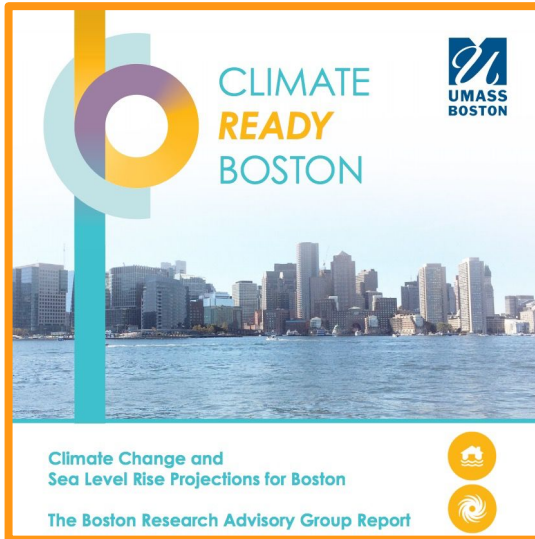


Preparing for the Rise: A Study of Boston's Sea Level & Designs for Coastal Resiliency



WPI

By Chase Gaudino, Lauren Kaija, Emilia Perez, Hannah Schulz, & Trisha Worthington



Project Goal

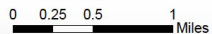
To assess how an additional 12" of SLR will impact the residents and businesses in Boston during a 1% annual chance flooding event.



Sea Level Rise Projection Modified from 36" to 48" Using 14ft Contour Line



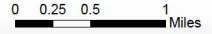
- Legend**
- East Boston Boundary
 - CRB - 36" SLR (1% Chance)
 - SLR - 48" (14ft Contour)



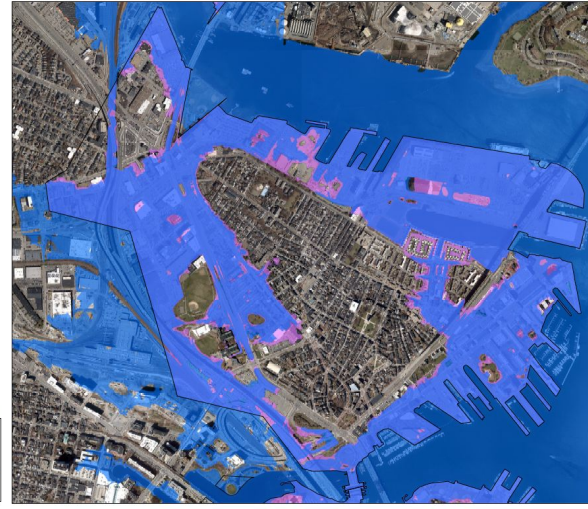
Sea Level Rise Projection Modified from 36" to 48" Using 14ft Contour Line



- Legend**
- Dorchester Boundary
 - CRB - 36" SLR (1% Chance)
 - SLR - 48" (14ft Contour)

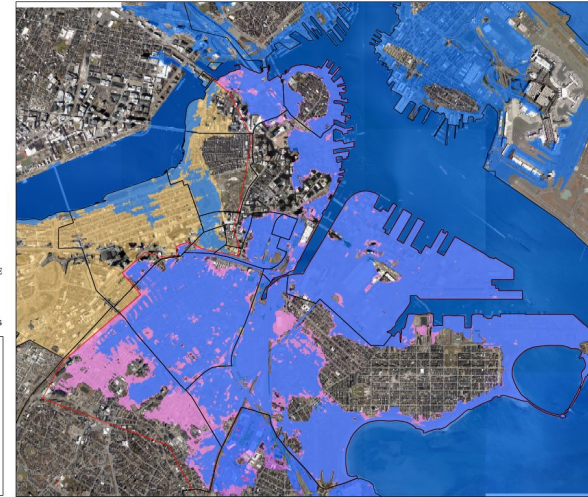


Sea Level Rise Projection Modified from 36" to 48" Using 14ft Contour Line



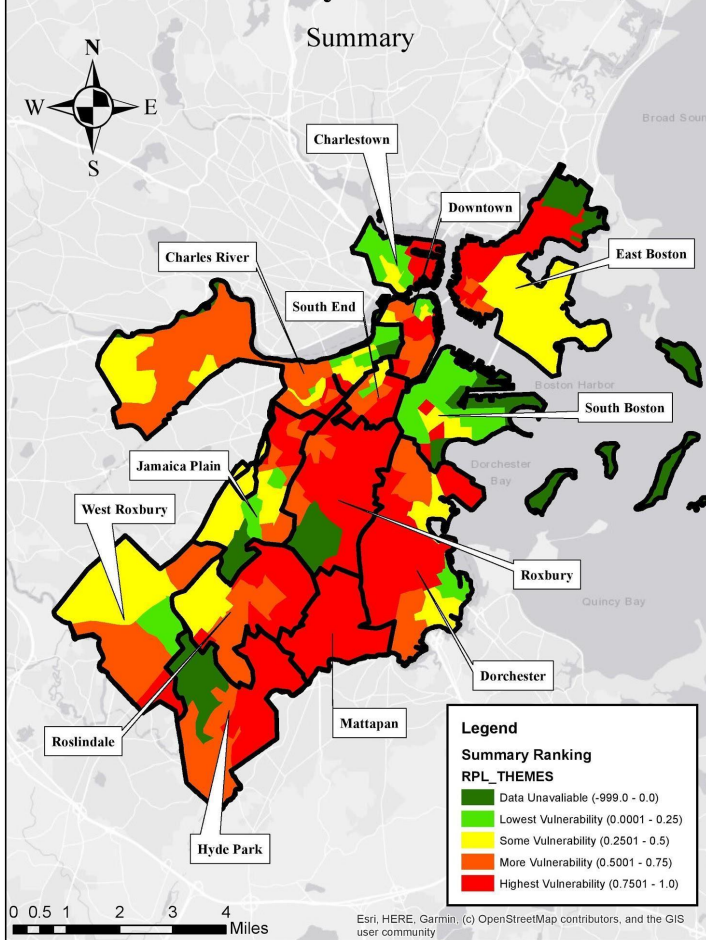
- Legend**
- Charlestown Boundary
 - CRB - 36" SLR (1% Chance)
 - SLR - 48" (14ft Contour)

Sea Level Rise Projection Modified from 36" to 48" Using 14ft Contour Line



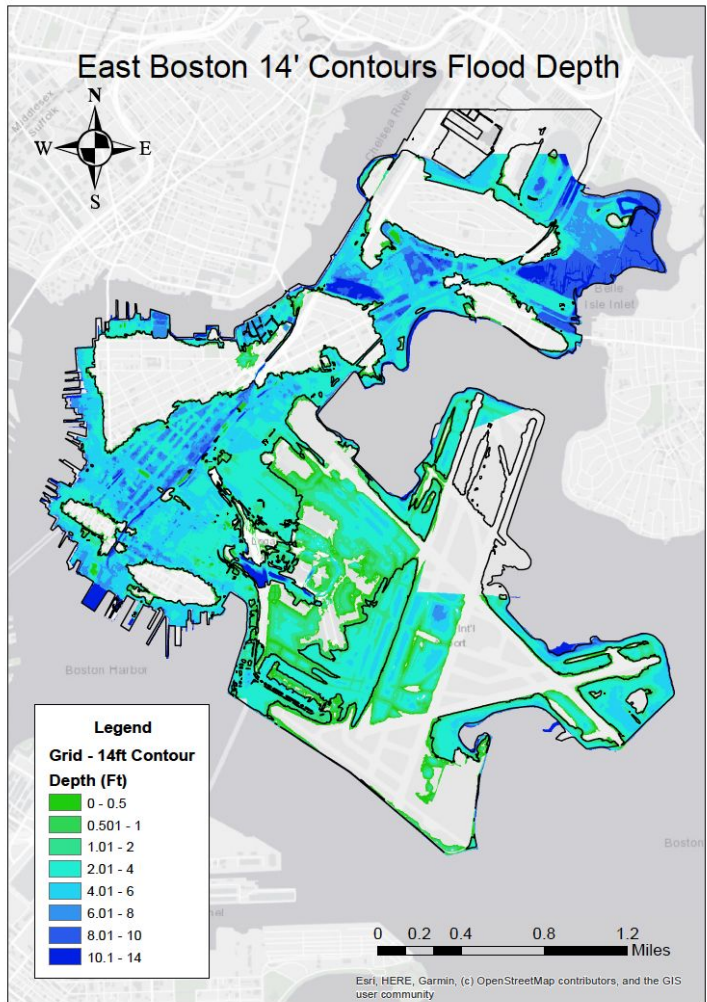
- Legend**
- Central Boston Neighborhood Boundaries
 - CRB - 36" SLR (1% Chance)
 - SLR - 14' Contour
 - SLR - 14' Contour (Charles River Dam overtopped)
 - Flooded Area to the West with Overtopping

Social Vulnerability Index in Boston, MA



Overall Vulnerability

- Socioeconomic Status
- Household Composition & Disability
- Minority Status & Language
- Housing Type & Transportation



Results of East Boston Impact Assessment

Structure and Content Loss

Resident Relocation

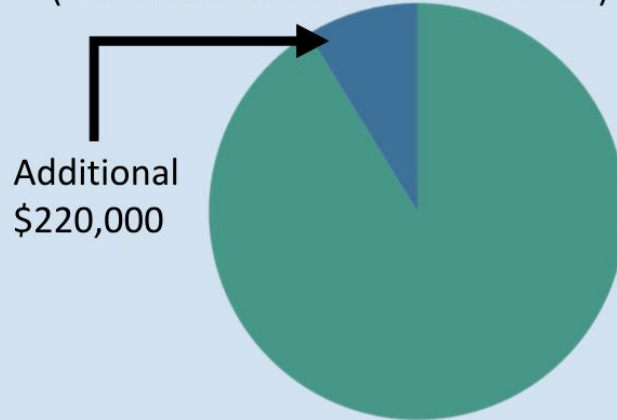
Commercial Buildings

Cost Analysis Results



- CRB's estimate: \$1.26 billion with 36" SLR (\$0.05 less than ours)
- Final adjusted estimate for 48" SLR: \$1.59 billion

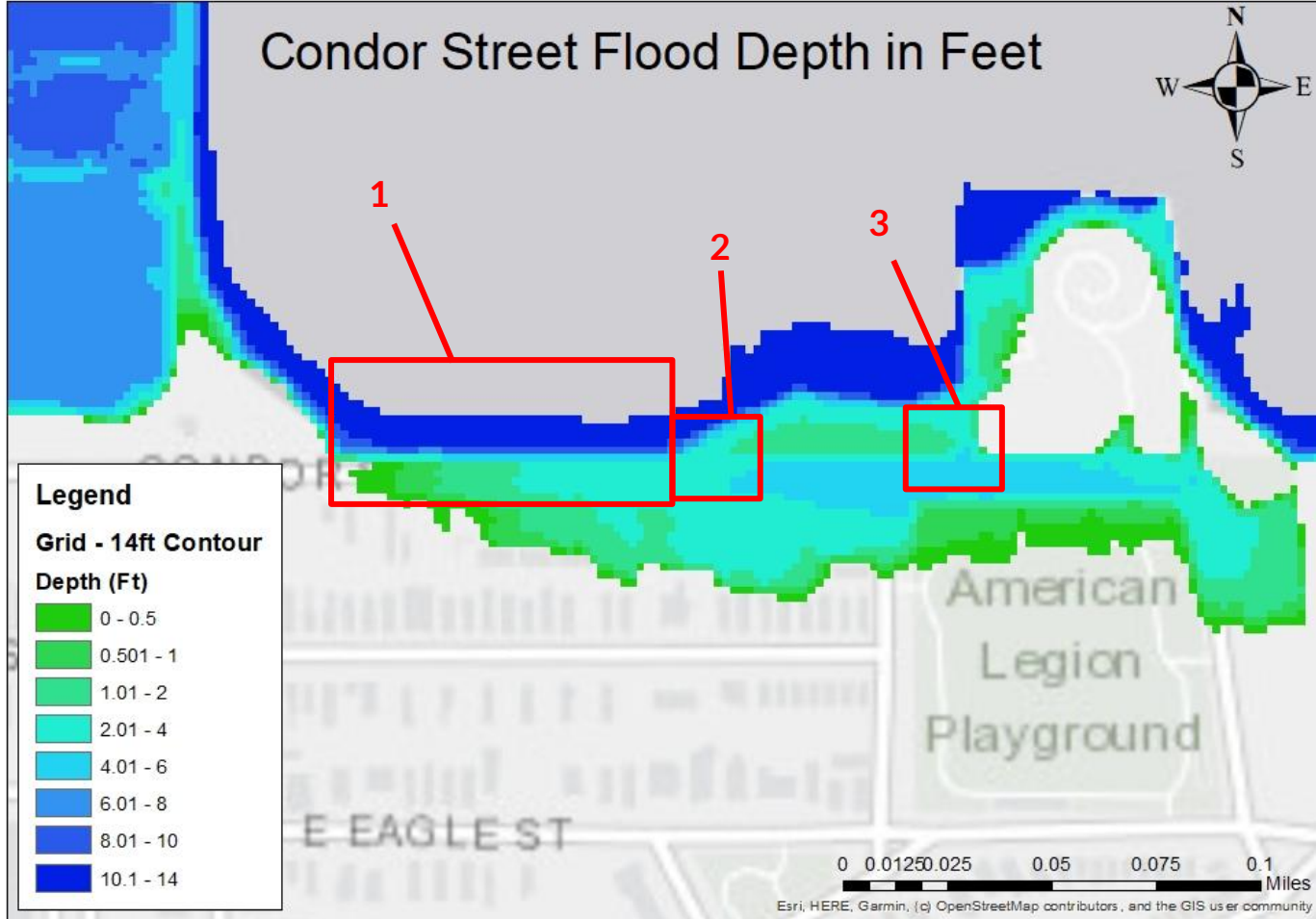
Homes Affected by 48" SLR
(Additional 201 for a total of 2295)



Homes Affected by 36" SLR
(2094 Homes)

- 59 Newly Affected Commercial Buildings
- 253 "Water Locked" Commercial Buildings

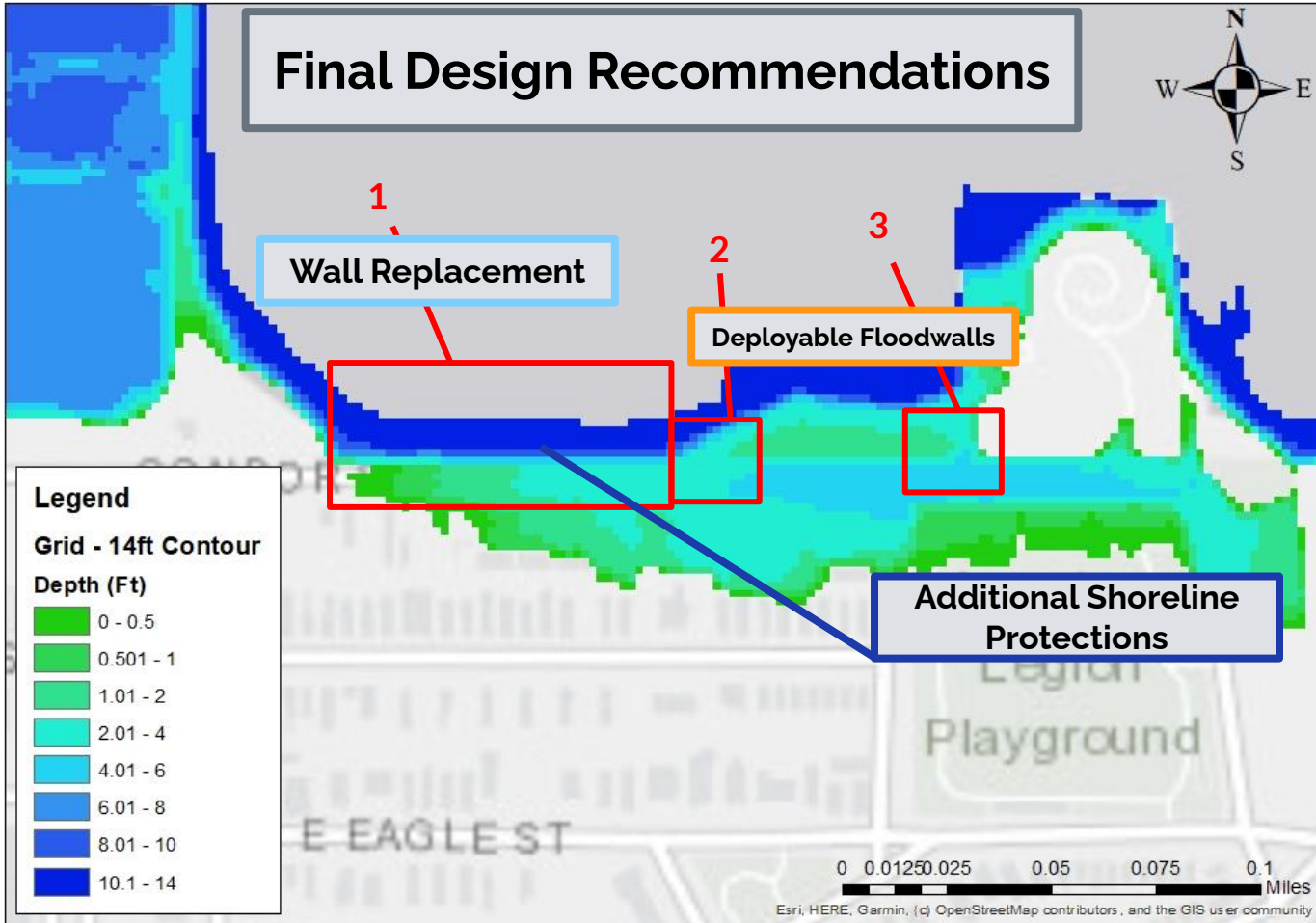
Condor Street Flood Depth in Feet



Alternatives Analysis

Design Options	Environmental Impact	Cost*	Community Perception	Longevity/ Sustainability	Design Feasibility	Operation and Maintenance *	Weighted Total
Replace Existing Wall	1	1	2	1	1	1	12
Elevated Harborwalk Along wall	2	2	1	1	2	2	17
Weighting Factor	2	1	2	1	1	3	

Final Design Recommendations



Wall Replacement & Rock Revetment Walkway



Deployable Floodwalls

Location 2 & 3

