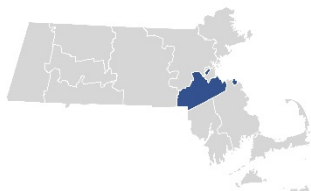


FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 6



NORFOLK COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

COMMUNITY NAME	NUMBER	COMMUNITY NAME	NUMBER
AVON, TOWN OF	250231	NEEDHAM, TOWN OF	255215
BELLINGHAM, TOWN OF	250232	NORFOLK, TOWN OF	255217
BRAINTREE, TOWN OF	250233	NORWOOD, TOWN OF	250248
BROOKLINE, TOWN OF	250234	PLAINVILLE, TOWN OF	250249
COHASSET, TOWN OF	250236	QUINCY, CITY OF	255219
DEDHAM, TOWN OF	250237	RANDOLPH, TOWN OF	250251
DOVER, TOWN OF	250238	SHARON, TOWN OF	250252
FOXBOROUGH, TOWN OF	250239	STOUGHTON, TOWN OF	250253
FRANKLIN, TOWN OF	250240	WALPOLE, TOWN OF	250254
HOLBROOK, TOWN OF	255212	WELLESLEY, TOWN OF	250255
MEDFIELD, TOWN OF	250242	WESTWOOD, TOWN OF	255225
MEDWAY, TOWN OF	250243	WEYMOUTH, TOWN OF	250257
MILLIS, TOWN OF	250244	WRENTHAM, TOWN OF	250258
MILTON, TOWN OF	250245		

REVISED:

JULY 6, 2021

FLOOD INSURANCE STUDY NUMBER

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Version Number 2.6.3.5



FEMA

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Beaver Brook (Town of Holbrook)	06-07 P
Beaver Brook (Town of Sharon)	08 P
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Billings Brook	10 P
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Bogastow Brook	12-17 P
Brook A (Stetson Brook)	18 P
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Brook No. 1	20-21 P
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Vine Brook	233-234 P
Waban Brook	235 P
Wading River	236 P
Walnut Hill Stream	237 P
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Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT NORFOLK COUNTY, MASSACHUSETTS

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal

Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Norfolk County, Massachusetts.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The FIRM panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

Due to levee de-accreditation status at the time this FIS was finalized, the Town of Canton was not included within this Partial Countywide Study. Data related to the Town of Canton remains in this FIS report for informational purposes only, and users should refer to the separately published FIS report and FIRM for effective data.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s) (<i>all prefixed by 25021C</i>)	If Not Included, Location of Flood Hazard Data
Avon, Town of	250231	01090001, 01090004	0214E, 0218E, 0219E, 0377E, 0381E, 0382E	
Bellingham, Town of	250232	01090001, 01090003	0138E, 0139E, 0299E, 0301E, 0302E, 0303E, 0304E, 0311E, 0312E, 0313E, 0314E	

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s) (<i>all prefixed by 25021C</i>)	If Not Included, Location of Flood Hazard Data
Braintree, Town of	250233	01090001	0206E, 0207E, 0208E, 0209E, 0217E, 0226F, 0227F, 0228E, 0236E	
Brookline, Town of	250234	01090001	0032E ¹ , 0033E ¹ , 0034E, 0041E ¹ , 0042E ¹ , 0051E, 0053E	
Canton, Town of	250235	01090001	N/A	Town of Canton FIS Report (FEMA 1987)
Cohasset, Town of	250236	01090001, 01090002	0113E, 0114F, 0118E, 0251F, 0252F, 0254F, 0256F, 0258F	
Dedham, Town of	250237	01090001	0038E, 0039E, 0043E, 0044E, 0177E, 0181E, 0182E, 0183E, 0184E	
Dover, Town of	250238	01090001	0016E, 0018E, 0019E, 0038E, 0152E, 0154E, 0156E, 0157E, 0158E, 0159E, 0176E, 0178E	
Foxborough, Town of	250239	01090001, 01090004	0332E, 0333E, 0334E, 0341E, 0342E, 0343F, 0344F, 0351E, 0353E, 0354E, 0358E, 0361E, 0362E, 0365E ¹ , 0366E	
Franklin, Town of	250240	01090001, 01090003	0139E, 0143E, 0144E, 0302E, 0304E, 0306E, 0307E, 0308E, 0309E, 0312E, 0316E, 0317E, 0321E, 0323E, 0336E	
Holbrook, Town of	255212	01090001, 01090004	0217E, 0218E, 0219E, 0236E, 0238E, 0382E	
Medfield, Town of	250242	01090001	0153E, 0154E, 0158E, 0159E, 0162E, 0164E, 0166E, 0167E, 0168E, 0169E	
Medway, Town of	250243	01090001	0136E, 0137E, 0138E, 0139E, 0141E, 0142E, 0143E, 0144E	
Millis, Town of	250244	01090001	0134E, 0142E, 0144E, 0153E, 0154E, 0161E, 0162E, 0163E, 0164E	
Milton, Town of	250245	01090001	0063E, 0064F, 0068F, 0182E, 0201E, 0202E, 0203E, 0204E, 0206E	
Needham, Town of	255215	01090001	0016E, 0017E, 0018E, 0019E, 0028E, 0036E, 0037E, 0038E, 0039E	
Norfolk, Town of	255217	01090001, 01090004	0144E, 0163E, 0164E, 0168E, 0307E, 0321E, 0322E, 0323E, 0324E, 0331E, 0333E, 0334E	

¹Panel not printed

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s) (<i>all prefixed by 25021C</i>)	If Not Included, Location of Flood Hazard Data
Norwood, Town of	250248	01090001	0178E, 0179E, 0183E, 0184E, 0186E, 0187E, 0189E, 0191E, 0193E	
Plainville, Town of	250249	01090003, 01090004	0319E, 0337E, 0338F, 0339F, 0341E, 0343F, 0407E, 0426F, 0427F	
Quincy, City of	255219	01090001	0066F, 0067F, 0068F, 0069F, 0086F, 0088F, 0089F, 0202E, 0204E, 0206E, 0207E, 0208E, 0226F, 0227F	
Randolph, Town of	250251	01090001	0203E, 0204E, 0208E, 0209E, 0212E, 0216E, 0217E, 0218E, 0219E	
Sharon, Town of	250252	01090001, 01090004	0187E, 0188E, 0189E, 0191E, 0193E, 0194E, 0351E, 0352E, 0353E, 0354E, 0356E, 0357E, 0358E, 0359E, 0366E	
Stoughton, Town of	250253	01090001, 01090004	0194E, 0212E, 0213E, 0214E, 0216E, 0218E, 0357E, 0359E, 0376E, 0377E, 0378E, 0379E, 0381E	
Walpole, Town of	250254	01090001, 01090004	0159E, 0167E, 0168E, 0169E, 0178E, 0186E, 0187E, 0188E, 0189E, 0331E, 0332E, 0333E, 0334E, 0351E	
Wellesley, Town of	250255	01090001	0004E, 0008E, 0009E, 0012E, 0014E, 0016E, 0017E, 0018E, 0028E, 0036E	
Westwood, Town of	255225	01090001	0038E, 0039E, 0159E, 0176E, 0177E, 0178E, 0179E, 0181E, 0183E, 0184E, 0186E	
Weymouth, Town of	250257	01090001, 01090002, 01090004	0089F, 0093E, 0226F, 0227F, 0228E, 0229E, 0231E, 0233E, 0236E, 0237E, 0238E, 0239E, 0241E, 0243E ¹	
Wrentham, Town of	250258	01090001, 01090003, 01090004	0312E, 0314E, 0316E, 0317E, 0318E, 0319E, 0323E, 0324E, 0333E, 0336E, 0337E, 0338F, 0339F, 0341E	

¹Panel not printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent

annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 30, "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Norfolk County became effective on July 17, 2012. Refer to Table 27 for information about subsequent revisions to the FIRMs.

- FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

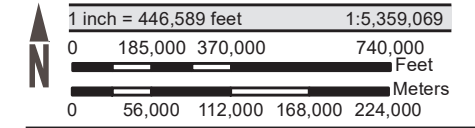
The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at www.fema.gov/national-flood-insurance-program-community-rating-system or contact your appropriate FEMA Regional Office for more information about this program.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain

this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Norfolk County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and USGS HUC-8 codes.

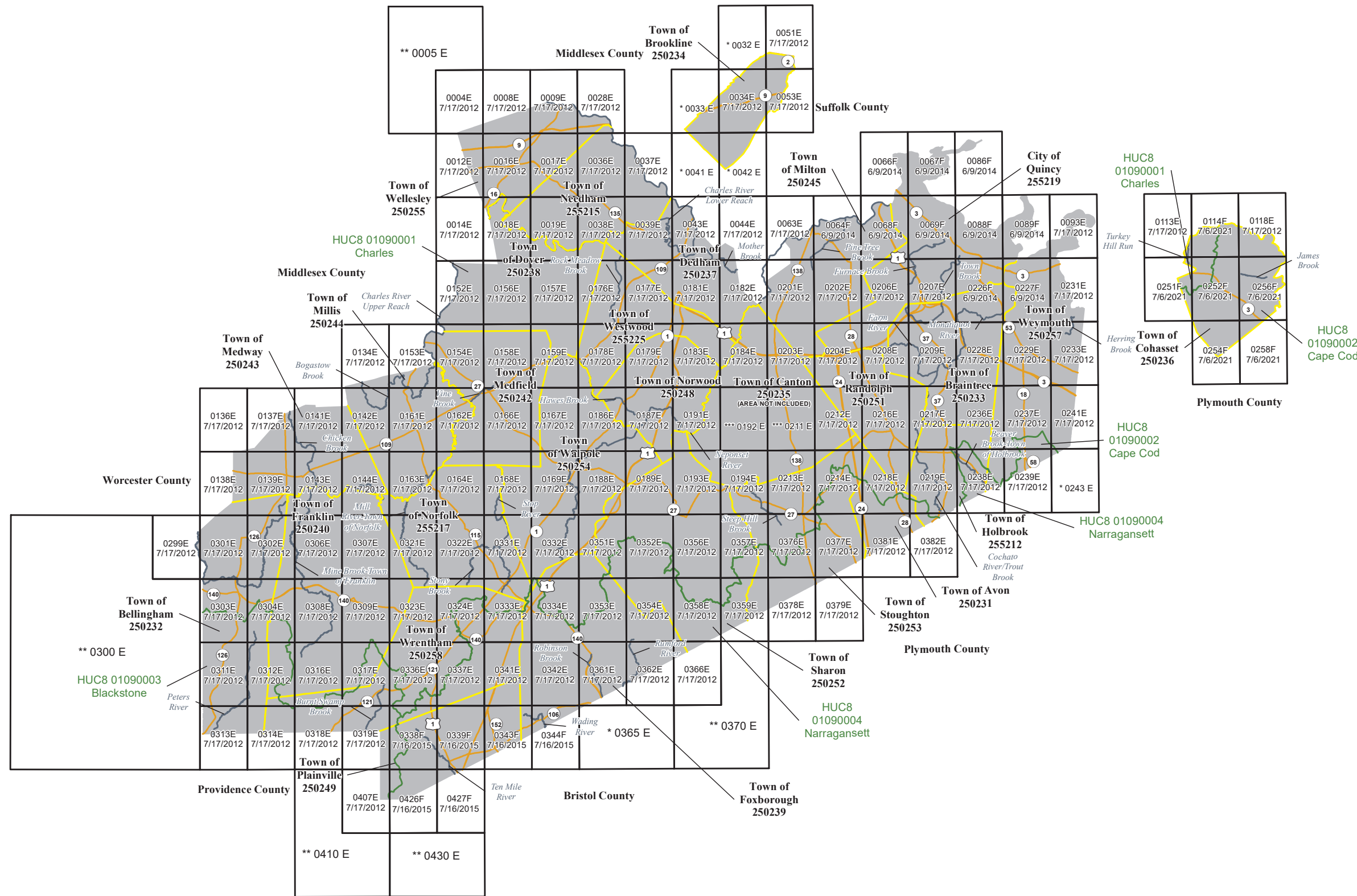
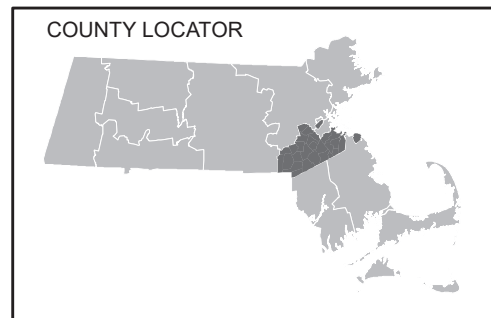
Figure 1. FIRM Index



Map Projection:
NAD 1983 State Plane, Massachusetts Mainland, FIPS 2001, Feet;
Western Hemisphere; Vertical Datum: NAVD 88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION



- PANELS PRINTED:
- 0004, 0008, 0009, 0012, 0014, 0016, 0017, 0018, 0019, 0028, 0034, 0036, 0037, 0038, 0039, 0043, 0044, 0051, 0053, 0063, 0064, 0066, 0067, 0068, 0069, 0086, 0088, 0089, 0093, 0134, 0136, 0137, 0138, 0139, 0141, 0142, 0143, 0144, 0152, 0153, 0154, 0156, 0157, 0158, 0159, 0161, 0162, 0163, 0164, 0166, 0167, 0168, 0169, 0176, 0177, 0178, 0179, 0181, 0182, 0183, 0184, 0186, 0187, 0188, 0189, 0191, 0193, 0194, 0201, 0202, 0203, 0204, 0206, 0207, 0208, 0209, 0212, 0213, 0214, 0216, 0217, 0218, 0219, 0226, 0227, 0228, 0229, 0231, 0233, 0236, 0237, 0238, 0239, 0241, 0299, 0301, 0302, 0303, 0304, 0306, 0307, 0308, 0309, 0311, 0312, 0313, 0314, 0316, 0317, 0318, 0319, 0321, 0322, 0323, 0324, 0331, 0332, 0333, 0334, 0336, 0337, 0338, 0339, 0341, 0342, 0343, 0344, 0351, 0352, 0353, 0354, 0356, 0357, 0358, 0359, 0361, 0362, 0366, 0376, 0377, 0378, 0379, 0381, 0382, 0407, 0426, 0427, 0113, 0114, 0118, 0251, 0252, 0254, 0256, 0258

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREA
** PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY
*** PANEL NOT PRINTED - AREA NOT INCLUDED

ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before July 6, 2021.

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 27 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

Coastal Base Flood Elevations shown on the map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Coastal flood elevations are also provided in the Coastal Transect Parameters table in the FIS Report for this jurisdiction. Elevations shown in the Coastal Transect Parameters table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on the FIRM.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

Figure 2. FIRM Notes to Users

PROJECTION INFORMATION: The projection used in the preparation of the map was Massachusetts State Plane, Mainland Zone (FIPZONE 2001). The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov.

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 30 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by Massachusetts Geographic Information System (MassGIS). Orthoimagery is from 2005 and is at a scale of 1:5,000. Vector data are undated. The following panels use 2008 imagery provided by the U.S. Geological Survey at a resolution of 15 centimeters or 30 centimeters with all vector data unchanged from the previous FIRM: 0064F, 0066F, 0067F, 0068F, 0069F, 0086F, 0088F, 0089F, 0226F, and 0227F. The following panels use 2013 imagery provided by the U.S. Geological Survey at a scale of 1:2,400 with all vector data unchanged from the previous FIRM: 0338F, 0339F, 0343F, 0344F, 0426F, and 0427F. The following panels use 2013 imagery provided by the U.S. Geological Survey at a resolution of 0.3 meter and 2016 transportation data provided by the U.S. Census Bureau, with all other vector data unchanged from the previous FIRM: 0114F, 0251F, 0252F, 0254F, 0256F, and 0258F. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Norfolk County, Massachusetts, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 27 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

ATTENTION: The corporate limits shown on the FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before July 6, 2021.

Figure 2. FIRM Notes to Users

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Norfolk County, Massachusetts, effective July 6, 2021.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in Zone VE.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Norfolk County.

Figure 3: Map Legend for FIRM


SPECIAL FLOOD HAZARD AREAS: <i>The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.</i>	
	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.



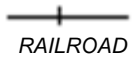

Figure 3: Map Legend for FIRM

	<p>Regulatory Floodway determined in Zone AE.</p>
<p>OTHER AREAS OF FLOOD HAZARD</p>	
	<p>Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.</p>
	<p>Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.</p>
	<p>Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.</p>
	<p>Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.</p>
<p>OTHER AREAS</p>	
	<p>Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.</p>
<div style="border: 1px solid black; padding: 2px; display: inline-block;">NO SCREEN</div>	<p>Unshaded Zone X: Areas of minimal flood hazard.</p>
<p>FLOOD HAZARD AND OTHER BOUNDARY LINES</p>	
<p>(ortho) (vector)</p>	<p>Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)</p>
	<p>Limit of Study</p>
	<p>Jurisdiction Boundary</p>
	<p>Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet</p>
<p>GENERAL STRUCTURES</p>	
<p>----- <i>Aqueduct</i> <i>Channel</i> <i>Culvert</i> <i>Storm Sewer</i></p>	<p>Channel, Culvert, Aqueduct, or Storm Sewer</p>
<p>_____ <i>Dam</i> <i>Jetty</i> <i>Weir</i></p>	<p>Dam, Jetty, Weir</p>

Figure 3: Map Legend for FIRM

	Levee, Dike, or Floodwall
	Bridge
REFERENCE MARKERS	
	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway

Figure 3: Map Legend for FIRM

	County Highway
	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
4276⁰⁰⁰mE	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Norfolk County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 22), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Norfolk County, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 12. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Arnolds Brook	Bellingham, Town of	Confluence with Peters River	Approximately 480 feet upstream of Lizotte Drive	01090003	1.1		Y	AE	7/1/1980
Beaver Brook (Avon)	Avon, Town of	Brockton Reservoir	Avon corporate limits	01090004	1.3		Y	AE	3/1/1978
Beaver Brook (Bellingham)	Bellingham, Town of	Confluence with Charles River	Beaver Pond	01090001	1.6		Y	AE	7/1/1980
Beaver Brook (Holbrook)	Holbrook, Town of	Holbrook corporate limits	Approximately 1,000 feet upstream of Weymouth Street	01090004	1.8		Y	AE	5/1/1985
Beaver Brook (Sharon)	Sharon, Town of	Just downstream of Upland Road	Approximately 3,400 feet upstream of Upland Road	01090001	0.7		Y	AE	6/1/1977
Beaver Meadow Brook	Canton, Town of	Bolivar Pond	Pleasant Street	01090001	0.6		Y	AE	2/1/1986
Billings Brook	Sharon, Town of	Just downstream of Old Post Road	Approximately 200 feet upstream of Dirt Road	01090004	0.5		Y	AE	6/1/1977
Billings Brook Branch	Sharon, Town of	Dirt Road	Just upstream of Wolomolopoag Street	01090004	0.4		Y	AE	6/1/1977
Bogastow Brook	Millis, Town of	Confluence with Charles River	Millis corporate limits	01090001	6.4		Y	AE	1/1/1983
Bolivar Pond	Canton, Town of	Entire shoreline	Entire shoreline	01090001		0.1	N	AE	12/1/1976
Bound Brook and Zone A tributaries	Cohasset, Town of	County boundary	Points of one square mile of drainage area	01090002	11.3		N	A	5/31/2017
Brook A (Stetson Brook)	Randolph, Town of	Confluence with Glovers Brook	Approximately 285 feet upstream of Allen Street	01090001	0.4		Y	AE	11/1/1985

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Brook B	Randolph, Town of	Confluence with Upper Reservoir	Approximately 1,100 feet upstream of Vesey Road	01090001	0.7		Y	AE	11/1/1985
Brook No. 1	Plainville, Town of	Wrentham/Plainville corporate limits	Confluence with Rabbit Hill Pond	01090004	1.6		Y	AE	1/1/1979
Bubbling Brook	Norwood, Town of; Walpole, Town of; Westwood, Town of	Willett Pond Dam	Walpole/Westwood corporate limits	01090001	2.1		Y	AE	1/1/2001
Buckmaster Brook	Westwood, Town of	Confluence with Germany Brook	Approximately 250 feet upstream of Arcadia Road	01090001	0.6		N	AE	11/2/1973
Bungay Brook	Bellingham, Town of	Confluence with Peters River	Approximately 1,310 feet upstream of Wrentham Road	01090003	1.4		Y	AE	7/1/1980
Burnt Swamp Brook	Wrentham, Town of	State limits	1,700 feet north of West Street	01090003	2.2		Y	AE	2/1/1980
Canoe River (Foxborough)	Foxborough, Town of	Beaumont Road	Maple Street	01090004	1.1		Y	AE	3/1/1978
Canoe River (Sharon)	Sharon, Town of	10,000 upstream of East Street	13,000 feet upstream of East Street	01090004	0.5		Y	AE	6/1/1977
Canton River	Canton, Town of	Confluence with Neponset River	Approximately 355 feet upstream of Revere Court	01090001	2.4		N	AE	12/1/1976

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Charles River	Bellingham, Town of; Dedham, Town of; Dover, Town of; Franklin, Town of; Medfield, Town of; Medway, Town of; Millis, Town of; Needham, Town of; Norfolk, Town of; Wellesley, Town of	Concord Street	Mellen Street	01090001	55.4		N	AE	7/1/1980
Chicken Brook	Medway, Town of	Confluence with Charles River	Medway/Holliston corporate limits	01090001	3.8		Y	AE	11/1/1978
Cobbs Brook	Walpole, Town of	Confluence with Neponset River	Approximately 50 feet upstream of North Street	01090001	1.3		Y	AE	12/1/1975
Cochato River	Braintree, Town of; Holbrook, Town of; Randolph, Town of	Confluence with Monatiquot River	North Shore Road Dam	01090001	6.2		Y	AE	7/1/1998
Cress Brook	Norfolk, Town of	Confluence with Mill River	Lake Street	01090001	1.2		Y	AE	11/1/1982
Crocker Brook	Wrentham, Town of	1,700 feet upstream of Crocker Pond	1,100 feet upstream of East Street	01090004	0.7		Y	AE	2/1/1980
Cunningham Brook	Quincy, City of	Confluence with Furnace Brook	Approximately 400 feet upstream of Robertson Street	01090001			Y	AE	7/1/1983
Diamond Brook	Walpole, Town of	Confluence with Neponset River	Washington Street	01090001	1.6		Y	AE	5/1/1985
Dorchester Brook	Stoughton, Town of	Atkinson Avenue	Stoughton/Easton corporate limits	01090004	0.7		Y	AE	10/1/1978

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Farm River	Braintree, Town of	Confluence with Monaquot River	Approximately 1,700 feet upstream of West Street	01090001	2.9		Y	AE	1/1/1984
Forge Pond	Canton, Town of	Entire shoreline	Entire shoreline	01090001		0.1	N	AE	1/1/1973
Fuller Brook	Wellesley, Town of	Approximately 200 feet downstream of Wellesley High School fields	Approximately 1,800 feet upstream of Smith Street	01090001			N	AE	11/1/1972
Furnace Brook	Quincy, City of	Tidal limit	Approximately 850 feet upstream of Hayden Street	01090001	3.0		Y	AE	10/1/1976
Germany Brook	Norwood, Town of; Westwood, Town of	Confluence with Hawes Brook	Westwood/Norwood corporate limits	01090001	1.8		Y	AE	7/1/1977
Glovers Brook	Randolph, Town of	Confluence with Cochato River	Approximately 1,000 feet upstream of Warren Street	01090001	1.5		Y	AE	11/1/1985
Harlow Pond Lateral	Norfolk, Town of	Confluence with Charles River	2,000 feet upstream of Phillips Pond	01090001	1.1		N	AE	11/1/1982
Hawes Brook	Norwood, Town of	Confluence with Neponset River	Willet Pond Dam	01090001	1.8		Y	AE	7/1/1977
Hawthorne Brook	Plainville, Town of	Confluence with Turnpike Lake	Cowell Street	01090004	0.7		Y	AE	1/1/1979
Herring Brook	Weymouth, Town of	Confluence with Weymouth Back River	Approximately 300 feet upstream of Iron Hill Street	01090001	1.0		Y	AE	9/1/1987
Hopping Brook	Bellingham, Town of; Medway, Town of	Confluence with Charles River	Approximately 1,400 feet upstream of Milford Street	01090001	2.3		Y	AE	11/1/1978

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
James Brook	Cohasset, Town of	Sohier Street	Point of one square mile of drainage area	01090002	1.0		N	A	5/31/2017
James Brook	Cohasset, Town of	Confluence with Cohasset Cove	Sohier Street	01090002	0.9		Y	AE	8/1/1983
Lake Holbrook	Holbrook, Town of	Holbrook/Randolph corporate limits	Spring Street	01090001		0.1	Y	AE	5/1/1985
Lake Waban	Wellesley, Town of	Entire shoreline	Entire shoreline	01090001		0.2	N	AE	11/1/1977
Lily Pond Stream	Cohasset, Town of	Confluence with Lily Pond	Approximately 2,798 feet upstream of confluence with Lily Pond	01090002	0.5		Y	AE	8/1/1983
Lower Pequid Brook	Canton, Town of	Confluence with Forge Pond	Reservoir Pond	01090001			N	AE	2/1/1986
Mann Pond Lateral	Norfolk, Town of	Confluence with Stop River	Boardman Street	01090001	1.2		Y	AE	11/1/1982
Martin Brook	Randolph, Town of	Confluence with Cochato River	Approximately 1,000 feet upstream of Oak Street	01090001	1.4		Y	AE	11/1/1985
Mary Lee Brook	Randolph, Town of	Confluence with Cochato River	South Main Street	01090001	1.6		Y	AE	11/1/1985
Massachusetts Bay	Braintree, Town of; Cohasset, Town of; Weymouth, Town of	Entire coastline	Entire coastline	N/A	28.3		N	AE/VE	5/1/2009
Massapoag Brook (Canton)	Canton, Town of	Outlet at Forge Pond	Canton corporate limits	01090001	1.5		Y	AE	2/1/1986
Massapoag Brook (Sharon)	Sharon, Town of	Approximately 100 feet downstream of Wooden Foot Bridge	Confluence with Massapoag Lake	01090001	1.6		Y	AE	6/1/1977
Massapoag Lake	Canton, Town of	Entire shoreline	Entire shoreline	01090001		0.6	N	AE	2/1/1986

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Meadow Brook	Norwood, Town of	Confluence with Neponset River	Pleasant Street	01090001	0.6		Y	AE	7/1/1977
Mill Brook	Westwood, Town of	Mouth at Willett Pond	Westwood corporate limits	01090001	2.6		Y	AE	12/1/1999
Mill River (Norfolk)	Norfolk, Town of	Confluence with Charles River	Norfolk/Wrentham corporate limits	01090001	4.6		Y	AE	11/1/1982
Mill River (Weymouth)	Weymouth, Town of	Approximately 750 upstream of Mill Street	Hollis Street	01090001	2.1		Y	AE	9/1/1987
Mill River Tributary A	Weymouth, Town of	Confluence with Mill River	Driveway approximately 550 feet upstream of Main Street	01090001	0.9		Y	AE	9/1/1987
Mill River Tributary B	Weymouth, Town of	Confluence with Mill River Tributary A	Railroad	01090001	0.1		Y	AE	9/1/1987
Miller Brook	Norfolk, Town of	Confluence with Mill River	Franklin/Norfolk corporate limits	01090001	0.5		Y	AE	11/1/1982
Mine Brook (Franklin)	Franklin, Town of	Confluence with Charles River	Approximately 200 feet upstream of Washington Street	01090001	9.7		Y	AE	2/1/1980
Mine Brook (Walpole)	Walpole, Town of	Confluence with Neponset River	Walpole corporate limits	01090001	2.4		Y	AE	12/1/1975
Monatiquot River	Braintree, Town of	Quincy Avenue	Confluence of Farm River and Cochato River	01090001	5.0		Y	AE	1/1/1984
Morses Pond	Wellesley, Town of	Entire shoreline	Entire shoreline	01090001		0.2	N	AE	11/1/1977
Mother Brook	Dedham, Town of	Dedham corporate limits	Divergence from Charles River	01090001	2.2		N	AE	6/1/1977

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Muddy River	Brookline, Town of	Brookline corporate limits	Upstream of Leverett Pond	01090001	1.5		N	AE	5/1/1972
Myrtle Street Lateral	Norfolk, Town of	Confluence with Charles River	3,000 feet upstream of Myrtle Street	01090001	0.7		Y	AE	11/1/1982
Neponset River (Milton/Canton)	Canton, Town of; Dedham, Town of; Milton, Town of; Norwood, Town of; Westwood, Town of	Milton corporate limits	Canton corporate limits	01090001	14.0		Y	AE	12/1/1976
Neponset River (Norwood)	Canton, Town of; Norwood, Town of	Norwood corporate limits	Norwood corporate limits	01090001	3.0		Y	AE	7/1/1977
Neponset River (Walpole)	Walpole, Town of	Walpole corporate limits	Walpole corporate limits	01090001	7.8		Y	AE	5/1/1985
Norroy Brook	Randolph, Town of	Confluence with Upper Reservoir	Approximately 285 feet upstream of Warren Street	01090001	1.7		Y	AE	7/1/1977
Old Swamp River	Weymouth, Town of	Approximately 80 feet downstream of Libbey Industrial Parkway	2,750 feet upstream of Ralph Talbot Street	01090001	2.3		Y	AE	5/1/1990
Pequid Brook (Upper Reach)	Canton, Town of	Confluence with Reservoir Pond	Unnamed bridge	01090001	0.7		N	AE	2/1/1986
Peters River	Bellingham, Town of	County limits	Silver Lake	01090003	4.9		Y	AE	7/1/1980
Pickerel Brook	Walpole, Town of	Confluence with Traphole Brook	Approximately 1,800 feet upstream of Wolcott Avenue	01090001	0.7		Y	AE	12/1/1975
Pine Tree Brook	Milton, Town of	Confluence with Neponset River	Approximately 2,000 feet upstream of Interstate 95	01090001	2.5		N	AE	10/1/1976
Plantingfield Brook	Norwood, Town of	Interstate 95	Westwood corporate limits	01090001	1.2		Y	AE	7/1/1977

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Ponkapoag Brook	Canton, Town of	Confluence with Neponset River	Turnpike Street	01090001	2.4		Y	AE	2/1/1986
Prison Farm Lateral	Norfolk, Town of	Confluence with Stop River	Spring Street	01090001	1.3		Y	AE	11/1/1982
Purgatory Brook	Norwood, Town of; Westwood, Town of	Just downstream of U.S. Route 1	Approximate 6,500 feet upstream of Gay Street	01090001	3.1		Y	AE	12/1/1999
Quincy Bay	Quincy, City of	Entire coastline	Entire coastline	N/A	28.1		N	AE/VE	8/1/2012
Rabbit Hill Brook	Wrentham, Town of	Wrentham/Plainville corporate limits	Crocker Pond	01090004	1.9		Y	AE	2/1/1980
Rattlesnake Run	Cohasset, Town of	Confluence with Straits Pond	Approximately 528 feet upstream of confluence with Straits Pond	01090001	0.1		Y	AE	8/1/1983
Redwing Brook	Stoughton, Town of	Just north of Pine Street	Approximately 1,000 feet upstream of Pine Street	01090001	0.8		Y	AE	10/1/1978
Reservoir Pond	Canton, Town of	Entire shoreline	Entire shoreline	01090001		0.4	N	AE	12/1/1976
Richardsons Brook	Cohasset, Town of	Approximately 1,160 feet upstream of confluence with Little Harbor	Point of one square mile of drainage area	01090002	0.5		N	A	5/31/2017
Richardsons Brook	Cohasset, Town of	Confluence with Little Harbor	Approximately 1,160 feet upstream of confluence with Little Harbor	01090002	0.2		Y	AE	8/1/1983
Robinson Brook	Foxborough, Town of	County limits	Central Street	01090004	1.7		Y	AE	3/1/1978
Rock Meadow Brook	Westwood, Town of	Country Club Road	Approximately 1,600 feet upstream of Hartford Street	01090001	2.9		N	AE	11/2/1973

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Rocky Brook	Dover, Town of	Confluence with Trout Brook	Just upstream of abandoned railroad	01090001	0.4		Y	AE	6/1/1985
Rumford River	Foxborough, Town of	Vandys Pond	Foxborough corporate limits	01090004	2.6		Y	AE	3/1/1978
School Meadow Brook	Sharon, Town of; Walpole, Town of	Confluence with Neponset River	Approximately 350 feet upstream of U.S. Route 1	01090001	1.5		Y	AE	12/1/1975
Sevenmile River	Plainville, Town of	County limits	Headwaters at unnamed pond	01090004	0.3		Y	AE	7/1/2014
Shepards Brook	Franklin, Town of	Confluence with Charles River	Approximately 1,400 feet south of Partridge Street	01090001	0.9		Y	AE	2/1/1980
South Brook	Westwood, Town of	Confluence with Purgatory Brook	East Street	01090001	1.2		N	AE	1/1/2001
Steep Hill Brook	Stoughton, Town of	Just upstream of Brittons Pond	Stoughton/Canton corporate limits	01090001	2.0		Y	AE	10/1/1978
Stony Brook	Norfolk, Town of	Confluence with Stop River	Norfolk/Wrentham corporate limits	01090001	3.0		Y	AE	11/1/1982
Stop River	Norfolk, Town of; Walpole, Town of	Walpole/Norfolk corporate limits	Norfolk/Wrentham corporate limits	01090001	6.5		Y	AE	11/1/1982
Sucker Brook	Sharon, Town of	Confluence with Massapoag Lake	Approximately 2,100 feet upstream	01090001	0.4		Y	AE	6/1/1977
Ten Mile River	Plainville, Town of	Plainville corporate limits	High Street	01090004	2.4		Y	AE	7/1/2014
Town Brook	Braintree, Town of; Quincy, City of	Elm Street	Approximately 400 feet upstream of Wood Road	01090001	4.5		Y	AE	1/1/1984

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Traphole Brook	Norwood, Town of; Walpole, Town of	Summer Street	Approximately 75 feet upstream of U.S. Route 1	01090001	1.4		Y	AE	7/1/1977
Tributary C2	Holbrook, Town of	Confluence with Cochato River	Approximately 400 feet upstream of Kleen Way	01090001	0.4		N	AE	7/15/1988
Tributary C2B	Holbrook, Town of	Confluence with Tributary C2	Approximately 250 feet upstream of Woodlawn Road	01090001	0.5		Y	AE	5/1/1985
Tributary R1	Holbrook, Town of	Confluence with Trout Brook	State Route 37	01090001	0.6		N	AE	7/15/1988
Tributary R2	Holbrook, Town of	Confluence with Trout Brook	Approximately 520 feet upstream of Reeds Lane	01090001	0.7		Y	AE	5/1/1985
Tributary R3	Holbrook, Town of	Confluence with Trout Brook	Approximately 100 feet upstream of State Route 37	01090001	0.5		Y	AE	5/1/1985
Tributary R4	Holbrook, Town of	Confluence with Trout Brook	Approximately 150 feet upstream of State Route 37	01090001	0.4		Y	AE	5/1/1985
Tributary to Great Black Swamp	Medway, Town of	Great Black Swamp	2,000 feet west of Saint Joseph's Cemetery on Oakland Street	01090001	0.8		Y	AE	11/1/1978
Tributary to Steep Hill Brook	Stoughton, Town of	Confluence with Steep Hill Brook	Town Pond	01090001	0.4		Y	AE	10/1/1978
Trout Brook (Avon)	Avon, Town of	County limits	Ladge Drive	01090004	0.6		Y	AE	3/1/1978
Trout Brook (Dover)	Dover, Town of	Confluence with Charles River	Approximately 1,500 feet upstream of Access Road	01090001	2.6		Y	AE	6/1/1985

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Turkey Hill Run	Cohasset, Town of	Downstream Cohasset corporate limits	Upstream Cohasset corporate limits	01090001	0.9		Y	AE	8/1/1983
Turtle Brook	Plainville, Town of	Mirimichi Street Dam	Confluence with Hawthorne Brook	01090004	1.8		Y	AE	1/1/1979
Unnamed Tributary to Mary Lee Brook	Randolph, Town of	Confluence with Mary Lee Brook	Just upstream of Union Street	01090001	0.4		Y	AE	11/1/1985
Unnamed Tributary to Robinson Brook	Foxborough, Town of	Confluence with Robinson Brook	Approximately 1,720 feet upstream of Robinson Brook	01090004			N	AE	3/1/1978
Vine Brook	Medfield, Town of	Confluence with Charles River	Just upstream of Industrial Drive	01090001	1.2		N	AE	1/1/1978
Waban Brook	Wellesley, Town of	Confluence with Charles River	Morses Pond Dam	01090001	2.0		N	AE	11/1/1977
Wading River	Foxborough, Town of	County limits	Headwaters at Lake Mirimichi	01090004	1.5		Y	AE	7/1/2014
Walnut Hill Stream	Cohasset, Town of	Manmade pond upstream of Beechwood Street	Point of one square mile of drainage area	01090002	0.6		N	A	5/31/2017
Walnut Hill Stream	Cohasset, Town of	Confluence with The Gulf	Manmade pond upstream of Beechwood Street	01090002	0.5		Y	AE	8/1/1983
West Mill Brook	Medfield, Town of	Confluence with Charles River	Medfield Junction	01090001			N	AE	1/1/1978
Whiting Pond Bypass	Plainville, Town of	County limits	Divergence from Ten Mile River	01090004	0.7		Y	AE	7/1/2014

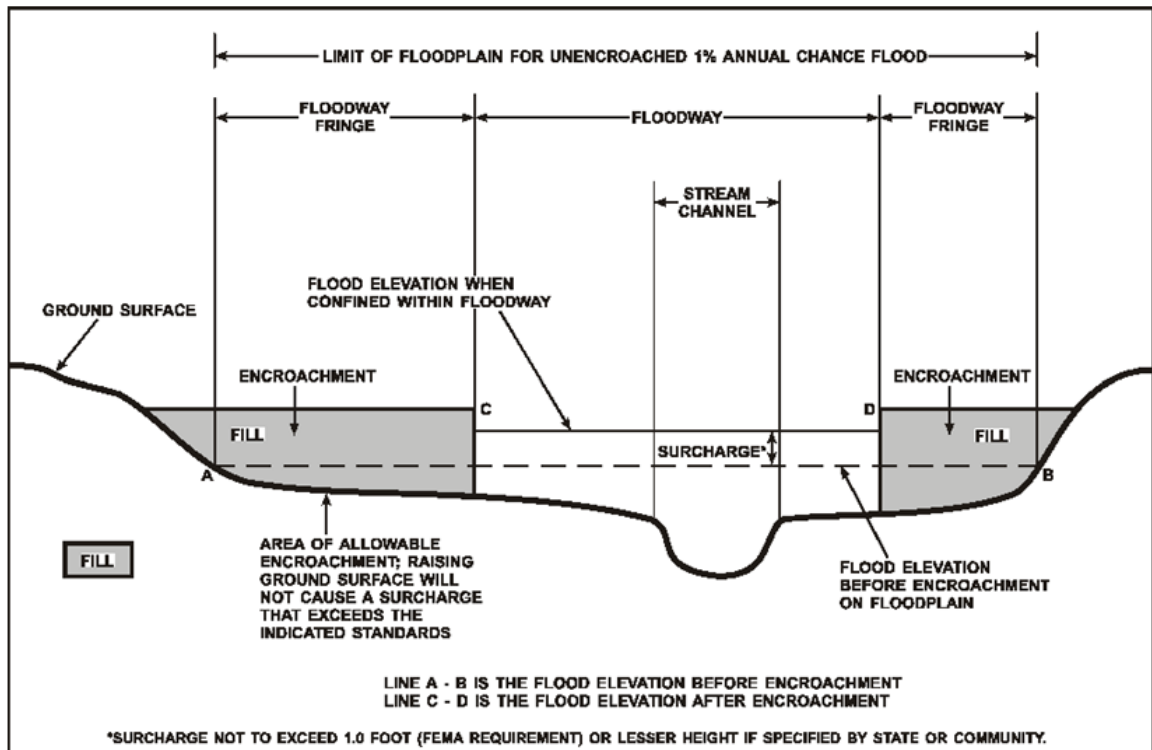
2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 23, "Floodway Data."

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Report.

2.5 Coastal Flood Hazard Areas

For most areas along rivers, streams, and small lakes, BFEs and floodplain boundaries are based on the amount of water expected to enter the area during a 1% annual chance flood and the geometry of the floodplain. Floods in these areas are typically caused by storm events. However, for areas on or near ocean coasts, large rivers, or large bodies of water, BFE and floodplain boundaries may need to be based on additional components, including storm surges and waves. Communities on or near ocean coasts face flood hazards caused by offshore seismic events as well as storm events.

Coastal flooding sources that are included in this Flood Risk Project are shown in Table 2.

2.5.1 Water Elevations and the Effects of Waves

Specific terminology is used in coastal analyses to indicate which components have been included in evaluating flood hazards.

The stillwater elevation (SWEL or still water level) is the surface of the water resulting from astronomical tides, storm surge, and freshwater inputs, but excluding wave setup contribution or the effects of waves.

- *Astronomical tides* are periodic rises and falls in large bodies of water caused by the rotation of the earth and by the gravitational forces exerted by the earth, moon and sun.
- *Storm surge* is the additional water depth that occurs during large storm events. These events can bring air pressure changes and strong winds that force water up against the shore.
- *Freshwater inputs* include rainfall that falls directly on the body of water, runoff from surfaces and overland flow, and inputs from rivers.

The 1% annual chance stillwater elevation is the stillwater elevation that has been calculated for a storm surge from a 1% annual chance storm. The 1% annual chance storm surge can be determined from analyses of tidal gage records, statistical study of regional historical storms, or other modeling approaches. Stillwater elevations for storms of other frequencies can be developed using similar approaches.

The total stillwater elevation (also referred to as the mean water level) is the stillwater elevation plus wave setup contribution but excluding the effects of waves.

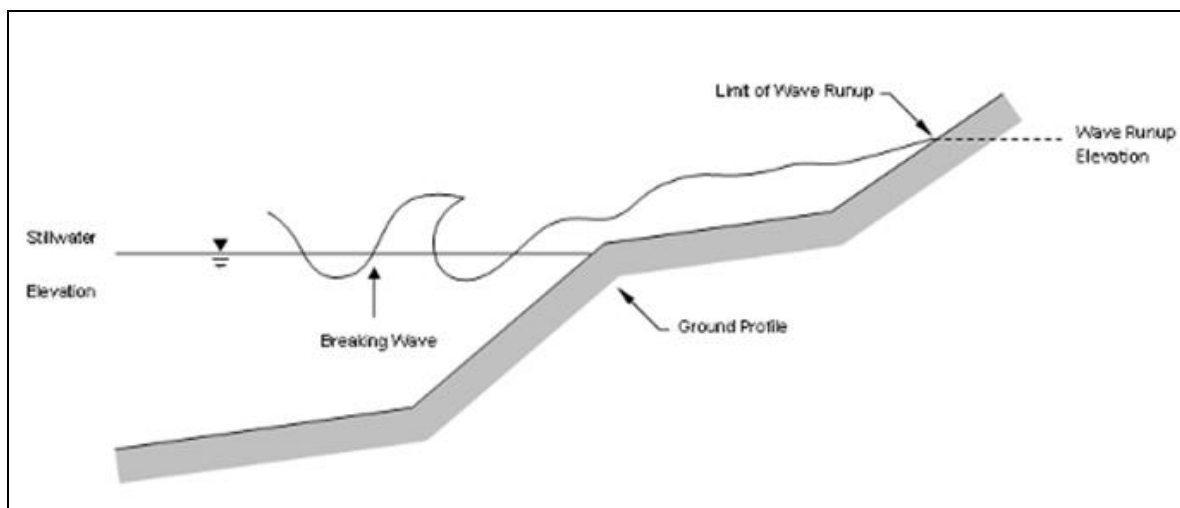
- *Wave setup* is the increase in stillwater elevation at the shoreline caused by the reduction of waves in shallow water. It occurs as breaking wave momentum is transferred to the water column.

Like the stillwater elevation, the total stillwater elevation is based on a storm of a particular frequency, such as the 1% annual chance storm. Wave setup is typically estimated using standard engineering practices or calculated using models, since tidal gages are often sited in areas sheltered from wave action and do not capture this information.

Coastal analyses may examine the effects of overland waves by analyzing storm-induced erosion, overland wave propagation, wave runup, and/or wave overtopping.

- *Storm-induced erosion* is the modification of existing topography by erosion caused by a specific storm event, as opposed to general erosion that occurs at a more constant rate.
- *Overland wave propagation* describes the combined effects of variation in ground elevation, vegetation, and physical features on wave characteristics as waves move onshore.
- *Wave runup* is the uprush of water from wave action on a shore barrier. It is a function of the roughness and geometry of the shoreline at the point where the stillwater elevation intersects the land.
- *Wave overtopping* refers to wave runup that occurs when waves pass over the crest of a barrier.

Figure 5: Wave Runup Transect Schematic



2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

For coastal communities along the Atlantic and Pacific Oceans, the Gulf of Mexico, the Great Lakes, and the Caribbean Sea, flood hazards must take into account how storm surges, waves, and extreme tides interact with factors such as topography and vegetation. Storm surge and waves must also be considered in assessing flood risk for certain communities on rivers or large inland bodies of water.

Beyond areas that are affected by waves and tides, coastal communities can also have riverine floodplains with designated floodways, as described in previous sections.

Floodplain Boundaries

In many coastal areas, storm surge is the principle component of flooding. The extent of the 1% annual chance floodplain in these areas is derived from the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm. The methods that were used for calculation of total stillwater elevations for coastal areas are described in Section 5.3 of this FIS Report. Location of total stillwater elevations for coastal areas are shown in Figure 8, "1% Annual Chance Total Stillwater Levels for Coastal Areas."

In some areas, the 1% annual chance floodplain is determined based on the limit of wave runup or wave overtopping for the 1% annual chance storm surge. The methods that were used for calculation of wave hazards are described in Section 5.3 of this FIS Report.

Table 25 presents the types of coastal analyses that were used in mapping the 1% annual chance floodplain in coastal areas.

Coastal BFEs

Coastal BFEs are calculated as the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm plus the additional flood hazard from overland wave effects (storm-induced erosion, overland wave propagation, wave runup and wave overtopping).

Where they apply, coastal BFEs are calculated along transects extending from offshore to the limit of coastal flooding onshore. Results of these analyses are accurate until local topography, vegetation, or development type and density within the community undergoes major changes.

Parameters that were included in calculating coastal BFEs for each transect included in this FIS Report are presented in Table 16, "Coastal Transect Parameters." The locations of transects are shown in Figure 9, "Transect Location Map." More detailed information about the methods used in coastal analyses and the results of intermediate steps in the coastal analyses are presented in Section 5.3 of this FIS Report. Additional information on specific mapping methods is provided in Section 6.4 of this FIS Report.

2.5.3 Coastal High Hazard Areas

Certain areas along the open coast and other areas may have higher risk of experiencing structural damage caused by wave action and/or high-velocity water during the 1% annual chance flood. These areas will be identified on the FIRM as Coastal High Hazard Areas.

- *Coastal High Hazard Area (CHHA)* is a SFHA extending from offshore to the inland limit of the primary frontal dune (PFD) or any other area subject to damages caused by wave action and/or high-velocity water during the 1% annual chance flood.
- *Primary Frontal Dune (PFD)* is a continuous or nearly continuous mound or ridge of sand with relatively steep slopes immediately landward and adjacent to the beach. The PFD is subject to erosion and overtopping from high tides and waves during major coastal storms.

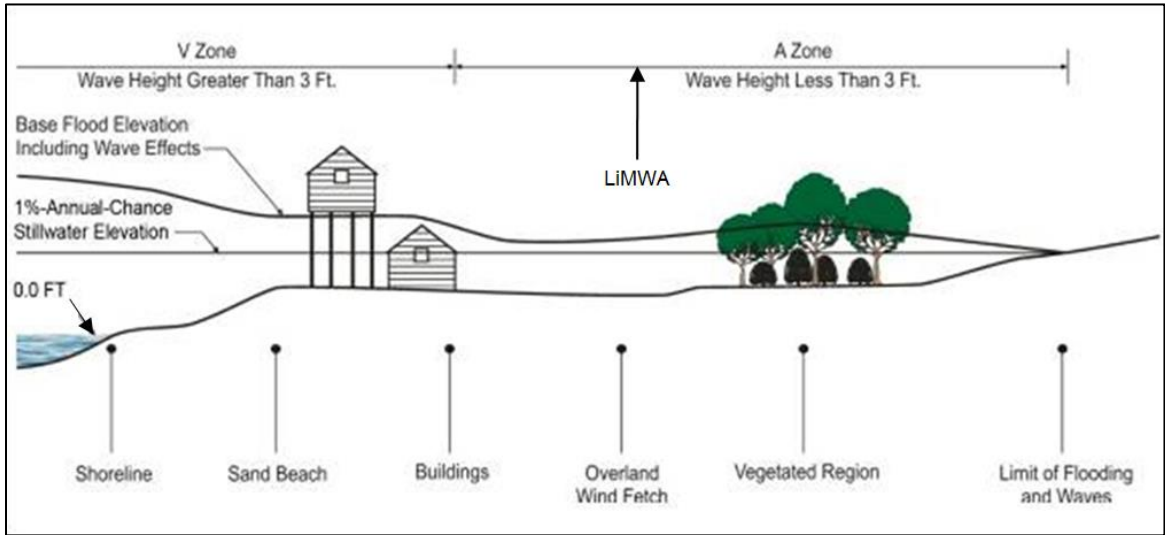
CHHAs are designated as "V" zones (for "velocity wave zones") and are subject to more stringent regulatory requirements and a different flood insurance rate structure. The areas of greatest risk are shown as VE on the FIRM. Zone VE is further subdivided into elevation zones and shown with BFEs on the FIRM.

The landward limit of the PFD occurs at a point where there is a distinct change from a relatively steep slope to a relatively mild slope; this point represents the landward extension of Zone VE. Areas of lower risk in the CHHA are designated with Zone V on the FIRM. More detailed information about the identification and designation of Zone VE is presented in Section 6.4 of this FIS Report.

Areas that are not within the CHHA but are SFHAs may still be impacted by coastal flooding and damaging waves; these areas are shown as "A" zones on the FIRM.

Figure 6, "Coastal Transect Schematic," illustrates the relationship between the base flood elevation, the 1% annual chance stillwater elevation, and the ground profile as well as the location of the Zone VE and Zone AE areas in an area without a PFD subject to overland wave propagation. This figure also illustrates energy dissipation and regeneration of a wave as it moves inland.

Figure 6: Coastal Transect Schematic



Methods used in coastal analyses in this Flood Risk Project are presented in Section 5.3 and mapping methods are provided in Section 6.4 of this FIS Report.

Coastal floodplains are shown on the FIRM using the symbology described in Figure 3, “Map Legend for FIRM.” In many cases, the BFE on the FIRM is higher than the stillwater elevations shown in Table 16 due to the presence of wave effects. The higher elevation should be used for construction and/or floodplain management purposes.

2.5.4 Limit of Moderate Wave Action

Laboratory tests and field investigations have shown that wave heights as little as 1.5 feet can cause damage to and failure of typical Zone AE building construction. Wood-frame, light gage steel, or masonry walls on shallow footings or slabs are subject to damage when exposed to waves less than 3 feet in height. Other flood hazards associated with coastal waves (floating debris, high velocity flow, erosion, and scour) can also damage Zone AE construction.

Therefore, a LiMWA boundary may be shown on the FIRM as an informational layer to assist coastal communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The location of the LiMWA relative to Zone VE and Zone AE is shown in Figure 6.

The effects of wave hazards in Zone AE between Zone VE (or the shoreline where Zone VE is not identified) and the limit of the LiMWA boundary are similar to, but less severe than, those in Zone VE where 3-foot or greater breaking waves are projected to occur during the 1% annual chance flooding event. Communities are therefore encouraged to adopt and enforce more stringent floodplain management requirements than the minimum NFIP requirements in the LiMWA. The NFIP Community Rating System provides credits for these actions.

Where wave runup elevations dominate over wave heights, there is no evidence to date of significant damage to residential structures by runup depths less than 3 feet. Examples

of these areas include areas with steeply sloped beaches, bluffs, or flood protection structures that lie parallel to the shore. In these areas, the FIRM shows the LiMWA immediately landward of the VE/AE boundary. Similarly, in areas where the zone VE designation is based on the presence of a primary frontal dune or wave overtopping, the LiMWA is delineated immediately landward of the Zone VE/AE boundary.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, “Map Legend for FIRM.” Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Norfolk County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Avon, Town of	A, AE, X
Bellingham, Town of	A, AE, X
Braintree, Town of	A, AE, VE, X
Brookline, Town of	A, AE, X
Canton, Town of	A, AE, X
Cohasset, Town of	A, AE, AO, VE, X
Dedham, Town of	A, AE, X
Dover, Town of	A, AE, X
Foxborough, Town of	A, AE, X
Franklin, Town of	A, AE, X
Holbrook, Town of	A, AE, X
Medfield, Town of	A, AE, X
Medway, Town of	A, AE, X
Millis, Town of	A, AE, X
Milton, Town of	A, AE, X
Needham, Town of	A, AE, AH, X

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Norfolk, Town of	A, AE, X
Norwood, Town of	A, AE, AO, X
Plainville, Town of	A, AE, X
Quincy, City of	A, AE, VE, X
Randolph, Town of	A, AE, X
Sharon, Town of	A, AE, X
Stoughton, Town of	A, AE, X
Walpole, Town of	A, AE, AO, X
Wellesley, Town of	A, AE, AH, X
Westwood, Town of	A, AE, X
Weymouth, Town of	A, AE, AO, VE, X
Wrentham, Town of	A, AE, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 4 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Blackstone	01090003	Blackstone River and tributaries	Blackstone River, Branch River, Abbott Run, Mill River, Peters River, Mumford River, Quinsigamond River, and many other small streams and tributaries	474
Cape Cod	01090002	Atlantic Ocean	Coastal land along Cape Cod Bay	1,204
Charles	01090001	Atlantic Ocean	Coastal land along Cape Cod Bay and Massachusetts Bay	1,013

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Narragansett	01090004	Narragansett Bay and coastal rivers	The Narragansett Watershed is the watershed drained by all coastal rivers (such as the Pawtuxet, Providence, and Taunton Rivers and their tributaries) discharging into Narragansett Bay, Rhode Island, excluding the Blackstone River Watershed (HUC8)	1,379

4.2 Principal Flood Problems

Table 5 contains a description of the principal flood problems that have been noted for Norfolk County by flooding source.

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Atlantic Ocean - Buzzards Bay and Mt. Hope Bay	The coastal communities (Cohasset, Weymouth, Quincy, and Braintree) along in Norfolk County are primarily subject to coastal flooding caused by nor'easters and hurricanes. Nor'easters can occur at any time of the year but are more prevalent in the winter months, whereas hurricanes mostly occur in the late summer and early fall months. The coastal areas tend to be more impacted by nor'easters given that they face primarily to the east, but hurricanes and tropical storms still can affect the coastal low-lying area in these communities. The most notable coastal storm to impact the coastal areas of these communities was the February 1978 nor'easter. Significant damage occurred to coastal homes, roads, and marinas.
Canton River	The Canton River has caused flooding issues (some bridges can be overtopped and numerous roads in low-lying areas along the river can be flooded) in the Town of Canton over the years as a result of hurricanes, snow melt combined with spring rains, and summer thunderstorms.

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Charles River	The Charles River has caused flooding issues in the Town of Bellingham, Medway, Millis, Medfield, Dover, Dedham, Needham, and Wellesley over the years as a result of hurricanes, snow melt combined with spring rains, and summer thunderstorms. The notable flood events along the Charles River were the March 1936 snow melt and rainfall event, July 1938 rainfall event, August 1955 - two successive hurricanes in a one week span, March 1968 snow melt and rainfall event, and spring 2010 which involved three large rainfall events over a five week period. Some bridges were overtopped and numerous roads in low-lying areas along the river were flooded. The July 1938, August 1955, and March 1968 flood events were about at a 2-percent annual chance flood, and the spring 2010 event was about a 4-percent annual chance flood, based on peak-flow data at the USGS Charles River at Dover streamgage (01103500). At the USGS Charles River at Waltham streamgage (01104500) further downstream, the spring 2010 event was about a 1-percent annual chance flood, and the 1938, 1955, and 1968 were between a 20- and 10-percent annual chance flood.
Monatiquot River	The Monatiquot River has caused flooding issues in the Town of Braintree over the years as a result of hurricanes, snow melt combined with spring rains, and summer thunderstorms. Significantly flooding issues have occurred due to the August 1955, March 1968, and March 2010 floods events. Some bridges were overtopped and numerous roads in low-lying areas along the river were flooded.
Neponset River	The Neponset River has caused flooding issues in the Towns of Foxborough, Walpole, Norwood, Canton, Westwood, Dedham, and Milton over the years as a result of hurricanes, snow melt combined with spring rains, and summer thunderstorms. The notable flood events along the Neponset River were the August 1955 - two successive hurricanes in a one week span, spring 2010 which involved three large rainfall events over a five week period, March 1968 snow melt and rainfall event, and the June 1998 rainfall event. Some bridges were overtopped and numerous roads in low-lying areas along the river were flooded. The August 1955 event was about a 1-percent annual chance flood, and the spring 2010, March 1968, and June 1998 events were about a 2-percent annual chance flood.
Town Brook	Town Brook has caused flooding issues in the City of Quincy over the years as a result of hurricanes, snow melt combined with spring rains, and summer thunderstorms. Construction of a diversion tunnel in the 1980's has significantly reduce flooding issues. But, prior to the diversion tunnel floods in August 1955 and March 1968 are the most notable to affect the Town Brook area.

Table 6 contains information about historic flood elevations in the communities within Norfolk County.

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Charles River	Central Avenue in Town of Needham	88.4	March 1936		USACE 1972

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Charles River	Central Avenue in Town of Needham	88.6	August 1955		USACE 1972
Charles River	Central Avenue in Town of Needham	87.5	March 1968		USACE 1972
Charles River	Central Avenue in Town of Needham	87.17	April 1987		
Charles River	Central Street in Town of Dover	105.48	March 1968		USACE 1972
Charles River	Charles River Street in Town of Needham	106.89	March 1968		USACE 1972
Charles River	Chestnut Street in Town of Needham	94.0	March 1936		USACE 1972
Charles River	Chestnut Street in Town of Needham	95.6	August 1955		USACE 1972
Charles River	Chestnut Street in Town of Needham	95.2	March 1968		USACE 1972
Charles River	Dedham Avenue in Town of Needham	92.5	March 1936		USACE 1972
Charles River	Dedham Avenue in Town of Needham	94.2	August 1955		USACE 1972
Charles River	Dedham Avenue in Town of Needham	93.53	March 1968		USACE 1972
Charles River	Dedham Avenue in Town of Needham	92.84	April 1987		
Charles River	Greendale Avenue in Town of Needham	91.6	March 1936		USACE 1972
Charles River	Greendale Avenue in Town of Needham	93.6	August 1955		USACE 1972
Charles River	Greendale Avenue in Town of Needham	91.5	March 1968		USACE 1972
Charles River	Greendale Avenue in Town of Needham	91.27	April 1987		
Charles River	Highland Avenue in Town of Needham	90.6	March 1936		USACE 1972
Charles River	Highland Avenue in Town of Needham	92.4	August 1955		USACE 1972
Charles River	Highland Avenue in Town of Needham	88.2	March 1968		USACE 1972

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Charles River	Highland Avenue in Town of Needham	87.78	April 1987		
Charles River	Kendrick Street in Town of Needham	91.0	March 1936		USACE 1972
Charles River	Kendrick Street in Town of Needham	92.4	August 1955		USACE 1972
Charles River	Kendrick Street in Town of Needham	97.61	March 1968		USACE 1972
Charles River	Kendrick Street in Town of Needham	88.11	April 1987		
Charles River	South Street in Town of Needham	103.45	March 1968		USACE 1972
Charles River	Upstream side of Bridge Street in Town of Dedham	91.2	March 1936		
Charles River	Upstream side of Bridge Street in Town of Dedham	92.2	July 1938		
Charles River	Upstream side of Bridge Street in Town of Dedham	92.9	August 1955		
Charles River	Upstream side of Bridge Street in Town of Dedham	89.8	March 1968		
Charles River	USGS streamgage at Dover	98.0	March 1936		USACE 1972
Charles River	USGS streamgage at Dover	98.2	August 1955		USACE 1972
Charles River	USGS streamgage at Dover	97.7	March 1968		USACE 1972
Charles River	USGS streamgage at Dover	97.3	January 1979		USACE 1972
Fuller Brook	Brook Street in Town of Needham	130.8	February 1970		USACE 1972
Fuller Brook	Brook Street in Town of Needham	130.4	March 1971		USACE 1972
Fuller Brook	Brook Street in Town of Needham	130.8	March 1972		USACE 1972

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Fuller Brook	Pilgrim Road in Town of Needham	131.8	February 1970		USACE 1972
Fuller Brook	Pilgrim Road in Town of Needham	131.3	March 1971		USACE 1972
Fuller Brook	Pilgrim Road in Town of Needham	131.7	March 1972		USACE 1972
Neponset River	Opposite Readville Manor in Town of Dedham	43.8	March 1936		
Neponset River	Opposite Readville Manor in Town of Dedham	47.0	August 1955		
Neponset River	Opposite Readville Manor in Town of Dedham	42.6	March 1968		

4.3 Non-Levee Flood Protection Measures

Table 7 contains information about non-levee flood protection measures within Norfolk County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 7: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Atlantic Ocean	N/A	Tide gates and seawalls	Towns of Cohasset, Braintree, and Weymouth; and City of Quincy	Dissipates wave energy and provides some flood protection of low areas
Bound Brook	Aaron River dam and Lily Pond gate	Some storage of flood waters	Cohasset	Potential reservoir/pond storage, but it depends on their management and current capacity available for storage
Canton River	Canton River Local Protection Project	Dams and diversion channel	Canton	Stop logs on Bolivar, Forge, and Reservoir Pond Dams are removed prior to flood events

Table 7: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Charles River	Charles River Natural Valley Storage	Natural storage in low-lying areas adjacent to the Charles River	Towns of Dedham, Dover, Medfield, Medway, Millis, Needham, Norfolk, and Wellesley	USACE bought undeveloped land in the floodplain of the Charles River, so it can act as natural storage during a flood - to slowly release water and slow velocities
Charles River	Mother Brook diversion channel	Diversion channel	Dedham and Needham	Flood flows from the Charles River can be diverted through Mother Brook to the Neponset River
Diamond and Spring Brooks	N/A	Multi-purpose reservoir	Walpole	Some flood flow reduction
Neponset River	Lower Mills Dam	Dam	Dedham and Milton	Gate levels can be lowered during floods to allow more water to pass the dam
Neponset River	N/A	Conservation land	Norwood	Conservation land set aside along Neponset River and tributaries to allow some minor storage of flood waters
Pine Tree Brook	N/A	Earthen dam	Milton	Helps retard floods on Pine Tree Brook
Riverine	N/A	Natural swamps/wetlands	Most towns and cities in Norfolk County	Natural swamps/wetlands provide some natural storage during flood events - slowly releasing flood waters and slowing velocities
Riverine	N/A	Natural lake and pond storage	Most towns and cities in Norfolk County	Natural lakes and ponds provide some natural storage during flood events - slowly releasing flood waters and slowing velocities
Three Swamp Brook	N/A	Undeveloped swampy areas	Avon	Flooding can be diverted into undeveloped swamp area along Three Swamp Brook
Town Brook	Old Quincy Reservoir and Dam and Town Brook Diversion Tunnel	Reservoir storage and diversion tunnel	Quincy	USACE built flood protection for Town Brook in Quincy by building a diversion tunnel and re-constructing the Old Quincy Reservoir dam for additional storage

Table 7: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Whitman's Pond	Whitman's Pond Diversion Tunnel	Diversion tunnel	Weymouth	Provides flood protection to Whitman's Pond and the pond's outflow to Atlantic Ocean

4.4 Levees

This section is not applicable to this Flood Risk Project.

Table 8: Levees

[Not Applicable to this Flood Risk Project]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 26, "Incorporated Letters of Map Change", which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, "FIRM Revisions."

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending

on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 12. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 9. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 10. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 16.) Stream gage information is provided in Table 11.

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Arnolds Brook	At the confluence with the Peters River	1.40	100	*	170	210	330
Arnolds Brook	At confluence with Brockton Reservoir	2.20	205	*	330	395	660
Arnolds Brook	At Old Pond Street	2.10	202	*	326	386	647
Arnolds Brook	At State Highway 24 exit ramp	2.00	196	*	316	373	624
Arnolds Brook	At New Pond Street	1.90	190	*	300	340	604
Arnolds Brook	At State Highway 24 entrance ramp	1.60	181	*	283	329	578
Arnolds Brook	At Stockwell Drive	1.10	105	*	162	188	299
Arnolds Brook	At Old Railroad Grade near Avon/Stoughton corporate limits	0.90	92	*	140	162	257
Beaver Brook (Bellingham)	At the confluence with the Charles River	2.60	70	*	130	160	220
Beaver Brook (Bellingham)	At the Taunton Street	2.10	60	*	110	140	190
Beaver Brook (Holbrook)	At Holbrook/Weymouth	1.80	790	*	*	1,350	1,760
Beaver Brook (Holbrook)	At Plymouth Street	0.90	300	*	*	500	650
Beaver Brook (Sharon)	At Upland Road	1.95	104	*	156	179	249

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Beaver Meadow Brook	At Bolivar Pond Outlet	9.70	805	*	525	1,890	2,680
Beaver Meadow Brook	At Bolivar Pond	3.10	270	*	600	750	1,070
Billings Brook	Cranberry Bogs (Mile 1.8)	1.10	51	*	72	80	105
Billings Brook Branch	950 feet from Main Branch (Cross Section A)	1.40	63	*	87	95	122
Bogastow Brook	At confluence with Charles River	19.20	475	*	780	940	1,420
Bogastow Brook	At Bogastow Pond outlet	17.60	505	*	835	1,010	1,530
Bogastow Brook	At Orchard Street (Schoolhouse Hill)	14.80	460	*	760	925	1,400
Bogastow Brook	At Orchard Street (Golf Course)	13.10	450	*	750	910	1,390
Bound Brook	At Turtle Island in Cohasset	0.49	68	*	101	116	160
Brook A		*	*	*	*	*	*
Brook B		*	*	*	*	*	*
Brook No. 1	At Lake Mirimichi	12.00	400	*	670	810	1,230
Brook No. 1	At inlet to Lake Mirimichi	5.83	220	*	360	440	670
Brook No. 1	At Interstate Route 495	4.55	170	*	280	340	520
Bubbling Brook	At Brook Street	3.56	167	*	268	322	500
Bubbling Brook	At Pettees Pond Lane	0.55	49	*	80	98	165
Bubbling Brook	At North Street	0.29	32	*	53	65	107

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Bungay Brook	At the confluence with the Peters River in Bellingham	4.10	210	*	360	440	680
Bungay Brook	4,000 feet upstream of the confluence with the Peters River	2.90	180	*	320	390	600
Burnt Swamp Brook	At Wrentham/Cumberland, Rhode Island corporate limits	4.60	200	*	330	410	630
Burnt Swamp Brook	At Burnt Swamp Road	3.50	180	*	257	370	567
Burnt Swamp Brook	At West Street	2.60	140	*	233	290	442
Burnt Swamp Brook	At Terminus of Study 1,700 feet upstream of West Street in Wrentham	1.00	120	*	200	250	380
Canoe River (Foxborough)	At Beaumont Pond	2.50	136	*	205	234	363
Canoe River (Foxborough)	At East Street	2.30	133	*	200	229	354
Canoe River (Foxborough)	Approximately 1,900 feet upstream of East Street	2.10	125	*	190	215	336
Canoe River (Foxborough)	At Willow Street	2.00	122	*	182	208	322
Canoe River (Foxborough)	Approximately 1,450 feet upstream of Willow Street	1.80	113	*	167	191	295

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Canoe River (Sharon)	Approximately 900 feet from Sharon/Foxborough corporate limit	1.48	71	*	99	111	146
Canton River	At gaging station	27.20	930	*	1,910	2,570	4,980
Caroline Brook	At Wellesley	0.26	*	*	*	480	*
Charles River (Lower Reach)	At Wellesley	216.00	2,200	*	2,900	3,500	4,500
Charles River (Lower Reach)	At Wellesley/Needham corporate limits (USGS Wellesley gage)	211.00	1,965	*	2,660	2,990	3,825
Charles River (Lower Reach)	At Dedham Corporate boundary	200.00	1,534	*	2,493	3,019	4,585
Charles River (Lower Reach)	Mother Brook diversion	198.20	2,301	*	3,740	4,528	6,878
Charles River (Lower Reach)	Downstream of Mother Brook Division Channel	198.00	1,780	*	2,480	3,200	4,270
Charles River (Lower Reach)	Upstream of Mother Brook Division Channel	198.00	2,650	*	3,610	4,680	6,210
Charles River (Lower Reach)	Route 128	192.70	2,267	*	3,685	4,461	6,776
Charles River (Lower Reach)	At the Charles River Village gage	184.00	2,500	*	3,500	4,500	6,000
Charles River (Lower Reach)	At Medfield	156.00	2,450	*	3,430	4,410	5,925

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Charles River (Lower Reach)	At Medfield/Dover/ Sherborn Corporate Limits	145.00	2,450	*	3,430	4,410	5,925
Charles River (Upper Reach)	At Myrtle Street in Norfolk	85.90	1,900	*	2,500	3,500	5,100
Charles River (Upper Reach)	At the Medway/Norfolk/ Franklin town boundary	66.00	1,900	*	2,500	3,500	5,100
Charles River (Upper Reach)	Upstream of Medway Dam	65.00	1,200	*	2,300	3,100	4,700
Charles River (Upper Reach)	Upstream of West Medway Dam	52.60	1,056	*	2,024	2,728	4,136
Charles River (Upper Reach)	At the Medway/Bellingham/ Franklin corporate limits	36.10	990	*	1,860	2,540	3,830
Charles River (Upper Reach)	Upstream of confluence with Hopping Brook	24.20	740	*	1,400	1,910	2,870
Charles River (Upper Reach)	At confluence with Stall Brook	20.20	650	*	1,230	1,670	2,520
Charles River (Upper Reach)	At Interstate 495	19.50	640	*	1,210	1,640	2,470
Charles River (Upper Reach)	At confluence with Beaver Brook	13.80	460	*	860	1,180	1,800
Charles River (Upper Reach)	At the head of Box Pond	12.90	430	*	820	1,130	1,780
Charles River (Upper Reach)	At Bellingham/Milford upstream corporate limits	11.90	430	*	800	1,130	1,670

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Chicken Brook	At confluence with Charles River in Medway	7.33	300	*	500	600	900
Chicken Brook	Upstream of Park Pond Dam	6.80	284	*	473	568	851
Chicken Brook	Upstream of Milk Pond Dam	6.35	270	*	450	540	810
Chicken Brook	Upstream of Milk Pond	5.73	250	*	415	500	750
Cobb's Brook	At confluence with Neponset River in Walpole	1.90	108	*	128	163	704
Cochato River	At the confluence with Monatiquot River	11.43	864	*	1,405	1,924	3,000
Cochato River	Upstream of confluence with Glover's Brook	6.24	642	*	990	1,375	2,748
Cochato River	At Randolph/Holbrook corporate limits	4.34	376	*	629	963	1,965
Cochato River	At Lake Holbrook	2.52	155	*	274	488	1,088
Cress Brook	At confluence with Mill River	1.80	115	*	200	245	385
Cress Brook	At Lake Street	0.20	25	*	45	60	90
Crocker Brook	2,000 feet downstream of East Street	2.10	80	*	130	150	240
Crocker Brook	At Railroad	1.40	60	*	100	120	190
Cunningham Brook	At Wallace Road	0.75	128	*	190	210	260
Diamond Brook	At confluence with Neponset River	2.10	160	*	300	380	500

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Diamond Brook	At Diamond Pond Dam	1.60	130	*	250	330	420
Diamond Brook	At Washington Street	1.10	110	*	220	290	360
Dorchester Brook	At Stoughton/Easton corporate limits	2.10	192	*	304	357	586
Dorchester Brook	At Atkinson Avenue	1.50	154	*	233	266	417
Farm River	** in Braintree	12.00	570	*	1,100	1,300	2,700
Farm River	** in Braintree	10.00	500	*	920	1,200	2,400
Fuller Brook	At Wellesley	2.83	*	*	*	820	*
Furnace Brook	At Hancock Street	3.18	630	*	880	970	1,090
Furnace Brook	At Newport Avenue	3.01	570	*	830	910	970
Furnace Brook	At Adams Street	2.43	460	*	640	710	830
Furnace Brook	At Crescent Street	1.52	140	*	165	173	190
Germany Brook	At 100 feet downstream of Nichols Street	2.40	250	*	342	383	497
Germany Brook	At 70 feet upstream of Westover Parkway	1.80	200	*	269	299	382
Glovers Brook		*	*	*	*	*	*
Great Pond Tributary	At Holbrook/Weymouth corporate limits	0.50	140	*	*	250	325

*Not calculated for this Flood Risk Project

**Locations not available in Town of Braintree 1977 FIS (FEMA 1977)

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Harlow Pond Lateral	At confluence with Charles River	1.40	90	*	150	185	285
Harlow Pond Lateral	At 4th Dam on Brook	0.10	22	*	26	30	36
Hawes Brook	At 140 feet upstream of Washington Street	8.80	778	*	1,152	1,342	1,873
Hawes Brook	Hawthorne Brook at inlet to Turnpike Lake	1.61	100	*	170	210	320
Herring Brook	At confluence with Weymouth Back River	15.10	615	*	1,006	1,203	2,032
Herring Brook	At Bituminous Road	14.70	598	*	981	1,176	1,993
Herring Brook	At Railroad	14.60	590	*	970	1,160	1,965
Herring Brook	Approximately 300 feet upstream of Railroad	14.50	583	*	956	1,145	1,934
Herring Brook	At Broad Street	14.10	567	*	924	1,104	1,858
Herring Brook	Weir just downstream of Commercial Street	14.00	566	*	922	1,099	1,846
Herring Brook	At Commercial Street	14.00	565	*	920	1,096	1,835
Herring Brook	At Pleasant Street	13.90	563	*	915	1,088	1,818
Herring Brook	At Ironhill Street	13.50	539	*	875	1,044	1,751
Herring Brook	Approximately 300 feet upstream of Ironhill Street	13.40	537	*	872	1,040	1,743

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Hopping Brook	At confluence with Charles River	11.40	400	*	670	1,000	1,800
Hopping Brook	At south of Main Street	10.71	350	*	600	900	1,400
James Brook	At confluence with Cohasset Cove	1.31	76	*	130	159	249
Lake Waban	At Wellesley	10.90	100	*	145	170	235
Lily Pond Stream	At confluence with Lily Pond	0.49	50	*	87	107	171
Mann Pond Lateral	At confluence with Stop River	1.40	100	*	*	330	570
Mann Pond Lateral	At Railroad Culvert	1.10	86	*	*	137	202
Mann Pond Lateral	At Boardman Street	0.70	120	*	*	280	405
Martin Brook		*	*	*	*	*	*
Mary Lee Brook	At confluence with Cochato River	1.40	160	*	205	245	285
Mary Lee Brook	Just upstream of confluence of Unnamed Tributary to Mary Lee Brook	1.17	140	*	180	215	255
Massapoag Brook (Canton)	Just downstream of the Silk Mill Pond Dam	10.35	140	*	230	270	530
Massapoag Brook (Canton)	At upstream Sharon/Canton corporate limits	9.90	400	*	710	880	1,250
Massapoag Brook (Sharon)	Just downstream of footbridge	5.58	265	*	426	505	748

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Massapoag Brook (Sharon)	Confluence with Devil Brook	4.73	233	*	372	439	646
Massapoag Brook (Sharon)	Confluence with Sub- Branch of Massapoag Brook	3.94	200	*	315	371	541
Massapoag Brook (Sharon)	Massapoag Lake	3.55	195	*	312	368	541
Meadow Brook	Confluence with Neponset River	1.50	183	*	249	278	359
Meadow Brook	Downstream of U.S. Route 1	1.20	147	*	197	216	274
Mill Brook	At Brook Road	3.02	149	*	241	289	425
Mill Brook	At Winslow Road	2.03	115	*	186	225	350
Mill Brook	At Tamarack Road	1.82	107	*	174	210	332
Mill Brook	At High Street	1.33	87	*	142	172	275
Mill Brook	At Hartford Street	0.83	64	*	105	127	200
Mill River (Norfolk)	At confluence with Charles River	16.80	500	*	*	1,153	1,707
Mill River (Norfolk)	At Miller Street	13.40	249	*	*	580	877
Mill River (Norfolk)	At City Mills Pond Dam (Main Street)	10.70	180	*	*	325	447
Mill River (Norfolk)	At Railroad Culvert	10.40	290	*	*	685	1,009
Mill River (Norfolk)	At Bush Pond Dam	9.40	175	*	*	264	590
Mill River (Norfolk)	Opposite Maple Street	9.00	238	*	*	533	774

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Mill River (Weymouth)	Approximately 1,750 feet downstream of West Street	5.80	239	*	365	423	668
Mill River (Weymouth)	At West Street	5.70	238	*	364	422	666
Mill River (Weymouth)	Approximately 1,150 feet upstream of West Street	5.60	237	*	363	421	664
Mill River (Weymouth)	At Railroad	4.40	190	*	300	340	532
Mill River (Weymouth)	Approximately 400 feet upstream of confluence with Mill River Tributary A	3.50	146	*	220	252	389
Mill River (Weymouth)	Approximately 550 feet downstream of Hollis Street / Randolph Street	2.80	139	*	206	241	369
Mill River (Weymouth)	At Hollis Street / Randolph Street	2.40	136	*	203	232	357
Mill River Tributary A	At Randolph Street	0.80	62	*	88	98	143
Mill River Tributary A	At Gravel Road	0.70	60	*	84	92	138
Mill River Tributary A	At Pond Street	0.60	53	*	61	73	103
Mill River Tributary A	At Railroad	0.60	51	*	58	69	98

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Mill River Tributary A	At Main Street	0.40	31	*	42	49	70
Mill River Tributary A	Approximately 630 feet downstream of State Highway 18	0.30	22	*	33	43	60
Mill River Tributary B	At Railroad	0.10	10	*	16	20	28
Miller Brook	Confluence with Mill River	1.70	195	*	*	450	660
Miller Brook	At Main Street	1.50	190	*	*	440	650
Mine Brook (Franklin)	Upstream of the confluence with Charles River	14.90	500	*	830	1,010	1,540
Mine Brook (Franklin)	Upstream of Beech Street	13.50	460	*	770	940	1,430
Mine Brook (Franklin)	Upstream of Interstate 495	9.40	360	*	600	730	1,110
Mine Brook (Franklin)	Upstream of Beaver Street	7.70	310	*	520	630	960
Mine Brook (Franklin)	Upstream of Spring Pond	2.60	150	*	250	300	460
Mine Brook (Walpole)	At confluence with Neponset River	7.20	175	*	325	450	1,025
Mine Brook (Walpole)	At downstream crossing of Mill Pond Road	7.10	175	*	350	525	1,150

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Mine Brook (Walpole)	At Railroad bridge	6.00	175	*	350	500	1,050
Mine Brook (Walpole)	At Walpole/Medfield corporate limits	5.00	400	*	500	575	950
Monatiquot River	** in Braintree	29.70	1,020	*	1,900	2,200	4,800
Monatiquot River	** in Braintree	27.80	990	*	1,800	2,150	4,700
Monatiquot River	** in Braintree	25.50	930	*	1,700	2,100	4,400
Monatiquot River	** in Braintree	24.00	900	*	1,600	2,000	4,200
Morses Pond	At Wellesley	8.80	125	*	175	210	285
Mother Brook	Diversion Dam from Charles River	198.20	767	*	1,247	1,509	2,293
Myrtle Street Latal	At confluence with Charles River	0.90	60	*	100	120	190
Neponset River	Dam at Lower Mills	*	2,450	*	3,410	3,730	4,750
Neponset River	Dedham/Boston corporate limits	93.00	552	*	1,401	1,945	5,500
Neponset River	At Interstate Route 95 bridge	*	*	*	*	1,510	*
Neponset River	Canton/Dedham Street Bridge	*	*	*	*	1,790	*
Neponset River	At Greenlodge Street Bridge	*	*	*	*	1,960	*
Neponset River	Dedham Street	86.30	820	*	1,440	1,786	2,850
Neponset River	Upstream of Purgatory Brook (Section C)	79.70	1,010	*	1,730	2,050	3,350

*Not calculated for this Flood Risk Project

**Locations not available in Town of Braintree 1977 FIS (FEMA 1977)

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Neponset River	Downstream of 1-95 Interchange near Canton/Norwood corporate limits	78.20	1,030	*	1,800	2,070	3,450
Neponset River	Neponset Street	76.50	1,060	*	1,850	2,254	3,550
Neponset River	Upstream crossing of I-95	41.90	720	*	1,150	1,508	2,300
Neponset River	Upstream of Traphole Brook	38.10	633	*	1,098	1,354	2,189
Neponset River	USGS gaging station (Section Y)	35.20	609	*	1,020	1,260	1,980
Neponset River	Upstream of Hawes Brook confluence	26.20	463	*	786	958	1,515
Neponset River	At Walpole/Norwood downstream corporate limits	25.80	700	*	1,025	1,225	2,575
Neponset River	At Washington Street	25.70	700	*	1,025	1,225	2,550
Neponset River	At Bird and Son Co. Dam	25.70	695	*	1,032	1,234	2,565
Neponset River	At Plimpton Pond Dam	24.90	683	*	1,024	1,235	2,527
Neponset River	At State Route 1A	22.90	575	*	900	1,100	2,350
Neponset River	At Stetson Pond Dam	22.20	574	*	906	1,114	2,336
Neponset River	At Elm Street	10.60	300	*	475	550	1,025
Neponset River	At South Street	*	261	*	416	498	1,050
Neponset River	At Summer Street	3.50	232	*	456	570	928
Norway Brook		*	*	*	*	*	*
Old Swamp River	At Libbey Industrial Parkway	4.90	241	*	360	422	657

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Old Swamp River	At State Route 3 Northbound lane	4.70	222	*	336	389	608
Old Swamp River	Approximately 800 feet downstream of Pleasant Street	4.10	190	*	288	334	537
Old Swamp River	At State Route 3 southbound lane	4.00	183	*	273	313	480
Old Swamp River	At Pleasant Street	4.00	182	*	272	310	475
Old Swamp River	Approximately 750 feet upstream of Pleasant Street	3.90	180	*	270	308	472
Old Swamp River	At Elm Street	3.80	179	*	267	305	469
Old Swamp River	Approximately 1,150 feet downstream of Talbot Street	3.60	170	*	254	300	453
Old Swamp River	At Talbot Street	3.40	160	*	239	289	437
Old Swamp River	Approximately 950 feet downstream of Ralph Talbot Street	3.10	147	*	220	268	396
Old Swamp River	At Ralph Talbot Street	3.00	143	*	212	250	375
Old Swamp River	Approximately 1,400 feet upstream of Ralph Talbot Street	2.90	140	*	206	235	356
Paintshop Pond	At Wellesley	8.90	125	*	175	210	285
Pequid Brook (Lower Reach)	At Reservoir Pond	6.23	180	*	190	210	300

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pequid Brook (Upper Reach)	At unnamed bridge approximately 1,050 feet upstream of Turnpike Street	4.02	220	*	410	480	720
Peters River	At the downstream corporate limits of Providence County, RI/Norfolk County, MA	12.50	750	*	1,150	1,600	2,600
Peters River	At confluence of Arnolds Brook	10.50	670	*	1,020	1,420	2,310
Peters River	At the confluence of Bungay Brook	6.40	470	*	720	1,010	1,640
Peters River	Upstream of Jenks Reservoir	5.60	430	*	660	910	1,480
Peters River	At the Pulaski Boulevard Bridge	4.20	350	*	540	750	1,220
Peters River	At the Abandoned Railroad Bridge	4.20	350	*	540	750	1,220
Peters River	At confluence of a tributary upstream of the New York/New Haven and Hartford Railroad	2.80	260	*	400	560	910
Pickerel Brook	At confluence with Traphole Brook	*	80	*	330	430	740
Pickerel Brook	At Walcott Avenue	0.80	86	*	386	471	816
Pine Tree Brook	At Confluence with Neponset River	8.28	550	*	870	1,030	1,400
Pine Tree Brook	At School Street	8.15	460	*	750	900	1,300
Pine Tree Brook	At Thatcher Street	7.33	370	*	640	760	1,125

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pine Tree Brook	At Elm Street	7.15	305	*	530	640	950
Pine Tree Brook	At Blue Hill Parkway	6.98	250	*	410	480	690
Plantingfield Brook	USGS crest-stage gage station at U.S. Route 1 culvert	1.52	190	*	258	290	374
Plantingfield Brook	Downstream of 1,400- foot culvert, approximately 1,950 feet upstream of U.S. Route 1	1.20	149	*	196	219	279
Plantingfield Brook	Upstream of 1,400-foot culvert	1.02	130	*	171	188	235
Ponkapoag Brook	At confluence with Neponset River	3.36	165	*	265	320	470
Prison Farm Lateral	At Needham Street	0.60	110	*	*	260	370
Purgatory Brook	Downstream of U.S. Route 1	2.90	307	*	432	487	647
Purgatory Brook	Downstream of Everett Street	2.50	265	*	366	370	454
Purgatory Brook	At Everett Street	4.42	192	*	308	369	600
Purgatory Brook	At confluence with South Brook	4.12	184	*	295	354	570
Purgatory Brook	At Washington Street	1.69	102	*	166	200	300
Purgatory Brook	At Gay Street	1.06	75	*	123	149	250
Rabbit Hill Brook	At Wrentham/Plainville corporate limits	3.70	160	*	260	310	480
Rabbit Hill Brook	At Myrtle Street	3.00	140	*	220	270	410
Rattlesnake Run	At confluence with Straits Pond	0.54	42	*	73	90	141

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Redwing Brook	At Stoughton/Canton corporate limits	1.70	164	*	260	304	502
Redwing Brook	At York Street and Meadow Brook Lane	1.40	120	*	187	217	351
Redwing Brook	At Pine Street	1.10	89	*	136	157	248
Richardsons Brook	At confluence with Little Harbor	0.29	31	*	54	66	106
Robinson Brook	At Foxborough/Mansfield corporate limits	2.40	162	*	249	289	456
Robinson Brook	At Commercial Street	2.30	159	*	242	281	440
Robinson Brook	Approximately 60 feet upstream of Foxborough Boulevard	2.30	156	*	236	272	428
Robinson Brook	Approximate 1,000 feet downstream of Interstate 95	2.20	152	*	228	265	415
Robinson Brook	At Interstate Route 95	2.10	148	*	224	259	405
Robinson Brook	At Walnut Street	1.90	141	*	216	248	384
Robinson Brook	Approximately 400 feet upstream of Hershey Pond	1.60	127	*	197	225	352
Robinson Brook	At Central Street	1.40	118	*	186	212	339
Robinson Brook	Just downstream of Cocasset Street	0.80	*	*	*	128	*
Robinson Brook	Approximately 1,800 feet upstream of Cocasset Street	0.33	*	*	*	56	*

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Rocky Brook	At confluence with Trout Brook	0.65	52	*	89	109	197
Rumford River	At Foxborough/Mansfield Corporate Limits	3.80	234	*	375	443	736
Rumford River	At Spring Street	3.70	229	*	367	432	719
Rumford River	At 1st Private Road	3.50	222	*	354	417	691
Rumford River	At 2nd Private Road	3.40	219	*	350	409	684
Rumford River	Approximately 600 feet upstream of Private Road	3.40	218	*	348	405	680
Rumford River	Approximately 4,400 feet downstream of Cocasset Street	3.30	215	*	346	400	670
Rumford River	Approximately 1,920 feet downstream of Cocasset Street	3.30	214	*	344	399	665
Rumford River	Approximately 1,600 feet downstream of Cocasset Street	3.30	213	*	342	398	660
Rumford River	At Cocasset Street	3.20	210	*	337	395	655
Rumford River	At Sand Street	3.10	208	*	331	387	640
Rumford River	Approximately 500 feet upstream of Sand Street	2.60	206	*	326	382	625
School Meadow Brook	At confluence with Neponset River	3.10	80	*	110	120	380
School Meadow Brook	At Washington Street	2.90	110	*	220	290	580

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
School Meadow Brook	At U.S. Route 1	1.70	100	*	190	230	400
Sevenmile River	Culvert in farm field 1,700 feet south of High Street in North Attleborough	0.41	31	*	55	67	97
Shepards Brook	Upstream of the confluence with Charles River in Franklin	4.40	240	*	400	490	760
South Brook	At confluence with Purgatory Brook	1.15	195	*	325	380	530
South Brook	Upstream of confluence with tributary from subarea 2	0.87	165	*	285	335	480
South Brook	Downstream of Southwest Park	0.54	105	*	180	210	320
South Brook	Downstream of Boston Providence Turnpike	0.44	100	*	165	195	295
Steep Hill Brook	At Stoughton/Canton corporate limits	5.30	583	*	1,004	1,225	2,193
Steep Hill Brook	At Erin Road	5.00	535	*	904	1,110	1,947
Steep Hill Brook	At Mill Street	4.30	497	*	846	1,026	1,814
Steep Hill Brook	At Pratt Court	2.40	365	*	603	722	1,236
Steep Hill Brook	At Southworth Pond Dam	2.00	328	*	536	639	1,084
Steep Hill Brook	At Sheehan Street	0.80	120	*	184	220	341
Stony Brook	At confluence with Stop River	3.60	210	*	*	460	590

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Stony Brook	At Stony Brook Pond Dam	3.20	190	*	*	470	660
Stony Brook	At Diamond Street	2.00	170	*	*	370	540
Stony Brook	At Union Street	1.10	130	*	*	280	420
Stony Brook	At Mirror Lake Avenue	0.40	4	*	*	8	11
Stop River	At Walpole/Norfolk corporate limits	12.60	360	*	7	820	1,200
Stop River	At Highland Lake Dam	10.10	150	*	*	240	290
Stop River	At Main Street	8.50	170	*	270	330	470
Stop River	At Winter Street	7.30	160	*	250	290	380
Stop River	At Prison Road	7.00	160	*	*	290	350
Stop River	At confluence with Stony Brook	3.40	470	*	*	580	870
Stop River	At Dedham Street (SR Rte 1A)	1.70	315	*	*	725	1,060
Stop River	At Pine Street (SR 115)	1.00	200	*	*	460	670
Sucker Brook	At mouth at Massapoag Lake	1.10	63	*	92	104	141
Ten Mile River	Abandoned dirt road at crushed stone operation off Cross Street in Plainville	1.43	122	*	224	268	394
Ten Mile River	High Street in Plainville	0.59	56	*	102	122	177
Town Brook	At USGS gage between Bigelow Street and Miller Stile Road	4.46	480	*	650	730	970
Town Brook	At upstream end of railroad	4.04	330	*	410	450	530

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Town Brook	At Braintree/Quincy corporate limits	2.35	356	*	420	440	495
Town Brook	Downstream of Common Street	2.22	255	*	325	360	445
Town Brook	At Worthington Circle	1.92	125	*	200	240	355
Town Brook	At Acorn Street	1.67	15	*	75	160	280
Town Brook	At Walnut Street	1.56	15	*	70	140	245
Town Brook	At upstream inlet of Old Quincy Reservoir	1.22	350	*	468	525	670
Town Brook	Upstream of Granite Street	0.56	200	*	268	300	384
Town Brook	Downstream of Wood Road	0.25	115	*	152	170	216
Traphole Brook	Sumner Street	3.40	400	*	1,050	1,390	2,350
Traphole Brook	U.S. Route 1	2.90	381	*	1,000	1,330	2,238
Traphole Brook	At Norwood/Walpole downstream corporate limits	2.90	486	*	1,159	1,404	2,229
Traphole Brook	At Union Street	2.10	422	*	848	1,034	1,574
Traphole Brook	At Coney Street	2.10	434	*	857	1,042	1,575
Traphole Brook	At U.S. Route 1	1.90	518	*	972	1,130	1,642
Tributary C2	At English Road	0.90	200	*	*	350	500
Tributary C2	At Kleen Road	0.30	100	*	*	360	510
Tributary C2B	At Railroad Culvert 32	0.50	295	*	*	605	850

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Tributary C2B	At Woodlawn Road	0.30	180	*	*	360	510
Tributary of Great Black Swamp	At upstream Millis/Medway corporate limits	1.16	130	*	200	300	400
Tributary of Great Black Swamp	Approximately 3,350 feet upstream of State Route 109	0.61	60	*	90	110	170
Tributary R1	At confluence with Trout Brook	0.60	200	*	*	400	550
Tributary R1	At State Route 37 (South Franklin Street)	0.40	100	*	*	250	350
Tributary R2	At confluence with Trout Brook	0.50	150	*	*	300	400
Tributary R2	At Dean Street	0.40	100	*	*	200	300
Tributary R3	At confluence with Trout Brook	0.40	100	*	*	250	300
Tributary R4	At confluence with Trout Brook	0.20	150	*	*	250	350
Tributary to Steep Hill Brook	Town Pond Dam at Pratt Court	1.70	149	*	235	275	450
Trout Brook (Avon)	At Avon/Brockton corporate limits	1.90	283	*	462	550	932
Trout Brook (Avon)	Connelly Road	1.40	226	*	365	444	740
Trout Brook (Avon)	Approximately 850 feet upstream of Connelly Road	1.00	173	*	274	321	529
Trout Brook (Avon)	At Ladge Drive	0.90	151	*	245	287	464
Trout Brook (Dover)	At confluence with Charles River	4.29	200	*	325	480	800

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Trout Brook (Dover)	At Haven Street	3.50	165	*	265	318	570
Trout Brook (Holbrook)	At Spring Road	0.30	300	*	*	550	750
Trout Brook (Holbrook)	At Braintree/Holbrook corporate limits	1.10	300	*	*	600	800
Tumbling Brook Tributary	At Braintree/Holbrook corporate limits	1.10	300	*	*	600	800
Turtle Hill Run	At confluence with Straits Pond	1.40	89	*	152	187	292
Turtle Brook	At Mirimichi Street	5.29	260	*	440	540	830
Turtle Brook	Above confluence with Sawmill Brook	3.50	145	*	215	285	495
Turtle Brook	At Shepard Street	1.88	110	*	190	235	365
Unnamed Tributary to Mary Lee Brook		*	*	*	*	*	*
Unnamed Tributary to Robinson Brook	Just upstream of confluence with Tributary to Robinson Brook	0.42	*	*	*	72	*
Vine Brook	At State Route 109	1.11	90	*	145	165	225
Vine Brook	At Upham Road	1.00	45	*	70	80	110
Wading River	At Cedar Street in Foxborough	18.2	430	*	810	1,010	1,465
Walnut Hill Stream	At confluence with The Gulf	0.45	44	*	76	94	149

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Whiting Pond Bypass	At confluence with Ten Mile River	*	89	*	154	182	253

*Not calculated for this Flood Risk Project

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to this Flood Risk Project]

Table 10: Summary of Non-Coastal Stillwater Elevations

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Bolivar Pond	Entire shoreline in Town of Canton	105.4	*	105.9	106.1	106.5
Buckmaster Pond	Entire shoreline in Town of Westwood	181.2	*	*	182.4	183.3
Forge Pond	Entire shoreline in Town of Canton	91.2	*	93.5	94.2	94.9
Fuller Brook	Upstream of Wellesley/Needham corporate limits	132.1	*	132.8	133.2	134.0
Massapoag Lake	Entire shoreline in Town of Sharon	252.8	*	254.0	254.2	254.6
Morses Pond	Entire shoreline in Town of Wellesley	122.9	*	123.7	124.2	125.4
Pettee Pond	Entire shoreline in Town of Westwood	143.3	*	*	144.4	145.2
Reservoir Pond	Entire shoreline in Town of Canton	145.4	*	146.2	147.0	148.4

*Not calculated for this Flood Risk Project

Table 11: Stream Gage Information used to Determine Discharges

[Not Applicable to this Flood Risk Project]

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 23, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 12. Roughness coefficients are provided in Table 13. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Arnolds Brook	Confluence with Peters River	Approximately 480 feet upstream of Lizotte Drive	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	7/1/1980	AE w/Floodway	Structure geometry was obtained from bridge plans, except for those structures which were unavailable or out of date, which were surveyed. Underwater portions of cross sections were obtained from field surveys. Overbank portions were obtained from topographic maps. Starting water-surface elevations were from the slope-area method.
Beaver Brook (Avon)	Brockton Reservoir	Avon corporate limits	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	3/1/1978	AE w/Floodway	Drainage areas and slopes were taken from topographic maps (USGS 1964a). Annual regional precipitation value of 3.67 feet per year was taken from USWB (1961). These variables were used to calculate 10-, 2-, and 1-percent-annual-chance floods. 0.2-percent-annual-chance floods were extrapolated. Areas of swamp, bog, open water, and urban development were computed and assigned weighting values to account for storage and rapid urban run-off. These values were used to adjust final discharges. Cross sections and structures were obtained from field surveys. No more than 0.25 mile is between each cross section. Starting water-surface elevations were from drainage area and channel geometry.
Beaver Brook (Bellingham)	Confluence with Charles River	Beaver Pond	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	7/1/1980	AE w/Floodway	Structure geometry was obtained from bridge plans, except for those structures which were unavailable or out of date, which were surveyed. Underwater portions of cross sections were obtained from field surveys. Overbank portions were obtained from topographic maps. Starting water-surface elevations were from the slope-area method.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Beaver Brook (Holbrook)	Holbrook corporate limits	Approximately 1,000 feet upstream of Weymouth Street	TR-20 (SCS 1965)	WSP-2 (SCS 1976)	5/1/1985	AE w/Floodway	For input to TR-20 model, basin boundaries were delineated on USGS topographic maps. Times of concentration were calculated from watershed characteristics. Soil characteristics were derived from soil maps (Norfolk 1926) and a Holbrook Planning Study (Holbrook 1966). Rainfall characteristics were from USWB (1961). 24-hour rainfall was used. For smaller drainages, tabular flood routing was used (SCS 1972a). Structures, complete cross sections, and high-water marks were obtained from field surveys. Sewer plans, highway drawings, engineering studies, and construction plans were used to supplement surveys. Distances were taken from topographic maps (Avis 1980a). Starting water-surface elevations were from normal depth.
Beaver Brook (Sharon)	Just downstream of Upland Road	Approximately 3,400 feet upstream of Upland Road	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	6/1/1977	AE w/Floodway	0.2-percent-annual-chance discharges (not available from equations) were extrapolated. Structures and underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne 1976). Starting water-surface elevations were from the slope-area method.
Beaver Meadow Brook	Bolivar Pond	Pleasant Street	HEC-1 (USACE 1973)	HEC-2 (USACE 1974)	2/1/1986	AE w/Floodway	As needed, cross sections may have been interpolated between surveyed cross sections using topographic maps (Sewell 1984b). Starting water-surface elevations were from downstream studies.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Billings Brook	Just downstream of Old Post Road	Approximately 200 feet upstream of Dirt Road	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	6/1/1977	AE w/Floodway	0.2-percent-annual-chance discharges (not available from equations) were extrapolated. Structures and underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne 1976). Starting water-surface elevations were from the slope-area method.
Billings Brook Branch	Dirt Road	Just upstream of Wolomolopoag Street	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	6/1/1977	AE w/Floodway	0.2-percent-annual-chance discharges (not available from equations) were extrapolated. Structures and underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne 1976). Starting water-surface elevations were from the slope-area method.
Bogastow Brook	Confluence with Charles River	Millis corporate limits	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	1/1/1983	AE w/Floodway	Structures were field-checked. Underwater portions of cross sections were obtained from field surveys. Overbank portions of cross sections were obtained from field measurement and photogrammetric maps. Starting water-surface elevations were from the slope-area method.
Bolivar Pond	Entire shoreline	Entire shoreline	HEC-1 (USACE 1973)	HEC-1 (USACE 1973)	12/1/1976	AE	HEC-1 analysis for entire river system above Forge Pond Dam provided elevation-frequency relationships for pond.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Bound Brook and Zone A tributaries	County boundary	Points of one square mile of drainage area	2017 state regression equations (Zarriello 2017)	HEC-RAS 4.1.0 (Brunner 2010)	5/31/2017	A	Flow-change locations were selected based on 50% change in drainage area. Sub-basin delineation used hydro-conditioned lidar topography (USGS 2011, 2014). Cross sections were placed at entrances and exits of structures, at flow-change locations, and at significant changes in stream morphology. Overbank geometries were taken from lidar topography; channel geometries were calculated from regional bankfull equations (Bent 2006). Roughness was estimated from drainage area. Starting water-surface elevations were from normal depth using slope of lower end of reach. Ineffective flow was applied where applicable.
Brook A (Stetson Brook)	Confluence with Glovers Brook	Approximately 285 feet upstream of Allen Street	Rational method	HEC-2 (USACE 1974)	11/1/1985	AE w/Floodway	Structures were field-checked. Cross sections were field-surveyed. Starting water-surface elevations were from Glovers Brook profiles.
Brook B	Confluence with Upper Reservoir	Approximately 1,100 feet upstream of Vesey Road	Log-Pearson type III flood frequency analysis, drainage-area ratio (Johnstone and Cross 1949)	HEC-2 (USACE 1974)	11/1/1985	AE w/Floodway	Streamgage used in statistical analysis was USGS streamgage 01104900 (Mill Brook at Westwood). Discharges were adjusted using drainage-area ratio equation with exponent of 0.75. Structures were field-checked. Cross sections were field-surveyed. Starting water-surface elevations were from an analysis of Upper Reservoir consisting of evaluation of reservoir capacity, discharge data between Upper Reservoir and Great Pond, and local rainfall and runoff data.
Brook No. 1	Wrentham/ Plainville corporate limits	Confluence with Rabbit Hill Pond	Regression equations (Wandle 1977)	E431 (Shearman 1976)	1/1/1979	AE w/Floodway	Cross sections and structures were obtained from field surveys. Starting water-surface elevations were from dam computations.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Bubbling Brook	Willett Pond Dam	Walpole/West wood corporate limits	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	1/1/2001	AE w/Floodway	0.2-percent-annual-chance discharges (not available from equations) were extrapolated. Underwater portions of cross sections and structures were obtained from field surveys. Overbank portions of cross sections were derived from topographic maps (Avis 1980c). Starting water-surface elevations were from Willett Pond.
Buckmaster Brook	Confluence with Germany Brook	Approximately 250 feet upstream of Arcadia Road	TR-20 (SCS 1965)	WSP-2 (SCS 1976)	11/2/1973	AE	For input to TR-20 model, basin boundaries were delineated on USGS topographic maps. Times of concentration were calculation from watershed characteristics. Soil characteristics were derived from soil maps, aerial photographs, and field observations. Rainfall characteristics were from USWB (1961). 24-hour rainfall was used. For smaller drainages, tabular flood routing was used (SCS 1972a). Structures were obtained from field surveys.
Bungay Brook	Confluence with Peters River	Approximately 1,310 feet upstream of Wrentham Road	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	7/1/1980	AE w/Floodway	Structure geometry was obtained from bridge plans, except for those structures which were unavailable or out of date, which were surveyed. Underwater portions of cross sections were obtained from field surveys. Overbank portions were obtained from topographic maps. Starting water-surface elevations were from Peters River profiles.
Burnt Swamp Brook	State limits	1,700 feet north of West Street	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	2/1/1980	AE w/Floodway	Structures were obtained from field surveys. Cross sections were obtained from field surveys and aerial photographs (Quinn 1979b). Starting water-surface elevations were from the slope-area method. Some hydraulic structures with minimal effect on the water surface were omitted from the hydraulic model. Profiles were verified by recent high-water marks.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Canoe River (Foxborough)	Beaumont Road	Maple Street	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	3/1/1978	AE w/Floodway	Drainage areas and slopes were taken from topographic maps (USGS 1964a). Annual regional precipitation value of 3.67 feet per year was taken from USWB (1961). These variables were used to calculate 10-, 2-, and 1-percent-annual-chance floods. 0.2-percent-annual-chance floods were extrapolated. Contributing flows from adjacent communities were incorporated. Areas of swamp, bog, open water, and urban development were computed and assigned weighting values to account for storage and rapid urban run-off. These values were used to adjust final discharges. Cross sections and structures were obtained from field surveys. No more than 0.25 mile is between each cross section. Starting water-surface elevations were from the slope-area method.
Canoe River (Sharon)	10,000 feet upstream of East Street	13,000 feet upstream of East Street	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	6/1/1977	AE w/Floodway	0.2-percent-annual-chance discharges (not available from equations) were extrapolated. Structures and underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne 1976). Starting water-surface elevations were from the slope-area method.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Canton River	Confluence with Neponset River	Approximately 355 feet upstream of Revere Court	Log-Pearson type III flood frequency analysis (WRC 1976), HEC-1 (USACE 1973)	HEC-2 (USACE 1974)	12/1/1976	AE	Streamgage used in analysis was USGS streamgage 01105500 (East Branch Neponset River in Canton). Gage statistics and March 1968 flood records were used as calibration targets for HEC-1 parameters, except for rainfall totals and distributions, which were taken from a statistical analysis of local historical precipitation data. As needed, cross sections may have been interpolated between surveyed cross sections using topographic maps (Sewell 1984b). Starting water-surface elevations were from Neponset River profiles.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Charles River	Concord Street	Mellen Street	multiple (see Special Considerations)	HEC-2 (USACE 1974)	7/1/1980	AE	<p>Discharges in Franklin were taken from studies in Medway or computed by scaling the discharges from the Medway/Bellingham/ Franklin boundary based on the ratio of drainage areas. Discharges in Medfield were taken from studies in Needham and a USACE hydrologic analysis. Discharges in Needham were taken from studies in Wellesley, Dover, Westwood, Dedham, and Newton if they compared favorably with estimates from Bulletin 17B methods (IACWD 1982) incorporating updated streamflow records and were consistent throughout adjacent communities. Discharges in Wellesley were taken from studies in Newton and Needham. Discharges in Bellingham, Dedham, Dover, Medway, Millis, and Norfolk were from log-Pearson type III analysis (IACWD 1982, WRC 1967, Johnson and Tasker 1974) on USGS streamgage 01103500 (Charles River at Charles River Village). In Bellingham, streamgage discharges were transposed to other locations using a drainage-area ratio with an exponent of 0.7 (USACE 1976a). In Medway, Millis, and Norfolk, streamgage discharges were extrapolated (SCS 1972a, USACE 1976a). In Dedham, streamgage discharges were transposed to other locations using a drainage-area ratio (SCS 1972a). One third of the flow in Charles River is diverted to Mother Brook. Structures were obtained from field surveys. Underwater portions of cross sections were obtained from field surveys. Overbank portions were obtained from topographic maps. Starting water-surface elevations were from various methods from community to community, including hydraulic analysis of controls, profiles from adjacent communities, and other studies. Profiles were verified by high-water marks from the floods of August 1955 and March 1968.</p>

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Chicken Brook	Confluence with Charles River	Medway/Holliston corporate limits	Regression equations (Wandle 1983)	HEC-2 (USACE 1974)	11/1/1978	AE w/Floodway	Discharges from regression equations were compared to discharges developed from unit hydrograph theory. Structures were obtained from field surveys. Cross sections were obtained from field surveys and aerial photographs. Starting water-surface elevations were from the slope-area method.
Cobbs Brook	Confluence with Neponset River	Approximately 50 feet upstream of North Street	unknown	WSP-2 (SCS 1976)	12/1/1975	AE w/Floodway	Cross sections were obtained from field surveys. Overbank portions of cross sections were derived from topographic maps (Avis 1980c). Starting water-surface elevations were from normal depth.
Cochato River	Confluence with Monatiquot River	North Shore Road Dam	HEC-1 (USACE 1973)	HEC-RAS 2.2 (USACE 1998)	7/1/1998	AE w/Floodway	Hydrologic analysis was revised to resolve discrepancies between Holbrook and Randolph FISs. Cross sections and structures were obtained from field surveys. Starting water-surface elevations were from Monatiquot River profiles.
Cress Brook	Confluence with Mill River	Lake Street	Regression equations (Wandle 1983)	HEC-2 (USACE 1974)	11/1/1982	AE w/Floodway	Structures were obtained from field surveys. Underwater portions of cross sections were obtained from field surveys. Overbank portions of cross sections were obtained from photogrammetric maps (USGS 1970b) or field measurement. Starting water-surface elevations were from the slope-area method.
Crocker Brook	1,700 feet upstream of Crocker Pond	1,100 feet upstream of East Street	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	2/1/1980	AE w/Floodway	Structures were obtained from field surveys. Cross sections were obtained from field surveys and aerial photographs (Quinn 1979b). Starting water-surface elevations were from the slope-area method. Some hydraulic structures with minimal effect on the water surface were omitted from the hydraulic model. Profiles were verified by recent high-water marks.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Cunningham Brook	Confluence with Furnace Brook	Approximately 400 feet upstream of Robertson Street	unknown	HEC-2 (USACE 1974)	7/1/1983	AE w/Floodway	Hydrologic analysis was performed by USACE for local flood protection studies (USACE 1976b). Structure data were taken from the USACE project (USACE 1976b). Cross sections were taken from topographic maps (Avis 1979). Hydraulic model was calibrated to USACE (1976b), taking recent modifications into account. Starting water-surface elevations were from Furnace Brook profiles.
Diamond Brook	Confluence with Neponset River	Washington Street	Regression equations (Wandle 1977)	WSP-2 (SCS 1976)	5/1/1985	AE w/Floodway	Flows from equations were modified to account for floodwater storage in Allens Pond using reservoir routing (SCS 1972a). Cross sections were obtained from field surveys. Overbank portions of cross sections were derived from topographic maps (Avis 1980c). Starting water-surface elevations were from normal depth.
Dorchester Brook	Atkinson Avenue	Stoughton/ Easton corporate limits	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	10/1/1978	AE w/Floodway	Drainage areas and slopes were taken from topographic maps (USGS 1964a). Annual regional precipitation value of 3.67 feet per year was taken from USWB (1961). These variables were used to calculate 10-, 2-, and 1-percent-annual-chance floods. 0.2-percent-annual-chance floods were extrapolated. Discharges were compared against streamgage records from Neponset River in Canton using drainage-area ratios. Areas of swamp, bog, open water, and urban development were computed and assigned weighting values to account for storage and rapid urban run-off. These values were used to adjust final discharges. Starting water-surface elevations were from the slope-area method.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Farm River	Confluence with Monatiquot River	Approximately 1,700 feet upstream of West Street	Log-Pearson type III flood frequency analysis (Wandle 1977)	HEC-2 (USACE 1974)	1/1/1984	AE w/Floodway	Streamgage used in analysis was USGS streamgage 01105500 (East Branch Neponset River in Canton) with a regional skew of 0.5 and adjustments for partial duration and sample size. Discharges were compared to outflow records at Armstrong Cork Company Dam on Monatiquot River and found to agree, so they were transposed to this location. At locations along Farm River, discharges were calculated from Armstrong Dam discharges using drainage-area ratio equation with exponent of 0.7. Cross sections and structures were obtained from field surveys, except cross sections available from the NRCS study (SCS undated).
Forge Pond	Entire shoreline	Entire shoreline	HEC-1 (USACE 1973)	HEC-1 (USACE 1973)	1/1/1973	AE	HEC-1 analysis for entire river system above Forge Pond Dam provided elevation-frequency relationships for pond.
Fuller Brook	Approximately 200 feet downstream of Wellesley High School fields	Approximately 1,800 feet upstream of Smith Street	HEC-1 (USACE 1973)	HEC-2 (USACE 1974)	11/1/1972	AE	Input to HEC-1 model included soil maps (SCS 1982), topographic maps (USGS 1970d), and 24-hour rainfall. Rainfall was calculated for 10-, 2-, and 1-percent-annual-chance storms and extrapolated for 0.2-percent-annual-chance storm. Methodology used within HEC-1 conformed to TR-55 (SCS 1974a) and WRC (1976).
Furnace Brook	Tidal limit	Approximately 850 upstream of Hayden Street	unknown	HEC-2 (USACE 1974)	10/1/1976	AE w/Floodway	Hydrologic analysis was performed by USACE for local flood protection studies (USACE 1976b). Cross sections were field-surveyed. Overbank extensions of field-surveyed cross sections and additional sections needed for hydraulic continuity were taken from topographic maps (Avis 1979). Hydraulic model was calibrated to USACE (1976b), taking recent modifications into account. Starting water-surface elevations were from normal depth.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Germany Brook	Confluence with Hawes Brook	Westwood/Norwood corporate limits	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	7/1/1977	AE w/Floodway	Log-Pearson type III flood frequency analysis (WRC 1976) was performed on USGS streamgage 01105550 (Plantingfield Brook in Norwood) with a regional skew coefficient. Gage statistics were used to calibrate parameters for regression equations for 10-, 2-, and 1-percent-annual-chance flows, which were used to calculate flows on Germany Brook due to watershed similarities. 0.2-percent-annual-chance flows were extrapolated. Structures were obtained from field surveys. Underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne undated). Starting water-surface elevations were from Hawes Brook profiles. The hydraulic model was checked for agreement with information from local residents on the floods of March 1968 and August 1955.
Glovers Brook	Confluence with Cochato River	Approximately 1,000 feet upstream of Warren Street	Log-Pearson type III flood frequency analysis	HEC-2 (USACE 1974)	11/1/1985	AE w/Floodway	Streamgage used in statistical analysis was USGS streamgage 01104900 (Mill Brook at Westwood). Discharges were adjusted based on analysis of rainfall data, culvert capacity, and available storage from Bear Swamp. Structures were field-checked. Cross sections were field-surveyed. Starting water-surface elevations were from Cochato River profiles.
Harlow Pond Lateral	Confluence with Charles River	2,000 feet upstream of Phillips Pond	Regression equations (Wandle 1983)	HEC-2 (USACE 1974)	11/1/1982	AE	Structures were obtained from field surveys. Underwater portions of cross sections were obtained from field surveys. Overbank portions of cross sections were obtained from photogrammetric maps (USGS 1970b) or field measurement. Starting water-surface elevations were from the slope-area method.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Hawes Brook	Confluence with Neponset River	Willet Pond Dam	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	7/1/1977	AE w/Floodway	Log-Pearson type III flood frequency analysis (WRC 1976) was performed on USGS streamgage 01105550 (Plantingfield Brook in Norwood) with a regional skew coefficient. Gage statistics were used to calibrate parameters for regression equations for 10-, 2-, and 1-percent-annual-chance flows, which were used to calculate flows on Germany Brook due to watershed similarities. 0.2-percent-annual-chance flows were extrapolated. Structures and underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne undated). Starting water-surface elevations were from Neponset River profiles. The hydraulic model was checked for agreement with information from local residents on the floods of March 1968 and August 1955.
Hawthorne Brook	Confluence with Turnpike Lake	Cowell Street	Regression equations (Wandle 1977)	E431 (Shearman 1976)	1/1/1979	AE w/Floodway	Cross sections and structures were obtained from field surveys. Starting water-surface elevations were from the slope-area method.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Herring Brook	Confluence with Weymouth Back River	Approximately 300 feet upstream of Iron Hill Street	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	9/1/1987	AE w/Floodway	Drainage areas and slopes were taken from topographic maps (USGS 1971). Annual regional precipitation value of 3.67 feet per year was taken from USWB (1961). These variables were used to calculate 10-, 2-, and 1-percent-annual-chance floods. 0.2-percent-annual-chance floods were extrapolated. Contributing flows from adjacent communities were incorporated. Discharges were compared against streamgage records from Old Swamp River near Whitmans Pond. Areas of swamp, bog, open water, and urban development were computed and assigned weighting values to account for storage and rapid urban run-off. These values were used to adjust final discharges. Structures were obtained from field surveys. No more than 0.25 mile is between each cross section. Starting water-surface elevations were from normal elevations as determined from field inspection.
Hopping Brook	Confluence with Charles River	Approximately 1,400 feet upstream of Milford Street	Regression equations (Wandle 1983)	HEC-2 (USACE 1974)	11/1/1978	AE w/Floodway	Discharges from regression equations were compared to discharges developed from unit hydrograph theory. Structures were obtained from field surveys. Cross sections were obtained from field surveys and aerial photographs. Starting water-surface elevations were from the slope-area method.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
James Brook	Sohier Street	Point of one square mile of drainage area	2017 state regression equations (Zarriello 2017)	HEC-RAS 4.1.0 (Brunner 2010)	5/31/2017	A	Flow-change locations were selected based on 50% change in drainage area. Sub-basin delineation used hydro-conditioned lidar topography (USGS 2011, 2014). Cross sections were placed at entrances and exits of structures, at flow-change locations, and at significant changes in stream morphology. Overbank geometries were taken from lidar topography; channel geometries were calculated from regional bankfull equations (Bent 2006). Roughness was estimated from drainage area. Starting water-surface elevations were from normal depth using slope of lower end of reach. Ineffective flow was applied where applicable.
James Brook	Confluence with Cohasset Cove	Sohier Street	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	8/1/1983	AE w/Floodway	Structures were obtained from field surveys. Cross sections were obtained from field surveys and from topographic maps (Avis 1978). Hydraulic model was calibrated to historic flood information obtained from local residents and to floodplain maps (RKPC 1976), taking recent modifications into account. Starting water-surface elevations were from normal depth.
Lake Holbrook	Holbrook/Randolph corporate limits	Spring Street	unknown	Stage-storage-discharge relationships	5/1/1985	AE	Relationships were based on lake outlet structures.
Lake Waban	Entire shoreline	Entire shoreline	Reservoir routing (Fair et al. 1966)	Dam analysis	11/1/1977	AE	Discharge-frequency relationships for Waban Brook were developed from TR-55 (SCS 1974a) and regression equations (Johnson and Tasker 1974). Flows were routed through Moses Pond, Paintshop Pond, and Lake Waban using reservoir routing. Water-surface elevations were from dam analysis.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Lily Pond Stream	Confluence with Lily Pond	Approximately 2,798 feet upstream of confluence with Lily Pond	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	8/1/1983	AE w/Floodway	Structures were obtained from field surveys. Cross sections were obtained from field surveys and from topographic maps (Avis 1978). Hydraulic model was calibrated to historic flood information obtained from local residents and to floodplain maps (RKPC 1976), taking recent modifications into account. Starting water-surface elevations were from Lily Pond elevations.
Lower Pequid Brook	Confluence with Forge Pond	Reservoir Pond	HEC-1 (USACE 1973)	HEC-2 (USACE 1974)	2/1/1986	AE	As needed, cross sections may have been interpolated between surveyed cross sections using topographic maps (Sewell 1984b). Starting water-surface elevations were from downstream studies.
Mann Pond Lateral	Confluence with Stop River	Boardman Street	TR-20 (SCS 1965)	WSP-2 (SCS 1976)	11/1/1982	AE w/Floodway	Structures were obtained from field surveys. Underwater portions of cross sections were obtained from field surveys. Overbank portions of cross sections were obtained from topographic maps (USGS 1970b) or from engineering studies or construction plans where available. Starting water-surface elevations were from a combination of routed discharge frequency and elevation-discharge relationship at the downstream end.
Martin Brook	Confluence with Cochato River	Approximately 1,000 feet upstream of Oak Street	Log-Pearson type III flood frequency analysis, drainage-area ratio (Johnstone and Cross 1949)	HEC-2 (USACE 1974)	11/1/1985	AE w/Floodway	Streamgage used in statistical analysis was USGS streamgage 01104900 (Mill Brook at Westwood). Discharges were adjusted using drainage-area ratio equation with exponent of 0.75. Structures were obtained from field surveys. Cross sections were field-surveyed. Starting water-surface elevations were from Cochato River profiles.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mary Lee Brook	Confluence with Cochato River	South Main Street	Regression equations (Wandle 1983)	HEC-2 (USACE 1974)	11/1/1985	AE w/Floodway	0.2-percent-annual-chance discharges (not available from equations) was extrapolated. Results from rural regression equations were transformed to urban peakflows using three-parameter estimations (Sauer et al. 1983) with a basin development factor of 4. Final results were compared to log-Pearson type III analysis on Old Swamp River in South Weymouth and Town Brook in Quincy, watersheds sufficiently similar in size and character. Structures were field-checked. Underwater portions of cross sections were obtained from field surveys. Overbank portions were obtained from aerial photographs. Starting water-surface elevations were from Cochato River profiles.
Massapoag Brook (Canton)	Outlet at Forge Pond	Canton corporate limits	HEC-1 (USACE 1973)	HEC-2 (USACE 1974)	2/1/1986	AE w/Floodway	As needed, cross sections may have been interpolated between surveyed cross sections using topographic maps (Sewell 1984b). Starting water-surface elevations were from downstream studies.
Massapoag Brook (Sharon)	Approximately 100 feet downstream of Wooden Foot Bridge	Confluence with Massapoag Lake	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	6/1/1977	AE w/Floodway	0.2-percent-annual-chance discharges (not available from equations) were extrapolated. Structures and underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne 1976).
Massapoag Lake	Entire shoreline	Entire shoreline	Regression equations (Johnson and Tasker 1974)	Dam analysis	2/1/1986	AE	0.2-percent-annual-chance discharges (not available from equations) were extrapolated. Water-surface elevation is controlled by flume house at outlet structure, with 3.5 to 4.0 feet of planking. Spillway was determined to be unable to handle 2-, 1-, and 0.2-percent-annual-chance floods and was modeled under the assumption that it would be fully opened. Elevations were computed using a stage-discharge curve based on outlet at flume house and flow overtopping Beach Street.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Meadow Brook	Confluence with Neponset River	Pleasant Street	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	7/1/1977	AE w/Floodway	Log-Pearson type III flood frequency analysis (WRC 1976) was performed on USGS streamgage 01105550 (Plantingfield Brook in Norwood) with a regional skew coefficient. Gage statistics were used to calibrate parameters for regression equations for 10-, 2-, and 1-percent-annual-chance flows, which were used to calculate flows on Germany Brook due to watershed similarities. 0.2-percent-annual-chance flows were extrapolated. Structures and underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne undated). Starting water-surface elevations were from Neponset River profiles. The hydraulic model was checked for agreement with information from local residents on the floods of March 1968 and August 1955.
Mill Brook	Mouth at Willett Pond	Westwood corporate limits	Regression equations (Wandle 1977)	HEC-2 (USACE 1974)	12/1/1999	AE w/Floodway	0.2-percent-annual-chance discharges (not available from equations) were extrapolated. Structures were obtained from field surveys. Starting water-surface elevations were from Millett Pond elevations.
Mill River (Norfolk)	Confluence with Charles River	Norfolk/Wrentham corporate limits	TR-20 (SCS 1965)	WSP-2 (SCS 1976)	11/1/1982	AE w/Floodway	Structures were obtained from field surveys. Underwater portions of cross sections were obtained from field surveys. Overbank portions of cross sections were obtained from topographic maps (USGS 1970b) or from engineering studies or construction plans where available. Starting water-surface elevations were from a combination of routed discharge frequency and elevation-discharge relationship at the downstream end.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mill River (Weymouth)	Approximately 750 upstream of Mill Street	Hollis Street	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	9/1/1987	AE w/Floodway	<p>Drainage areas and slopes were taken from topographic maps (USGS 1971). Annual regional precipitation value of 3.67 feet per year was taken from USWB (1961). These variables were used to calculate 10-, 2-, and 1-percent-annual-chance floods. 0.2-percent-annual-chance floods were extrapolated. Contributing flows from adjacent communities were incorporated. Discharges were compared against streamgage records from Old Swamp River near Whitmans Pond. Areas of swamp, bog, open water, and urban development were computed and assigned weighting values to account for storage and rapid urban run-off. These values were used to adjust final discharges. Structures were obtained from field surveys. No more than 0.25 mile is between each cross section. Starting water-surface elevations were from normal elevations as determined from field inspection.</p>

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mill River Tributary A	Confluence with Mill River	Driveway approximately 550 feet upstream of Main Street	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	9/1/1987	AE w/Floodway	<p>Drainage areas and slopes were taken from topographic maps (USGS 1971). Annual regional precipitation value of 3.67 feet per year was taken from USWB (1961). These variables were used to calculate 10-, 2-, and 1-percent-annual-chance floods. 0.2-percent-annual-chance floods were extrapolated. Contributing flows from adjacent communities were incorporated. Discharges were compared against streamgage records from Old Swamp River near Whitmans Pond. Areas of swamp, bog, open water, and urban development were computed and assigned weighting values to account for storage and rapid urban run-off. These values were used to adjust final discharges. Structures were obtained from field surveys. No more than 0.25 mile is between each cross section. Starting water-surface elevations were from normal elevations as determined from field inspection.</p>

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mill River Tributary B	Confluence with Mill River Tributary A	Railroad	Regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	9/1/1987	AE w/Floodway	Drainage areas and slopes were taken from topographic maps (USGS 1971). Annual regional precipitation value of 3.67 feet per year was taken from USWB (1961). These variables were used to calculate 10-, 2-, and 1-percent-annual-chance floods. 0.2-percent-annual-chance floods were extrapolated. Contributing flows from adjacent communities were incorporated. Discharges were compared against streamgage records from Old Swamp River near Whitmans Pond. Areas of swamp, bog, open water, and urban development were computed and assigned weighting values to account for storage and rapid urban run-off. These values were used to adjust final discharges. Structures were obtained from field surveys. No more than 0.25 mile is between each cross section. Starting water-surface elevations were from normal elevations as determined from field inspection.
Miller Brook	Confluence with Mill River	Franklin/Norfolk corporate limits	TR-20 (SCS 1965)	WSP-2 (SCS 1976)	11/1/1982	AE w/Floodway	Structures were obtained from field surveys. Overbank portions of cross sections were obtained from topographic maps (USGS 1970b) or from engineering studies or construction plans where available. Starting water-surface elevations were from a combination of routed discharge frequency and elevation-discharge relationship at the downstream end.
Mine Brook (Franklin)	Confluence with Charles River	Approximately 200 feet upstream of Washington Street	Regression equations (Wandle 1983)	HEC-2 (USACE 1974)	2/1/1980	AE w/Floodway	Structures were obtained from field surveys. Cross sections were obtained from field surveys and aerial photographs (Quinn 1979a). Starting water-surface elevations were from the slope-area method.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mine Brook (Walpole)	Confluence with Neponset River	Walpole corporate limits	unknown	WSP-2 (SCS 1976)	12/1/1975	AE w/Floodway	Cross sections were obtained from field surveys. Overbank portions of cross sections were derived from topographic maps (Avis 1980c). Starting water-surface elevations were from normal depth.
Monatiquot River	Quincy Avenue	Confluence of Farm River and Cochato River	Log-Pearson type III flood frequency analysis (Wandle 1977)	HEC-2 (USACE 1974)	1/1/1984	AE w/Floodway	Streamgage used in analysis was USGS streamgage 01105500 (East Branch Neponset River in Canton) with a regional skew of 0.5 and adjustments for partial duration and sample size. Discharges were compared to outflow records at Armstrong Cork Company Dam on Monatiquot River and found to agree, so they were transposed to this location. At other locations along Monatiquot River, discharges were calculated from Armstrong Dam discharges using drainage-area ratio equation with exponent of 0.7. Cross sections and structures were obtained from field surveys, except cross sections available from the NRCS study (SCS undated). The 1984 study used much of the geometry and the starting water-surface elevations from the previous study.
Morses Pond	Entire shoreline	Entire shoreline	Reservoir routing (Fair et al. 1966)	Dam analysis	11/1/1977	AE	Discharge-frequency relationships for Waban Brook were developed from TR-55 (SCS 1974a) and regression equations (Johnson and Tasker 1974). Flows were routed through Morses Pond, Paintshop Pond, and Lake Waban using reservoir routing. Water-surface elevations were from dam analysis.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mother Brook	Dedham corporate limits	Divergence from Charles River	Log-Pearson type III flood frequency analysis (IACWD 1982)	HEC-2 (USACE 1974)	6/1/1977	AE	By law, one third of the discharge on Charles River is diverted to Mother Brook. Charles River discharges were computed from log-Pearson type III analysis and transposed to Mother Brook location using drainage-area ratios. Most cross sections were field-surveyed, but some may have been interpolated as necessary with the aid of survey data and topographic mapping (MDC 1959). Starting water-surface elevations were from basic hydraulic calculations using Manning's equation.
Muddy River	Brookline corporate limits	Upstream of Leverett Pond	unknown	unknown	5/1/1972	AE	
Myrtle Street Lateral	Confluence with Charles River	3,000 feet upstream of Myrtle Street	Regression equations (Wandle 1983)	HEC-2 (USACE 1974)	11/1/1982	AE w/Floodway	Structures were obtained from field surveys. Underwater portions of cross sections were obtained from field surveys. Overbank portions of cross sections were obtained from photogrammetric maps (USGS 1970b) or field measurement. Starting water-surface elevations were from the slope-area method.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Neponset River (Milton/Canton)	Milton corporate limits	Canton corporate limits	Log-Pearson type III flood frequency analysis (WRC 1976), TR-20 (SCS 1965), TR-55 (SCS 1974a)	HEC-2 (USACE 1974)	12/1/1976	AE w/Floodway	In Canton, Dedham, and Westwood, hydrologic analysis was taken from MWRC (1971). Log-Pearson type III analysis of USGS streamgage 01105000 (Neponset River in Norwood) incorporated regional skew and historic weighting. Downstream of gage, flows were computed through TR-20 to account for natural storage in wetlands. TR-20 analysis was used to generate discharge-drainage-area frequency curve, from which peakflows were taken. In Milton, discharges from MWRC (1971) were transposed using discharge-drainage-area relationships in TR-55, then adjusted according to SCS (1972). Cross sections were obtained from field surveys. As needed, cross sections may have been interpolated between surveyed cross sections using topographic maps (Sewell 1984b, Milton 1976, MDC 1956). Starting water-surface elevations were from published information (MWRC 1971), assuming the stop planks were removed at Lower Mills Dam.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Neponset River (Norwood)	Norwood corporate limits	Norwood corporate limits	Log-Pearson type III flood frequency analysis (WRC 1976), TR-20 (SCS 1965), regression equations (Johnson and Tasker 1974)	HEC-2 (USACE 1974)	7/1/1977	AE w/Floodway	Hydrologic analysis was taken from MWRC (1971). Log-Pearson type III analysis of USGS streamgage 01105000 (Neponset River in Norwood) incorporated regional skew and historic weighting. Downstream of gage, flows were computed through TR-20 to account for natural storage in wetlands. TR-20 analysis was used to generate discharge-drainage-area frequency curve, from which peakflows were taken. Upstream of gage, flows were computed for the 10-, 2-, and 1-percent-annual-chance floods according to Johnson and Tasker, with the equation's parameters calibrated to the gage. Flows for the 0.2-percent-annual-chance flood were extrapolated. Structures and underwater portions of cross sections were field-surveyed. Overbank portions of cross sections and interpolated cross sections were taken from topographic maps (Teledyne undated). Starting water-surface elevations were from adjacent studies. The hydraulic model was calibrated to high-water marks from the March 1968 flood and checked for agreement with MWRC (1971) and with the FIS for Canton.