FLOOD INSURANCE STUDY

NEWPORT COUNTY, RHODE ISLAND
(ALL JURISDICTIONS)

Newport County

COMMUNITY NAME	COMMUNITY NUMBER
JAMESTOWN, TOWN OF	445399
LITTLE COMPTON, TOWN OF	440035
MIDDLETOWN, TOWN OF	445401
NEWPORT, CITY OF	445403
PORTSMOUTH, TOWN OF	445405
TIVERTON, TOWN OF	440012

PRELIMINARY
MARCH 21, 2012

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
44005CV000B

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this Preliminary FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision (LOMR) process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult community officials and check the Community Map Repository to obtain the most current FIS components.

Initial Countywide FIS Effective Date: April 5, 2010

Revised Countywide FIS Date:

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FLOOD INSURANCE STUDY
NEWPORT COUNTY, RHODE ISLAND (ALL JURISDICTIONS)

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises and updates previous FISs/Flood Insurance Rate Maps (FIRMs) for the geographic area of Newport County, Rhode Island, including: the City of Newport; and the Towns of Jamestown, Little Compton, Middletown, Portsmouth, and Tiverton (hereinafter referred to collectively as Newport County).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by the communities of Newport County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The April 5, 2010 FIS (Reference 1) was prepared to include the incorporated communities within Newport County in a countywide format. Information on the authority and acknowledgments for each jurisdiction included in the 2010 countywide FIS, as compiled from their previously printed FIS reports, is shown below.

Jamestown, Town of:	The hydrologic and hydraulic analyses for the FIS report dated February 19, 1986, represent a revision of the original analyses performed by the Natural Resources Conservation Services (NRCS), formerly Soil Conservation Service (SCS), for the Federal Emergency Management Agency (FEMA). The updated version was prepared by Stone & Webster Engineering Corporation for FEMA, under Contract No. EMW-C-0405. That work was completed in February 1984.
Little Compton, Town of:	The hydrologic and hydraulic analyses for the FIS report dated August 15, 1984, represent a revision of the original analyses performed by Stone & Webster Engineering Corporation for FEMA, under Contract No. H-4604. The hydrologic and hydraulic analyses for Rhode Island Sound and the Sakonnet River were previously performed by the New England Division of the U.S. Army Corps of Engineers (USACE). The original work was completed in May 1979. The updated version was also prepared by Stone & Webster Engineering Corporation for FEMA. The revised work was completed in June 1983.
Middletown, Town of:	The hydrologic and hydraulic analyses for the FIS report dated October 17, 1983, represent a revision of the original analyses performed by the New England Division of the USACE for FEMA. The updated version was prepared by Harris-Toups Associates for FEMA, under Contract No. H-4776. That revised work was completed in November 1979. The hydrologic and hydraulic analyses for Maidford River were conducted by the NRCS. The wave height and wave runup analyses for this study were performed by Dewberry & Davis for FEMA, under Contract No. EMW-C-0543. That work was completed in April 1983.
Newport, City of:	The hydrologic and hydraulic analyses for the FIS report dated May 17, 1990, represent a revision of the original analyses performed by the USACE for FEMA, under Contract No. H-4776. A further revision of the study was performed by Harris-Toups Associates in

Newport, City of - continued:	October 1979. The hydrologic and hydraulic analyses in the 1990 revision were prepared by the USACE, under Inter-Agency Agreement No. EMW-84-E-1506, Project Order No. 1, Amendment No. 28. That study was completed in July 1987. The original wave height and wave runup analyses for the 2010 countywide study were performed by Dewberry & Davis for FEMA, under Contract No. EMW-C-0543 and was completed in July 1981. Zone boundaries and base flood elevations for Newport Harbor were subsequently revised by Dewberry & Davis in 1984. The USACE reviewed the original work, with no changes in existing wave height analysis recommended, and conducted the wave runup analysis along the Atlantic Ocean.
Portsmouth, Town of:	The hydrologic and hydraulic analyses for the FIS report dated September 2, 1982, represent a revision of the original analyses performed by the New England Division of the USACE for FEMA. The updated version was prepared by Harris-Toups Associates for FEMA, under Contract No. H-4776. That work was completed in August 1979. The wave height and wave runup analyses for the 2010 countywide study were performed by Dewberry & Davis for FEMA, under Contract No. EMW-C-0543. That work was completed in July 1981.
Tiverton, Town of:	The hydrologic and hydraulic analyses for the FIS report dated September 15, 1983, represent a revision of the original analyses performed by Tippetts-Abbett-McCarthy-Stratton for FEMA, under Contract No. H-4604. The updated version was prepared by Stone & Webster Engineering Corporation under agreement with FEMA. The stillwater flooding portion of this study was completed in May 1979. The hydrologic and hydraulic analyses in the updated study were computed by the USACE. The wave height and wave runup analyses were completed in April 1982.

For the 2010 countywide study, floodplains within the Town of Middletown for coastal areas, as well as for Maidford River and Bailey Brook, were redelineated using updated topographic data provided to FEMA by Town of Middletown Geographic Information Systems (GIS). This work was done for FEMA by Dewberry (the study contractor) under FEMA Contract No. HSFE01-07-D-0037, Task Order 0001 in 2008. The coastal and riverine floodplain redelineation effort was performed using the information contained in the previously published FIRMs and FIS report. No new analyses was performed to define the coastal special flood hazard areas.

Base map information shown on the 2010 countywide study FIRM panels was provided by the Rhode Island Geographic Information System (RI GIS). This information was derived from digital orthophotos produced at a scale of 1:5,000 with 2-foot Ground Sample Distance (GSD) from photography dated April 2003 (Reference 2).

The coordinate system used for the production of FIRM panels for the 2010 study was Rhode Island State Plane, FIPSZONE 3800, North American Datum of 1983 (NAD 83), GRS80 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the UTM projection, NAD 83. Differences in the datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of information shown on the FIRM.

The coastal wave height analysis for this coastal study was prepared by the Strategic Alliance for Risk Reduction (STARR) for FEMA under Contract No. HSFEHQ-09-D-0370 and completed in July 2011. This new analysis resulted in revisions to the Special Flood Hazard Areas (SFHAs) within the Towns of Jamestown, Little Compton, Middletown, Portsmouth, Tiverton, and City of Newport.

Base map information shown on the FIRM panels produced for this 2012 revision was derived from USGS High Resolution orthophotography dated spring of 2011, produced at six inch resolution. The horizontal datum used was North American Datum of 1983 (NAD 83) (Reference 3).

1.3 Coordination

Consultation Coordination Officer’s (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

Prior to this countywide FIS, the dates of the initial and final CCO meetings held for all jurisdictions within Newport County are shown in Table 1, "Initial and Final CCO Meetings."

TABLE 1 - INITIAL AND FINAL CCO MEETINGS

Community	Initial CCO Date	Final CCO Date
Town of Jamestown	September 5, 1979	December 24, 1984
Town of Little Compton	August 10, 1977	March 8, 1984
Town of Middletown	April 7, 1978	June 2, 1983
City of Newport	May 1, 1984	May 17, 1989
Town of Portsmouth	May 1978	March 9, 1982
Town of Tiverton	August 4, 1977	January 25, 1983

For the 2010 countywide FIS, an initial meeting was held on April 7, 2008 at the Middletown Town Hall. Workmaps of the coastal redelineation effort for the Town of Middletown were presented. This meeting was attended by representatives of the Middletown Planning and Engineering Departments, FEMA Region I, and the study contractor. Final CCO meetings were held May 13, 2009. These meetings were attended by representatives of Dewberry, the State of Rhode Island, FEMA, and all of the communities.

For this 2012 coastal study revision, outreach meetings were held on June 14, 2010. Letters were sent to inform the communities of the scope of the FIS, and to solicit pertinent local information. Work map discussion meetings were held with the communities on August 30, 2010, to discuss the initial results of the new coastal flood hazard analysis. The results of this countywide study were reviewed at the final CCO meetings held on , and attended by representatives of the communities, the . All problems raised at that meeting were addressed in this study.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Newport County, Rhode Island.

April 5, 2010 Countywide FIS:

All or portions of the flooding sources listed in Table 2, "Flooding Sources Studied by Detailed Methods," were studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2). The areas studied were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

TABLE 2 - FLOODING SOURCES STUDIED BY DETAILED METHODS

Atlantic Ocean	Jamestown Brook	Paradise Brook
Bailey Brook	Maidford River	Rhode Island Sound
Beacon Avenue Tributary	Mount Hope Bay	Sakonnet River
Conanicut Brook	Nannaquaket Pond	Sheffield Cove Brook
	Narragansett Bay	

The 2010 countywide FIS also incorporated the determination of letters issued by FEMA resulting in map changes (Letters of Map Revision [LOMR]), as shown in Table 3, "Letters of Map Change."

TABLE 3- LETTERS OF MAP CHANGE

Community	Flooding Source(s)/Project Identifier	Effective Date	Type	Case Number
Tiverton, Town of	Village at Mount Hope Bay	February 8, 2008	LOMR	07-01-1087P
Portsmouth, Town of	Humphrey Property	February 9, 2009	LOMR	09-01-0279P

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

All or portions of numerous flooding sources in the county were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards at the time of the study. The scope and methods of study were proposed to, and agreed upon by, FEMA and the communities in Newport County.

2012 Coastal Study Update

The coastal wave height analysis for this countywide coastal study was prepared by STARR. This new analysis resulted in revisions to the FIRM for the Towns of Jamestown, Little Compton, Middletown, Portsmouth, Tiverton, and City of Newport. There were no new LOMR determinations that resulted in FIRM revisions.

2.2 Community Description

Newport County consists of six communities and is located in southeastern Rhode Island. The county is bordered to the north by Bristol County, Rhode Island; to the east by Bristol County, Massachusetts; to the south by Rhode Island Sound and the Atlantic Ocean; and to the west by Washington County, Rhode Island. The population of Newport County was 82,888 in 2010, 85,433 in 2000, and 87,194 in 1990 (Reference 4).

The Town of Jamestown is located in the southwestern portion of Newport County in southeastern Rhode Island, approximately 26 miles south of the City of Providence. The Town of Jamestown is an island situated at the entrance to Narragansett Bay. It is bordered by the Towns of Narragansett and North Kingstown to the west, the Town of Portsmouth to the north, the Town of Middletown and the City of Newport to the east, and Rhode Island Sound to the south.

The Town of Jamestown encompasses a land area of 9.7 square miles and a water area of 21.8 square miles. The island has a length of approximately 8.7 miles along its major north-south axis and is approximately 1.6 miles wide at its widest point. A ridge formed along its major axis rises to an elevation of 140 feet from which the land slopes to the coast.

There are ten fairly distinct drainage areas on the island, the largest being Jamestown Brook, which has a drainage area of approximately 1.1 square miles. The other drainage systems vary in size from 0.8 square mile to 0.1 square mile; most have drainage areas of less than 0.3 square mile.

The Town of Jamestown is an ocean resort and residential community with the majority of residents employed outside the town, particularly in the North Kingstown area.

The Town of Little Compton is located in the southern portion of Newport County in southeastern Rhode Island, approximately 44 miles south of the City of Boston, Massachusetts, and 32 miles southeast of the City of Providence, Rhode Island. It is bordered by the Town of Tiverton, Rhode Island, to the north; the Town of Westport, Massachusetts, to the east; Rhode Island Sound to the south; and the Sakonnet River and the Towns of Portsmouth and Middletown, Rhode Island to the west.

The Town of Little Compton encompasses an area of 23.2 square miles, of which 1.7 square miles is water (Reference 5). The town is a rural-agricultural community with a small fishing fleet that operates from Sakonnet Harbor.

Most of the residential development in the Town of Little Compton is along major roads, especially at Adamsville and The Commons. The 13.5-mile coastline, which was formed by glacial outwash plains, is characterized by barrier beaches, dunes, ponds, and salt marshes. Bare rocks, shoals, and ledges are found in the waters off the Town of Little Compton (Reference 6). The most dense coastal development is on Sakonnet Point at Sakonnet Harbor and is characterized by private residences and several commercial establishments. Inland of the coast, the land is hilly, rising to plateaus with elevations ranging between 150 feet and 200 feet.

The Town of Little Compton has coastal, estuarine, and inland drainage areas. The coastal area extends from the Westport corporate limits to Sakonnet Harbor. The estuarine area continues north along the coast from Sakonnet Harbor to High Hill Point. Runoff from both these areas flows directly into Rhode Island Sound and the Sakonnet River via overland flow and small tidal streams, ponds, or marshes. Most of the inland areas are drained by one of the many streams that flow south into Rhode Island Sound.

The streams of the area are separated by low-lying hills. Each of the streams flows into a coastal pond or marsh impounded behind a barrier beach. From east to west, the major streams are Cold Brook, Sisson Brook, and Dundery Brook. These streams drain into Quicksand Pond, Tunipus Pond, and Briggs Marsh, respectively. The northwest portion of the town drains into the Harold E. Watson Reservoir, which in turn drains north through Pocket Brook into the neighboring Town of Tiverton. Runoff from the northeast section of town near Adamsville flows into Adamsville Brook or the adjacent Town of Westport.

The Town of Middletown is located on Aquidneck Island in southeastern Rhode Island, approximately 25 miles southeast of the City of Providence. It is bordered by the City of Newport to the southwest, the Town of Portsmouth to the northeast, and the Town of Little Compton to the east. Middletown was settled in 1639.

The Town of Middletown has a rolling terrain with a predominant ridge running the entire length of the town. The ridge has a maximum elevation of 250 feet, but the average elevation of the town is 150 feet.

Bailey Brook originates just west of Newport State Airport and flows south into Great End Pond, draining the western portion of The Town of Middletown. Paradise Brook originates just north of Howland School and flows south. It drains the eastern portion of the town and discharges into Nelson Pond. The Maidford River begins in the northern portion of The Town of Middletown and also flows south. The river drains the central portion of the town and discharges into the Sakonnet River.

The City of Newport is located at the southern end of Aquidneck Island in Narragansett Bay, approximately 30 miles south of the City of Providence. It is bordered by the Atlantic Ocean to the east and south, Narragansett Bay to the west, and the Town of Middletown to the north. The developed floodplain areas include Newport Harbor waterfront, Washington and Thames Streets, the area north of Easton Pond along Ellery Road, the area at the head of Almy Pond, and Goat Island (Reference 7). The City of Newport is mostly residential, but is also a tourist center with attractions including famous mansions, America's Cup Race, jazz concerts, beaches, the "Cliff Walk," and other historic sites.

The terrain of the City of Newport consists of gently rolling hills, with a maximum elevation of 150 feet in the northern portion of the city. The coast is mostly rocky cliffs interspersed with several swamps and sand beaches.

The Town of Portsmouth is located on the north end of Aquidneck Island, approximately 22 miles southeast of the City of Providence. The Town of Portsmouth is bordered by the Town of Bristol to the north, Mount Hope Bay to the northeast, the Sakonnet River to the east, the Town of Middletown to the south, and Narragansett Bay to the west. Several islands are located within the corporate limits, including Patience, Hope, Dyer, Hog, and Prudence Islands in Narragansett Bay, and Gould Island in the Sakonnet River.

The Town of Tiverton is located in the northern portion of Newport County in southeastern Rhode Island, approximately 18 miles southeast of the City of Providence. The Town of Tiverton is bordered by the City of Fall River to the north, the Town of Westport to the east, the Town of Little Compton to the south, and the Town of Portsmouth to the west. The Sakonnet River and Mount Hope Bay are located to the west. The town encompasses a total land area of approximately 31.4 square miles.

The coast, formed by a glacial outwash plain, is an irregular outline of coves, bays, and promontories. It is characterized by scattered tidal flats, ponds, salt marshes, sandy bluffs, and small crescent-shaped beaches. Residential, commercial, and industrial development is concentrated along the northernmost portions of the Sakonnet River, Mount Hope Bay, and Nannaquaket Pond. Summer homes, some located along the low-lying beach areas, and year-round residences are located to the south.

Inland of the immediate coastal area, the town is characterized by a hilly plateau, undeveloped wetlands, and ponds. Elevations range from 150 to 200 feet with scattered hills exceeding 300 feet.

The Town of Tiverton is divided into eastern and western drainage basins by a ridge of hills that run north to south through the center of town. Both basins are characterized by extensive swamps and wetlands which are drained by numerous streams and brooks. The largest of these is Adamsville Brook, which drains the southeastern portion of town, flowing south into the adjacent Town of Little Compton and ultimately the West Branch Westport River. To the northeast, Tiverton is drained by several small unnamed streams that flow into Stafford, Sawdy, and South Watuppa Ponds. Runoff from The Town of Tiverton's coastal areas flows into Mount Hope Bay or the Sakonnet River via overland flow and several small coastal streams. Border Brook collects runoff from much of southeastern Tiverton flowing into Nonquit Pond which has been dammed and forms part of Newport's water-supply system. The east-central portion of the town is drained by several streams including Sin and Flesh Brook and White Wine Brook. These streams flow into Nannaquaket Pond and then into the Sakonnet River via the Quaket River. To the south, Sapowet Marsh Wildlife Preserve is a large tidal marsh area which empties into the Sakonnet River.

2.3 Principal Flood Problems

Flooding in the Town of Jamestown is generally limited to the coastal lowlands along Narragansett Bay. The most severe coastal flooding occurs during hurricanes, which are tropical in nature and are characterized by low barometric pressures, wind speeds greater than or equal to 75 miles per hour, torrential rain, tremendous waves, and tidal flooding. Severe coastal flooding resulted from the hurricanes of September 1938 and August 1954. Both of these storms had a severe effect on portions of the coastline of Jamestown. Along the coast of the town, the recurrence intervals for the 1938 and 1954 hurricanes were estimated to be approximately a 1-percent-annual-chance and an approximately 1.4-percent-annual-chance storm (100 year and 70 year recurrence intervals), respectively. High-water marks for the 1938 and 1954 hurricanes in the area around Jamestown are shown in the table on page 11 (References 8 through 15).

Floodplain development in the Town of Little Compton is primarily residential, with the exception of a small commercial development near Sakonnet Harbor that supports the recreational and fishing industries. These low-lying coastal areas are subject to the periodic flooding and wave attack which accompany coastal storms and hurricanes.

Many times a storm of relatively minor proportions will linger over the area for a substantial period of time, causing excessive buildup of tidal levels throughout the area. The majority of these storms cause damage only to boats, low coastal roads, beaches, and seawalls. Occasionally, a major northeaster or hurricane accompanied by strong onshore winds and high tides will result in surge and wave activity that causes extensive property damage. Some of the more significant coastal storms in the Town of Little Compton area include the hurricanes of 1938 and 1954. As estimated by the USACE, resultant flood levels along the Sakonnet River ranged from approximately 12 feet NAVD 88 at Sakonnet Point to 12.8 feet NAVD 88 at High Hill Point during the 1938 storm and from

11 feet NAVD 88 and to 11.8 feet NAVD 88 at the same locations during the 1954 storm. Flood levels between Sakonnet Point and the Westport, Massachusetts corporate limits were estimated at 12.1 feet NAVD 88 and 11.2 feet NAVD 88 for the 1938 and 1954 hurricanes, respectively. These storms claimed lives and damaged residential, recreational, industrial, and commercial developments, including harbors and marinas, in the flood-prone coastal areas.

Minor local flooding occurs in various locations throughout the Town of Little Compton, primarily as a result of inadequate or blocked culverts. Storms of great intensity and short duration are usually the cause of this type of flooding. Due to natural wetlands and natural valley storage areas, inland flooding throughout the Town of Little Compton has been minimal.

The Town of Middletown is susceptible to tidal surges caused primarily by hurricanes and northeasters. When a hurricane passes through the Narragansett Bay area, strong winds are generated, which revolve counterclockwise around the central low pressure. These winds primarily come from the south and result in a surge being driven up into Narragansett Bay and the Sakonnet River. This effect can readily be seen in records of the hurricanes of 1938 and 1954 (Hurricane Carol).

The 1938 hurricane generated a flood level of approximately 11.2 feet NAVD 88 in the southern coastal areas and other low-lying coastal areas.

The 1938 hurricane, comparable to a 1-percent-annual-chance flood, generated flood elevations between 8 and 19 feet NAVD 88 around the City of Newport. The storm caused heavy damage to the beach areas, leveled Newport Beach, and nearly destroyed Bailey's Beach. Ocean Drive was damaged in several sections. Boats in the wharf area of Newport Harbor were tossed onto shore. The Coast Guard Station at Brenton Point was badly damaged.

In 1954, the Coast Guard Station at Castle Hill recorded flood elevations from Hurricane Carol to be only four inches below those of the 1938 hurricane. Beach areas were damaged, boats at the Newport Yacht Club were torn from moorings, and the police station had five feet of water on the first floor. Damage to Ocean Drive was less severe because of seawalls constructed after the 1938 hurricane.

Since the Town of Portsmouth is located between Narragansett Bay and the Sakonnet River, it is prone to tidal flooding. The two storms on record that caused the most flooding are the hurricanes of 1938 and 1954. The 1938 hurricane, which was a 1-percent-annual-chance storm, reached flood elevations of 13 feet along the shoreline. The areas damaged by flooding included Common Fence Point, Bay View Avenue, the intersection of Therinn and Baker Roads, Pine Hill Point, and the northeast portion of Prudence Island. The water overtopped the seawall and caused extensive damage to the houses in the adjacent residential area. Further flooding resulted from ponds that were created behind the seawall because the outlets were clogged with sand. Historic high-water marks are shown in Table 4, "High-Water Mark Elevations:"

TABLE 4 – HIGH-WATER MARK ELEVATIONS

Flooding Source And Location	Hurricane September 21, 1938 (feet NAVD)[1]	Hurricane September 14, 1944 (feet NAVD)[1]	Hurricane Carol August 31, 1954 (feet NAVD)[1]
NARRAGANSETT BAY			
At Newport USC&GS Tide Gage	11.9	5.8	8.9
Bailey Beach	12.6	*	*
Price Neck	14.1	*	10.1
Brenton Point	19.0, 17.7	*	*
Newport Harbor	10.5		*
USC&GS Tidal Gage	11.9	*	8.9
Coddington Cove	*	*	9.6
Bristol Point	*	*	10.1
Bristol Harbor	12.3, 13.1	*	11.6, 12.1
Mouth at Warren River	13.7	*	12.3
At the south end of Providence Island	11.4	*	10.1
At Melville	11.5	*	10.5
At Homestead	13.3	*	11.1
At USC&GS Tide Gage	14.9	9.1	13.9
Rumstick Neck	14.2	*	*
Barrington Beach	14.6	*	14.1
Nayatt Point	14.5	*	14.2
Bullock Cove	14.3	*	13.6
Bullock Point	14.9	*	13.9
Crescent Park	15.2	*	*
Squantum Point	15.0	*	15.3
Seekonk River	15.2	*	14.0
Point St. Bridge	15.7	*	14.4
SAKONNET RIVER			
At Sandy Point	*	*	10.9
At McCurry Point	*	*	10.4
At Island Park	14.4	*	13.5

[1]All elevations are referenced to North American Vertical Datum of 1988 (NAVD 88)

*Data not available

TABLE 4 – HIGH-WATER MARK ELEVATIONS - continued

Flooding Source And Location	Hurricane September 21, 1938 (feet NAVD)[1]	Hurricane September 14, 1944 (feet NAVD)[1]	Hurricane Carol August 31, 1954 (feet NAVD)[1]
SAKONNET RIVER - continued			
At Railroad Bridge	14.7	*	*
At Common Fence Point	13.3	*	11.1
At Fall River USC&GS Tide Gage	12.9	8.4	12.5
Little Compton Breakwater Point	12.9	*	9.8
Laurel Park	*	*	13.1
Kickamuit River	12.3	*	12.6

[1]All elevations are referenced to North American Vertical Datum of 1988 (NAVD 88).
*Data not available

In the Town of Tiverton low-lying coastal areas are subject to the periodic flooding and wave attack that accompany coastal storms and hurricanes. Many times a storm of relatively minor proportions will linger over the area for a substantial period of time and will cause excessive buildup of the tidal levels throughout the area. The majority of these storms cause damage to boats, low coastal roads, beaches, and seawalls.

Minor flooding occurs at various locations throughout the Town of Tiverton, primarily as a result of inadequate or blocked culverts. Storms of great intensity and short duration are usually the cause of this type of flooding. Due to natural wetlands and natural valley storage areas, inland flooding throughout the Town of Tiverton has been minimized.

Five hurricanes have affected Rhode Island in the last two decades, causing minimal-to-moderate damage to the Rhode Island coastline. Three of these hurricanes caused mild-to-moderate damage to Newport County. Hurricane Gloria in September 1985 caused moderate beach erosion along the Rhode Island beaches and wind gusts up to 92 miles per hour. Hurricane Gloria arrived at low tide and the storm surges were less than 5-feet above normal. Statewide, there were approximately 300,000 power outages due to the storm (References 16 and 17). Hurricane Bob made landfall in Newport County as a strong Category II hurricane. With winds of 75 to 100 MPH, the storm severely affected coastal communities and caused extensive beach erosion. Hurricane Bob caused a storm surge of 5 to 8 feet along the Rhode Island shore. The hurricane damaged trees and utility poles leaving more than 60 percent of southeast Rhode Island residents without power (References 18, 19, and 20). Remnants of Hurricane Bertha formed waterspouts near Washington County, Rhode Island and caused structural roof damage to a few homes in

Bristol County, Rhode Island. Wind damage across New England led to fallen trees and power lines. Sustained winds reached 60 knots (69 MPH) over nearby Atlantic waters (References 21 and 22). High surf induced by Hurricane Earl in September 2010 resulted in minor coastal flooding in Newport, RI and left ocean debris behind. Washington and Newport counties were both under a tropical storm warning and Governor Donald Carcieri declared an emergency. Several school districts in Rhode Island released students from school early on September 3, as well as Bristol-Warren and Cumberland school Districts, which closed schools in anticipation of Hurricane Earl (References 23 and 24). In August 2011, Hurricane Irene produced significant amounts of rain, storm surge and coastal flooding, resulting in property damages within Newport County. Several large trees were downed and widespread power outages were reported. Wind gusts were reported as high as 51 knots (59 MPH). The automated surface observing system at Newport State Airport recorded sustained winds of 30 knots (35 MPH) and wind gusts to 48 knots (55 MPH) (References 23 and 24).

From December 2010 through February 2011, the State of Rhode Island saw a series of six winter storms that led to record snowfalls across the state. These storms caused a number of problems statewide with transportation, power outages, and collapses. Snow accumulation from a winter storm on December 27, 2010 reached between 10 and 16 inches and left over 480,000 Rhode Island National Grid customers, majority of those in Newport and Washington counties, without power (Reference 25). In January 2011, several winter storms resulted in a January snowfall total of 24 inches in Newport County (Reference 26).

2.4 Flood Protection Measures

All communities in Newport County are participants in the regular phase of the NFIP and, as such, have incorporated into zoning regulations or ordinances a set of floodplain management regulations to help minimize future flood damages and related hazards.

Existing flood protection along most of the coast of the Town of Jamestown is offered by the natural, steep, rocky shoreline. The high cliffs are especially predominant along the southern coast where the major protection is necessary. Wind and wave activity along the Town of Jamestown shoreline in Narragansett Bay is somewhat limited by the open water fetch. In low-lying areas, existing flood protection is limited to a few seawalls and some scattered areas of dumped riprap.

There are no flood control structures affecting streamflow in the Town of Jamestown. The two dams on Jamestown Brook are used for water supply and offer only indirect flood control.

In the Towns of Little Compton and Tiverton, protective structures have generally been built and maintained by the municipality or private property owners to satisfy individual requirements for flood protection. Limited financial resources sometimes result in less than adequate protection.

The USACE constructed a breakwater at Sakonnet Harbor in the mid-1950s. Studies have been made to assess the need for additional structures. A New England River Basins Commission study for the area recommends that flood-prone areas be protected and wetlands be preserved (Reference 27).

Flood warning and forecasting services are performed by the National Weather Service. The adoption of federal, state, and local development regulations concerning floodplain management will help alleviate storm-related losses.

Numerous areas of the Town of Middletown are partially protected by seawalls. Other areas have had riprap placed or seawalls built for erosion control. In those areas along Bailey Brook and the Maidford River which have flooded, culvert modification has been made to control flooding.

Numerous areas of the City of Newport are protected by seawalls, including areas of Ocean Drive which were damaged in 1938, but were somewhat protected by the seawalls in 1954. Much of the area along the "Cliff Walk" has had riprap placed, or seawalls built, for erosion protection (Reference 28).

The Island Park section of the Town of Portsmouth is partially protected by seawalls. The seawalls have been overtopped during some of the more severe storms, but it usually provides adequate protection from coastal surges. Flooding and erosion problems which occur along Bay View Avenue to the northeast of the Mount Hope Bridge have been partially controlled by stacking concrete blocks along the road. Flood warning and forecasting services are performed by the National Oceanic and Atmospheric Administration (NOAA).

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, during previous community re-studies, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for the FIS. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 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-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent-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 which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, 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 county at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes. Riverine and coastal analyses are discussed separately in the following sections.

3.1 Riverine Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each riverine flooding source studied by detailed methods.

In order to provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for purposes of flood plain management. This flood has a 1-percent chance of being equaled or exceeded each year and is expected to be exceeded once on the average during any 100-year period. The risk of having a flood of this magnitude or greater increases when periods longer than 1 year are considered. For example, over a 30-year period, there is a 26 percent chance of experiencing a flood equal to or greater than the 1-percent-annual-chance flood. The 0.2-percent-annual-chance flood plain is also shown on the FIRM to indicate areas of moderate flood hazards.

Areas inundated by the 1-percent-annual-chance flood are shown as A and AE zones on the county's FIRM. It is in these areas that the FEMA requires local communities to exercise floodplain management measures as a condition for participation in the NFIP.

For each community within Newport County that had a previously printed FIS report, the unrevised hydrologic analyses described in those reports have been compiled and are summarized below.

For Bailey Brook and Paradise Brook in the Town of Middletown, peak discharge-frequency relationships for the 10-, 2-, and 1-percent-annual-chance flood discharges were determined from the SCS small watershed method (Reference 29). The 0.2-percent-annual-chance peak discharges were developed by straight line extrapolation of log-Pearson Type III distributions of the 10-, 2-, and 1-percent-annual-chance flood discharges (Reference 30). Peak discharge-frequency relationships for the Maidford River were calculated using the SCS TR-20 computer program (Reference 31).

For Beacon Avenue Tributary, Conanicut Brook, Jamestown Brook, and Sheffield Cove Brook, peak discharges were computed by the SCS in the original FIS for the Town of Jamestown (Reference 32). The discharges were determined using the relationship between time of concentration and flow in cubic feet per second per square mile per inch of runoff. Time of concentration for each drainage basin was calculated from the physical characteristics of the basin. Flow was calculated using the rainfall data for the area and SCS runoff curves (curve number used based on soils and land-use data for each basin) (Reference 33).

A summary of the drainage area-peak discharge relationships for all the streams studied by detailed methods is shown in Table 5, "Summary of Discharges."

TABLE 5 – SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
BAILEY BROOK					
At the mouth	2.79	370	625	710	1,055

TABLE 5 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
BAILEY BROOK - continued					
At State Route 214	1.18	215	370	415	619
BEACON AVENUE TRIBUTARY					
At the mouth	*	69	114	136	216
CONANICUT BROOK					
At the mouth	*	106	164	222	295
JAMESTOWN BROOK					
At the mouth	1.1	451	724	919	1,319
MAIDFORD RIVER					
At the mouth	2.25	624	929	1,119	1,567
At Prospect Avenue	1.32	651	970	1,168	1,696
PARADISE BROOK					
At the mouth	1.08	200	350	395	597
At Private Drive	0.41	115	190	215	314
SHEFFIELD COVE BROOK					
At the mouth	*	264	434	496	639

*Data not available

3.2 Riverine Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

For each incorporated community within Newport County that had a previously printed FIS report, the hydraulic analyses described in those reports have been compiled and are summarized below.

Analyses were carried out by applying the step-backwater computations employed by the HEC-2 computer program (based on Bernoulli's energy equation and Manning's formula) to cross-section data and other hydraulic characteristics of the waterways of Bailey Brook, Maidford River, and Paradise Brook in the Town of Middletown (Reference 34). The computer model was calibrated to historic records obtained from interviews with local officials and residents. Culvert conditions at the date of the studies were used and recent modifications were taken into consideration in the use of historic flood marks. Starting water-surface elevations for Bailey Brook and Paradise Brook were taken from bank full analyses of Green End Pond and Nelson Pond, respectively. Starting water-surface elevations for the Maidford River were taken as the mean high tide on the Sakonnet River.

The hydraulic analyses for Beacon Avenue Tributary, Conanicut Brook, Jamestown Brook, and Sheffield Cove Brook were obtained from the original FIS for the Town of Jamestown (Reference 32). Water-surface elevations were developed using a SCS backwater computer program.

The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Qualifying bench marks within a given jurisdiction that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B, or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)

- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutment)

- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)

- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

In addition to NSRS bench marks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook (TSDN) associated with this FIS and FIRM. Interested individuals may contact FEMA to access this data.

Roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the streams and floodplain areas. Roughness factors for all streams studied by detailed methods are shown in Table 6, "Manning's "n" Values."

TABLE 6 – MANNING'S "n" VALUES

Stream	Channel "n"	Overbank "n"
Bailey Brook	0.030-0.050	0.090-0.110
Beacon Avenue Tributary	*	*
Conanicut Brook	*	*
Jamestown Brook	*	*
Maidford River	0.030-0.050	0.090-0.110
Paradise Brook	0.030-0.050	0.090-0.110
Sheffield Cove Brook	*	*

*Data not available

2012 Coastal Study Update

Based on the results of the new coastal analysis, the backwater elevations are revised where necessary. The flooding sources of Bailey Brook, Beacon Avenue Tributary, Conanicut Brook, Jamestown Brook, Maidford River, Paradise Brook, and Sheffield Cove Brook were revised for backwater elevations.

3.3 Coastal Hydrologic Analyses

The stillwater elevation is the elevation of the water due to the effects of the astronomic tides and storm surge on the water surface. Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for Rhode Island Sound, Narragansett and Mount Hope Bays, and the Sakonnet River flooding sources affecting the communities of Jamestown, Little Compton, Middletown, Newport, Portsmouth, and Tiverton. These analyses serve as the basis for coastal hydraulic analyses using detailed methods in accordance with Appendix D of the "Guidance for Coastal Flooding Analyses and Mapping," of the April 2003 FEMA "Guidelines and Specifications for Flood Hazard Mapping Partners." (Reference 35).

For this study, the stillwater elevations for the 10-, 2-, 1-, and 0.2-percent-annual-chance events for areas subject to coastal flooding were obtained from the "Regional Frequency Analyses using L-Moments" memorandum developed by STARR (Reference 36) for the nearest gages to Newport County. Table 7 contains the stillwater elevations determined at the five tide gage stations located in and adjacent to Newport County. Stillwater elevations from the Newport, Quonset Point, and Providence gages were linearly interpolated to all coastal transects along Narragansett and Mount Hope Bays and the Sakonnet River for use in coastal hydraulic analyses. Stillwater elevations from the New London, Newport, and New Bedford gages were linearly interpolated to all coastal transects along Rhode Island Sound throughout the county for use in coastal hydraulic analyses.

TABLE 7 - SUMMARY OF COASTAL STILLWATER ELEVATIONS

	Flood Elevations (NAVD 88)*			
Flooding Source and Location	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance
NARRAGANSETT BAY				
Providence tide gage station 8454000 (41˚48.4’N, 71˚24.0’W)	7.0	10.9	13.8	26.0
Quonset Point tide gage station 8454049 (41˚35.2’N, 71˚24.6’W)	5.7	8.9	11.2	21.2
Newport tide gage station 8452660 (41˚30.3’N, 71˚19.6’W)	5.3	8.3	10.5	19.9
RHODE ISLAND SOUND				
New London tide gage station 8461490 (41˚21.6’N, 72˚5.4’W)	4.8	7.4	9.4	17.7
Newport tide gage station 8452660 (41˚30.3’N, 71˚19.6’W)	5.3	8.3	10.5	19.9
New Bedford (41˚38.4’ N, 70˚ 55.1’ W)	6.0	9.4	11.9	22.4

*North American Vertical Datum of 1988

Transects (profiles) were located for coastal hydrologic and hydraulic analyses perpendicular to the average shoreline along areas subject to coastal flooding and extending inland to a point where wave action ceased in accordance with the “Users Manual for Wave Height Analysis” (Reference 37). Transects were placed with consideration of topographic and structural changes of the land surface, as well as the cultural characteristics of the land so that they would closely represent local conditions.

Coastal transect topography data was obtained from Light Detection and Ranging (LiDAR) data collected in April 2010 by Aero-Metric, Inc. (Reference 38). Data is accurate to 2-foot contours. Bathymetric data was obtained from the NOAA National Ocean Service (NOS) Hydrographic Data Base (NOSHDB) and Hydrographic Survey Meta Data Base (HSMDB) (NOAA, May 27, 2010) (Reference 39). The sounding datum of mean low low water (MLLW) was converted to vertical datum NAVD 88.

Transects were spaced close together in areas of complex topography and dense development. In areas having more uniform characteristics, transects were spaced at larger intervals. It was also necessary to locate transects in areas where unique flooding existed and in areas where computed wave heights varied significantly between adjacent transects.

3.4 Coastal Hydraulic Analyses

Wave height is the distance from the wave trough to the wave crest. The height of a wave is dependent upon wind speed and duration, water depth, and length of fetch. Offshore (deep water) and near shore (shallow water) heights and wave periods were calculated for restricted and unrestricted fetch settings following the methodology described in the February 2007 FEMA "Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update" (Reference 40), for each coastal transect.

Wave height and period values for the transects located along the flooding sources of Narragansett Bay, Mount Hope Bay, Sakonnet River and Rhode Island Sound were calculated using the Steady-State Spectral Wave Model (STWAVE) (Reference 41). STWAVE is a phased-averaged spectral wave model that simulates depth-induced wave refraction and shoaling, depth- and steepness-induced wave breaking, diffraction, wind-wave growth, and wave-wave interaction and white capping that redistribute and dissipate energy in a growing wave field. The model accepts a spectral form of the wave as an input condition and provides wave height and period results over the gridded model domain.

Wave setup was assumed to be an important factor in determining total water level, since the coastline has historically experienced flooding damage above the predicted storm surge elevations. Wave setup is based upon wave breaking characteristics and profile slope. As stated in the "Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update" (Reference 40), "Wave setup can be a significant contributor to the total water level landward of the +/- MSL shoreline and should be included in the determination of coastal base flood elevations." Wave setup values were calculated to the entire open coast shoreline in each community. Wave setup for each coastal transect was calculated by the Direct Integration Method (DIM) developed by Goda (2000) as described in the FEMA "Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update" (Reference 40). For those coastal transects where a structure was located, the wave setup against the coastal structure was also calculated. For profiles with vertical structures or revetments, a failed structure analysis was performed and a new profile of the failed structure was generated and analyzed, in accordance with the USACE, Coastal Engineering Research Center report "Criteria for Evaluating Coastal Flood Protection Structures," (TR CERC-89-15) (Reference 42). The more conservative result of the two analyzed conditions was mapped.

Erosion analysis using FEMA's Coastal Hazard Analysis Modeling Program (CHAMP) Version 2.0 (Reference 43) was performed for profiles with erodible dunes and without coastal structures, such as vertical walls or revetments. The dune subject to erosion is a sandy feature with potentially light vegetation. Any thickly vegetated, rocky, silty, or clayey dune features or bluffs are assumed not subject to erosion. Predicted post-storm erosion profiles were used for analysis of wave heights associated with coastal storm surge flooding, where appropriate.

The methodology for analyzing the effects of wave heights is described in a report entitled "Methodology for Calculating Wave Action Effects Associated with Storm Surges," prepared by the National Academy of Sciences (Reference 44). This method is based on three major concepts. First, depth-limited waves in shallow water reach maximum breaking height that is equal to 0.78 times the stillwater depth. The wave crest is 70 percent of the total wave height above the stillwater level. The second major concept is that wave height may be diminished by dissipation of energy due to the presence of obstructions such as sand dunes, dikes and seawalls, buildings, rising topography, and vegetation. The amount of energy dissipation is a function of the physical characteristics of the obstruction and is determined by procedures prescribed in the NAS report. The third major concept is that wave height can be regenerated in open fetch areas due to the transfer of wind energy to the water. This added energy is related to fetch length and depth.

Along each transect, overland wave propagation was computed considering the combined effects of changes in ground elevation, vegetation, and physical features. Wave heights were calculated to the nearest 0.1 foot, and wave crest elevations were determined at whole-foot increments. The calculations were carried inland along the transect until the wave crest elevation was permanently less than 0.5 foot above the total water elevation or the coastal flooding met another flood source (i.e. riverine) with an equal water-surface elevation. The results of the calculations are accurate until local topography, vegetation, or cultural development of the area undergoes any major changes.

Areas of the coastline subject to significant wave attack are referred to as coastal high hazard zones. The USACE has established the 3-foot breaking wave as the criterion for identifying the limit of coastal high hazard zones (Reference 45). The 3-foot wave has been determined as the minimum size wave capable of causing major damage to conventional wood frame or brick veneer structures. This criterion has been adopted by FEMA for the determination of V-zones.

It has been shown in laboratory tests and observed in post storm damage assessments that wave heights as little as 1.5 feet can cause damage to and failure of typical Zone AE construction. Therefore, for NFIP advisory purposes only, a Limit of Moderate Wave Action (LiMWA) boundary has been added in coastal areas subject to moderate wave action. Please refer to your state or local building codes to determine if there are higher building standards in place. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave, and was delineated for all areas subject to significant wave attack in accordance with “Procedure Memorandum No. 50 – Policy and Procedures for Identifying and Mapping Areas Subject to Wave Heights Greater than 1.5 feet as an Informational Layer on Flood Insurance Rate Maps (FIRMs)” (Reference 46).

The effects of wave hazards in the Zone AE (or shoreline in areas where VE Zones are not identified) and the limit of the LiMWA boundary are similar to, but less severe than, those in Zone VE where 3-foot breaking waves are projected during a 1-percent-annual-chance flooding event.

In areas where wave runup elevations dominate over wave heights, such as areas with steeply sloped beaches, bluffs, and/or shore-parallel flood protection structures, there is no evidence to date of significant damage to residential structures by runup depths less than 3 feet. However, to simplify representation, the LiMWA was continued immediately landward of the VE/AE boundary in areas where wave runup elevations dominate. Similarly, in areas where the Zone VE designation is based on the presence of a Primary Frontal Dune (PFD) or wave overtopping, the LiMWA was also delineated immediately landward of the Zone VE/AE boundary.

Wave runup is the uprush of water caused by the interaction of waves with the area of shoreline where the stillwater hits the land or other barrier intercepting the stillwater level. The wave runup elevation is the vertical height above the stillwater level ultimately attained by the extremity of the uprushing water. Wave runup at a shore barrier can provide flood hazards above and beyond those from stillwater inundation. Guidance in the February 2007 FEMA "Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update" (Reference 40) suggests using the 2-percent wave runup value, the value exceeded by 2 percent of the runup events. The 2-percent wave runup value is particularly important for steep slopes and vertical structures. Wave runup was calculated for each coastal transect using methods from the Shore Protection Manual (SPM) (Reference 47) for vertical structures, Technical Advisory Committee for Water Retaining Structures (TAW) method for sloped structures with a slope steeper than 1:8, and mean runup height calculated by the FEMA Wave Runup Model RUNUP 2.0 multiplied by 2.2 was used to obtain the 2-percent runup height for non-vertical structures and profiles with a slope less than 1:8, as described in the February 2007 "Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update" to Appendix D, "Guidance for Coastal Flooding Analysis and Mapping" (Reference 40).

When the runup is greater than or equal to 3 feet above the maximum ground elevation, the BFE was determined to be 3 feet above the ground crest elevation, in accordance with guidance in Appendix D. Computed runup was not adjusted if less than three feet above the ground crest.

When runup overtops a barrier such as a partially eroded bluff or a structure, the floodwater percolates into the bed and/or runs along the back slope until it reaches another flooding source or a ponding area. Standardized procedures for the treatment of shallow flooding and ponding were applied as described in Appendix D of the "Guidance for Coastal Flooding Analysis and Mapping" (Reference 35).

Where uncertified coastal structures such as vertical walls and revetments were present, additional analysis for wave setup and wave runup was performed on profiles assuming the structure will partially fail during the base flood. The post-failure slopes applied for this analysis were 1:3 for sloped revetments, and 1:1.5 for vertical walls, which are within the range suggested by the February 2007 "Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update" to Appendix D (Reference 40).

In accordance with 44 CFR Section 59.1 of the NFIP the effect of the (PFD) on coastal high hazard area (V Zone) mapping was evaluated for the Towns of Jamestown, Little Compton, Middletown, Portsmouth, Tiverton, and City of Newport. PFDs were identified in each of these communities. Identification of the PFD was based upon a FEMA approved numerical approach for analyzing the dune's dimensional characteristics. This approach utilized LiDAR data for the study areas (Reference 38) and assessed change in back slope to determine the landward toe of the PFD. In areas where the PFD defines the landward limit of the V Zone, the V Zone extends to the landward toe of the dune. The PFD defined the landward limit of the V Zone along portions of the shoreline only within the communities of Little Compton and Middletown.

Because wave height calculations are based on such parameters as the size and density of vegetation, natural barriers such as sand dunes, buildings, and other man-made structures, detailed information on the physical and cultural features of the study area were obtained from aerial photography. LiDAR data of the shorelines of the Towns of Jamestown, Little Compton, Middletown, Portsmouth, Tiverton, and City of Newport, was used for the topographic data. The land-use and land cover data were obtained from USGS 2003 - 2004 High Resolution Orthoimagery for all the towns (Reference 2). Minor updates to the land-use data were made using USGS 2011 High Resolution Orthoimagery (Reference 3).

Figure 1 is a profile for a typical transect illustrating the effects of energy dissipation and regeneration on a wave as it moves inland. This figure shows the wave crest elevations being decreased by obstructions, such as buildings, vegetation, and rising ground elevations, and being increased by open, unobstructed wind fetches. Actual wave conditions in the community may not include all the situations illustrated in Figure 1.

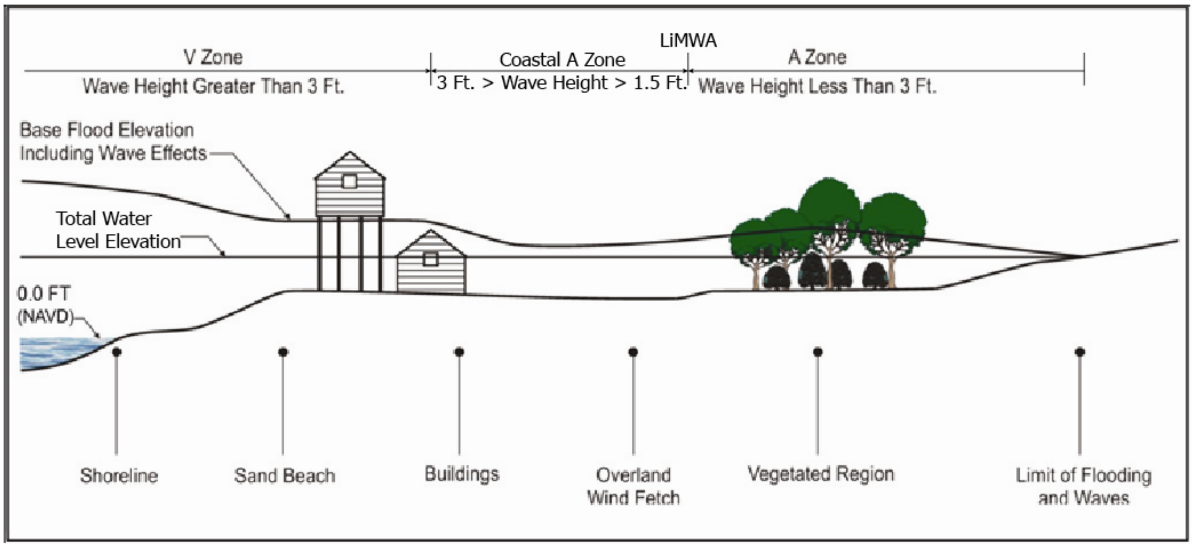

Figure 1 - TRANSECT SCHEMATIC

After analyzing wave heights along each transect, wave crest elevations were interpolated between transects. Various source data were used in the interpolation, including the topographic work maps, notes and photographs taken during field inspection, and engineering judgment. Controlling features affecting the wave crest elevations were identified and considered in relation to their positions at a particular transect and their variation between transects.

Along each transect, wave envelope elevations were computed considering the combined effects of changes in ground elevation, vegetation, and physical features. Between transects, elevations were interpolated using the topographic maps, land-use and land-cover data, and engineering judgment to determine the areal extent of flooding. It was determined that wave runup was not a significant flooding factor in the county. The results of the calculations are accurate until local topography, vegetation, or cultural development within the community undergoes any major changes.

Table 8 provides a description of the transect locations, the 1-percent-annual-chance stillwater elevations, and the maximum 1-percent-annual-chance wave crest elevations. Figure 2, "Transect Location Map," illustrates the location of the transects for the county.

TABLE 8 - TRANSECT DESCRIPTIONS

Transect	Location	Elevation (Feet NAVD 88)		V Zone Mapping Method
		Stillwater 1-percent-annual-chance	Max. Wave Crest 1-percent-annual-chance [1]	
1	At the shoreline of Narragansett Bay, Dutch Island	10.5	24.9	Wave Overtopping Splash Zone
2	At the shoreline of Narragansett Bay, in the Town of Jamestown, Fox Hill Pond to approximately 1,000 feet southwest of Beavertail Road / Hull Cove Farm Road intersection	10.5	23.6	Wave Overtopping Splash Zone
3	At the shoreline of the Rhode Island Sound, in the Town of Jamestown, approximately 1,000 feet southwest of Beavertail Road / Hull Cove Farm Road intersection to Hull Cove	10.4	23.7	Wave Overtopping Splash Zone
4	At the shoreline of the Rhode Island Sound, in the Town of Jamestown, Hull Cove to Mackerel Cove Beach	10.5	26.3	Wave Overtopping Splash Zone
5	At the shoreline of Narragansett Bay, in the Town of Jamestown, Mackerel Cove Beach and Sheffield Cove	10.5	20.1	Runup
6	At the shoreline of Narragansett Bay, in the Town of Jamestown, Mackerel Cove Beach to approximately 1,000 feet east of Newport Street / Dumpling Drive intersection	10.5	25.8	Wave Overtopping Splash Zone
7	At the shoreline of Narragansett Bay, in the Town of Jamestown, approximately 1,000 feet east of Newport Street / Dumping Drive intersection to approximately 700 feet northeast of Racquet Road / Dumpling Drive intersection	10.5	19.7	Wave Overtopping Splash Zone

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

TABLE 8 - TRANSECT DESCRIPTIONS - continued

Transect	Location	Elevation (Feet NAVD 88) Stillwater 1-percent-annual-chance	Elevation (Feet NAVD 88) Max. Wave Crest 1-percent-annual-chance [1]	V Zone Mapping Method
8	At the shoreline of Narragansett Bay, in the Town of Jamestown, approximately 700 feet northeast of Racquet Road / Dumpling Drive intersection to Lincoln Street	10.5	16.8	Runup
9	At the shoreline of Narragansett Bay, in the Town of Jamestown, Lincoln Street to Potter Cove	10.5	16.2	Runup
10	At the shoreline of Narragansett Bay, in the Town of Jamestown, Potter Cove	10.5	17.7	Runup
11	At the shoreline of Narragansett Bay, in the Town of Jamestown, Potter Cove to Cranston Cove	10.8	18.7	Wave Overtopping Splash Zone
12	At the shoreline of Narragansett Bay, in the Town of Jamestown, Cranston Cove to approximately 1,000 feet south of Wickford Avenue (extended)	11.2	20.2	Runup
13	At the shoreline of Narragansett Bay, in the Town of Jamestown, approximately 1,000 feet south of Wickford Avenue (extended) to Ship Street (extended)	11.2	18.7	Wave Overtopping Splash Zone
14	At the shoreline of Narragansett Bay, in the Town of Jamestown, Ship Street (extended) to Weeden Lane (extended)	10.9	20.6	Wave Overtopping Splash Zone
15	At the shoreline of Narragansett Bay, in the Town of Jamestown, Weeden Lane (extended) to Westwind Drive (extended)	10.6	20.3	Runup
16	At the shoreline of Narragansett Bay, in the Town of Jamestown, Westwind Drive (extended) to Sheffield Cove	10.5	20.6	Wave Overtopping Splash Zone
17	At the shoreline of Narragansett Bay, western shore of Patience Island	12.2	22.9	Runup
18	At the shoreline of Narragansett Bay, northern tip of Prudence Island to approximately 2,400 feet southwest of Narragansett Avenue / Bay Avenue intersection; north, east, and south shores of Patience Island	12.1	20.1	Runup

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

TABLE 8 - TRANSECT DESCRIPTIONS - continued

Transect	Location	Elevation (Feet NAVD 88)		V Zone Mapping Method
		Stillwater 1-percent-annual-chance	Max. Wave Crest 1-percent-annual-chance [1]	
19	At the shoreline of Narragansett Bay, northern tip of Prudence Island to Dexter Road, including neck of Prudence Island	12.0	19.7	Runup
20	At the shoreline of Narragansett Bay, on Prudence Island, approximately 2,400 feet southwest of Narragansett Avenue / Bay Avenue intersection to Hope View Road / South Prudence Bay Island Park Road intersection	11.7	20.1	Wave Overtopping Splash Zone
21	At the shoreline of Narragansett Bay, on Prudence Island, Hope View Road / South Prudence Bay Island Park Road intersection to approximately 4,100 feet south of Roberta Avenue	11.5	19.8	Wave Overtopping Splash Zone
22	At the shoreline of Narragansett Bay, on Prudence Island, approximately 4,100 feet south of Roberta Avenue to approximately 400 feet south of Well Lane	11.7	20.1	Wave Overtopping Splash Zone
23	At the shoreline of Narragansett Bay, on Prudence Island, approximately 400 feet south of Well Lane to Dexter Road	11.9	19.0	Runup
24	At the shoreline of Narragansett Bay, Dyer Island	11.5	19.3	Runup
25	At the shoreline of Narragansett Bay, Hog Island	12.0	19.0	Runup
26	At the shoreline of Mount Hope Bay, in the Town of Tiverton, MA/RI State Boundary to approximately 100 feet south of Riverside Drive / Sunderland Heights Road intersection	12.3	19.4	Runup
27	At the shoreline of Sakonnet River, in the Town of Portsmouth, Point Road crossing with The Cove to State Highway 24	12.0	15.8	Runup
28	At the shoreline of Sakonnet River, in the Town of Portsmouth, State Highway 24 to Water Street	12.1	16.1	Runup

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

TABLE 8 - TRANSECT DESCRIPTIONS - continued

Transect	Location	Elevation (Feet NAVD 88) Stillwater 1-percent-annual-chance	Elevation (Feet NAVD 88) Max. Wave Crest 1-percent-annual-chance[1]	V Zone Mapping Method
29	At the shoreline of Mount Hope Bay, in the Town of Portsmouth, Water Street to approximately 300 feet south of Anthony Road / Narragansett Road intersection	12.2	20.5	Wave Overtopping Splash Zone
30	At the shoreline of Mount Hope Bay, in the Town of Portsmouth, approximately 300 feet south of Anthony Road / Narragansett Road intersection to Bayview Avenue cul-de-sac	12.1	18.5	Runup
31	At the shoreline of Mount Hope Bay, in the Town of Portsmouth, Bayview Avenue cul-de-sac to Mount Hope Bridge	12.0	20.5	Wave Overtopping Splash Zone
32	At the shoreline of Narragansett Bay, in the Town of Portsmouth, Mount Hope Bridge to approximately 700 feet north of Willow Lane	11.9	19.2	Wave Overtopping Splash Zone
33	At the shoreline of Narragansett Bay, in the Town of Portsmouth, approximately 700 feet north of Willow Lane to mouth of Barker Brook	11.8	20.3	Wave Overtopping Splash Zone
34	At the shoreline of Narragansett Bay, in the Town of Portsmouth, mouth of Barker Brook to approximately 800 feet north of Alexander Road / Lagoon Road intersection	11.7	20.4	Runup
35	At the shoreline of Narragansett Bay, in the Town of Portsmouth, approximately 800 feet north of Alexander Road / Lagoon Road intersection to mouth of Lawton Valley Reservoir outlet	11.5	18.1	Runup
36	At the shoreline of Narragansett Bay, in the Town of Middletown, mouth of Lawton Valley Reservoir outlet to Porter Street	11.3	19.6	Runup
37	At the shoreline of Narragansett Bay, in the Town of Middletown, Porter Street to Chandler Street	10.8	20.4	Wave Overtopping Splash Zone

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

TABLE 8 - TRANSECT DESCRIPTIONS - continued

Transect	Location	Elevation (Feet NAVD 88)		V Zone Mapping Method
		Stillwater 1-percent-annual-chance	Max. Wave Crest 1-percent-annual-chance [1]	
38	At the shoreline of Narragansett Bay, in the City of Newport, Chandler Street to Rossiter Street; Coasters Harbor Island	10.7	19.9	Wave Overtopping Splash Zone
39	At the shoreline of Narragansett Bay, in the City of Newport, Rossiter Street to Goat Island Causeway; western coast of Goat Island	10.5	18.2	Wave Overtopping Splash Zone
40	At the shoreline of Narragansett Bay, in the City of Newport, Goat Island Causeway to Goodwin Street; eastern coast of Goat Island	10.5	13.2	Runup
41	At the shoreline of Narragansett Bay, in the City of Newport, Goodwin Street to approximately 900 feet southwest of Halidon Avenue	10.5	16.1	Runup
42	At the shoreline of Narragansett Bay, in the City of Newport, approximately 900 feet southwest of Halidon Avenue to Jackson Court (extended)	10.5	18.1	Runup
43	At the shoreline of Narragansett Bay, in the City of Newport, Jackson Court (extended) to approximately 1,300 feet southwest of Castle Hill Avenue / Ella Terrace intersection	10.5	25.7	Wave Overtopping Splash Zone
44	At the shoreline of the Rhode Island Sound, in the City of Newport, approximately 1,300 feet southwest of Castle Hill Avenue / Ella Terrace intersection to Prices Neck	10.4	22.1	Wave Overtopping Splash Zone
45	At the shoreline of the Rhode Island Sound, in the City of Newport, Prices Neck to Lily Pond	10.5	24.4	Wave Overtopping Splash Zone
46	At the shoreline of the Rhode Island Sound, in the City of Newport, Lily Pond to approximately 1,200 feet southeast of Bellevue Avenue / Ledge Road intersection	10.5	24.3	Wave Overtopping Splash Zone

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

TABLE 8 - TRANSECT DESCRIPTIONS - continued

Transect	Location	Elevation (Feet NAVD 88) Stillwater 1-percent-annual-chance	Elevation (Feet NAVD 88) Max. Wave Crest 1-percent-annual-chance [1]	V Zone Mapping Method
47	At the shoreline of the Rhode Island Sound, in the City of Newport, approximately 1,200 feet southeast of Bellevue Avenue / Ledge Road intersection to approximately 200 feet south of Shepard Avenue	10.6	24.8	Wave Overtopping Splash Zone
48	At the shoreline of the Rhode Island Sound, in the City of Newport, approximately 200 feet south of Shepard Avenue to Easton Pond	10.6	24.2	Runup
49	At the shoreline of the Rhode Island Sound, in the Town of Middletown, Easton Pond	10.6	21.5	Wave Overtopping Splash Zone
50	At the shoreline of the Rhode Island Sound, in the Town of Middletown, Easton Pond to approximately 500 feet northwest of Esplanade / Shore Drive intersection	10.6	21.5	Overland Wave Propagation
51	At the shoreline of the Rhode Island Sound, in the Town of Middletown, approximately 500 feet northwest of Esplanade / Shore Drive intersection to Nelson Pond	10.6	22.6	Runup
52	At the shoreline of the Rhode Island Sound, in the Town of Middletown, Nelson Pond to approximately 500 feet southwest of end of Sachuest Point Road	10.7	21.5	Primary Frontal Dune
53	At the shoreline of the Rhode Island Sound, in the Town of Middletown, approximately 500 feet southwest of end of Sachuest Point Road to approximately 2,800 feet northeast of Sachuest Point Road	10.7	22.8	Runup
54	At the shoreline of the Sakonnet River, in the Town of Middletown, approximately 2,800 feet northwest of Sachuest Point Road to approximately 500 feet south of Buena Vista Street	10.5	20.7	Runup

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

TABLE 8 - TRANSECT DESCRIPTIONS - continued

Transect	Location	Elevation (Feet NAVD 88) Stillwater 1-percent-annual-chance	Elevation (Feet NAVD 88) Max. Wave Crest 1-percent-annual-chance[1]	V Zone Mapping Method
55	At the shoreline of the Sakonnet River, in the Town of Portsmouth, approximately 500 feet south of Buena Vista Street to Eastover Road (extended)	10.7	24.3	Runup
56	At the shoreline of the Sakonnet River, in the Town of Portsmouth, Eastover Road (extended) to approximately 300 feet north of Sunrise Drive (extended)	11.2	22.9	Wave Overtopping Splash Zone
57	At the shoreline of the Sakonnet River, in the Town of Portsmouth, approximately 300 feet north of Sunrise Drive (extended) to Robin Road	11.5	17.9	Runup
58	At the shoreline of the Sakonnet River, in the Town of Portsmouth, Robin Road to approximately 700 feet north of Tallman Avenue / Atlantic Avenue intersection	11.6	20.1	Wave Overtopping Splash Zone
59	At the shoreline of the Sakonnet River, in the Town of Portsmouth, approximately 700 feet north of Tallman Avenue / Atlantic Avenue intersection to Island Park Avenue	11.9	23.2	Overland Wave Propagation
60	At the shoreline of the Sakonnet River, in the Town of Portsmouth, Island Park Avenue to Point Road crossing with The Cove	11.9	18.5	Runup
61	At the shoreline of the Sakonnet River, in the Town of Tiverton, approximately 100 feet south of Riverside Drive / Sunderland Heights Road intersection to mouth of Quaket River	11.9	20.6	Wave Overtopping Splash Zone
62	At the shoreline of the Sakonnet River, in the Town of Tiverton, mouth of Quaket River to North Court	11.7	22.1	Wave Overtopping Splash Zone
63	At the shoreline of the Sakonnet River, in the Town of Tiverton, North Court to approximately 500 feet south of Little Harbor Road	11.6	19.2	Wave Overtopping Splash Zone

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

TABLE 8 - TRANSECT DESCRIPTIONS - continued

Transect	Location	Elevation (Feet NAVD 88) Stillwater 1-percent-annual-chance	Elevation (Feet NAVD 88) Max. Wave Crest 1-percent-annual-chance [1]	V Zone Mapping Method
64	At the shoreline of the Sakonnet River, in the Town of Tiverton, approximately 500 feet south of Little Harbor Road to approximately 900 feet southwest of High Hill Road / Fogland Road intersection	11.3	21.5	Wave Overtopping Splash Zone
65	At the shoreline of the Sakonnet River, in the Town of Tiverton, approximately 900 feet southwest of High Hill Road / Fogland Road intersection to Barbara Street	11.2	21.3	Wave Overtopping Splash Zone
66	At the shoreline of the Sakonnet River, in the Town of Little Compton, Barbara Street to approximately 800 feet northwest of Town Way / Oliver Lane intersection	11.1	21.5	Overland Wave Propagation
67	At the shoreline of the Sakonnet River, in the Town of Little Compton, approximately 800 feet northwest of Town Way / Oliver Lane intersection to Bay Farm Lane	10.8	21.8	Runup
68	At the shoreline of the Sakonnet River, in the Town of Little Compton, Bay Farm Lane to approximately 2,400 feet north of Taylors Lane	10.5	21.0	Runup
69	At the shoreline of the Sakonnet River, in the Town of Little Compton, approximately 2,400 feet north of Taylors Lane to approximately 400 feet south of Taylors Lane	10.5	20.7	Overland Wave Propagation
70	At the shoreline of the Sakonnet River, in the Town of Little Compton, approximately 400 feet south of Taylors Lane to approximately 700 feet northwest of westernmost point of Baileys Ledge Road	10.5	22.3	Overland Wave Propagation

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

TABLE 8 - TRANSECT DESCRIPTIONS - continued

Transect	Location	Elevation (Feet NAVD 88) Stillwater 1-percent-annual-chance	Elevation (Feet NAVD 88) Max. Wave Crest 1-percent-annual-chance[1]	V Zone Mapping Method
71	At the shoreline of the Rhode Island Sound, in the Town of Little Compton, approximately 700 feet northwest of westernmost point of Baileys Ledge Road to approximately 200 feet north of Sakonnet Point Road	10.5	22.4	Wave Overtopping Splash Zone
72	At the shoreline of the Rhode Island Sound, in the Town of Little Compton, approximately 200 feet north of Sakonnet Point Road to Ohio Road (extended)	10.8	25.7	Wave Overtopping Splash Zone
73	At the shoreline of the Rhode Island Sound, in the Town of Little Compton, Ohio Road (extended) to Long Pond	10.9	24.9	Wave Overtopping Splash Zone
74	At the shoreline of the Rhode Island Sound, in the Town of Little Compton, Long Pond	10.9	22.6	Runup
75	At the shoreline of the Rhode Island Sound, in the Town of Little Compton, Long Pond to Briggs Marsh	10.9	23.0	Wave Overtopping Splash Zone
76	At the shoreline of the Rhode Island Sound, in the Town of Little Compton, Briggs Marsh to Point Meadows Road (extended)	11.0	23.4	Runup
77	At the shoreline of the Rhode Island Sound, in the Town of Little Compton, Point Meadows Road (extended) to approximately 300 feet northeast of Ocean Drive / Indian Road intersection	11.0	23.7	Overland Wave Propagation
78	At the shoreline of the Rhode Island Sound, in the Town of Little Compton, 300 feet northeast of Ocean Drive / Indian Road intersection to RI/MA State Boundary	11.0	22.5	Runup

[1] Because of map scale limitations, maximum wave elevations may not be shown on the FIRM.

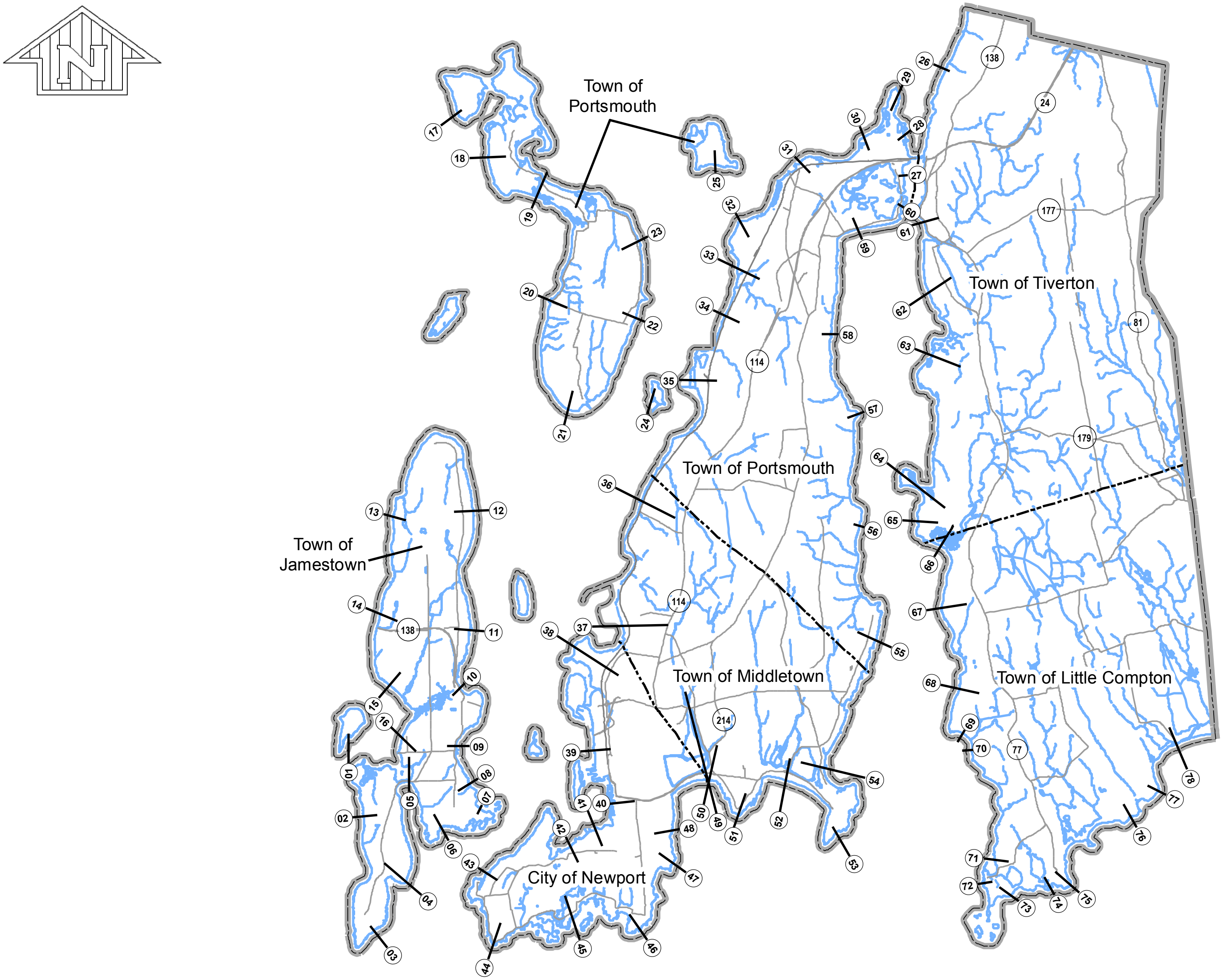

FIGURE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

APPROXIMATE SCALE

0 7,500 15,000 30,000 45,000 60,000 Feet

TRANSECT LOCATION MAP

The results of the coastal analysis using detailed methods are summarized in Table 9, "Transect Data," which provides the flood hazard zone and base flood elevations for each coastal transect, along with the 10-, 2-, 1- and 0.2-percent-annual-chance flood stillwater elevations from the different flooding sources, including effects of wave setup where applicable. Historic flood damage information was also used in the determination of floodprone areas along the Newport shoreline.

TABLE 9 - TRANSECT DATA

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level[1]		Base Flood Elevation (Feet NAVD 88)[2]
	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance	1-percent-annual-chance	Zone	
NARRAGANSETT BAY							
Transect 1	5.3	8.3	10.5	19.8	16.4	VE	16-25
						AE	14
Transect 2	5.3	8.3	10.5	19.8	15.5	VE	18-21
						AE	13-15
Transect 5	5.3	8.3	10.5	19.8	13.2	VE	15-17
						AE	11-13
Transect 6	5.3	8.3	10.5	19.8	17.0	VE	21-40
						AE	*
Transect 7	5.3	8.3	10.5	19.8	13.3	VE	17-22
						AE	16
Transect 8	5.3	8.3	10.5	19.8	11.4	VE	13-19
						AE	12-13
Transect 9	5.3	8.3	10.5	19.8	11.2	VE	13-19
						AE	12-13
Transect 10	5.3	8.3	10.5	19.9	11.8	VE	14
						AE	12-14
Transect 11	5.4	8.5	10.8	20.4	12.7	VE	15-19
						AE	13-14
Transect 12	5.7	8.9	11.2	21.3	13.6	VE	17-19
						AE	*
Transect 13	5.7	8.9	11.2	21.2	12.7	VE	15
						AE	13
Transect 14	5.5	8.6	10.9	20.5	13.5	VE	19
						AE	*

[1] Including stillwater elevation and effects of wave setup.
[2] Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted.
* Data not available

TABLE 9 - TRANSECT DATA – continued

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level[1]	Zone	Base Flood Elevation (Feet NAVD 88)[2]
	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance	1-percent-annual-chance		
NARRAGANSETT BAY - continued							
Transect 15	5.3	8.3	10.6	20.0	13.3	VE	15
						AE	13
Transect 16	5.3	8.3	10.5	19.8	13.5	VE	17-20
						AE	*
Transect 17	6.1	9.6	12.2	23.0	15.1	VE	22
						AE	*
Transect 18	6.1	9.5	12.1	22.8	13.6	VE	15-16
						AE	14
Transect 19	6.1	9.5	12.0	22.7	13.1	VE	15-17
						AE	13-14
Transect 20	5.9	9.2	11.7	22.2	13.5	VE	16-21
						AE	14-15
Transect 21	5.8	9.0	11.5	21.7	13.4	VE	15
						AE	14
Transect 22	5.9	9.2	11.7	22.1	13.8	VE	16
						AE	*
Transect 23	6.0	9.3	11.9	22.4	13.0	VE	17
						AE	15
Transect 24	5.8	9.1	11.5	21.8	13.0	VE	15
						AE	13
Transect 25	6.1	9.5	12.0	22.7	12.9	VE	15
						AE	13
Transect 32	6.0	9.4	11.9	22.5	13.1	VE	15
						AE	13-14
Transect 33	6.0	9.3	11.8	22.3	13.9	VE	16
						AE	13-14
Transect 34	5.9	9.2	11.7	22.1	14.0	VE	17
						AE	*
Transect 35	5.8	9.1	11.5	21.8	12.2	VE	14
						AE	13

[1] Including stillwater elevation and effects of wave setup.
[2] Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted.
* Data not available

TABLE 9 - TRANSECT DATA – continued

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level[1]	Zone	Base Flood Elevation (Feet NAVD 88)[2]
	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance	1-percent-annual-chance		
NARRAGANSETT BAY - continued							
Transect 36	5.7	8.9	11.3	21.3	13.2	VE	16
						AE	13
Transect 37	5.4	8.5	10.8	20.4	13.4	VE	16
						AE	14
Transect 38	5.4	8.4	10.7	20.2	13.4	VE	16
						AE	13
Transect 39	5.3	8.3	10.5	19.8	12.9	VE	17
						AE	12-13
Transect 40	5.3	8.3	10.5	19.8	10.8	VE	13
						AE	12
Transect 41	5.3	8.3	10.5	19.8	11.2	VE	13
						AE	12
Transect 42	5.3	8.3	10.5	19.8	12.1	VE	17
						AE	12
Transect 43	5.3	8.3	10.5	19.8	16.9	VE	26
						AE	17
MOUNT HOPE BAY							
Transect 26	6.2	9.7	12.3	23.2	13.8	VE	20-22
						AE	*
Transect 29	6.2	9.6	12.2	23.1	13.8	VE	18
						AE	14
Transect 30	6.1	9.5	12.1	22.9	13.0	VE	15
						AE	13-14
Transect 31	6.1	9.5	12.0	22.8	14.8	VE	20
						AE	13
RHODE ISLAND SOUND							
Transect 3	5.2	8.2	10.4	19.6	15.6	VE	24-30
						AE	*
Transect 4	5.3	8.3	10.5	19.8	17.3	VE	17-30
						AE	15

[1] Including stillwater elevation and effects of wave setup.
[2] Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted.
* Data not available

TABLE 9 - TRANSECT DATA – continued

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level[1]		Base Flood Elevation
	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance	1-percent-annual-chance	Zone	(Feet NAVD 88)[2]
RHODE ISLAND SOUND - continued							
Transect 44	5.3	8.2	10.4	19.7	14.2	VE	20
						AE	15-16
Transect 45	5.3	8.2	10.5	19.8	16.0	VE	18-24
						AE	16-17
Transect 46	5.3	8.3	10.5	19.9	15.9	VE	18-20
						AE	16
Transect 47	5.3	8.3	10.6	20.0	15.7	VE	25-26
						AE	*
Transect 48	5.3	8.3	10.6	20.0	15.9	VE	25
						AE	*
Transect 49	5.3	8.3	10.6	20.0	14.1	VE	16
						AE	14-15
Transect 50	5.3	8.3	10.6	20.0	13.7	VE	16
						AE	14-15
Transect 51	5.4	8.4	10.6	20.1	14.8	VE	26
						AE	14
Transect 52	5.4	8.4	10.7	20.1	14.1	VE	16
						AE	16
Transect 53	5.4	8.4	10.7	20.2	15.0	VE	19-26
						AE	*
Transect 71	5.3	8.3	10.5	19.8	14.7	VE	17-18
						AE	15-17
Transect 72	5.5	8.5	10.8	20.5	16.0	VE	19
						AE	17-18
Transect 73	5.5	8.6	10.9	20.5	16.4	VE	17-21
						AE	17
Transect 74	5.5	8.6	10.9	20.6	14.8	VE	17
						AE	15
Transect 75	5.5	8.6	10.9	20.6	15.1	VE	17
						AE	15

[1] Including stillwater elevation and effects of wave setup.
[2] Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted.
* Data not available

TABLE 9 - TRANSECT DATA – continued

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level[1]	Zone	Base Flood Elevation (Feet NAVD 88)[2]
	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance	1-percent-annual-chance		
SAKONNET RIVER							
Transect 76	5.5	8.6	11.0	20.7	15.4	VE	17-18
						AE	16-17
Transect 77	5.5	8.7	11.0	20.8	15.6	VE	18
						AE	16-17
Transect 78	5.6	8.7	11.0	20.8	14.7	VE	17
						AE	15
Transect 27	6.1	9.5	12.0	22.7	13.0	VE	16
						AE	15-16
Transect 28	6.1	9.5	12.1	22.9	12.8	VE	17
						AE	*
Transect 54	5.3	8.3	10.5	19.8	13.5	VE	16-27
						AE	14-16
Transect 55	5.4	8.4	10.7	20.3	15.9	VE	19-22
						AE	17
Transect 56	5.7	8.8	11.2	21.2	15.0	VE	16-19
						AE	15-16
Transect 57	5.8	9.0	11.5	21.6	12.2	VE	15
						AE	*
Transect 58	5.9	9.2	11.6	22.0	12.8	VE	16
						AE	14
Transect 59	6.0	9.4	11.9	22.5	14.5	VE	17
						AE	15
Transect 60	6.0	9.4	11.9	22.5	13.0	VE	17-19
						AE	15
Transect 61	6.0	9.4	11.9	22.5	14.1	VE	16-19
						AE	14
Transect 62	5.9	9.3	11.7	22.2	14.5	VE	24
						AE	15-16
Transect 63	5.9	9.1	11.6	21.9	13.1	VE	15-17
						AE	13-16
Transect 64	5.7	8.9	11.3	21.4	14.1	VE	19
						AE	14-16

[1] Including stillwater elevation and effects of wave setup.
[2] Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted.
* Data not available

TABLE 9 - TRANSECT DATA – continued

Flooding Source and Transect Number	Stillwater Elevation				Total Water Level[1]		Base Flood Elevation
	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance	1-percent-annual-chance	Zone	(Feet NAVD 88)[2]
SAKONNET RIVER - continued							
Transect 65	5.7	8.8	11.2	21.2	14.0	VE	18
						AE	14
Transect 66	5.6	8.8	11.1	21.0	14.0	VE	16-21
						AE	14-16
Transect 67	5.5	8.5	10.8	20.5	14.2	VE	16
						AE	*
Transect 68	5.3	8.3	10.5	19.8	13.8	VE	16
						AE	*
Transect 69	5.3	8.3	10.5	19.8	13.5	VE	16
						AE	14-15
Transect 70	5.3	8.3	10.5	19.8	14.0	VE	15-17
						AE	14-15

[1] Including stillwater elevation and effects of wave setup.
[2] Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted.
* Data not available

Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

3.5 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), FIS reports and FIRMs are now being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. Structure and ground elevations in the community must, therefore, be referenced to NAVD 88. It is important to note that adjacent communities (outside of Newport County) may still be referenced to NGVD 29. This may result in differences in base flood elevations across the corporate county limits.

Prior versions of the FIS report and FIRM were referenced to NGVD 29. When a datum conversion is effected for an FIS report and FIRM, the Flood Profiles, base flood elevations and bench marks reflect the new datum values. To compare structure and ground elevations to 1-percent-annual-chance (100-year) flood elevations shown in the FIS and on the FIRM, the subject structure and ground elevations must be referenced to the new datum values.

As noted above, the elevations shown in the FIS report and on the FIRM for Newport County are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor. The conversion factor to NGVD 29 from NAVD 88 is +0.9 feet. The base flood elevations shown on the FIRM represent whole-foot rounded values. For example, a base flood elevations of 102.4 will appear as 102 on the FIRM and 102.6 will appear as 103. Therefore, users that wish to convert the elevations in this FIS to NGVD 29 should apply the stated conversion factor(s) to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information on NAVD 88, see “Converting the National Flood Insurance Program to the North American Vertical Datum of 1988”, FEMA Publication FIA-20/June 1992, or contact the Spatial Reference System Division, National Geodetic Survey, NOAA, Silver Spring Metro Center, 1315 East-West Highway, Silver Spring, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent-annual-chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations; delineations of the 1- and 0.2-percent-annual-chance floodplains; and 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the county. For the streams studied in detail, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic data.

For the flooding sources studied by approximate methods, the boundaries of the 1-percent-annual-chance floodplains were delineated using the previously printed FIRMs for all of the incorporated jurisdictions within Newport County.

For coastal flooding sources studied by detailed methods in this county-wide FIS, the 1- and 0.2-percent-annual-chance flood boundaries were delineated using 2-foot-contour topographic maps developed from LiDAR data collected in 2010 (Reference 38).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. 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.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 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 this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this FIS are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this FIS were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain.

Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 10). The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

The 2012 coastal study impacted the limit of backwater effects on some of the Floodway Data Tables and Flood Profiles by revising the annual 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations at the confluence of rivers and the coastal flooding sources.

Affected Floodway Data Tables and Flood Profiles were updated for Bailey Brook (profile only), Beacon Avenue Trib (profile only), Coanicut Brook (profile only), Jamestown Brook (profile only), Maidford River, Paradise Brook (profile only), and Sheffield Cove Brook (profile only).

No floodways were calculated for Beacon Avenue Tributary, Conanicut Brook, Jamestown Brook, and Sheffield Cove Brook in, since there were no floodways in the previous study for the Town of Jamestown.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities at selected cross sections is provided in Table 10, "Floodway Data." In order to reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 10 for certain downstream cross sections of the Maidford River are lower than the regulatory flood elevations in that area, which must take into account the 1-percent-annual-chance flooding due to backwater from other sources.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water surface elevation of the 1-percent-annual-chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 3.

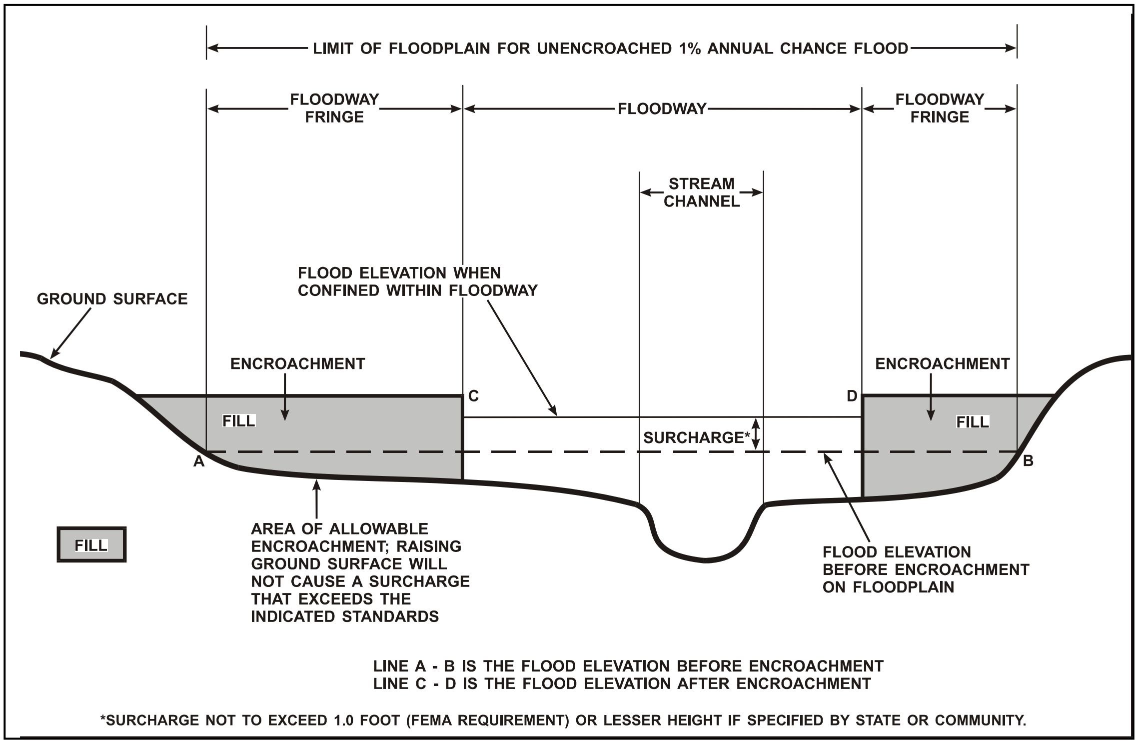

Figure 3 - FLOODWAY SCHEMATIC

FLOODING SOURCE		FLOODWAY			1%-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	75	310	2,235	0.3	13.8	13.8	13.9	0.1
B	450	76	319	2.2	13.8	13.8	13.9	0.1
C	1,320	66	132	5.4	17.2	17.2	17.3	0.1
D	2,250	90	342	2.1	22.0	22.0	22.1	0.1
E	3,080	30	77	9.2	27.9	27.9	27.9	0.0
F	4,315	40	172	4.1	38.8	38.8	38.8	0.0
G	5,055	95	263	2.7	46.3	46.3	46.3	0.0
H	5,475	65	123	5.8	47.5	47.5	47.6	0.1
I	6,890	5	40	10.3	65.3	65.3	65.3	0.0
J	7,200	173	693	0.6	70.7	70.7	71.7	1.0
K	7,735	23	49	8.4	78.3	78.3	78.7	0.4
L	8,395	8	27	15.3	93.7	93.7	93.7	0.0
M	8,635	38	154	2.7	99.4	99.4	99.4	0.0
N	8,975	50	248	1.7	107.6	107.6	107.6	0.0
O	9,825	*	45	9.1	113.6	113.6	113.6	0.0

[1] FEET ABOVE GREEN END AVENUE

* FLOODWAY COINCIDENT WITH CHANNEL BANKS

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

FLOODWAY DATA

BAILEY BROOK

FLOODING SOURCE		FLOODWAY			1%-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	6,930	197	764	1.5	10.7 [2]	11.0 [3]	12.0 [3]	1.0
B	7,390	51	253	4.6	14.6	14.6	15.6	1.0
C	8,075	39	155	7.6	25.3	25.3	25.5	0.2
D	8,595	20	137	8.5	34.8	34.8	35.8	1.0
E	9,020	49	159	7.4	44.4	44.4	44.7	0.3
F	10,340	42	190	6.1	60.3	60.3	61.3	1.0
G	10,770	132	179	6.5	69.9	69.9	70.2	0.3
H	11,690	26	144	8.1	82.2	82.2	83.2	1.0
I	12,615	22	177	6.6	86.6	86.6	87.6	1.0
J	13,640	43	160	7.3	102.1	102.1	102.4	0.3
K	14,765	85	317	3.2	110.6	110.6	111.6	1.0
L	16,040	185	872	1.0	115.3	115.3	116.3	1.0
M	17,285	24	118	6.5	128.9	128.9	129.9	1.0
N	18,380	21	97	7.4	147.8	147.8	148.8	1.0
O	19,055	55	201	2.8	152.6	152.6	153.6	1.0

[1] FEET ABOVE CONFLUENCE WITH SAKONNET RIVER

[2] ELEVATION COMPUTED WITHOUT CONSIDERATION OF WAVE EFFECTS

[3] ELEVATION COMPUTED WITHOUT CONSIDERATION OF TIDAL FLOODING FROM RHODE ISLAND SOUND

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

FLOODWAY DATA

MAIDFORD RIVER

FLOODING SOURCE		FLOODWAY			1%-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	30	25	57	7.0	13.4	13.4	13.6	0.2
B	1,325	130	222	1.8	25.6	25.6	26.3	0.7
C	2,650	171	232	1.7	31.6	31.6	32.5	0.9
D	4,250	5	21	10.4	62.9	62.9	62.9	0.0
E	4,535	64	104	2.1	75.7	75.7	75.7	0.0
F	4,675	200	154	1.4	91.6	91.6	91.6	0.0
G	4,865	65	68	3.2	98.6	98.6	98.6	0.0
H	5,025	113	87	2.5	112.9	112.9	112.9	0.0
I	5,170	140	96	2.2	118.0	118.0	118.0	0.0
J	5,560	43	66	3.3	127.4	127.4	127.4	0.0
K	6,050	36	46	4.7	140.9	140.9	141.0	0.1
L	7,065	98	296	0.7	164.1	164.1	164.1	0.0
M	7,440	112	278	0.8	165.5	165.5	165.5	0.0
N	8,400	265	783	0.3	165.5	165.5	165.6	0.1

[1] FEET ABOVE CONFLUENCE WITH NELSON POND

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

FLOODWAY DATA

PARADISE BROOK

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent-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 detailed hydraulic analyses are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, and to areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Newport County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each identified floodprone incorporated community and the unincorporated areas of the county. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community, up to and including this countywide FIS, are presented in Table 11, "Community Map History."

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISION DATES
Jamestown, Town of	April 20, 1972	None	April 20, 1972	July 1, 1974 February 27, 1976 February 19, 1986 June 16, 1992 April 5, 2010
Little Compton, Town of	July 19, 1974	December 24, 1976	August 17, 1981	October 1, 1983 February 15, 1985 June 16, 1992 April 5, 2010
Middletown, Town of	April 9, 1971	None	April 9, 1971	July 1, 1974 December 12, 1975 January 16, 1976 April 17, 1984 June 16, 1992 April 5, 2010
Newport, City of	June 17, 1970	None	June 17, 1970	July 1, 1974 November 21, 1975 February 2, 1983 April 3, 1985 May 17, 1990 June 16, 1992 April 5, 2010

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISION DATES
Portsmouth, Town of	August 24, 1973	None	August 24, 1973	July 1, 1974 December 19, 1975 September 10, 1976 March 2, 1983 October 1, 1983 February 1, 1985 June 16, 1992 September 30, 1995 July 20, 1998 April 5, 2010
Tiverton, Town of	May 24, 1974	None	May 2, 1977	October 1, 1983 March 15, 1984 June 16, 1992 September 30, 1995 April 5, 2010

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI (ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

This FIS report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Newport County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS Reports, FHBMs, FBFMs, and FIRMs for all of the incorporated jurisdictions within Newport County. This FIS also supersedes the 2010 countywide FIS (Reference 1).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this FIS can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region I, 99 High Street, 6th Floor, Boston, Massachusetts 02110.

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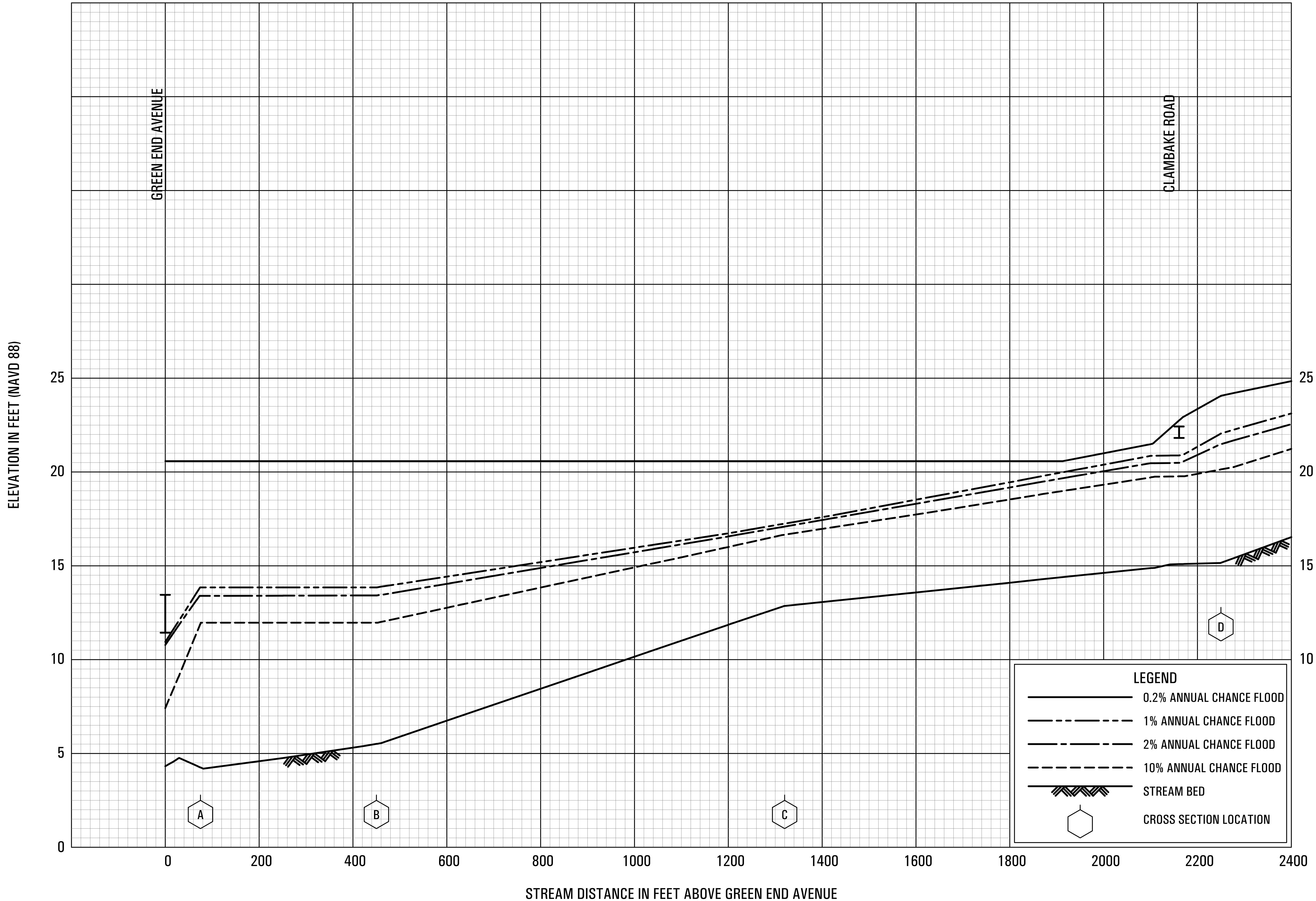


FLOOD PROFILES

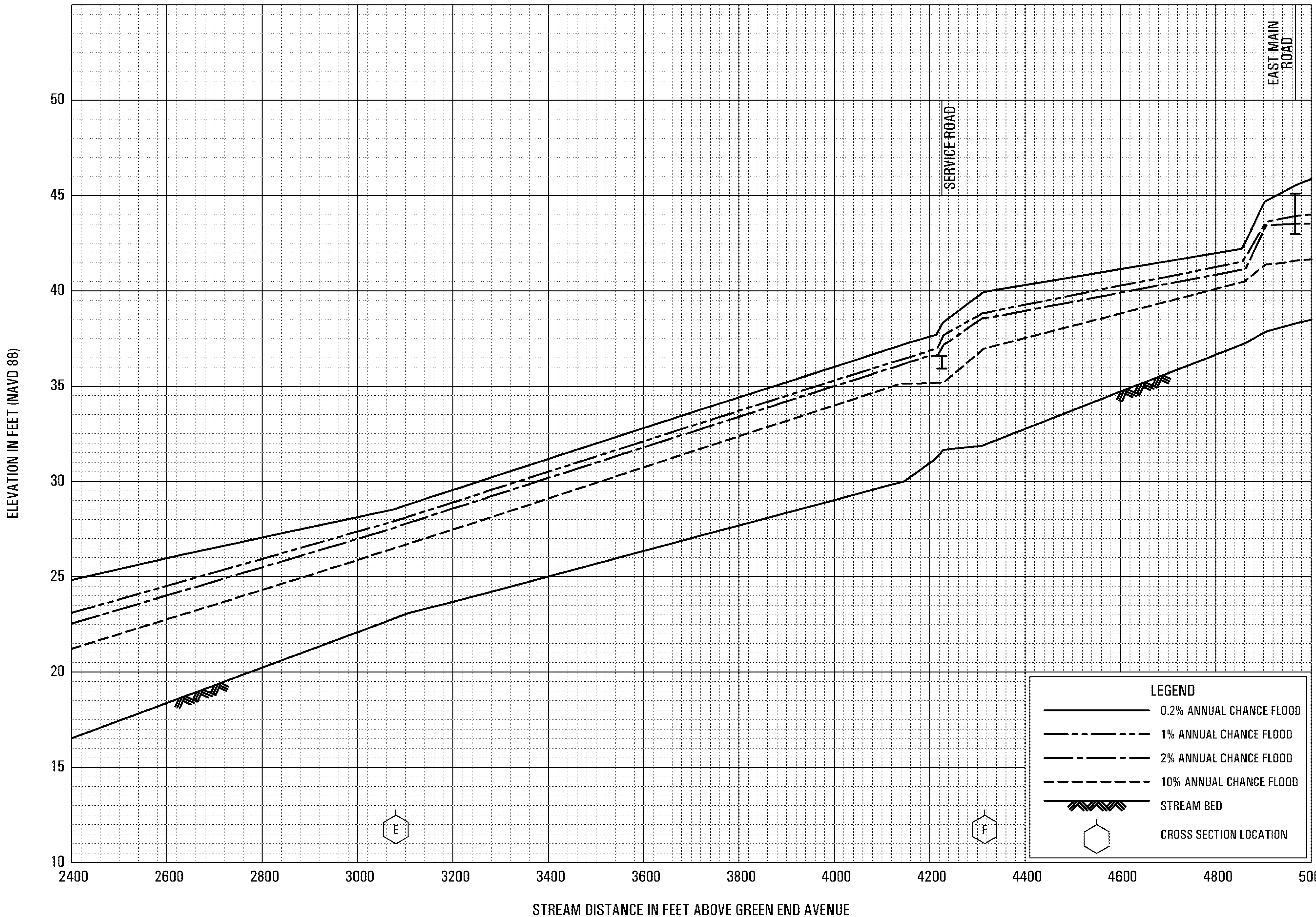
BAILEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

01P



FLOOD PROFILES

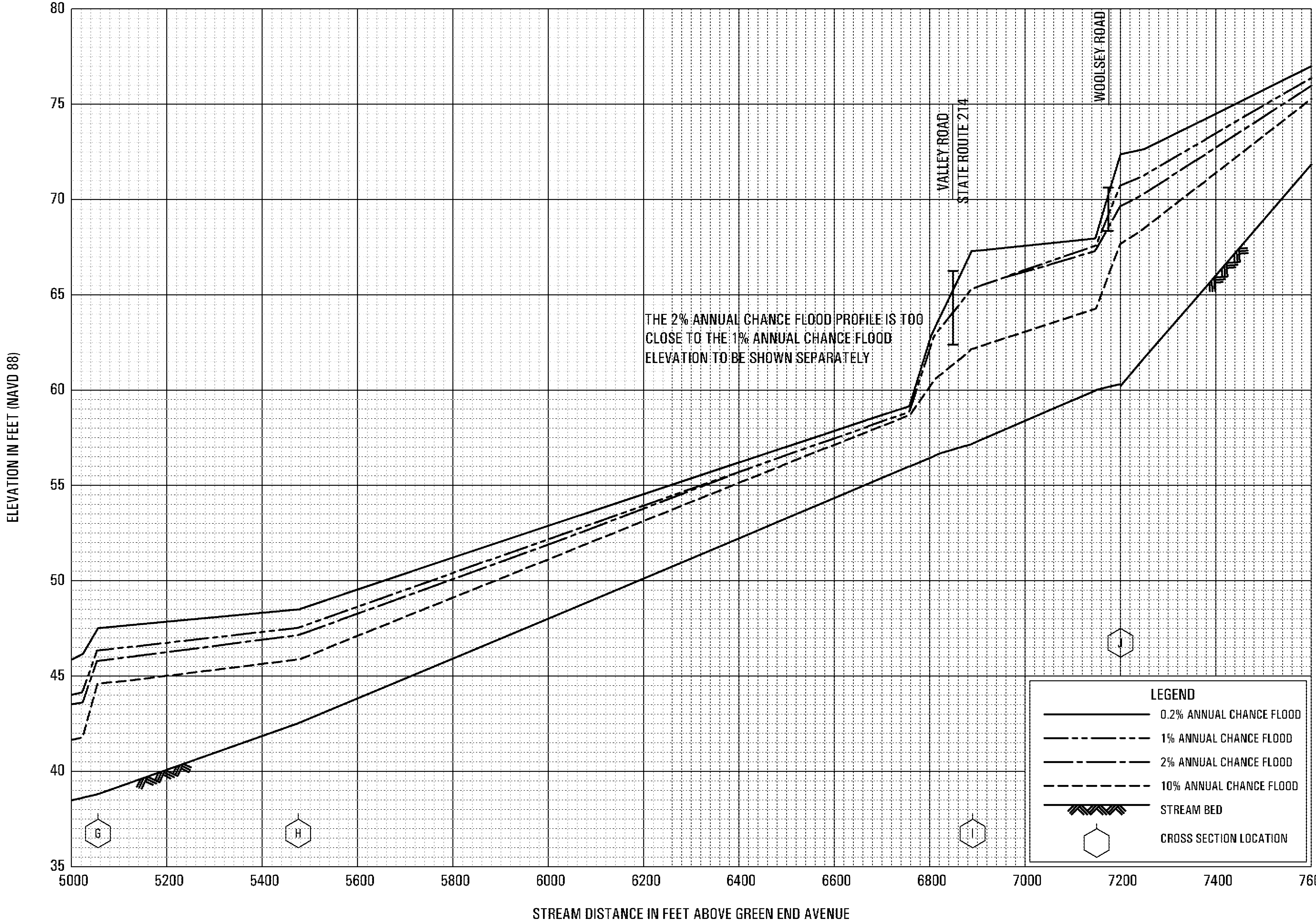
BAILEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

02P



FLOOD PROFILES

BAILEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

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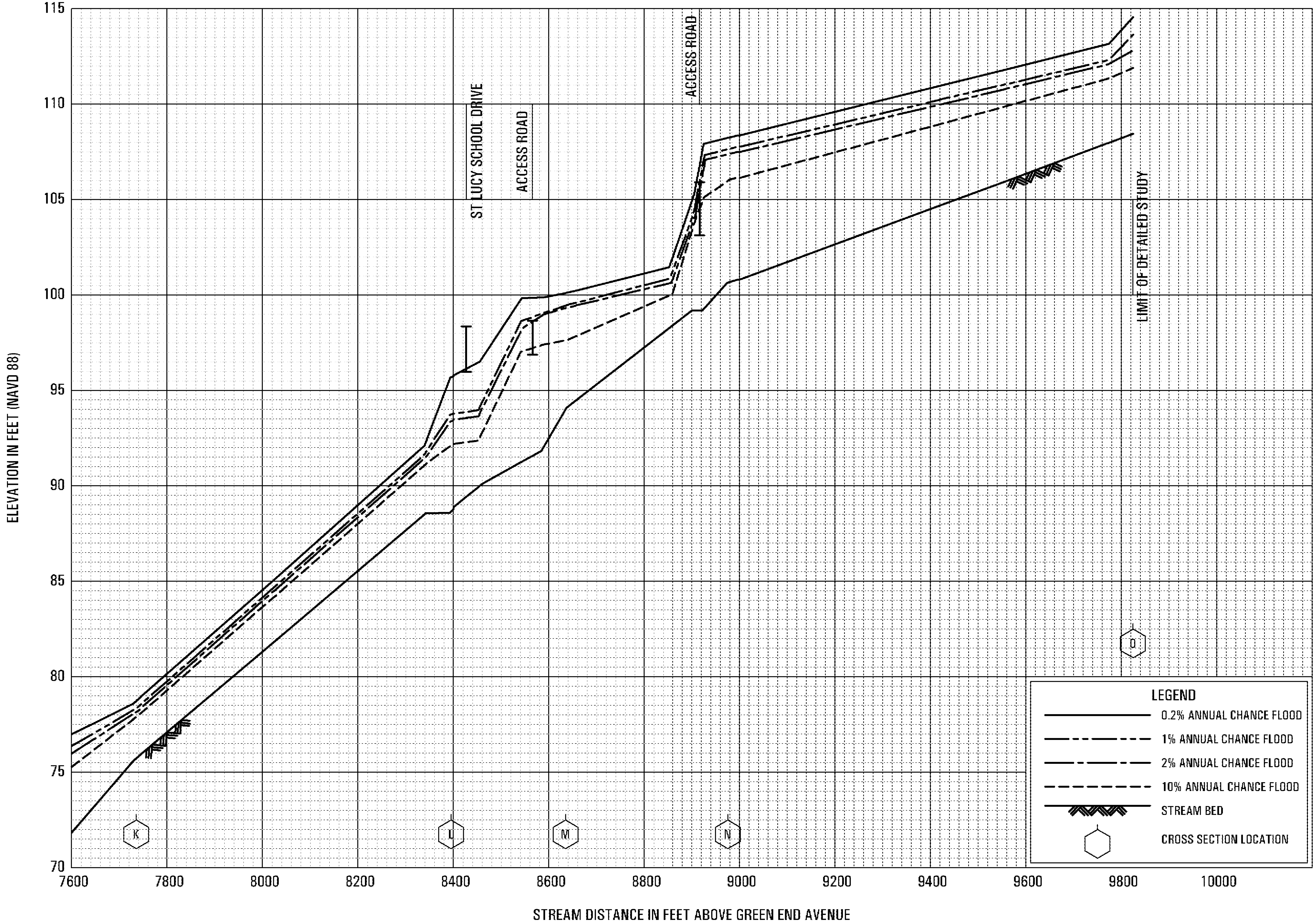


FLOOD PROFILES

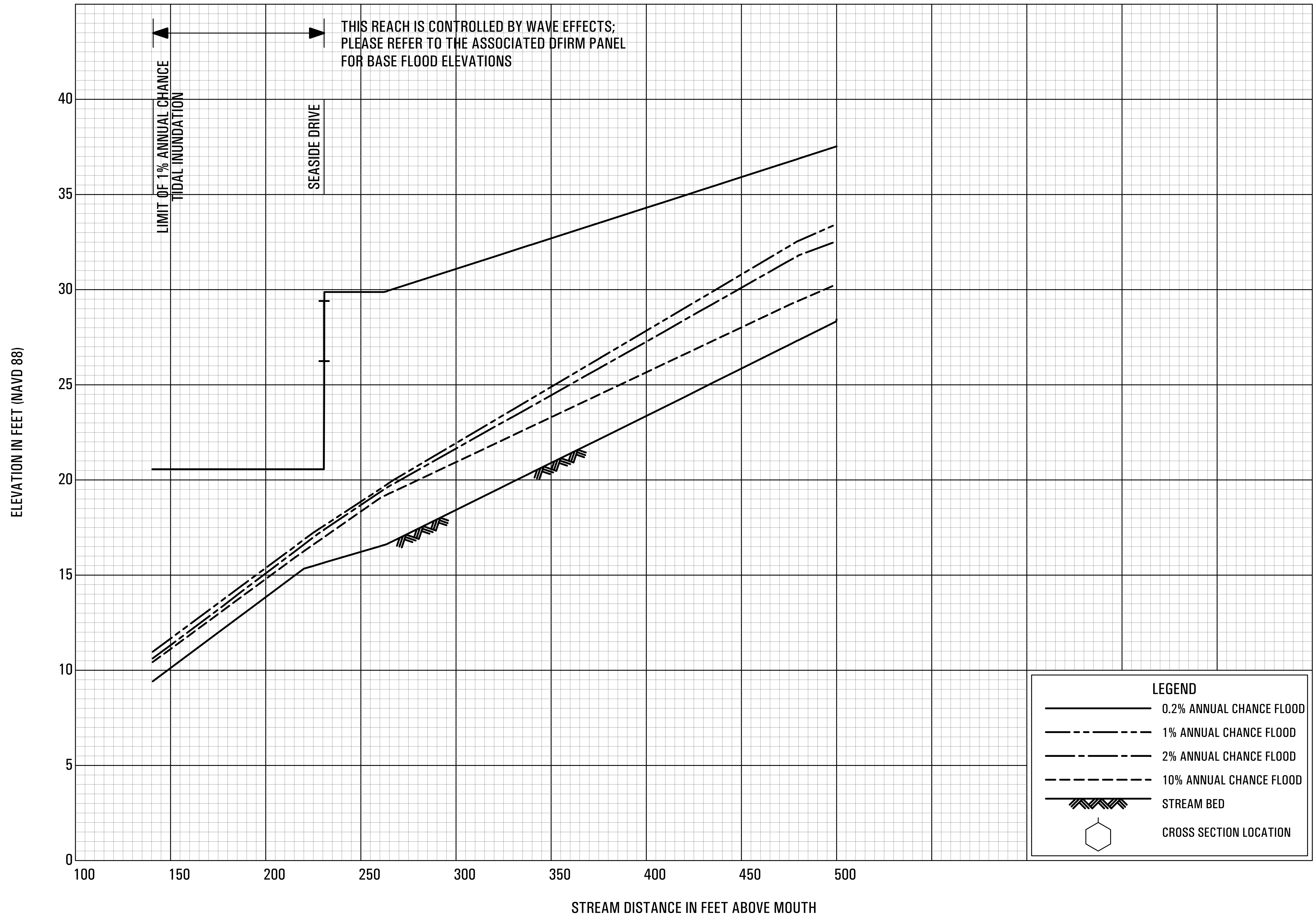
BAILEY BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

04P



FLOOD PROFILES

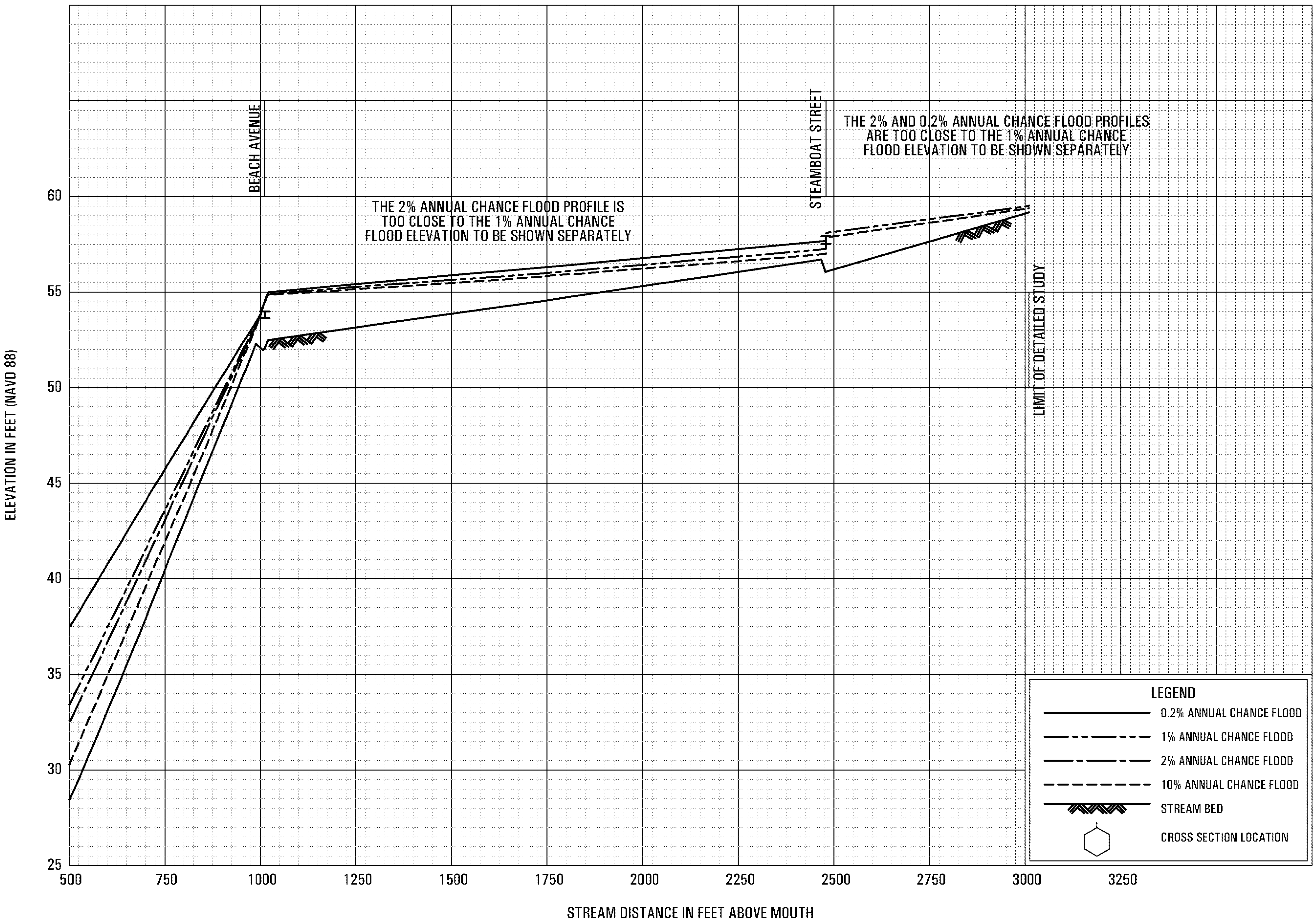
BEACON AVENUE TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

05P



FLOOD PROFILES

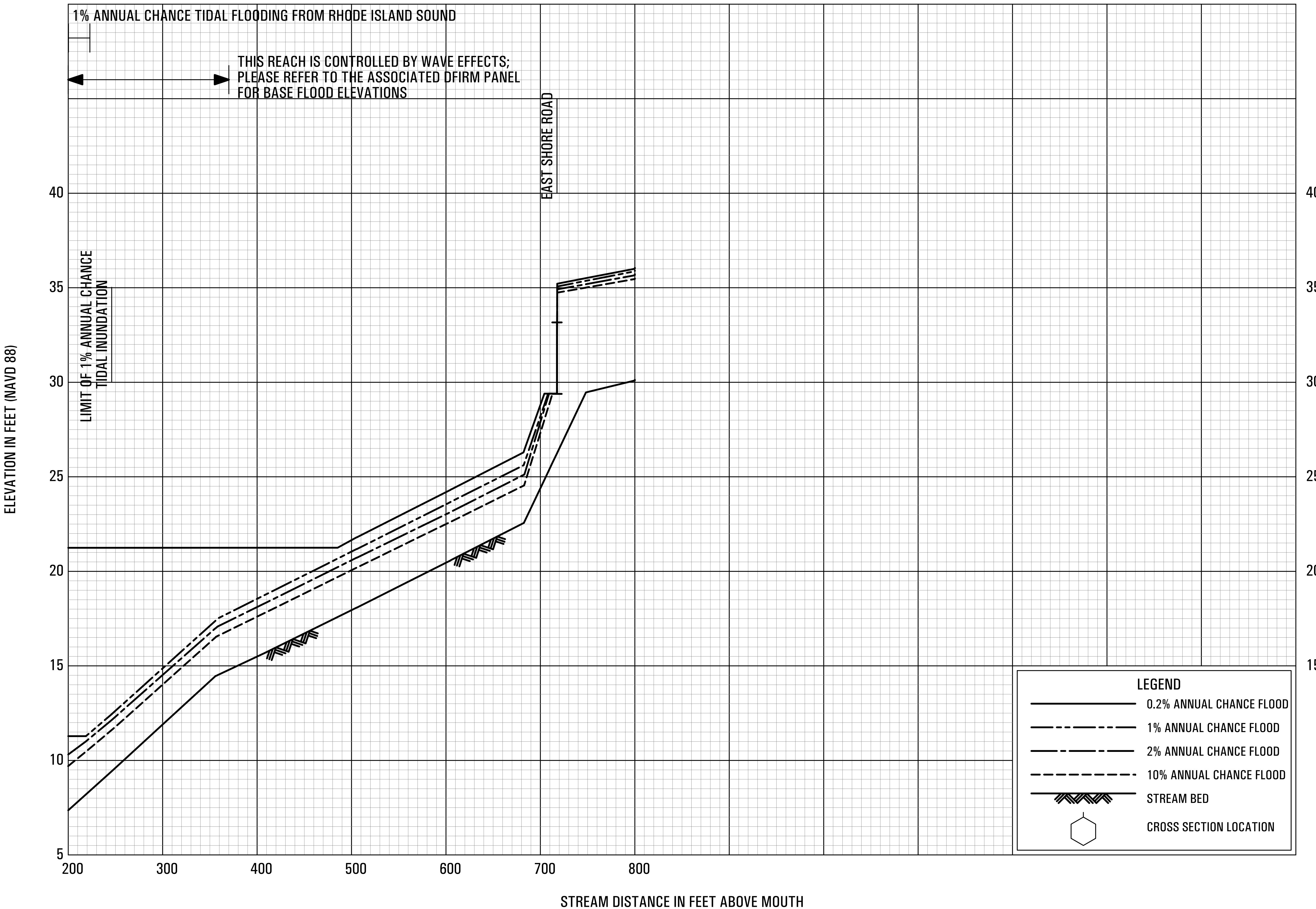
BEACON AVENUE TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

06P



FLOOD PROFILES

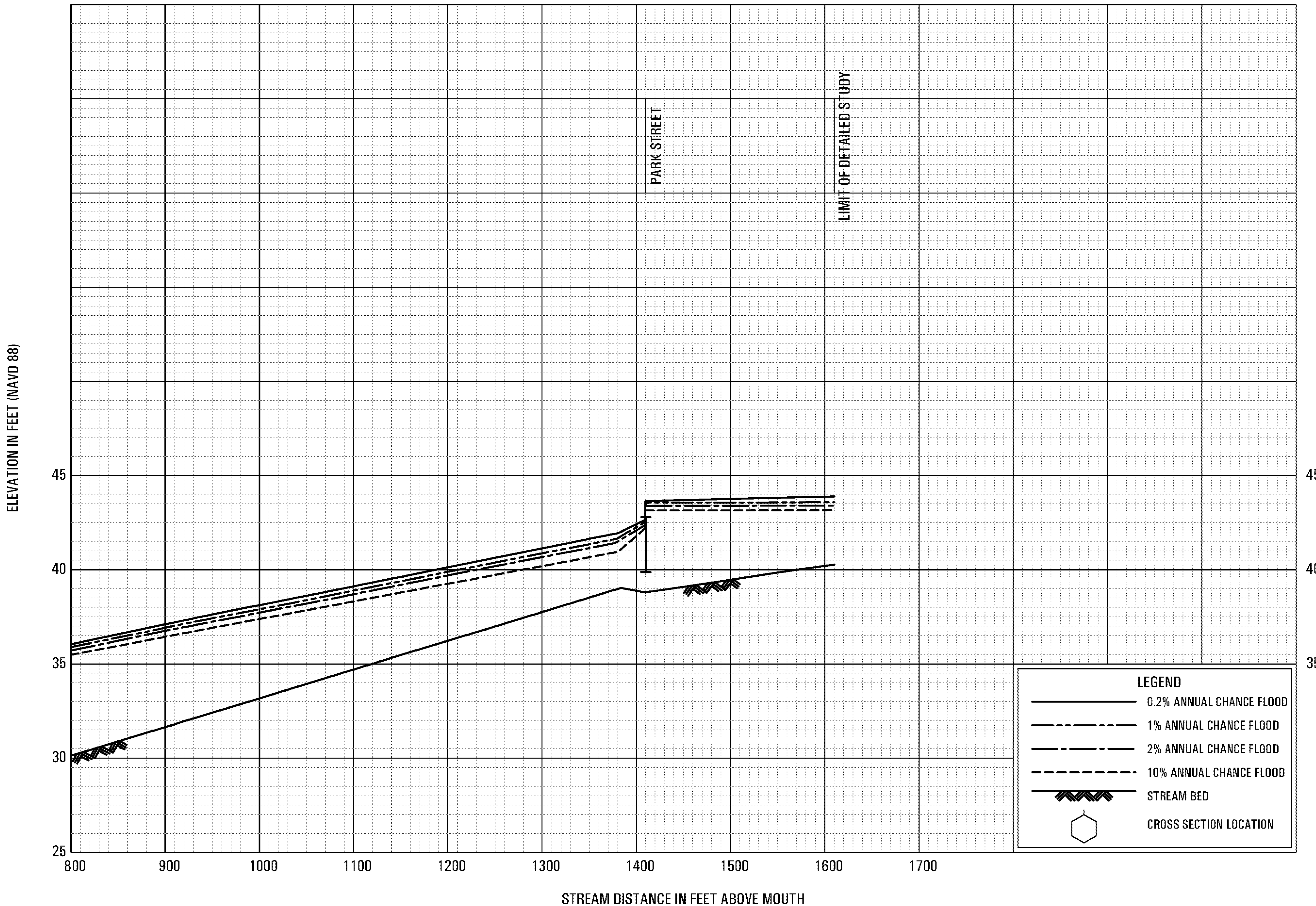
CONANICUT BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

07P



FLOOD PROFILES

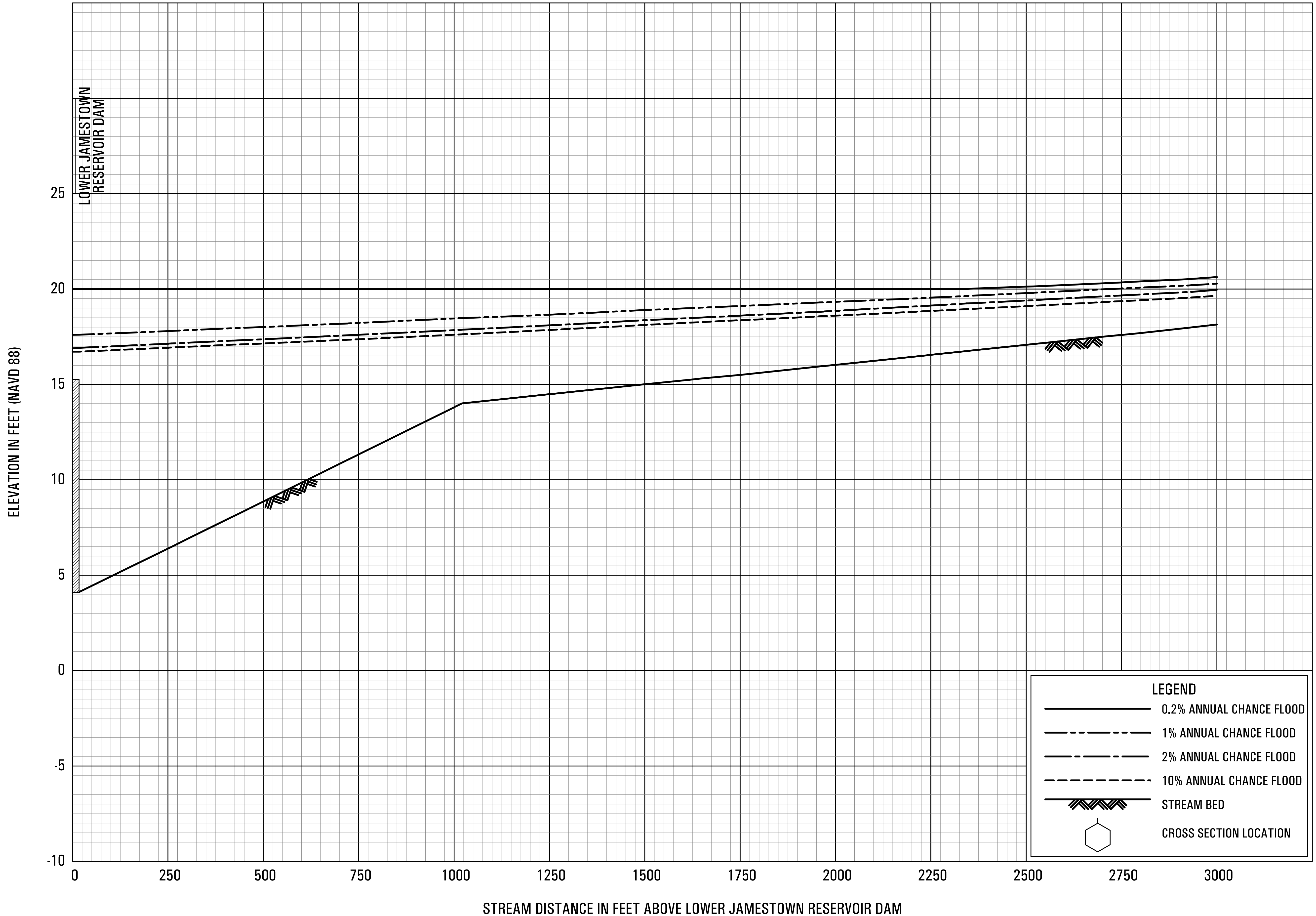
CONANICUT BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

08P



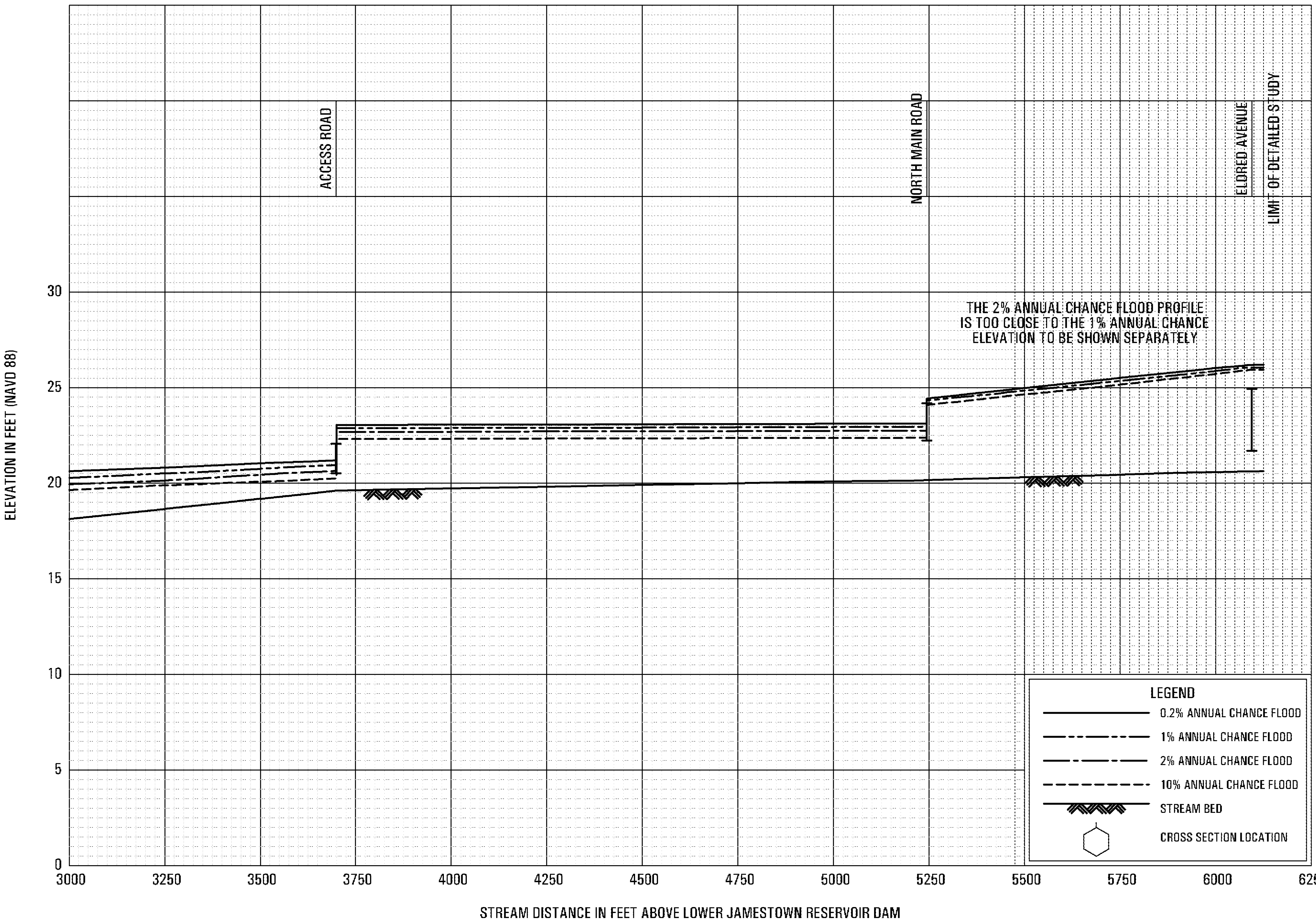
FLOOD PROFILES

JAMESTOWN BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)



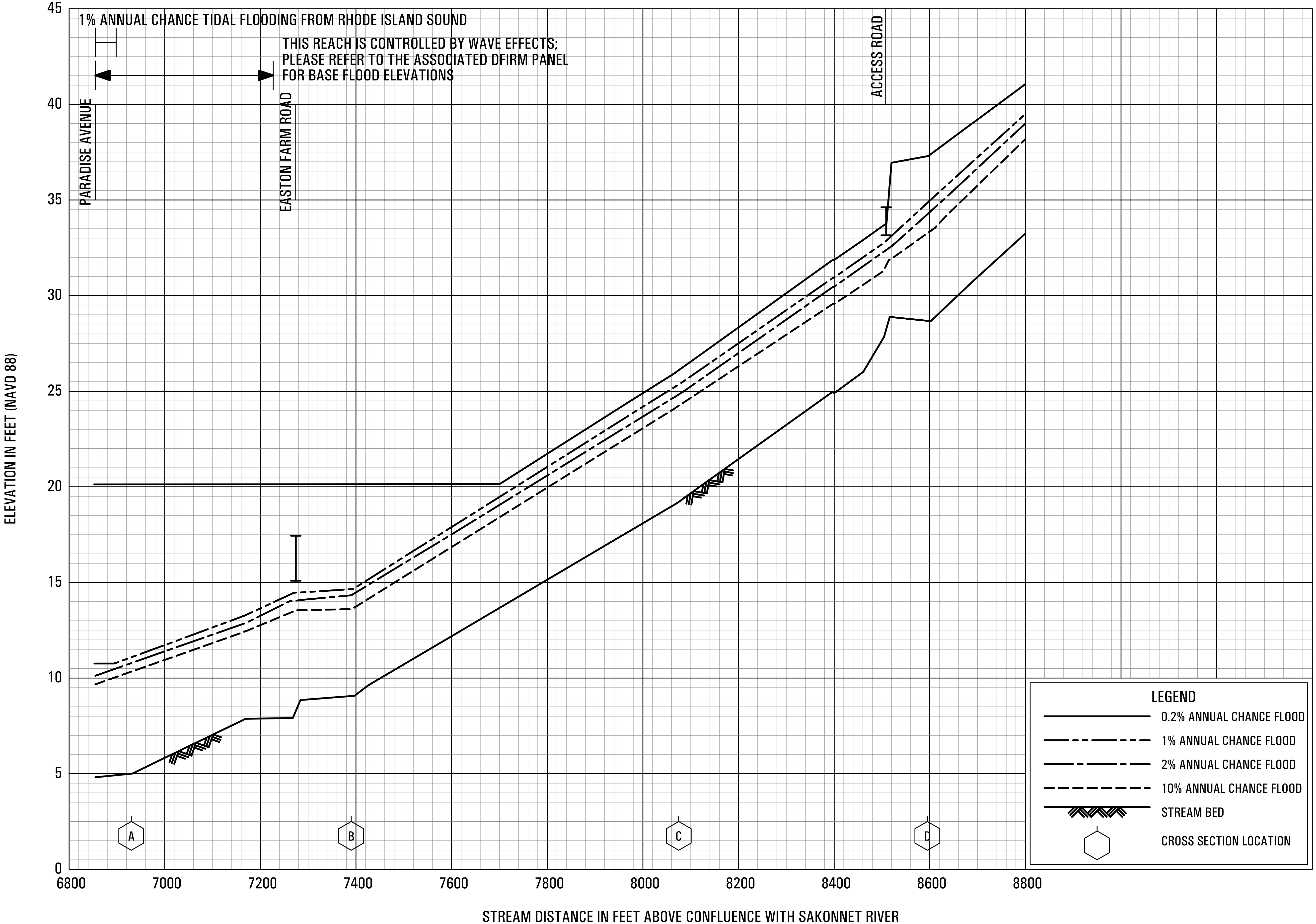
FLOOD PROFILES

JAMESTOWN BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)



FLOOD PROFILES

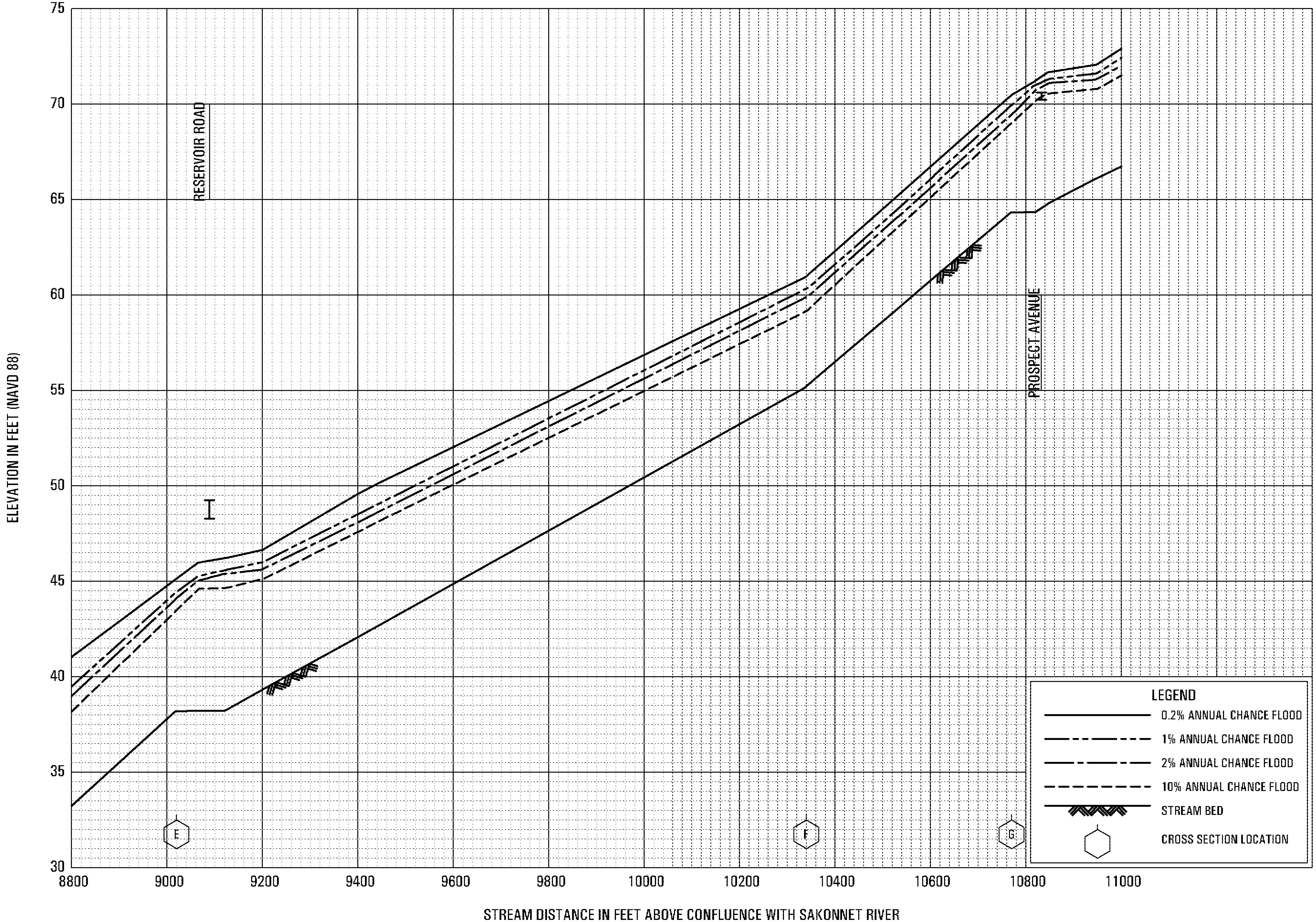
MAIDFORD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

11P



FLOOD PROFILES

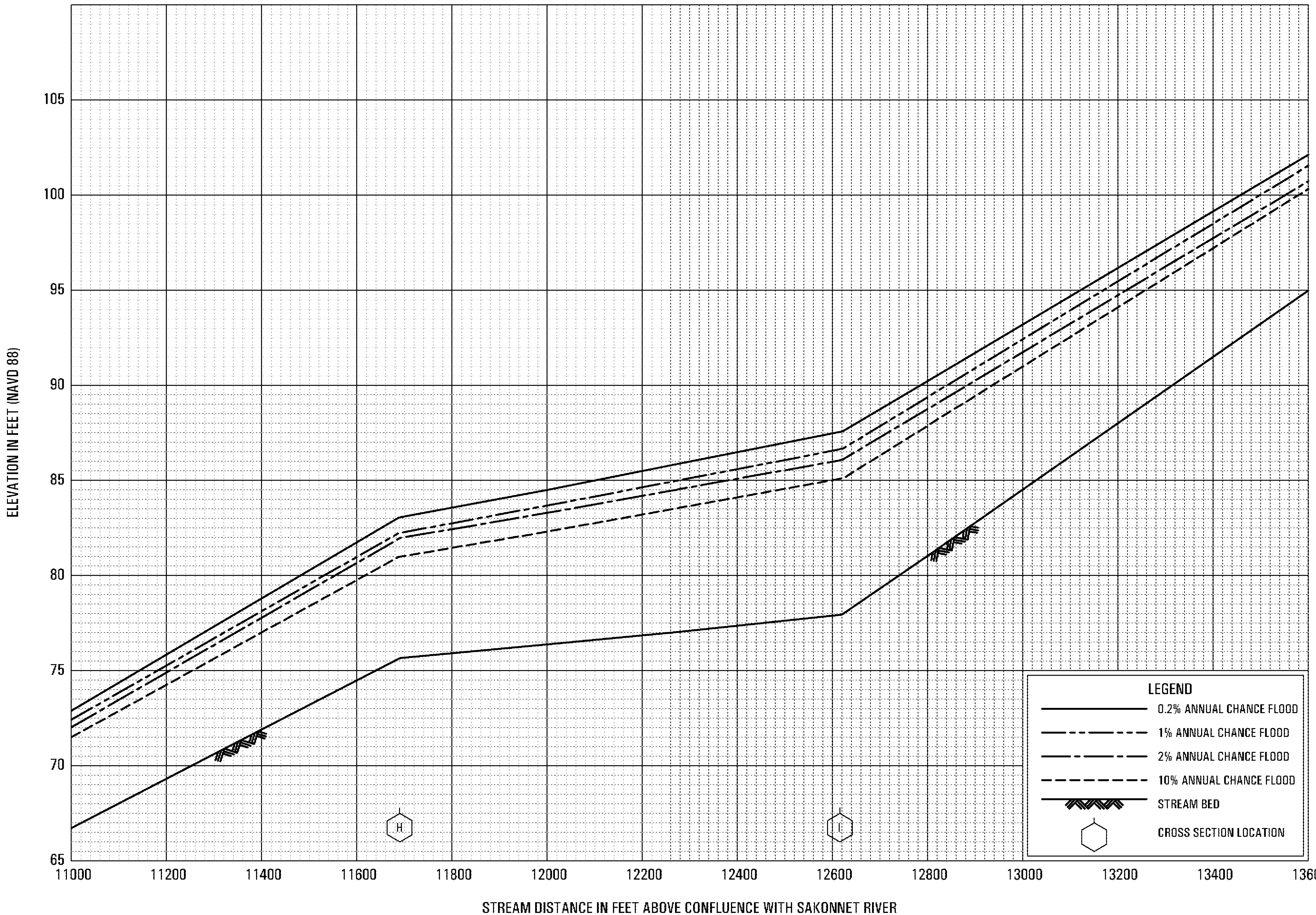
MAIDFORD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

12P



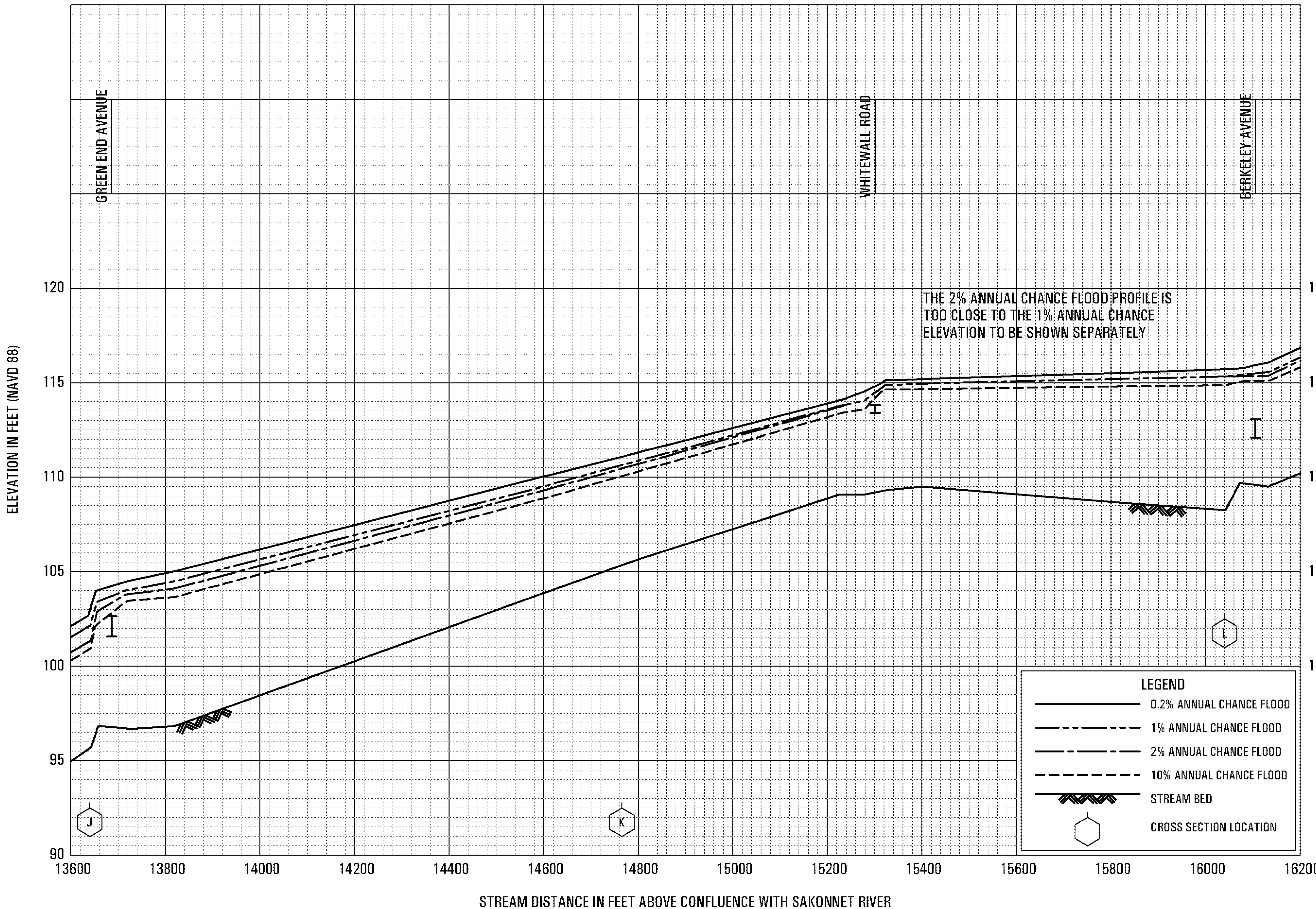
FLOOD PROFILES

MAIDFORD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)



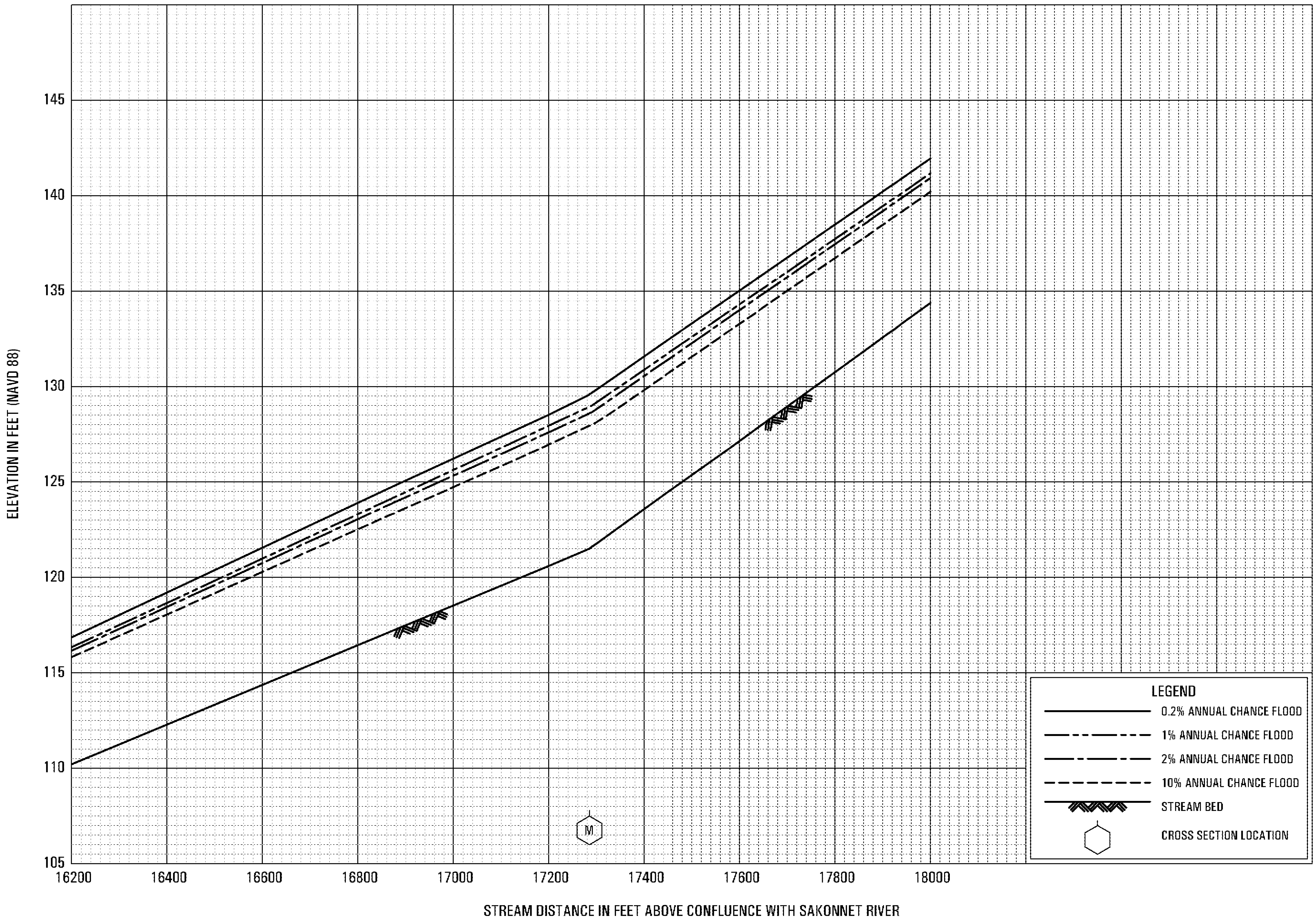
FLOOD PROFILES

MAIDFORD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)



FLOOD PROFILES

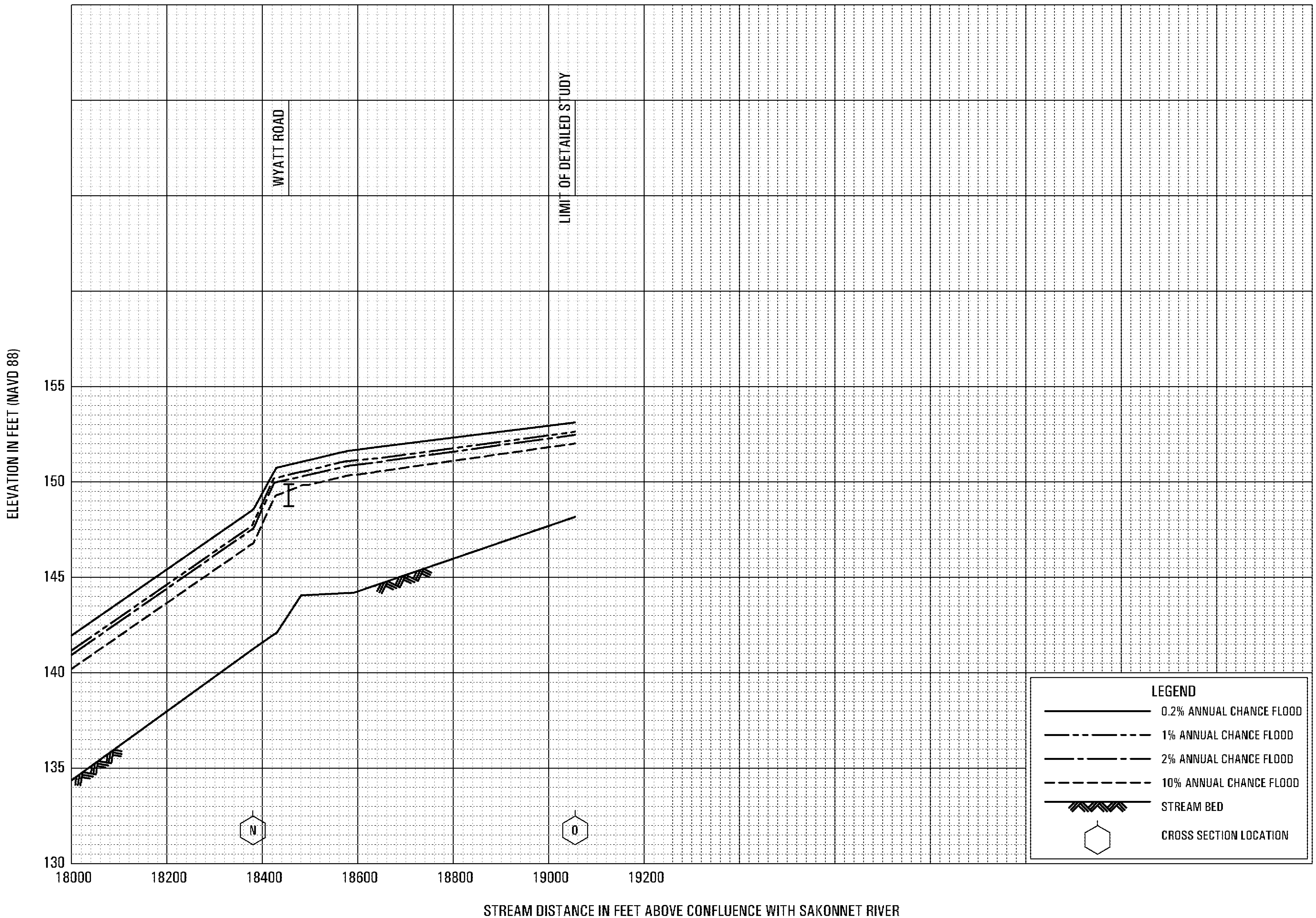
MAIDFORD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

15P



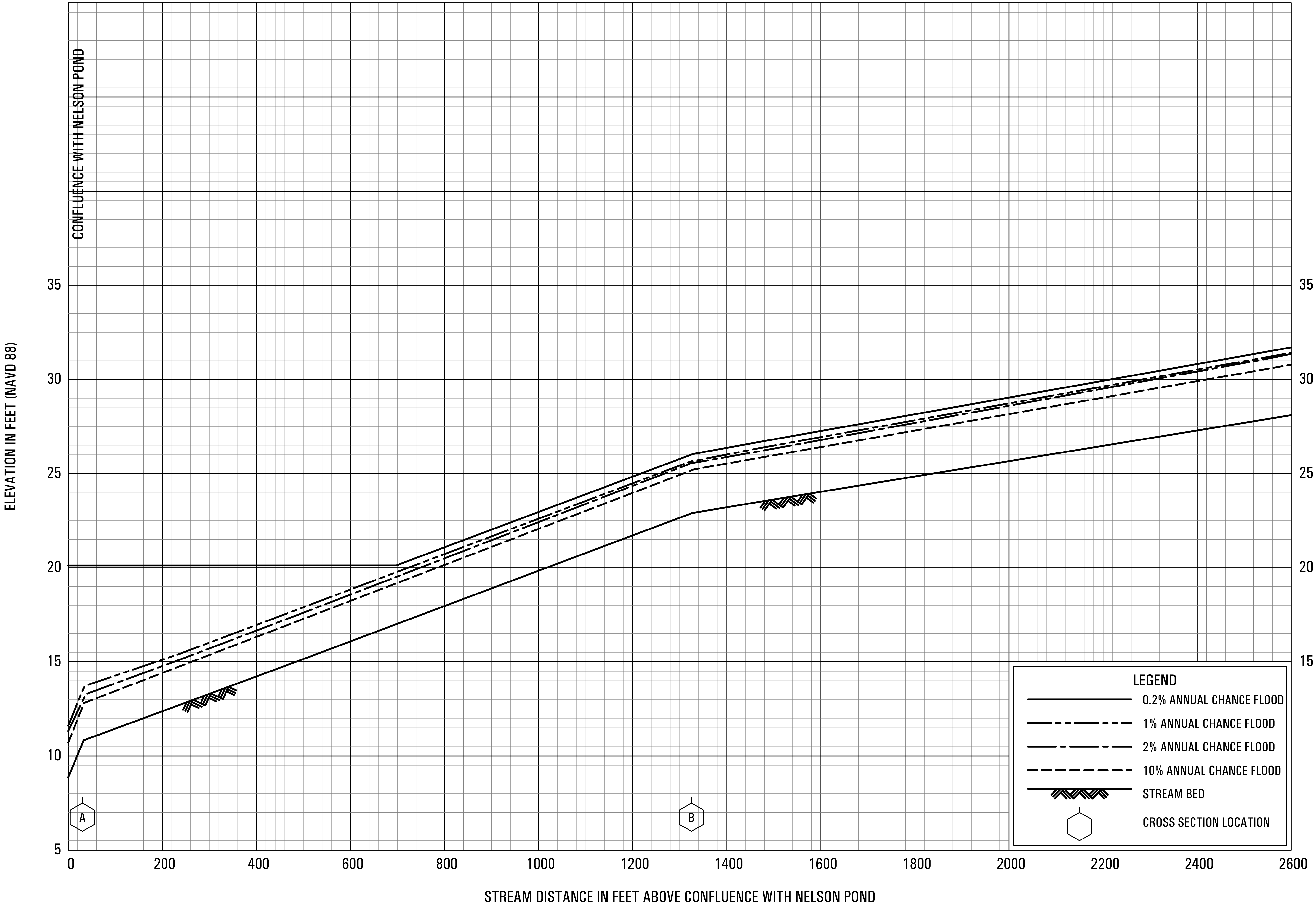
FLOOD PROFILES

MAIDFORD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)



FLOOD PROFILES

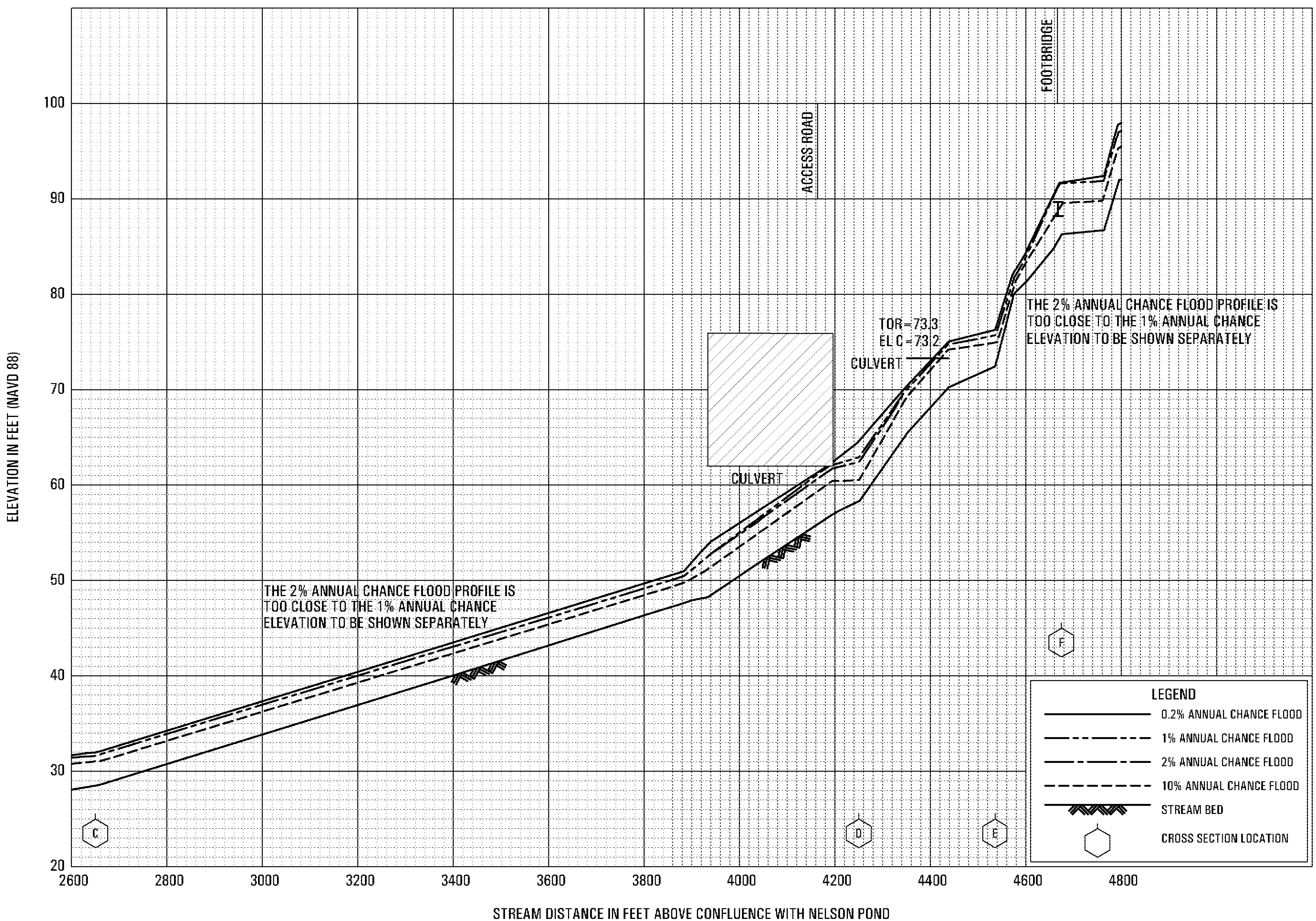
PARADISE BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

17P



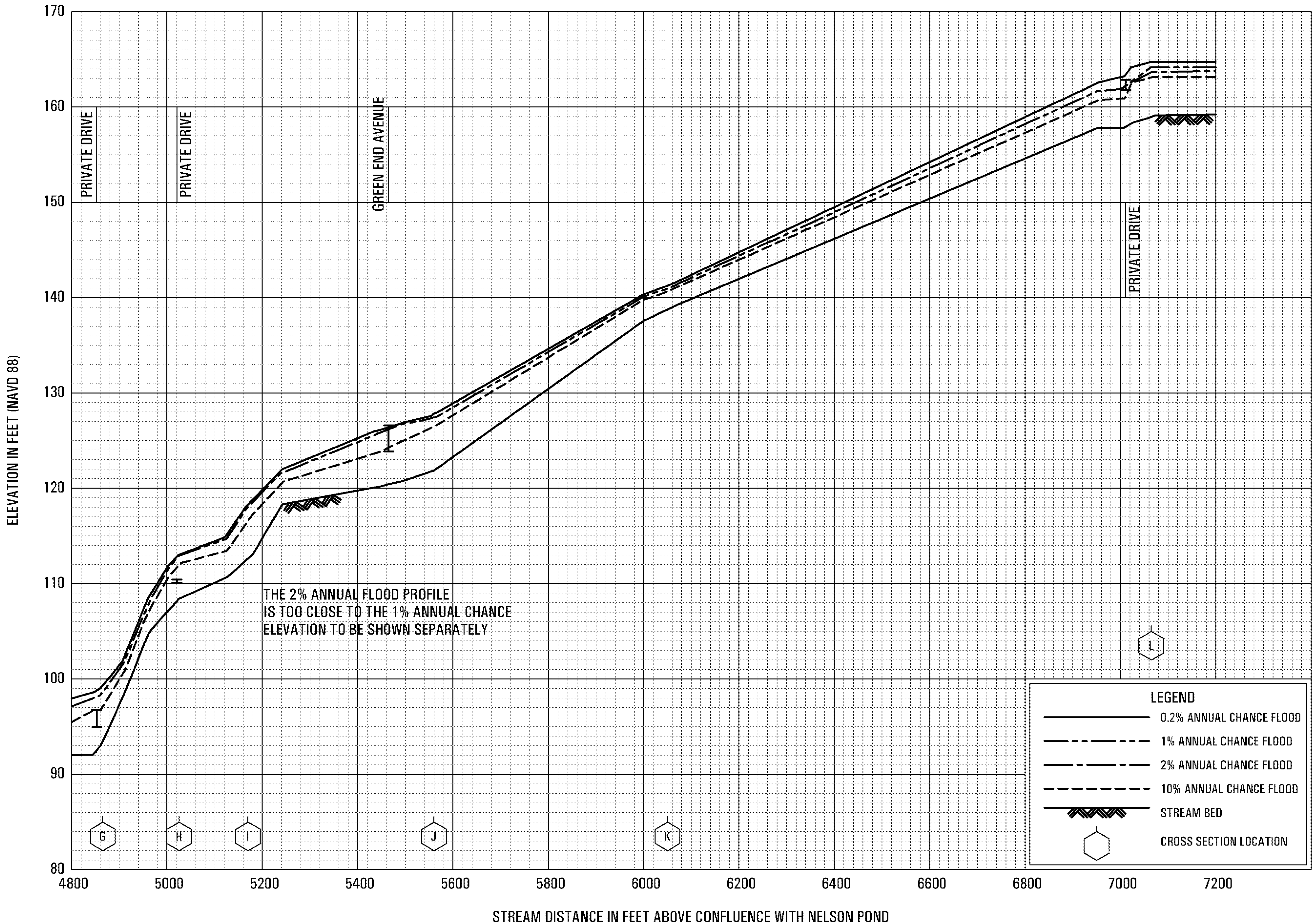
FLOOD PROFILES

PARADISE BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)



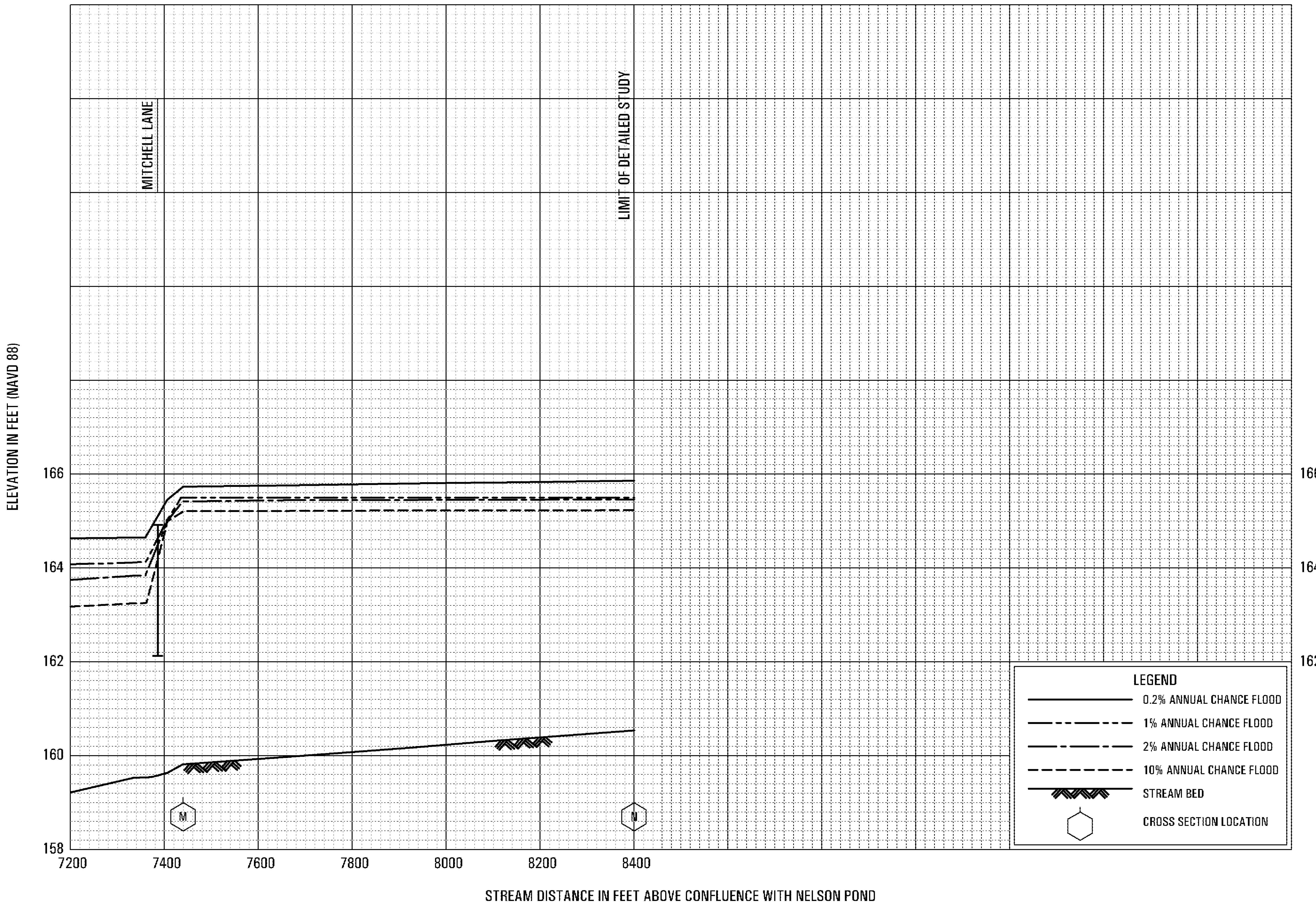
FLOOD PROFILES

PARADISE BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)



FLOOD PROFILES

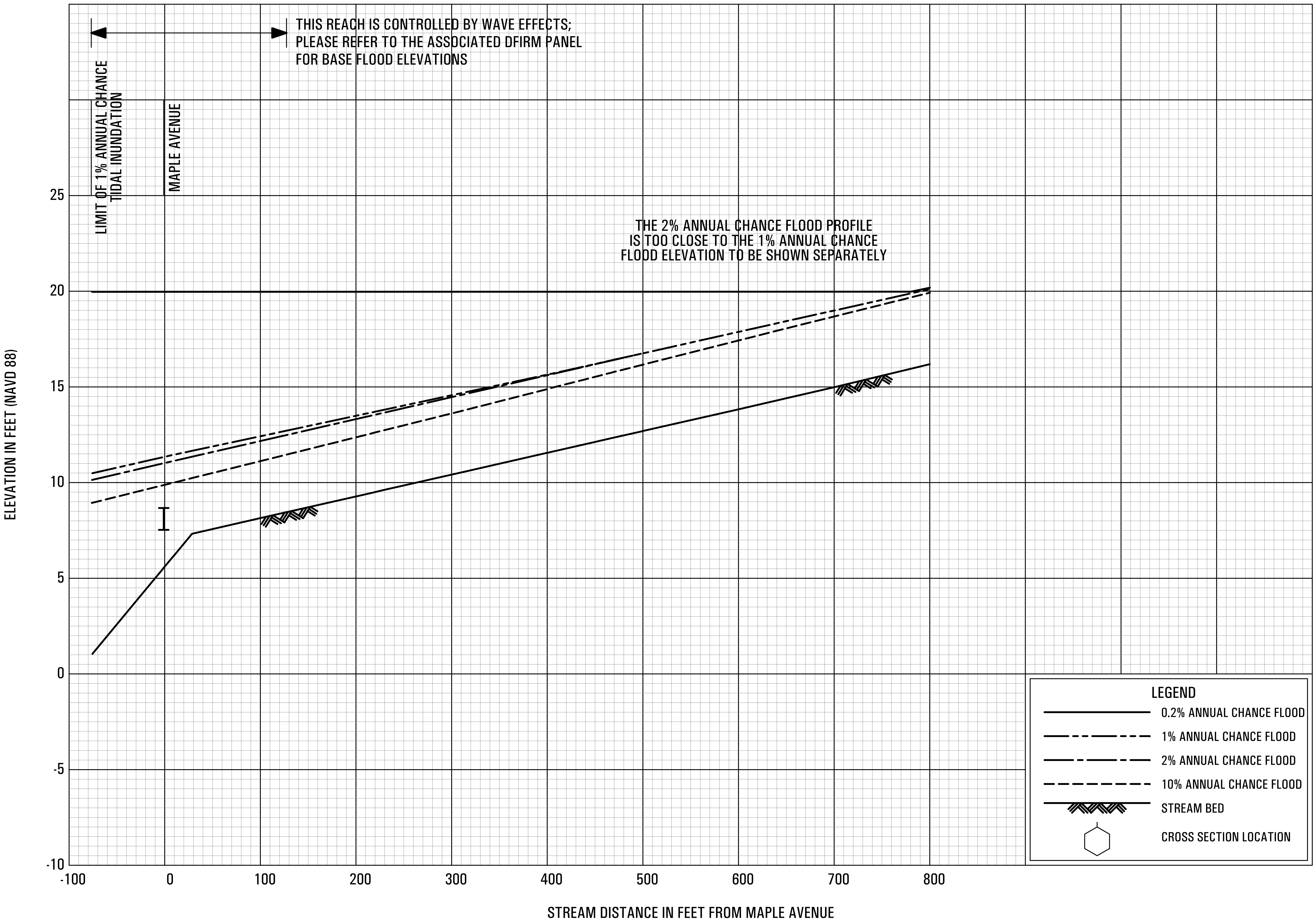
PARADISE BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

20P



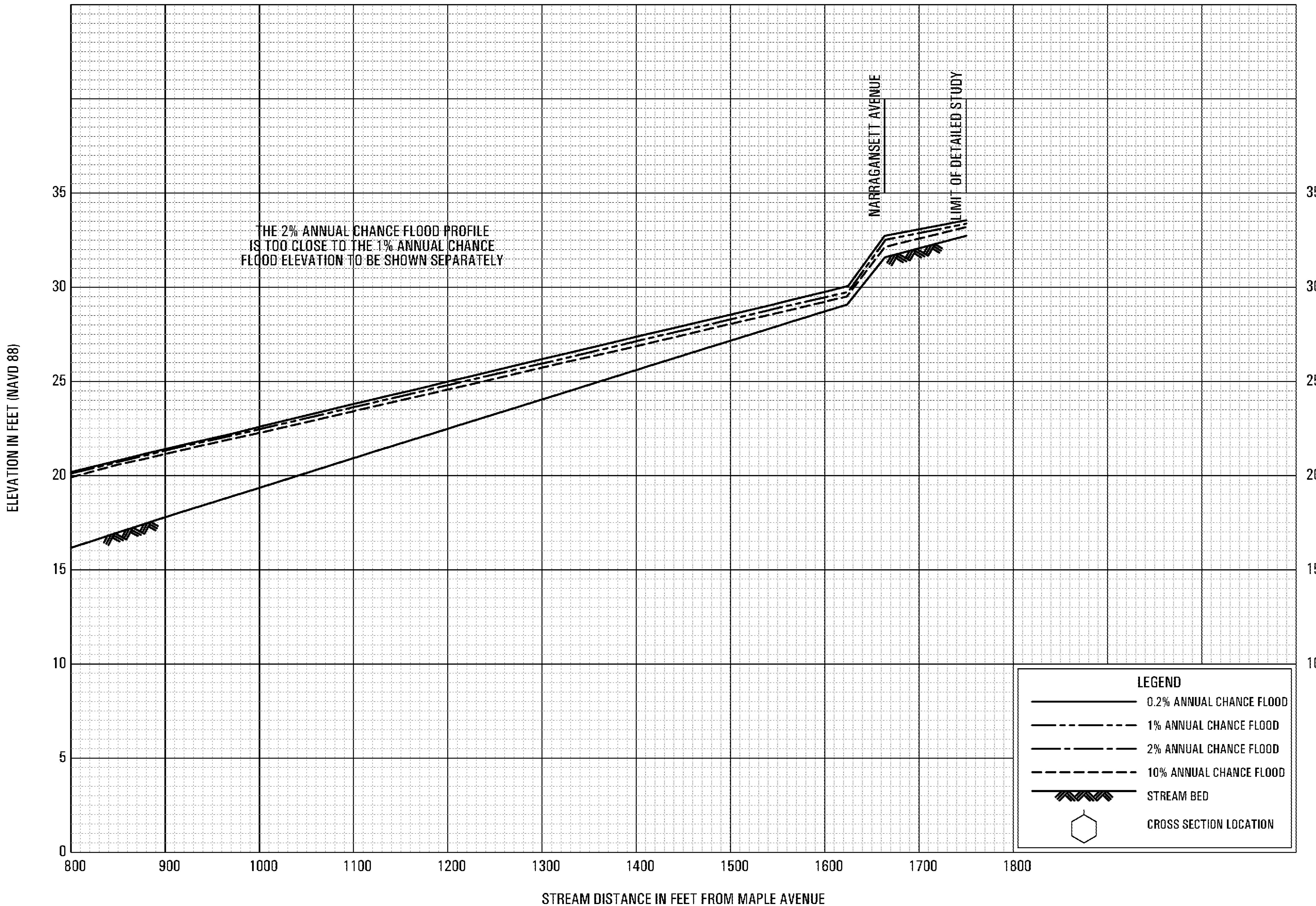
FLOOD PROFILES

SHEFFIELD COVE BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)



FLOOD PROFILES

SHEFFIELD COVE BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

NEWPORT COUNTY, RI

(ALL JURISDICTIONS)

22P