Appendices (Part 1 of 3)

Appendix A Task 1-1 Recap Nemo and Task 1-2 Supporting Documentation

Appendix B Task 1-2 Model Updates and Piped Infrastructure

Appendix C Task 1-2 Updated Flood Model Outputs (Mapbook)

Appendix D GIS Mapbook of 3-acre Opportunity Sites by Land Use (January 2020 workshop)

Appendix E Land Use Codebook (Classifications for GIS Desktop Analysis)

Appendix F GIS-based Suitability Screening of Potential Wetland GI Sites

Appendix G Full List of Suitable Opportunity Sites for Regional Wetland GI

Appendix H Initial Scoring Methodology

Appendix I Revised Scoring Methodology

Appendix J Task 2-2 Maps and Tables of Additional GI Opportunities

Appendix K Ranking Tool Dashboard and Supporting Materials

Appendix L Task 3-2 Feedback on Top 35 watershed opportunities (One-Pager Summaries)

Appendix M Stakeholder Engagement and Outreach Materials

Appendix N Task 4 Site Investigations Recap Notes and Photos

Appendix O Conceptual Wetland GI - Supporting Documentation

Appendix P Active Reservoir Management - Supporting Documentation

Appendix Q Overview of Water Bodies, Piped Infrastructure Constrictions, and Control Structures (Summary Map)

Appendix A

Task 1-1 Recap Nemo
Task 1-2 Supporting Documentation

Image credit: MyRWA

Stantec

Task 1.1 Recap Memo

To:	Kyle Johnson/Kleinfelder One Beacon Street, Suite 8100 Boston, MA 02108	From:	Jen Zoppo/Stantec 226 Causeway Street Boston, MA
File:	195130265	Date:	October 29, 2019

Reference: Opportunity Areas Identified by Communities

Community	Opportunities	General Comments

Arlington	• Meadowbrook Park (old infrastructure for stop logs here, cemetery)
	• Russell Municipal Lot (corner of Chestnut/Mystic Street). A few acres, near St Agnus. Aboveground parking, flood storage under and green roof on top.
	• Robins Farm Park
	• Thompson & Gibbs Schools – recently redone. May be opportunity at field at Thompson school. The question is whether possible to get water there. Town of Arlington is doing some investigation.
	• High School upcoming but there is contamination. Already in design.
	• Spy Pond
	• Broadway is a very wide road; could put a swale along it. Combine with traffic calming/pedestrian safety. Could consider reducing parking to only one side of the road
	  ○ From Bates westbound is more residential, currently 42' wide
	  ○ From Bates eastbound is currently 44' wide
	• North Union playground, possibly re-doing it now for playground. It's below the road now, could raise up and include storage below	

Belmont		

Reference: **Opportunity Areas Identified by Communities**

Community	Opportunities	General Comments
Burlington	• Skating rink near Littles Brook/Woburn town line. FMC leases land from the Town. • Mary Cummings Park (top of a hill so not ideal) • Rotary Field is lower elevation. Also Marvin field. One of these is Town-owned (can check assessors database to confirm which). Water comes down from S Bedford/Blanchard and from Northeastern. • Conservation land near Mountain Road, left of overlook park (Town property). Topography is challenging here. • Wyman Street old Town well. Wellhouse; well not used for years. No treatment plant and no plans to use it.	• Mostly maintenance in CIP. No big projects. • Contamination throughout town tends to be an issue for infiltration.
Cambridge	• Danehey project identified • Russell Field (environmental issues) • Clarendon, small, being redeveloped now • Playground Rindge Ave, large. Would have to be an underground system • Rafferty Field (Concord Ave), but adjacent lots are private and not looking to treat stormwater from private lots. • St Savour Court housing authority experiences flooding, possible location for tank. • Some pipes are larger than they need to be, could divert flow there. Realtime controls.	
Everett	• City owned land along river south of Freightliner canoe/kayak launch • Island End 3.0 (possibly next MVP application). Everett/Chelsea regional action grant for a seawall, currently no restoration or GI. City doesn't own any land there. Everett MVP tie-in to raise roadway adjacent.	• Most of Everett is contaminated; not much opportunity for infiltration

Reference: **Opportunity Areas Identified by Communities**

Community	Opportunities	General Comments
	• Wetland area along Revere Beach Parkway currently just collects trash and no one cleans it. There is area along Revere Beach Parkway	• CIP projects are more on the coastal side
Lexington	• Repaving parts of Mass Ave within 5 years from Arlington Town line to Pleasant St • Harrington School may be an opportunity, particularly the fields. Older school. • Waldorf School (private), south of a large wetland • Arlington Meadows, large wetland • Mass Ave/Minuteman Pkwy near Seasons 4 (nursery/garden center)	No large projects planned
Malden	• Turf construction planned for Roosevelt Park, stormwater storage • McDonald Stadium - storage	No storm drain CIP
Medford	• Rebuilding Fire Dept • Making two streets public; Freedom Way • Barry Park, possibly infiltration • High School, water runs down outdoor stairs along the road, has been investigated by Horsley Witten as place for GI • Land along highway ramp (93)/river is state-owned. detention basin/bioswale • Tufts Park, KLF looking at capacity for underground storage tank • Private property, wetland, contamination. Old radio tower WEEI. Overgrown building. Undevelopable. Across from Torbert Macdonald Park. Has been of interest to MyRWA as siting for stormwater wetland and wetland restoration.	

Reference: **Opportunity Areas Identified by Communities**

Community	Opportunities	General Comments
	• Victory Park, natural wetland, soccer fields. Currently floods and have to close it. • DCR Parks (Dugger Park, Veterans Memorial Park (long/linear), McDonald Park) • Buried streams in City, Gravelly Brook runs parallel to 93 from Wright's Pond Opportunity to daylight. Gillis Park is next to it. • Playstead Park used to have a stream through it. Previously talked about installing a large chamber under the park. Also part of Medford- Horsley Witten GI study. • Source control – convert private parcels to conservation	
Melrose	• Franklin Field 604b study identified locations for storage, submitted grant app over a year go but don't think they received it. More about water quality. • Warren Street Park on Franklin at corner of Warren and Melrose, also 604b. Proposed underground storage system. • Pine Banks Park, jointly owned by Melrose/Malden. One new turf field. Could possibly do something under baseball fields. • Potential for infiltration along cemetery roads where new drainage pipes are proposed. This project is getting MEMA funds. Not in design yet, possible that the project could get additional storage infiltration, e.g. Cultec as cost-effective opportunity. • Derby Road area maybe opportunity for roadway GI practices. • City-owned parking lot behind where Papa Gino's used to be, between Foster and Grove St along the back of Main Street. Could do infiltration.	

Reference: **Opportunity Areas Identified by Communities**

Community	Opportunities	General Comments
Reading	• Skating rink for storage, but there isn't a lot that drains to it. Located at headwaters, near High School. Floods and they dam it in winter for a rink. • Winter skating rink • Elementary and Middle School • Birch Meadow site work planned FY21 • Barrows School infiltration chamber already. Probably minimal – could put in larger ones.	High groundwater across town
Somerville	• Senior Housing (private) along Alewife Brook. Clarendon Hill. Site improvements planned; parking lot. • Matignon Field, private school • Somerville Housing Authority (south of Ten Hills) • Holland Street repaving (Area 3 from Somerville MVP study) • Group small GSI together at a neighborhood scale; results from Somerville MVP project	Only small portions in the Mystic are separated, but more planned in the future (possibly Davis) Assembly Row drains below dam
Stoneham	• Pomeworth Field • Weiss Farm (private), agriculture. 40B development. • Recreation Park • New High School planned, about 5 years from now. Forming a building committee now. Assume same location as existing High School for now.	Stoneham is at a higher elevation than surrounding Towns Town does not have a CIP
Wakefield	• Some Town-owned parcels near border with Melrose/Stoneham, but high elevation • Main Street, some gas work planned in the next year or two. Complete streets. Infiltration trenches. **May be outside watershed.**	Town Engineer thinks there is a larger area in the Mystic watershed than shown based on the boundary from

Reference: **Opportunity Areas Identified by Communities**

Community	Opportunities	General Comments
		MassGIS; could lead to more opportunities The Town has historically been under-funded on roads/sidewalks and is going after $2.5M per year for the next 10 years – opportunity to include GSI
Watertown		Town of Belmont owns Belmont Street, but Watertown owns sidewalks.
Wilmington	• Town owns limited property within the Mystic watershed. Some on Cook Ave, but hilly. • Small pump station owned by Town	Sand and gravel throughout Town, so good infiltration Most of the area in the Mystic watershed is industrial. Very limited residential around Cook Ave.
Winchester	Town reports they have already implemented BMPs at all major opportunity areas. Most opportunity is in Woburn (Cummings Park, development with Kraft Foods – conservation restriction on land not currently to be developed.) • Muraco and Lynch Elementary Schools likely to be rebuilt next. • Design for infiltration at Lincoln Elementary School but didn't have money to build. Plans available. • Leonard Field, some drainage down Washington toward field. • Opportunity along Aberjona River (Davidson Park)	

Reference: **Opportunity Areas Identified by Communities**

Community	Opportunities	General Comments
Woburn	• Cranberry bog conservation area along Aberjona, flood storage. Washington Circle to Salem St. Marsh above it, then Halls Brook holding area. Where cranberry bog crosses Washington would be great location for storage but a house currently there. • Four Corners, next MVP opportunity. Culvert issue/blockage. Runs under buildings (KFC) • Wetlands across Washington, 17.5 acres owned by City • NRD restoration of wetland	

Highlighted text indicates site for which GIS shapefile data is provided.

Stantec Consulting Services

Jen Zoppo PMP
Project Manager

Phone: 1 617 314 7172
jennifer.zoppo@stantec.com

Attachment: Attachment

c. C.C.

Task 1.1 Recap Map
(Consolidated Initial Regional Model Feedback and GI Opportunity Sites)

Legend

- Model River Reach
- Mystic River Tributaries
- Major Roads
- Municipal Boundaries
- 10 Year 2070 Low Lying Areas Above River Elevation
- 10 Year 2070 Overbank Flooding Areas
- 10 Year 2070 Low Lying Areas Disconnected from the River
- Over_Prediction
- Under_Prediction
- Opportunity_Sites
- Mystic River Watershed

1 inch = 0.39 miles

N

READING
WOBURN
BURLINGTON
WAKEFIELD
STONEHAM
MELROSE
WINCHESTER
LEXINGTON
ARLINGTON
BELMONT
MEDFORD
EVERETT
SOMERVILLE
CAMBRIDGE
WATERTOWN
MALDEN

Upper Woburn Street Pond
Lower Woburn Street Pond
Mill Pond
Lake Quannapowitt
Crystal Lake
Spring Pond: Second Pond
Griswold Pond
Whittemore Pond
Butterfield Pond
Horn Pond
Doleful Pond
North Reservoir
Ell Pond: Crystal Pond
Spot Pond
Winter Pond
Wedge Pond
Judkins Pond
Middle Reservoir
Quarter Mile Pond
Fells Reservoir
South Reservoir
Boojum Rock Pond
Wrights Pond
Upper Mystic Lake
Arlington Reservoir
Lower Mystic Lake
Fellsmere Pond
Spy Pond
Little Pond
Clay Pit Pond
Jerrys Pond
Little Fresh Pond
Fresh Pond
Lyman Pond
Charles River

INTERSTATE 93
MAIN STREET
HAVERHILL STREET
FRANKLIN STREET
GROVE STREET
RAMP 38
WEST STREET
EAMES STREET
WOBURN STREET
WILLOW STREET
SALEM STREET
JOHN STREET
RAMP 41
YANKEE DIVISION HIGHWAY
LOWELL STREET
CAMBRIDGE STREET
MERRIMAC STREET
NEW BOSTON STREET
WILMINGTON
BEDFORD STREET
CENTER STREET
WINN STREET
YANKEE DIVISION HIGHWAY
OLYMPIA AVENUE
HOPKINS STREET
PROSPECT STREET
CHURCH STREET
NORTH AVENUE
WATER STREET
ALBION STREET
NAHANT STREET
FARM STREET
BROADWAY
WILLIAM STREET
ELM STREET
MISHAWUM ROAD
BURLINGTON MALL ROAD
WAYSIDE ROAD
BLANCHARD ROAD
MIDDLESEX TURNPIKE
CAMBRIDGE ROAD
MONTVALE AVENUE
SPRING STREET
EAST STREET
PLEASANT STREET
FRANKLIN STREET
MARBLE STREET
WASHINGTON STREET
FOREST STREET
PARK STREET
LEXINGTON STREET
HIGHLAND AVENUE
SOUTH BORDER ROAD
POND STREET
WARWICK ROAD
LYNN FELLS PARKWAY
UPHAM STREET
WEST WYOMING AVENUE
LEBANON STREET
MAPLE STREET
MARRETT ROAD
SUMMER STREET
RIDGE STREET
LOCKELAND ROAD
MANOMET ROAD
BACON STREET
MASSACHUSETTS AVENUE
BRATTLE STREET
GROVE STREET
MILL STREET
MYSTIC STREET
MEDFORD STREET
HIGH STREET
PLAYSTEAD ROAD
WINTHROP STREET
FELLSWAY WEST
FELLSWAY EAST
RAMP RT 93 SB TO RT 28
MYSTIC VALLEY PARKWAY
MYSTIC AVENUE
RIVERSIDE AVENUE
FELLSWAY
COMMERCIAL STREET
RIVERS EDGE DRIVE
BOSTON AVENUE
HARVARD STREET
POWDER HOUSE BOULEVARD
HOLLAND STREET
REVERE BEACH PARKWAY
TILESTON STREET
SCHOOL STREET
SECOND STREET
BEACHAM STREET
ALFORD STREET
MCGRATH HIGHWAY
SOMERVILLE AVENUE
BEACON STREET
GARDEN STREET
HURON AVENUE
MOUNT AUBURN STREET
CONCORD AVENUE
CONCORD TURNPIKE
TRAPELO ROAD
WAVERLEY OAKS ROAD
BELMONT STREET
WARREN STREET
ORCHARD STREET
FRONTAGE ROAD
PARK AVENUE
WINTER STREET
CONCORD AVENUE
LAKE STREET
PLEASANT STREET
MILL STREET
MAIN STREET
BROADWAY
SALEM STREET
CENTRE STREET
EASTERN AVENUE
BRYANT STREET
FERRY STREET
MEDFORD STREET
TERMINAL STREET
BUNKER HILL STREET
NEW RUTHERFORD AVENUE
CHELSEA STREET
CAMBRIDGE STREET
INTERSTATE 93

Task 1.1

Outreach materials and sample community data request

MVP Action Grant: Watershed-wide Analysis to Optimize & Coordinate Regional Stormwater Management in Mystic River Watershed

Mystic River WATERSHED ASSOCIATION

PROJECT OVERVIEW

The Resilient Mystic Collaborative's (RMC) Upper Mystic Stormwater Working Group, through the City of Cambridge, was awarded a $350,000 Municipal Vulnerability Preparedness (MVP) Action Grant to prioritize opportunities for regional stormwater retention with an emphasis on green infrastructure solutions. An associated $75,000 grant from the U.S. EPA will help communities incorporate the results of this work into their local Hazard Mitigation Plans.

The MVP Action Grant will be used to complete a comprehensive analysis of how to optimize and coordinate regional stormwater management in the Upper Mystic River Watershed. The goal of the analysis is to determine the effectiveness of new stormwater wetlands and active reservoir management in reducing river flooding at a regional scale.

WHY IS THIS PROJECT A PRIORITY? HOW DOES IT ADVANCE REGIONAL RESILIENCY EFFORTS?

> ***"Climate impacts do not recognize town, county, or state borders."***
>
> ***"Extreme precipitation events, impacted by climate change, cause the Mystic River watershed to flood more frequently and severely due to changes in intensity and rainfall volume."***
>
> *- Recent regional climate reports*

A growing number of municipalities within the Upper Mystic River watershed have conducted climate change vulnerability assessments and determined that addressing flooding from extreme precipitation is of high priority within their municipality. This initiative aims to advance efforts to mitigate flooding from precipitation events within the watershed by aligning resources with intervention opportunities. Working together across municipal boundaries to prioritize the most cost-effective projects at the watershed scale, this project will serve as a model for other regional collaboratives across the state and country.

Through this MVP Action Grant, the project team will identify and pursue site-specific green infrastructure opportunities for regional stormwater management and evaluate additional flood management strategies to mitigate precipitation flooding from the 10-year storm event in 2070.

WHAT ARE THE KEY PROJECT OUTCOMES? HOW WILL THIS BENEFIT MY MUNICIPALITY?

The Consensus Building Institute (CBI) released a new report this month[1], funded by the Barr Foundation, that included an overview of climate resilience initiatives in the Greater Boston region.

A major takeaway from this report was that preparing for climate impacts requires municipalities to address areas of *shared vulnerability* in addition to their own unique needs. The project team is coordinating with 17 municipalities within the Upper Mystic watershed, DCR, and MWRA to identify and pursue site-specific green infrastructure opportunities to advance regional and local stormwater management with co-benefits for RMC stakeholders. The project will involve:

- Undertaking a watershed-wide analysis to optimize and coordinate regional stormwater management in the Mystic River Watershed.
- Refining the existing watershed model to become an inclusive, shared stormwater management model for Upper Mystic municipalities. This step will help improve planning efforts and assist in prioritization of projects that reduce watershed flood risk via improved stormwater management.
- Building out a portfolio of potential green infrastructure projects in each municipality. For each municipality in this project, at least one green infrastructure project opportunity will be identified. (A full list of these will be shared in this project's Final Report.)

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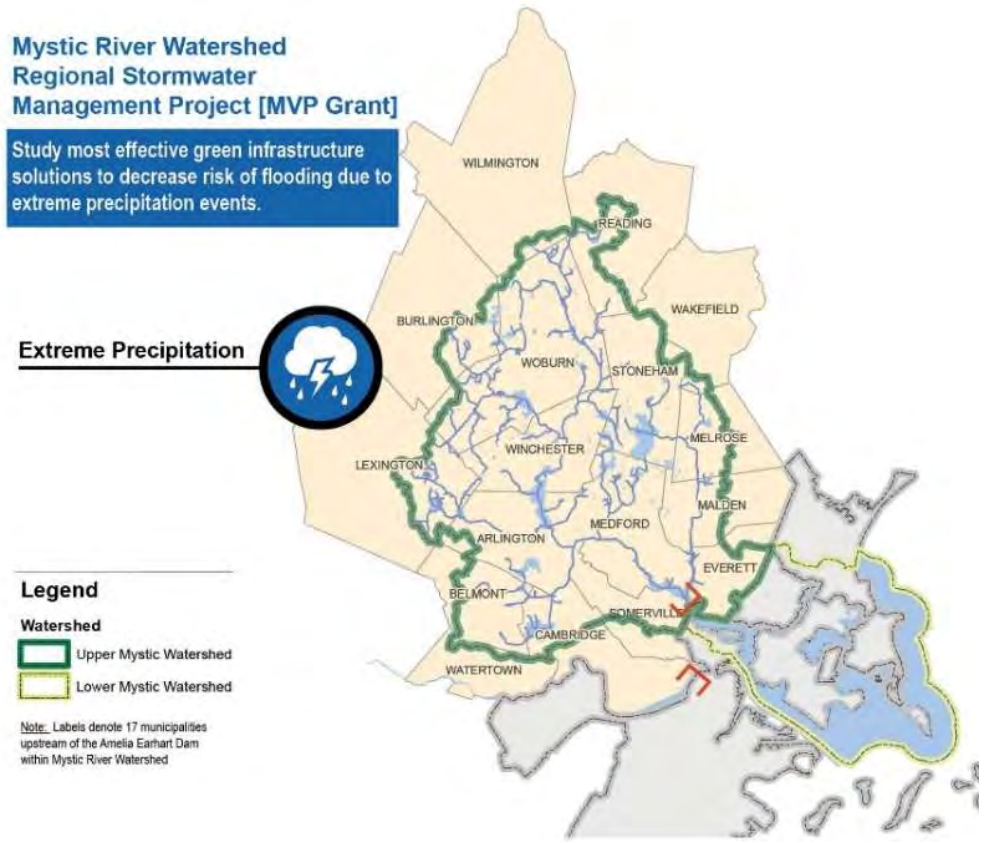
[1] *Pathways to Climate Resilience: Strategies for the Greater Boston Area.* Barr Foundation & Consensus Building Institute. August 2019. https://barrfdn.issuelab.org/resource/pathways-to-climate-resilience-strategies-for-the-greater-boston-area.html

MVP Action Grant: Watershed-wide Analysis to Optimize & Coordinate Regional Stormwater Management in Mystic River Watershed

Mystic River WATERSHED ASSOCIATION

- Using a consensus-based prioritization approach, the project team – working in collaboration with the RMC Upper Mystic Stormwater Working Group - will rank the most cost-effective green infrastructure projects that contribute significantly to flood reduction at the watershed scale (during precipitation events) while also delivering significant co-benefits and enhancing local climate resilience:
- A select group of priority project opportunities will then be advanced to 10% concept design and modeled within the updated Mystic River Watershed model. (Note: Priority opportunities in this group will not include an opportunity in each of the municipalities). The intent of prioritization, as it applies to this effort, is to prioritize project opportunities that contribute significantly to flood reduction at the watershed scale and help position these potential projects for implementation via future MVP Action grants, or using other funding sources.



HOW CAN YOU BEST SUPPORT THIS PROJECT?

As municipal engineers, planners, first responders, and leaders within the watershed, your involvement is very important. Your input is being requested:

- **Review the projected flood maps** at the meeting that were developed through previous RMC and project team efforts to help calibrate the Upper Mystic Watershed model via feedback and data on actual observations;
- **Provide technical feedback on drainage system functions and first-hand observations from first response to flood events** at the meeting; also discuss and review any previous work done by specific communities to identify potential parcels for green infrastructure implementation.
- **Share existing community data**. See **ATTACHMENT: Data Request Table.** Within 2 weeks of the meeting, provide requested data (GIS data, reports, plans, etc.) to Jen Zoppo at Stantec.
- Meeting participants are also invited - and encouraged to **contribute to - the RMC Upper Mystic Stormwater Working Group's prioritization ranking workshops** (target date December 2019 or January 2020). As this date nears, meeting participants will receive an email with confirmed date and location.

PROJECT TIMELINE: September 2019 – June 2020

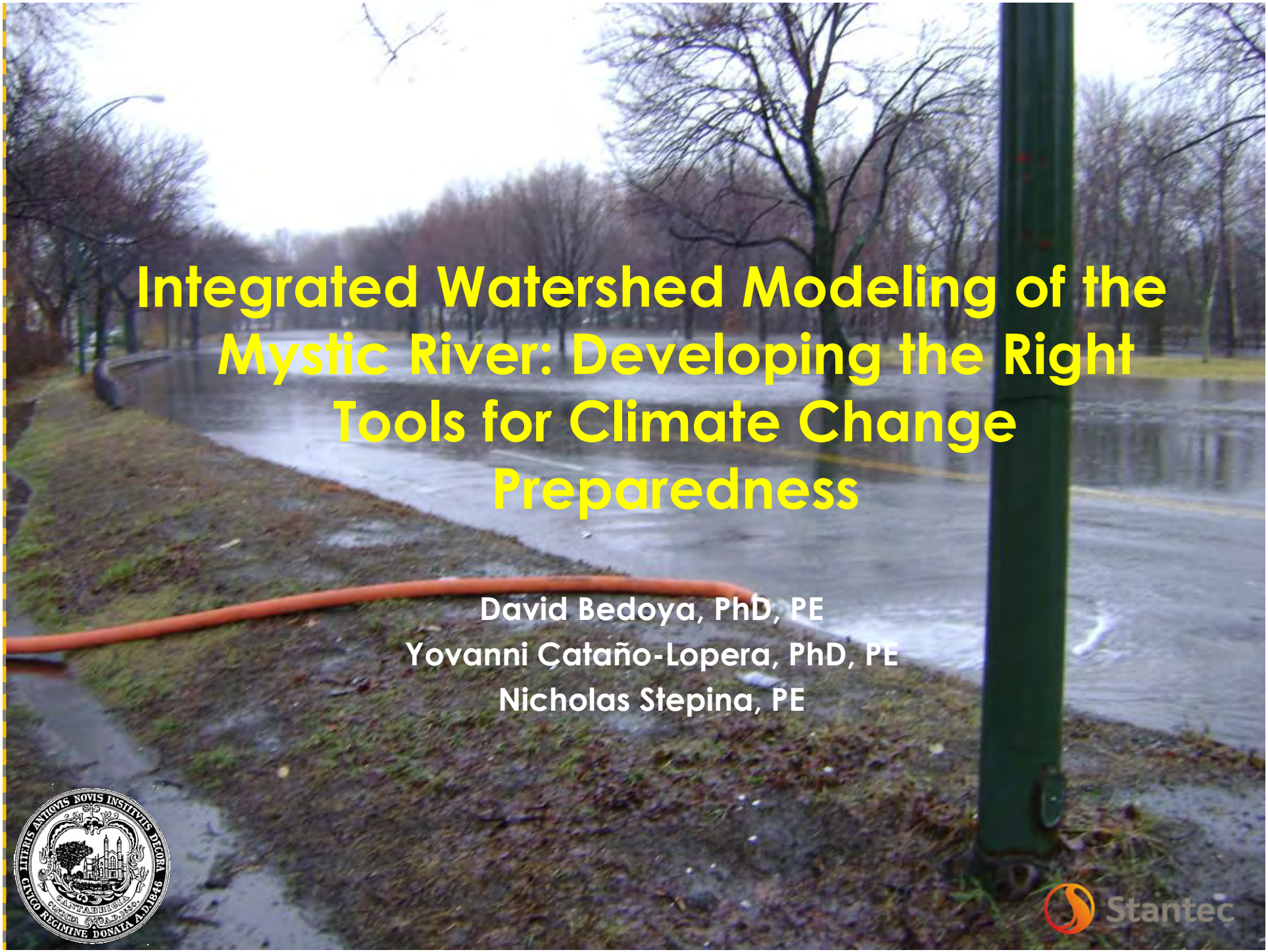
PROJECT CONTACTS:

Patrick Herron, Executive Director, Mystic River Watershed Association, Patrick.Herron@mysticriver.org 781-316-3438

Jen Zoppo, Project Manager, Stantec, Jennifer.Zoppo@stantec.com 617-314-7172

Task 1.2
Supporting Documentation

Initial Regional Model documentation



Integrated Watershed Modeling of the Mystic River: Developing the Right Tools for Climate Change Preparedness

David Bedoya, PhD, PE
Yovanni Cataño-Lopera, PhD, PE
Nicholas Stepina, PE

Presentation Overview

1 Cambridge CCVA

2 The Alewife Brook Area

3 Hydraulic Model Integration

4 Hydraulic Model Calibration and Validation

5 Potential Future Uses

6 Conclusions

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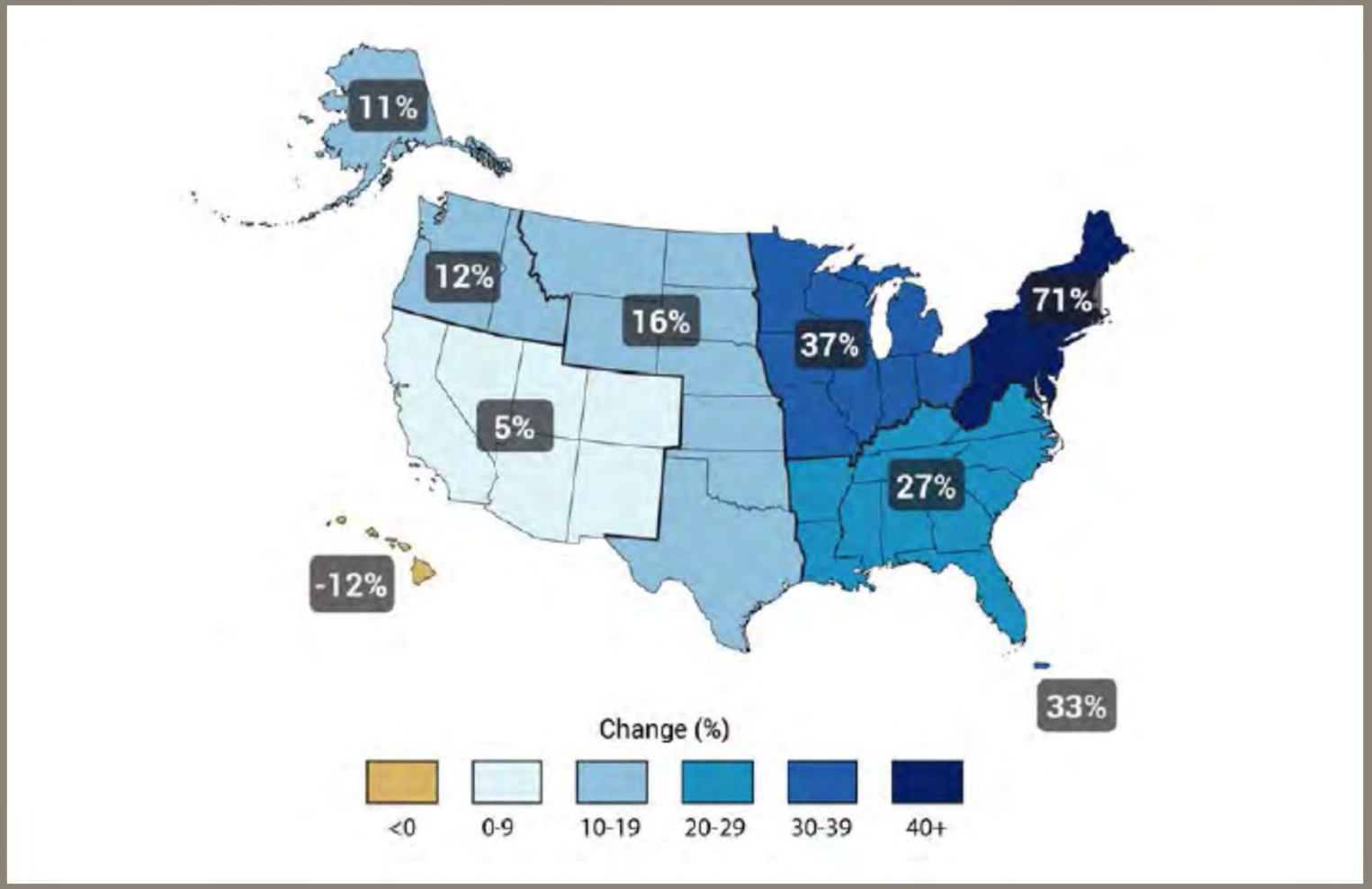
1 Cambridge CCVA, Part 1



Source: 2014 U.S. National Climate Assessment Report

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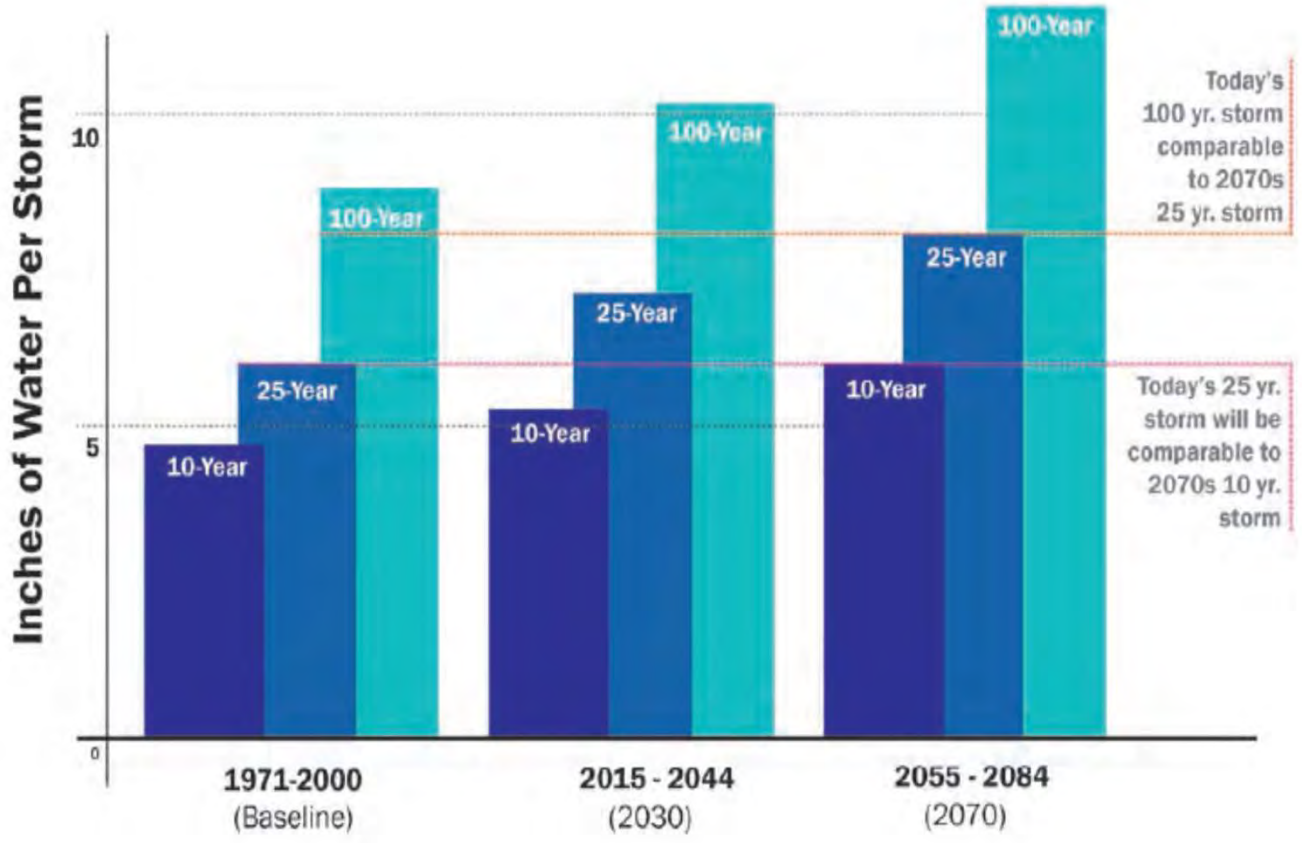
Cambridge CCVA, Part 1

Increase in Precipitation



Source: 2015 Cambridge CCVA, Part 1

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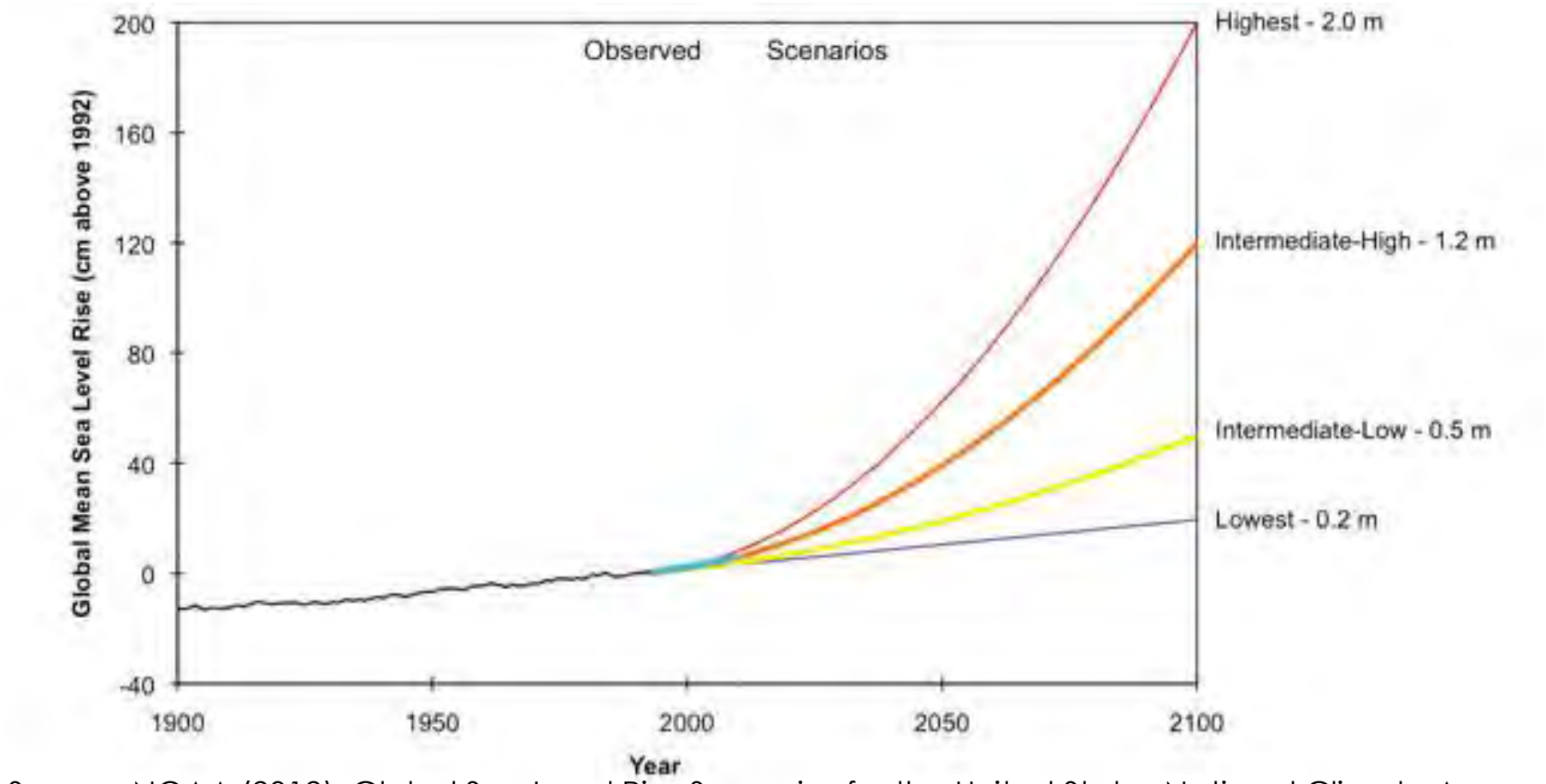
Cambridge CCVA, Part 1

SLR/SS



Source: NOAA (2012). Global Sea Level Rise Scenarios for the United States National Climate Assessment

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Flood Modeling in the CCVA

Riverine Overbank Flooding from Precipitation

- Captured using HEC-RAS model

Sewer System Flooding from Precipitation or River Backups

- Captured Using City's Infoworks ICM Model

Riverine Overbank Flooding from SLR/SS events

- Captured using ADCIRC in the BH-FRM

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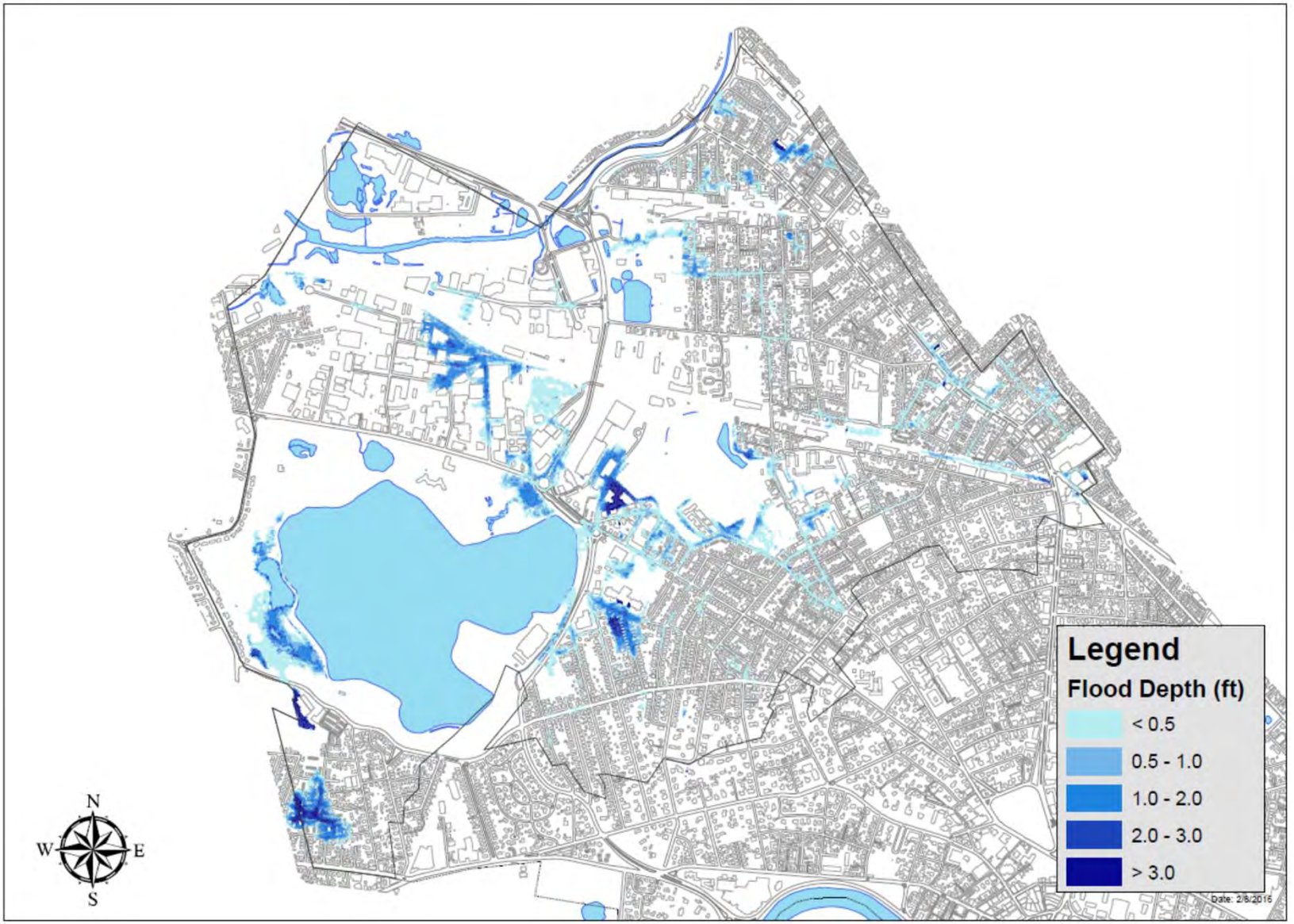
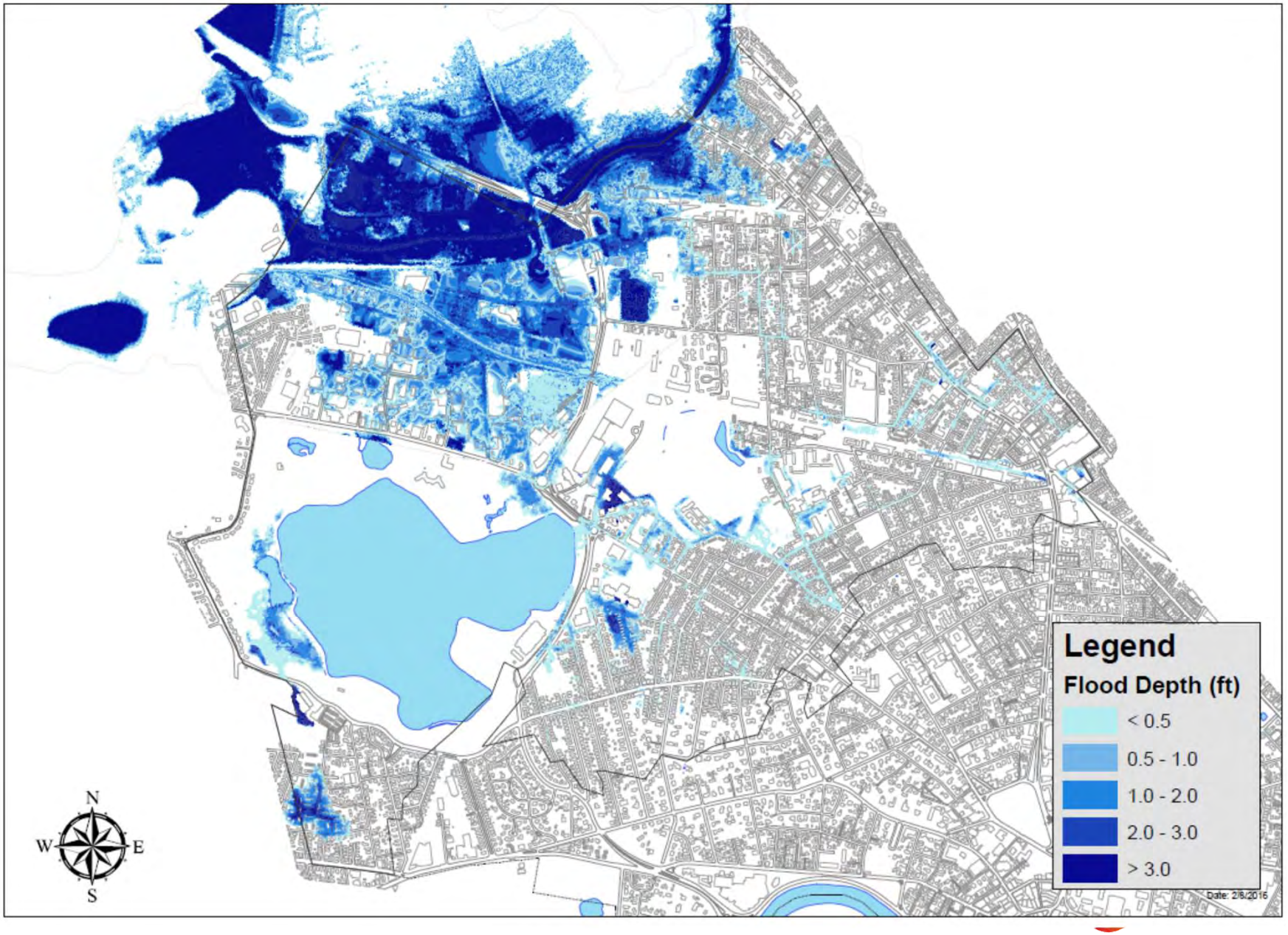
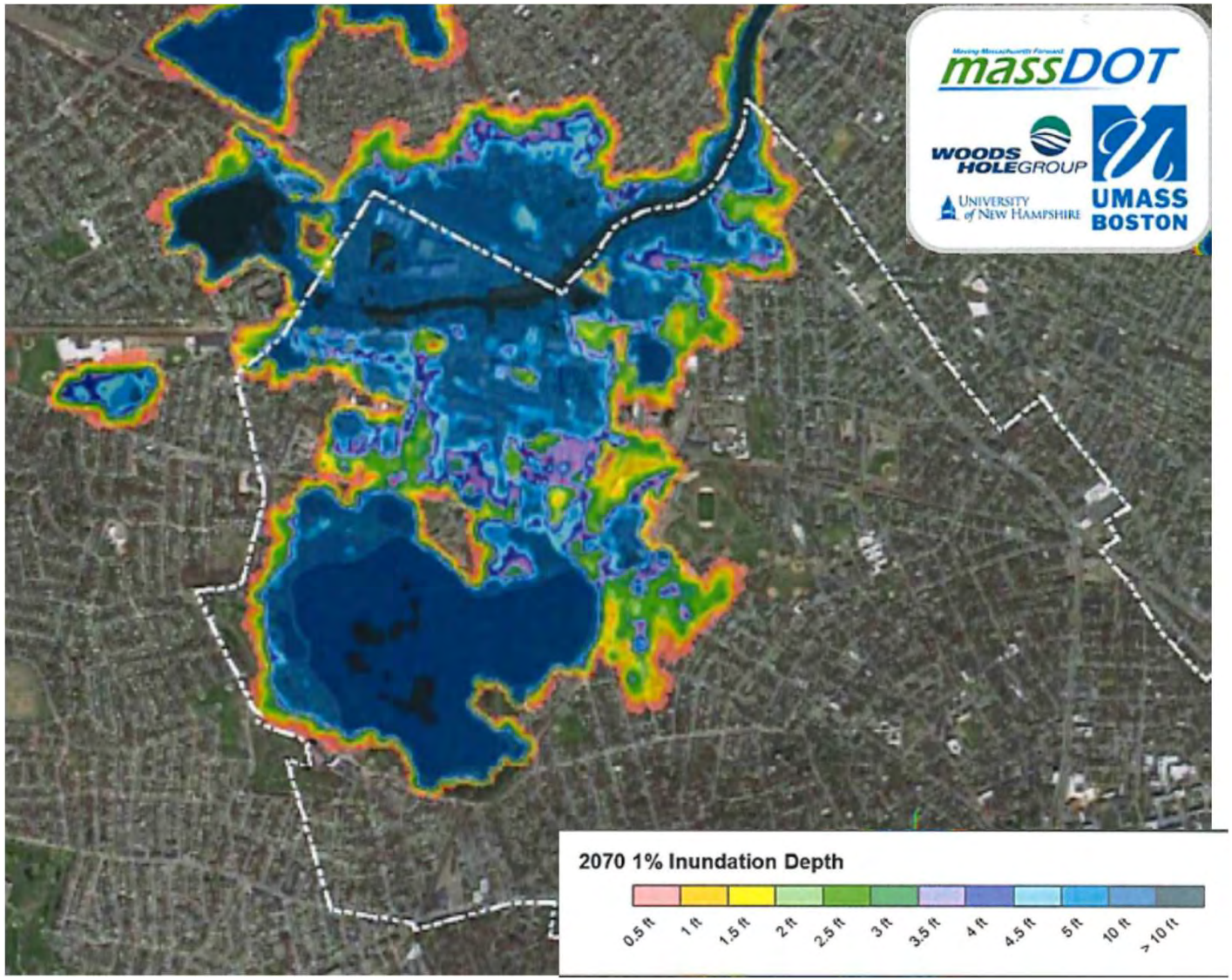
Sewer System Flooding from Precipitation



Riverine and Sewer System Flooding from Precipitation



Riverine Flooding from SLR/SS



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CCVA Part 1, Conclusions

Charles River

- Riverine overbank flooding risk is small
- Sewer system flooding is greatly exacerbated
- SLR/SS flooding risk is small and flow pathways are localized

Alewife Brook

- Riverine overbank flooding is significantly increased
- Sewer system flooding is increased
- SLR/SS flood risk and severity are greatly increased by the end of the century

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2 The Alewife Brook Area

- This region of Cambridge is the most vulnerable to flooding under climate change
- Flooding risk is augmented by increased precipitation up to mid-century as well as SLR/SS at the end of the century
- The Alewife area will be impacted by both riverine and sewer system flooding

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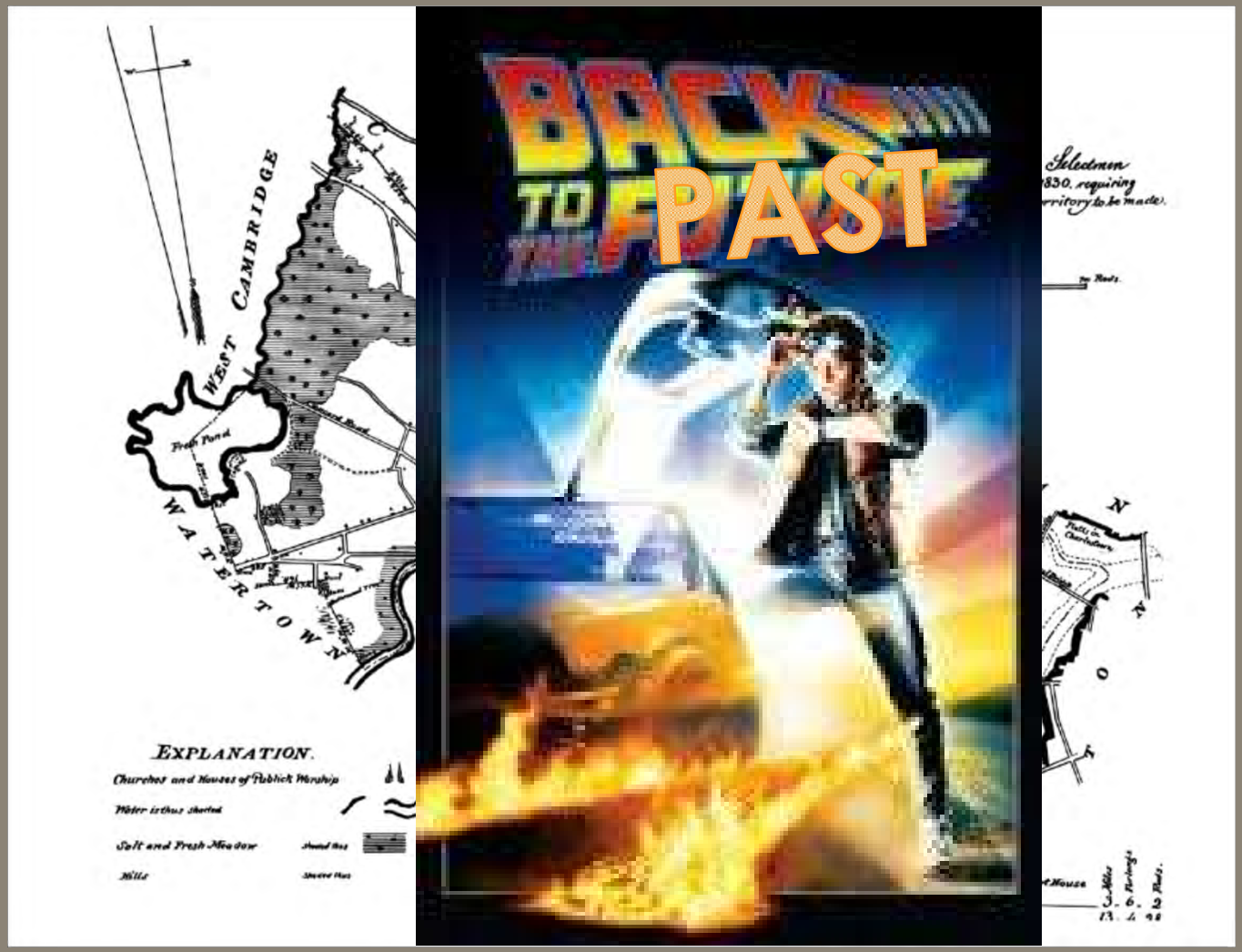
2. The Alewife Brook area in the Future –Title of the Movie?



Source: John Sullivan, Cambridge Historical Commission

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Challenges of a non-integrated approach

- Different flooding types occur at different times
- Flooding is generated by factors of different scale (local or system level for sewer flooding) versus watershed or regional for riverine flooding
- High degree of inter-dependence between systems
- Running scenarios and combinations of scenarios becomes cost and time prohibitive (it's also the worst nightmare for a hydraulic modeler-high chances of error)

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3 Hydraulic Modeling Integration

- River Models don't include pipe systems
- Sewer models don't include river systems
- Coastal models don't include pipe systems or hydrology

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Mystic River Watershed Model Integration

- Watershed scale riverine geometry and hydrologic catchments directly imported from FEMA model used for FIS
- Pipe model was obtained from Cambridge and MWRA regional sewer model
- Both models were integrated seamlessly
- The Cambridge floodplain was generated with a high resolution 2D grid, which includes flow path obstacles
- Operation of the AED was assumed different than FEMA based on communications and calibration

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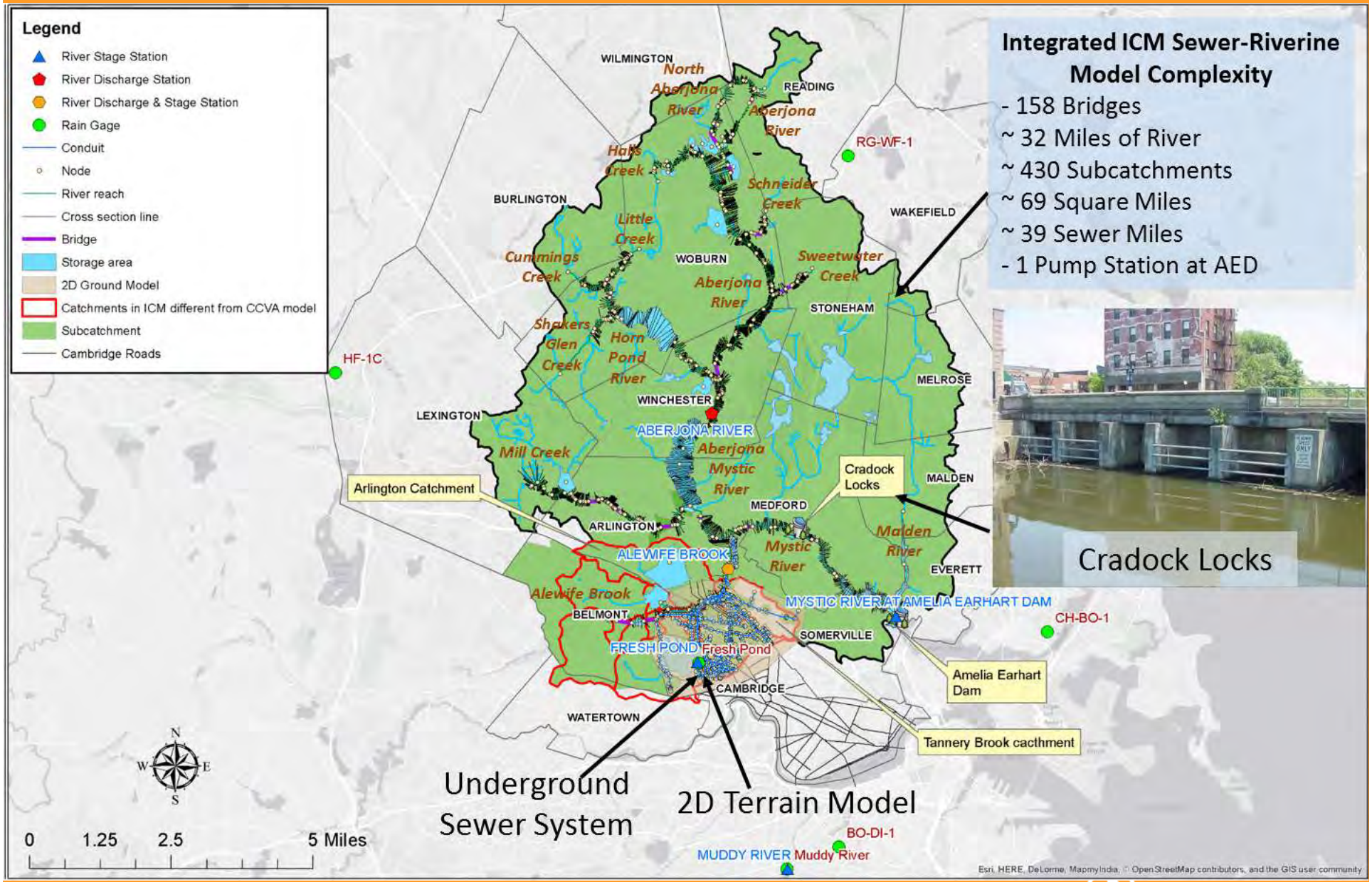
Mystic River Watershed Model Integration



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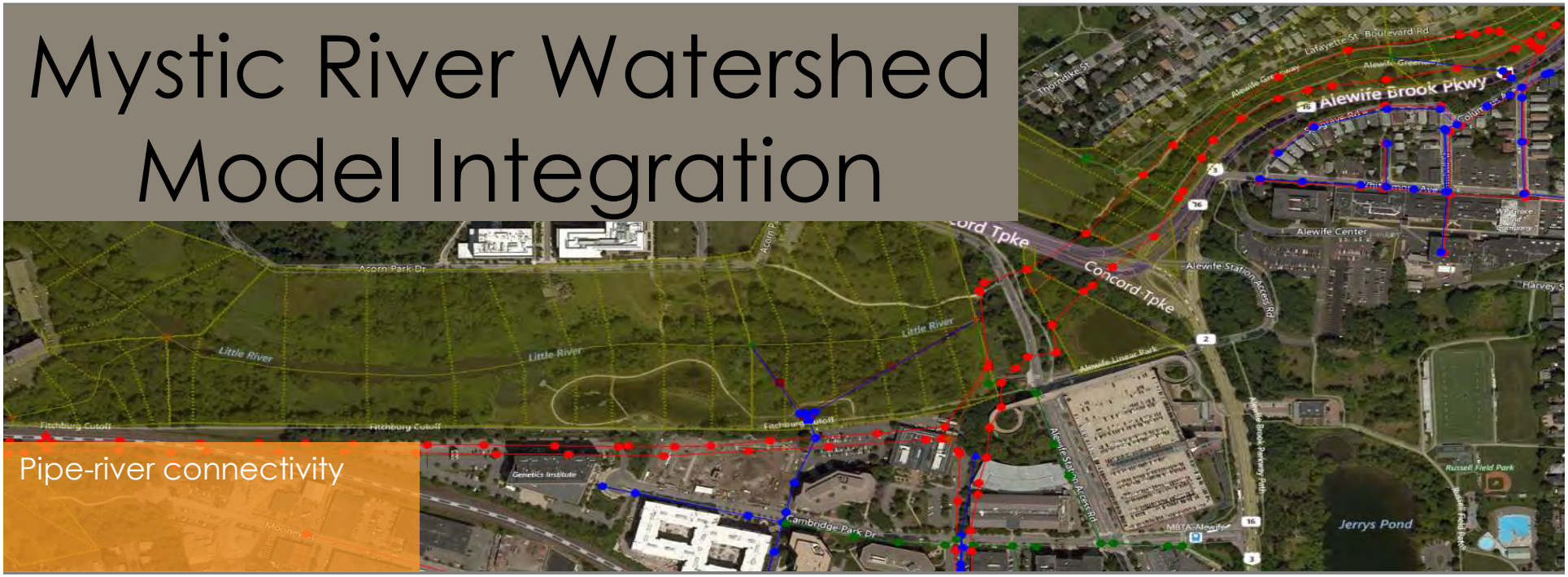
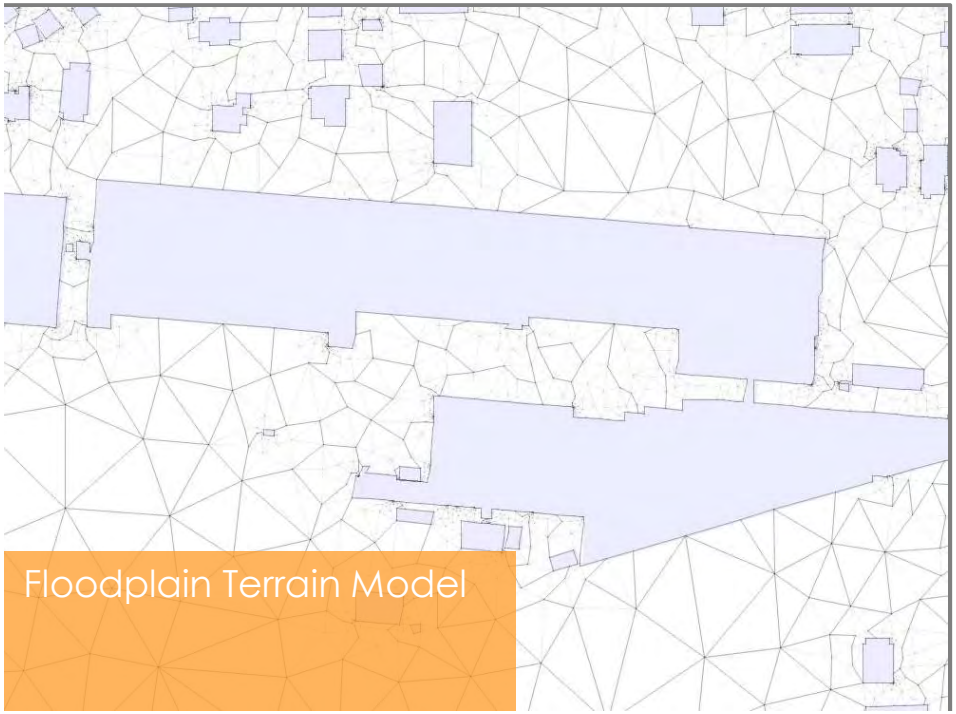
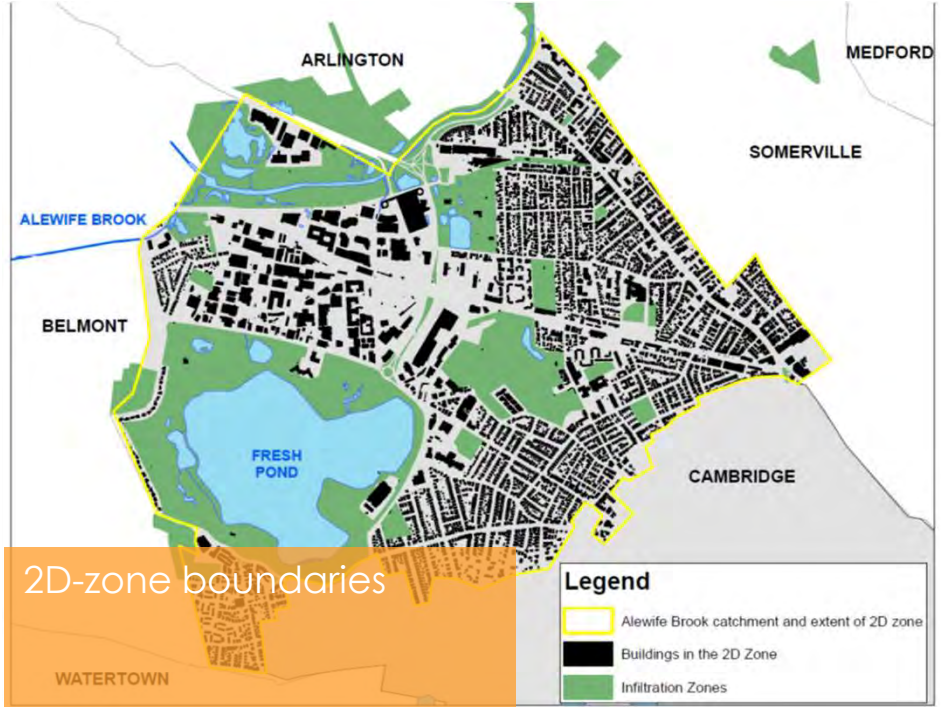
Mystic River Watershed Model Integration



Pipe-river connectivity



Floodplain Terrain Model



2D-zone boundaries

4 Hydraulic Model Calibration and Validation

Photos courtesy of Cambridge DPW

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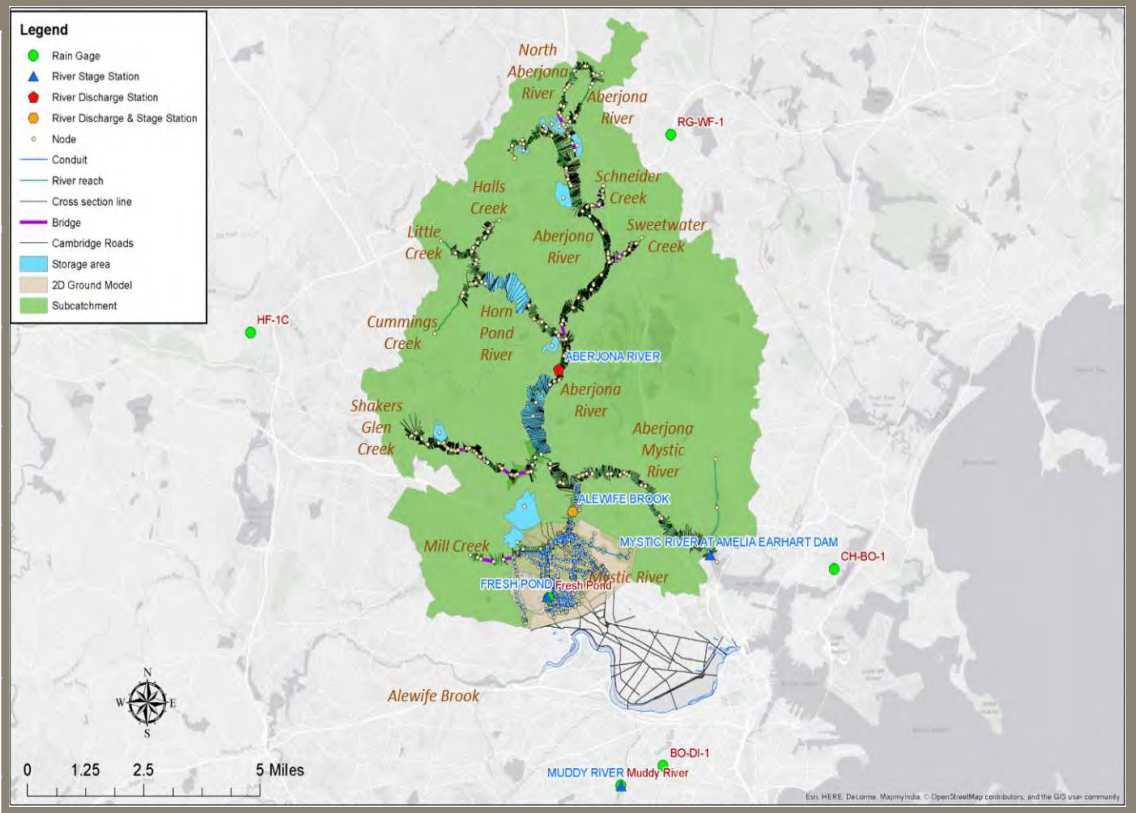
4 Hydraulic Model Calibration and Validation- Selected Storms

	March 2010	May 2006
Start Date/Time	13/8:00	12/17:30
End Date/Time	15/21:00	16/18:30
Total Rainfall (in)	9.59*	7.42*
Peak Intensity (in/hour)	1.32	0.60
Return Period**	>50-yr	~>20-yr

*At Muddy River in Brookline RG

**Based on NOAA Atlas 14 Estimates at Logan Airport



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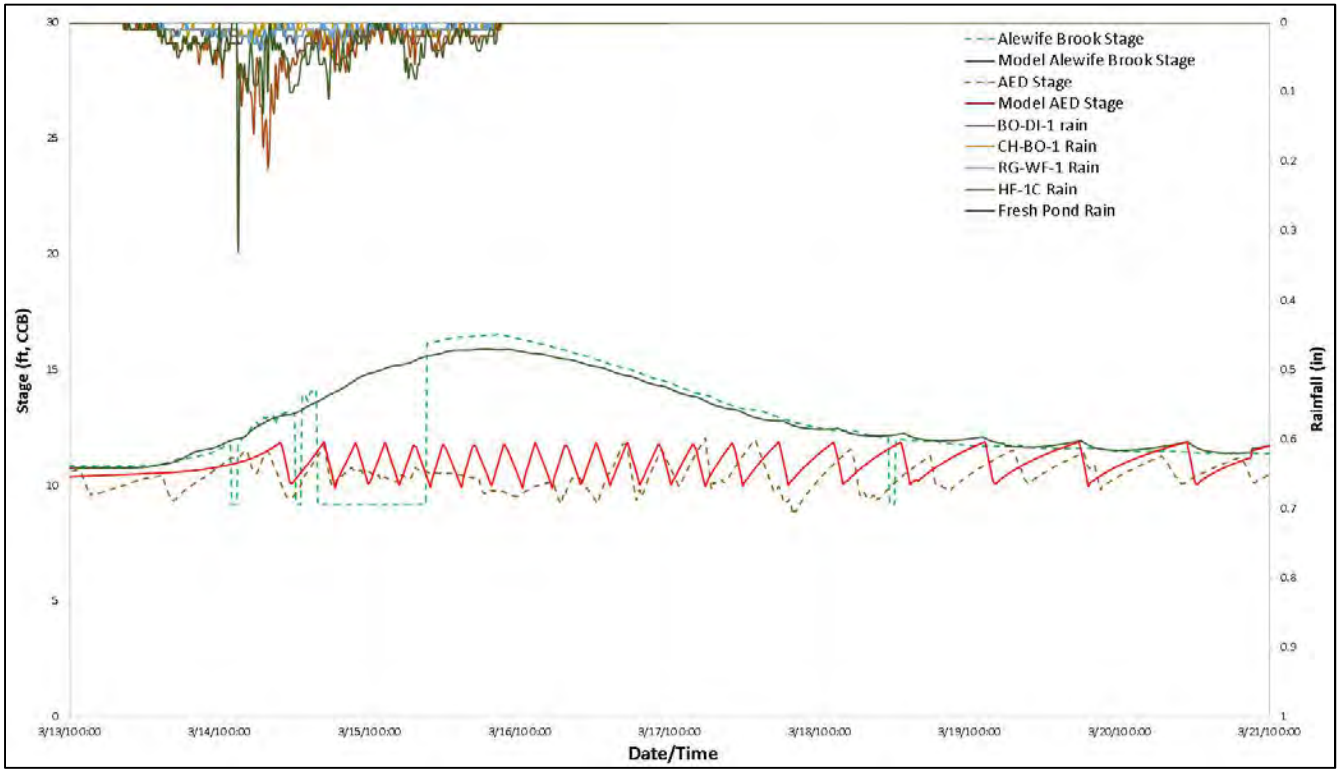
4 Hydraulic Model Calibration -March 2010 River Gages

USGS Station		Model	Meter	Difference (ft)
Alewife Brook	Peak Stage (ft)	15.94	16.52	-0.58
Amelia Earhart Dam	Peak Stage (ft)	11.90	12.05	-0.15



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4 Hydraulic Model Calibration -March 2010 River Gages

Comparison between metered and modeled flows for the March 2010 storm event.				
USGS Station		Meter	Model	% Difference
Aberjona River	Peak Flow (MGD)	937.16	935.96	-0.1
	Volume (MG)	2957.42	2341.03	-20.8
Alewife Brook	Peak Flow (MGD)	142.72	141.58	-0.8
	Volume (MG)	510.54	532.14	4.2

Stantec

4 Hydraulic Model Calibration -March 2010 Photographic Evidence

Photographs Courtesy of Cambridge DPW

Stantec

4 Hydraulic Model Calibration -March 2010 Photographic Evidence

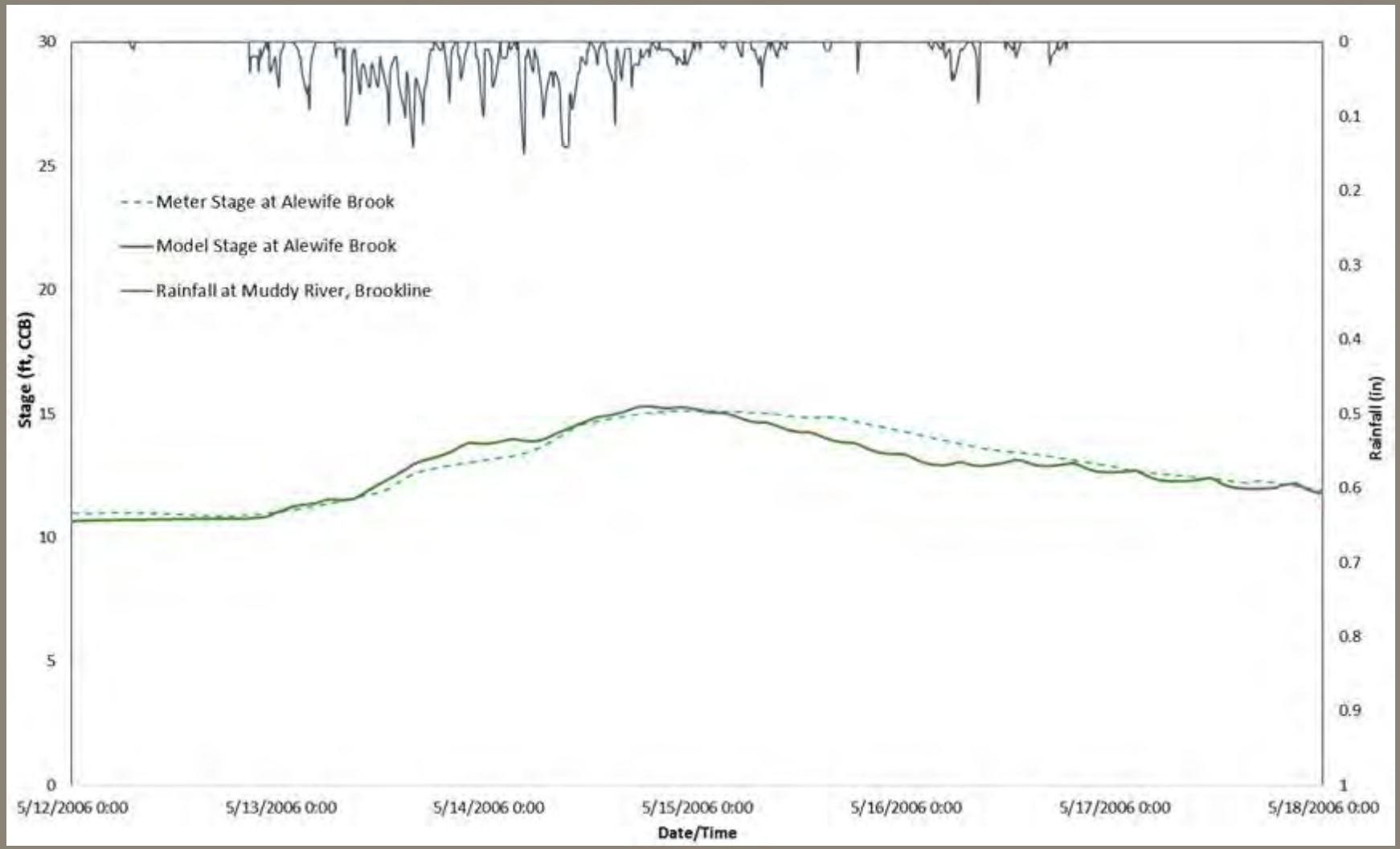
CAM400 Outfall

CAM401B Outfall

Photographs Courtesy of Cambridge DPW

Stantec

4 Hydraulic Model Validation -Mary 2006



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5 Previous Model Calibration

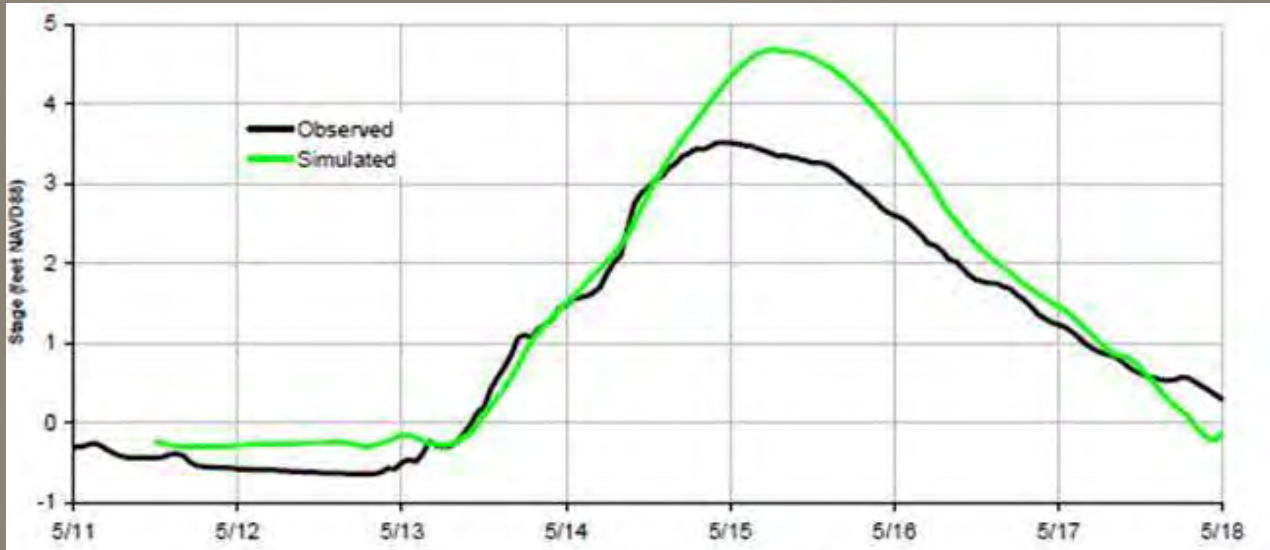

Figure 4: Observed and Simulated Stage for May 2006 Event – Alewife Brook

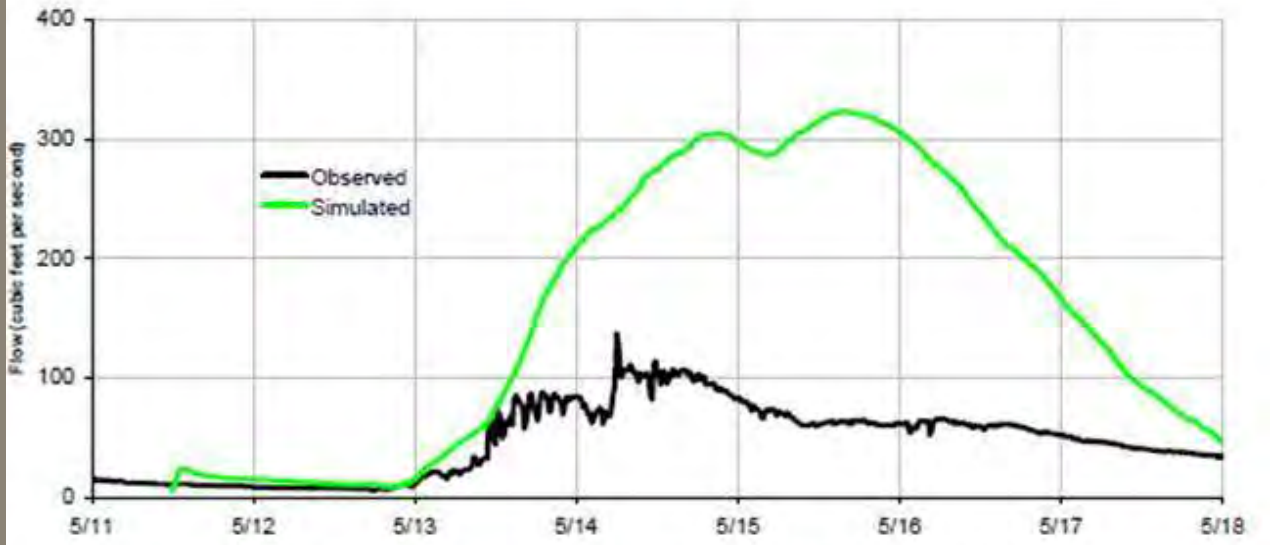

Figure 5: Observed and Simulated Discharge for May 2006 Event – Alewife Brook

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5 Potential Future Uses

- Forecast flood extents during future precipitation-driven scenarios
- Potential to propagate flooding from SLR/SS events
- Potential to asses combinations of precipitation and SLR/SS seamlessly
- Allow for evaluation of mitigation measures at multiple scales alone and in combination

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5 List of Potential Local Measures

	Measure	Sewer System Flooding	River Overbank Flooding from Precipitation	River Overbank Flooding from SLR/SSS
Source Controls	Land Use changes			
	Peak flow retention			
Pathway Controls	Flow Storage			
	Flow Transfer			
	Conveyance Capacity Increase			
Receptor Controls	System isolation via berms, walls			

antec

5 List of Potential Watershed Measures

Measure	Sewer System Flooding	River Overbank Flooding from Precipitation	River Overbank Flooding from SLR/SSS
Smart Reservoir Management			
Large Scale Land Use Changes			
Removal of Hydraulic Bottlenecks			
Increase in pumping and sluicing output			

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5 List of Potential Regional Measures

Measure	Sewer System Flooding	River Overbank Flooding from Precipitation	River Overbank Flooding from SLR/SSS
Topographic changes in flanking paths			
Revamp of the AED (raising top of the dam)			
Flow isolation and real-time flow management			
Other large scale projects		Unknown	Unknown

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Conclusions

- The model has been successfully integrated, calibrated, and validated
- It will be used to update the CCVA, Part 1 and inform the CCVA CCPR
- The watershed integrated can be refined with more information from watershed communities
- It can be used for watershed and regional decision making and to evaluate effectiveness of those decisions

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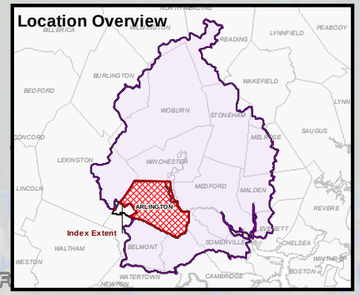
Appendix B

Task 1-2 Model Updates and Piped Infrastructure

Image credit: MyRWA

Location Overview



Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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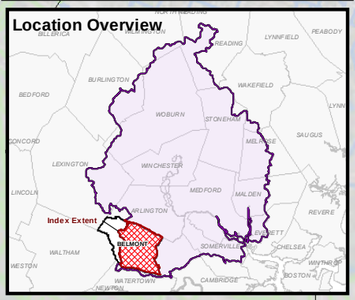
PROJECT NO.	20201034.004A
CREATED:	4/17/2020
CREATED BY:	RDelgado
CHECKED BY:	CP/KEJ
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model:
ARLINGTON

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
ARLINGTON, MA

FIGURE
1
of 17

Location Overview



BELMONT

LEXINGTON

ARLINGTON

WALTHAM

WATERTOWN

SOMERVILLE

CAMBRIDGE

BOSTON

0 2,000 Feet
1 inch = 2,000 feet

N

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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FILE NAME:	Watershed Drainage + Outfalls.mxd

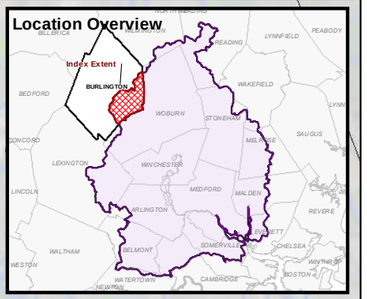
Mystic Watershed Hydraulic Model:
BELMONT

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
BELMONT, MA

FIGURE
2
of 17

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

Location Overview



BILLERICA
BEDFORD
WILMINGTON
BURLINGTON
WOBURN
LEXINGTON
WINCHESTER

0 2,000
Feet
1 inch = 2,000 feet

N

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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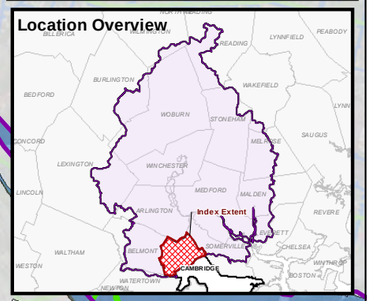
Mystic Watershed Hydraulic Model:
BURLINGTON

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
BURLINGTON, MA

FIGURE
3
of 17

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

Location Overview



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- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
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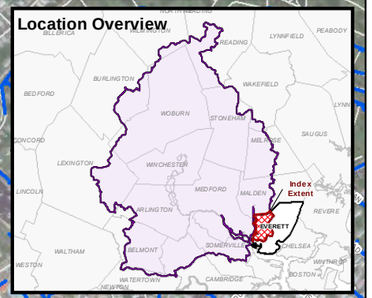
Mystic Watershed Hydraulic Model:
CAMBRIDGE

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
CAMBRIDGE, MA

FIGURE
4
of 17

Location Overview



MALDEN
MEDFORD
EVERETT
SOMERVILLE
CHELSEA
BOSTON

0 1,000
Feet
1 inch = 1,000 feet

N

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

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- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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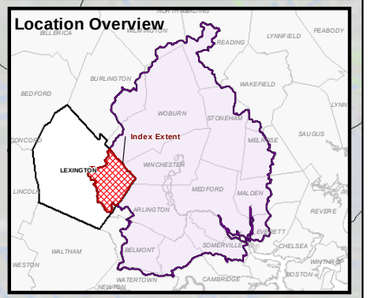
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model:
EVERETT

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
EVERETT, MA

FIGURE
5
of 17

Location Overview



0 2,000
Feet
1 inch = 2,000 feet

N

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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CREATED BY:	RDelgado
CHECKED BY:	CP/KEJ
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model:
LEXINGTON

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
LEXINGTON, MA

FIGURE
6
of 17

Location Overview

Index Extent

MALDEN

STONEHAM

WINCHESTER

MELROSE

SAUGUS

MEDFORD

REVERE

EVERETT

SOMERVILLE

CHELSEA

0 2,000 Feet

1 inch = 2,000 feet

N

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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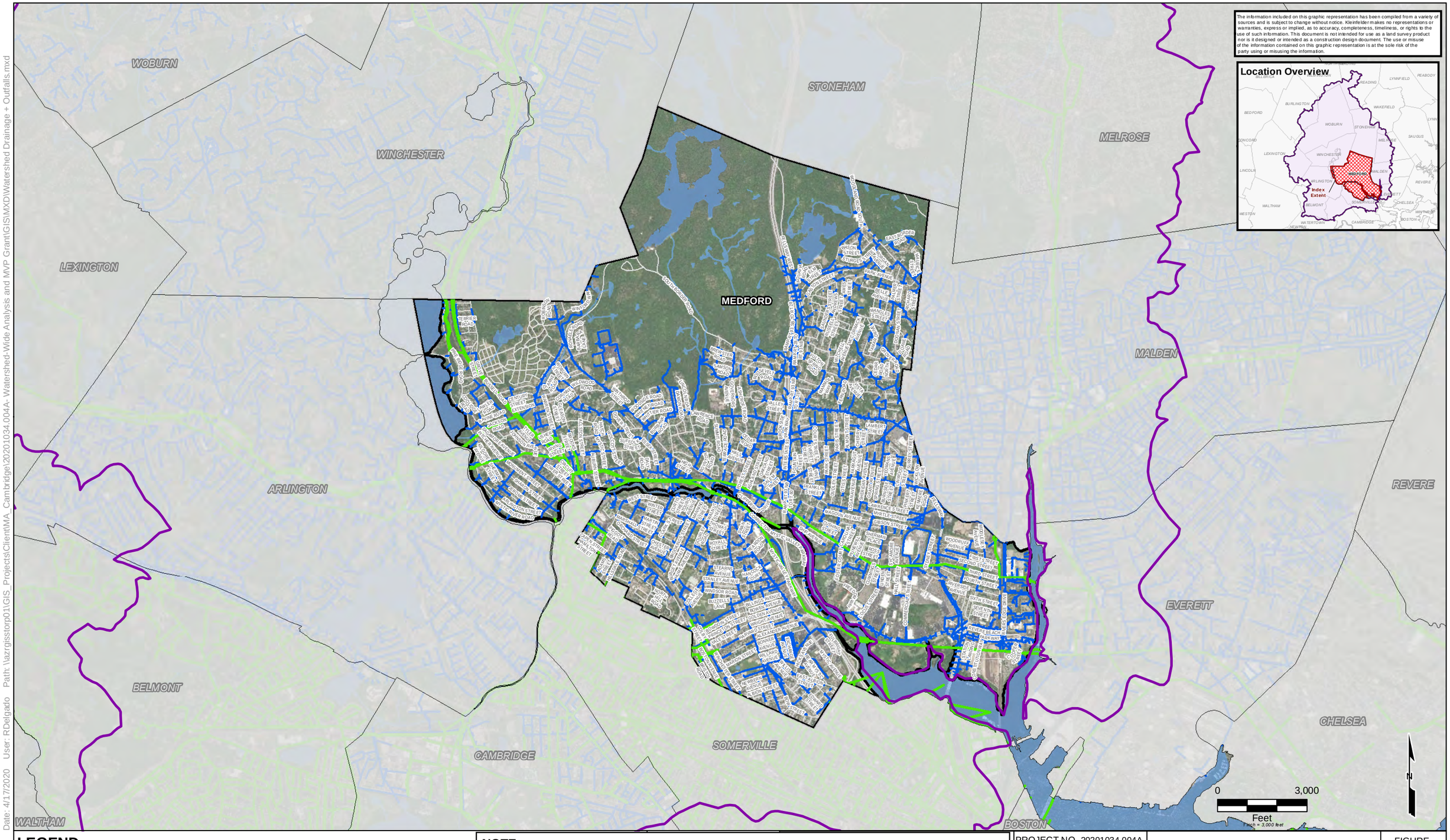
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model: MALDEN

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
MALDEN, MA

FIGURE 7 of 17



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LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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PROJECT NO.	20201034.004A
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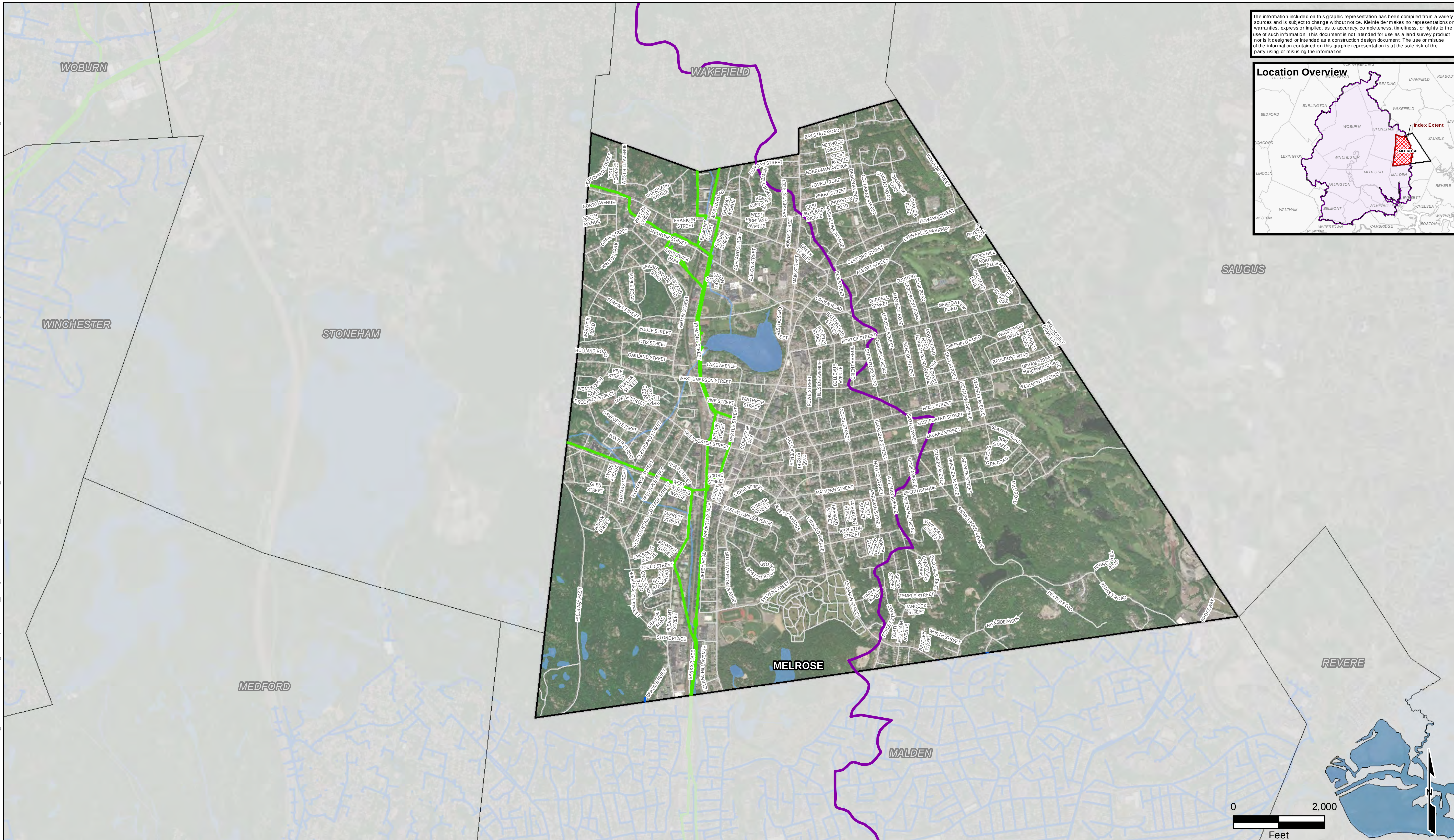
CHECKED BY:	CP/KEJ
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model:
MEDFORD

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
MEDFORD, MA

FIGURE
8
of 17

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd



LEGEND

- Upper Mystic River Watershed
- Stormwater Drain Main
- Town Boundary
- Modeled Pipes

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PROJECT NO.	20201034.004A
CREATED:	4/17/2020
CREATED BY:	RDelgado
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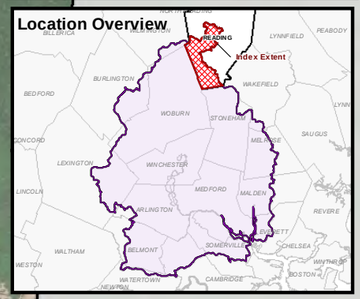
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model:
MELROSE

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
MELROSE, MA

FIGURE
9
of 17

Location Overview



0 2,000
Feet
1 inch = 2,000 feet

N

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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PROJECT NO.	20201034.004A
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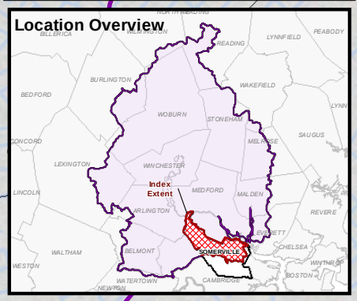
CREATED BY:	RDelgado
CHECKED BY:	CP/KEJ
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model: READING

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
READING, MA

FIGURE 10 of 17

Location Overview



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LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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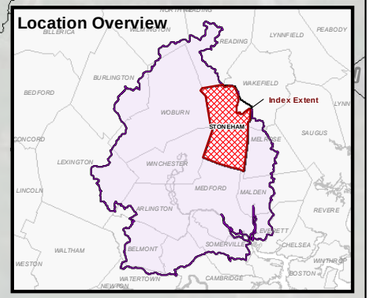
CREATED BY:	RDelgado
CHECKED BY:	CP/KEJ
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model:
SOMERVILLE

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
SOMERVILLE, MA

FIGURE
11
of 17

Location Overview



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LEGEND

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- Town Boundary
- Modeled Pipes
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Mystic Watershed Hydraulic Model:
STONEHAM

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
STONEHAM, MA

FIGURE
12
of 17

Location Overview

Index Extent

READING
WOBURN
STONEHAM
WAKEFIELD
SAUGUS
MELROSE
WINCHESTER

0 2,000
Feet
1 inch = 2,000 feet

N

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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FILE NAME:	Watershed Drainage + Outfalls.mxd

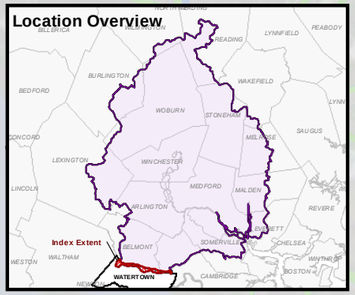
Mystic Watershed Hydraulic Model:
WAKEFIELD

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
WAKEFIELD, MA

FIGURE
13
of 17

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

Location Overview



WALTHAM

BELMONT

CAMBRIDGE

WATERTOWN

NEWTON

0 1,000 Feet

1 inch = 1,000 feet

N

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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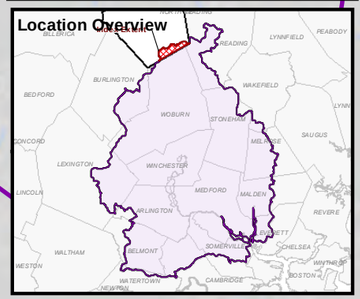
Mystic Watershed Hydraulic Model:
WATERTOWN

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
WATERTOWN, MA

FIGURE
14
of 17

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

Location Overview



LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

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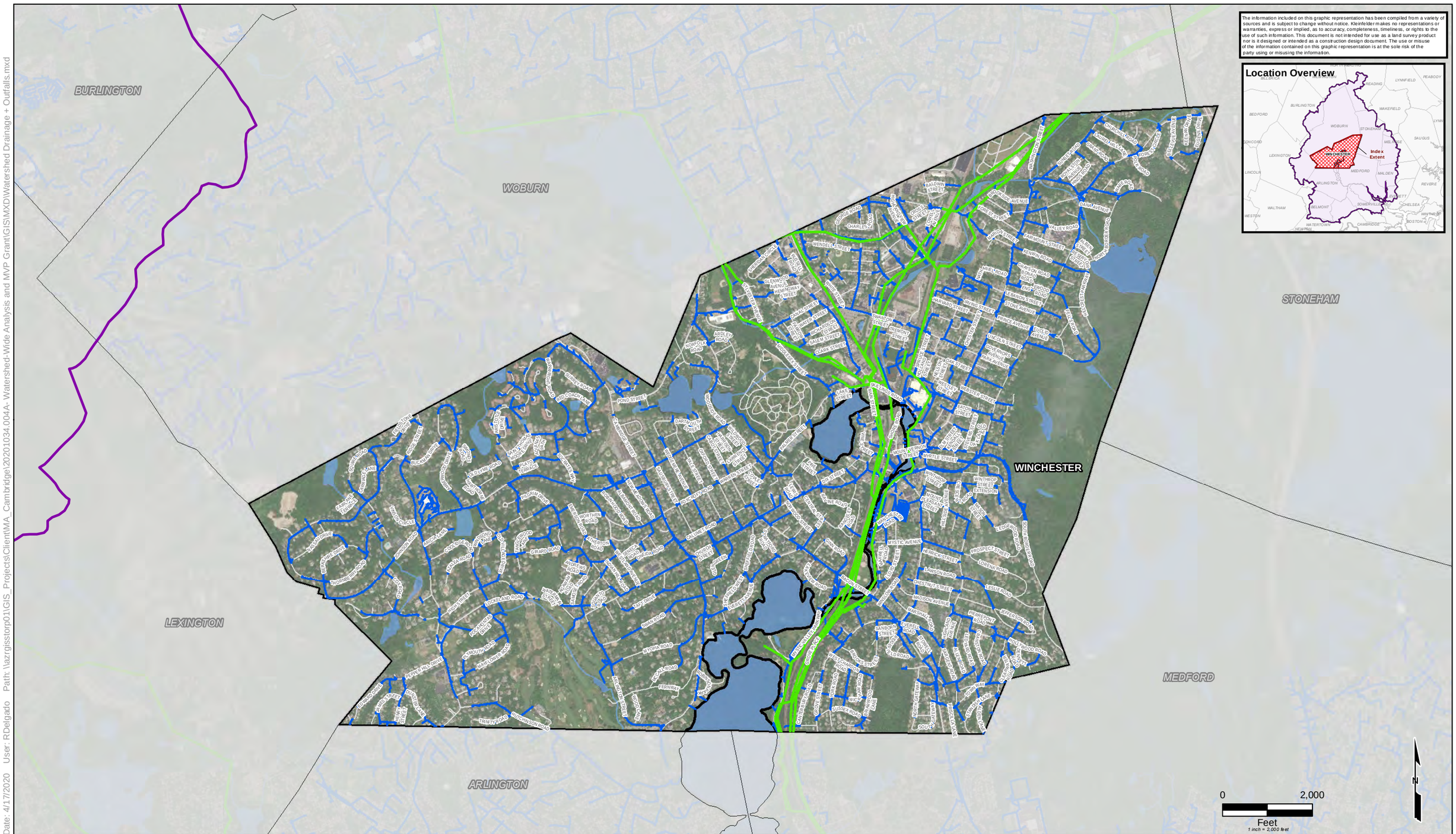
PROJECT NO.	20201034.004A
CREATED:	4/17/2020
CREATED BY:	RDelgado
CHECKED BY:	CP/KEJ
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model:
WILMINGTON

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
WILMINGTON, MA

FIGURE
15
of 17

Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd



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LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

NOTE:

"Modeled Pipes" depict piped infrastructure that has been integrated into the regional model update as of January 2020. GIS data availability or constraints (such as pipe size data) limited the application of a standard pipe size threshold for import into the model. The pipes/structures included represent major storm sewers, typically >16", that contribute stormwater runoff to Upper Mystic tributaries or the Mystic River main channel.

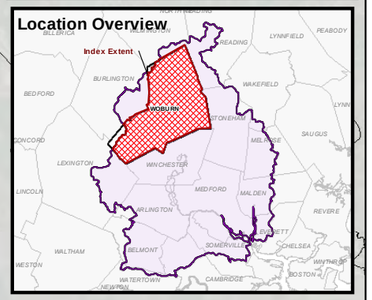
PROJECT NO.	20201034.004A
CREATED:	4/17/2020
CREATED BY:	RDelgado
CHECKED BY:	CP/KEJ
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model: WINCHESTER

Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
WINCHESTER, MA

FIGURE 16 of 17

Location Overview



Date: 4/17/2020 User: RDelgado Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Watershed Drainage + Outfalls.mxd

LEGEND

- Upper Mystic River Watershed
- Town Boundary
- Modeled Pipes
- Stormwater Drain Main

NOTE:

"Modeled Pipes" depict piped infrastructure that has been integrated into the regional model update as of January 2020. GIS data availability or constraints (such as pipe size data) limited the application of a standard pipe size threshold for import into the model. The pipes/structures included represent major storm sewers, typically >16", that contribute stormwater runoff to Upper Mystic tributaries or the Mystic River main channel.

PROJECT NO.	20201034.004A
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CREATED BY:	RDelgado
CHECKED BY:	CP/KEJ
FILE NAME:	Watershed Drainage + Outfalls.mxd

Mystic Watershed Hydraulic Model: WOBURN

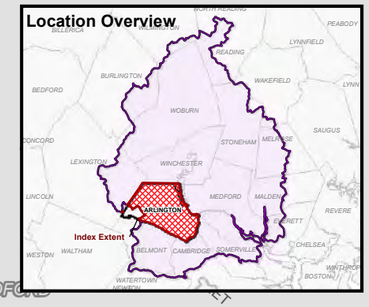
Mystic Watershed-Wide Analysis and MVP Grant
Storm Drain System Overview Map
Per Town
WOBURN, MA

FIGURE 17 of 17

Appendix C

Task 1-2 Updated Flood Model Outputs (Mapbook)

Image credit: Kleinfelder



LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
- Detailed 2D Zone Coverage
- Present 2yr, 24 hr - 30% DCIA disconnection
- Present 2yr, 24 hr - Baseline
- 2070 10yr, 24 hr - Baseline (Exist. High Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 100yr, 24 hr - Baseline (Exist. High Tide)
- **FEMA National Flood Hazard Layer FLD_ZONE**
- 100-yr FEMA zones (A; AE; AH; AO)
- **FEMA National Flood Hazard Layer FLD_ZONE**
- 500-yr, other FEMA zones
- 100-yr FEMA zones (A; AE; AH; AO)

Note: Mystic Viewer Tool (web version of flood layers) accessible at

https://geo.stantec.com/MysticRiver/viewer/

Contact Resilient Mystic Collaborative for login credentials.

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PROJECT NO.	20201034.004A
CREATED:	12/3/2020
CREATED BY:	KJohnson
CHECKED BY:	___
FILE NAME:	Mapbook_Revised Flood Layers_Dec 2020.mxd

FEMA and Regional Flood Model Outputs (by municipality)
ARLINGTON

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
ARLINGTON, MA

FIGURE **1** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview

Index Extent

ARLINGTON
LEXINGTON
BELMONT
WALTHAM
WATERTOWN
CAMBRIDGE
FRONTAGE ROAD
CONCORD TURNPIKE
CONCORD AVENUE
PLEASANT STREET
LAKE STREET
MASSACHUSETTS AVENUE
ALEWIFE BROOK PARKWAY
TRAPELO ROAD
BELMONT STREET
FRESH POND PARKWAY
BRATTLE STREET
MOUNT AUBURN STREET

0 1,000 Feet
1 inch = 1,667 feet

N

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

LEGEND

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- 2070 100yr, 24 hr - Baseline (Exist. High Tide)

FEMA National Flood Hazard Layer FLD_ZONE
- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer
- 500-yr, other FEMA zones

FLD_ZONE
- 100-yr FEMA zones (A; AE; AH; AO)

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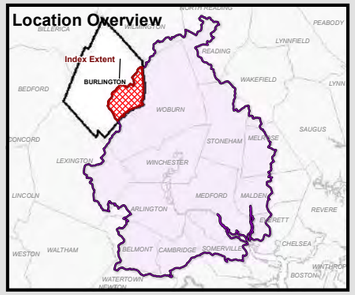
CHECKED BY:	___
FILE NAME:	Mapbook_Revised Flood Layers_Dec 2020.mxd

FEMA and Regional Flood Model Outputs (by municipality)
BELMONT

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
BELMONT, MA

FIGURE **2** of 17

Location Overview



BILLERICA

BEDFORD

BEDFORD STREET

TERRACE HALL AVENUE

BURLINGTON

CAMBRIDGE STREET

YANKEE DIVISION HIGHWAY

MISHAWUM ROAD

WOBURN

MAIN STREET

WINN STREET

ROUTE 3

MIDDLESEX TURNPIKE

BURLINGTON MALL ROAD

SOUTH BEDFORD STREET

BLANCHARD ROAD

LEXINGTON

0 1,000

Feet

1 inch = 1,667 feet

N

LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
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FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer

- 500-yr, other FEMA zones

FLD_ZONE

100-yr FEMA zones (A; AE; AH; AO)

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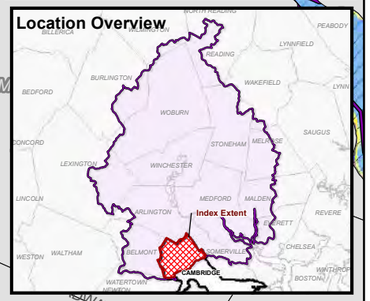
FEMA and Regional Flood Model Outputs (by municipality) BURLINGTON

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
BURLINGTON, MA

FIGURE **3** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview



LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
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FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer FLD_ZONE

- 500-yr, other FEMA zones

100-yr FEMA zones (A; AE; AH; AO)

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CREATED BY:	KJohnson
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FILE NAME:	Mapbook_Revised Flood Layers_Dec 2020.mxd

FEMA and Regional Flood Model Outputs (by municipality) CAMBRIDGE

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
CAMBRIDGE, MA

FIGURE **4** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview

Index Extent

MEDFORD STREET
MALDEN
MEDFORD
FELLSWAY
MAIN STREET
BROADWAY
FERRY STREET
EVERETT
REVERE BEACH PARKWAY
CHELSEA
SOMERVILLE
BOSTON

0 1,000 Feet
1 inch = 1,000 feet

N

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

LEGEND

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FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer FLD_ZONE

- 500-yr, other FEMA zones
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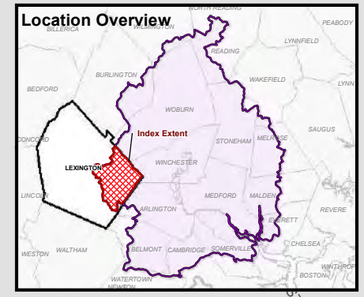
FEMA and Regional Flood Model Outputs (by municipality) EVERETT

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
EVERETT, MA

FIGURE **5** of 17



LEGEND

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FEMA National Flood Hazard Layer FLD_ZONE

- 500-yr, other FEMA zones

100-yr FEMA zones (A; AE; AH; AO)

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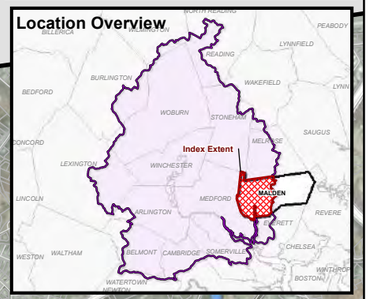
FEMA and Regional Flood Model Outputs (by municipality) LEXINGTON

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
LEXINGTON, MA

FIGURE **6** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview



LEGEND

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FEMA National Flood Hazard Layer FLD_ZONE

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FILE NAME:	Mapbook_Revised Flood Layers_Dec 2020.mxd

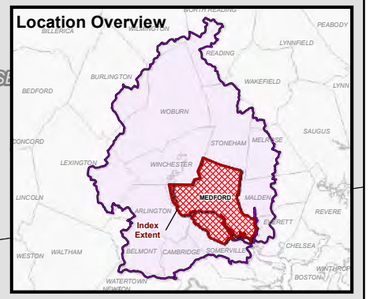
FEMA and Regional Flood Model Outputs (by municipality) MALDEN

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
MALDEN, MA

FIGURE **7** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview



LEGEND

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FEMA National Flood Hazard Layer FLD_ZONE

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FEMA National Flood Hazard Layer

- 500-yr, other FEMA zones

FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

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PROJECT NO.	20201034.004A
CREATED:	12/3/2020
CREATED BY:	KJohnson
CHECKED BY:	___
FILE NAME:	Mapbook_Revised Flood Layers_Dec 2020.mxd

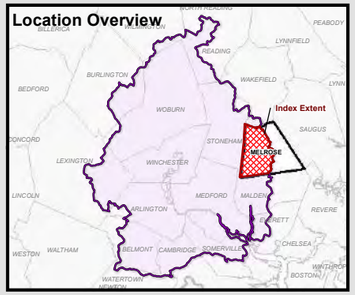
FEMA and Regional Flood Model Outputs (by municipality)
MEDFORD

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
MEDFORD, MA

FIGURE **8** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview



WINCHESTER

WAKEFIELD

STONEHAM

SAUGUS

MELROSE

MEDFORD

MALDEN

REVERE

FRANKLIN STREET

LYNN FELLS PARKWAY

POND STREET

INTERSTATE 93

MAIN STREET

UPHAM STREET

FELLSWAY WEST

WOODLAND ROAD NORTH

WOODLAND ROAD SOUTH

FELLSWAY EAST

WASHINGTON STREET

LEBANON STREET

0 1,000 Feet

1 inch = 1,500 feet

N

LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
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PROJECT NO.	20201034.004A
CREATED:	12/3/2020
CREATED BY:	KJohnson
CHECKED BY:	___
FILE NAME:	Mapbook_Revised Flood Layers_Dec 2020.mxd

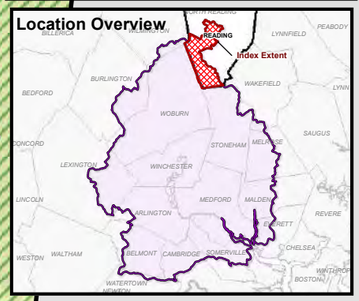
FEMA and Regional Flood Model Outputs (by municipality)
MELROSE

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
MELROSE, MA

FIGURE **9** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview



LEGEND

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FLD_ZONE

100-yr FEMA zones (A; AE; AH; AO)

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FILE NAME:	Mapbook_Revised Flood Layers_Dec 2020.mxd

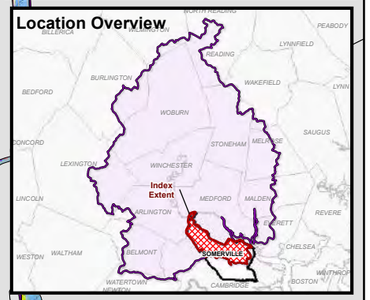
FEMA and Regional Flood Model Outputs (by municipality)
READING

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
READING, MA

FIGURE
10
of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview



LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
- Detailed 2D Zone Coverage
- Present 2yr, 24 hr - 30% DCIA disconnection
- Present 2yr, 24 hr - Baseline
- 2070 10yr, 24 hr - Baseline (Exist. High Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 100yr, 24 hr - Baseline (Exist. High Tide)

FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer

- 500-yr, other FEMA zones

FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

Note: Mystic Viewer Tool (web version of flood layers) accessible at

https://geo.stantec.com/MysticRiver/viewer/

Contact Resilient Mystic Collaborative for login credentials.

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FEMA and Regional Flood Model Outputs (by municipality)
SOMERVILLE

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
SOMERVILLE, MA

FIGURE **11** of 17

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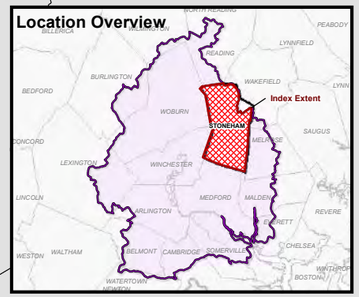
Location Overview



YANKEE DIVISION HIGHWAY
MISHAWUM ROAD
BURLINGTON
WINN STREET
WOBURN
READING
INTERSTATE 93
WILLIAM STREET
ELM STREET
WASHINGTON STREET
FOREST STREET
STONEHAM
FRANKLIN STREET
WATER STREET
NAHANT STREET
FARM STREET
WAKEFIELD
MAIN STREET
SAUGUS
LYNN FELLS PARKWAY
UPHAM STREET
MELROSE
LEBANON STREET
WINCHESTER
CAMBRIDGE STREET
CHURCH STREET
MYSTIC VALLEY PARKWAY
HIGHLAND AVENUE
MEDFORD
FELLSWAY WEST
WOODLAND ROAD SOUTH
WOODLAND ROAD NORTH
FELLSWAY EAST
ROAD STREET

N
0
2,000
Feet
1 inch = 2,500 feet

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
- Detailed 2D Zone Coverage
- Present 2yr, 24 hr - 30% DCIA disconnection
- Present 2yr, 24 hr - Baseline
- 2070 10yr, 24 hr - Baseline (Exist. High Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 100yr, 24 hr - Baseline (Exist. High Tide)

FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer FLD_ZONE

- 500-yr, other FEMA zones
- 100-yr FEMA zones (A; AE; AH; AO)

Note: Mystic Viewer Tool (web version of flood layers) accessible at

https://geo.stantec.com/MysticRiver/viewer/

Contact Resilient Mystic Collaborative for login credentials.

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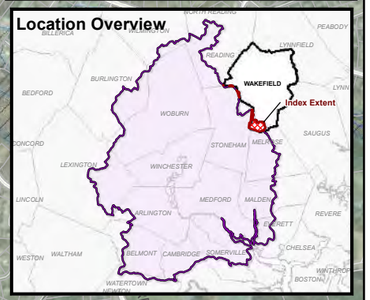
FEMA and Regional Flood Model Outputs (by municipality)
STONEHAM

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
STONEHAM, MA

FIGURE **12** of 17

Location Overview



READING

INTERSTATE 93

WILLIAM STREET

ELM STREET

STONEHAM

WOBURN

FRANKLIN STREET

NAHANT STREET

WAKEFIELD

MAIN STREET

SAUGUS

MELROSE

WINCHESTER

0 1,000 Feet
1 inch= 1,250 feet

N

LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
- Detailed 2D Zone Coverage
- Present 2yr, 24 hr - 30% DCIA disconnection
- Present 2yr, 24 hr - Baseline
- 2070 10yr, 24 hr - Baseline (Exist. High Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 100yr, 24 hr - Baseline (Exist. High Tide)

FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer FLD_ZONE

- 500-yr, other FEMA zones
- 100-yr FEMA zones (A; AE; AH; AO)

Note: Mystic Viewer Tool (web version of flood layers) accessible at

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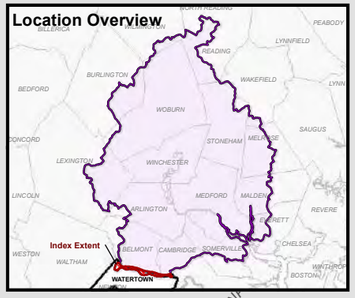
FEMA and Regional Flood Model Outputs (by municipality) WAKEFIELD

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
WAKEFIELD, MA

FIGURE **13** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd



LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
- Detailed 2D Zone Coverage
- Present 2yr, 24 hr - 30% DCIA disconnection
- Present 2yr, 24 hr - Baseline
- 2070 10yr, 24 hr - Baseline (Exist. High Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 100yr, 24 hr - Baseline (Exist. High Tide)

FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer FLD_ZONE

- 500-yr, other FEMA zones
- 100-yr FEMA zones (A; AE; AH; AO)

Note: Mystic Viewer Tool (web version of flood layers) accessible at

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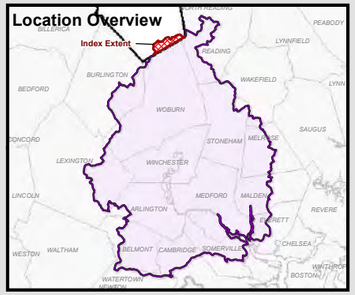
FEMA and Regional Flood Model Outputs (by municipality) WATERTOWN

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
WATERTOWN, MA

FIGURE **14** of 17

Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Location Overview



LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
- Detailed 2D Zone Coverage
- Present 2yr, 24 hr - 30% DCIA disconnection
- Present 2yr, 24 hr - Baseline
- 2070 10yr, 24 hr - Baseline (Exist. High Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 100yr, 24 hr - Baseline (Exist. High Tide)

FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer

- 500-yr, other FEMA zones

FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

Note: Mystic Viewer Tool (web version of flood layers) accessible at

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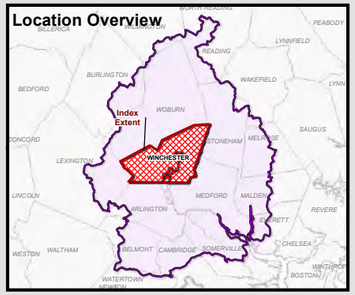
FEMA and Regional Flood Model Outputs (by municipality) WILMINGTON

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
WILMINGTON, MA

FIGURE **15** of 17

Location Overview



BURLINGTON

WOBURN

STONEHAM

LEXINGTON

ARLINGTON

MEDFORD

WINCHESTER

CAMBRIDGE ROAD

MAIN STREET

FOREST STREET

WASHINGTON STREET

HIGHLAND AVENUE

CHURCH STREET

CAMBRIDGE STREET

LEXINGTON STREET

LOWELL STREET

MYSTIC VALLEY PARKWAY

SOUTH BORDER ROAD

INTERSTATE 93

FELLSWAY WEST

WOODLAND ROAD SOUTH

N

0 2,000

Feet

1 inch = 2,000 feet

LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
- Detailed 2D Zone Coverage
- Present 2yr, 24 hr - 30% DCIA disconnection
- Present 2yr, 24 hr - Baseline
- 2070 10yr, 24 hr - Baseline (Exist. High Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 100yr, 24 hr - Baseline (Exist. High Tide)

FEMA National Flood Hazard Layer FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer

- 500-yr, other FEMA zones

FLD_ZONE

- 100-yr FEMA zones (A; AE; AH; AO)

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FEMA and Regional Flood Model Outputs (by municipality)
WINCHESTER

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
WINCHESTER, MA

FIGURE **16** of 17

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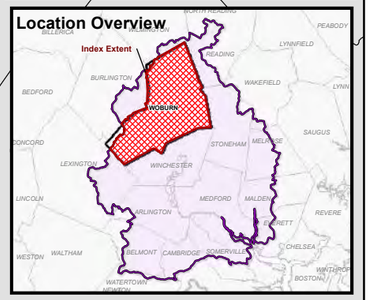
Location Overview



BILLERICA
WILMINGTON
READING
WAKEFIELD
BEDFORD
BURLINGTON
LEXINGTON
WOBURN
STONEHAM
WINCHESTER
MEDFORD
MELROSE
FRANCIS WYMAN ROAD
WILMINGTON ROAD
BEDFORD STREET
TERRACE HALL AVENUE
CAMBRIDGE STREET
ROUTE 3
MIDDLESEX TURNPIKE
BURLINGTON MALL ROAD
SOUTH BEDFORD STREET
GROVE STREET
ADAMS STREET
HANCOCK STREET
LOWELL STREET
LEXINGTON STREET
CAMBRIDGE ROAD
NEW BOSTON STREET
YANKEE DIVISION HIGHWAY
MISHAWUM ROAD
WINN STREET
WASHINGTON STREET
FOREST STREET
HIGHLAND AVENUE
POND STREET
LYNN FELLS PARKWAY
MAIN STREET
FRANKLIN STREET
ELM STREET
WILLIAM STREET
PROSPECT STREET
SALEM STREET
WEST STREET
WOBURN STREET
INTERSTATE 93

N

0 3,000 Feet
1 inch = 3,333 feet

LEGEND

- Upper Mystic River Watershed
- Parcel Boundaries
- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Water
- Detailed 2D Zone Coverage
- Present 2yr, 24 hr - 30% DCIA disconnection
- Present 2yr, 24 hr - Baseline
- 2070 10yr, 24 hr - Baseline (Exist. High Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 10yr, 24 hr - Baseline (Future SLR Tide)
- 2070 100yr, 24 hr - Baseline (Exist. High Tide)

FEMA National Flood Hazard Layer FLD_ZONE
- 100-yr FEMA zones (A; AE; AH; AO)

FEMA National Flood Hazard Layer FLD_ZONE
- 500-yr, other FEMA zones

100-yr FEMA zones (A; AE; AH; AO)

Note: Mystic Viewer Tool (web version of flood layers) accessible at

https://geo.stantec.com/MysticRiver/viewer/

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FEMA and Regional Flood Model Outputs (by municipality)
WOBURN

Mystic Watershed-Wide Analysis and MVP Grant
FEMA and Regional Flood Model Maps
Per Municipality
WOBURN, MA

FIGURE
17
of 17

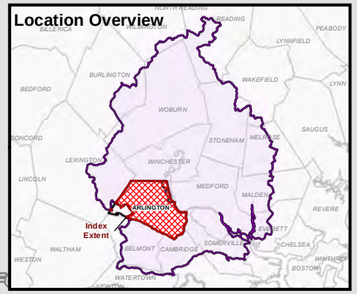
Date: 12/3/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\Mapbook_Revised Flood Layers_Dec 2020.mxd

Appendix D

GIS Mapbook of 3-acre Opportunity Sites by Land Use (January 2020 workshop)

Image credit: Kleinfelder

Location Overview



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WINCHESTER

LEXINGTON

ARLINGTON

BELMONT

WALTHAM

CAMBRIDGE

SOMERVILLE

Buzzell Field
Top 20: EJ

187 EVERETT ST

0 2,000
Feet
1 inch = 2,000 feet

N

Date: 1/20/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\kj scratch\GIS Mapbook_20200120.mxd

LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Vacant Use, Municipal or Conservation
- Vacant Use, Private

Public Open Space (per MassGIS)

- DCR
- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

Note:

LandUse Types reflect latest version of municipality's Assessor's database as made available via MassGIS; refer to annotated LU Codebook metadata for categorization, updated June 2016)

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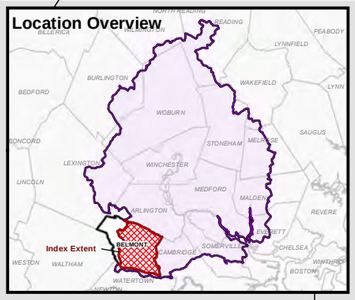
Opportunities By Town
ARLINGTON
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
ARLINGTON, MA

FIGURE
1
of 17

Location Overview



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BELMONT

345 CONCORD AVE

291 CONCORD AVE
Top 20: EQ, HYD, EJ, CONN

121 ORCHARD ST
Top 20: IMPL

37 C ST
Top 20: EJ

Pequosette Playground

0 2,000 Feet
1 inch = 2,000 feet

N

LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Vacant Use, Municipal or Conservation

Public Open Space (per MassGIS)

- Municipality-Owned
- Other

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

Note:

LandUse Types reflect latest version of municipality's Assessor's database as made available via MassGIS; refer to annotated LU Codebook metadata for categorization, updated June 2016)

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Opportunities By Town
BELMONT
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
BELMONT, MA

FIGURE
2
of 17

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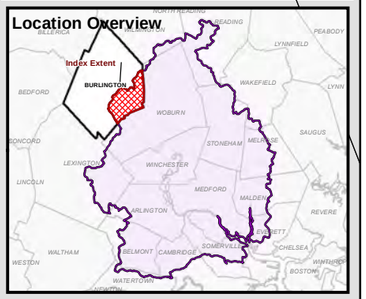
Date: 1/20/2020 User: KJohnson Path: \\azrgisstorp01\GIS_Projects\Client\MA_Cambridge\20201034.004A- Watershed-Wide Analysis and MVP Grant\GIS\MXD\kj scratch\GIS Mapbook_20200120.mxd

Location Overview



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BILLERICA

BEDFORD

LEXINGTON

WILMINGTON

WOBURN

BURLINGTON

0 BEACON ST

0 WYMAN ST
Top 20: EQ, CONN, IMPL

34 WYMAN ST
Top 20: IMPL

13 WYMAN ST

Mountain Road Conservation Area

100 SO BEDFORD ST
Marvin Field

0 SO BEDFORD ST

0 2,000
Feet
1 inch = 2,000 feet

N

LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)
- Municipality-Owned
- State of Federal Land
- Vacant Use, Municipal or Conservation
- Vacant Use, Private
- Unknown

Public Open Space (per MassGIS)
- Municipality-Owned

Equal-weight Score
- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)
- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

Note:

LandUse Types reflect latest version of municipality's Assessor's database as made available via MassGIS; refer to annotated LU Codebook metadata for categorization, updated June 2016)

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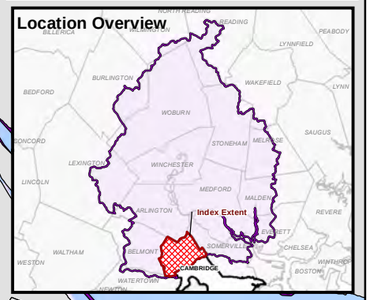
Opportunities By Town
BURLINGTON
prepared for: Resilient Mystic Collaborative
Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
BURLINGTON, MA

FIGURE
3
of 17

Location Overview



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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Vacant Use, Municipal or Conservation
- Vacant Use, Quasi-Public
- Vacant Use, Private

Public Open Space (per MassGIS)

- DCR
- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

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Opportunities By Town
CAMBRIDGE
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
CAMBRIDGE, MA

FIGURE
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of 17

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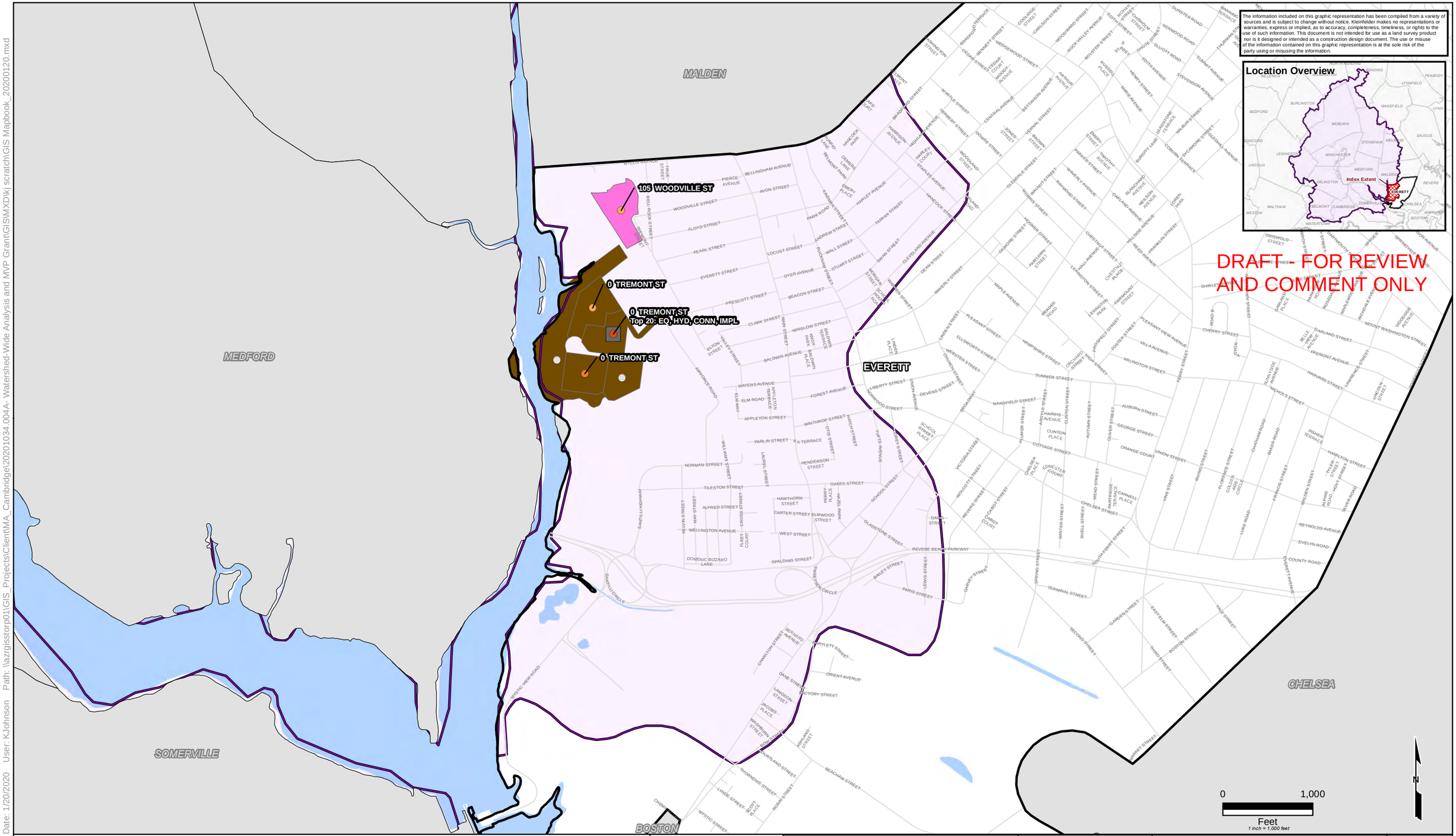

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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- Vacant Use, Private

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

Note:

LandUse Types reflect latest version of municipality's Assessor's database as made available via MassGIS; refer to annotated LU Codebook metadata for categorization, updated June 2016)

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Opportunities By Town
EVERETT
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
EVERETT, MA

FIGURE
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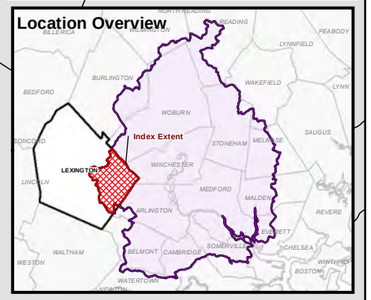
Location Overview



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LACONIA ST

WOBURN ST
Top 20: EQ, HYD, EJ, CONN, IMPL

299 WOBURN ST

LOWELL ST

171 WOBURN ST
Top 20: EQ, HYD, EJ, CONN, IMPL

MAPLE ST
Top 20: EQ, HYD, EJ, CONN, IMPL

MASSACHUSETTS AVE

SOLOMON PIERCE RD
Top 20: EQ, HYD, EJ, CONN, IMPL

328 LOWELL ST
Top 20: EQ, HYD, EJ, CONN

HOWARD MUNROE PL
Top 20: EJ

BUTTERFIELD RD
Top 20: EQ, HYD, EJ, CONN, IMPL

BUTTERFIELD RD
Top 20: EJ

SANDERSON RD
Top 20: EQ, HYD, EJ, CONN, IMPL

BUTTERFIELD RD
Top 20: EQ, HYD, EJ, CONN, IMPL

VILLAGE CIR
Top 20: EQ, HYD, EJ, CONN, IMPL

MAPLE ST
Top 20: EQ, HYD, EJ, CONN

WOBURN

WINCHESTER

LEXINGTON

ARLINGTON

MEDFORD

BELMONT

WALTHAM

0 2,000
Feet
1 inch = 2,000 feet

N

LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)
- State of Federal Land
- Vacant Use, Private

Public Open Space (per MassGIS)
- Municipality-Owned

Equal-weight Score
- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)
- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

Note:

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Opportunities By Town
LEXINGTON
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
LEXINGTON, MA

FIGURE
6
of 17

Location Overview

Index Extent

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0 HIGHLAND AV

32 PEARL ST
Top 20: EQ, HYD, EJ

100 PEARL ST
Top 20: EJ

N/A
Top 20: EJ

0 SALEM ST

77 SALEM ST
Top 20: EJ

0 GREEN ST

0 2,000
Feet
1 inch = 2,000 feet

N

LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)
- State of Federal Land

Public Open Space (per MassGIS)
- DCR

Equal-weight Score
- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)
- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
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Opportunities By Town
MALDEN
prepared for: Resilient Mystic Collaborative
Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
MALDEN, MA

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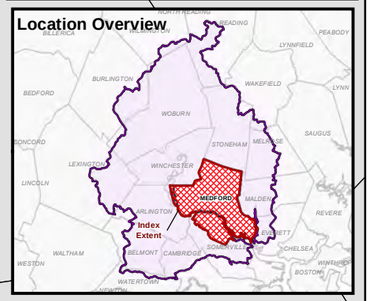
Location Overview



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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Vacant Use, Municipal or Conservation
- Vacant Use, Private
- Unknown

Public Open Space (per MassGIS)

- DCR
- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
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Opportunities By Town
MEDFORD
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
MEDFORD, MA

FIGURE
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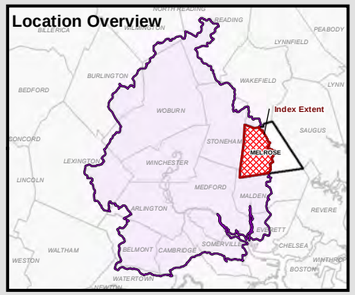
of 17

Location Overview



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253 VINTON ST

80 WYOMING WEST AV

Conant Playground

MELROSE

WOBURN

WAKEFIELD

WINCHESTER

STONEHAM

MEDFORD

MALDEN

REVERE

SAUGUS

0 2,000 Feet
1 inch = 2,000 feet

N

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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Vacant Use, Private
- Unknown

Public Open Space (per MassGIS)

- DCR
- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
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- Five Weighted Methods

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Opportunities By Town
MELROSE
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Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
MELROSE, MA

FIGURE
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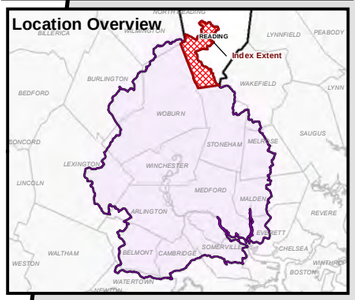
of 17

Location Overview



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Birch Meadow Playing Fields
0 BIRCH MEADOW
0 BIRCH MEADOW
0 BIRCH MEADOW
0 BIRCH MEADOW
0 BIRCH MEADOW DR
0 BIRCH MEADOW
Higgins Property
OFF GROVE ST
Top 20: EQ, CONN, IMPL
OFF OAKLAND RD
0 BIRCH MEADOW
Dicenzo
Maillet Sommes And Morgan Land
Maillet Sommes And Morgan Land

0 2,000
Feet
1 inch = 2,000 feet

N

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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Vacant Use, Municipal or Conservation
- Vacant Use, Private
- Unknown

Public Open Space (per MassGIS)

- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

Note:

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Opportunities By Town
READING
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
READING, MA

FIGURE
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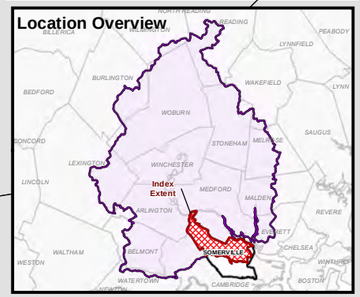
Location Overview



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1374 BROADWAY
Top 20: EJ

5 MEACHAM ST

BROADWAY

0 2,000
Feet
1 inch = 2,000 feet

N

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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Unknown

Public Open Space (per MassGIS)

- DCR

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
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Opportunities By Town
SOMERVILLE
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
SOMERVILLE, MA

FIGURE
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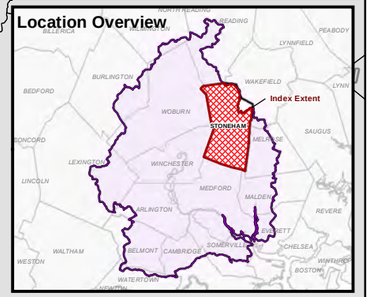
of 17

Location Overview



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Cerrone Memorial Playground
0 GOULD ST
Top 20: EJ, CONN, IMPL
101 CENTRAL ST
71 CENTRAL ST
35 CENTRAL ST
0 GERRY CT
OFF SPRING LN
STONEHAM
READING
WAKEFIELD
WOBURN
BURLINGTON
WINCHESTER
MEDFORD
MELROSE
SAUGUS
LEXINGTON
ARLINGTON
MALDEN
REVERE

0 3,000
Feet
1 inch = 3,000 feet

N

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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Vacant Use, Municipal or Conservation
- Vacant Use, Private

Public Open Space (per MassGIS)

- DCR
- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
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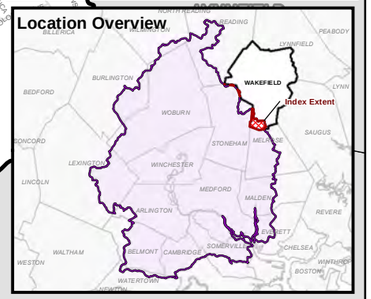
Opportunities By Town
STONEHAM
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
STONEHAM, MA

FIGURE
12
of 17

Location Overview



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0 2,000 Feet
1 inch = 2,000 feet

N

LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Public Open Space (per MassGIS)

- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

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Opportunities By Town
WAKEFIELD
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
WAKEFIELD, MA

FIGURE
13
of 17

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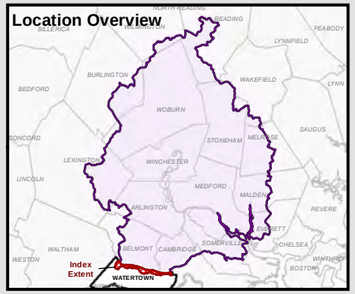
Location Overview



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WALTHAM
BELMONT
CAMBRIDGE
WATERTOWN
NEWTON
Oakley Country Club
St Patricks Cemetery

0 1,000 Feet
1 inch = 1,000 feet

N

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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Public Open Space (per MassGIS)

- Other

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

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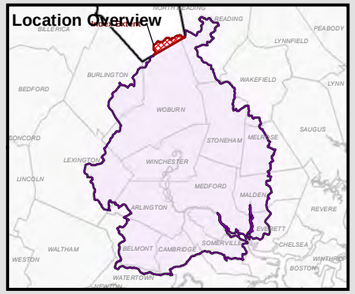
Opportunities By Town
WATERTOWN
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
WATERTOWN, MA

FIGURE
14
of 17

Location Overview



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LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Vacant Use, Municipal or Conservation
- Vacant Use, Quasi-Public
- Vacant Use, Private

Public Open Space (per MassGIS)

- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

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Opportunities By Town
WILMINGTON
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
WILMINGTON, MA

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of 17

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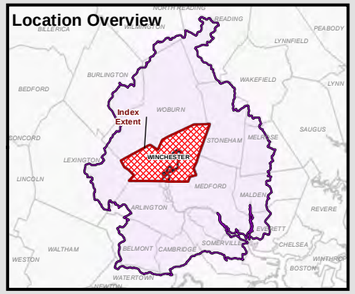
Location Overview



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BURLINGTON

WOBURN

STONEHAM

LEXINGTON

MEDFORD

ARLINGTON

0 WOODSIDE RD
Top 20: EQ, HYD

131 WESTLEY ST

161 MYSTIC VALLEY PW

WINCHESTER

0 JOHNSON RD
Top 20: EQ, HYD, CONN, IMPL

0 RIDGE ST
Top 20: EQ, HYD, CONN, IMPL

38 50 RIDGE ST

0 2,000
Feet
1 inch = 2,000 feet

N

LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- State of Federal Land
- Vacant Use, Municipal or Conservation
- Vacant Use, Private

Public Open Space (per MassGIS)

- DCR
- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
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- Medium
- High
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Scenarios In Top 20 (Type)

- One Weighted Method
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Opportunities By Town
WINCHESTER
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
WINCHESTER, MA

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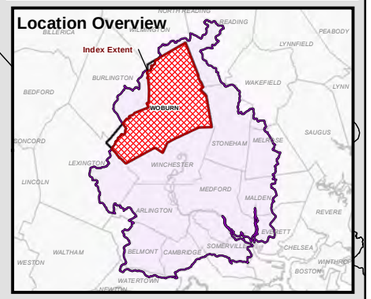
Location Overview



DRAFT - FOR REVIEW AND COMMENT ONLY

0 4,000 Feet
1 inch = 4,000 feet

N

LEGEND

- Roads (per MassDOT)
- Town Boundary
- Adjacent Town Boundary
- Upper Mystic River Watershed
- Water

Landuse Type (per Assessors' Data)

- Municipality-Owned
- State of Federal Land
- Vacant Use, Municipal or Conservation
- Vacant Use, Private
- Unknown

Public Open Space (per MassGIS)

- Municipality-Owned

Equal-weight Score

- Not Suitable
- Lowest Score
- Low
- Medium
- High
- Highest Score

Scenarios In Top 20 (Type)

- One Weighted Method
- Two Weighted Methods
- Three Weighted Methods
- Four Weighted Methods
- Five Weighted Methods

Note:

LandUse Types reflect latest version of municipality's Assessor's database as made available via MassGIS; refer to annotated LU Codebook metadata for categorization, updated June 2016)

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PROJECT NO.	20201034.004A
CREATED:	1/20/2020
CREATED BY:	KJohnson
CHECKED BY:	CP/KEJ
FILE NAME:	GIS Mapbook_20200120.mxd

Opportunities By Town
WOBURN
prepared for: Resilient Mystic Collaborative

Mystic Watershed-Wide Analysis and MVP Grant
Landuse Overview Map
Per Town
WOBURN, MA

FIGURE
17
of 17

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