement with private real estate developers to create several public open spaces as part of the development of the East Cambridge riverfront (now Charles Park, Front Park, Lechmere Canal Park and Centanni Way), This has been a successful tool for the creation of new parks in the City, with more recent examples including the new Timothy J. Toomey, Jr. Park, Triangle Park, and Binney Street Park in the Kendall Square area of East Cambridge resulting from development agreements.

Leveraging private development to create open space has also been effective in creating privately-owned public spaces that, while remaining under private control, are required to be available for public use (usually through development agreements or other legal mechanisms). These spaces are maintained by property owners, and

sometimes provide for additional public benefits such as programming or events that are open to the broader community. Examples of these spaces include many of the open spaces within the MXD District in the Kendall Square area.

The City has also purchased land for use as open space, such as the acquisition of abandoned rail corridors for the purpose of creating multi-use pathways. A recent example is the purchase of the former Watertown Branch off the Fitchburg Line for the creation of a new off-road pathway connection located between Fresh Pond Reservation and Danehy Park. This new path connects to the newly completed Watertown-Cambridge Greenway developed in partnership with DCR.

Population Characteristics

Cambridge is a shifting mosaic of cultural and demographic diversity brought about by decades of immigrants seeking jobs in factories, as well as people from all over the world attracted to the institutions of higher education in the region. Cambridge residents represent a wide range of age groups, races and income levels. Effectively responding to the open space and recreational needs of such a diverse population is an ongoing effort for the city.

Population Size and Density

According to the 2020 U.S. Decennial Census, the population of Cambridge is 118,403. This represents a 12.6% growth in population since 2010, and a 24.2% growth since 1990. Before 1990, the population of the city had steadily declined since its peak of 120,740 in 1950. This long-term decline can be traced to out-migration, especially in the 1950s and 1960s, and declining birth rates. Household sizes have also declined, reflecting state and national trends.

The overall population density in Cambridge is approximately 18,529 per square mile, or 29 persons per acre. This makes Cambridge the ninth most densely populated city in the nation, and second highest in the state (Source: US Census, 2020).

Household Composition and Size

According to 2020 American Community Survey 5-Year Estimates, the average household size in Cambridge is 2.13 people. According to these estimates, there are 47,449 households in Cambridge.

It is important to note that the distribution of both population characteristics and socioeconomic factors are unevenly distributed across the city, in

Table 3.1: Total Population and Population Density of Cambridge, 1950-2020

Census Year	Total Population	Population Density (persons/acre)
1950	120,740	29
1960	107,716	26
1970	100,316	24
1980	95,322	23
1990	95,802	23
2000	101,355	25
2010	105,162	26
2020	118,403	29

Source: U.S. Census Bureau, 2020 Decennial Census

Table 3.2: Household Composition in Cambridge, 2020

Household Type	Number of Households	Percent of All Households
Total Households	47,449	100%
Total Family Households	20,148	42%
Couples with Children	15,611	33%
Single Householder w/ Children	4,537	10%
Total Non-Family Households	27,301	58%
Householder Living Alone	16,863	36%
Householder Not Living Alone	10,438	22%

Source: U.S. Census Bureau, 2020 ACS 5-Year Estimates

part reflecting the legacy of historic patterns of development and land use.

Employers and Employment Trends

Since the 1980s, the City has collected data to assemble a list of the 25 largest employers in the city, based on voluntary reporting by employers. Harvard University and the Massachusetts Institute of Technology have shared the top two positions since data collection began. The City of Cambridge has consistently placed among the top five, often in third position, but more recently supplanted by a large pharmaceutical company and startup incubator.

The top 25 employers over time has been a snapshot of growth of industries in Cambridge in even a short time, and that has been reflected in built patterns as well. The relationship between particularly as areas that had undergone earlier development as employment centers are now seeing more housing development as driven by long term planning efforts and policy changes, which will have implications on open space preferences. It is worthwhile to consider as well the implications of emerging trends in employment writ large, and in particular, shifts in work and commute patterns in the aftermath of the COVID-19 pandemic that may also have impacts on patterns of open space use.

Open Space Needs Assessment Mapping

As part of this planning process, a mapping methodology was developed by project team in the Community Development Department to understand the concept of open space need and benefits across several topic areas. Data were grouped into four broad areas: access and distribution, climate resilience, public health, and community, which consisted of socioeconomic data.

These topic areas help to assess different areas of need across our open space system through a lens that centers equity, and to help inform where the City should be examining and prioritizing certain types of actions that can help to address open space need. These actions can range from working to generally expand access to open space in areas, to guiding targeted park and open space interventions to meet localized conditions presented by this data.

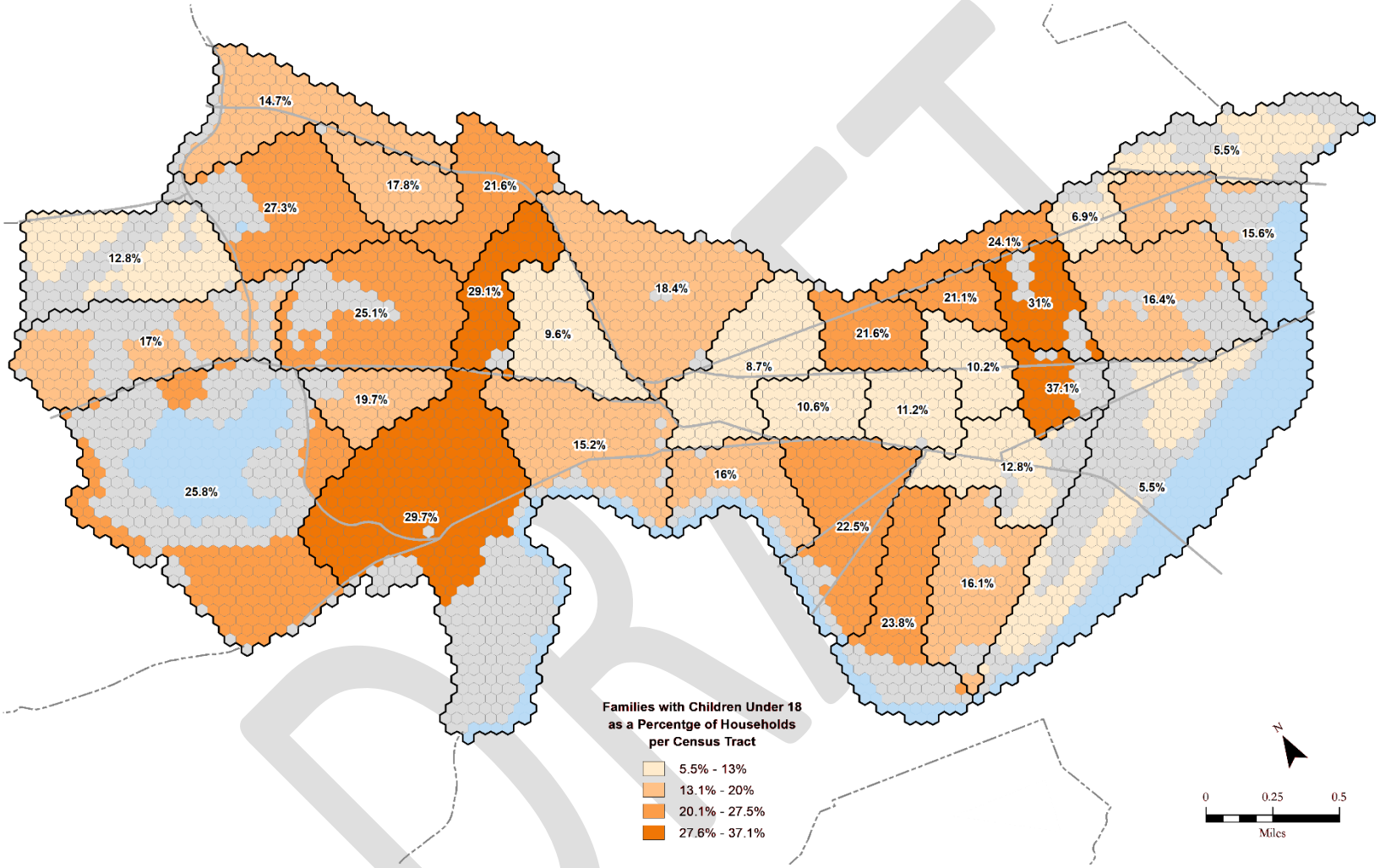
Mapping methodology summary:
The Needs Assessment used a mapping system consisting of the land area of Cambridge divided into approximately 1-acre hexagonal grid cells. For each given variable, the cells reflect the average of the given data across the area for each cell. This allowed for a few specific benefits:

- Allowed for finer-grain distribution of populated cells, by allowing for removal and redistribution of population-based characteristics or variables from unpopulated areas. For example, Census information at the tract level can be more accurately distributed between only populated cells, while excluding unpopulated cells such as the majority of the Fresh Pond Reservation (with the exception of parcels representing Neville)
- Allowed for reconciling data from different levels of granularity in a more meaningful way.
- Created a framework to be able to compare different geographic areas across the city

An initial set of maps was developed in order test the methodology and present initial findings. The initial maps were reviewed as part of the open space planning process to get input on the specific variables being looked at how they reflected community core values. The maps were revised to reflect this feedback as well as incorporate newly available 2020 Decennial Census data as well as new American Community Survey 5-Year estimates.

These maps are integrated throughout the OSRP document as they pertain to relevant subject matter.

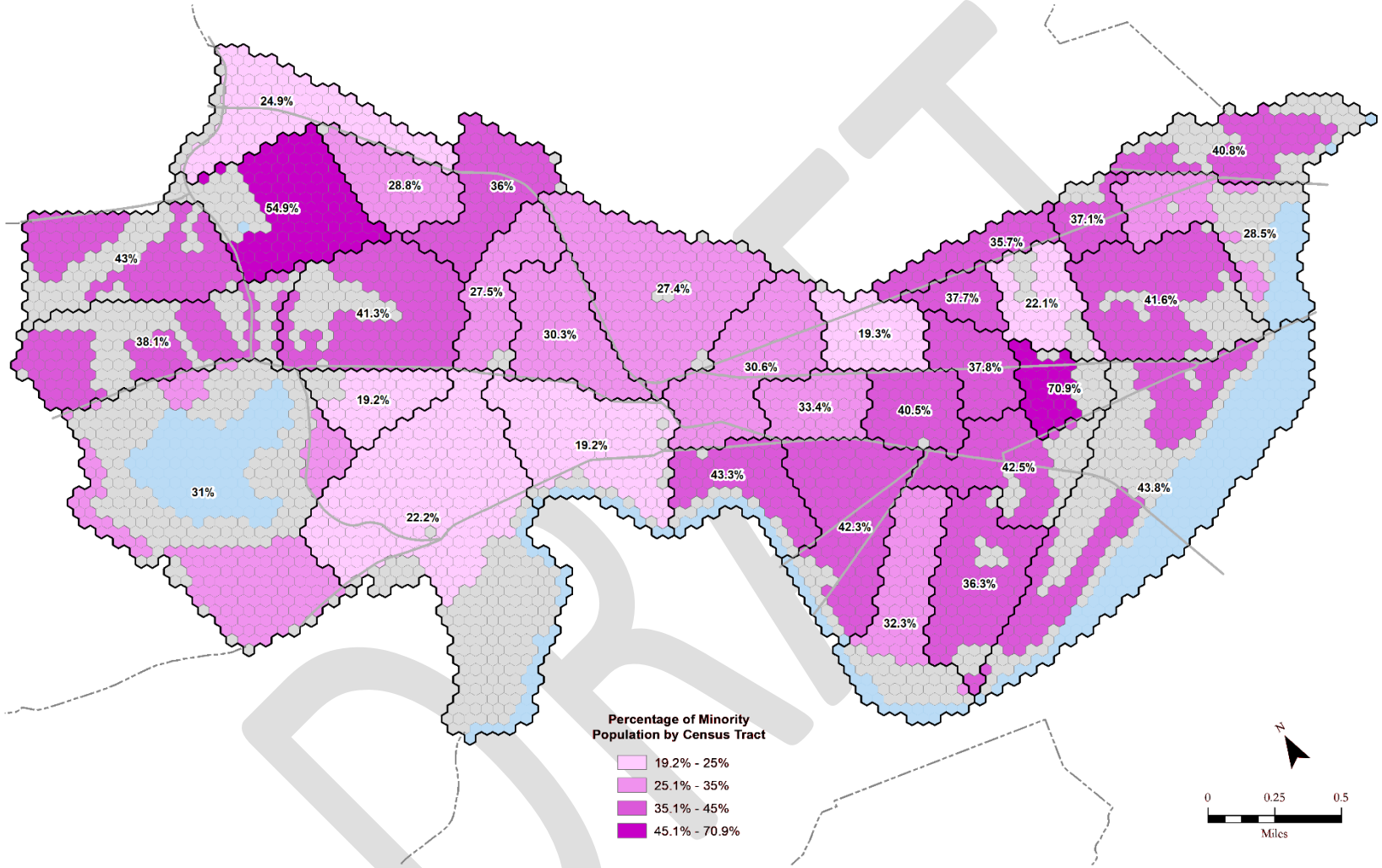
Map 3.2: Families with Children under 18, as percentage of households per Census Tract



This map displays the relative proportion of households that include children under 18 by Census tract. This can speak to the need for parks and open spaces to reflect needs and interests for both adults and children. Note, the number of children in the households and household structure are not indicated by this data.

(Data Source: US Census Bureau, Cambridge GIS)

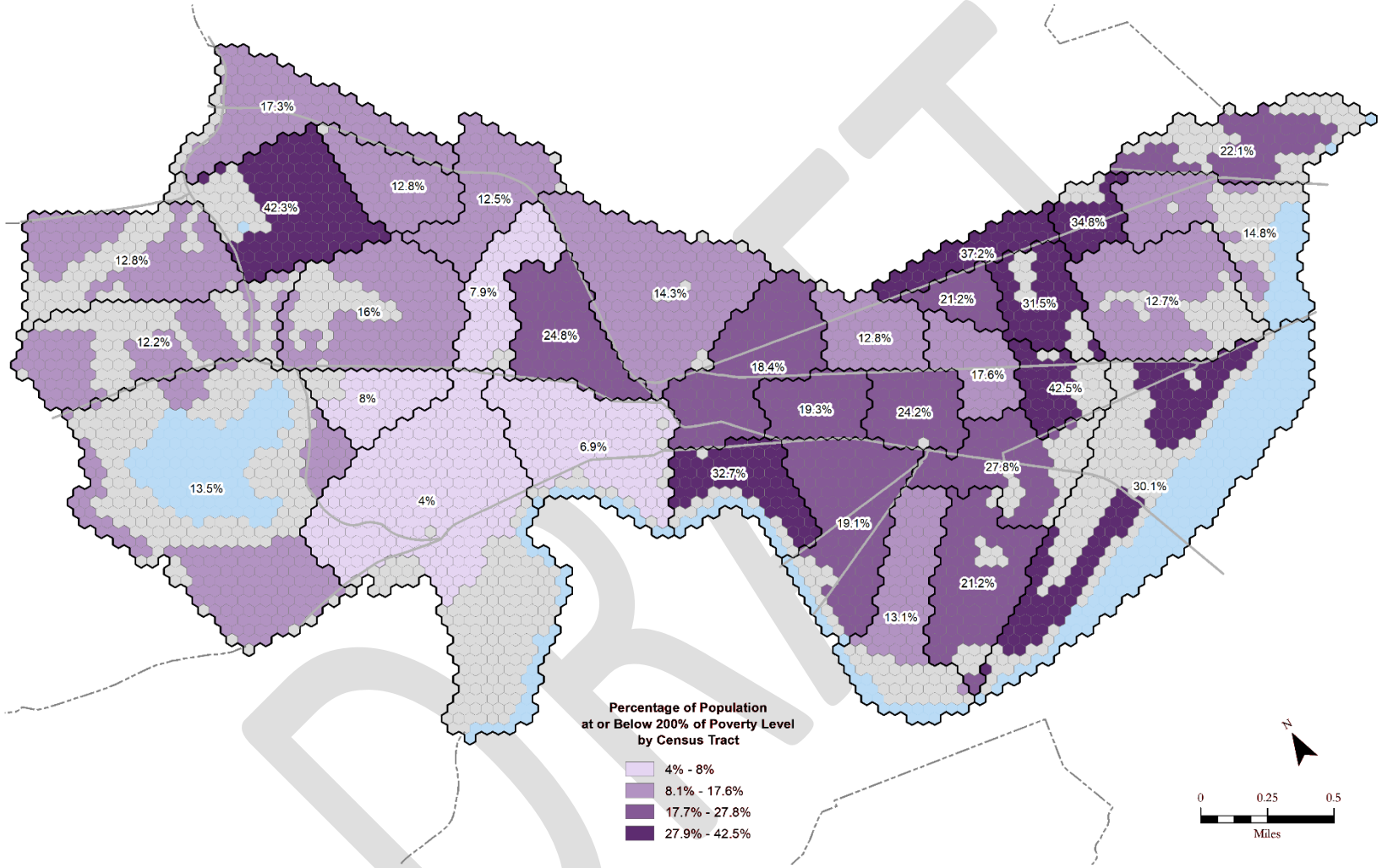
Map 3.3: Percentage of Minority Population, by Census Tract



This map shows the percentage of minority population by Census tract, averaged across individual 1-acre grid cells.

(Data Source: US Census Bureau)

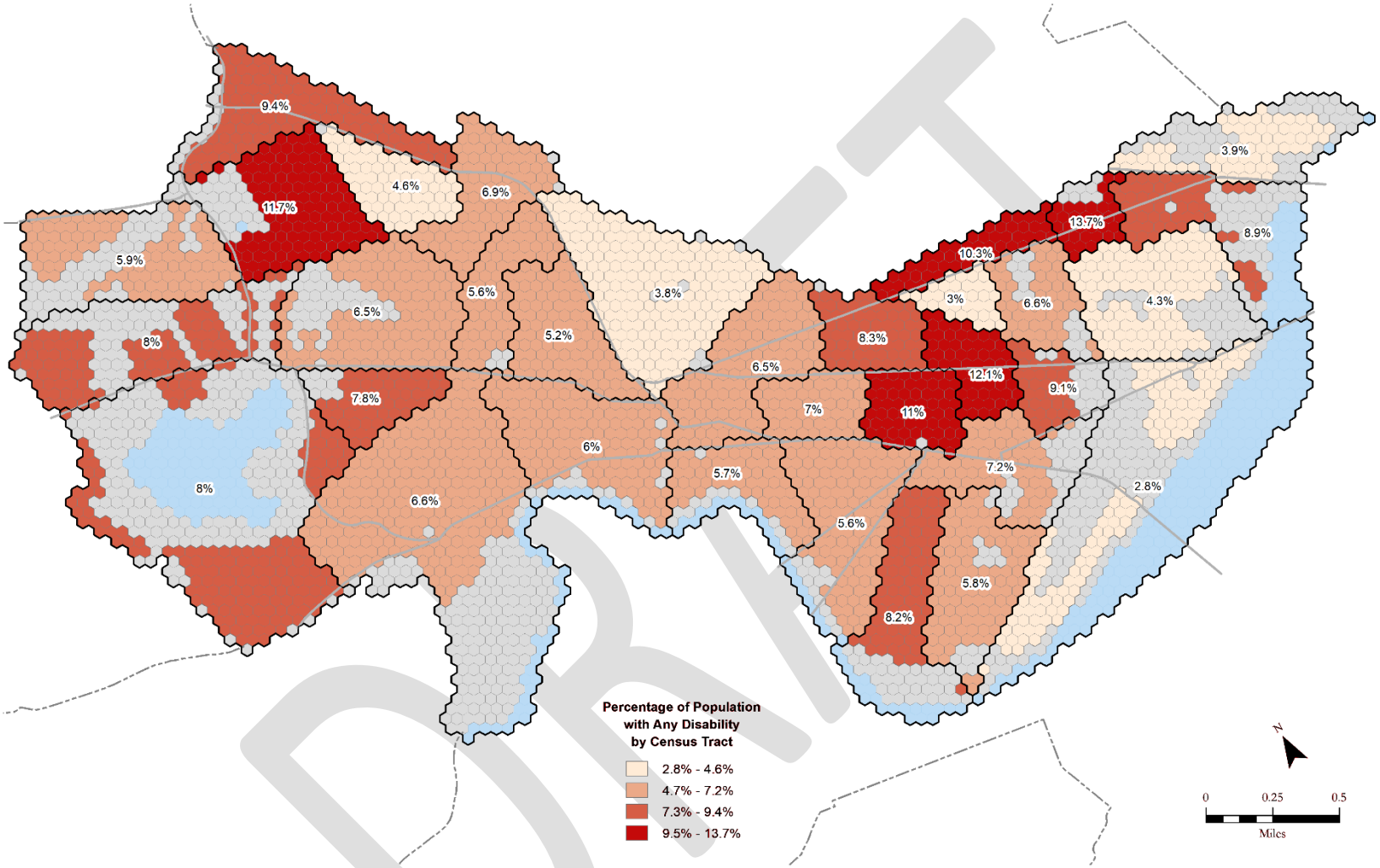
Map 3.4: Percentage of Population at or Below 200% of Poverty Level by Census Tract



This map shows the percentage of the population within each Census tract that is at or below 200% of the poverty level, averaged out across 1-acre grid cells.

(Data Source: US Census Bureau)

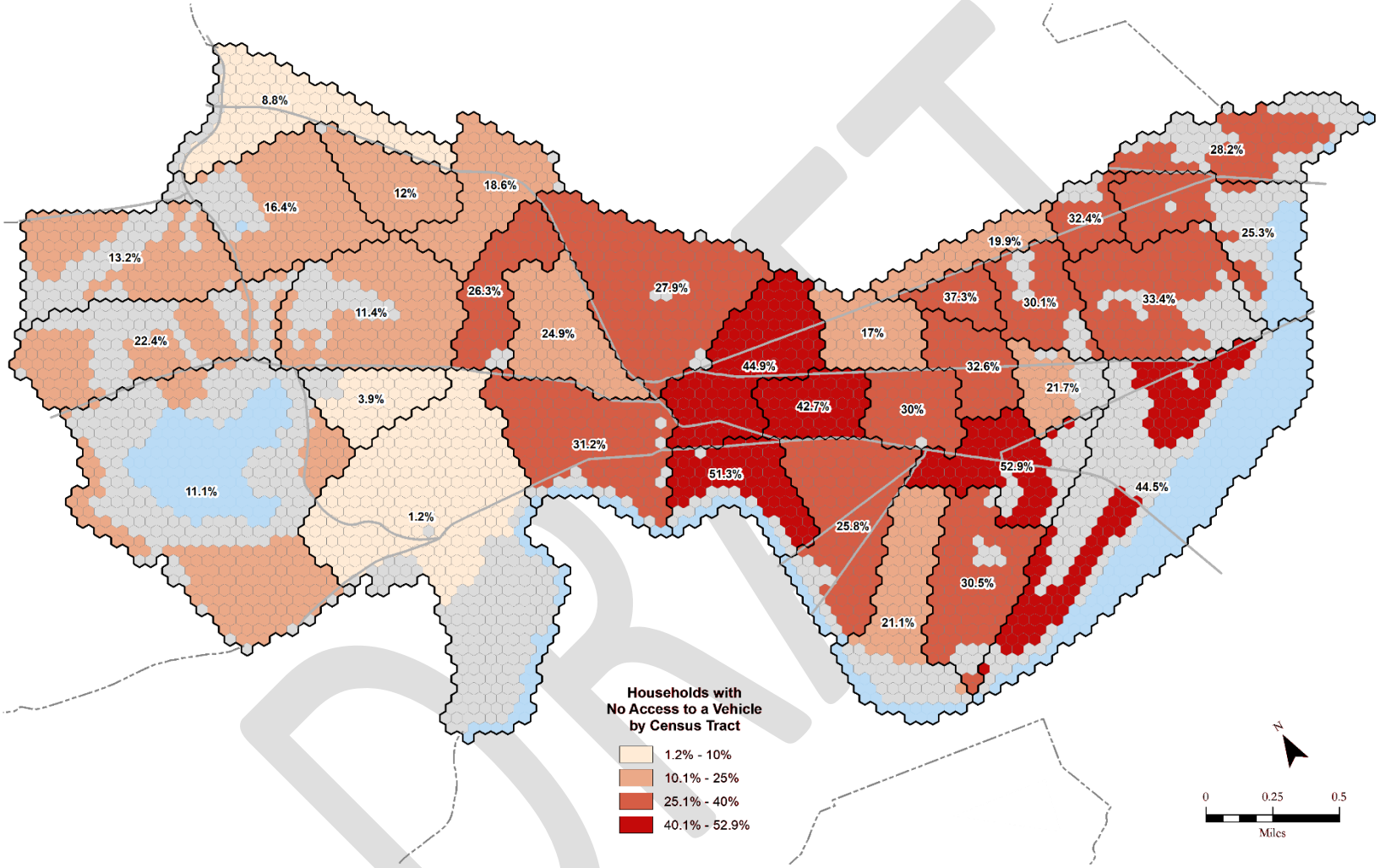
Map 3.5: Percentage of Population with Any Disability by Census Tract



This map shows the proportion of the population in each given Census tract that self-report to have difficulty in one or more of these areas: hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty.

(Data Source: US Census Bureau)

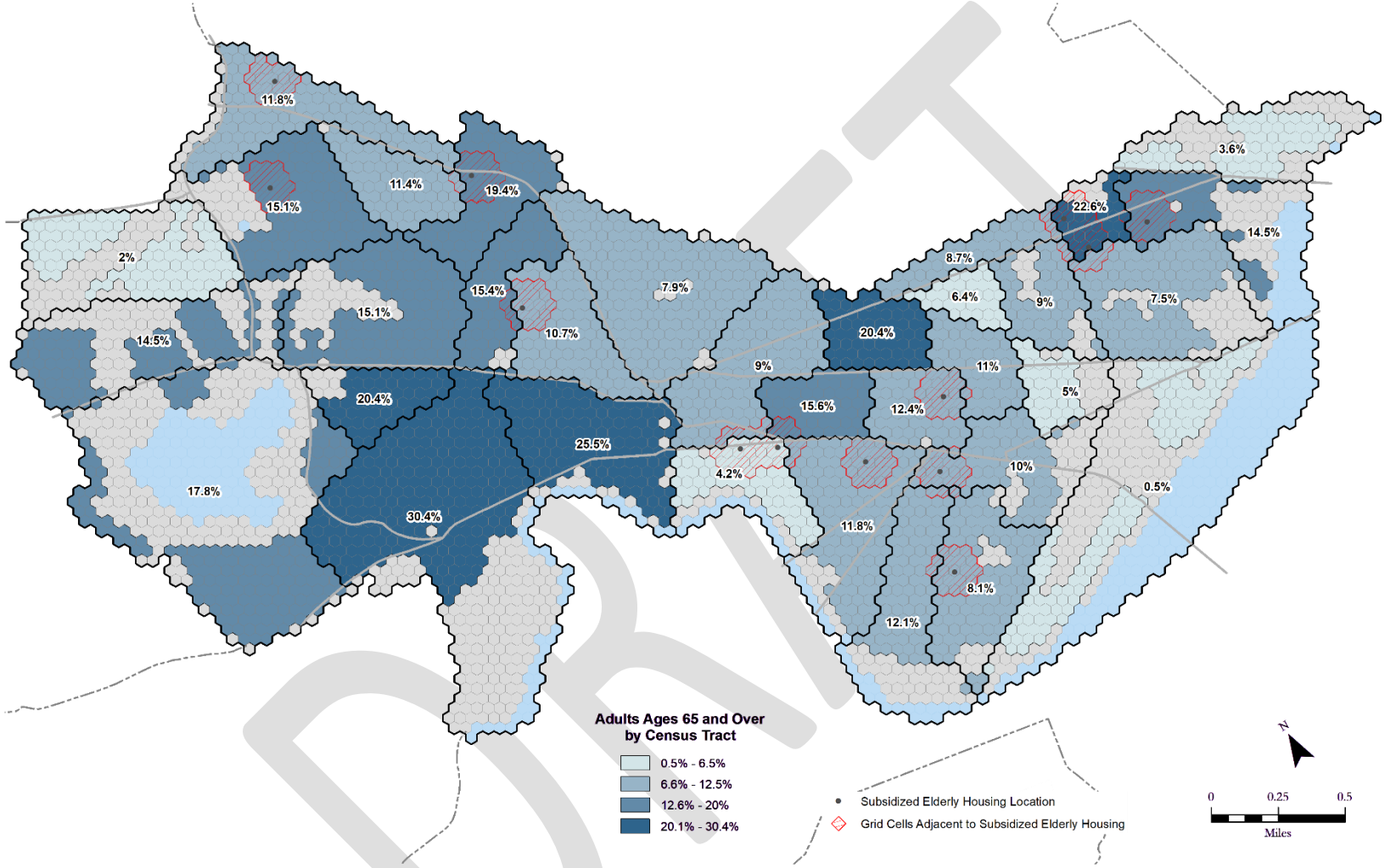
Map 3.6: Households with No Access to a Vehicle by Census Tract



This map shows the percentage of households in a Census tract that do not have access to a car or motor vehicle. Access to a vehicle may impact the ability to access open space resources beyond those immediately within an easy walk, bicycle ride, or journey via transit.

(Data Source: US Census Bureau)

Map 3.7: Adults Ages 65 and Over by Census Tract



This map shows the proportion of a tract's population that is composed of adults over the age of 65. The grid cells indicated in the dashed red are grid cells within approximately ¼ mi from the location of subsidized elderly housing, which may indicate a higher relative concentration of people over 65.

(Data Source: US Census Bureau, Cambridge GIS)

Environmental Justice Population(s)

In Massachusetts, an Environmental Justice Population is defined as a neighborhood where one of the following criteria are true:

- the annual median household income is 65 percent or less of the statewide annual median household income
- minorities make up 40 percent or more of the population
- 25 percent or more of households identify as speaking English less than "very well"
- minorities make up 25 percent or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150 percent of the statewide annual median household income.

In Cambridge, 3 block groups meet all three of the Environmental Justice criteria; 2 block groups for minority population and English isolation; 3 block groups for minority population and income; and 72 block groups meeting the minority population criterion. These block groups are shown on **Map 3.8**.

Growth and Development Patterns

Patterns and Trends

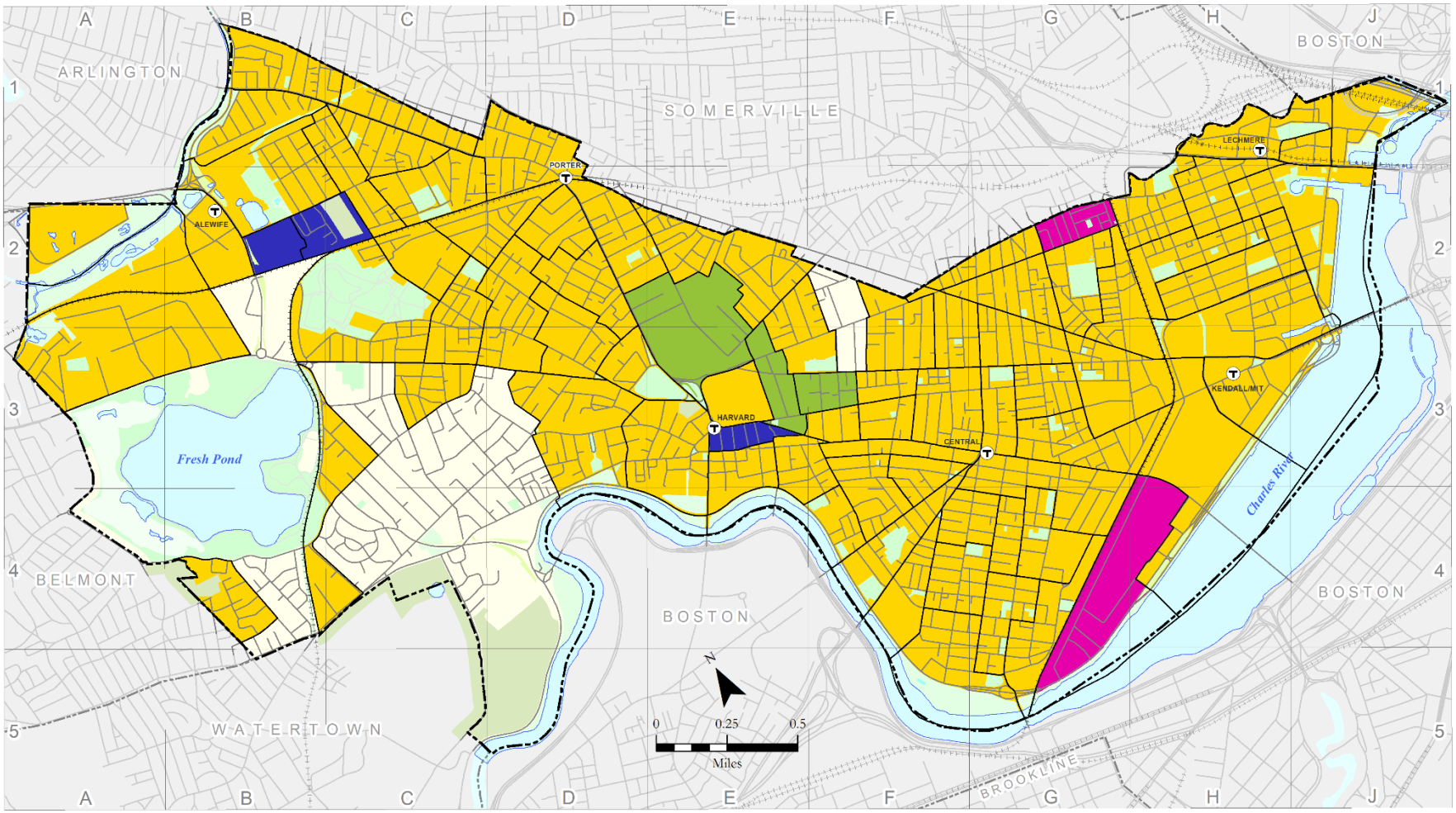
By the mid-1970s, the Kendall Square urban renewal area (described in part “B” of this Section, “History of the Community”) remained vacant, and the industrial areas of Cambridgeport, Concord-Alewife and East Cambridge continued to decline. In response, the City undertook a comprehensive effort to revive these areas, in hopes of attracting federal aid, real estate developers and ultimately employment opportunities. Plans and development policies were created for the East Cambridge Riverfront (1978), Alewife (1979) and Cambridgeport (1983). Each plan recommended a specific mix of new uses, including commercial development, housing and open space integrated into an overall urban design plan. It was felt that new development could be accommodated in these areas with the least disruption to existing residential neighborhoods. In addition to rebuilding the commercial tax base, these districts offered the best opportunities to expand residential amenities, such as additional housing and open space, that could not be incorporated into the already dense, fully developed neighborhoods.

These new planning initiatives also reflected a change in public sentiment regarding the scale of development. The new plans gave preference to lower densities than were previously allowed, protection of the existing scale and pattern of development, stabilization of the housing stock, and preservation of the historical character and fabric of the neighborhoods and commercial districts.

Starting in the mid-1970s, successive citizen-sponsored and city-sponsored rezoning petitions have nearly reversed, area by area, the increased density and development potential allowed under the landmark zoning revisions adopted in 1960 (described in part “B” of this Section). These down-zonings occurred in residential, commercial and industrial areas throughout the city, and in some areas were accompanied by the creation of design guidelines and special (discretionary) permit requirements, which expanded the role of the public in reviewing and shaping private development. Two of the most significant special permit provisions were for Planned Unit Development (PUD) districts and for townhouse development.

Another important land use initiative during this time was the special authority sought by Cambridge and granted by the Massachusetts legislature in 1979 to regulate institutional (primarily university) uses in lower density residential neighborhoods. This authority was applied in the Institutional Use Regulations of 1981 and the subsequent creation of special Institutional Use Overlay Districts.

Map 3.8: Environmental Justice Map



In the 1980s, a strong real estate market resulted in development that reflected these new plans and policies. New development transformed parts of Kendall Square and East Cambridge, and to a lesser extent Cambridgeport and Alewife. Over eight million square feet of new commercial space was created, including offices, research facilities, hotels and light manufacturing. Large-scale development projects included Cambridge Center, undertaken by the Cambridge Redevelopment Authority on land that had been cleared as part of the Kendall Square urban renewal district. Development of the East Cambridge riverfront also resulted in a series of new parks as well as a major retail destination, the Cambridgeside Galleria mall. While the real estate market cooled considerably during the early 1990s, and many projects were stalled due to financial difficulties, the economic boom of the late 1990s and early part of the new millennium led to another round of development.

During this time period, the MBTA Red Line was also extended from its previous terminus at Harvard Square to Davis Square and Porter Square in 1984, and to its current terminus at Alewife in 1985. In addition to a new rapid transit connection, the construction of this rail extension also enabled the creation of the Alewife Linear Park located over the new Red Line tunnel, as well as supporting the conversion of the former City landfill to the Mayor Thomas W. Danehy Park on the site of a former landfill (and prior to that, a clay mine). Soil from the excavation of the tunnel was used to cap the landfill and form part of the barrier system used to separate current uses from landfill materials.

The Cambridge population and the number jobs in the city both increased significantly. After a brief economic downturn that began in 2001, construction and permitting of new projects resumed vigorously in Cambridge through much of the first decade of the 21st century.

Between 1991 and 1993, the City worked to create a citywide growth policy in order to provide a basic framework for regulating future development. The resulting growth policy document, *Toward a Sustainable Future*, recommends sustaining and enhancing Cambridge's current mix of urban form, scale, density and mix of uses in existing neighborhoods and commercial districts, and encouraging new growth to be accommodated by redeveloping older industrial districts into mixed-use areas that reflect the diversity and vitality of Cambridge as a whole. Open space is identified as a vital element of the urban mix, as well planned, well designed, well maintained, and in some cases appropriately programmed open spaces help to mitigate the negative impacts of density on residents and community members as well as helping to enhance the uses that surround them.

The growth policy was used as a framework for the significant Citywide Rezoning of 2001 and the area-specific Eastern Cambridge Planning Study and associated rezoning that was adopted the same year. It also served as the policy framework for the Concord-Alewife Planning Study and rezoning adopted in 2006. *Toward a Sustainable Future* was updated in 2007 to chronicle the planning and development changes that have occurred in the city since its initial publication in 1993.

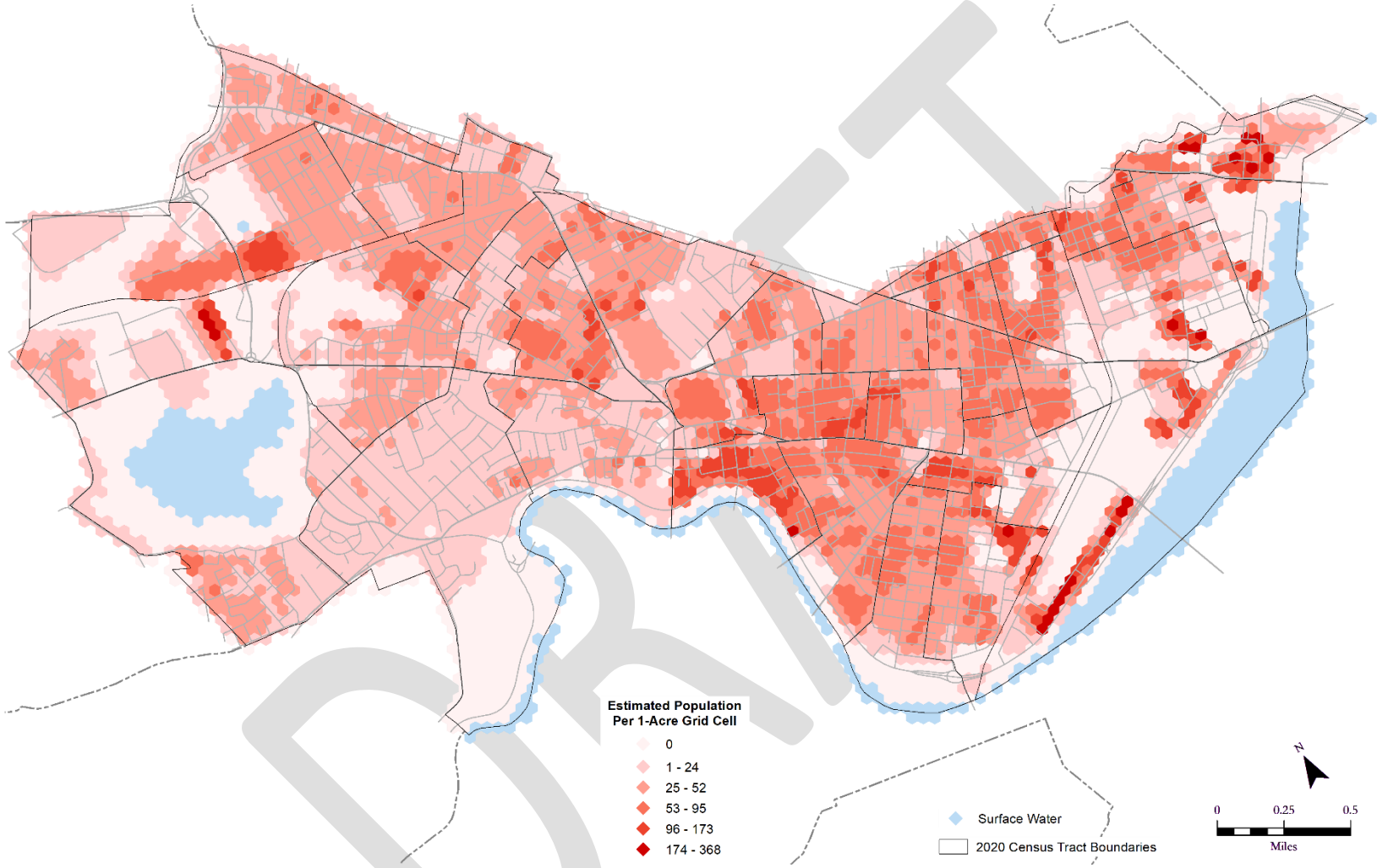
Since the adoption of the growth policy, several areas of the city experienced transformative development, including University Park in upper Cambridgeport, additional residential and commercial development in Kendall Square, and the completion of development on the East Cambridge Riverfront. The One Kendall Square project in Eastern Cambridge combined new construction with the redevelopment of historic industrial buildings to create a new business, restaurant and entertainment center. A master plan for development of the Cambridge Crossing (formerly North Point) area in Eastern Cambridge was been approved and construction has commenced, following the regulations and guidelines established in the Eastern Cambridge Planning Study. This development is planned to

include over 5 million square feet of mixed-use development, including 2,400–2,700 new housing units. Most of these development areas have included publicly-accessible open space, sometimes as a zoning or special permit requirement, sometimes simply as a way to make the project more attractive and lively.

The expansion of university campus facilities has also proceeded over past decades, including expansion of Harvard University facilities in the Baldwin (formerly known as Agassiz) neighborhood and MIT development along the edges of its campus near Cambridgeport and in the Kendall Square area. MIT's infill redevelopment of the Volpe Transportation Center site in the heart of Kendall Square will include over 3.5 acres of publicly beneficial open space.

In 2018, the City completed the Envision Cambridge citywide planning process. This comprehensive planning effort established a roadmap to guide the City's continued growth toward a more equitable, resilient, and livable environment. In conjunction with the Envision Cambridge process, the City undertook a district planning study for the Alewife area, with an emphasis on the Alewife Quadrangle area that is an area that was anticipating redevelopment, followed by approval of rezoning of the Quadrangle area in 2023.

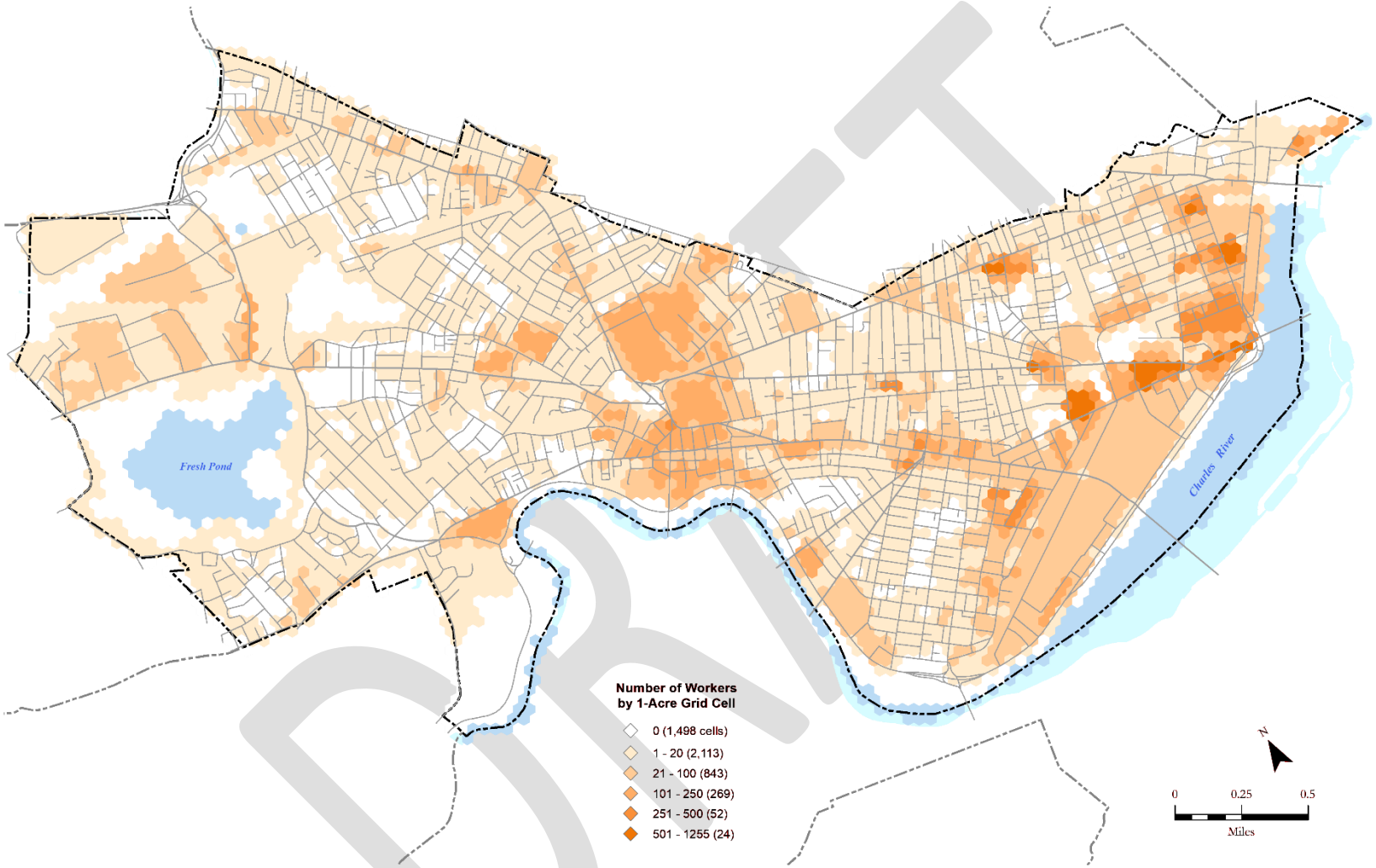
Map 3.9: Estimated Population Density



This map shows the total estimated population per 1-acre grid cell. This is based off of 2020 Census information and Cambridge housing start data for projects in the development pipeline as of time of analysis.

(Data source: Cambridge GIS)

Map 3.10: Estimated Workforce Density



This map shows the approximate distribution of the workforce in Cambridge. This does not distinguish between workers that live in Cambridge as opposed to those who commute in from outside of Cambridge.

(Data source: LODES, Cambridge GIS)

Infrastructure

Transportation

Cambridge is a city rich in transportation amenities. The availability of different transportation options has resulted in a city that supports a diversity of travel patterns. The close-knit nature of the Cambridge street grid as it has developed over centuries, along with the pedestrian-accessible nature of the built environment, have made walking a primary means of transportation. Public transportation has a long history in Cambridge, predating that of the automobile, and remains a popular transportation alternative.

Vehicular traffic in Cambridge can be heavy or light in different areas at different times, and is affected by the travel patterns of Cambridge residents and employees as well as cut-through traffic serving other communities. It is notable as well that in the aftermath of COVID-19, telework and hybrid work arrangements have increased across various industries and organizations, which impacts commuting and transportation patterns in major employment centers in the city.

Major transportation infrastructure and services are shown on **Map 3.9**, and bicycle facilities are shown on **Map 3.10**.

The Massachusetts Bay Transportation Authority (MBTA) operates both rail and bus service within Cambridge. A primary transportation artery is the Red Line subway, stopping at Kendall/MIT, Central, Harvard, Porter, Davis (in Somerville, but serving parts of Cambridge) and Alewife. A branch of the Green Line, which formerly terminated at Lechmere Station in East Cambridge, now extends to Union Square in Somerville, approximately a quarter-mile walk from the northern edge of Inman Square. The Orange Line station at Bunker Hill Community College is also within walking distance of some parts of East Cambridge.

There is a commuter rail station at Porter with service to points as far west as Fitchburg.

Cambridge is served by 27 MBTA bus lines across different parts of the city, as well as multiple shuttles that travel between transit stations and major employment areas within the city and region. The City is also part of a public-private partnership that operates the EZ Ride commuter shuttle, connecting Cambridgeport, Kendall, Lechmere and North Station during weekday peak hours.

The few major highways in Cambridge include Route 2, a major commuter corridor from the northwest suburbs into Boston, Route 16, which includes the parkway system of Memorial Drive, Fresh Pond Parkway and Alewife Brook Parkway, and Route 28 or Monsignor O'Brien Highway in East Cambridge. Some of the more local routes in Cambridge also provide connections to the Massachusetts Turnpike (Interstate Route 90) access in Allston and Interstate Route 93 access in Somerville.

Cambridge has strong policies to support and promote sustainable modes of transportation, including bicycling, walking, public transportation and carpooling. These policies are codified in the Vehicle Trip Reduction Ordinance, the Cambridge Growth Policy document and the Cambridge Climate Protection Plan. City programs intended to achieve these goals include a comprehensive Transportation Demand Management program and a Bicycle and Pedestrian Mobility Program. In addition, the City's Parking and Transportation Demand Management Ordinance requires certain development projects to achieve specific reductions in single-occupancy vehicle trips to their sites and to report their progress to the City. Measures such as subsidized transit passes, shuttle buses, facilities and amenities for pedestrians and bicyclists, carpooling incentives and vehicle sharing services help to achieve the desired vehicle trip reductions.

The Cambridge Bicycle Plan guides the City's development of bicycle infrastructure. The plan recommendations range from infrastructure

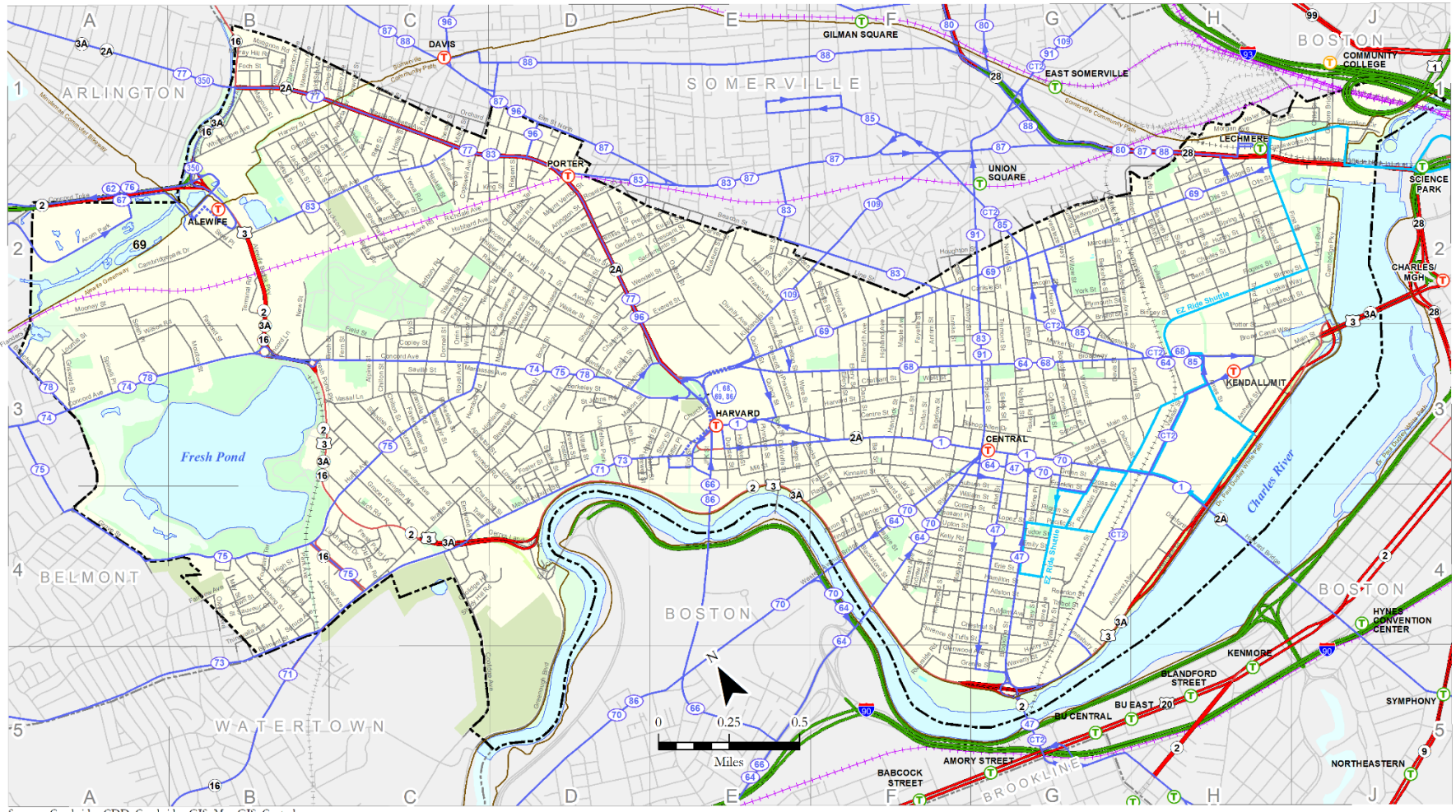
improvements to broader efforts around cycling safety education, programs, and resources. In 2019, the City Council adopted the Cycling Safety Ordinance that required the construction of separated bicycle lanes on streets designated for greater separation when they are reconstructed as part of the City's Five-Year Plan for Streets and Sidewalks. In 2020, the City Council adopted subsequent amendments to the ordinance, which set requirements to install approximately 25 miles of separated bicycle lanes.

The City implements traffic calming measures and other streetscape improvements in its roadway improvement projects, making the streetscape safer, more comfortable and more attractive for pedestrians and bicyclists. These projects are also opportunities for integrating sustainability measures such as rain gardens or tree plantings.

The City is also a member of the regional BlueBikes bicycle share system (formerly Hubway) that is owned by thirteen municipalities in the Boston metropolitan region. Since the launch of the system in 2011, the system has grown to nearly 500 stations systemwide, with over 80 located in Cambridge, including several located near parks and open spaces.

The City also implements public information campaigns on subjects such as bicycle safety and the environmental and health benefits of walking. The Pedestrian Committee and Bicycle Committee, composed of Cambridge residents and staff from various City departments, provide advice on the City's programs and activities and undertake initiatives to support and promote walking and bicycling.

Map 3.10: Transit Facilities



Sources: Cambridge CDD; Cambridge GIS; MassGIS, Central Transportation Planning Staff; Charles River TMA.

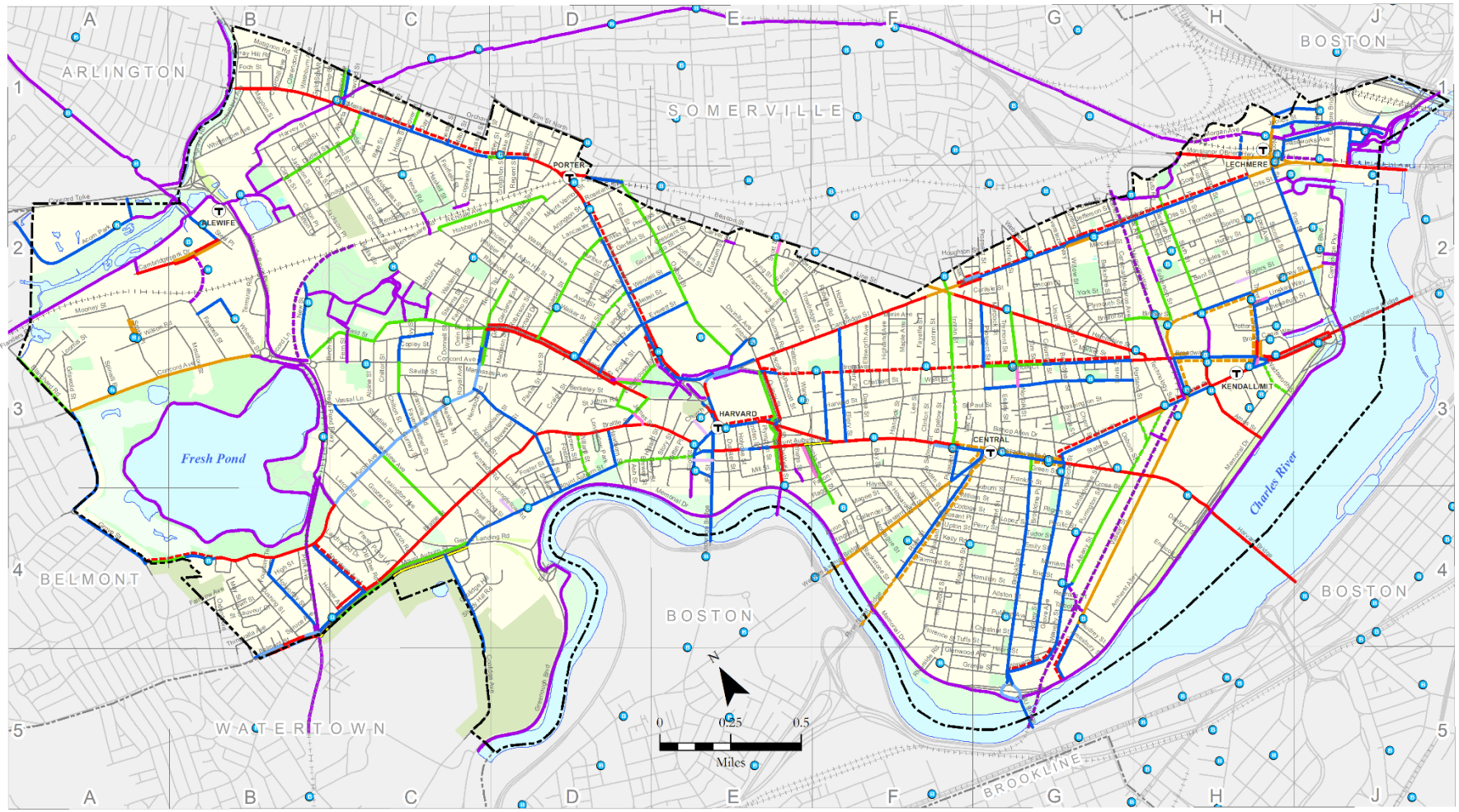
Major Road Classifications
- Limited Access Highway
- Multi-Lane Highway, Not Limited Access
- Other Numbered Highway

Interstate Highway
U.S. Highway
Massachusetts State Highway

MBTA Rapid Transit Stations
- Red Line
- Green Line
- Orange Line
- Commuter Rail Lines

MBTA Bus Route
EZ Ride Shuttle Route
Park Trails and Multi-Use Paths

Map 3.11: Bicycle Facilities



Sources: Cambridge CDD; Cambridge GIS; MassGIS.

Public or private water supply systems

Cambridge has its own municipal water supply, although the system is not located solely within the city's municipal boundaries. The Cambridge Water Department's main reservoirs, Stony Brook and Hobbs Brook, along with the watersheds that supply them, are located along Route 128 (Interstate 95) in the municipalities of Waltham, Lincoln, Lexington and Weston. Water is brought from these reservoirs to Fresh Pond in Cambridge, purified, and pumped to the covered Payson Park Reservoir in Belmont for storage, then brought from this reservoir by gravity into the city's water grid.

At full capacity, Hobbs Brook Reservoir and Stony Brook Reservoir together hold approximately 3.1 billion gallons of water. The Fresh Pond Reservoir has a capacity of approximately 1.5 billion gallons, and Payson Park has a capacity of 32 million gallons. Given Cambridge's average daily demand of 12-13 million gallons, and assuming that rainfall remains sufficient, the City's water delivery system will remain reliable.

The Walter J. Sullivan Water Treatment Facility within the Fresh Pond Reservation came online in 2001, and it helps to ensure that Cambridge's water supply will be compliant with all current and future regulations for the foreseeable future. The Cambridge Water Department has a long-term capital plan for improving gatehouses, dams, valves, pipes and watershed lands. In 2022, the Cambridge Water Department installed new filter media in the Walter J. Sullivan Water Treatment Facility, which strengthened the ability to reduce PFAS compounds from Cambridge's water supply.

Municipal sewer service or individual septic systems

The original sewer system was built over 150 years ago as a combined system, in which both sanitary discharge and stormwater drainage were carried in a single pipe. Originally, waste was discharged directly into the rivers. Today, combined sewer flows are integrated into the Massachusetts Water Resources Authority (MWRA) system, which serves 43 communities in the state. Sewer pumping stations are located on State lands in the North Point area (adjacent to the new Central Artery on-ramps) and at the Cottage Hill location on Magazine Beach. These stations serve Cambridge along with communities to the west, and connect to the Deer Island treatment facility. However, during heavy rainfall events, combined sewer overflows can occur and discharge untreated sewage into the Charles River and/or the Alewife Brook.

In the late 1930s, separation of the combined sewer system began. Separated systems convey stormwater drainage to the rivers and sanitary waste to the treatment plant. Currently, the sewer system in Cambridge includes approximately 111 miles of sanitary sewer mains, 98 miles of stormwater drainage lines, 37 miles of combined sewer and approximately 15,000 assorted sewer and drainage structures such as manholes, catch basins, regulators, overflows, etc. Construction and rehabilitation of the sewer and drainage systems has been accomplished through the use of Federal, State and local funds. Separation of the combined sewer systems continues today.

Over the past 20 years, the City's approach to sewer separation and stormwater management has become more rigorous and is expected to continue in the future with large-scale sewer separation and stormwater management projects that address community flooding problems and water quality issues, particularly in light of anticipated impacts of climate change. The goals of Cambridge's sewer and drain infrastructure plan are to address high-risk infrastructure conditions; remove inflow/infiltration from sewer systems; eliminate sanitary sewer overflows and reduce combined sewer overflows; manage stormwater quality and quantity; reduce flooding and protect neighborhoods; address fats oils and grease in the sewer system; and to conduct operation and maintenance activities.

Long-Term Development Patterns

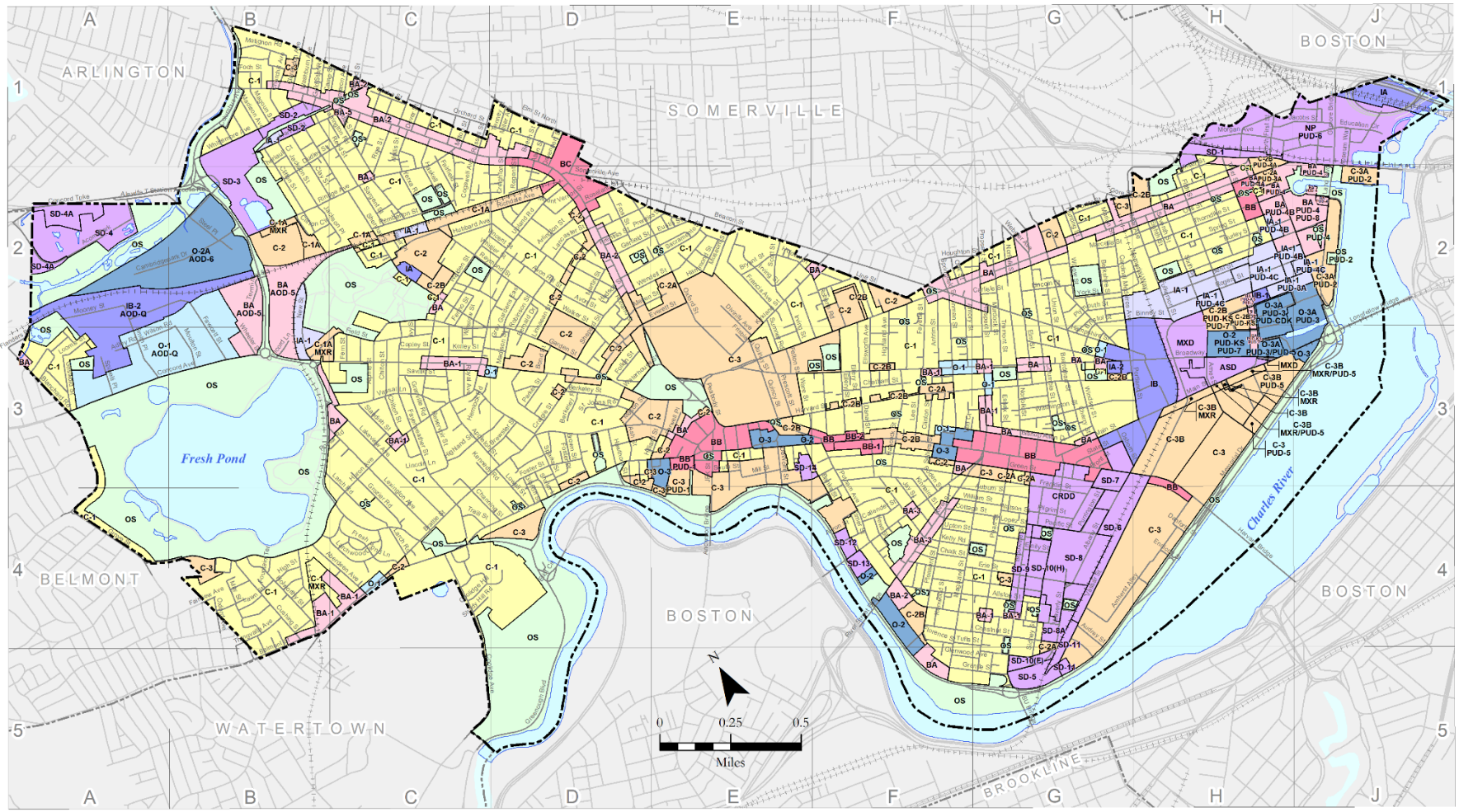
It is expected that Cambridge will remain an attractive and profitable location for commercial and residential development in the long term. The desirability of Cambridge as a place to live, its connection to the overall region, the availability of public transportation, and the academic and research institutions that support the innovation economy will all help to ensure Cambridge's role as a growth center for population and employment. Ongoing public improvements to infrastructure will help to ensure that development is desirable and sustainable. Cambridge's growth policies and zoning regulations, including the clear and comprehensive nature of its PUD and other project review processes, ongoing attention to Transportation Demand Management, requirements for stormwater management, and carefully crafted design standards and guidelines will also help to ensure that Cambridge is positioned to take advantage of future development as an asset to the community.

The evolving industrial districts of Eastern Cambridge, Cambridgeport and the Alewife area are expected to continue to be the primary areas for new growth, and developers continue to seek permits for projects in these areas. These areas are also most likely to be the places where significant new open spaces can be created, as they allow significant flexibility in the future use of lots compared to established residential neighborhoods. At a slower rate, development of a more moderate scale can be expected in moderate-density commercial districts, including Central Square, Porter Square and along Massachusetts Avenue and Cambridge Street.

The permitted uses and densities allowed by zoning, along with special considerations for urban design review, traffic impact mitigation and open space in evolving areas, reflect and anticipate these development trends. Cambridge's base zoning districts are illustrated in **Map 3.11.**

As the Cambridge community continues to grow and change in terms of its residential population, employment base and visitors, it will be an evolving challenge to meet the community's needs for open space and other environmental and quality-of-life benefits.

Map 3.11: Zoning Map



Sources: Cambridge CDD; Cambridge GIS; MassGIS.

Section 4: Environmental Inventory and Analysis

Geology, Soils, and Topography

Cambridge is located entirely within the Boston Basin, a mostly flat, wedge-shaped lowland area between hilly terrain and the Atlantic Ocean. Apart from the large-scale geological forces which created the Boston Basin, Cambridge's terrain has been shaped primarily by glacial activity and, more recently, by human activity.

Glacial action during the Ice Ages is responsible for some of Cambridge's most significant topographic features. Most of the hills in the city are gentle hills, created either by glacial deposition or as a result of glacial outwash. Mount Auburn, for example, is a kame – it was formed as sediments collected either in a notch in the ice sheet or along its edge. The steep hill along a portion of the southern edge of Fresh Pond is an ice-contact slope, and formed in a similar way. The hill to the south of Fresh Pond that extends into Belmont and Watertown is called the Fresh Pond Moraine, also formed from glacial deposits. Cambridge has no particularly high peaks. Fresh Pond itself is a “kettle-hole,” a pond created when a buried piece of glacier melts. Before the glaciation, a deep valley ran through western Cambridge, directly under present-day Fresh Pond. A river ran through this valley and joined the Charles. Glaciers, however, deposited material in this valley, filling it up to its current elevation.

Bedrock is deeply buried throughout the Boston Basin. In Cambridge, it is generally about 50 feet below the surface. In parts of western Cambridge, due to the aforementioned valley that was filled by glacial deposits, bedrock is reached at 150 feet below sea level. For most kinds of small construction projects, a deep bedrock layer poses no trouble. However, this deep bedrock is significant for larger buildings whose foundations must be supported by bedrock.

Much of the land in Cambridge consists of filled areas. Much of the area along the Charles River, particularly in Cambridgeport and East Cambridge, had been marshes before they were filled for development, as was the former Millers River along the border between Cambridge and Somerville and the Great Swamp surrounding Fresh Pond. Fill areas such as these have resulted in a high water table and in some areas may have produced structurally unstable deposits and clays. For large construction, piles must be driven sufficiently deep, through layers of clay and weak organic deposits, in order to reach material upon which a foundation may be supported. Groundwater drawdown is also a concern. Continuously pumping groundwater from basements in order to dewater them can result in lowering the water table in an area, exposing the support piles of nearby buildings and potentially weakening them. For this reason, Cambridge does not permit permanent dewatering.

In the western parts of Cambridge, underneath the top level of fill is a layer of “sensitive clay,” which at first may appear to be stable, but becomes more like quicksand if it is disturbed. During Cambridge’s industrial era, this clay was mined extensively. More recently, the MBTA encountered this material when building the Alewife extension of the Red Line. It forced them to use some unusual construction techniques to prevent the clay supporting the sides of the subway tunnel from collapsing.

According to the most recent U.S. Soil Conservation Service maps, the soil profile of Cambridge consists mostly of patches of Merrimac, Newport and Scio soil types mixed with extensive “urban land” (parking lots, streets, etc.). Urban land and udorthents (disturbed, fill land) constitute the major soil types in the parts of East Cambridge and Cambridgeport that were created by filling in the Charles River and Millers River marshes. None of these soil types pose particularly difficult challenges

for drainage, especially since Cambridge is served by MWRA storm sewer connections. Private septic systems are not used in Cambridge, and can only function properly in certain soils. Siting parks and playing fields on Scio and especially Newport soils, which have slow water infiltration rates and relatively low permeability, may require special construction techniques. Merrimac soils, on the other hand, have rapid permeability and therefore fewer limitations. The part of Cambridge with the most severe land use limitations based on soil type is the Alewife area, particularly around the Little River. This area is characterized by a soil type called “Freetown muck,” consisting of highly decomposed organic material over sandy or loamy material. This muck is usually wet, has very low permeability and is usually found in areas where the water table is very close to the surface. Soil types are illustrated in **Map 4.1**.

Since all buildings in Cambridge are serviced by MWRA sewer lines and by the Cambridge Water Department, soil characteristics suitable for septic systems or private water wells are not essential. Furthermore, most of the city is situated on soils that drain quickly. The exception is the Alewife area, where the slow-draining characteristics of the soil contribute to flooding problems.

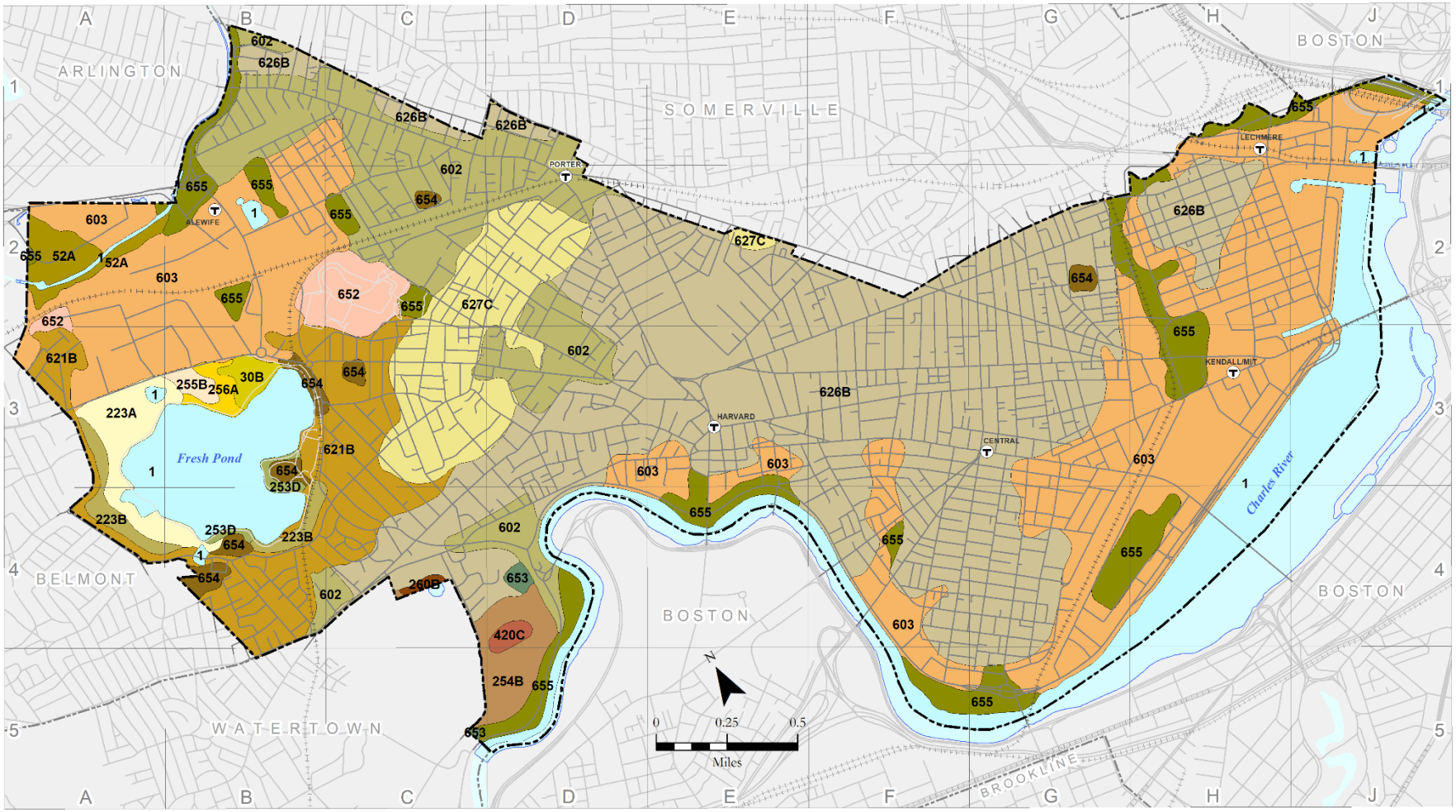
Landscape Character

The defining character of Cambridge is that of a densely-developed city consisting of largely low-rise residential neighborhoods. As noted in the previous section, Cambridge was almost entirely developed by the early 1900s and most of its building stock dates to before 1930. In general, Cambridge neighborhoods are made of close-knit three-story houses, though in many neighborhoods there is substantial variety in the size and style of the housing. Within the neighborhoods are networks of small residential streets, while several longer roads traverse the city, defining the major travel routes, defining the extents of the different neighborhoods and providing commercial services within a walkable distance from the neighborhoods. The major centers for commercial services as well as restaurants and other cultural attractions are primarily the squares along Massachusetts Avenue—Central Square, Harvard Square and Porter Square—as well as Kendall Square, Inman Square, and commercial corridors and commercial nodes throughout the neighborhoods. Also found within the neighborhoods is a collection of parks and playgrounds, most of which were re-claimed from land that was previously developed. These serve as recreational areas and neighborhood gathering points.

There are many unique landscapes within Cambridge that diverge from this general character. These include areas that were once the city’s industrial manufacturing centers, but are at different states of redevelopment into mixed-use areas with professional offices, commercial research laboratories, moderate-rise to high-rise housing, shopping uses, cultural attractions and other new features. These areas include a “belt” running along the eastern half of the city from East Cambridge to Kendall Square to Cambridgeport, along with the Concord-Alewife district north of Fresh Pond.

Other areas with unique landscape character include the institutional campuses at Harvard University and the Massachusetts Institute of Technology. While parts of these campuses are integrated into neighborhoods or commercial districts, the central parts of the campuses have a more traditional university campus character with iconic or otherwise distinctive buildings set within areas of open space. Harvard Yard is the most historic and perhaps the most iconic of these traditional campus areas. Another unique area is in the neighborhood around Brattle Street (historically known as “Tory Row”), a collection of mansions that have, on the whole, changed very little since colonial times.

Map 4.1 | Soil and Geologic Features



Sources: Natural Resources Conservation Service via MassGIS; Cambridge GIS; MassGIS.

Soil Types

- 30B Raynham Silt Loam, 0 - 5% Slopes
- 52A Freetown Muck, 0 - 1% Slopes
- 223A Scio Silt Loam, 0 - 3% Slopes
- 223B Scio Silt Loam, 3 - 8% Slopes
- 253D Hinckley Loamy Sand, 15 - 25% Slopes
- 254B Merrimac Fine Sandy Loam, 3 - 8% Slopes
- 255B Windsor Loamy Fine Sand, 3 - 8% Slopes
- 256A Deerfield Loamy Sand, 0 - 3% Slopes
- 260B Sudbury Fine Sandy Loam, 3 - 8% Slopes
- 420C Canton Fine Sandy Loam, 8 - 15% Slopes
- 602 Urban Land
- 603 Urban Land, Wet Substratum, 0 - 3% Slopes
- 621B Scio-Urban Land Complex, 0 - 8% Slopes
- 626B Merrimac-Urban Land Complex, 0 - 8% Slopes
- 627C Newport-Urban Land Complex, 3 - 15% Slopes
- 652 Udorthents, Refuse Substratum (Dumps/Landfill)
- 653 Udorthents, Sandy
- 654 Udorthents, Loamy
- 655 Udorthents, Wet, Substratum
- 1 Water

The major open spaces in Cambridge, while protected from development, are also largely man-made. The character of the Charles Riverfront, perhaps the most important and distinctive open space and recreational resource in the city, is defined by its pathways and open spaces, its recreational resources and the system of historic parkways that run alongside it. Much of this was built in the early 20th century. The Charles River Basin, extending roughly from the Museum of Science to the Boston University Bridge, was constructed around this time through damming and shorewall construction. Gerry's Landing or "Hell's Half-Acre" is a small "urban wild" alongside the river. The Charles River bridges are also defining elements of the riverfront.

Fresh Pond Reservation, which was at one time the location of many industrial uses, was also largely constructed through the efforts of the Cambridge Water Department under the direction of the Olmsted, Olmsted & Eliot firm (as described in **Section 3**). Currently, it is one of the few areas with the character of a natural forest preserve – though it is also home to the municipal golf course. The smaller Alewife Brook Reservation is the other true example of an "urban wild" in Cambridge, as the conditions of the soil have largely prevented development from occurring on the reservation itself; however, its character is impacted somewhat by the development that has occurred on abutting sites. The parkway system running along the Charles River, Fresh Pond and Alewife Brook also has a distinctive character, both due to its parkway design and because it is the only set of limited-access highways through the city. The 2014 Alewife Stormwater Wetland project, implemented in partnership with DCR and MWRA, created a constructed stormwater wetland that provides water quality benefits as well as recreational opportunities and spaces for outdoor learning.

Other open spaces with distinctive character include Mount Auburn Cemetery (located in Cambridge and Watertown), developed in the 1830s as America's first "garden cemetery," and Cambridge Common, one of the oldest continually-protected open spaces in America, which was a communal grazing resource and military training ground until it was designated a public park in the 1830s. Both of these are on the National Register of Historic Places.

Water Resources

Watersheds

Water resources in Cambridge are shown on **Map 4.2**. As Cambridge borders the Charles River, most of the city is within the lower Charles River Watershed. The northern section of Cambridge is within the Mystic River Watershed, as the Alewife Brook/Little River connects to the Mystic River farther north.

The Fresh Pond Watershed encompasses the immediate area surrounding the Fresh Pond Reservation. In addition to watershed land within Cambridge, the City is concerned with the quality of the up-country watershed that supplies the municipal water system, consisting of over 1,200 acres of Cambridge-owned land in Waltham, Weston, Lincoln and Weston (shown on **Map 4.2A**).

This system includes the 593-acre Hobbs Brook Reservoir and 74-acre Stony Brook Reservoir, which store water that is piped to Fresh Pond for storage and treatment before entering the city's water grid. The Cambridge Water Department's comprehensive Source Water Management Program, both for Fresh Pond and the up-country watershed properties, includes water resources monitoring, hazardous materials emergency response planning, partnership development (relationship-building with other parties in the watershed with common goals), proactive site review and monitoring, stormwater management and community outreach. Some of the ongoing initiatives intended to provide additional water quality protection include restoration projects at

Fresh Pond Reservation, providing additional protection and restoration to lands in the up-country watershed, and working with the public on education and stewardship programs.

Surface Water

The major surface water resources, as described above, are the Charles River, Alewife Brook and Fresh Pond.

The Charles has historically been a very popular and active resource for a variety of different types of boating, and remains so today, and in recent years some limited swimming activities have also been allowed. Beginning in 2019, the Environmental Protection Agency, working with the Charles River Watershed Association (CRWA), began issuing water quality grades for six waterbody segments (from a singular grade encompassing just the lower Charles River), and in addition to the measure of *E. coli* sampling data also includes measurement of cyanobacteria blooms and combined sewer overflows.

The Lower Basin segment, which encompasses from Watertown to Boston has received grades in the "B" and "B-" range since the introduction of the new grading system. These are significant improvements from its "D" rating in 1995, reflecting efforts by many communities within the watershed to reduce pollution.

Similarly, the Mystic River Watershed, which includes the Alewife Brook and Little River, has been graded on 14 individual stretches of river and tributaries since 2014. These two segments have generally received "D," "D+," or "D-" grades.

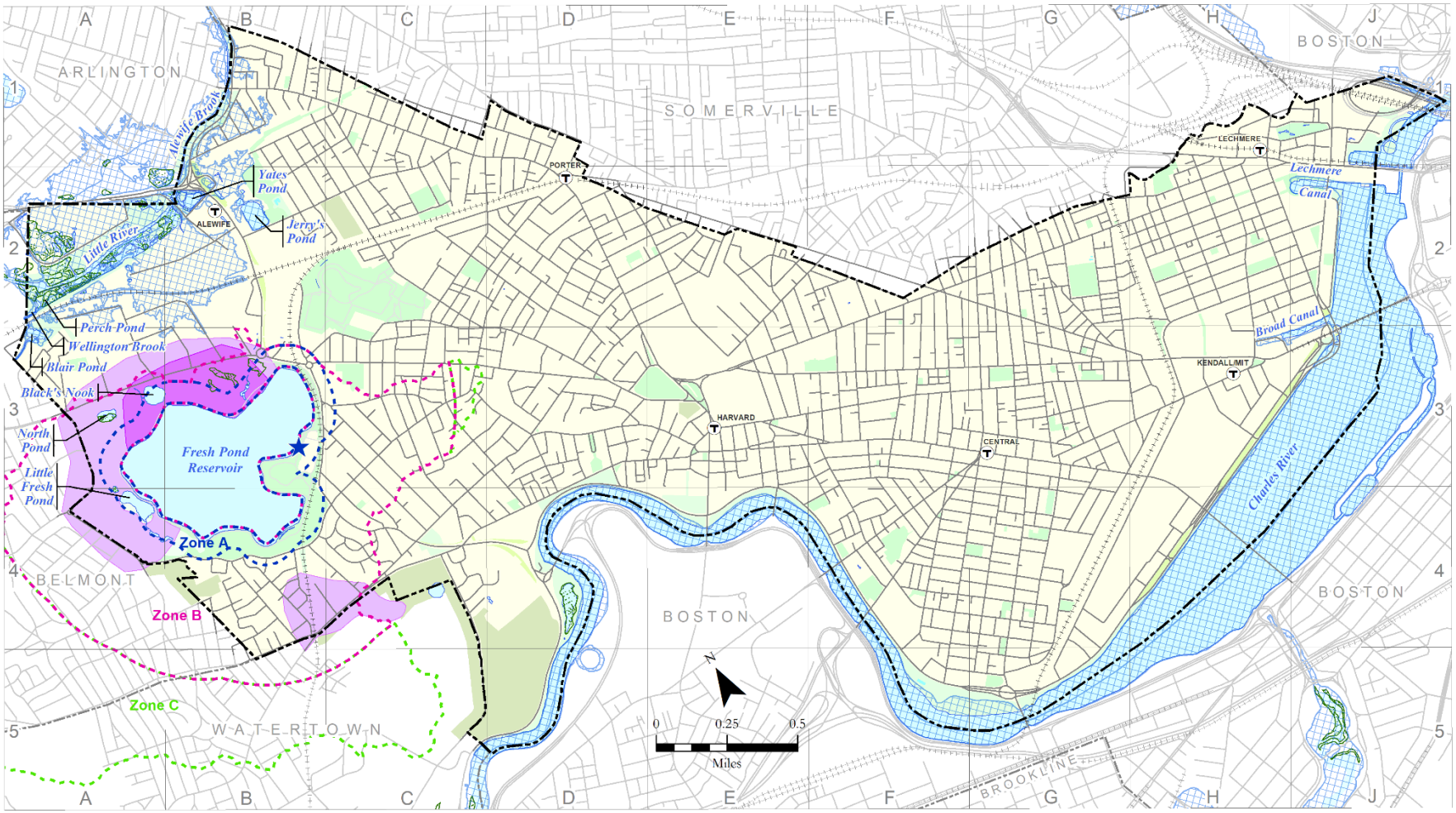
Most of the Alewife Brook along the Alewife Brook Parkway shows signs of an unfortunate past attempt at flood control by replacing natural banks with concrete.

In accordance with the Variances for Combined Sewer Overflow (CSO) Discharges to the Charles River Basin and to the Alewife Brook/Upper Mystic River Basin, the City of Cambridge is working together with the City of Somerville and the MWRA to develop an update to the MWRA's CSO Long-Term Control Plan for CSO outfalls that the City owns and operates. Through its NPDES CSO Permit, the City is authorized to discharge flows from eleven CSOs. Since the permit was issued in 2009, two of the CSOs have been permanently closed, while two more are temporarily closed pending hydraulic evaluations along the Charles River. Today, four active CSO outfalls remain open along the Alewife brook, and three along the Charles River.

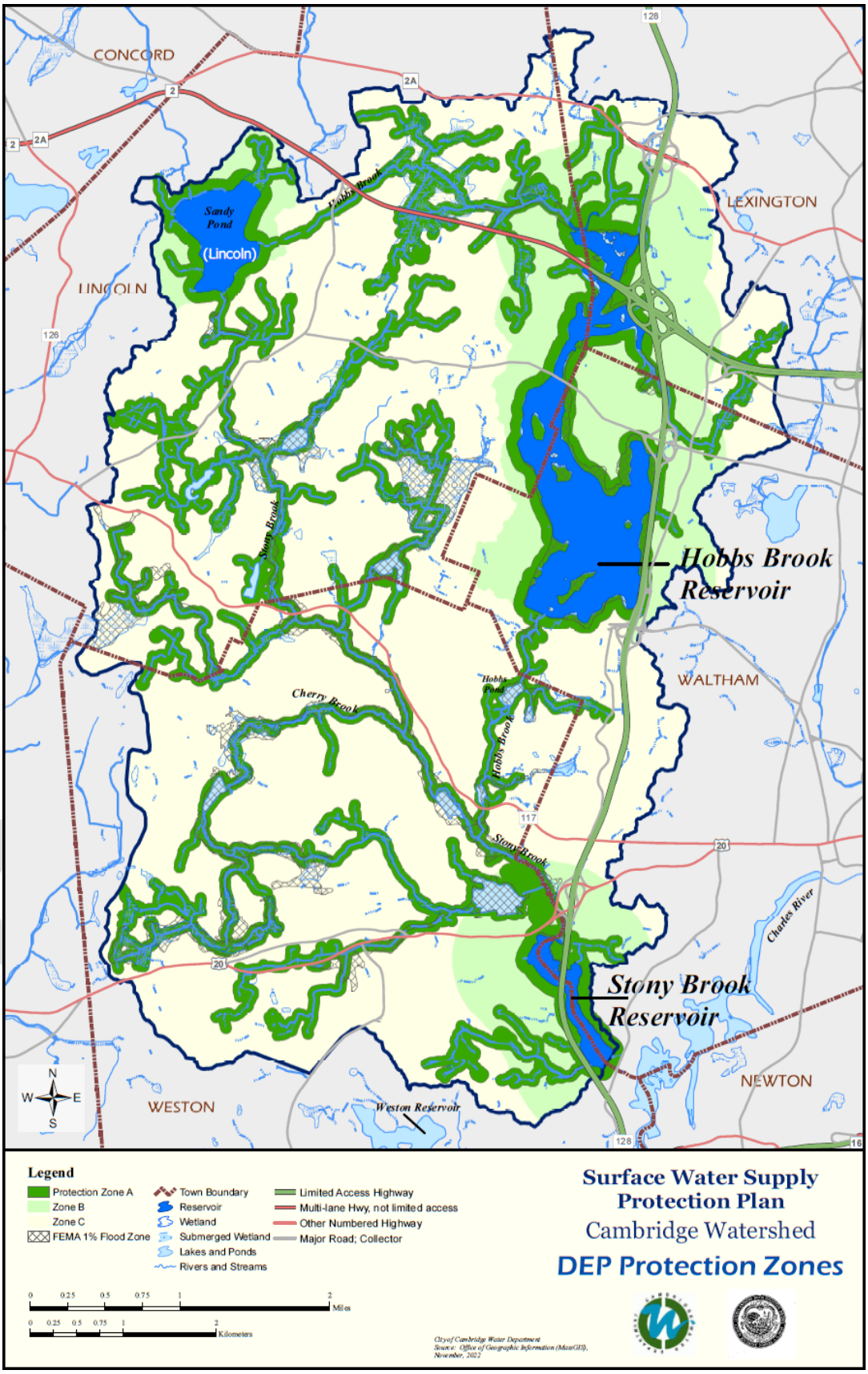
Smaller surface water bodies in or near the Alewife Brook Reservation include Blair Pond, Perch Pond and Yates Pond, which along with the Alewife Brook Reservation are managed by the Massachusetts Department of Conservation and Recreation. Jerry's Pond, on privately-owned property, once served as a neighborhood swimming area, but access has long since been restricted as a part of the former W.R. Grace facility, The property is in the process of undergoing redevelopment, and the project will improve public access to the site by providing boardwalk-style paths bringing people closer to the pond.

As part of the City's water supply, Fresh Pond does not permit active recreational use and is protected by a security fence. It does exist as a visual amenity for recreational users of the Fresh Pond Reservation. There are also smaller ponds within the Fresh Pond Reservation, including Black's Nook, North Pond and Little Fresh Pond. These ponds are within or adjacent to recreational areas including the Thomas P. O'Neill, Jr. Municipal Golf Course and William G. Maher Park, but are too shallow to allow most types of recreational use. They do attract fish and wildlife, and are especially important to the nesting of migratory birds, and a "dog beach" was established at Little Fresh Pond, providing an additional recreational use.

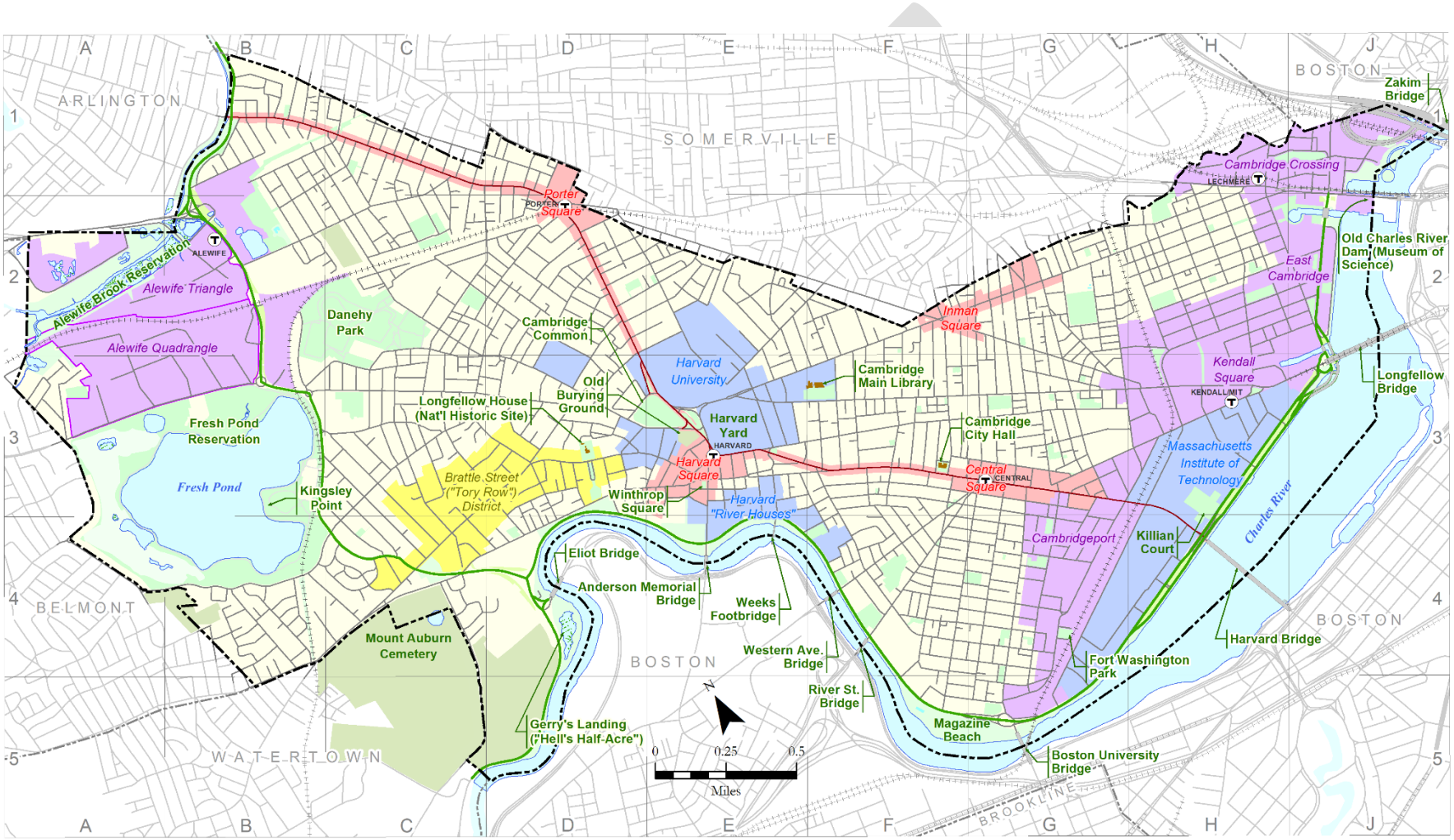
Map 4.2: Water Resources



Map 4.3: Watershed Area



Map 4.4: Unique Features



Sources: Cambridge CDD; Cambridge GIS; MassGIS.

- University Campus Areas
- Brattle Street ("Tory Row") District
- Evolving Industrial Districts
- Commercial Squares and Massachusetts Avenue Corridor
- Historic Parkways
- Massachusetts Avenue
- Notable Public Buildings

Aquifer recharge areas

There are no wells for drinking water in Cambridge, as the entire city is served by the Cambridge Water Department's distribution system. As previously described, the quality of this water system is actively controlled and monitored on an ongoing basis.

Flood hazard areas

There is no significant problem flooding along the Charles River, with flood hazard zones limited to a few small areas near the river edge, typically within undeveloped parklands. Problem flooding, however, does occur within the Alewife Brook floodplain. Reasons for the flooding include increased stormwater runoff due to new development, the reduced hydraulic capacity of culverts, and the tendency for rising water levels on the Mystic River during large storm events (50-year and worse) to cause a reversal in the direction of flow.

The City recently completed a Climate Change Vulnerability Assessment and Resilience Plan, which looked at the increased risk of flood- and other climate-related risks that result from projections on a changing climate, which include intensifying storm events compounded with anticipated sea level rise. This study served as a "stress test" of the City's preparedness for increasingly severe storm events. See **Map 4.5** and **Map 4.6** for current and future flood-risk areas based on this analysis.

Wetlands

Historically, a significant portion of Cambridge was covered with wetlands and tidal marshes, particularly in Eastern Cambridge along the Charles River Basin and in North Cambridge in the Alewife and Fresh Pond areas. However, after centuries of development, filled land, and the damming of the Charles, there is little remaining natural wetland in the city. The few remaining remnants of wetlands are located predominantly along the Alewife Brook and partly near Fresh Pond. Another significant wetland is the Gerry's Landing or "Hell's Half Acre" area along the Charles River near the Eliot Bridge. With few small exceptions, all wetlands are within existing reservation areas. A constructed wetland in Danehy Park also aids in stormwater management and is a popular destination for birding.

Vegetation

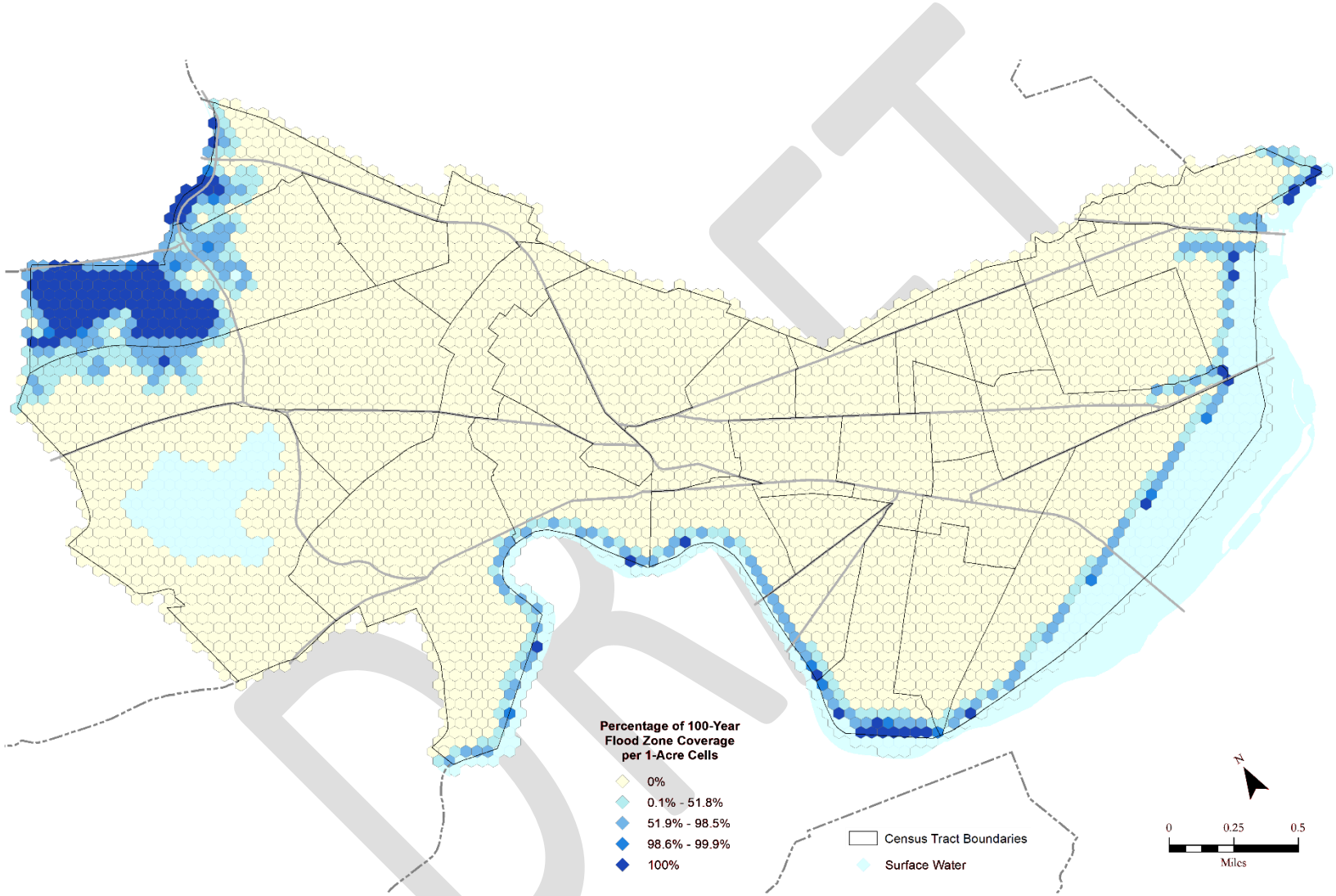
General Inventory

Given the densely developed nature of Cambridge, much of the existing vegetation is the result of deliberate landscaping efforts over time. This includes trees, grasses, shrubs and other decorative plantings on private property as well as along public streets, in public parks and on university campuses. The few reservation areas in Cambridge, including the Charles River, Fresh Pond and Alewife Brook, are exceptions in that they are more likely to contain more wild, native species. The City works to encourage native species in these areas and to remove invasive species where appropriate. This includes incorporating more native species into parks and open spaces, both as part of capital projects, as well as more surgical re-plantings where opportunities exist. Although these are often smaller areas within a developed urban setting, these naturalistic areas provide for increased biodiversity where more highly manicured lawn or field planting approaches may not be necessary for athletic or other uses.

Forest Land

The most significant forested areas in Cambridge are found in the Fresh Pond Reservation and Alewife Reservation. Fresh Pond Reservation in particular has a robust deciduous and evergreen forest, with particularly dense woods along the

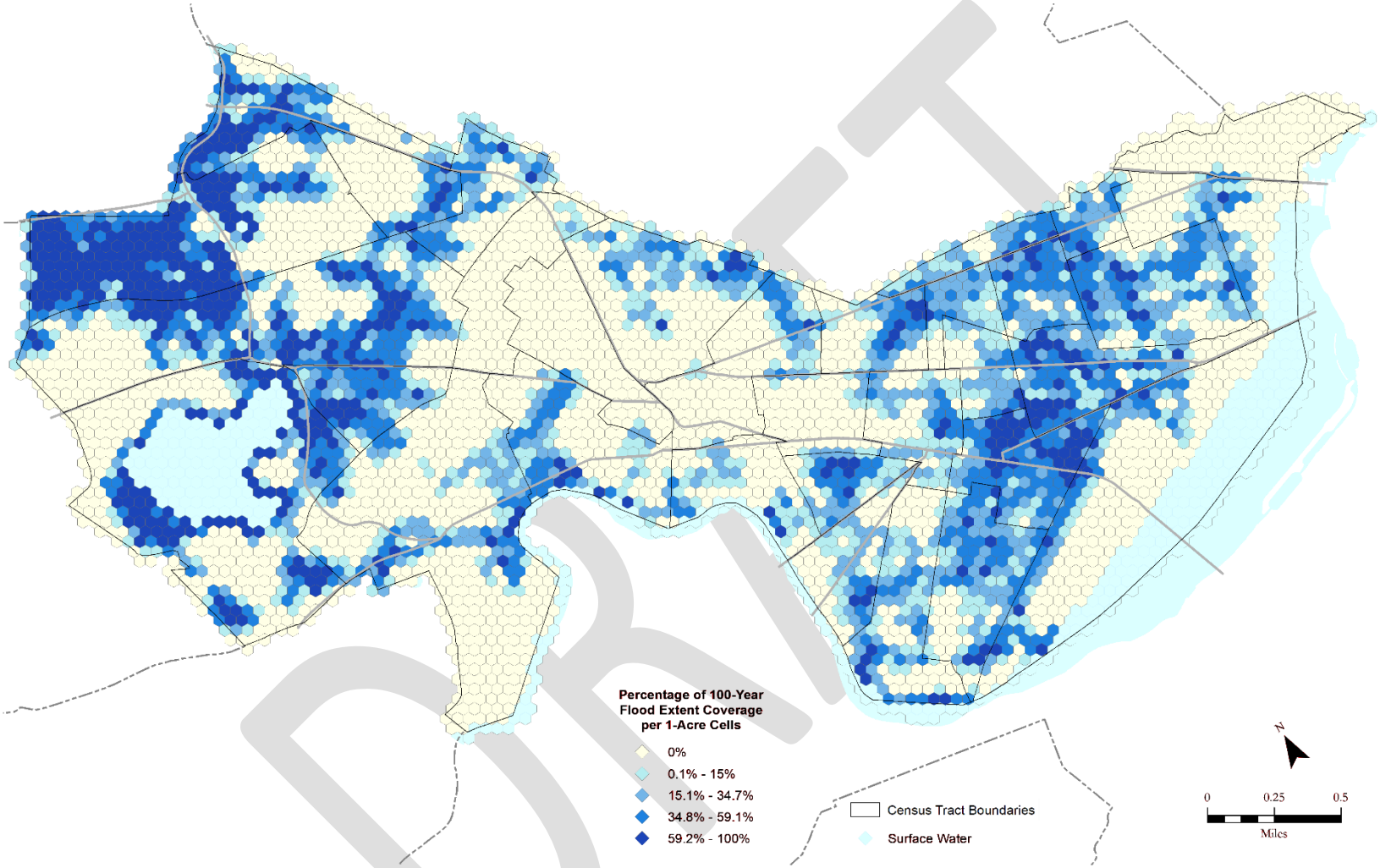
Map 4.5: Flooding Risk, Present-Day 100-Year Storm



This map illustrates areas of the city that are located within current 100-year storm. A 100-year storm is a storm event that has a 1% chance of occurring in any given year—though it is possible for multiple such events to occur in a much shorter timeframe. Note that many of the cells located along the Charles River reflect the fact that a portion of the grid cells overlap with the Charles River itself within the basin walls. Some of the grid cells located within Magazine Beach, which has a more naturalized shoreline, do fall within the flood zone.

(Source: Resilient Cambridge Plan, re-mapped for OSNA)

Map 4.6: Flooding Risk (projected 2070)



This map illustrates the projected flood extent of a projected 2070 100-year storm when taking into account impacts of climate change. This "stress test" of Cambridge's infrastructure conducted through the Resilient Cambridge planning process helps the City to prioritize improvements to mitigate against the risk of this flooding, such as the Port Infrastructure Project that is currently underway. Parks and open spaces can be designed to help to mitigate flooding or built with the expectation of flooding as a possibility as part of its design.

(Source: Resilient Cambridge Plan, remapped for OSNA)

north and south shores of the pond, buffering it from the surrounding activity and bestowing upon it a quiet pastoral quality. The trees and vegetation within these reservations contribute to their wildlife habitat value, particularly for migratory birds, and they are popular locations for nature-watching.

Public Shade Trees

Street trees are perhaps the most commonly found type of public vegetation in the city. The Parks and Urban Forestry division of the Department of Public Works manages the public "urban forest" consisting of over 19,000 public trees along public streets and in public parks and cemeteries.

The City recently completed an Urban Forest Master Planning process to guide the actions of the City as it works toward a healthy, resilient, and more equitably distributed tree canopy, and to reverse a trend of tree canopy decline in Cambridge.

Guided by the planning process, adjustments were made to the City's recommended species list that help to broaden the diversity of the City's urban forest, that encourage canopy growth, and to foster resilience to the anticipated effects of climate change. Ten species made up nearly two-thirds of the urban forest, with Norway maple, pin oak, and honey locust making up an estimated 30% of the urban forest. Guided by this process, species that are highly- (or over-) represented in Cambridge's urban forest are planted more sparingly relative to other species.

Parks and open space also provide the opportunity to plant trees in environments that may be more hospitable to trees than public sidewalks and roadways, which must contend with challenges like road salt, relatively smaller planting areas, and other challenges present in urban public roadways.

Further, parks afford the opportunities to pilot different planting approaches, such as the recent Miyawaki microforests located at Danehy Park and Greene-Rose Heritage Park, as well as a microforest pilot at the newly created Triangle Park. These pilot projects leverage a more dense planting approach that encourages faster canopy growth, rather than more typical urban planting approaches in which trees are spaced long distances apart. Recently, the City established a bare-root tree nursery to support its tree planting program.

In addition to planting practices, this work has supported a greater role for residents in the stewardship of public street trees.

A Tree Protection Ordinance was passed by the City Council that removal of trees above certain thresholds require a tree removal permit, and in some cases, require mitigation measures.

Agricultural Land

No land in Cambridge is used or zoned specifically for agricultural use.

Wetland Vegetation

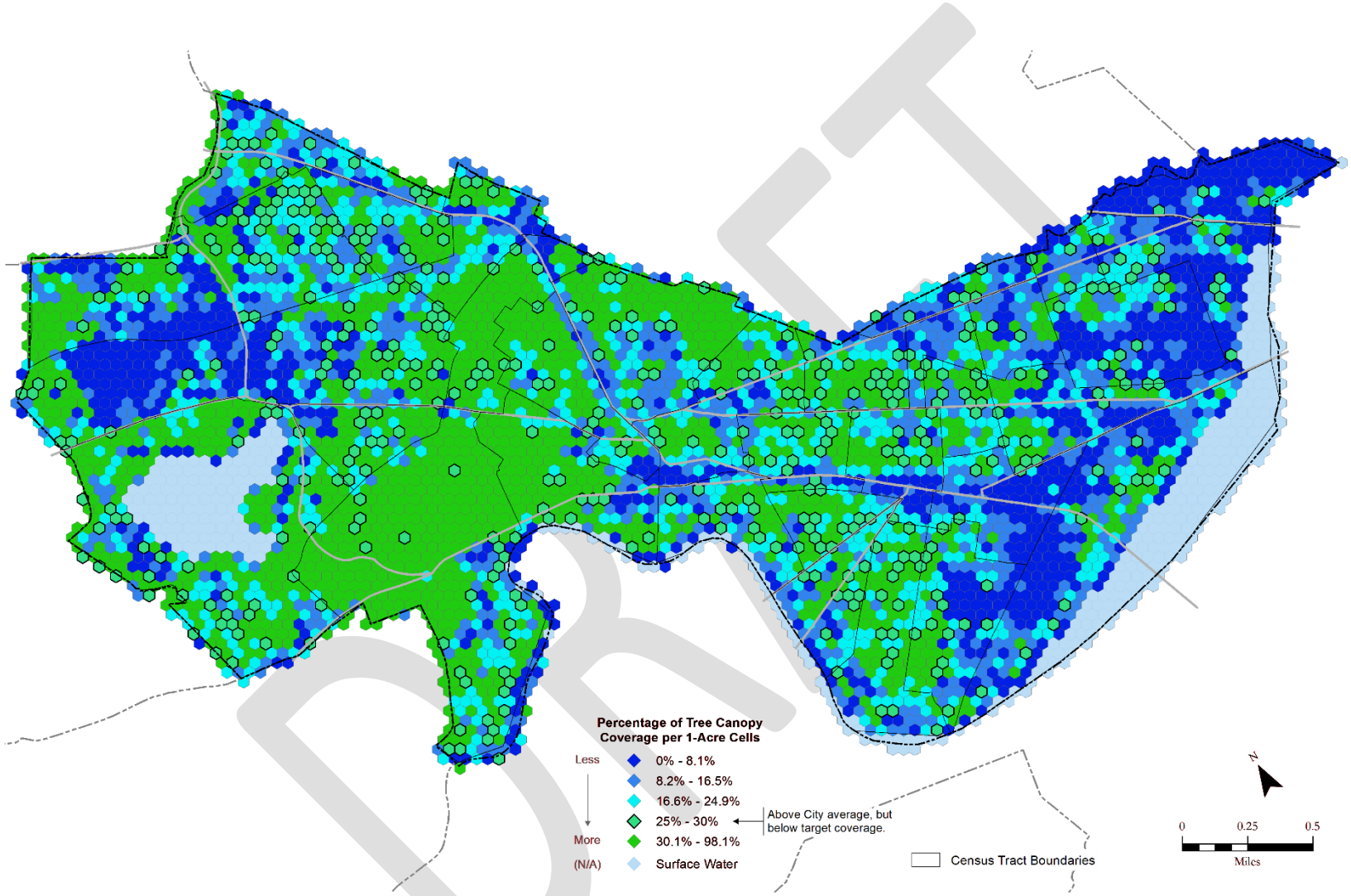
Wetland vegetation is found primarily in the Alewife Brook Reservation and somewhat within the Fresh Pond Reservation. The common reed, *Phragmites*, is the most abundant wetland plant in the Alewife Brook Reservation. This is a non-native, aggressive species, and serves as indication of the disturbed nature of this ecosystem. Most of the other plants at Alewife are either strictly wetlands species or other species that can tolerate wet soils.

Rare Species

The Massachusetts Division of Fisheries and Wildlife notes two rare vegetation species observed in recent years.

Gentiana andrewsii, Andrews' Bottle Gentian, was observed at the DCR-managed Alewife Brook Reservation. It was most recently observed in 2017 and is considered an Endangered Species in Massachusetts.

Map 4.7: Tree Canopy



This map shows the percentage of each given acre grid cell that has existing tree canopy coverage. This is based on flyover data collected as part of the Urban Forest Master Plan process. Cells in the blue to teal range indicate cells that are below the citywide average canopy coverage, and cells depicted in the outlined green cell are at or above the citywide average, but below a target figure.

(Source: Cambridge Urban Forest Master Plan, re-mapped for OSNA)

Table 4.1: Rare Species, Vegetation

Common Name	Scientific Name	Taxonomic Group	MESA Status	Most Recent Observation
American Sea-blite	*Suaeda calceoliformis*	Vascular Plant	Special Concern	1912
Andrews' Bottle Gentian	*Gentiana andrewsii*	Vascular Plant	Endangered	2017
Britton's Violet	*Viola brittoniana*	Vascular Plant	Threatened	1843
Engelmann's Flatsedge	*Cyperus engelmannii*	Vascular Plant	Threatened	2008
Fries' Pondweed	*Potamogeton friesii*	Vascular Plant	Endangered	1880
Lake Quillwort	*Isoetes lacustris*	Vascular Plant	Endangered	Historic
Long's Bulrush	*Scirpus longii*	Vascular Plant	Threatened	1913
Pale Green Orchid	*Platanthera flava var. herbiola*	Vascular Plant	Threatened	Historic
Slender Woodland Sedge	*Carex gracilescens*	Vascular Plant	Endangered	1891

Rare Species Viewer (https://www.mass.gov/info-details/rare-species-viewer), accessed December 2021

Cyperus engelmanni (Engelmann's Umbrella-sedge) was observed in Fresh Pond Reservation along the shore of Black's Nook in 1981. It was most recently observed in 2008 and is considered a Threatened Species in Massachusetts. *Cyperus engelmanni* is particularly susceptible to changes in water level in Black's Nook, as the plant occupies exposed sandy-to-peaty margins of the shore. No growth occurs in high water cycles, and seeds will germinate only on suitable exposed shoreline.

All other rare species observed in Cambridge are considered historic.

The full list of observed rare species is shown in **Table 4-1**.

Vegetation Mapping Projects

In collaboration with the University of Vermont using aerial photography and LiDAR (light detection and ranging) data in order to assess Cambridge's tree canopy over time.

Fisheries and Wildlife

Because natural ecosystems require larger and less disturbed tracts of wilderness, there are few existing areas in Cambridge that support wildlife. The only areas that provide a suitable habitat for fish, birds and other animals are the Charles River, Fresh Pond Reservation and Alewife Brook Reservation.

The Charles River is the site of a significant alewife and blueback herring anadromous fish run, in addition to smaller smelt and shad runs. The fish population is affected by water quality issues resulting from combined sewer overflows, urban runoff and upstream pollution, but conditions have improved in recent years and are expected to continue to improve. The only remaining potential wildlife habitat area along the Cambridge portion of the Charles is the Gerry's Landing or "Hell's Half Acre" site, which has a variety of wetland types, dense vegetation and proximity to the river. Its small size and isolation from other wilderness limits wildlife activity, however it does have value as a nature-watching area. Several bird species

including red-winged blackbirds may be observed in this area.

Most of the wildlife habitat in Cambridge is concentrated near Fresh Pond and the Alewife Brook Reservation, due to their combination of open water, dense vegetation and food. These areas are important stops along migratory routes for over one hundred bird species. The ponds at Fresh Pond Reservation harbor muskrats, turtles and frogs, and the wooded areas contain raccoons and skunks, among other species. The presence of several scattered ponds, dense vegetation and forested areas results in a topography that is well-suited to the feeding and nesting habits of a variety of bird species. The abundance of food items, such as weeds, berries, and other vegetation, along with insects, fish and amphibians, also adds to the importance of Fresh Pond as a bird habitat. Alewife Brook Reservation provides a relatively large, contiguous stretch of potential habitat for wildlife, with the Little River running through it, several ponds, and many acres of woodland and wetland within its limits. However, the poor condition of this habitat limits the types of animals within its boundaries. Fish found in the Alewife Brook and Little River primarily consist of non-native species such as carp. A remnant anadromous fish run still migrates through the Alewife Brook, however only a few hundred blue-black herring and alewife now spawn in the Little Pond/Alewife system.

Information on Vernal Pools

There are no known vernal pools in Cambridge.

Corridors for Wildlife Migration

As previously noted, the Charles River is the site of a significant alewife and blue-black herring anadromous fish run. The fish migration routes through the Alewife Brook and Little River are much smaller, possibly on account of the pollution, sedimentation and eutrophication in these waterways. Also as previously noted, the Fresh Pond Reservation and Alewife Brook Reservation are habitats well suited to birds, and these areas serve as stops along the migration routes of over one hundred bird species.

Rare Species

Peregrine falcons have been recently observed in Cambridge. Often nesting on rocky cliffs, peregrine falcons also make their homes in the urban setting in tall man-made structures like buildings or bridges. Conservation efforts have proven encouraging; prior to 2017 they were listed as endangered in Massachusetts, and in 2019 their status was improved to Special Concern.

Other observations of rare or endangered species in Cambridge are considered historic. The full list of observed rare species is shown in **Table 4-2**.

Table 4.2: Rare Species, Fish and Wildlife

Common Name	Scientific Name	Taxonomic Group	MESA Status	Most Recent Observation
American Bittern	*Botaurus lentiginosus*	Bird	Endangered	1906
Barn Owl	*Tyto alba*	Bird	Special Concern	Historic
Blue-spotted Salamander (complex)	*Ambystoma laterale* pop. 1	Amphibian	Special Concern	1917
Bridle Shiner	*Notropis bifrenatus*	Fish	Special Concern	1928
Common Gallinule	*Gallinula galeata*	Bird	Special Concern	1890
Eastern Box Turtle	*Terrapene carolina*	Reptile	Special Concern	1892
Eastern Pondmussel	*Ligumia nasuta*	Mussel	Special Concern	1941
Eastern Spadefoot	*Scaphiopus holbrookii*	Amphibian	Threatened	1892
Imperial Moth	*Eacles imperialis*	Butterfly/Moth	Threatened	Historic
Least Bittern	*Ixobrychus exilis*	Bird	Endangered	1890
New England Medicinal Leech	*Macrobdella sestertia*	Segmented Worm	Special Concern	1800s
Peregrine Falcon	*Falco peregrinus*	Bird	Threatened	2019
Sedge Wren	*Cistothorus platensis*	Bird	Endangered	1840
Twelve-spotted Tiger Beetle	*Cicindela duodecimguttata*	Beetle	Special Concern	1932
Wood Turtle	*Glyptemys insculpta*	Reptile	Special Concern	Historic

Rare Species Viewer (https://www.mass.gov/info-details/rare-species-viewer), accessed December 2021

Scenic Resources and Unique Environments

The most significant scenic resource in Cambridge is the banks of the Charles River, which borders much of the city and provides numerous views into Boston. Points of interest along the Charles River include:

- The Lechmere Canal and Broad Canal, which were once parts of the industrial infrastructure of East Cambridge and are now largely of recreational value;
- the Massachusetts Institute of Technology campus and particularly Killian Court, MIT's iconic open space overlooking the river;
- Magazine Beach, which for nearly a century has been a major public recreational resource;
- the area near Harvard, with its plantings of sycamore trees alongside Memorial Drive and the iconic architecture of the "River Houses;"
- Longfellow Park, which provides unobstructed views between the historic Longfellow House and the river;
- The aforementioned Gerry's Landing or "Hell's Half-Acre" area, one of the last remaining "urban wilds" in the city.

Scenic landscapes and other unique features are shown on **Map 4-3**.

Fresh Pond Reservation and Alewife Brook Reservation have scenic value primarily as natural preserves that provide a feeling of separation from the developed areas of Cambridge. They also provide opportunities for observing wildlife, such as bird-watching, and ecological study. An area of particular note is Kingsley Point, an elevated point

within Fresh Pond Reservation that provides views across Fresh Pond.

Danehy Park, which is elevated due to its being constructed on a former landfill, also provides the opportunity for exceptional views across parts of northwestern Cambridge. Another important landscape is the aforementioned Mount Auburn Cemetery, which by virtue of its carefully designed pathways, vegetation and structures, has been considered one of the most scenic areas in the region for over a century and is still a popular site for walking and passive recreation.

Major Geologic Features

There are few significant geologic features in Cambridge, due to its flat topography and abundance of land that is or had once been filled and developed. Notable features have previously been described in part “A” of this Section.

Cultural, Archeological, Historic Areas

Cambridge has one of the most comprehensive historic preservation programs in Massachusetts. Many sites within Cambridge are on the National Register of Historic Places, and are thus protected at the state and sometimes federal level, while the City also uses local historic district, landmark and neighborhood conservation district designations to protect individual structures and neighborhoods.

Under these ordinances, no change can take place without the approval of the Cambridge Historical Commission. Altogether, Cambridge has over 2,000 listings on the National Register of Historic Places (of which ten percent are individual listings and the rest are in districts), two local historic districts, 26 local landmarks and four neighborhood conservation districts. These areas with historic protections are shown on **Map 4-4**.

Many of Cambridge’s previously described unique landscapes also have historic significance. Cambridge Common is notable for many reasons, perhaps most importantly as the site where General George Washington took command of the first Continental Army in 1775. The site known currently as the Longfellow House was Washington’s headquarters in 1775-1776 and later home to poet Henry Wadsworth Longfellow, and is now a National Historic Site administered by the National Park Service.

The carefully landscaped gardens surrounding the house are open and accessible to the public, and the adjacent Longfellow Park, owned by the City, was once part of this estate. Other open space sites with historic significance include Fort Washington Park, the site of a three-gun fortification built for the siege of Boston during the Revolutionary War, and Winthrop Square, once the marketplace for Old Cambridge that became one of Cambridge’s first protected open spaces in the 1830s. Two civic sites with significant historic and cultural value are Cambridge City Hall and the Cambridge Main Library, both built in 1889, and both of which are fronted by public open space. Mount Auburn Cemetery, Harvard Yard and the entire Charles River Basin are also on the National Register of Historic Places.

Prior to European settlement and for some time afterwards, the tidal flats along the Charles River in Cambridge were valued by Native Americans for the abundance of shellfish. This, along with the characteristics of early 17th century European settlement, indicates the possible existence of archeological sites within the city. However, to date no archaeological sites have been recorded with the Massachusetts Historical Commission, and the substantial amount of filling that has taken place in many parts of the city mean that potential sites are likely to have been destroyed in the course of the city's development.

Unique Environments (incl ACECs)

All of the significantly unique environments in Cambridge have previously been noted in this Section and illustrated in **Map 4-3**. The two areas that are considered Areas of Critical Environmental

Concern at a statewide level are the Alewife district and the Charles River district. In both cases, the primary concern is the poor water quality and the State-directed goal to make these water resources healthy habitats for vegetation and wildlife as well as recreational resources for residents. Both of these areas are owned and controlled by the Massachusetts Department of Conservation and Recreation, so the primary responsibility for their management lies with the State, however the Cambridge Conservation Commission provides input into the future management plans for these areas and has approval authority over those plans. The City also helps to manage water quality and flooding issues through its sewer/stormwater separation program and other investments aimed toward reducing combined sewer overflows, and through development policies that promote stormwater management and floodwater control.

Environmental Challenges

Hazardous Waste and Brownfield Sites

There are approximately 40 hazardous waste sites in the city, primarily in areas that historically contained industrial uses and are undergoing redevelopment, providing opportunities to address the remnants of these historic uses.

Historically, the Cambridge Water Department, along with other City staff, conducted an inventory of sites that were near Fresh Pond and monitored clean-up of those sites.

Landfills

There are currently no active landfills in Cambridge. The area that is currently Danehy Park had been Cambridge's only active landfill active from 1955 to 1970, which had been a clay pit before being acquired by the City. In 1990, the City decided to cover this decommissioned landfill with 40 feet of clean fill and convert it into a 50-acre public recreational facility with playing fields, playgrounds, and other recreational features. It was opened for recreational use in 1992.

In 2023, a contractor performing soil borings for a City project identified a methane pocket beneath the clay cap. The City has been working closely with MassDEP to develop an enhanced monitoring program and site-wide assessment. In conjunction with this work, the City is developing a Capital Improvements Plan for Danehy Park to guide future improvements in the park.

Erosion

Erosion is a significant consideration in the management of water resources in Cambridge, and the City's plans for Fresh Pond Reservation, along with the State's plans for the Charles River and Alewife Brook Reservations, include shoreline stabilization as a major element of future improvement projects.

Chronic Flooding

As described previously, chronic flooding is an issue in the area of the Alewife Brook/Little River system. There are many factors contributing to the flooding, including the soil conditions, issues with stormwater runoff and combined sewer overflows, and past development in the area not applying adequate flood storage and stormwater management practices. These considerations as well as more recent city policies with regard to flood storage and stormwater management practices are expected to result in future development that will mitigate the flooding problems in this area.

Sedimentation

Water pollution resulting from combined sewer overflows, stormwater runoff and other sources is a cause of sedimentation in local waterways including the Charles River and Alewife Brook/Little River system.

New Development

As noted in the previous section, large-scale development is generally expected to continue to occur mainly in evolving former industrial areas such as the Cambridge Crossing (formerly North Point) area, eastern Cambridge, Cambridgeport and the Alewife Quadrangle area, with some infill development in predominantly residential neighborhoods and commercial corridors. While these areas are close to open spaces and water resources, new development has the potential to provide environmental benefits by encouraging the clean-up of brownfield sites and the implementation of stormwater management practices. This may be especially beneficial on sites that are largely paved and currently contribute to stormwater runoff.

Development also provides the opportunity to incorporate more contemporary green building techniques in replacing outdated building stock. Moreover, the areas of Cambridge with significant development potential are also the areas that are more likely to see the creation of new open space, as it is integrated into future plans for large-area development.

Ground and Surface Water Pollution

Water pollution is a major concern that the City continues to address. During heavy rains, combined sewer overflows discharge untreated sewage into waterways including the Charles River and Alewife Brook/Little River system. Measures such as combined sewer/stormwater separation projects are working to reduce combined sewer overflow events. However, stormwater itself is also a water pollution concern, because it can carry heavy metals and other hazardous chemicals from roads and private properties into waterways and cause sedimentation. Runoff containing excess nutrients is also an issue because it can result in eutrophication, which is a concern especially in the Little River, Blair Pond and Alewife Brook, which are becoming largely incapable of supporting healthy aquatic vegetation that provides food and cover for fish and other animals. The City of Cambridge has a regular street cleaning program and requires private developers to adopt stormwater detention practices, but it is difficult to eliminate all sources of pollution, especially since much of the runoff entering Cambridge waterways originates in surrounding communities.

Impaired Water Bodies

The Massachusetts Department of Environmental Protection maintains a list of impaired water bodies as per the requirements of section 303(d) of the Clean Water Act. Streams, lakes and ponds are identified as impaired if there is a significant presence of pollutants or if the waterway does not meet water quality standards for dissolved oxygen, temperature, pH, fecal coliform bacteria, solids, color and turbidity, oil and grease, or taste and odor. In Cambridge, the Charles River and Alewife Brook are listed as a 303(d) impaired water bodies, along with Blair Pond, Jerry's Pond, Yates Pond and Black's Nook. With the exception of Black's Nook (which is within the Fresh Pond Reservation) all of these waterways are managed by the Massachusetts Department of Conservation and Recreation. The City works to reduce point and non-point source pollution and improve water quality through measures that have been previously described, including stormwater management, reduction of combined sewer overflows and street cleaning.

Invasive Species

Invasive species are a particular concern as they affect the Fresh Pond Reservation. The Fresh Pond Reservation Master Plan and the various projects that are currently being implemented as a result of the plan address the need to remove invasive species of trees, shrubs and undergrowth in order to restore the natural ecosystem in this area.

Environmental Equity Issues

Environmental impacts on Cambridge waterways affect the entire Cambridge population, as well as

communities outside Cambridge. Most of the hazardous waste and ground pollution issues in Cambridge affect the former industrial districts that are increasingly becoming desirable areas for the development of new housing and commercial uses. Residential neighborhoods are impacted by lead contamination in the soil due to its historical presence in paint and other common products. Cambridge's Lead-Safe program has addressed this issue since 1994 by providing information to the public about lead risks, assisting with soil testing, and providing financial assistance for de-leading to income-eligible residents.

The environmental issues that have a greater impact on neighborhoods with lower-income, foreign-born, or minority populations are largely the result of building and development practices that were common at the time when the city's dense, working-class residential neighborhoods were developed. For instance, there tends to be less recreational open space available in neighborhoods that have historically had higher housing densities, because little land was reserved for open space during development, and parks have had to be developed by acquiring and converting developed land over time. In these areas, exposure to heat and the heat island effect is also a factor, owing to a combination of more hardscape and less vegetation (and especially shade trees) to mitigate these impacts.

Section 5: Inventory of Lands of Conservation and Recreation Interest

In Cambridge, the phrase “open space” is often used to refer to the system of public parks, playgrounds, reservations, and other outdoor spaces that provide greenery and recreational facilities and are enjoyed by the public at large.

But within the urban context, “open space” can also represent a broader public realm, the connecting fabric of the city that complements residential, commercial and other private land and ties them together into an integrated community.

This public realm includes parks, city streets and sidewalks, small plazas and planted areas, lawns around public buildings, and private open spaces that allow physical or visual enjoyment by the public. It can also include indoor public facilities, depending on their freedom of public access and how they are used by the community.

Because open space is such an integral part of the city, it is important for open space planning to consider not only the quantity of open space in the city, but the quality of open space in relation to its surrounding urban context.

Because land within the city has potential value for private uses, it is necessary to protect open spaces from private development pressures. There are different degrees of open space protection. Under the state’s Article 97 – Amendment 97 to the Massachusetts Constitution – land that has been acquired for conservation or natural resource protection cannot be converted to another use without votes by the Conservation Commission and City Council, as well as the Massachusetts Legislature. Most open spaces in Cambridge are not protected under this language because they were acquired or are used for recreational purposes, although a number of parks are protected at the state level because they have received grant funding for their development through state or federal programs.

At the municipal level, nearly all publicly-owned open spaces with an official park designation have a special “Open Space” designation under the Cambridge Zoning Ordinance. The rules for an “Open Space” zoning district allow only civic or religious uses and a maximum floor area ratio of 0.25, tightly restricting the size and type of structures that might be built. Some spaces also have officially designated historic value (at the local, state or federal level), and any changes to the use of that land would require public review by the Cambridge Historical Commission and/or other agencies.

Some public open spaces have been created through the enforcement of zoning provisions on a private development project (such as a Planned Unit Development or a transfer of development rights) or by requirements on a special permit, therefore they are protected as open space uses under the Cambridge Zoning Ordinance even in cases where the land remains fully or partially in private ownership, as they fulfill the legally required open space per the Zoning Ordinance.

Because of these levels of protection and because the Cambridge community places a high value on open space, it would require a major shift in attitudes to convert public open space to private use.

Rather, in contrast, the trend over the past several decades has been the conversion of some private, previously-developed land to public open space, a slow and often expensive process that requires significant public resources and cooperation from private property owners.

Table 5.1: Park Type Descriptions and Assigned Walksheds

	Mini Park	Neighborhood Park	Community Recreation Park	Citywide Park
Definition	Smaller scale parks that tend to focus on a single park use (e.g., playground or passive space)	Medium-scale parks that are of a scale to combine multiple different park uses, such as play areas, hard courts (e.g., basketball), or community gardens	Medium- to larger-scale parks that include athletic fields as well as other park uses such as playgrounds	Large-scale open spaces of citywide or regional importance
OSNA Walkshed	¼ mi	½ mi	½ mi	½ mi

Park Typology and Walkshed Analysis

As part of the Needs Assessment process, spaces in the open space network were assigned individual park types. This classification system is an update of a similar classification scheme conducted during the City's Green Ribbon Study in 2000, which itself was based on a classification system initially developed by the National Recreation and Parks Association.

With a few minor adjustments, the inventory and categorization process largely followed the findings of the earlier Green Ribbon Open Space Study. Some naming conventions were adjusted to better distinguish between characteristics of the spaces themselves versus park uses or equipment located in the parks. In a departure from the previous iteration of this classification, each park space was also assigned a single park type, as opposed to being able to fit within multiple categories.

In addition to these types, two additional classifications of open spaces were established for **Plazas** and **Pocket Parks**. The spaces classified as Plazas and Pocket Parks tend to be smaller spaces and tend to have less separation from the sidewalks or the public right-of-way. Many, especially plaza spaces, tend to be located on major commercial corridors or in or one of the city's squares.

These spaces are important parts of the urban fabric, and provide valuable space for passive use, opportunities to pause and enjoy respite, or in the case of plaza spaces in squares or commercial areas, opportunities for activation.

However, because they tend to lack the scale and level of separation from adjacent roadways that may make them feel to users as distinct spaces, the purposes of park type analysis these spaces were not given a walkshed distance to serve as a service area.

In addition to supporting a more granular walkshed analysis, the park type classifications help to inform how different types of spaces may be able to support different types of design strategies as the City makes improvements to open spaces over time.

Cemetery spaces were omitted from this analysis and categorization (in consideration of limitations in recreational use beyond passive uses and functions as active cemeteries), but these also constitute important opportunities for planting and history. The Cambridge Cemetery recently underwent a master planning process to consider the future of the space as both an active cemetery but also a cultural and landscape resource. The historic Mount Auburn Cemetery is a prime example of the multi-faceted benefits that cemetery spaces can offer, and though privately-owned, is a cherished regional resource.

Public and Nonprofit Parcels

About 11.9% of the land area in Cambridge is considered public or publicly accessible open space. Most of the open space in Cambridge is part of a network of public open spaces—which include City-owned parks, playgrounds, and reservation areas, as well as reservation areas owned by the Commonwealth of Massachusetts under the purview of the Department of Conservation and Recreation. Refer to Map 5.1 and Table 5.3 for City-owned parks and public open spaces, and Map 5.2 and Table 5.4 for public parks and open spaces controlled by other public entities.

The majority of public schools and youth centers in Cambridge include an on-site playground area or are contiguous with a larger outdoor open space; the two exceptions are located across the street from outdoor spaces that support those uses.

Private Parcels

The City of Cambridge is largely developed, and often, private parcels that feature open space integrate these spaces into a larger urban fabric. Some private properties feature privately-owned public open spaces, spaces that have some level of guaranteed public access, often protected through a legal instrument such as an easement, development agreement, or other tools. Refer to **Map 5.6 and Table 5.8**.

Some notable larger private spaces include the historic Mount Auburn Cemetery and Harvard Yard. While these are both privately-controlled, they generally welcome visitation by members of the public. In addition, Jerry's Pond in North Cambridge is a human-made pond, the result of the historic

Table 5.2: Plazas and Pocket Parks

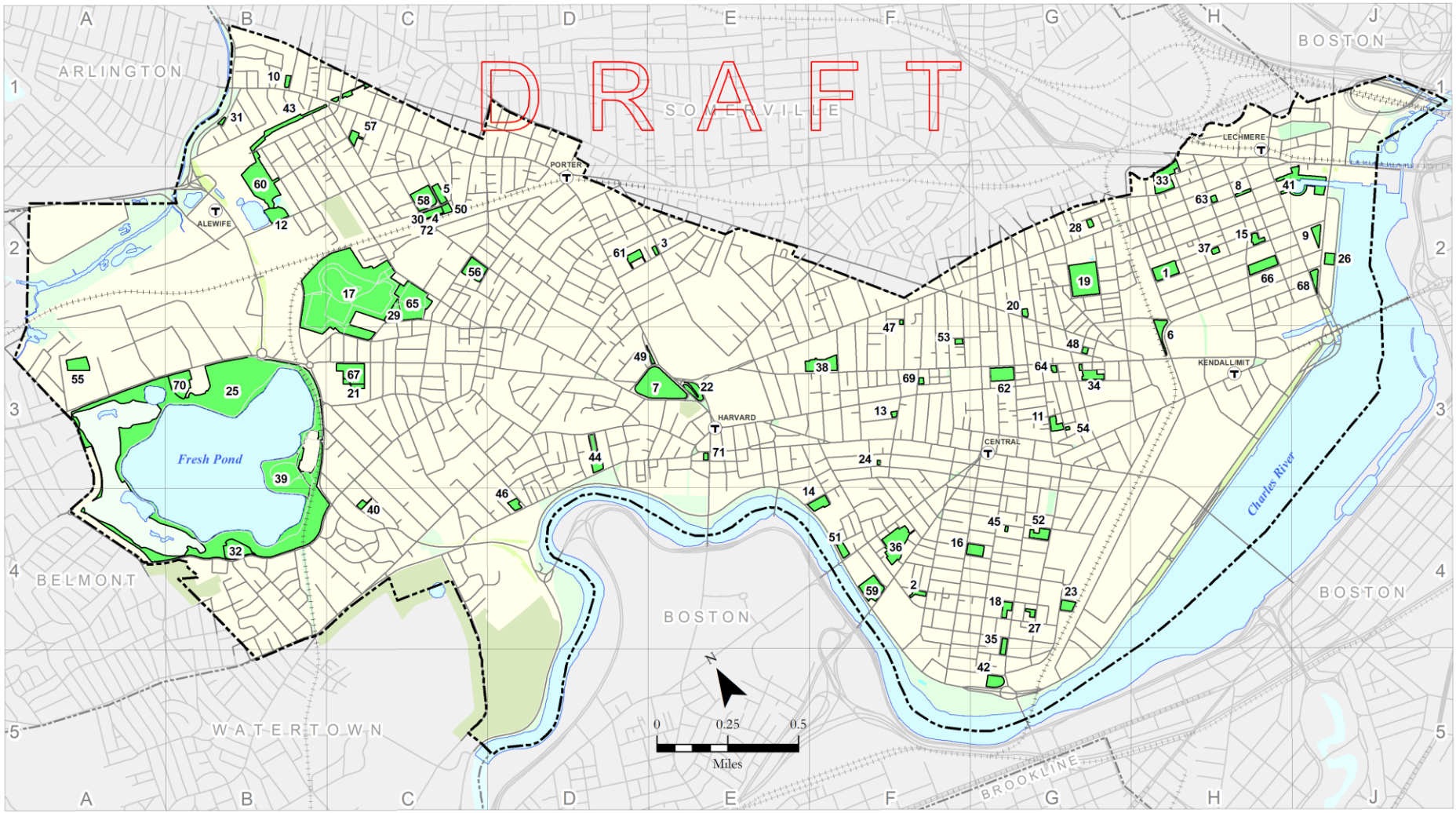
	Plaza	**Pocket Park**
Definition	Open areas that are primarily hardscape, and that typically provide space for passive seating and planting. These spaces may be able to support temporary programmed uses. These are often located adjacent to (or part of) the public right-of-way, and often located in commercial districts.	Smaller passive areas that may include seating, plantings, or other similar features. These may be spaces such as recaptured right-of-way areas
OSNA Walkshed	N/A	N/A

brick industry in the neighborhood, has since re-naturalized to a degree. The pond is a part of a larger property that is undergoing redevelopment, and the development entities are working with the community toward restoration of the pond area.

Park and Open Space Equity

With this iteration of the Open Space and Recreation Plan update, a major emphasis was placed on park and open space equity. In particular, an Open Space Needs Assessment was conducted as part of this process that allowed the City to understand open space needs through a lens that incorporates not only the distribution and access of open space, but consideration of equity as it relates to public health and risks associated with climate change. **Please refer to note on Open Space Needs Assessment in Section 3, and Summary of Community Needs in Section 7.**

Map 5.1: Parks and Public Open Spaces (City-Owned)



Sources: Cambridge CDD; Cambridge GIS; MassGIS.

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Table 5.3: Parks and Public Open Spaces (City-Owned)

#	Name	Park Type	Acres	Recreational Uses	Zoning	Protections	Action Plan Recommendation
1	Ahern Field	Community Recreation Park	2.56	Playground, Water Play/Splash Pad, Basketball, Soccer, Softball, Street Hockey	OS	Zoning; public ownership/use	
2	Alberico Park	Mini Park	0.54	Playground	OS	Zoning; public ownership/use	
3	Alden Park	Mini Park	0.27	Playground, Water Play/Splash Pad	OS	Zoning; public ownership/use	
4	Anderson Courts	Community Recreation Park	1.02	Basketball, Tennis	OS	Zoning; public ownership/use	
5	Bergin Park	Community Recreation Park	1.10	Playground, Water Play/Splash Pad	OS	Zoning; public ownership/use	
6	Binney Street Park	Mini Park	1.21	Off Leash Use, Passive Use	MXD	Developer requirement (open space covenant); public ownership/use	
7	Cambridge Common	Neighborhood Park	8.19	Playground, Water Play/Splash Pad, Foot/Bike Paths, Soccer	OS	Granted for enclosure "to be forever appropriated to public use only, as a public park, promenade, and place for military parade;" Urban Self-Help Grant funding; zoning; public ownership/use; historic register	
8	Centanni Way	Mini Park	0.35	Passive Use	OS	Zoning; public ownership/use; historic register	
9	Charles Park	Mini Park	0.94	Playground	OS	Zoning; public ownership/use	
10	Clarendon Avenue Playground	Mini Park	0.43	Playground	BA-2	Taken for "recreational open space purposes;" public ownership/use	
11	**Clement G. Morgan Park**	**Neighborhood Park**	**1.04**	**Playground, Basketball**	**OS**	**Taken for "recreational open space purposes;" zoning; public ownership/use**	**Y**
12	**Comeau Field**	**Community Recreation Park**	**1.95**	**Playground, Baseball (Little League)**	**OS**	**Zoning; public ownership/use**	**Y**
13	Cooper Park	Mini Park	0.23	Playground, Water Play/Splash Pad	OS	Zoning; public ownership/use	
14	Corporal Burns Park	Neighborhood Park	1.43	Playground, Water Play/Splash Pad, Basketball, Street Hockey	OS	Zoning, public ownership/use, historic register	
15	Costa Lopez Taylor Park	Neighborhood Park	0.74	Playground, Basketball, Community Garden	OS/C-1	Zoning; public ownership/use	

#	Name	Park Type	Acres	Recreational Uses	Zoning	Protections	Action Plan Recommendation
16	**Dana Park**	**Neighborhood Park**	**1.40**	**Playground, Water Play/Splash Pad, Basketball**	**OS**	**Deeded with the condition that the City forever occupy the property as a park; zoning; public ownership/use**	**Y**
17	**Danehy Park**	**Citywide Park**	**47.76**	**Playground, Water Play/Splash Pad, Foot/Bike Paths, Soccer, Softball, Track, Off Leash Use**	**OS**	**Urban Self-Help Grant funding; zoning; public ownership/use**	**Y**
18	David Nunes Park	Neighborhood Park	0.91	Playground, Water Play/Splash Pad, Basketball, Street Hockey	OS	Taken to "lay out and maintain and improve as a public park or parks;" zoning; public ownership/use	
19	Donnelly Field	Community Recreation Park	6.82	Playground, Water Play/Splash Pad, Baseball (Little League), Basketball, Softball	OS	Zoning; public ownership/use	
20	Elm/Hampshire Plaza	Mini Park	0.34	Passive Use	OS	Zoning; public ownership/use	
21	Father Callanan Playground	Community Recreation Park	0.80	Playground, Water Play/Splash Pad, Basketball	OS	Urban Self-Help Grant funding; zoning; public ownership/use	
22	Flagstaff Park	Mini Park	1.36	Passive Use	OS	Deeded for use as a public park; zoning; public ownership/use; historic register	
23	Fort Washington Park	Mini Park	1.00	Off Leash Use	OS	Deeded with the condition that Washington Square "remain suitable enclosed and shall forever remain open for light, air and ornament for the owners of the new Pine Grove estates and the public generally;" zoning; public ownership/use; historic register	
24	Franklin Street Park	Mini Park	0.11	Water Play/Splash Pad	OS	Zoning; public ownership/use	
25	Fresh Pond Reservation	Citywide Park	83.74	Foot/Bike Paths, Community Garden, Off Leash Use	OS	Taken for use as a "reservoir/storage basin;" zoning; public ownership/use	
26	Front Park	Mini Park	0.86	Passive Use	OS	Taken for "recreation open space purposes;" zoning; public ownership/use	
27	Fulmore Park	Mini Park	0.41	Playground, Water Play/Splash Pad	OS	Zoning; public ownership/use	

#	Name	Park Type	Acres	Recreational Uses	Zoning	Protections	Action Plan Recommendation
28	Gannett/Warren Pals Park	Mini Park	0.33	Playground, Water Play/Splash Pad	C-1	Public ownership/use	
29	Garden Street Glen/Roethlisberger Memorial Park	Mini Park	1.77	Passive Use	OS	Zoning; public ownership/use	
30	Giacobbe Dog Run	Community Recreation Park	0.26	Off Leash Use	OS	Zoning; public ownership/use	
31	Gibbons Park	Mini Park	0.21	Playground	OS	Zoning; public ownership/use	
32	Glacken Field	Community Recreation Park	3.05	Playground, Water Play/Splash Pad, Basketball, Soccer, Softball, Tennis	OS	Contained within Fresh Pond Reservation with subsequent use permitted for "playground purposes"; zoning; public ownership/use	
33	Gold Star Mothers Park	Community Recreation Park	3.63	Playground, Water Play/Splash Pad, Basketball, Soccer, Softball, Off Leash Use	OS	Zoning; public ownership/use	
34	Greene • Rose Heritage Park	Neighborhood Park	1.52	Playground, Water Play/Splash Pad, Tennis, Pickleball, Community Garden, Off Leash Use, Pickleball	OS	Portions taken for "recreation open space purposes" and "municipal open space purposes;" zoning; public ownership/use	
35	Hastings Square	Neighborhood Park	0.69	Passive Use	OS	Deeded with the condition that Hastings Square "remain suitably enclosed and shall forever remain open for light, air and ornament for the owners of the Pine Grove estates and the public generally;" zoning; public ownership/use; historic register	
36	**Hoyt Field**	**Community Recreation Park**	**4.71**	**Playground, Water Play/Splash Pad, Basketball, Softball, Tennis, Pickleball, Off Leash Use, Pickleball**	**OS**	**Zoning; public ownership/use**	**Y**
37	Hurley Park	Mini Park	0.32	Playground, Water Play/Splash Pad	OS	Zoning; public ownership/use	
38	Joan Lorentz Park	Neighborhood Park	3.01	Playground, Off Leash Use	OS	Zoning; public ownership/use	

#	Name	Park Type	Acres	Recreational Uses	Zoning	Protections	Action Plan Recommendation
39	Kingsley Park	Neighborhood Park	11.37	Foot/Bike Paths	OS	Contained within Fresh Pond Reservation; zoning; public ownership/use	
40	Larch Road Park	Mini Park	0.40	Playground, Basketball	OS	Zoning; public ownership/use	
41	Lechmere Canal Park	Neighborhood Park	4.03	Playground	OS	Zoning; public ownership/use	
42	Lindstrom Field	Community Recreation Park	1.42	Playground, Baseball (Little League), Basketball	OS	Zoning; public ownership/use	
43	**Linear Park**	**Community Recreation Park**	**3.27**	**Foot/Bike Paths**	**OS**	**Zoning; public ownership/use**	**Y**
44	Longfellow Park	Neighborhood Park	2.05	Passive Use	OS	Taken for memorial park with conditions that 1) the roadway surrounding the park could be expanded if necessary, and 2) no building be permitted in the park except for that of a memorial to Mr. Longfellow; zoning; public ownership/use; historic register	
45	Lopez Street Park	Mini Park	0.12	Playground	OS	Zoning; public ownership/use	
46	Lowell School Park	Neighborhood Park	0.76	Playground, Basketball	OS	Taken for "improvement as a public park or parks;" zoning; public ownership/use; historic register	
47	**Maple Avenue Park**	**Mini Park**	**0.12**	**Playground, Water Play/Splash Pad**	**OS**	**Zoning; public ownership/use**	**Y**
48	**Market Street Park**	**Mini Park**	**0.26**	**Playground**	**OS**	**Zoning; public ownership/use**	**Y**
49	Mary Conlan Park	Mini Park	0.30	Passive Use	OS	Zoning; public ownership/use	
50	McMath Park	Community Recreation Park	0.57	Community Garden	OS	Zoning; public ownership/use	
51	New Riverside Neighborhood Park	Neighborhood Park	0.80	Water Play/Splash Pad	SD-12	Developer requirement	
52	Pacific Street Open Space	Community Recreation Park	1.35	Soccer, Off Leash Use	OS/SD-8	Zoning; public ownership/use	
53	**Paine Park**	**Mini Park**	**0.32**	**Playground, Water Play/Splash Pad, Basketball**	**OS**	**Zoning; public ownership/use**	**Y**
54	**Pine Street Park**	**Mini Park**	**0.10**	**Playground, Water Play/Splash Pad**	**OS**	**Zoning; public ownership/use**	**Y**
55	**Rafferty Park**	**Neighborhood Park**	**2.09**	**Playground, Basketball, Tennis**	**OS**	**Zoning; public ownership/use**	**Y**
56	**Raymond Park/Corcoran Field**	**Neighborhood Park**	**2.77**	**Playground, Basketball, Soccer,**	**OS**	**Zoning; public ownership/use**	**Y**

#	Name	Park Type	Acres	Recreational Uses	Zoning	Protections	Action Plan Recommendation
				Softball, Community Garden, Off Leash Use			
57	**Reverend Williams Park**	**Neighborhood Park**	**0.78**	**Playground, Water Play/Splash Pad, Basketball**	**OS**	**Zoning; public ownership/use**	**Y**
58	Rindge Field	Community Recreation Park	3.23	Playground, Baseball (High School)	OS	Zoning; public ownership/use	
59	Riverside Press Park	Neighborhood Park	3.01	Playground, Water Play/Splash Pad, Basketball, Tennis	OS	Zoning; public ownership/use	
60	Russell/Samp Field	Community Recreation Park	7.72	Playground, Baseball (Little League), Football, Soccer	OS	Zoning; public ownership/use	
61	Sacramento Field	Neighborhood Park	1.06	Playground, Basketball, Soccer, Community Garden, Off Leash Use	OS	Taken for "recreation open space purposes;" zoning; public ownership/use	
62	Sennott Park	Community Recreation Park	2.44	Playground, Water Play/Splash Pad, Basketball, Soccer, Softball	OS	Zoning; public ownership/use	
63	Silva Park	Mini Park	0.27	Playground	OS	Zoning; public ownership/use	
64	Squirrel Brand Park	Mini Park	0.27	Community Garden	C-1	Public ownership/use	
65	St. Peter's Field	Community Recreation Park	7.44	Playground, Baseball (High School), Basketball, Softball	OS	Zoning; public ownership/use	
66	Timothy J. Toomey, Jr. Park	Neighborhood Park	2.25	Playground, Water Play/Splash Pad, Off Leash Use	IA-1 /PUD-4C	Developer requirement; public ownership/use	
67	Tobin Field	Community Recreation Park	3.64	Baseball (Little League)	OS	Zoning; public ownership/use	
68	Triangle Park	Mini Park	0.82	Passive Use	C-3A/PUD-2	Public ownership/use	
69	**Wilder-Lee Park**	**Mini Park**	**0.23**	**Playground**	**OS**	**Zoning; public ownership/use**	**Y**

#	Name	Park Type	Acres	Recreational Uses	Zoning	Protections	Action Plan Recommendation
70	William G. Maher Park	Community Recreation Park	3.47	Foot/Bike Paths, Soccer, Community Garden	OS	Contained within Fresh Pond Reservation with subsequent use permitted for park; zoning; public ownership/use	
71	Winthrop Square	Mini Park	0.25	Passive Use	OS	Zoning; public ownership/use; historic register	
72	Yerxa Road Underpass	Mini Park	0.14	Foot/Bike Paths	OS	Zoning; public ownership/use	

Map 5.2: Parks and Public Open Spaces (Non-City Owned)

Sources: Cambridge CDD; Cambridge GIS; MassGIS.

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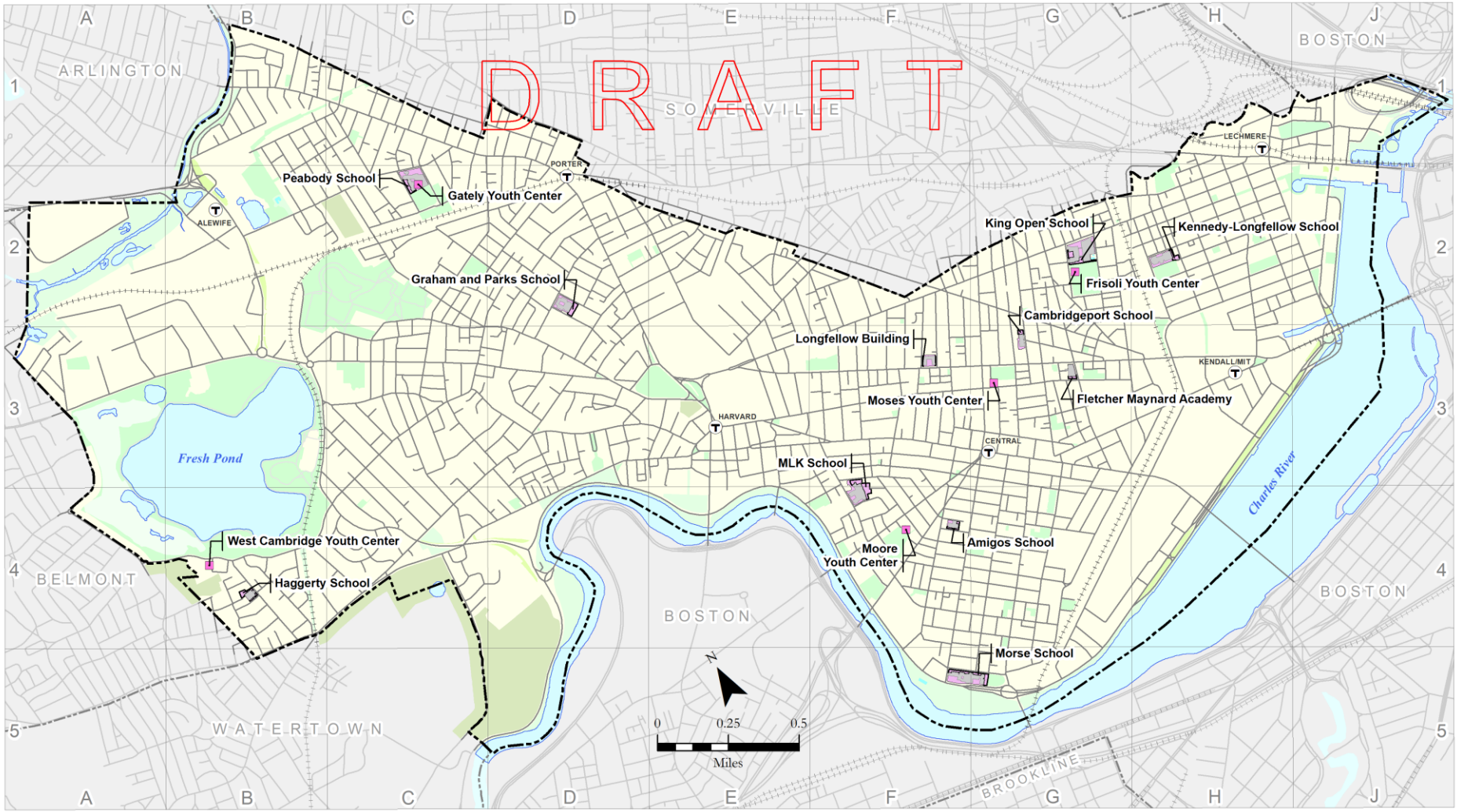
Table 5.4: Parks and Public Open Spaces (Non-City Owned)

Name	Needs Assessment Park Type	Ownership	Acres	Recreational Uses	Zoning	Protections
Alewife Brook Reservation	Citywide Park	State	72.86	Walk/Run/Bike Pathways, Passive Use	OS	Zoning; public ownership/use
Blair Pond	Mini Park	State	6.93	Passive Use	OS	Zoning; public ownership/use
Charles River Basin	Citywide Park	State	58.13	Walk/Run/Bike Pathways, Passive Use	OS	Zoning; public ownership/use; historic register
John F. Kennedy Memorial Park	Neighborhood Park	State	5.07	Passive Use	OS	Zoning; public ownership/use
Longfellow House and Grounds	N/A	Federal	1.94	Passive Use, Building Tours	OS	Public ownership/use; historic register
Lowell Memorial Park	Neighborhood Park	State	2.74	Passive Use	OS	Zoning; public ownership/use; historic register
Magazine Beach	Citywide Park	State	6.88	Little League Baseball, Playing Fields, Boat Launch	OS	Zoning; public ownership/use; historic register
McCrehan Memorial Pool Grounds	Community Recreation Park	State	1.43	Swimming	OS	Zoning; public ownership/use
Memorial Drive Tot Lot	Mini Park	State	0.21	Playground	OS	Zoning; public ownership/use
North Point Park	Citywide Park	State	7.82	Passive Use, Playground, Water Play	NP/PUD-6	Public ownership/use
Riverbend Park	Neighborhood Park	State	3.44	Bicycling, Jogging, Walking, Passive Use	OS	Zoning; public ownership/use
Veterans Memorial Pool Grounds	Community Recreation Park	State	1.88	Swimming	OS	Zoning; public ownership/use
Watertown-Cambridge Greenway	Community Recreation Park	State	2.25	Walk/Run/Bike Pathways	B/C-1/BA-1	Public ownership/use

Map 5.3: Schools and Youth Centers



Sources: Cambridge CDD; Cambridge GIS; MassGIS.

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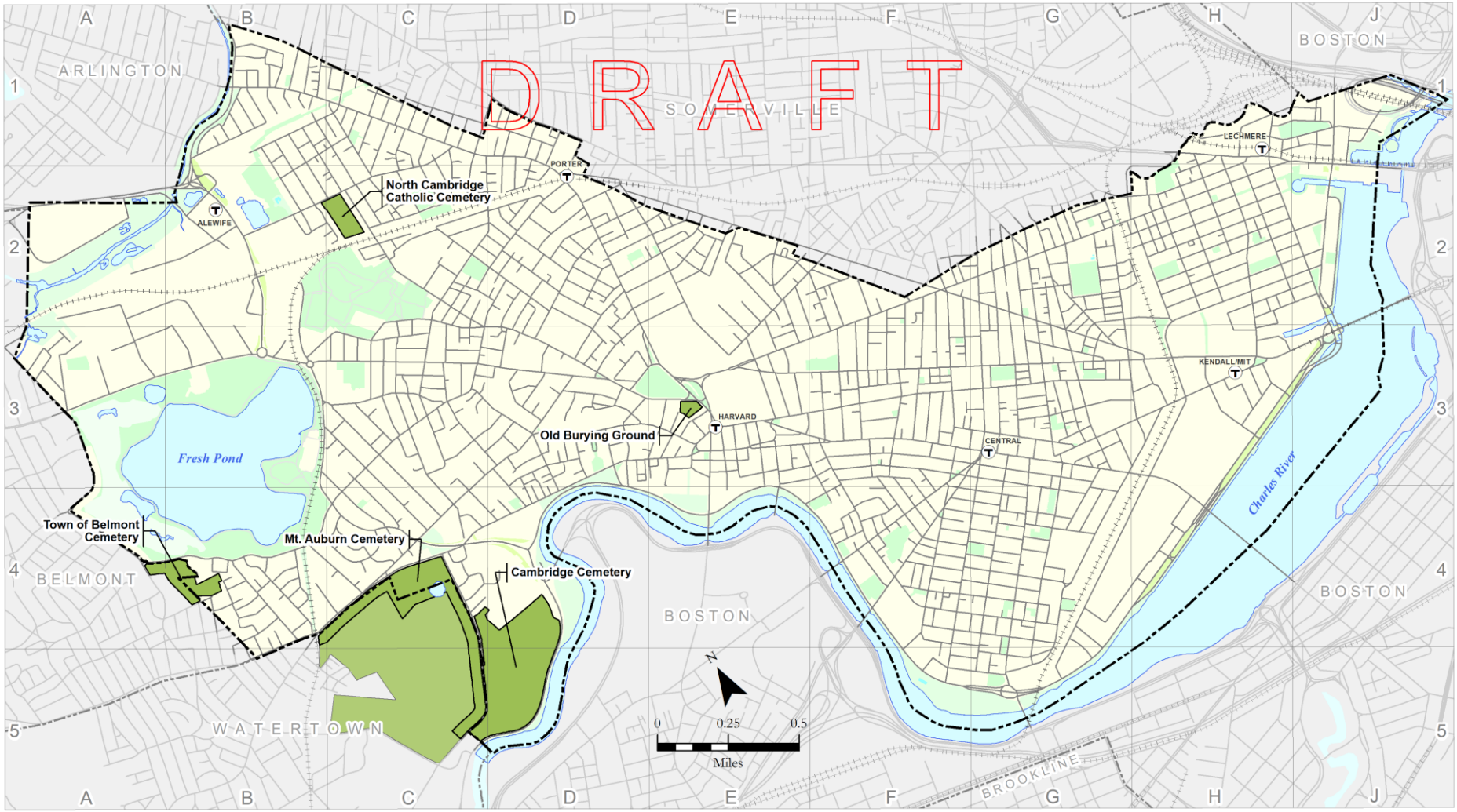
Table 5.5: Schools and Youth Centers

Name	Ownership	On-Site Playground/ Contiguous Outdoor Space	Nearby Open Space(s)/Recreational Facility
Amigos School	City	Y	Amigos School Playground
Baldwin School	City	N	Alden Park, Sacramento Field
Cambridge Rindge & Latin School	City	Y	Joan Lorentz Park, War Memorial Recreation Center
Cambridgeport School	City	Y	Cambridgeport School Playground
Fletcher Maynard Academy	City	Y	Fletcher Maynard Academy Playground, Greene-Rose Heritage Park
Graham and Parks School	City	Y	Graham and Parks School Playground
Haggerty School	City	Y	Haggerty School Playground
Kennedy-Longfellow School	City	Y	Kennedy-Longfellow School Playground, Ahern Field
King Open School	City	Y	King Open School Playground, Donnelly Field
Longfellow Building	City	Y	Longfellow Building Play Areas, Wilder-Lee Park
MLK School	City	Y	MLK School Playground
Morse School	City	Y	Morse School Playground, Lindstrom Field
Peabody School	City	Y	Peabody School Playground
Tobin School	City	Y	Under Construction
Frisoli Youth Center	City	Y	Donnelly Field
Gately Youth Center	City	Y	Rindge Field, Peabody School Playground, Bergin Park, Anderson Courts
Moore Youth Center	City	Y	Hoyt Field
Moses Youth Center	City	Y	Sennott Park
Russell (West Cambridge) Youth Center	City	N	Glacken Field, Fresh Pond Reservation

Map 5.4: Cemeteries

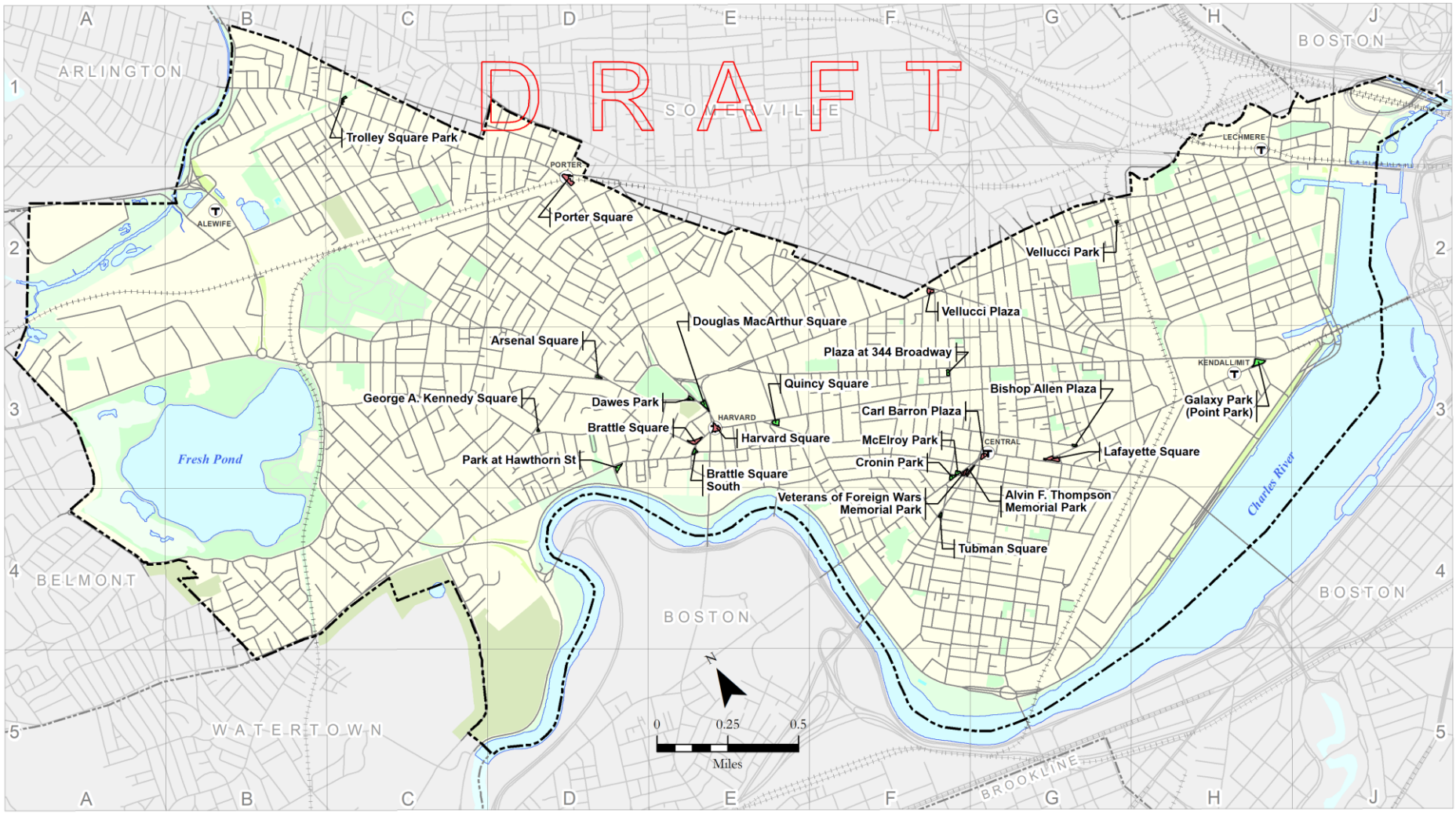


Sources: Cambridge CDD; Cambridge GIS; MassGIS.

Table 5.6: Cemeteries

Name	Location	Ownership	Acres
Cambridge Cemetery	76 Coolidge Ave	City of Cambridge	62.1
Mt. Auburn Cemetery	580 Mt Auburn St	Private	40.3
North Cambridge Catholic Cemetery	244 Rindge Ave	Private	6.9
Old Burying Ground	1456 Massachusetts Ave	City of Cambridge	2
Town of Belmont Cemetery	121 Fairview Ave	Public (non-City)	12.1

Map 5.5: Plazas and Pocket Parks



Sources: Cambridge CDD; Cambridge GIS; MassGIS.

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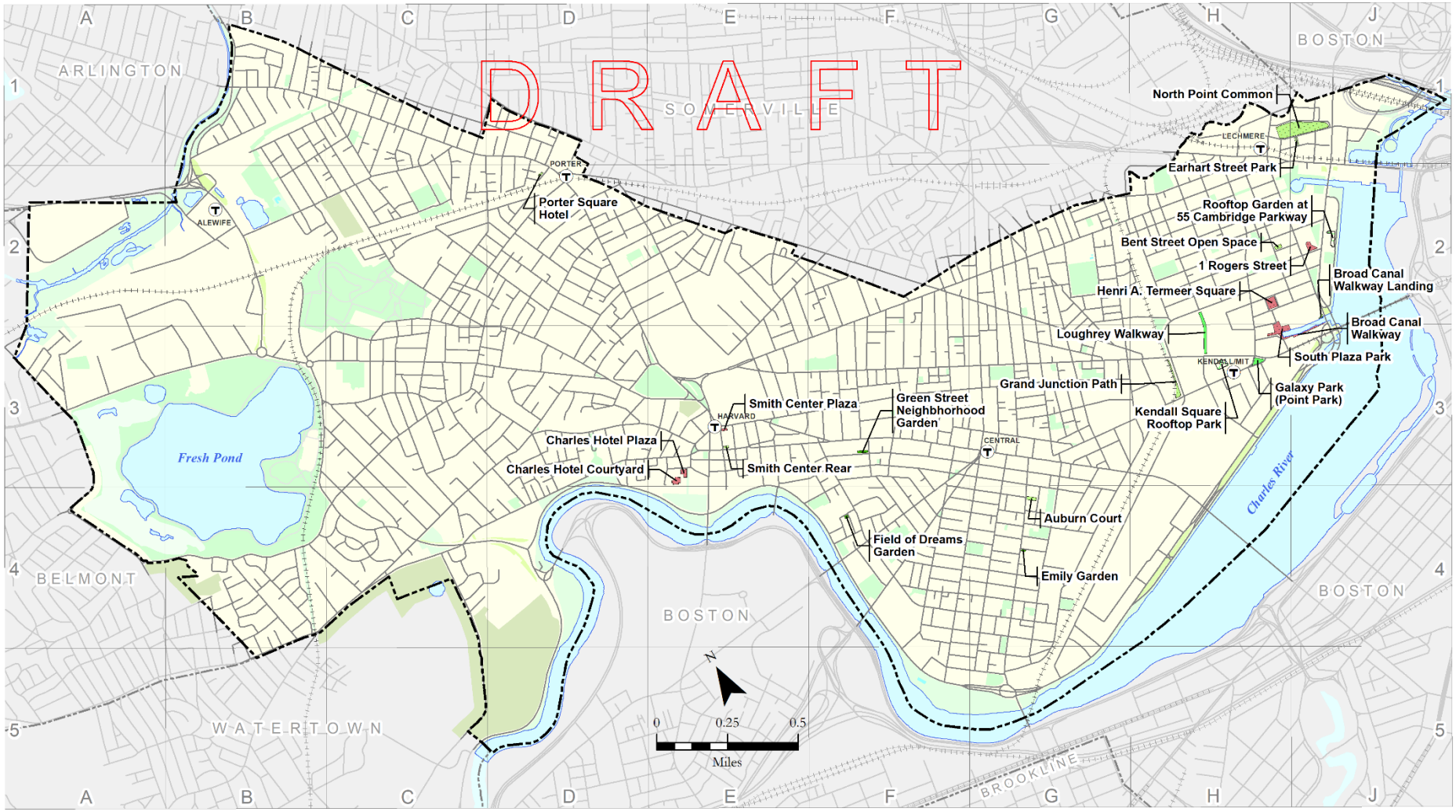
Table 5.7: Public Plazas and Pocket Parks

Name	Ownership	Acres	Type
Trolley Square Park	City	0.14	Pocket Park
Porter Square	State	0.43	Pocket Park
Arsenal Square	City	0.09	Pocket Park
George A. Kennedy Square	City	0.05	Pocket Park
Dawes Park	City	0.13	Pocket Park
Douglas MacArthur Square	City	0.22	Pocket Park
Park at Hawthorn St	City	0.19	Pocket Park
Vellucci Plaza	City	0.21	Plaza
Harvard Square	City	0.32	Plaza
Brattle Square	City	0.30	Plaza
Millers River Park	City	0.06	Pocket Park
Quincy Square	City	0.23	Pocket Park
McElroy Park	City	0.11	Pocket Park
Cronin Park	City	0.15	Pocket Park
Veterans of Foreign Wars Memorial Park	City	0.16	Plaza
Tubman Square	City	0.08	Pocket Park
Bishop Allen Plaza	City	0.06	Pocket Park
Lafayette Square	City	0.37	Plaza
Galaxy Park (Point Park)	Cambridge Redevelopment Authority/City	0.39	Pocket Park
Carl Barron Plaza	City	0.17	Plaza
Plaza at 344 Broadway	City	0.11	Pocket Park
Brattle Square South	City	0.12	Pocket Park
Alvin F. Thompson Memorial Park	City	0.13	Plaza

Map 5.6: Selected Privately-Owned Public Spaces



Sources: Cambridge CDD; Cambridge GIS; MassGIS.

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Table 5.8: Selected Privately-Owned Public Spaces

Name	Ownership	Acres
Loughrey Walkway	Private	0.91
Charles Hotel Courtyard	Private	0.39
Smith Center Plaza	Private	0.10
Charles Hotel Plaza	Private	0.31
1 Rogers Street	Private	0.44
Rooftop Garden at 55 Cambridge Parkway	Private	0.47
Grand Junction Path	Private	0.57
Kendall Square Rooftop Park	Private	0.60
Broad Canal Walkway	Private	0.59
Auburn Court	Private	0.24
Henri A. Termeer Square	Private	0.77
The Common at Cambridge Crossing	Private	4.31
South Plaza Park	Private	1.16
Bent Street Open Space	Private	0.19
Earhart Street Park	Private	0.19
Broad Canal Walkway Landing	Private	0.07
Field of Dreams Garden	Private	0.09
Emily Garden	Private	0.06
Green Street Neighbhorhood Garden	Private	0.20
Smith Center Rear	Private	0.09
Porter Square Hotel	Private	0.09
Galaxy Park (Point Park)	Private	0.39

Section 6: Community Vision

Description of Process

The City of Cambridge conducted a broad multi-faceted community process to inform this update of the OSRP and establish an action plan.

As part of this process, the City conducted an extensive community engagement process to identify vision, goals, needs, and priorities that make up the action plan component of this work.

The City also conducted a technical Open Space Needs Assessment, building on the Envision Cambridge citywide planning process, to inform the identification of priority areas of open space need. This included a citywide examination of data to identify needs that existed within the City's network of existing parks and open spaces.

The City prepared a supplemental summary report to accompany this OSRP submission, with the goal of creating informational media that is more readily accessible to community members. This report is attached as an Appendix to this plan document submission.

The planning process was conducted in the context and ongoing effects of the COVID-19 pandemic, and consideration of safety and comfort of participants was critical in consideration of outreach and engagement methods used.

As such, some aspects of the planning process were conducted virtually. In addition, recordings of the meetings were made available with additional opportunities for participation, which provided an opportunity for those not able to attend the specific meeting times to participate in the process. As public health guidance evolved, in-person community engagement in outdoor settings was gradually incorporated alongside virtual opportunities in order to broaden outreach.

The community engagement process consisted of:

- **Four virtual community meetings**, which were also recorded and made available for viewing after the meeting occurrences
- **Multiple surveys** targeting different aspects of the plan. These included an introductory questionnaire, as well as targeted surveys at different phases of the planning process in order to get specific feedback on the specific phase of work.
- **Availability of virtual office hours** during the course of the project, in which community members had the ability to schedule appointments with project staff.
- **Outdoor in-person "pop-up"-style engagement events** in parks and open spaces around the city. Locations for these were informed by factors such as previous survey participation.
- **Focus group sessions** with young people at youth centers, as well as with ESOL (English for Speakers of Other Languages) students through the Community Learning Center
- **Presentations and outreach to neighborhood groups** as well as standing advisory committees.

Statement of Open Space and Recreation Goals

Through the community process outlined above, a community vision was established to guide the City's work in open space and recreation:

> *Cambridge's parks and open spaces are essential and interconnected spaces that welcome all members of our diverse community.*
>
> *Our parks and open spaces welcome people to engage in a wide variety of active or passive activities. In our parks and open spaces people can come to be together or spend time alone.*
>
> *Our parks and open spaces are inclusive and accessible places for gathering, relaxing, being active, and playing in well-maintained facilities, landscape, and nature.*
>
> *Our parks and open spaces foster culture and the arts, providing spaces for spectacle and performance to express and inspire peoples' creativity.*
>
> *Our parks and open spaces support our everyday quality of life and provide places and moments where memories are made.*

A series of themes and goals was developed through this process. These are expanded upon in the following chapters through the Analysis of Needs that led to the creation of these goals, and the ensuing Seven-Year Action Plan outlines recommended actions toward these goals.

Theme: Expanding and Improving Park Access for All

Goal A: Make parks and park programs welcoming for all

Goal B: Improve access to open space, with an emphasis in areas of high open space need

Goal C: Make it easier for people to get to and travel through our parks and open spaces in ways that are active and sustainable

Theme: Providing Environmental Benefits in an Urban Context

Goal D: Protect and enhance natural areas

Goal E: Use our parks and open spaces to make Cambridge more resilient to climate change. Design and program open spaces for a changing climate

Theme: Activating and Enhancing Public Spaces

Goal F: Promote healthy play and active recreation for people of all ages, abilities, genders, and backgrounds

Goal G: Increase active and passive activity in public spaces

Goal H: Make comfortable spaces where people can gather and connect

Goal I: Bring creativity, arts, and culture to parks and public spaces

Theme: Enhancing and Improving Design, Operations, and Management

Goal J: Build high-quality parks that embody our community's priorities and wide range of interests

Goal K: Aim to keep parks clean and keep equipment in working order. Improve how the City manages park maintenance

Goal L: Improve how we share information about parks and open spaces. Highlight opportunities for learning and community building

Section 7: Analysis of Needs

Summary of Resource Protection Needs

Resource protection needs include continued protection of water bodies and watershed areas that are part of the city's water supply. These include the Fresh Pond Reservation (which includes the Reservoir itself and surrounding open space areas) as well as water bodies and open spaces located within other municipalities.

Watershed, water bodies

- Fresh Pond Master Plan and Upcountry Water Supply Protection
- Jerry's Pond/Jerry's Pit to be restored via private development

Stormwater and water quality

- Water Quality and stormwater management
- Charles River, Alewife Brook

As noted in Section 5, the largely-developed nature of Cambridge means that a primary lens through which we consider open space and the City is strategic use of spaces embedded within the urban fabric. These include opportunities for rewilding or establishing native planting areas and pollinator plantings, or to leverage parks to improve water quality before it is returned to groundwater or waterways. This work is guided by the Resilient Cambridge and Healthy Forest, Healthy City (Urban Forest Master Planning) Initiatives.

Resilient Cambridge

The *Resilient Cambridge* planning effort included a climate change vulnerability assessment that modeled the risks to the City stemming from climate change in order to help the City prepare for these impacts. In particular risks relating to flooding as well as heat risk are areas in which parks and open spaces may play a role in mitigating impacts. This can include leveraging open spaces for stormwater management and flood protection, or designing spaces to help mitigate against extreme heat events.

Healthy Forest, Healthy City Initiative

The City undertook an Urban Forest Master Planning process to assess changes in tree canopy over time and guide practices and inform policy development in light of recent canopy loss. The benefits of a healthy urban tree canopy are multi-faceted. In addition to the intrinsic value that trees bring, they can also help to provide relief from—and mitigation against—climate change and its impacts. In particular, a lack of tree canopy is correlated with risk of higher temperatures (see **Map 4.7** and **Map 7.1**). The distribution of tree canopy across the city was another important finding in ensuring the equitable distribution of the benefits that trees can provide.

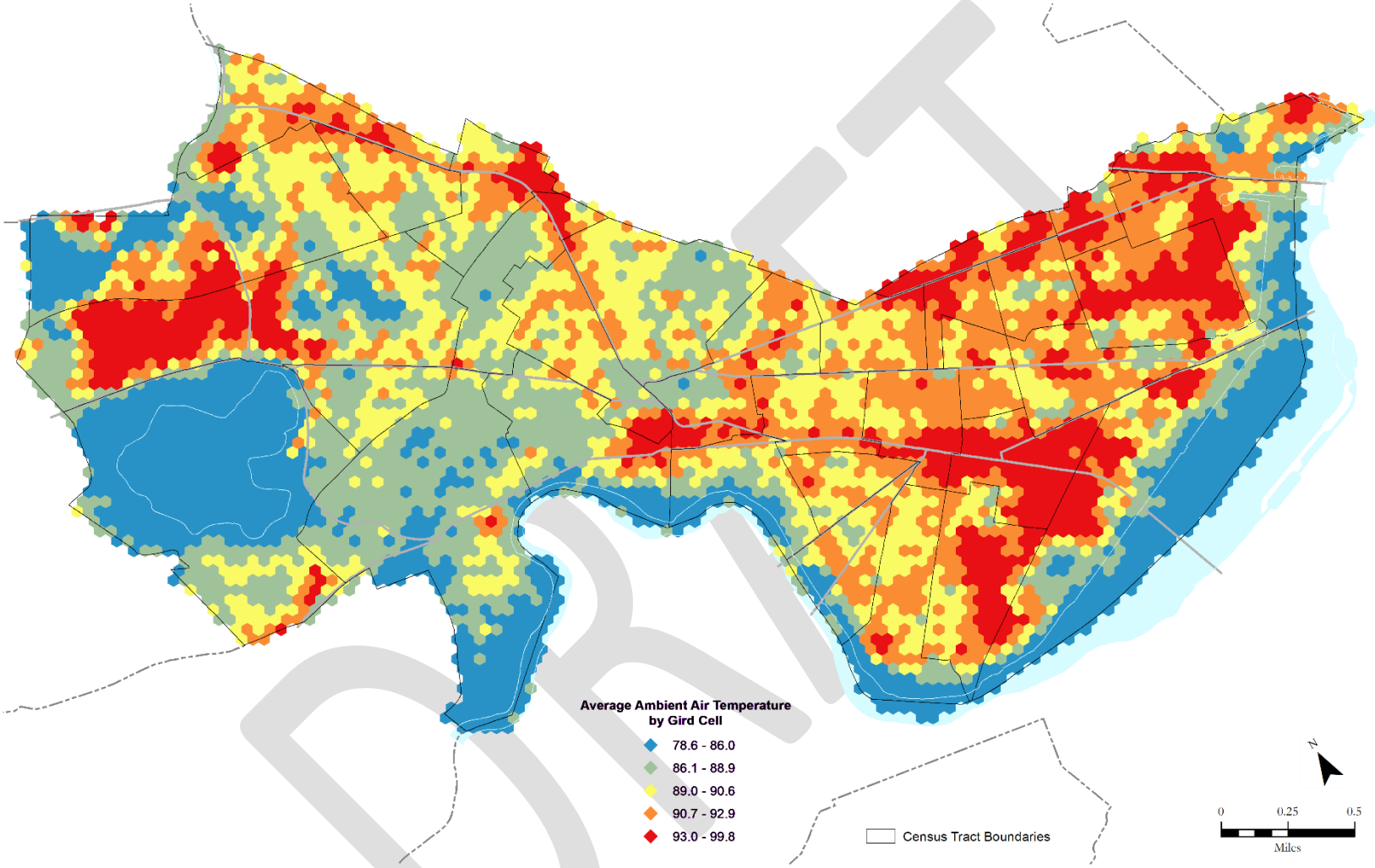
The findings from the process informed revisions to a recently-approved tree protection ordinance. They also informed revisions to planting lists for regular spring and fall tree planting conducted by the City, with an eye toward diversifying the city's plantings in light of a changing climate.

Summary of Community's Needs

The City's network of parks and open space is important community infrastructure, and also serves as space that the City can take direct action to meet community needs and advance City goals.

Cambridge does not exist in a vacuum, and many of the needs identified at the local level are in significant alignment with many of the goals and objectives outlined in the Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP). Common threads of ensuring park access for under-served populations, supporting trails, and protecting as well as leveraging water, and creating and supporting walkable neighborhood parks that serve their immediate neighbors are ingrained

Map 7.1: Urban Heat Island Effect



This map illustrates the relative effect of urban heat island, by illustrating the difference in ambient air temperature on a 90-degree day with 46% humidity. The areas that tend to be hotter are those that have less tree canopy, are further away from surface water, and where there are high levels of impervious surface. In addition to the locations of parks and open spaces, the design of parks can also have an impact on the relative comfort of being in those spaces.

(Source: Resilient Cambridge Plan, re-mapped for OSNA)

across the goals and actions identified through this planning process.

Several of the stated goals of MAPC MetroCommon 2050 plan (as well as preceding MetroFuture 2030 plan) are in substantial alignment with needs identified through this process as well. The City's park and open space network supports sustainable growth patterns and a healthy community, by locating and investing in spaces close to home that are avenues for community expression and character, for physical activity, for play, and for civic life. They can also serve critical ecological and environmental resilience functions in supporting biodiversity and as opportunity areas for localized actions toward climate change mitigation and preparedness.

At the local level, Envision Cambridge, the City's citywide planning process, is foundational in surfacing a series of community core values through the extensive community engagement process that were used as a starting point for the more specific work examination of open space through this planning process.

Open Space Needs Assessment

As a part of this planning process, the project team conducted an Open Space Needs Assessment to understand open space needs across the city through several topic area lenses.

The aim of this process was to understand different aspects of the concept of open space need—as well as potential disparities across the city.

The analysis consisted of community demographics, climate risk, and public health factors—and importantly, how these considerations may compound to impact different parts of the community differently.

Map 7.2 shows the summary results of the Needs Assessment, a composite map distilling areas of high open space need based on the assessment criteria. These indicate where these different open space needs compound, and priority areas where interventions to provide open space or the benefits that open spaces can provide, would be most impactful.

Critically and necessarily, this analysis was reinforced and expanded upon by learnings from the community engagement process for this planning process, which helped to further develop upon observations from this mapping work, as well as raise other open space priorities.

The following section summarizes prevailing community needs.

Expanding and Improving Access

Diversity and Equity, Sense of Belonging, and Welcoming Public Spaces

An important theme surfaced in this process is the importance of parks and open spaces that are welcoming to members of the community broadly. Eliminating barriers to use—which can be both physical as well as social—and increasing the diversity of public space activities and uses will help to maximize the utility of open spaces in our community.

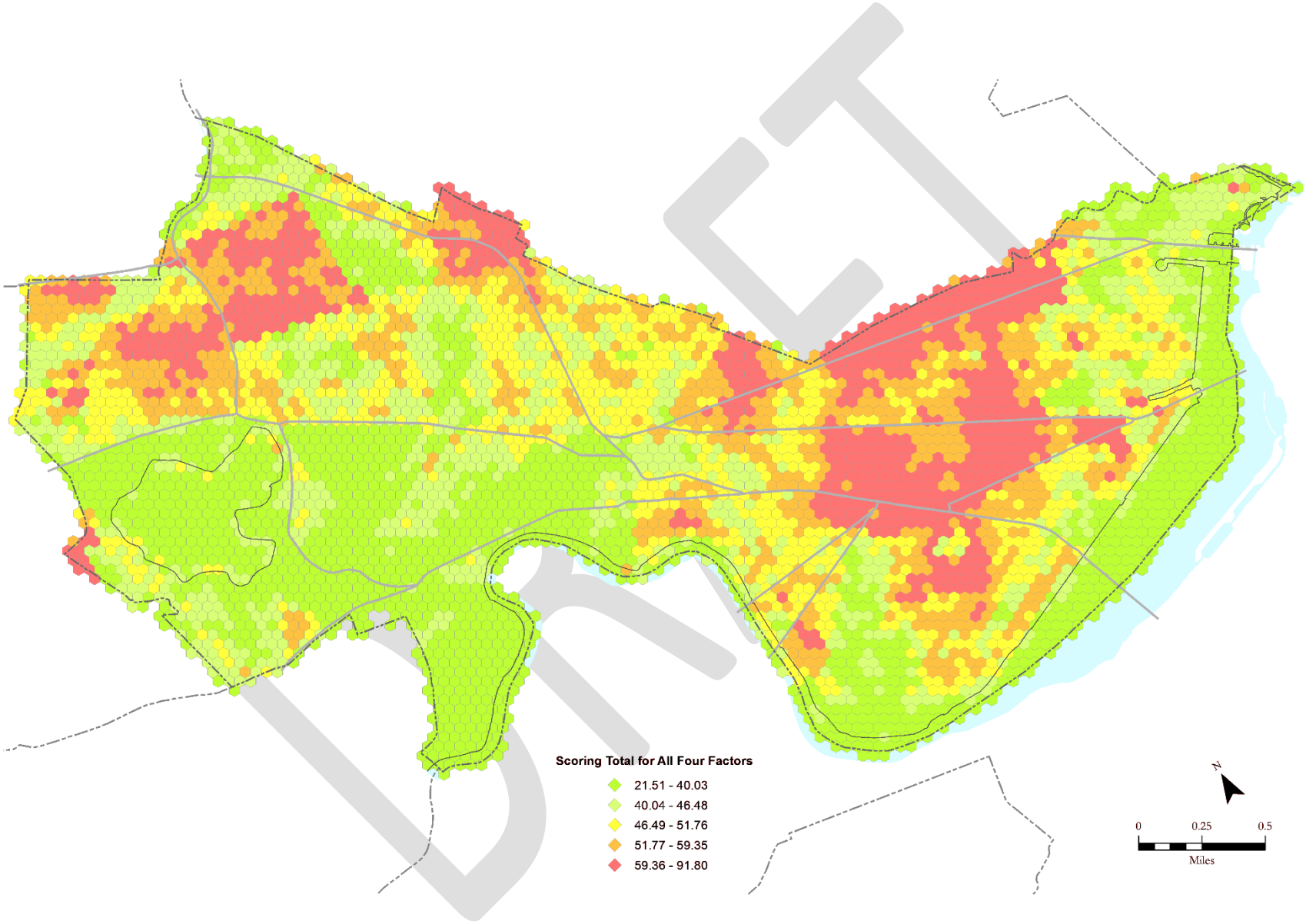
It is critical to not only assess barriers to park and open space access, but to ensure the design and operation of parks reflect the needs of the community at large, and work toward making our parks and open spaces actively welcoming to all.

Central to this is ongoing and intentional community engagement with historically under-heard and under-served members of our community.

Accessibility and Universal Design

As the City continues to implement park improvements and renovations, these projects provide an opportunity to ensure they are designed and constructed to meet current accessibility standards. One area to continue to build on is integrating inclusive design within parks and open spaces so that people with disabilities can enjoy

Map 7.2: Composite Open Space Needs Index (Areas of High Open Space Need)



parks alongside other users by designing guided by the principles of universal design.

The recently opened Louis A. DePasquale Universal Design Playground, located at Mayor Thomas W. Danehy Park, is a playground that centered universal design and inclusion in its design approach. The framework of universal design looks beyond accessibility requirements, and instead approaches public space design with the view that a space designed to be inclusive is a more usable space for all. Lessons learned from that project should be incorporated into future park improvements to ensure parks can be enjoyed by all users regardless of ability.

Open space expansion, acquisition, and access

Overall, residents enjoy a high level of access to open space, with nearly all residents in Cambridge living within half a mile (or approximately ten-minute walk), of a park or open space. However, largely due to historic development patterns, the distribution and amount of acreage people have access to varies significantly across the city.

Map 7.3 shows disparities in access to acreage, relative to both amount of acreage nearby, and as shown in **Map 7.4**, this disparity is amplified when taking into account population density.

Land acquisition is one mechanism to improve access to open space. Opportunities for land acquisition through purchase do arise from time to time; however, these are generally difficult to predict—and when they do arise, occur in a highly competitive development market. In instances where the City is able to acquire land, it must also be balanced with other community priorities as well, such as the need for other public facilities beyond open space.

Another mechanism that has been effective in expanding access to open space has been to leverage redevelopment. This has allowed for the creation both of new public parks, as well as Privately-Owned Public Spaces (POPS), spaces that though under private ownership have some level of guarantee of public access.

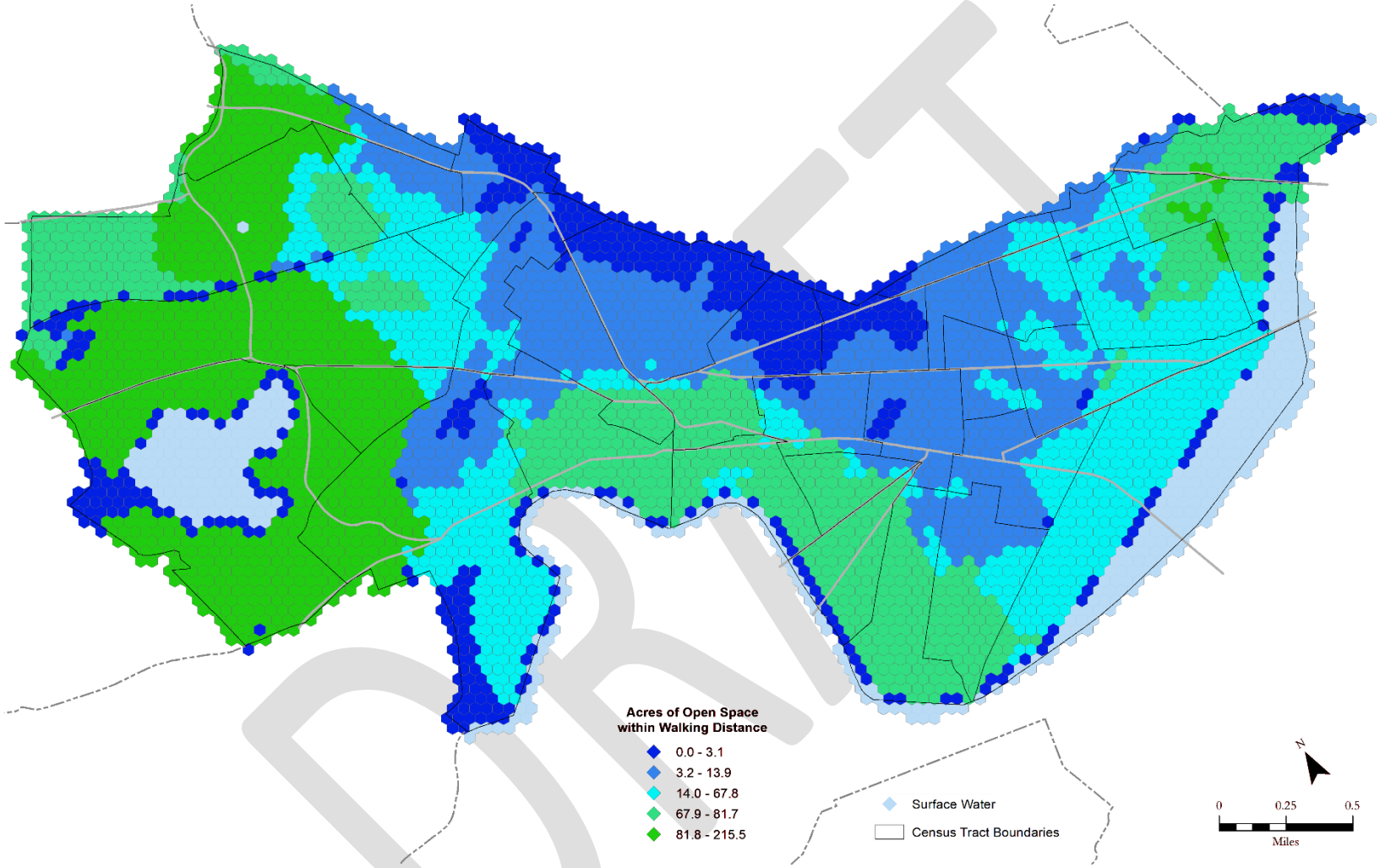
As areas undergo district-scale planning, and eventual redevelopment, this provides an opportunity to leverage one or more of these strategies in order to meet current and future open space needs. Recent or ongoing district planning initiatives in areas of high open space need include the Alewife Planning Study and subsequent rezoning process; the Mass Ave Planning Study focusing on Massachusetts Avenue north of the Cambridge Common; and the Central Square Rezoning Community Process, which builds upon the earlier Central Square Planning Study (C2) and Central Square City Lots Study.

Pocket Parks, Plazas, and Streetscape Activation

A significant portion of the City's public land is located within the public right-of-way. This area includes roadways, sidewalks and separated bicycle lanes—as well as plaza areas and pocket parks. Though smaller than most distinct park sites, these small sites can provide some of the same benefits that park spaces may bring—these can include spaces for respite or gathering, areas that can support small performances or activation, or areas that can support planting and landscaping. While they are not a complete substitute for the creation of park spaces, these opportunities do help to extend the benefits that parks can bring beyond park sites themselves.

As the City continues to implement roadway projects as part of its ongoing Street and Sidewalk Reconstruction program, we can continue to leverage opportunities to convert excess or underutilized right-of-way space to advance public realm and open space goals.

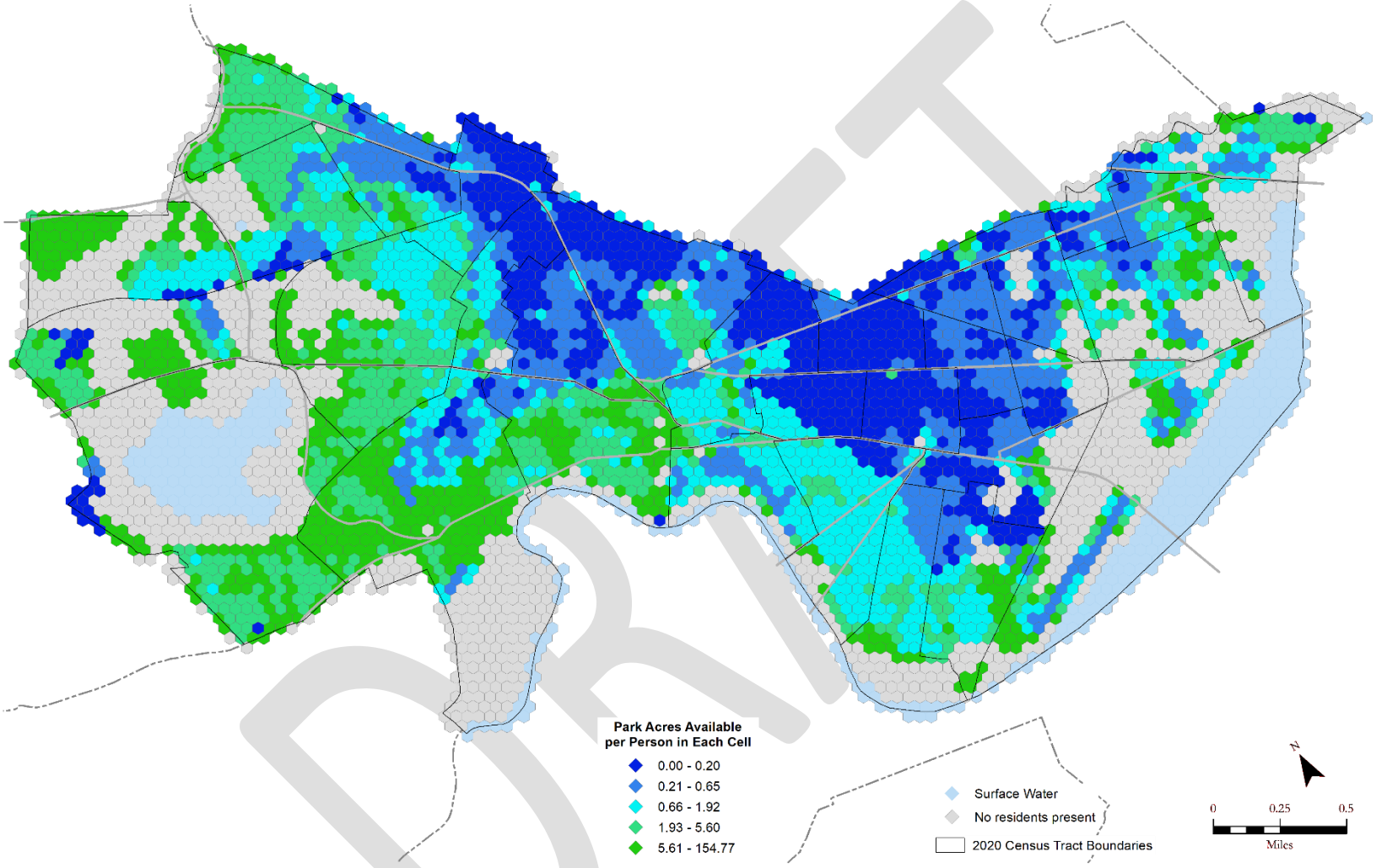
Map 7.3: Total Acres of Open Space within Walking Distance



This map shows access to total acreage of open space within walking distance of a grid cell. (Note, some cells located within open space areas, in proximity to water bodies, or within barriers such as railroads will display as having 0 acres of access. These cells are unpopulated and are identified separately).

(Data source: Cambridge GIS)

Map 7.4: Park Acres Available Per Resident



This map shows access to acreage of open space when factoring in population density. Unpopulated areas are omitted from this analysis. The areas in darker blue indicate where there are relatively fewer park acres available per person; what this indicates is that the amount of park acreage available in these areas must serve a wider range of uses, interests, and level of use. In much of this area, there is less total acreage to begin with, and this demand on park space is compounded in areas with relatively higher population density.

(Data source: Cambridge GIS, US Census Bureau)

Public Space Lab and Block Parties

The Cty's Public Space Lab initiative fosters community-building through partnerships and experimentation in the public realm. Initiatives include Play Streets, temporary street closures to transform them into places for play, learning, and fun; Public Patios, gathering spaces in commercial squares and corridors created in partnership with local businesses; as well as temporary public space activations such as the CloudHouse temporary shade pavilion.

The City's Block Party program also helps to support community-building and public space activation through the provision of funding and access to play equipment for these events.

Improving Access to Existing Open Spaces

Another strategy to improve access to park space is by creating or improving connections to already-existing spaces. Particularly where there are physical barriers or missing links to existing significant resources, these interventions can be as impactful as the creation of new spaces.

A feasibility study has been completed to inform the design of a pedestrian-bicycle bridge to Danehy Park across the Fitchburg Railroad tracks. This connection would provide a direct link from the North Cambridge neighborhood—and notably, a part of the City that contains two of the three Census tracts in which all three Environmental Justice criteria are met—to a significant regional recreation resource.

In addition, the existing methane vent trench located around the perimeter of Danehy Park may provide further opportunities for connections into the park.

Improvements to the City's off-road pathway network as well as streetscape improvements to support active modes of transportation help to make the journey to existing parks more comfortable for more users.

Supporting Community Well-Being and Social Resilience

Parks play a vital role in supporting social connections—an important aspect of community resilience—and the design and activation of spaces can help to support these functions of parks and open spaces. It is also important to note, that activity can and should happen in balance with the function of parks and open spaces as spaces for respite as well. By considering the scale of both individual spaces as well as the broader system of parks and open spaces in the city, different uses and interests can be balanced such that there are spaces that meet the variety of interests that community members have.

Active Recreation and Physical Activity

The City continues to support a variety of sports leagues and programs, which provide avenues not just for healthy physical activity, but also opportunities for forging and strengthening community bonds. Ongoing coordination with local leagues to understand needs and participation levels of existing established programs and sports, as well as collaboration with participants in emerging sports such as pickleball (as well as lawn games such as spikeball and informal volleyball matches) helps the City balance resources and spaces, in order to adapt field and court spaces such that new uses can be accommodated while still ensuring existing programs are not impacted.

Parks and open spaces can also support physical activity and healthy lifestyles outside of organized sports and programs. Design strategies such as including walking paths or outdoor workout equipment can help reduce barriers to integrating physical activity into everyday park use. Safe and

accessible pathways, particularly in reservation areas or larger landscaped areas, can provide opportunities for activity surrounded by nature.

As part of the Open Space Needs Assessment, a series of health factors based on demographic modeling and national-level prevalence data from the CDC's 500 Cities/PLACES initiative were mapped to understand where certain health conditions may be expected to be overrepresented in the city. Of particular interest to this study were those which physical activity may help reduce the risk, such as high blood pressure, diabetes, and obesity. By understanding where there may be higher population risk for certain health conditions, we can be attuned to where design or program interventions to encourage physical activity could be integrated into park and open space design and program offerings.

The Public Health Department will be undertaking a Physical Activity Assessment as part of its Community Health Improvement Plan (CHIP) to further understand barriers to physical activity that may be present, which can further inform strategies to encourage physical activity in parks.

Public Art, Programming, and Cultural Celebration

Parks and open spaces are an effective platform to celebrate arts, creativity, and culture. Bringing arts and culture to parks provides opportunities to celebrate the diversity of Cambridge, and to create a public realm that reflects Cambridge's unique character.

The City's Percent-for-Act Ordinance is one of the oldest in the nation. This ordinance requires at least 1% of capital projects for the creation of site-specific public art. The integration of artists into the design process for parks and open spaces help in shaping memorable spaces that reflect the uniqueness of the Cambridge community.

Performances such as musical or theatrical performances are also another avenue to bring arts into parks.

In addition to being avenues for art and cultural celebration, events and programs are focal points for community gathering. As the City renovates parks, and in particular larger-scale Neighborhood or Community Recreation Parks, incorporating the infrastructure such as access to power and water can help to further support community events.

Playful, Creative, and Comfortable Gathering Spaces

Outside of the formal integration of public art or programming, park design can also support playfulness and gathering. The City's work on Healthy Parks and Playgrounds continues to guide the design of park and playground spaces, conceiving of parks as multi-generational spaces that aim to meet a broad range of interests. Playfulness and creativity as expressed in the built environment and, like public art, contribute to shaping engaging, memorable places.

Cambridge community members value parks as spaces for gathering, and park amenities and nearby features that support comfort to enjoy parks for longer periods of time. This can include thermal comfort and incorporation of elements like shade structures, tree plantings, as well as access to restrooms and food or other amenities.

High Quality, Community-Informed Design

As parks undergo improvement or renovation processes, these are also opportunities for project planners to work with stakeholders to tailor these improvements to reflect current needs.

As parks and open spaces change over time, they also provide the opportunity to support park activities that are emerging in popularity, such as

dog parks and pickleball, though this happens in balance with continuing to provide facilities for existing users.

Ongoing and focused engagement work with historically underserved populations can help to ensure that as our park system undergoes gradual change through capital improvements, that the park uses reflect the interests and needs of the community broadly.

In addition to engagement around specific park projects or initiatives relating to open space, initiatives such as the Neighborhood Planning Initiative help to align citywide goals and interests at the neighborhood level with capital improvements planning.

Participatory Budgeting

The City's Participatory Budgeting process, now in its 11th cycle, is another regular opportunity for residents to provide creative ideas for public spaces, and a window into emerging trends and ideas to consider as the City continues to improve open spaces.

Management Needs, Potential Change of Use

Planning and Coordination

Functions relating to parks and open space are housed across several departments and divisions within the City. The interdepartmental staff Open Space Committee meets regularly to ensure ongoing coordination of projects, initiatives, long range open space planning, and other matters relating to parks and open space. This coordination is critical to ensure parks and open spaces continue to meet the needs of the Cambridge community.

Capital Improvements Planning

As a part of this planning process, staff evaluated the conditions and ages of parks and park equipment in order determine priority park projects for larger scale renovation rather than targeted repairs.

These parks typically feature equipment that are nearer to end of useful life, and feature infrastructure and systems that are not in line with current standards.

Priority park sites are indicated in **Section 9, Seven Year Action Plan, under Goal J**.

Operations and Maintenance Needs

The effective upkeep and maintenance of parks helps to ensure that these resources are available for the public to enjoy.

The integration of a digital issue reporting system Commonwealth Connect (powered by SeeClickFix), has helped to support park maintenance operations. This helps to focus resources on issues as they arise. The Parks Division is in the process of transitioning to a digital asset management system that will further assist in upkeep of equipment.

The continued implementation of network-enabled park infrastructure such as waste and recycling stations help to improve efficiency of park maintenance activities. Additional systems such as smart pest control systems help to provide data and responsiveness, while web-connected irrigation systems help to conserve water by remotely controlling whether watering is needed based on factors such as recent weather.

More diverse park plantings also come with more complex maintenance regimes. As the City increases the use of more naturalistic planting approaches that support pollinators, different maintenance practices and expertise will be

needed to support these spaces, particularly in their initial establishment.

*Public **Information** and Active Participation in Parks*

Efforts toward improving communications around parks and park programs and process can help residents and community members more fully enjoy existing park resources.

Throughout the community engagement for this process, one of the emergent themes was the opportunity for public information to enable people to better connect with open space and recreation resources. This includes tailoring web resources that are interactive and easy to use, as well as making it easier to discover and participate in events and programming in parks. This can also include a broader range of information resources, such as information guides and print materials, and working to provide access to information in other languages.

Another theme was opportunities for people to engage or participate with the City's parks system, as avenues for learning and civic engagement. This can also take the form of providing on-ramps and opportunities for volunteerism and engagement, with parks as a vehicle for supporting community life and civic participation.

Section 8: Goals and Objectives

To support our community vision, a set of goals was established across a wide range of areas relating to open space. The twelve goals are organized into four categories:

Theme: Expanding and Improving Park Access for All

Goal A: Make parks and park programs welcoming for all

Objectives:

- Continue community engagement around parks and open space, with intentionality toward underrepresented groups
- Work to eliminate barriers to enjoyment of parks and open space

Goal B: Improve access to open space, with an emphasis in areas of high open space need

Objectives:

- Monitor for ways to expand open space network, including acquisition opportunities, leveraging private development, or reuse of publicly-owned land
- Evaluate feasibility of improving connections where there are physical barriers to park access
- Explore opportunities to provide additional benefits of open spaces through use of existing City land

Goal C: Make it easier for people to get to and travel through our parks and open spaces in ways that are active and sustainable

Objectives:

- Improve facilities at parks to support active modes such as bicycling and walking
- Continue implementation of off-road bicycle network and other bicycle network plan projects to make an active journey to parks safe and appealing

Theme: Providing Environmental Benefits in an Urban Context

Goal D: Protect and enhance natural areas

Objectives:

- Protect Cambridge's watershed areas and balance resource protection needs with recreational access

Goal E: Use our parks and open spaces to make Cambridge more resilient to climate change. Design and program open spaces for a changing climate

Objectives:

- Design parks and open spaces to reduce our impact on climate change
- Increase resilience through the design and operations of parks and open spaces

Theme: Activating and Enhancing Public Spaces

Goal F: Promote healthy play and active recreation for people of all ages, abilities, genders, and backgrounds

Objectives:

- Encourage parks design that encourages healthy and active recreation
- Design memorable and engaging spaces through creative and playful design

Goal G: Increase active and passive activity in public spaces

Objectives:

- Continue to provide a variety of park programming such as performances and community events
- Encourage and support community-led events in open spaces

Goal H: Make comfortable spaces where people can gather and connect

Objectives:

- Incorporate elements that support community-building in parks

Goal I: Bring creativity, arts, and culture to parks and public spaces

Objectives:

- Integrate public art into public spaces to reflect the creativity and diversity of Cambridge
- Leverage programming and the arts to support community life

Theme: Enhancing and Improving Design, Operations, and Management

Goal J: Build high-quality parks that embody our community's priorities and wide range of interests

Objectives:

- Conduct inclusive community processes around park design and leverage neighborhood planning and other long-term planning processes to inform changes to the City's park network over time
- Emphasize creativity in park design to create distinctive and memorable park spaces
- Continue to evaluate park and open space practices including new and emerging uses for consideration into our parks

Goal K: Aim to keep parks clean and keep equipment in working order. Improve how the City manages park maintenance

Objectives:

- Continue to leverage technologies to support park maintenance
- Improve coordination with agencies that control land in Cambridge to ensure they best serve public needs

Goal L: Improve how we share information about parks and open spaces. Highlight opportunities for learning and community building

Objectives:

- Make it easier for people to learn about and engage with parks
- Leverage parks and open spaces as assets in community-building

Specific actions following these goals are detailed in the subsequent chapter of this report.

Section 9: Seven-Year Action Plan

The tables in this section detail actions the City will be undertaking to work toward the goals identified as a part of this planning process. Recommendations are listed under individual goals; however, many actions also relate to multiple goals.

Goal A: Make parks and park programs welcoming for all

ID	Action		Type	Lead Agency	Timeline
A-1	Expand community engagement with underserved groups about parks and open spaces.		Public information and Community Engagement	City (Community Development)	Ongoing
	A-1.1	Pilot a youth engagement program/partnership to continue engagement with young people about parks.	Programs and practices	City (Community Development)	Medium-Term
A-2	Continue to prioritize Universal Design principles, and inclusive park design.		Design guidelines/best practices	City (Community Development)	Ongoing
	A-2.1	Develop universal design best practices and inclusive design guidelines, and apply to park design.	Planning study or process	City (Community Development)	Near-Term
	A-2.2	Identify possible locations for additional Universal Design parks and playgrounds that emphasize universal design principles in design.	Study	City (Community Development)	Medium-Term
A-3	Continue targeted capital improvements to improve park and open space accessibility.		Capital Improvements	City (Community Development)	Ongoing
A-4	Encourage language access and multi-lingual access to park information.		Programs and practices	City (Community Development, Department of Human Services)	Ongoing
A-5	Prioritize inclusive park design and avoid defensive architecture.		Design guidelines/best practices	City (Community Development)	Ongoing

A-6	Encourage new and existing privately owned public spaces (POPS) to provide signage clearly indicating public access.	Programs and practices	City (Community Development)	Ongoing
A-7	Work with new Community Safety Department on park and open space safety.	Programs and practices	City (Community Development)	Ongoing
A-8	Review park lighting practices to help nighttime safety.	Programs and practices	City (Community Development, Electrical Department)	Medium-Term
A-9	Evaluate barriers to park and open space enjoyment on an ongoing basis.	Public information and community engagement	City (Community Development)	Ongoing
A-10	Explore how design and management of parks can help serve people who are experiencing homelessness. Collaborate with the Cambridge Multi-Service Center on community engagement with people who are experiencing homelessness.	Public information and community engagement	City (Community Development)	Ongoing

Goal B: Improve access to open space, with an emphasis in areas of high open space need

ID	Action		Type	Lead Agency	Timeline
B-1	Look for opportunities to acquire existing or create new open space, particularly in areas of high open space need per the Open Space Needs Assessment:		Programs and practices	City (Community Development)	Ongoing
	B-1.1	Central Square	Planning study or process	City (Community Development)	Ongoing
	B-1.2	Porter Square	Planning study or process	City (Community Development)	Ongoing
	B-1.3	The Port	Planning study or process	City (Community Development)	Ongoing
	B-1.4	Inman/Wellington-Harrington/Cambridge Street	Planning study or process	City (Community Development)	Ongoing

B-2	Evaluate feasibility of off-road path connections to parks and open spaces.		Planning study or process	City (Community Development)	Ongoing
	B-2.1	Evaluate feasibility of connection across tracks near Rindge Ave and Danehy Park.	Planning study or process	City (Community Development)	Near-Term
	B-2.2	Study feasibility of an off-road path connection between Alewife Brook Parkway and Sherman Street.	Planning study or process	City (Community Development)	Near-Term
	B-2.3	Study feasibility of Fitchburg path to Porter Square and Alewife station.	Planning study or process	City (Community Development)	Medium-Term
B-3	Advance zoning recommendations in Alewife Quadrangle area to create public open space.		Zoning, Land Use, and Development Review	City (Community Development)	Near-Term
B-4	Continue to work with private developers and community groups to expand access to public or publicly accessible open space.		Zoning, Land Use, and Development Review	City (Community Development)	Ongoing
	B-4.1	Continue to work with private developers and community groups to expand access to public or publicly accessible open space at Jerry's Pond.	Zoning, Land Use, and Development Review	City (Community Development)	Near-Term
B-5	Explore feasibility of pocket parks and similar smaller spaces through right-of-way recapture.		Capital improvements	City (Community Development)	Ongoing
B-6	Evaluate creating an additional public entrance to Rafferty Park.		Capital Improvements	City (Community Development)	Near-Term
B-7	Evaluate opportunities for Danehy Park vent trench area.		Planning study or process	City (Community Development)	Near-Term
B-8	Evaluate reuse of vacant or underutilized City-owned property for temporary park spaces.		Land acquisition/conversion	City (Community Development)	Ongoing
	B-8.1	Create a temporary park space where Grand Junction crosses Cambridge Street	Land acquisition/conversion	City (Community Development)	Near-Term

Goal C: Make it easier for people to get to and travel through our parks and open spaces in ways that are active and sustainable

ID	Action	Type	Lead Agency	Timeline
C-1	Expand access to Bluebikes stations in and near parks.	Programs and practices	City (Community Development)	Ongoing
C-2	Continue implementation of Bicycle Network Vision.	Capital improvements	TPT, DPW, CDD	Ongoing
C-3	Continue development of off-road multi-use paths.	Capital Improvements	TPT, DPW, CDD	Ongoing
C-3.1	Continue development of Grand Junction Multi-Use Path.	Capital Improvements	TPT, DPW, CDD	Near-Term
C-3.2	Continue development of Danehy-New Street Connector.	Capital Improvements	TPT, DPW, CDD	Near-Term
C-4	Continue development of walking loops and paths within parks and open spaces. Include seating and other amenities along the path.	Capital Improvements	Community Development	Ongoing
C-5	Ensure availability of bicycle parking in and near parks.	Capital improvements	Community Development	Ongoing
C-5.1	Adhere to bicycle parking guidelines when renovating parks.	Capital Improvements	Community Development	Ongoing
C-5.2	Include parking for different styles of bikes such as cargo bikes.	Capital Improvements	Community Development	Ongoing
C-6	Explore wayfinding opportunities in and near parks.	Planning study or process	Community Development	Ongoing
C-7	Locate seating along streets, sidewalks, and paths that provide connections to parks.	Capital Improvements	TPT, DPW, CDD	Ongoing

Goal D: Protect and enhance natural areas

ID	Action	Type	Lead Agency	Timeline
D-1	Continue to implement recommendations from the Fresh Pond Master Plan.	Capital Improvements	Water Department	Ongoing

	D-1.1	Continue the Black's Nook Restoration Project.	Capital Improvements	Water Department	Near-Term
	D-1.2	Continue the Huron Pine Grove Restoration Project.	Capital Improvements	Water Department	Near-Term
	D-1.3	Continue the Kingsley Park Slope Stabilization and Accessibility Improvements Project.	Capital Improvements	Water Department	Near-Term
D-2	Develop resources and/or programs that leverage parks, open spaces, and natural areas for nature-based learning.		Programs and practices	Community Development	Ongoing
D-3	Plant and maintain landscaped areas to support natural habitats. This includes planting more pollinator gardens, using a naturalized planting approach, and shifting to a more natural maintenance regime.		Programs and practices	Community Development	Ongoing
D-4	Where feasible, leverage parks and open spaces to improve water quality through green and grey infrastructure.		Capital Improvements	Community Development	Ongoing
D-5	Establish and strengthen partnerships with non-City organizations to steward natural areas.		Partnerships	Community Development	Ongoing

Goal E: Use our parks and open spaces to make Cambridge more resilient to climate change. Design and program open spaces for a changing climate

ID	Action	Type	Lead Agency	Timeline
E-1	Continue to implement the Urban Forest Master Plan (2020). Focus on planting more trees in low-canopy neighborhoods.	Programs and practices	City (Public Works)	Ongoing
E-2	Evaluate and expand access to park and playground amenities that can provide relief from heat, such as splash pads, pools, and shade structures.	Capital improvements	City (Community Development)	Ongoing
E-3	Design large-scale parks and open spaces to help with stormwater management.	Capital improvements	City (Public Works)	Ongoing
E-4	Prioritize use of porous materials in new park construction and renovation.	Capital improvements	City (Public Works)	Ongoing
E-5	Leverage parks as resilience hubs. Design parks and develop a system to use our parks to support residents and coordinate resource distribution and services before, during, or after a natural disaster or other emergency situations.	Programs and practices	City (Community Development, Public Health)	Ongoing

	E-5.1	Explore using parks to host temporary climate-related relief, such as pop-up shade and cooling centers.	Programs and practices	City (Community Development)	Ongoing
	E-5.2	Identify the role of open spaces in emergency situations.	Programs and practices	City (Community Development)	Ongoing
	E-5.3	Evaluate feasibility of pop-up waterplay activities to help keep people cool during extreme heat.	Programs and practices	City (Community Development)	Ongoing

Goal F: Promote healthy play and active recreation for people of all ages, abilities, genders, and backgrounds

ID	Action	Type	Lead Agency	Timeline
F-1	Continue to offer and support a variety of recreational programming.	Programs and practices	City (Human Service Programs)	Ongoing
F-2	Continue to support and organize recreational programming that is accessible to all. Continue recreation programs such as The Cambridge Program that focus on serving people with disabilities.	Programs and practices	City (Human Service Programs)	Ongoing
F-3	Help people engage in sports locally by continuing to collaborate with sport groups and creating spaces that can be used for multiple types of recreation.	Programs and practices	City (Human Service Programs)	Ongoing
F-4	Continue to encourage play in the public realm and playful urban design.	Programs and practices	City (Community Development)	Ongoing
F-5	Design places to encourage play for people of all ages, especially adults and teenagers.	Design guidelines/best practices	City (Community Development)	Ongoing
F-6	Design parks to encourage a variety of types of play.	Capital Improvements	City (Community Development)	Ongoing
F-6.1	Determine the feasibility of an adventure playground.	Planning study or process	City (Community Development)	Ongoing

F-7	Design parks to encourage physical activity for a variety of people and park users.		Capital improvements	City (Community Development)	Ongoing
	F-7.1	Continue to collaborate with Cambridge Public Health Department and other partners to encourage physical activity.	Programs and practices	City (Community Development)	Ongoing
	F-7.2	Design spaces and include equipment that encourage physical activity, such as workout equipment and walking paths.	Capital improvements	City (Community Development)	Ongoing
	F-7.3	Develop programs to encourage physical activity for a variety of people and park users.	Programs and practices	City (Community Development)	Near-Term
	F-7.4	Work with Public Health Department to evaluate access to physical activity.	Programs and practices	City (Community Development)	Ongoing

Goal G: Increase active and passive activity in public spaces

ID	Action	Type	Lead Agency	Timeline
G-1	Continue Street Performer Program, Summer in the City, and other Arts Council programs and events.	Programs and practices	City (Arts Council)	Ongoing
G-2	Continue Danehy Park Day, Screen on the Green, other Recreation programs and events.	Programs and practices	City (Recreation)	Ongoing
G-3	Continue and expand Cambridge Plays program.	Programs and practices	City (Community Development)	Ongoing
G-4	Continue and expand Play Streets program.	Programs and practices	City (Community Development)	Ongoing
G-5	Develop toolkit and resources for residents and community groups to organize activities in public spaces.	Programs and practices	City (Community Development)	Ongoing
G-6	Explore feasibility of activation of Riverbend Park.	Partnership	City (Community Development)	Ongoing

G-7	Explore feasibility of a grant program to support community-led activities in parks and open spaces.	Programs and practices	City (Community Development)	Ongoing
G-8	Conduct community engagement to assess neighborhood-specific interest in different types of events in parks and open spaces.	Public information and community engagement	City (Community Development)	Ongoing

Goal H: Make comfortable spaces where people can gather and connect

ID	Action	Type	Lead Agency	Timeline
H-1	Continue Public Space Lab projects and programming.	Programs and practices	City (Community Development)	Ongoing
H-2	Explore a framework for small business program to provide for limited vending in certain parks.	Policy change	City (Community Development)	
H-3	Provide more restroom access in and near our parks and open spaces.	Planning study or process	City (Community Development)	Ongoing
H-4	Explore ways to increase food access in and near parks.	Programs and practices	City (Community Development)	Medium-Term
H-5	Design and program parks for four seasons of use.	Programs and practices	City (Community Development)	Ongoing
H-5.1	Use canopies, trees, and other shade structures to provide shade in the summer and sun in the winter.	Capital improvements	City (Community Development)	Ongoing
H-5.2	Develop winter programming, and support winter use.	Programs and practices	City (Community Development)	Ongoing
H-6	Make it easier for people to gather and host events in our parks by improving our park permitting system.	Programs and practices	City (Community Development)	Ongoing

Goal I: Bring creativity, arts, and culture to parks and public spaces

ID	Action	Type	Lead Agency	Timeline
I-1	Collaborate with Arts and Culture staff to integrate art and performance in parks.	Programs and practices	City (Cambridge Arts and Community Development)	Ongoing
I-2	Continue City-led arts programming such as Summer in the City, dance and performance workshops, and temporary public art.	Programs and practices	City (Cambridge Arts)	Ongoing
I-3	Prioritize funding for arts and creative programming in parks and public spaces.	Funding	City (Open Space Committee)	Ongoing
I-4	Design and renovate parks to facilitate community events, cultural festivities, and programming.	Capital improvements	City (Community Development)	Ongoing
I-4.1	Site utilities (power, water, etc.) within parks in places that facilitate community events and programming.	Capital improvements	City (Public Works and Community Development)	Ongoing
I-4.2	Explore feasibility of creating dedicated performance spaces.	Planning study or process	City (Cambridge Arts and Community Development)	Medium-Term
I-5	Use public art and the artmaking process as community engagement for park and open space planning and design.	Programs and practices	City (Cambridge Arts and Community Development)	Ongoing
I-6	Continue to encourage a diversity of designers, artists, and landscape architects in public art projects.	Programs and practices	City (Cambridge Arts and Community Development)	Ongoing
I-7	Partner with Cambridge Arts to publish a directory of parks most suitable for community cultural events.	Programs and practices	City (Cambridge Arts and Community Development)	Ongoing
I-8	Encourage unique, creative, and memorable park design. Incorporate art into the design process.	Design guidelines/best practices	City (Community Development)	Ongoing

Goal J: Build high-quality parks that embody our community's priorities and wide range of interests

ID	Action	Type	Lead Agency	Timeline
J-1	Continue program of park improvements through renovations or targeted improvements in parks:	Capital improvements	City (Open Space Committee)	Ongoing
	Raymond Park	Capital improvements	City (Open Space Committee)	Near-Term

		Rafferty Park	Capital improvements	City (Open Space Committee)	Near-Term
		Danehy Park/St Peter's Field/Garden St Glen	Capital improvements	City (Open Space Committee)	Ongoing
		Hoyt Field	Capital improvements	City (Open Space Committee)	Near-Term
		Wilder-Lee Park	Capital improvements	City (Open Space Committee)	Near-Term
		Old Longfellow School (359 Broadway)	Capital improvements	City (Open Space Committee)	Near-Term
		Dana Park	Capital improvements	City (Open Space Committee)	Medium-Term
		Lopez Park	Capital improvements	City (Open Space Committee)	Medium-Term
		Maple Avenue Playground	Capital improvements	City (Open Space Committee)	Medium-Term
		Paine Park	Capital improvements	City (Open Space Committee)	Medium-Term
		Larch Road Park	Capital improvements	City (Open Space Committee)	Medium-Term
		Kennedy-Longfellow School Playground	Capital improvements	City (Open Space Committee)	Long-Term
		Market Street Park	Capital improvements	City (Open Space Committee)	Long-Term
		Reverend Williams Park	Capital improvements	City (Open Space Committee)	Long-Term
		Comeau Field and Playground Area	Capital improvements	City (Open Space Committee)	Long-Term
J-2		Continue to evaluate and adapt park uses to popular demands and emerging trends.	Planning study or process	City (Open Space Committee)	Ongoing
	J-2.1	Use findings from the Needs Assessment and community engagement to inform park design.	Planning study or process	City (Open Space Committee)	Ongoing
	J-2.2	Where appropriate, design spaces that can accommodate multiple uses.	Planning study or process	City (Community Development)	Ongoing
	J-2.3	When designing parks, consider incorporating uses that are increasing in popularity (e.g., Pickleball and other emerging uses)	Planning study or process	City (Open Space Committee)	Ongoing

	J-2.4	Leverage Neighborhood Planning Initiative (NPI) Action Planning process to review program-level concepts across open spaces in residential neighborhoods.	Planning study or process	City (Community Development)	Ongoing
J-3	Conduct a community process around changes to the off-leash dog program and improve education and messaging about where and when dogs can be off leash.		Programs and practices	City (Open Space Committee)	Near-Term
J-4	Continue to expand access to gardening, including maintenance and accessibility improvements, shared/communal gardening approaches, or volunteer stewardship opportunities in landscape areas.		Programs and practices	City (Open Space Committee)	Ongoing
	J-4.1	Fence and gate repairs at Maher Garden at Fresh Pond Reservation	Capital Projects	City (Open Space Committee)	Near-Term
	J-4.2	Planter bed replacements at Costa Lopez Taylor	Capital Projects	City (Open Space Committee)	Near-Term
	J-4.3	Accessibility and retaining wall improvements at Peggy Hayes Memorial Garden	Capital Projects	City (Open Space Committee)	Near-Term
	J-4.4	Accessibility improvements at Emily Garden	Capital Projects	City (Open Space Committee)	Medium-Term
	J-4.5	Improvements to Watson St Lot	Capital Projects	City (Open Space Committee)	Medium-Term
J-5	Develop design guidelines for privately owned public spaces (POPS).		Design guidelines/best practices	City (Community Development)	Near-Term
J-6	Seek to have diverse design and construction teams on all park and open space projects.		Programs and practices	City (Open Space Committee)	Ongoing

Goal K: Aim to keep parks clean and keep equipment in working order. Improve how the City manages park maintenance

ID	Action	Type	Lead Agency	Timeline
K-1	Continue use and promotion of Commonwealth Connect for reporting park maintenance needs.	Programs and practices	City (Public Works)	Ongoing
K-2	Develop detailed database of park furnishings.	Programs and practices	City (Open Space Committee)	Ongoing

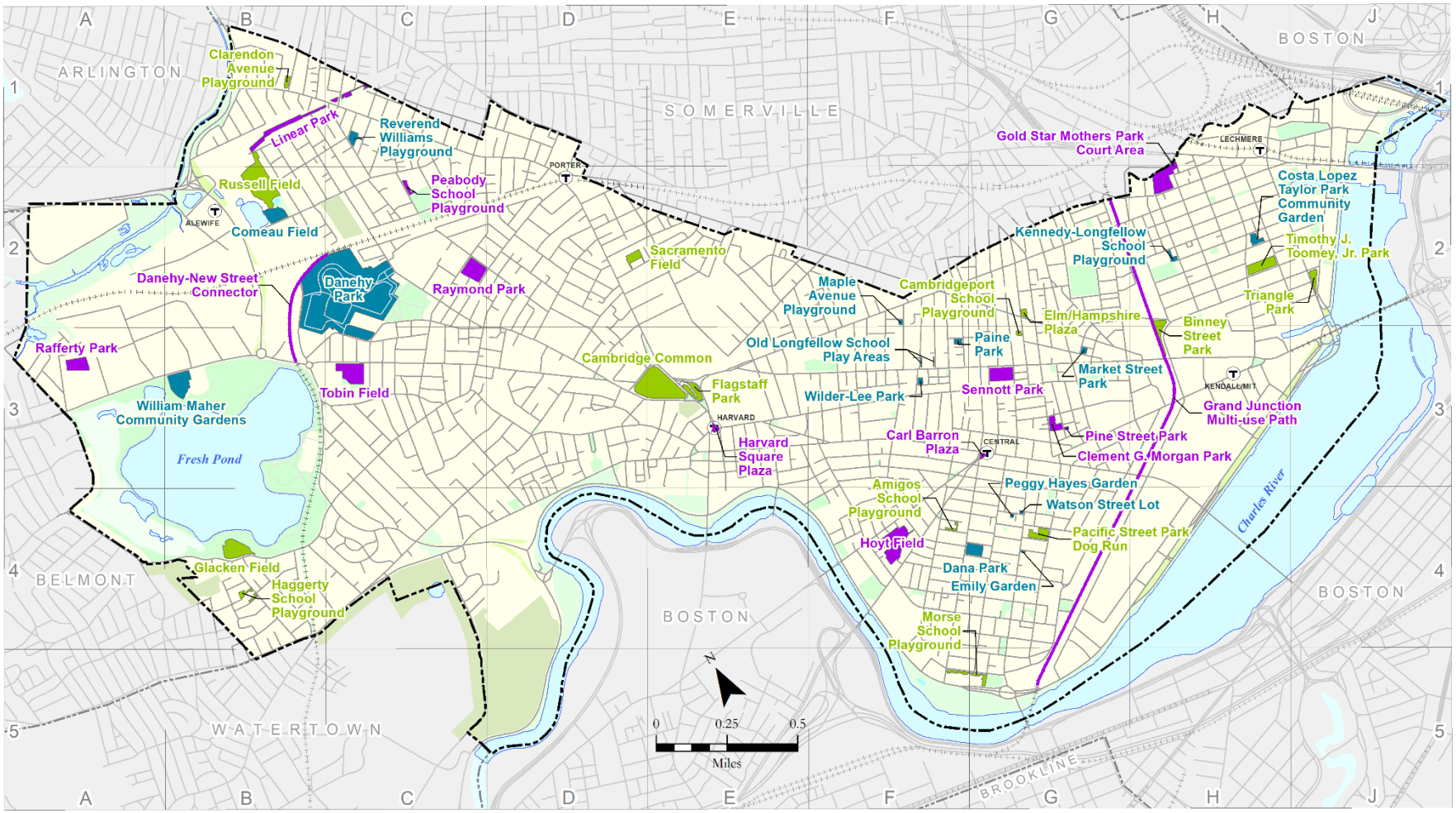
K-3	Increase our capacity to maintain innovative and unique parks.	Programs and practices	City (Public Works)	Ongoing
K-4	Establish a system to coordinate with the Massachusetts Department of Conservation and Recreation (DCR) about open space.	Partnerships	City (City Manager's Office)	Ongoing
K-5	Continue implementation of "smart" devices to improve park operations (such as network-enabled irrigation, trash/recycling, and rodent control).	Programs and practices	City (Public Works)	Ongoing
K-6	Identify opportunities for increasing access to storage for maintenance needs, and for park programs and other temporary uses.	Planning study or process	City (Open Space Committee)	Ongoing

Goal L: Improve how we share information about parks and open spaces. Highlight opportunities for learning and community building

ID	Action	Type	Lead Agency	Timeline
L-1	Expand and improve information on the City's online calendar about public events in City parks.	Public information and community engagement	City (IT)	Ongoing
L-2	Improve parks website and interactive parks maps.	Public information and community engagement	City (Community Development)	Medium Term
L-3	Identify opportunities for community members who want to engage/volunteer with local parks.	Public information and community engagement	City (Community Development)	Ongoing
L-3.1	Develop framework for "Adopt-a-Plant Bed" pilot program or "Friends of… " groups.	Programs and practices	City (Community Development)	Medium Term
L-3.2	Use the Public Space Lab to foster community involvement in re-imagining, improving, and activating public spaces.	Public information and community engagement	City (Community Development)	Ongoing
L-4	Encourage learning about parks, and use parks to support learning.	Public information and community engagement	City (Community Development)	Ongoing

L-4.1	Identify opportunities to work with schools and youth-serving organizations to connect parks and learning.	Public information and community engagement	City (Community Development)	Ongoing
L-4.2	Find creative and well-designed ways to share information about parks on-site (e.g., signage)	Programs and practices	City (Open Space Committee)	Ongoing
L-4.3	Find creative and interesting ways to share information and stories about our parks (e.g. social media posts about art in parks)	Public information and community engagement	City (Community Development)	Ongoing

Map 9.1: Action Plan Recommendations



Sources: Cambridge CDD; Cambridge GIS; MassGIS.

Seven-Year Action Plan
- Recently Completed
- In Progress
- Plan Recommendations

Section 10: Public Comments

(Reserved)

Section 11: References

(Reserved)

List of Maps and Tables

[Reserved for Appendices]

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