Reinvesting in History and Place to Build Resiliency and Community in Quincy, MA

NEWEA 2021 Annual Conference and Exhibit

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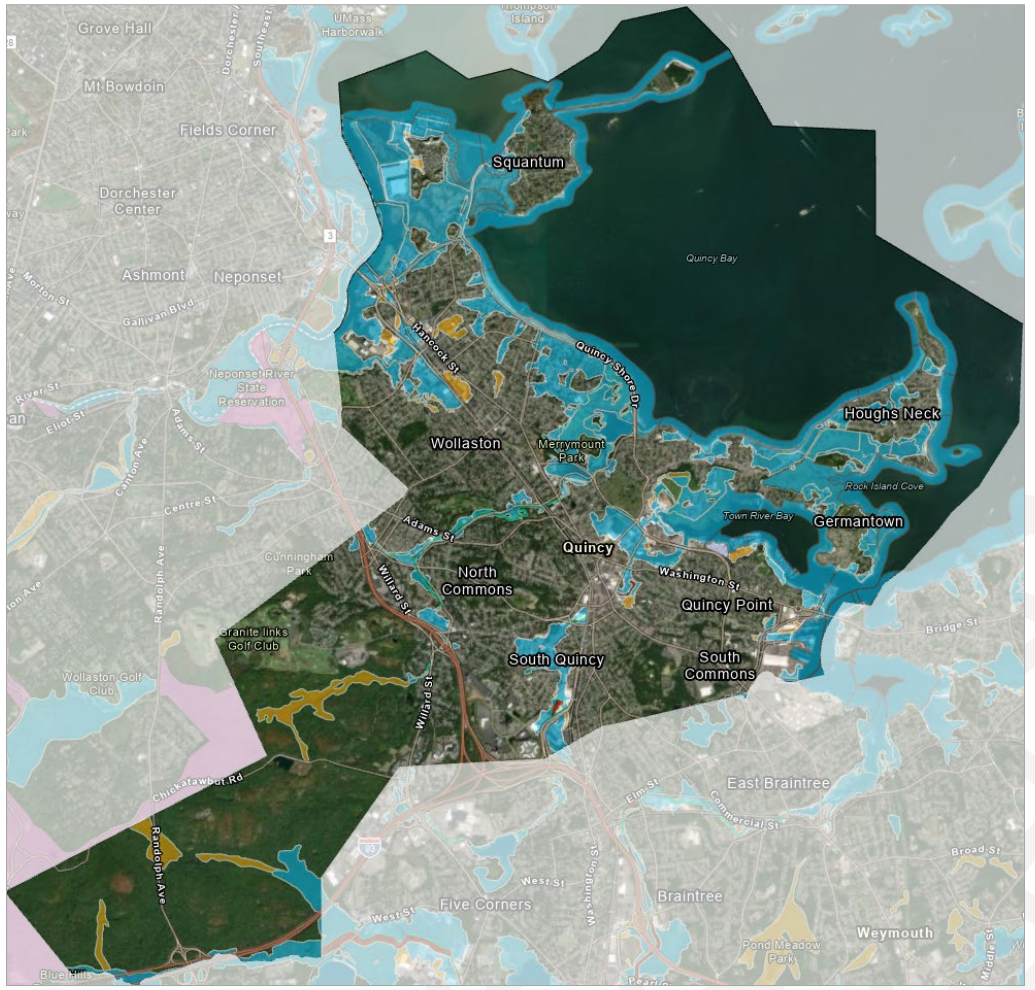
COMMITMENT & INTEGRITY DRIVE RESULTS

Quincy – Today

- Population: 97,000
- Land Area: 26 square miles (6,700 ha)
- Has been incorporated as a City for 132 year
- Type A Mayoral Form of Government
- Annual Operating Budget; $290M (FY2018)
- The City faced economic downturn following:
  - End of granite quarrying
  - Advent of the Shopping Mall (in Braintree)
  - Close of the Quincy Shipyard in 1986
  - Duncan move to Canton in 2004
- Actively working to revitalize and better their community

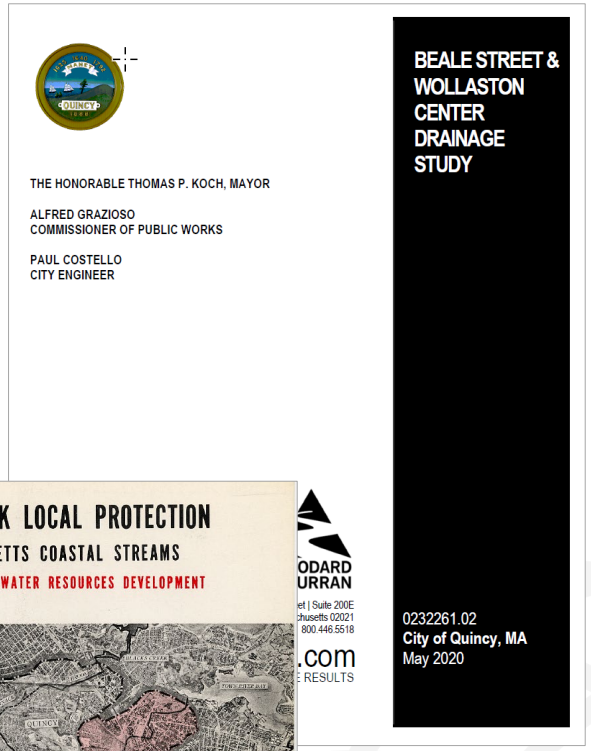
Major Challenge and a History of flooding

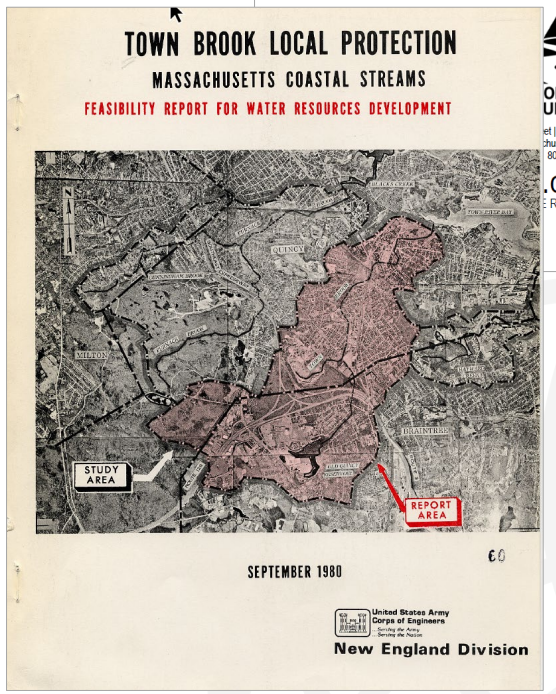
- Drainage Stats
  - 27 miles of coastline
  - 12 miles of seawall
  - 51 Tide Gates / Backflow Preventers
  - 150 miles of storm drains w/~ 340 Outfalls
- NFIP Stats
  - 7% of City in SFHA
  - Over $1B in building value in the SFHA
  - 3500 Insurance policies, $883,000,000 in coverage paying $3,700,000 in premiums this year
  - Second only to Boston with 4900 policies and over a Billion $ in coverage.
  - Fifth Repetitive Loss Properties
  - CRS Class 7
- Major Flood History
  - Costal: nor-easters 1978 (Blizzard), 1991 (Perfect Storm), 2018 (2)
  - Riverine: Town Brook 1955, 1968
  - Hurricanes: New England 1938, Carol 1954, Sandy 2012



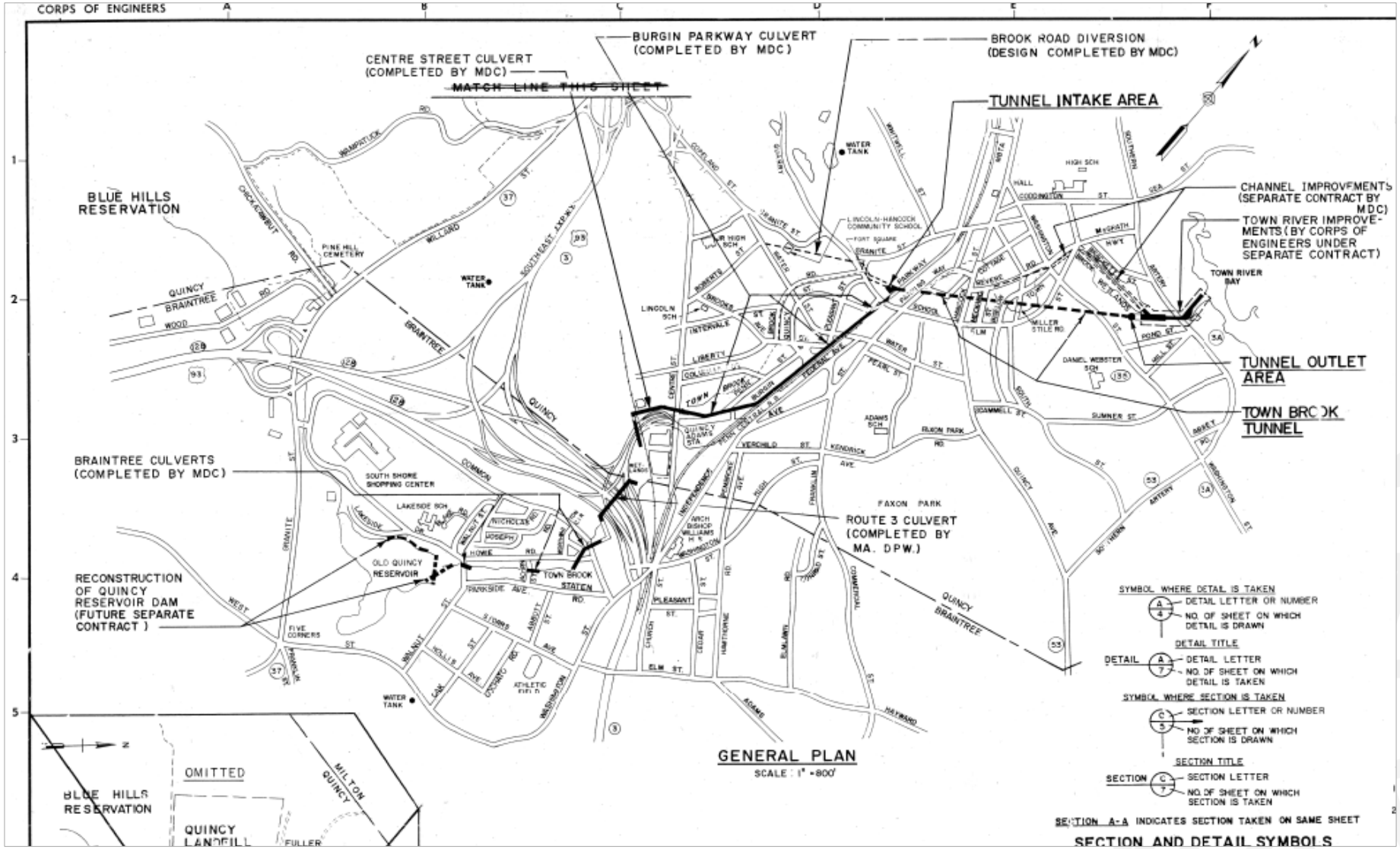
Actively seeking solutions with Drainage Studies

- Necessary Stream Improvements to Furnace Brook and Blacks Creek, Chas T. Main Inc. June 1956
- ACOE – Protection Feasibility Reports
  - Town Brook, September 1980
  - Furnace Brook, November 1976
- West Quincy Drainage Basin Study, Cunningham and Furnace Brook, Whitman & Howard Inc, September 1985
- Town Brook Drainage Assessment Bigelow Street Relief Conduit, Rizzo Associates, May 2006
- Beale Street & Wollaston Center Drainage Study, Woodard & Curran, May 2020



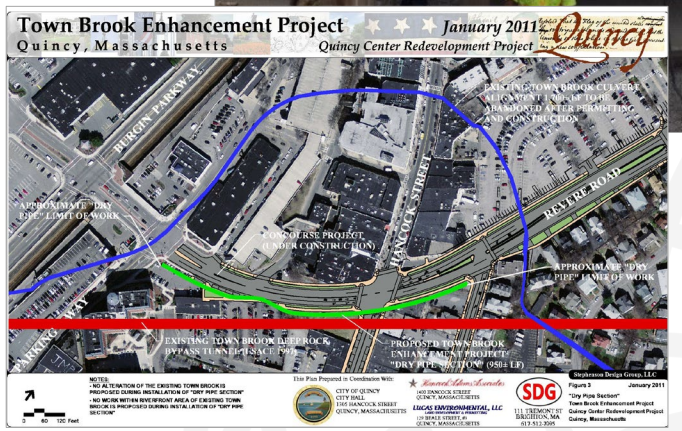


History of Implementing Mitigation Actions



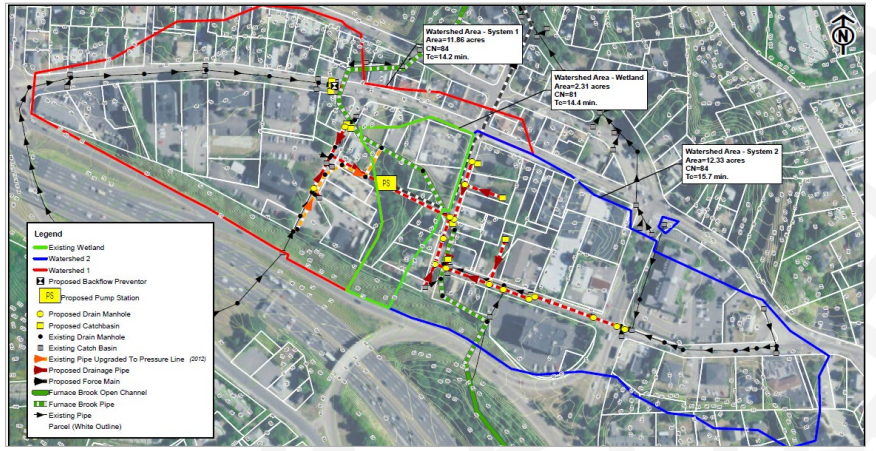
Current Project: Town Brook Realignment

- **OBJECTIVE**
  - Relocate Town Brook to enable re-development of Hancock Lot and Ross Garage
- **WORK**
  - Relocation of 1,000 feet (300 m) of concrete box culvert
    - 11-foot (3.4 m) wide
    - 6-foot (1.8m) high
  - Installation of Water Quality Treatment Devices
  - Construction of a Pocket Park
  - Restoration of Smelt Spawning Habitat (Daylighting)
- Completed in 2021

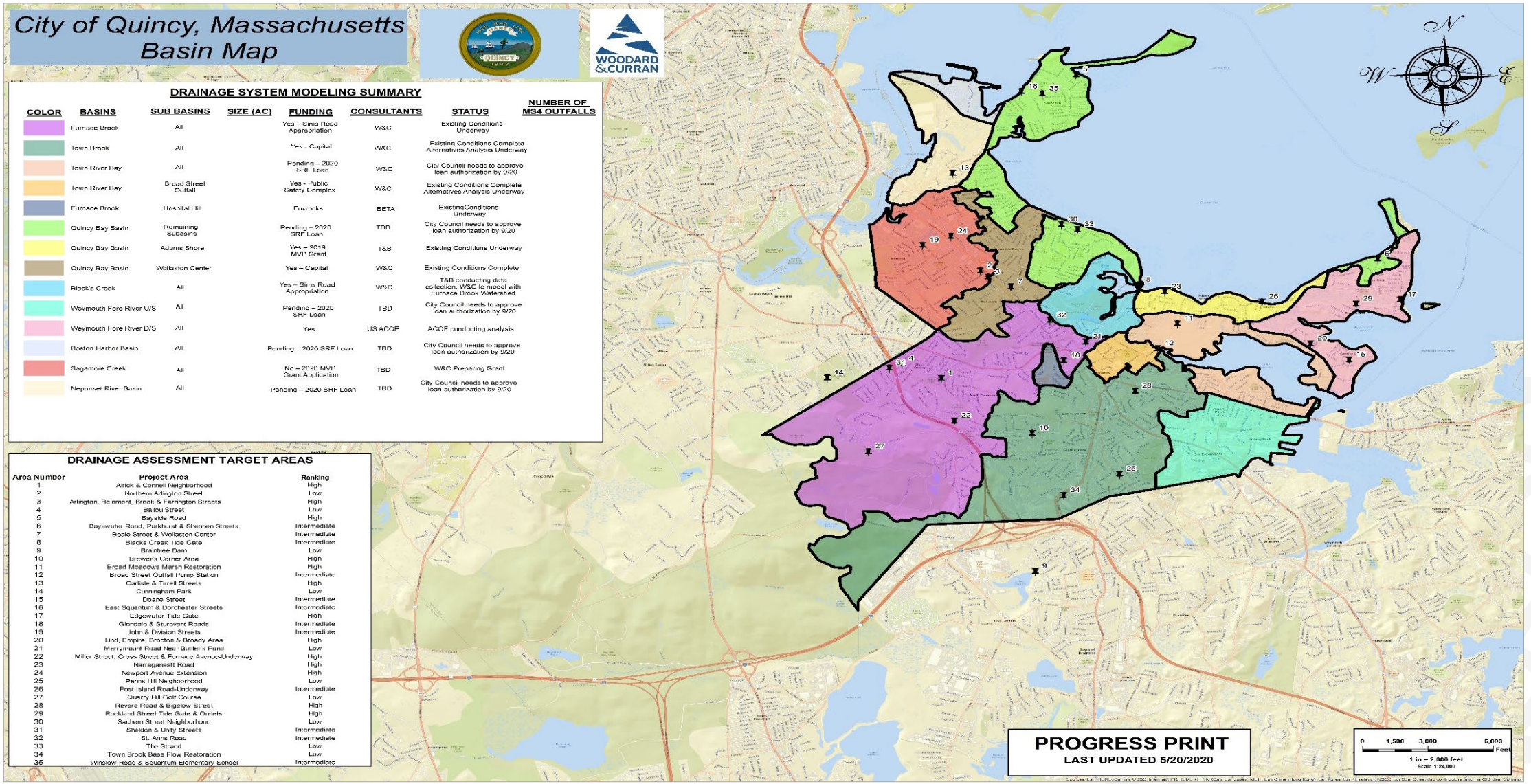


Current Project: Miller St., Furnace Avenue & Cross St. Pump Station

- **OBJECTIVE**
  - Install pump station and drain to mitigate flooding.
- **WORK**
  - Construct storage facility with 2 pumps (110 cfs capacity) and approximately 1,150 feet of drain.
  - Construct collect system to drain 26-acre basin to station,
  - Seal inlet's to Furnace Brook culvert, under basin area, to prevent surging or backflow.
  - Stream restoration on 1,000 feet of Furnace Brook.
- **Current Status**
  - FEMA Permitting (CLOMR)

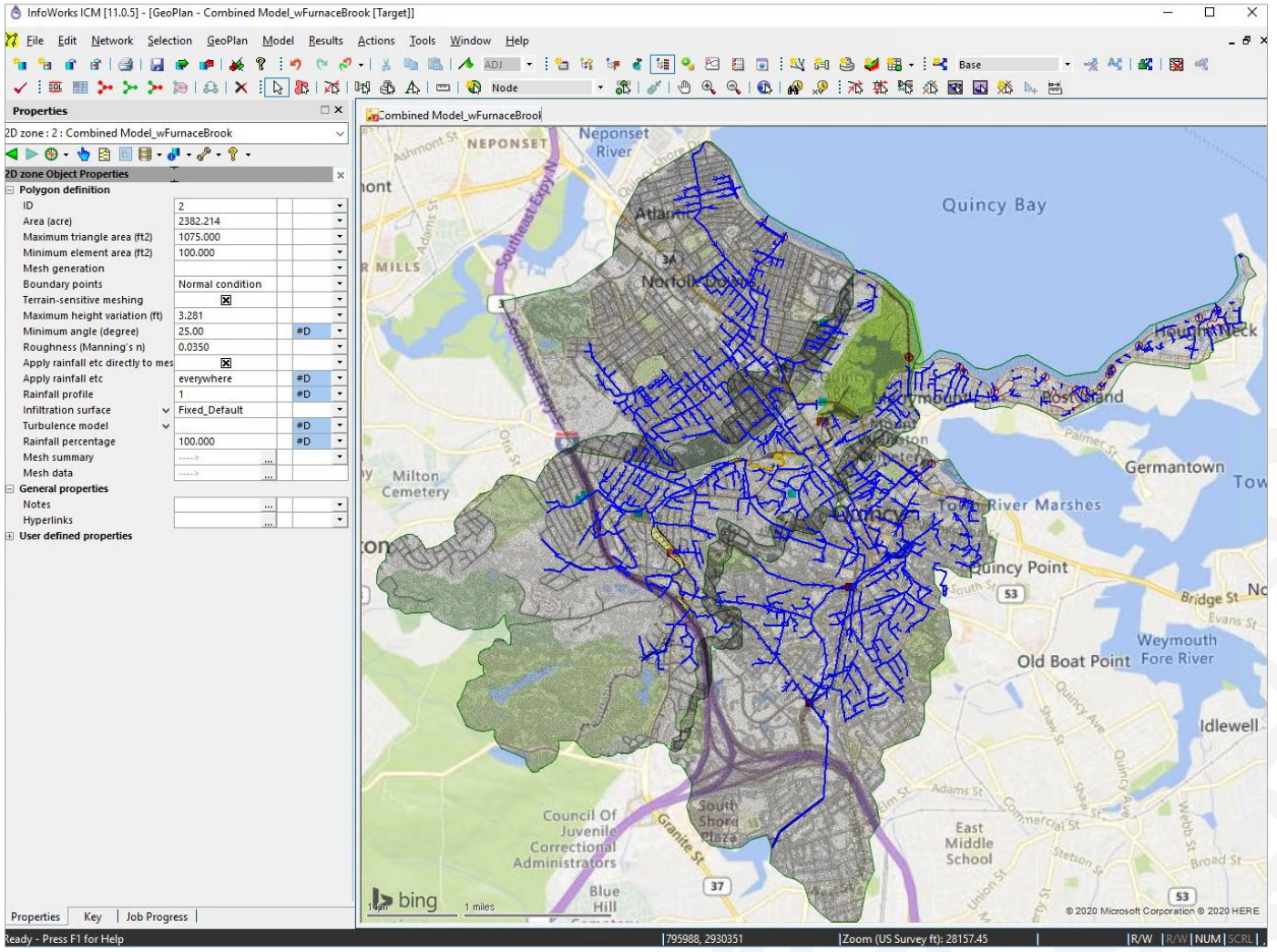


Looking Broader, Citywide Drainage Plan



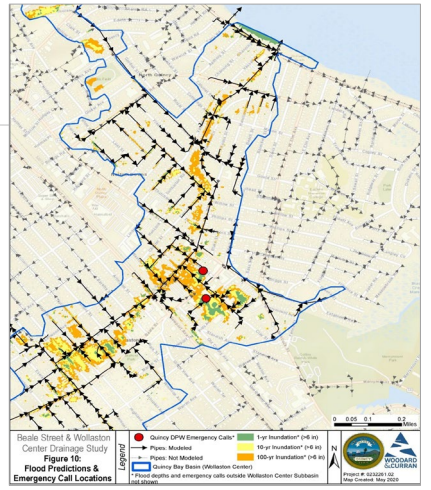
Citywide Drainage Model

- Citywide, Comprehensive, Integrated 1D/2D, H&H Model.
- Model built over time by basin and compile into a fully functional citywide Model.
- Model Integrated:
  - Town Brook
  - Furnace Brook
  - Adam Shore
  - Wollaston Center
  - Hospital Hill (developer Model)

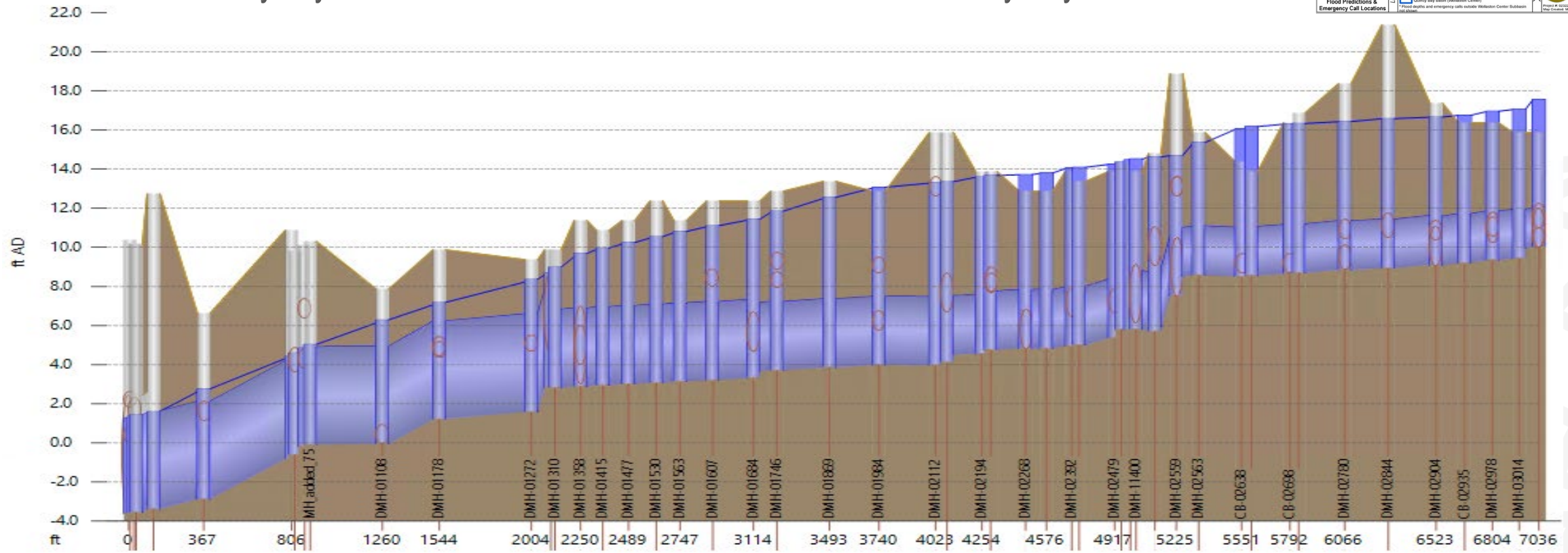


Recently Completed, Wollaston Center Study

- 450 acres
- 860 structures
- 18 miles of pipe
- 2 tide gates

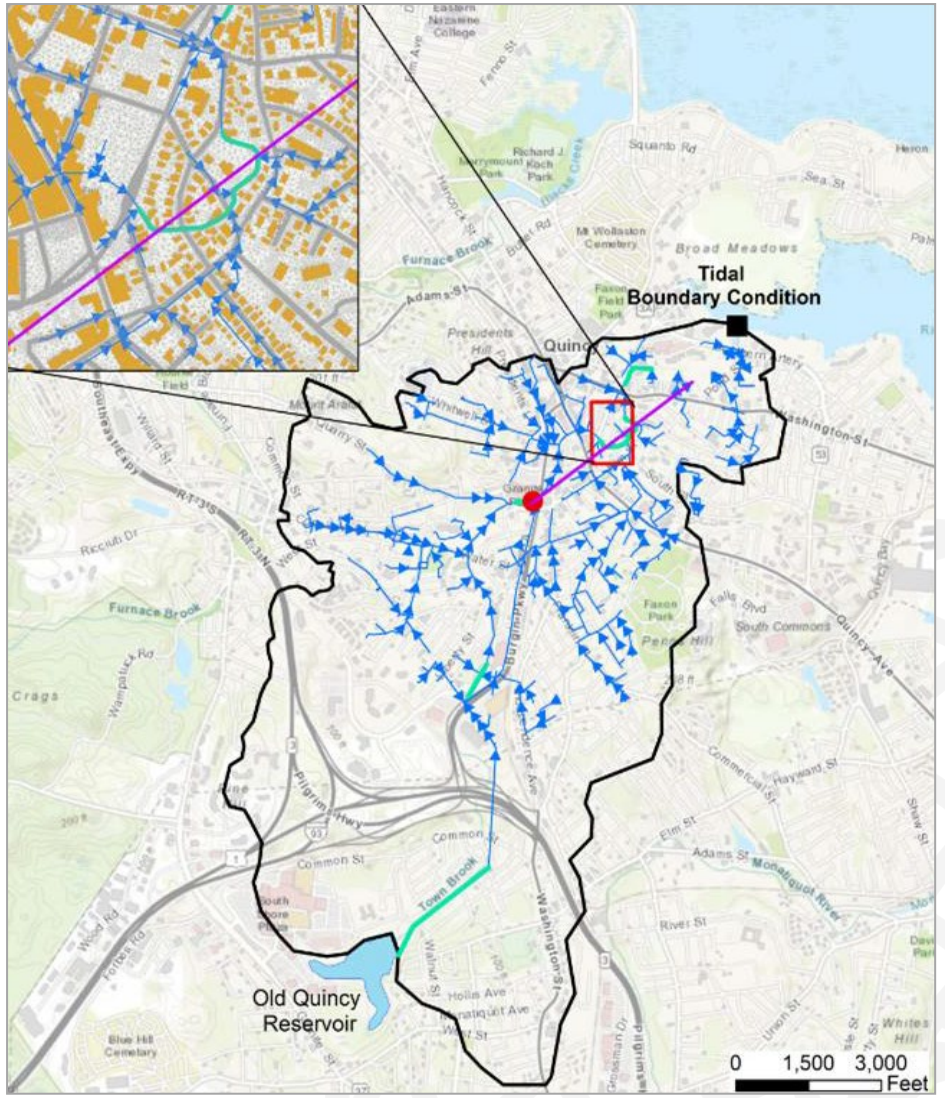


25-yr Hydraulic Grade Line: Belmont and Brook St. to Quincy Bay _Low Tide

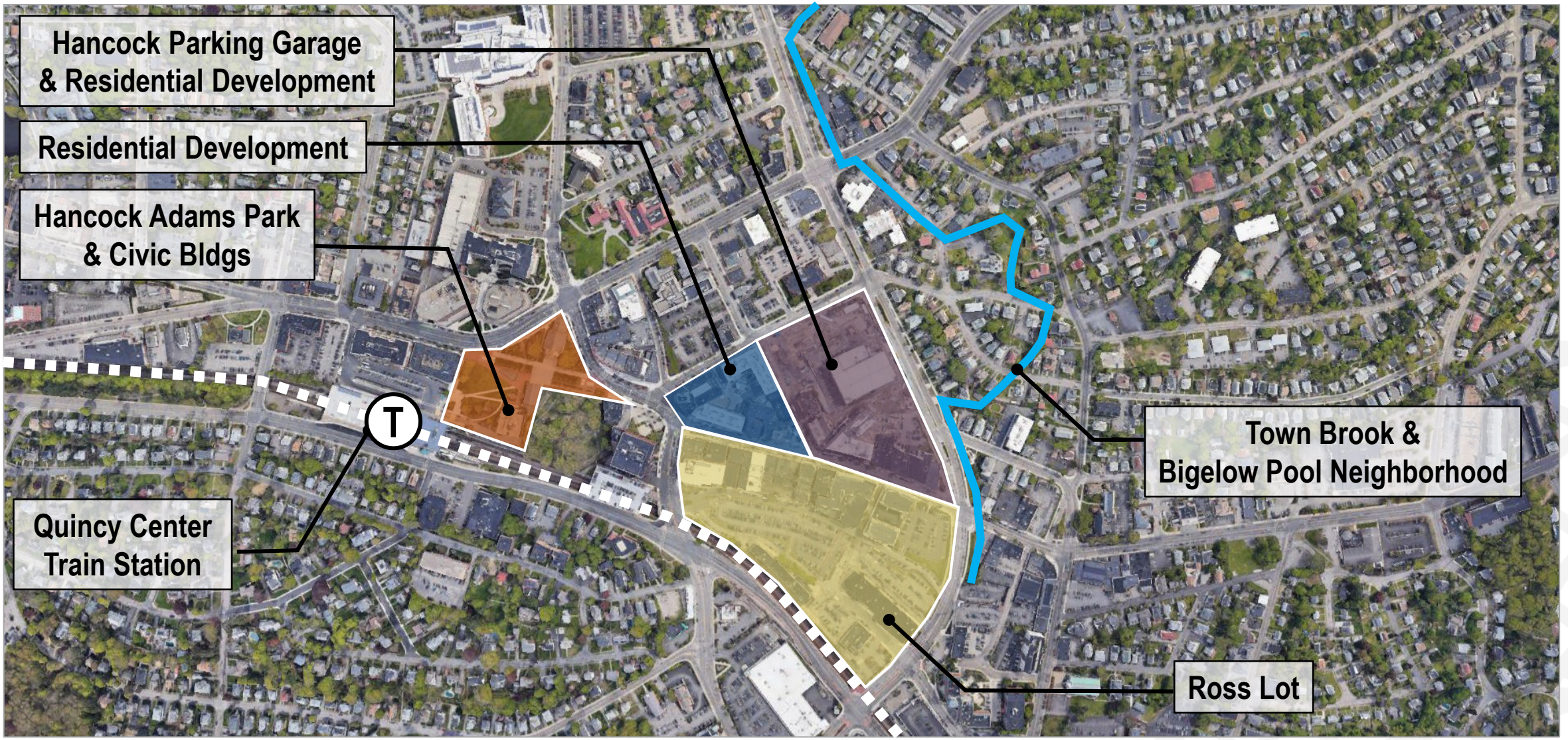


Existing Study Town Brook

- 3,551 Acres
- 24 miles of pipe
- 2.7 miles of culverts
- 1,000 structures
- 2 major diversion structures
- ✓ Two Flood Assessments
  - Kincaide Park
  - Bigelow Pool
- ✓ Town Brook Relocation
- Downtown Redevelopment Plans



Positioning Downtown for growth



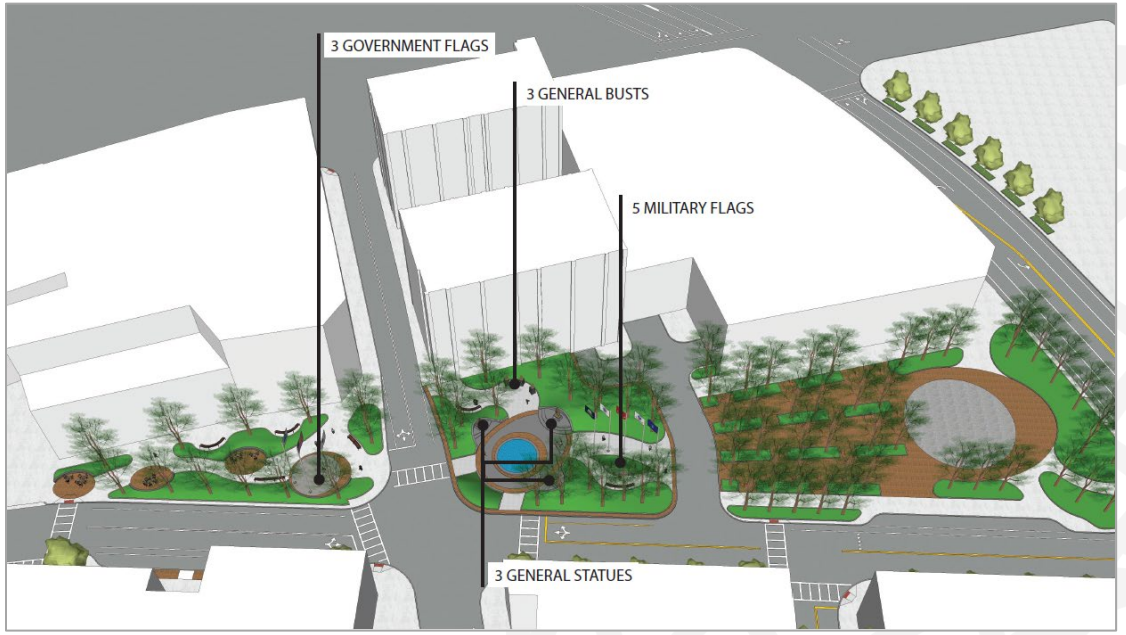
Positioning Downtown for growth

- Part of Quincy's Downtown Revitalization Plan
- Consolidation of municipal parking into new Hancock Garage
  - 700 Parking Spaces
  - Parking for new development sites
  - Free Up Ross Lot for Future Development
- Infrastructure and Utility Upgrades
- Streetscape Improvements
- Development Parcels
- Pocket Park

Ross Lot- Creating a New Mixed Use Center

Generals' Parks

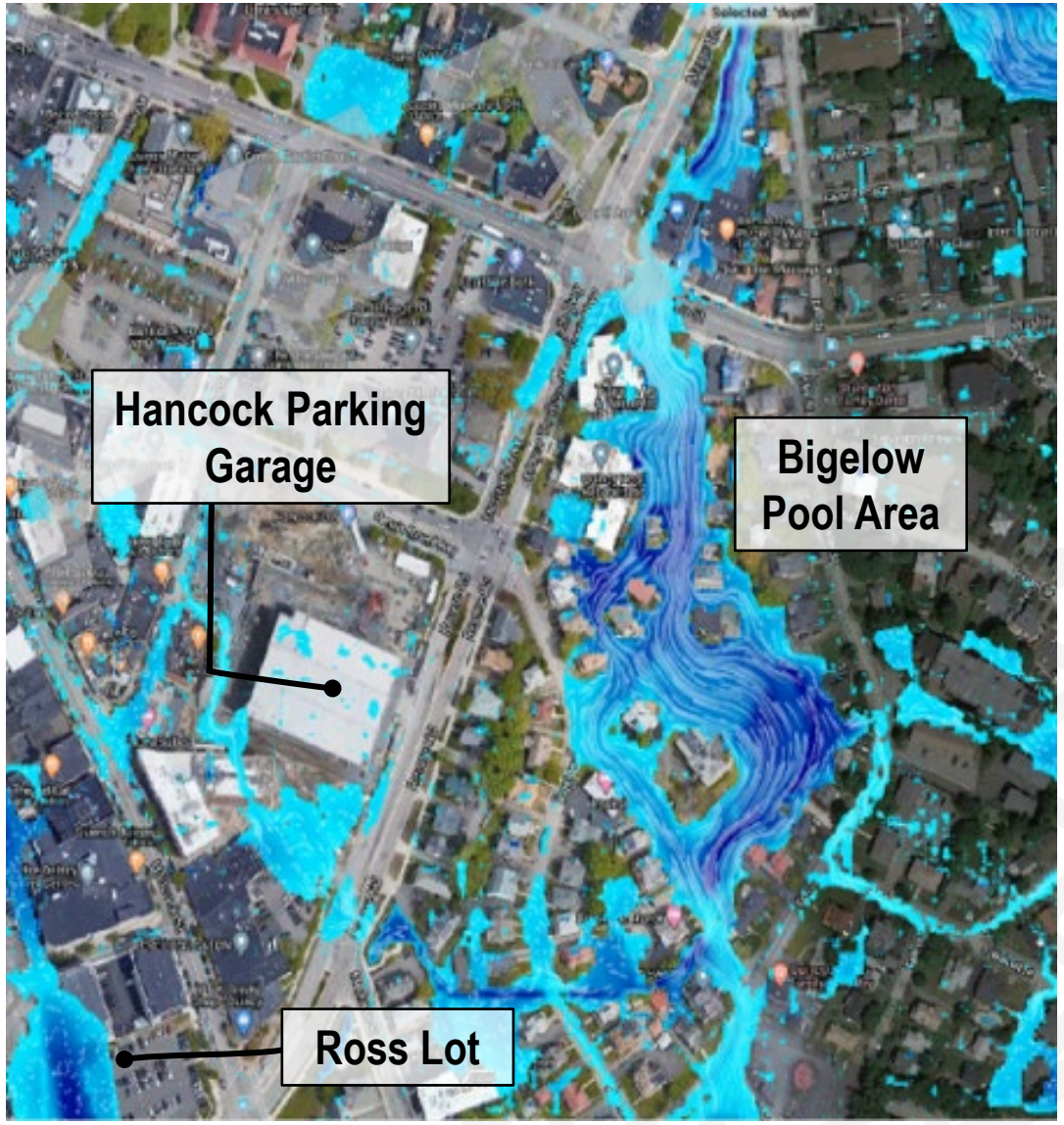
- New signature open space to complement downtown development.
- Celebration of 3 Quincy Generals
- Mayor's Priority Project
- Potential Connection to Town Brook



Transformation in Action

Bigelow Pool Area- The Next Piece in the Puzzle

- Identified as a Principal Study Area within the Drainage Capital Plan.
- Adjacent to Booming Downtown
- Serious Flooding and Safety Concerns
- Smelt Spawning/Pocket Parks



Consequence of Failure (CoF) - High

Storm Event	Number of Structures Inundated/Depth of Flooding at Control Point (ft.)		
	Existing	Failed*	% Change
10-yr	31 / 1.5	61 / 3.4	+30 / +1.9
25-yr	42 / 2.1	60 / 3.7	+20 / +1.6
100-yr	51 / 3.3	62 / 4.3	+9 / +1.0

*Assumes a 75% blockage resulting from collapse

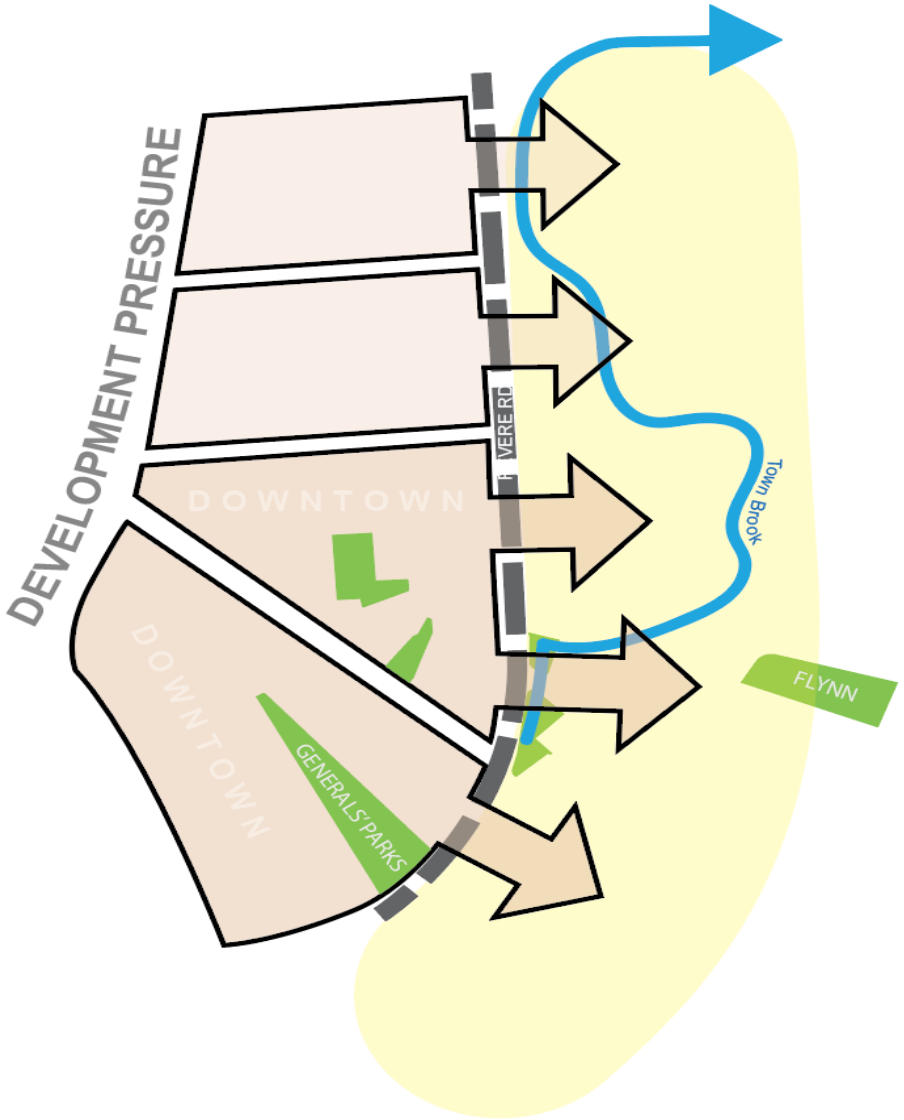
Notes:

1. Many of the structures are multi-family buildings
2. Includes Quincy Health & Rehabilitation Center - Critical Facility

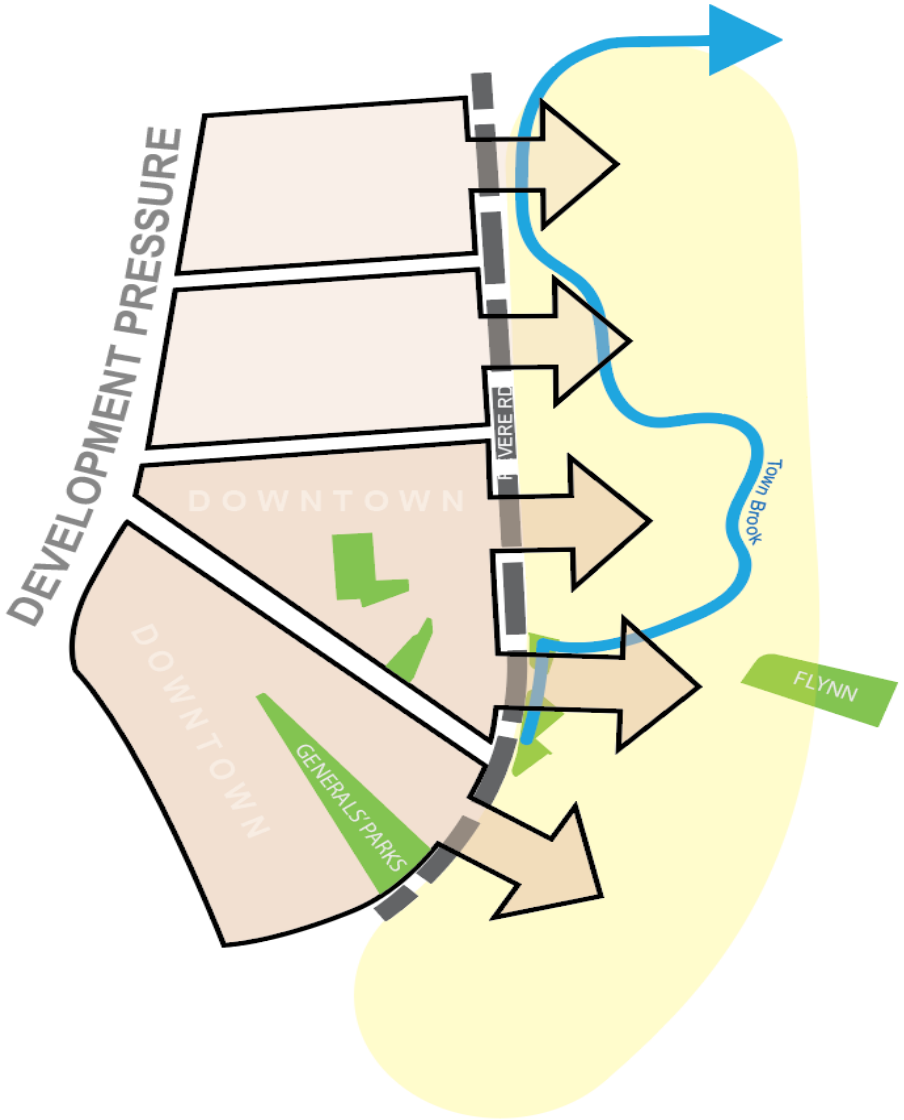
Alternative Analysis

- Reduce Frequency/Duration/Magnitude of Flooding
- Reduce the Likelihood of Failure
- 17 Alternatives
  - Storage
  - Deep Rock Diversions
  - Channel/Culvert Widening
  - Pipe Diversion
- 8 Advanced to Feasibility Study
  - No-Build
  - Replace-in-Kind
  - Diversion Pipe
  - Upstream Diversion to Deep Rock Tunnel
  - Midstream Diversion to Deep Rock Tunnel
  - Downstream Diversion to Deep Rock Tunnel
  - Widening Town Brook and Culvert Infrastructure
  - River Walk and Parks

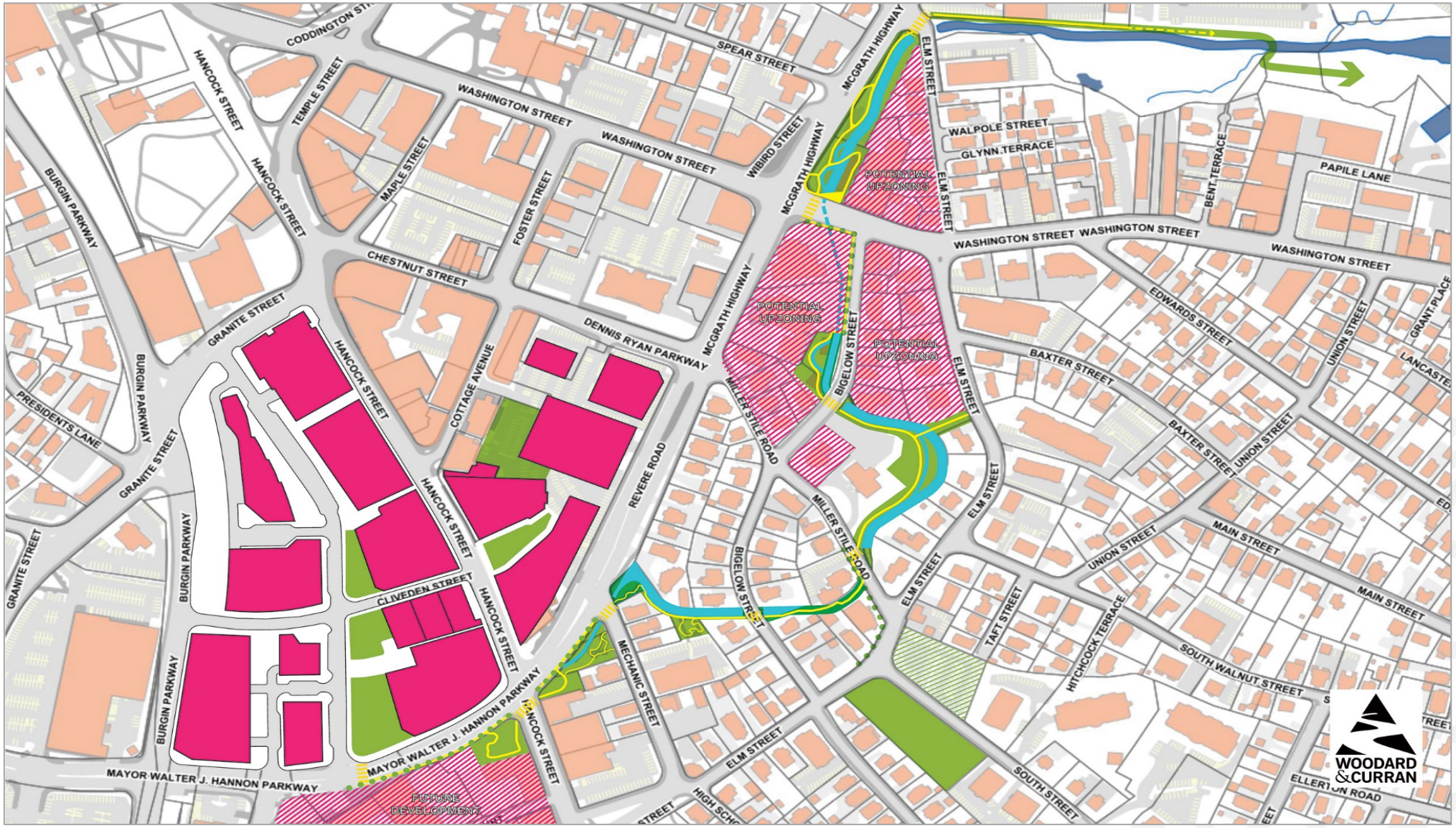
Leveraging Downtown Development Pressures



Asking our Infrastructure to Do More



River Walk and Parks



River Walk and Parks

Creating a Multi-Benefit Solution

Alternatives	Level of Protection (Houses removed from inundation area)	Flood Mitigation (Reduction in flood elevations)	Initial Cost	Total O&M Cost	Consequence of Failure	Community Enhancements	Construction Schedule	Construction Access and Work Area	Likelihood of Failure	Existing Utility Impacts	Traffic Impacts	Right-Of-Way and Ownership Impacts	Geotechnical Considerations	Regulatory Permitting Requiremtns	Complexity of Construction	Temporary Construction Impacts (noise, dust, etc.)	Habitat Enhancement	Overall[3]	
Significance Ratings[1]	***16***	***16***	***12***	***12***	***12***	***12***	***10***	***10***	***10***	***10***	***10***	***6***	***6***	***6***	***6***	***4***	***4***	1764	Ranking
No-build	0	0	12	0	0	0	10	10	0	10	10	6	6	6	6	4	0	704	8
Spot Repairs	0	0	7	3	4	0	8	8	6	9	8	5	5	5	5	3	0	690	9
Replace in kind	0	0	5	12	12	2	6	4	10	7	8	4	5	3	4	2	2	834	4
Diversion pipe (1b)	11	11	3	3	8	0	4	4	6	1	2	4	3	3	2	2	1	774	7
Tunnel diversion (2)	12	12	1	4	8	0	4	6	6	8	6	4	2	3	1	1	1	908	3
Tunnel diversion (5a)	7	10	1	4	7	0	4	6	6	8	8	4	3	3	1	1	1	810	5
Tunnel diversion (5b)	8	9	1	4	6	0	4	5	6	8	8	4	1	3	1	1	1	776	6
Brook widening (4c)	16	16	2	11	12	2	5	2	10	6	6	2	4	3	2	1	3	1208	2
River Walk and Parks (8)	16	16	0	10	12	12	2	1	10	4	5	1	4	3	2	1	4	1220	1

1) Significance Ratings represent the maximum score possible per Impact Criteria category.

2) Impact Criteria is scored with 0 representing the minimum score, and increasing to the maximum Significance Rating as applicable.

3) Overall Score for each Alternative is calculated by the sumation of Impact Criteria scores factored by the Significance Rating maximum allowable scores.

Questions?

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