

Summary Review

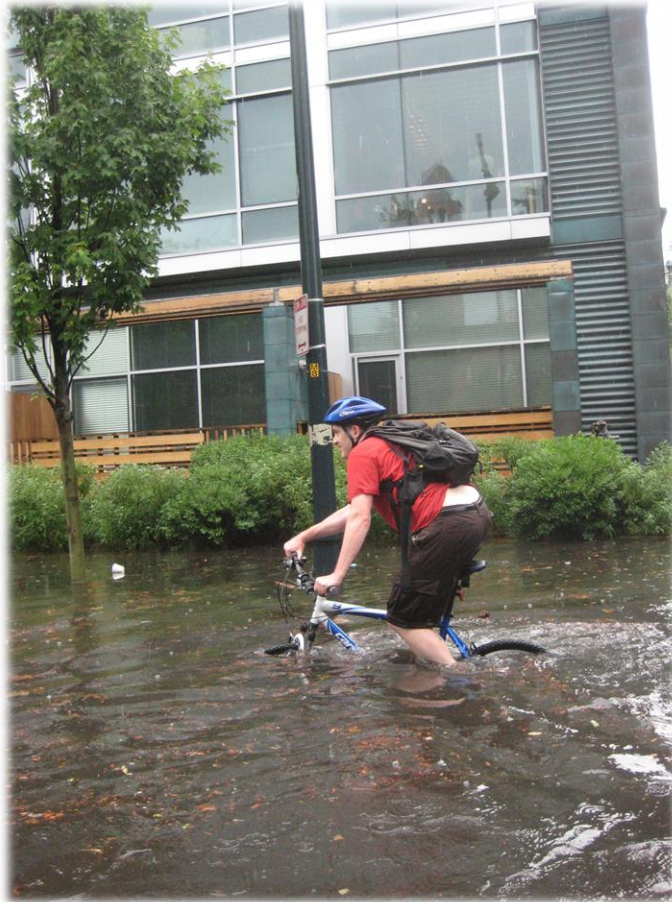
FLOODING

Task Force Meeting

April 24, 2019



What is the risk to residents/neighborhood?



Green St & Sidney Place, July 10, 2010



Intersection of Bishop Allen Dr & School St, July 10, 2010 Storm

Risk is a function of both Probability AND Impact

Probability

- 10% Flood (10-Year Storm)
- 1% Flood (100-Year Storm)
- 0.2% Flood (500-Year Storm)

Impact (People & \$\$)

- Basement Storage
- Inexpensive playroom
- Office with critical docs
- Kid's bedroom
- Entire living space
indoor air quality
- Critical utilities
- Regional infrastructure



Design Standards

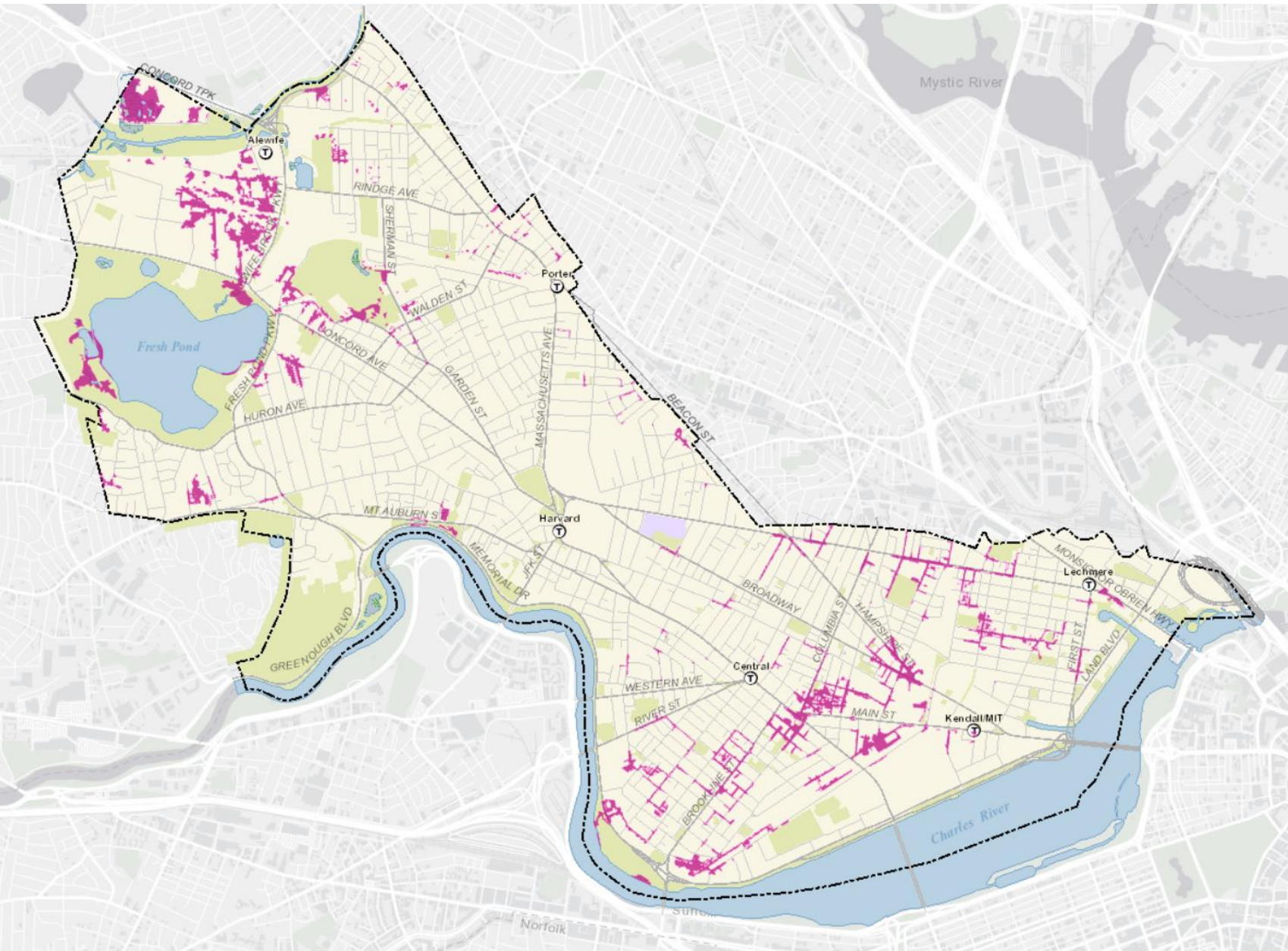
City Infrastructure: Traditionally much of system only had capacity for a 2 year storm. Designing to 10 year design, 25 year, if cost effective. Over the last number of years have shifted to 2030 and now 2070 design storms.

Private property – no requirements, unless in FEMA floodplain. This only covers a small portion of the city (2% of properties).
Remainder of the City, no requirement or standard.

Water Treatment plant, power station, dam, etc. – design to higher level standard – 100 year or 500 year.



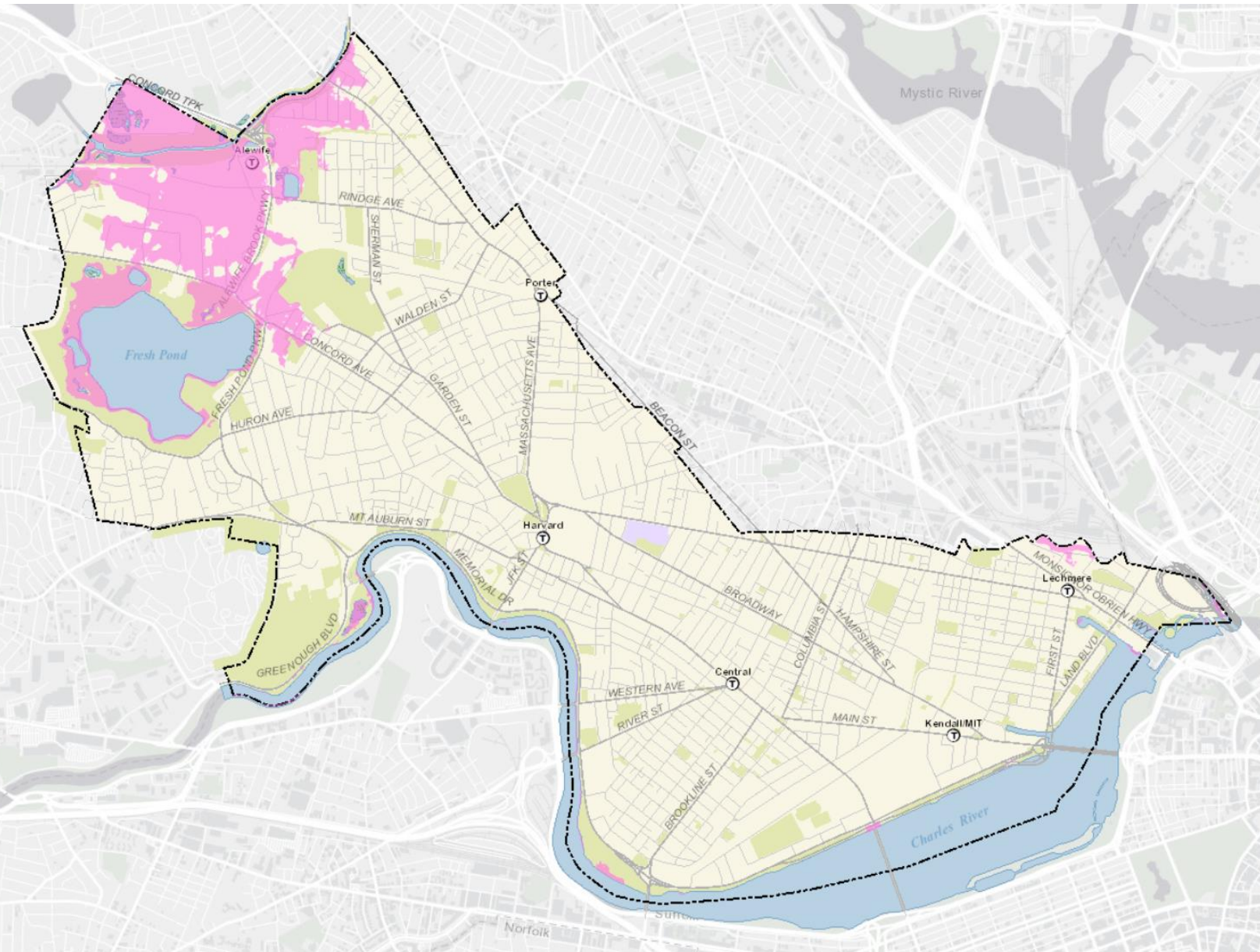
2070 10% Precipitation Flood



Precipitation 10% Chance
in any given year

- 17% of Properties

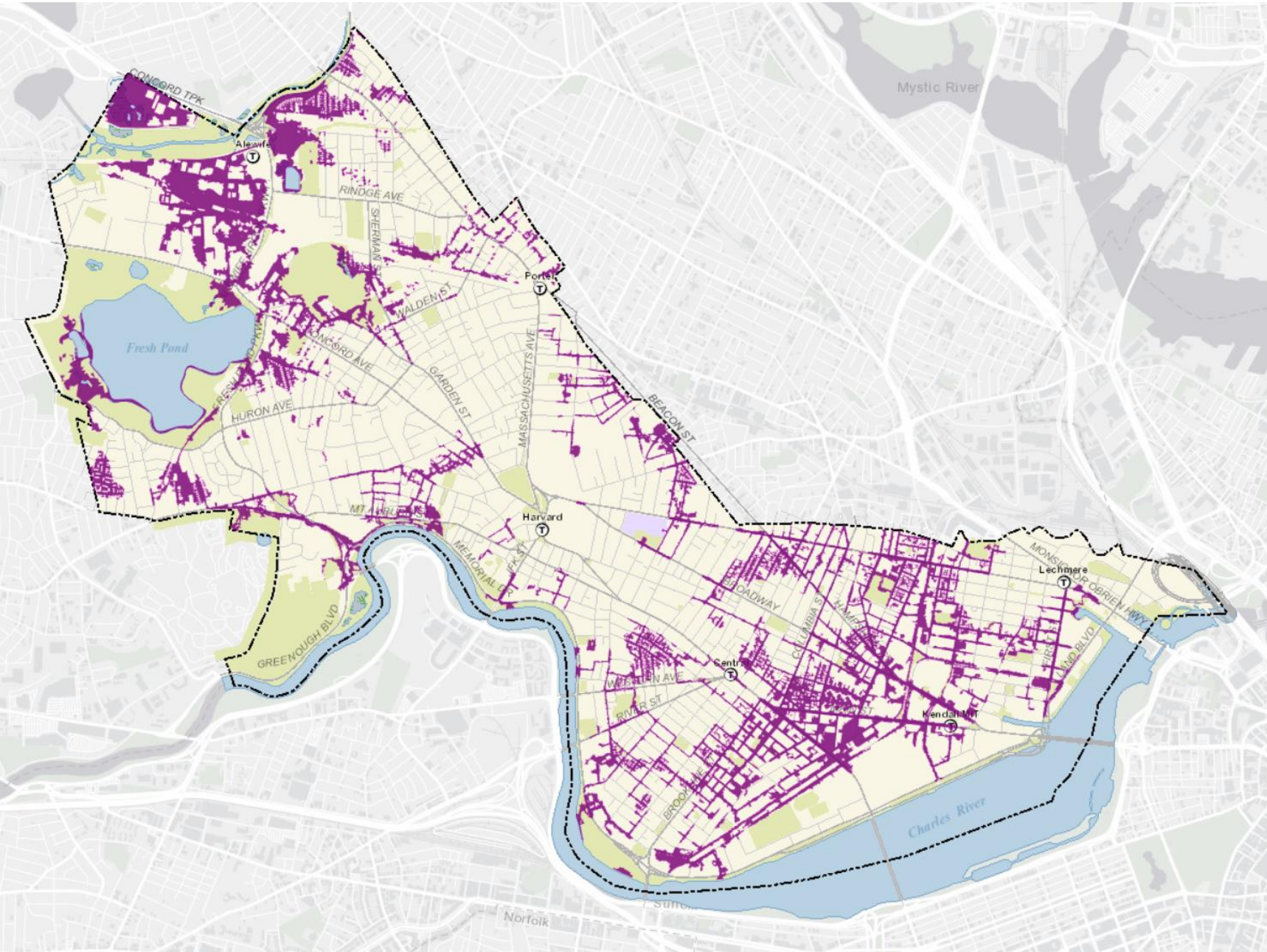
2070 10% SLR / SS Flood



SLR / SS 10% Chance in any given year

- 4% of Properties

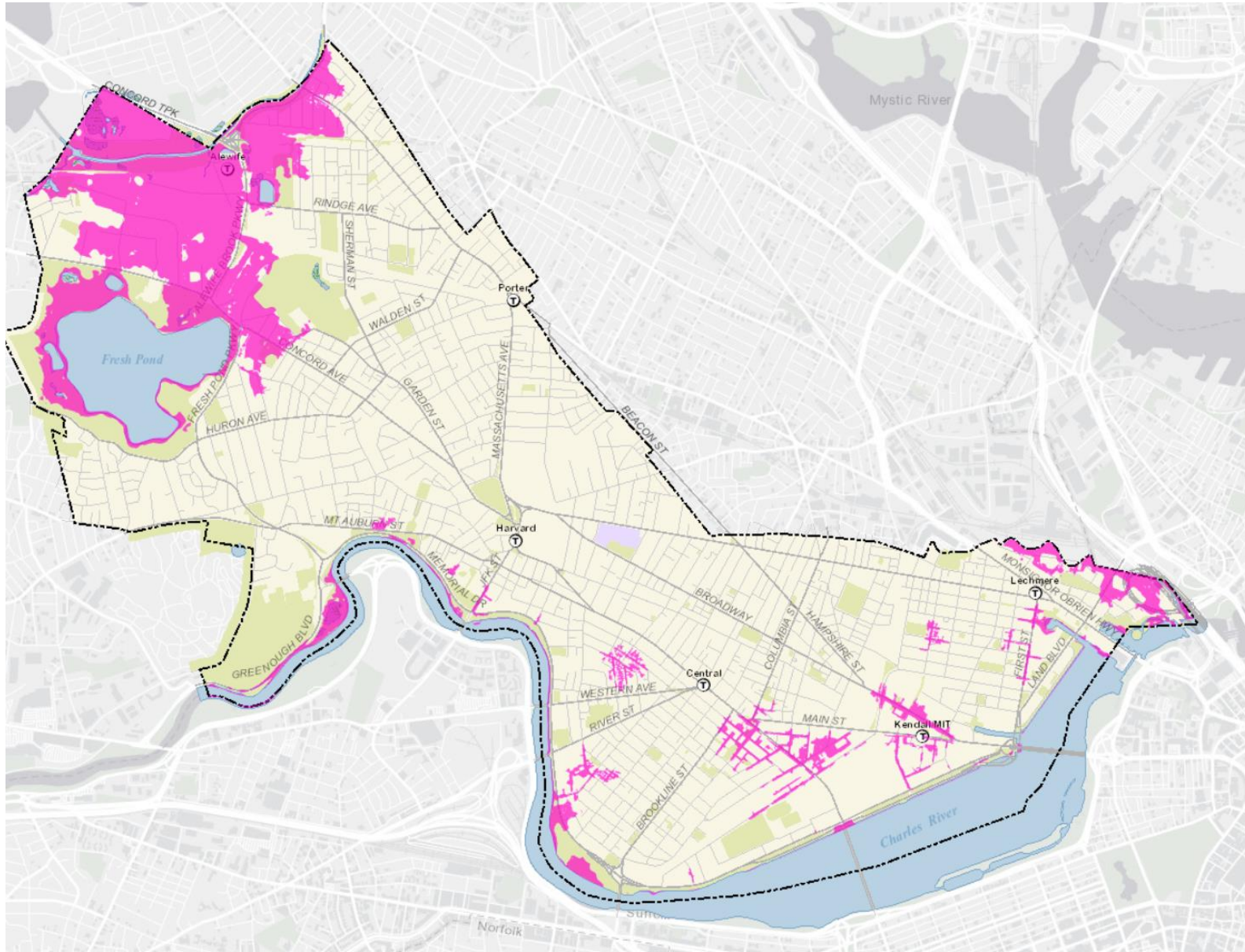
2070 1% Precipitation Flood



Precipitation 1%
Chance in any given
year

- 47% of Properties

2070 1% SLR / SS Flood



SLR / SS 1% Chance in any given year

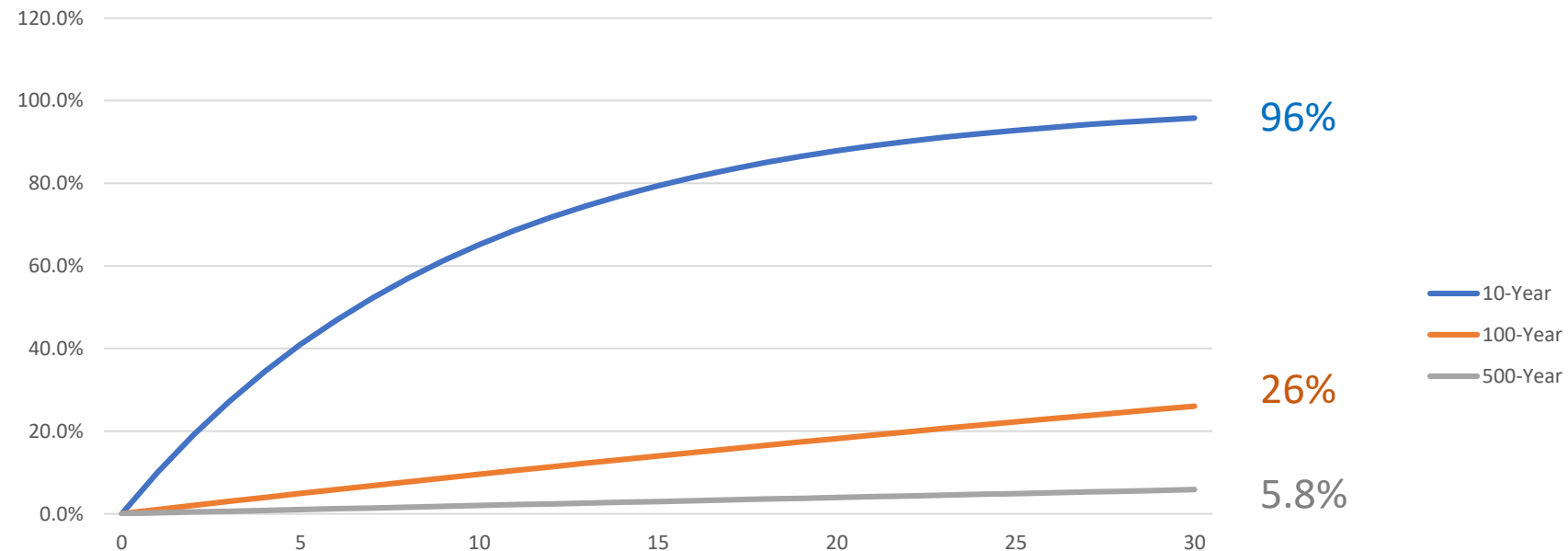
- 7% of Properties

PROBABILITY

- 10% Flood (10-Year Storm)
- 1% Flood (100-Year Storm)
- 0.2% Flood (500-Year Storm)

30 Year Cumulative Risk

Cumulative Risk of Experiencing 2070 10-Yr, 100-Yr and 500-Yr Flooding Over 30 Years



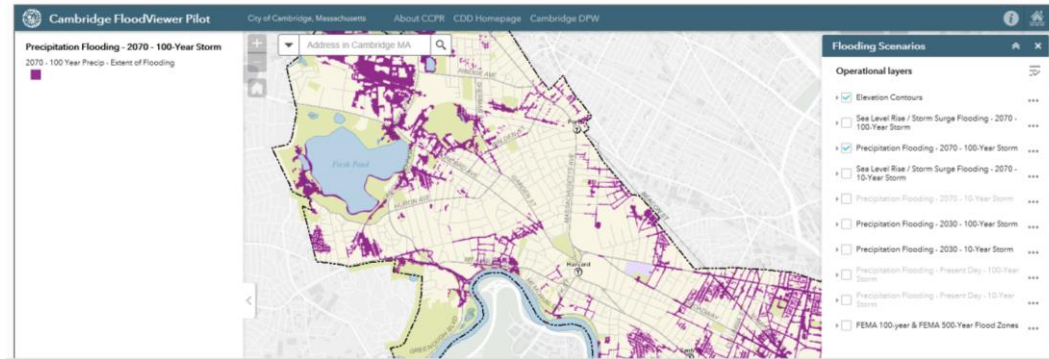
Current City Flood Protection Guidance

Cambridge FloodViewer – Accessible Flood Extent & Elevation Data

UNDERSTANDING FLOOD RISKS & PROTECTING YOUR PROPERTY

Public Works

Use this tool to help understand the risk of flooding to your property and how to protect against it. The Flood Viewer has been developed as an informational tool for the Cambridge community to assess climate change threats from flooding and to prepare for it by implementing specific strategies. The City is in the process of developing a practical guide for climate change preparedness and resilience. It is recognized that projected flood information presented in the Flood Viewer are based on climate change scenarios that are drawn from the best available science but involve ranges of uncertainty. The provided flood information will need to be revisited frequently to ensure that our community preparedness efforts continue to reflect updated projections specific to local climate change. Please contact FloodViewer@cambridgema.gov with questions or help using the map.



Address: 197 Vassal Ln
Map-Lot: 260-80

FloodViewer
 City of Cambridge, MA

(Elevations in ft-CCB¹) Flood Elevation Data

Minimum Ground Elevation:	16.9
Maximum Ground Elevation:	28.6
2070 100-Year SLR/SS Flooding:	22.5
2070 100-Year Precipitation Flooding:	24.1
2070 10-Year SLR/SS Flooding:	22.1
2070 10-Year Precipitation Flooding:	22.6
2030 100-Year Precipitation Flooding:	23.9
2030 10-Year Precipitation Flooding:	22.2
Present Day 100-Year Precipitation Flooding:	23.5
Present Day 10-Year Precipitation Flooding:	21.9
FEMA 100-year Flood Elevation:	N/A
FEMA 500-year Flood Elevation:	22.4



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Use this tool to help understand the risk of flooding to your property and how to protect against it.

Learn more at:
CambridgeMA.gov/FloodViewer

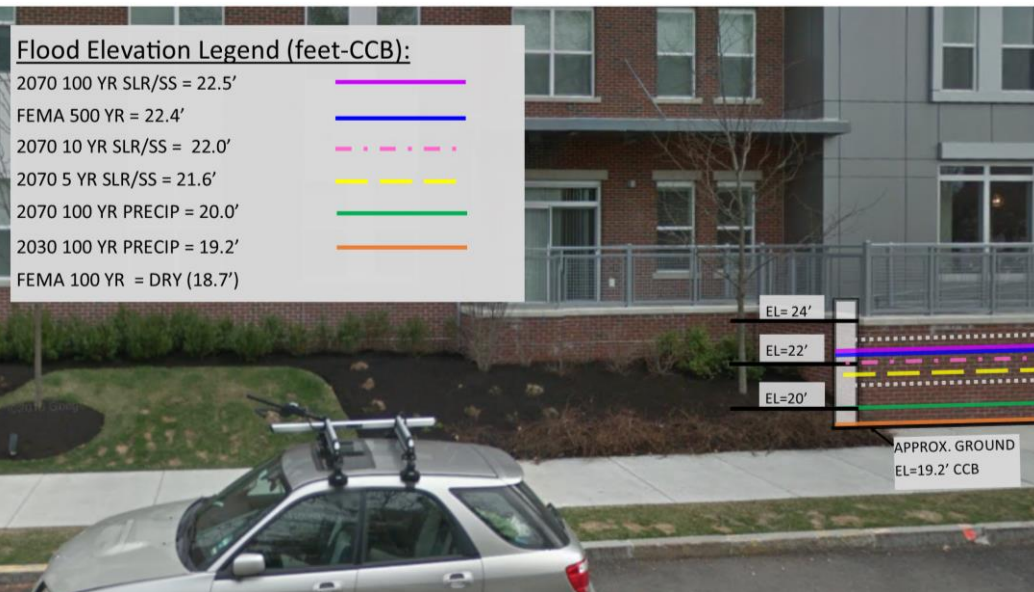
Cambridge Design Flood Elevation Guidance

- Build/protect to 2070 10% annual risk
- Recover from 2070 1% annual risk

Flood Elevation Legend (feet-CCB):

2070 100 YR SLR/SS = 22.5'	
FEMA 500 YR = 22.4'	
2070 10 YR SLR/SS = 22.0'	
2070 5 YR SLR/SS = 21.6'	
2070 100 YR PRECIP = 20.0'	
2030 100 YR PRECIP = 19.2'	
FEMA 100 YR = DRY (18.7')	

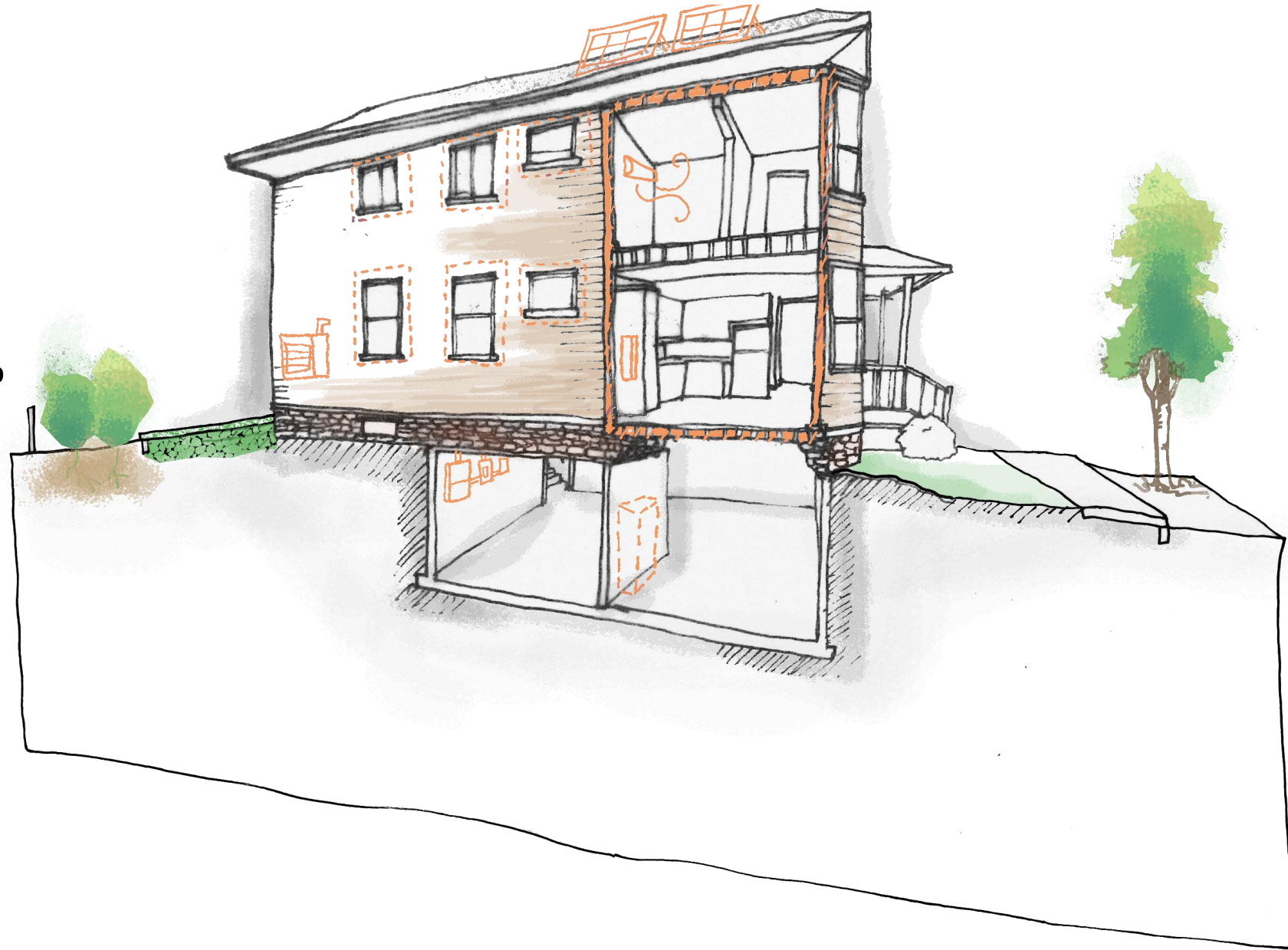
Selected Parcel Buildings Parcel Boundary Extent of Flooding - 2070 - 100-Year Precip



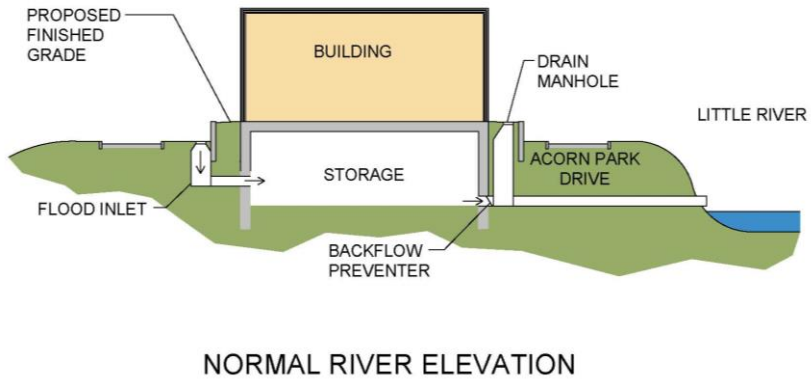
Tool Box: Buildings

1. Build / protect from 2070 10% Flood Elevation.

1. Recover from 2070 1% Flood.
Elevate utilities and critical infrastructure above 2070 1% Flood Elevation.



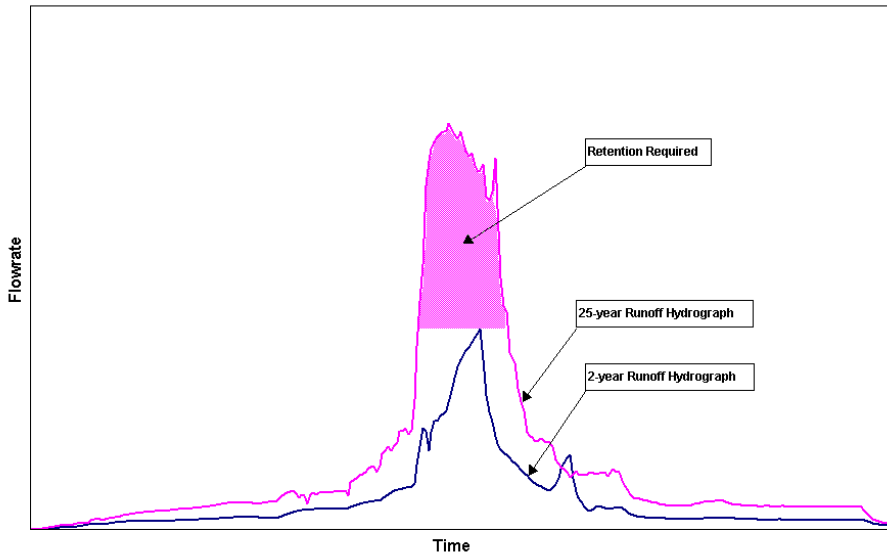
Tool Box: Stormwater Management



Stormwater Management

Currently focus on performance based criteria. Met through combination of green and grey infrastructure.

- **25:2 Requirement.** Post-development discharge hydrograph for the 25-year event \leq to the 2-year rainfall event pre-development. Stored or recharge difference on site.
- Post-development peak discharge rates cannot exceed pre-development peak discharge rates.
- Water quality improvements – TSS and phosphorus.
- Sewer Holding tanks in Kendall Sq and Alewife areas; 8-hour volume.



TOOL BOX: GREEN Infrastructure: Used to meet performance criteria

Green Roof



Bioretention Garden



White /Green Roof



Porous Pavement



Background: FEMA 1% Flood and 0.2% Flood

Scenario	% Land Area Flooded	% Properties Flooded
2070 10-year precip	6	17
2070 100-year precip	19	47
2070 10% SLR/SS (including propagated flooding)	11	4
2070 1% SLR/SS (including propagated flooding)	14	7
FEMA 100-year	5	2
FEMA 500-year	14	6

FEMA Based on Historic flooding.

FEMA – unique – provided higher level of protection for properties in 100-year flood plain vs the rest of the city.

Flooding from overtopping rivers, not localized flooding. Nearly all Alewife area, but not the rest of the city.

100-Year

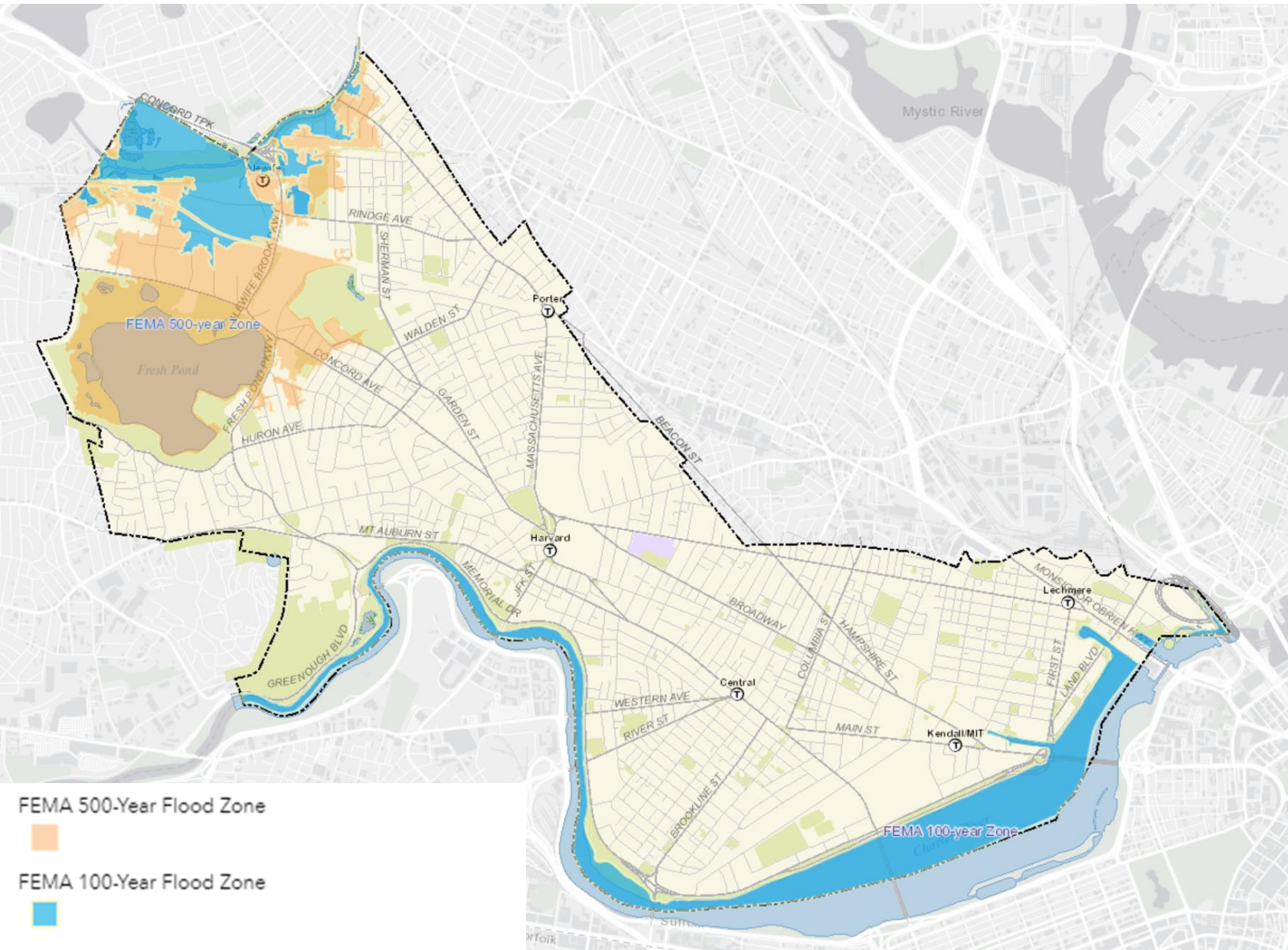
1% Chance in any given year

- 2% of Properties

500-Year

0.2% Chance in any given year

- 6% of Properties



FEMA 500-Year Flood Zone
■
 FEMA 100-Year Flood Zone
■