# FLOOD INSURANCE STUDY

# STRAFFORD COUNTY, NEW HAMPSHIRE
## (ALL JURISDICTIONS)

| COMMUNITY NAME | COMMUNITY NUMBER |
|---|---|
| BARRINGTON, TOWN OF | 330178 |
| DOVER, CITY OF | 330145 |
| DURHAM, TOWN OF | 330146 |
| FARMINGTON, TOWN OF | 330147 |
| LEE, TOWN OF | 330148 |
| MADBURY, TOWN OF | 330219 |
| MIDDLETON, TOWN OF | 330222 |
| MILTON, TOWN OF | 330149 |
| NEW DURHAM, TOWN OF | 330227 |
| ROCHESTER, CITY OF | 330150 |
| ROLLINSFORD, TOWN OF | 330190 |
| SOMERSWORTH, CITY OF | 330151 |
| STRAFFORD, TOWN OF | 330196 |

PRELIMINARY
DECEMBER 9, 2013

U.S. DEPARTMENT OF HOMELAND SECURITY

**Federal Emergency Management Agency**

FLOOD INSURANCE STUDY NUMBER
33017CV000A

# 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.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Countywide FIS Effective Date: May 17, 2005

Revised Countywide FIS Effective Date: _________

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# FLOOD INSURANCE STUDY
# STRAFFORD COUNTY, NEW HAMPSHIRE
# (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), Flood Hazard Boundary Maps (FHBMs), and Flood Boundary and Floodway Maps (FBFMs) for, the geographic area of Strafford County, New Hampshire, including: the Cities of Dover, Rochester, and Somersworth; and the Towns of Barrington, Durham, Farmington, Lee, Madbury, Middleton, Milton, New Durham, Rollinsford, and Strafford (hereinafter referred to collectively as Strafford 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 Strafford 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.

This FIS report presents the contents of original community-based FIS reports as well as two updates. The first update was completed in 2005, when the community reports were combined into a countywide report and the Flood Insurance Rate Maps were presented in digital format. The second update was completed in 2013, when new riverine analyses were performed in 4 communities in the southeastern portion of Strafford County.

Much of the information in this report is repeated from the 2005 countywide version of this FIS. Additional information regarding the 2013 update is included under the heading “2013 Coastal Study Update” located within appropriate sections throughout this report.

## 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 May 17, 2005 FIS (FEMA, 2005) was prepared to include the incorporated communities within Strafford County in a countywide FIS. Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is shown below.

| | |
|---|---|
| Dover, City of: | the hydrologic and hydraulic analyses for the FIS report dated October 1979 were prepared by the U.S. Soil Conservation Service (SCS) for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-18-75, Project order No. 8. That work was completed in January 1978. |
| Durham, Town of: | the hydrologic and hydraulic analyses of Lamprey River, Oyster River, Hamel Brook, and Longmarsh Brook for the FIS report dated May 3, 1990, were prepared by the SCS for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-86-E-2225, Project Order No. 01. That work was completed in September 1987. The hydrologic and hydraulic analyses of College Brook, the Lamprey River, the Oyster River, and Pettee Brook for the FIS report dated August 23, 2001, were prepared by the U.S. Geological Survey (USGS) for FEMA, under Inter-Agency Agreement No. EMW-97-IA-0155. That work was completed in April 1998. |
| Farmington, Town of: | the hydrologic and hydraulic analyses for the FIS report dated May 17, 1988, were prepared by Costello, Lomasney, & deNapoli, Inc., for FEMA, under Contract No. EMW-84-R-1600. That work was completed in November 1985. |

| | |
|---|---|
| Milton, Town of: | the hydrologic and hydraulic analyses for the FIS report dated June 3, 1988, were performed by Costello, Lomasney, & deNapoli, Inc., for FEMA, under Contract No. EMW-84-R-160. That work was completed in November 1985. |
| New Durham, Town of: | the hydrologic and hydraulic analyses for the FIS report dated May 2, 1991, were prepared by the SCS for FEMA, under Inter-Agency Agreement No. EMW-88-E-2736, Project Order No. 2. That work was completed in September 1989. |
| Rochester, City of: | the hydrologic and hydraulic analyses for the FIS report dated March 16, 1982, were prepared by Hamilton Engineering Associates, Inc. for FEMA, under Contract No. EMW-C-0334. That work was completed in April 1981. |
| Somersworth, City of: | the hydrologic and hydraulic analyses for the FIS report dated February 16, 1982, were performed by Hamilton Engineering Associates, Inc. for FEMA, under Contract No. EMW-C-0334. That work was completed in April 1981. |
| Strafford, Town of: | the hydrologic and hydraulic analyses of Bow Lake for the FIS report dated May 2, 2002, were prepared by the USGS, New Hampshire/Vermont District, for FEMA, under Inter-Agency Agreement No. EMW-99-IA-0163, Project Order No. 1. That work was completed in June 2000. |

The authority and acknowledgments for the Towns of Barrington, Lee, Madbury, Middleton, and Rollinsford were not available prior to the 2005 countywide study because no FIS reports had been published for those communities.

The 2005 countywide FIS was produced by Dewberry & Davis LLC under agreement with FEMA. The work was effective in May of 2005. The contract required the digital conversion of existing effective FIRMs and Flood Hazard Boundary Maps, and the preparation of a FIS and Digital FIRM (DFIRM) for Strafford County (All Jurisdictions). No new hydrologic or hydraulic analyses were prepared.

Base map information shown on FIRM panels produced for the 2005 study was derived from USGS Digital Orthophoto Quadrangles (DOQs) produced at a scale of 1:12,000 from photography dated 1998 or later.

The digital FIRM was produced using New Hampshire State Plane Coordinate system, FIPS Zone 2800, referenced to the North American Datum of 1983 (NAD 83), GRS80 spheroid.

**2013 Coastal Study Update**

The 2013 coastal study update was prepared by the University of New Hampshire (UNH) for FEMA under Agreement No. EMB-2010-CA-0916 and completed in September of 2013. The study consisted of revisions to the analyses in 4 contiguous communities located in southeastern Strafford County, including the City of Dover and the Towns of Durham, Madbury, and Rollinsford.

This 2013 FIS includes revisions to detailed studies in the incorporated community of Durham, NH within Strafford County. Information on the authority and acknowledgements for this jurisdiction is shown below.

| | |
|---|---|
| Durham, Town of: | the hydrologic and hydraulic analyses for the FIS report dated _______, were prepared by the U.S. Geological Survey, New England Water Science Center, for FEMA. That work was completed in November, 2012. |

## 1.3 Coordination

During the early years of the National Flood Insurance Program, Consultation Coordination Officer's (CCO) meetings were held for each jurisdiction in this countywide FIS. An initial CCO meeting was held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of an FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting was held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

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

## TABLE 1 – INITIAL AND FINAL CCO MEETINGS

| Community Name | Initial CCO Meeting | Final CCO Meeting |
|---|---|---|
| Dover, City of | May 1978 | October 11, 1978 |
| Durham, Town of | July 15, 1997 | September 27, 1999 |
| Farmington, Town of | April 12, 1984 | November 20, 1986 |
| Milton, Town of | April 12, 1984 | August 21, 1986 |
| New Durham, Town of | September 2, 1987 | June 11, 1990 |
| Rochester, City of | June 1979 | September 24, 1981 |
| Somersworth, City of | June 1979 | August 19, 1981 |
| Strafford, Town of | August 25, 1999 | June 25, 2001 |

For the 2005 countywide study, letters were sent to all communities within Strafford County notifying them of the scope of the FIS. The letters stated that the effective FIRMs and Flood Hazard Boundary Maps (FHBMs) of these communities would be digitally converted to a format that conforms to FEMA's Digital FIRM (DFIRM) specifications. The letters further stated that no new hydrologic and hydraulic analyses were prepared. The results of the 2005 countywide study were reviewed at the final CCO meetings held on November 12, 2003, and attended by representatives of the communities, FEMA, Dewberry and Davis LLC, the University of New Hampshire, and the NH Office of State Planning.

For this 2013 coastal study revising the maps for 4 communities within Strafford County, invitations to attend a Risk MAP Discovery Meeting were sent to the 4 communities on August 31, 2011. The invitations included a request to submit pertinent information on local flood risks and hazards to UNH. The meetings were held on September 22, 2011, and were attended by representatives of the communities, the University of New Hampshire, the FEMA Regional Service Center (RSC), FEMA, AECOM, the NH Office of State Planning, and the New Hampshire-Vermont Water Science Center of the U.S. Geological Survey. Prior to the release of the preliminary maps, communities were invited to attend one of a daylong series of Workmap review sessions held on August 1, 2013, and attended by representatives of the communities, the University of New Hampshire, FEMA, AECOM, the NH Office of Energy and Planning (formerly known as the NH Office of State Planning), and the New Hampshire-Vermont Water Science Center of the U.S. Geological Survey. The final CCO meetings were 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 Strafford County, New Hampshire.

**May 17, 2005 Countywide FIS**

All or portions of the flooding sources listed in Table 2, "Flooding Sources Studied by Detailed Methods," were studied by detailed methods.

**TABLE 2 - FLOODING SOURCES STUDIED BY DETAILED METHODS**

Bellamy River
Bow Lake
Branch River
Club Pond
Cocheco River
College Brook
Dames Brook
Ela River
Hamel Brook
Longmarsh Brook
Kicking Horse Brook
Lamprey River
Little Bay
Mad River
Miller Brook
Oyster River
Pettee Brook
Salmon Falls River

The 2005 countywide FIS also incorporated the determinations of letters issued by FEMA resulting in map changes (Letter of Map Revision [LOMR], Letter of Map Revision- based on Fill [LOMR-F], and Letter of Map Amendment [LOMA]), as shown in Table 3, "Letters of Map Change."

**TABLE 3 – LETTERS OF MAP CHANGE**

| Community Name | Flooding Source(s)/ Project Identifier | Effective Date | Type |
|---|---|---|---|
| Somersworth, City of | Peters Marsh Brook – Stackpole Property | April 4, 2003 | LOMR |
| Somersworth, City of | Peters Marsh Brook – Central Parkway | March 13, 2003 | LOMA |

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.

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. The scope and methods of study were proposed to, and agreed upon by, FEMA and the communities in Strafford County.

For the 2005 countywide study, the flood hazard information shown on the previous FIRMs, FHBMs, and FBFMs for the aforementioned communities was converted to a digital format. In addition, several areas of approximate flooding were extended in order to match the approximate flooding across community corporate limits within Strafford County. The delineation involved the use of topographic maps at a scale of 1:24,000 and contour intervals of 10 and 20 feet (U.S. Department of the Interior, 1958 et cetera).

**2013 Coastal Study Update**

The 2013 study consisted of revisions to the riverine analyses in 4 contiguous communities located in southeastern Strafford County. These communities include: Dover, Durham, Madbury, and Rollinsford. The work performed in these communities consisted of revisions as follows:

- Revised Zone AE studies on the Oyster and Lamprey Rivers
- Revisions due to updated topographic data on the tidal portion of the Salmon Falls River, Bellamy River, Cocheco River, College Brook, Oyster River, Hamel Brook/Longmarsh Brook, Pettee Brook, and Woodman Brook
- Zone A basic studies replaced all existing Zone A streams.

The updated topographic data used for the 2013 study was based on LiDAR collected at a 2.0 meter nominal post spacing (2.0m GSD) for approximately 8,200 $mi^2$ of coastal areas including parts of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, and New York, as part of the American Recovery and Reinvestment Act (ARRA) of 2009. The data was collected by Photo Science Inc. in May of 2011. No snow was on the ground and rivers were at or below normal levels. Some areas of the project required 1.0 meter nominal post spacing (1.0m GSD), and a required 9.25cm Vertical Accuracy. The study area was covered by 1.0 meter post spacing LiDAR data and a portion of the contributing drainage area was covered by the 2.0 meter post spacing LiDAR data. A seamless Digital Elevation Model (DEM) at a 10 ft resolution was created combining the above datasets to create a base elevation for the coastal analyses.

## 2.2 Community Description

Strafford County is located in southeastern New Hampshire. In Strafford County, there are 13 communities. The Towns of New Durham, Middleton, and Milton are located in the northern section of the county. The Towns of Farmington, Strafford, Barrington, and the City of Rochester lie in the central part of the county. The Towns of Rollinsford, Madbury, Lee, Durham, and the Cities of Somersworth and Dover comprise the southeastern portion of the county.

Strafford County is bordered to the north by the communities of Carroll County: the Towns of Wolfeboro, Brookfield, and Wakefield. To the east, the county is bordered by the communities of York County, Maine: the Towns of Acton, Lebanon, Berwick, South Berwick, and Eliot. The county is bordered to the south and southwest by communities of Rockingham County: the Towns of Newington, Newmarket, Epping, Nottingham, and Northwood. Strafford County is bordered to the east by the Town of Pittsfield, in Merrimack County, and to the northwest by the Towns of Barnstead and Alton, in Belknap County.

According to the U.S. Census Bureau, the population of Strafford County was 123,143 in 2010.

The topography of the county varies from flat coastal plains and rounded rolling hills in the southeast, to rugged, forested mountains in the northwest.

The climate of Strafford County is characterized by mean annual summer and winter temperatures of 70 degrees Fahrenheit (°F) and 24°F, respectively. The mean annual precipitation is between 40 and 45 inches, which is distributed evenly throughout the year. The average annual snowfall is approximately 55 inches.

The main flooding sources in Strafford County are the Salmon Falls River, which flows south and forms the eastern boundary of the county, and the Cocheco River which extends from the southwest to the north-central part of the county. Both rivers drain into the Piscataqua River, a tidal river which enters the Atlantic Ocean at Portsmouth Harbor.

### 2.3 Principal Flood Problems

Flooding in Strafford County historically has occurred in every season. Floods occurring during the mid-summer and late summer are often associated with tropical storms moving up the Atlantic coastline. The more severe flooding occurs in early spring as a result of snowmelt and heavy rains. Major floods of this type occurred in 1986, 1927, 1936, and 1954. The March 1986 flood on the Cocheco River was in excess of a 1-percent chance event. The flood of March 1936 caused damage to structures in the floodplains of the Cocheco River and the Salmon Falls River. The March 1936 flood on the Salmon Falls River had approximately a 50-year recurrence interval. The March 1977 flood on the Bellamy River was approximately a 7-percent chance event. Other more recent noteworthy storms causing flooding in the area have included May 2006, April 2007, and March 2010.

On the Lamprey River, several large floods have occurred since the USGS gage No. 01073500 was installed at Packers Falls. The two most severe floods were in March 1936 and April 1987. The respective discharges associated with these events were 5,490 cubic feet per second (cfs) and

7,500 cfs. The estimated return periods for floods of these magnitudes are 25 years and in excess of 100 years, respectively. In the Town of Durham, these floodwaters caused damage to roads, bridges, and dams, especially in the area of State Route 108, and in the area of Longmarsh Road. (USGS, 1934-1985).

Low-lying areas adjacent to the Ela River, Great Bay and tidal portions of the Oyster River are subject to periodic flooding. However, little significant damage occurs in these areas due to the general absence of buildings and other structures.

Ice and debris jams occurring at culverts, bridges, and other debris-catching structures, especially along the Cocheco River, have helped to compound flooding in the county.

### 2.4 Flood Protection Measures

In the Town of Farmington, channel modifications and dike construction were completed in 1955 and 1958 and included modifications of the Cocheco River, the Mad River, and Dames Brook. In 1955, the improvement consisted of straightening and enlarging 600 feet of the Mad River channel and 3,100 feet of the channel of the Cocheco River from the Central Street bridge to the South Main Street bridge. Construction of 3,000 feet of dike along the left bank of the Cocheco River between the two bridges was also completed (U.S. Army Corps of Engineers [USACE], 1955). In 1958, an additional 200 feet of dike was constructed on the left bank just downstream of the South Main Street bridge.

Bow Lake in the Cocheco River watershed and Swains Lake and Bellamy Reservoir in the Bellamy River watershed give a degree of flood protection incidental to their design use. The New Hampshire Water Resources Board operates Bow Lake and Swains Lake for recreational use of the reservoirs. Each fall the pools are drawn down in anticipation of the spring runoff. This procedure not only prevents damage to shoreline property, but also allows for temporary storage of floodwater, thus lowering the frequency of downstream flooding. Bellamy Reservoir, a water supply site for the City of Portsmouth, New Hampshire, has a significant effect on the Bellamy River flood potential within the City of Dover. The flood storage available due to the 362-acre normal pool, coupled with the two-stage weir outlet structure, reduces downstream flows by nearly 50 percent.

## 3.0 <u>ENGINEERING METHODS</u>

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this 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 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 exceedance) 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 FIS. Maps and flood elevations will be amended periodically to reflect future changes.

## 3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency and peak elevation-frequency relationships for the flooding sources studied in detail affecting the county.

For each jurisdiction within Strafford County that has a previously printed FIS report, the hydrologic analyses described in those reports have been compiled and are summarized below.

### Pre-countywide Analyses

For the Ela River in the Town of New Durham and the Bellamy River and Cocheco River in the City of Dover, discharge-frequency data were developed using an SCS synthetic rainfall-runoff procedure based on regionalized climatological data coupled with individual stream physical characteristics for input into the SCS TR-20 computer program (U.S. Department of Agriculture [USDA], 1983).

In the Town of Durham, discharge-frequency data for Hamel and Longmarsh Brooks (which consist of directed flow from the Lamprey River to the Oyster River) were developed using iterative hydraulic analyses at the watershed divide. The final values resulted when the downstream flow of the Lamprey River plus the diverted flow equaled the upstream inflow to the diversion location. Technical Release No. 20 was used to verify this information (USDA, 1983). No drainage area was computed for the diversion flow due to changing conditions at the watershed divide.

In the Town of Durham, peak discharge computations for the Oyster River and the Lamprey River were based on log-Pearson Type III analyses of gage records at USGS gaging stations No. 01073000 and No. 01073500, respectively (USGS, 1981). Peak discharge computations for the Oyster River at Mill Pond Dam and the Lamprey River at gage No. 01073500 were based on discharge values that were determined in the 1990 Town of Durham FIS.

In the Town of Durham, peak discharge computations for College and Pettee Brooks were based on regional regression equations developed by the USGS from peak-discharge records for floods along selected rivers in urbanized areas (USGS, 1994). The 100-year recurrence interval was then transposed to the drainage areas at different locations along the rivers in Durham using the following drainage area-discharge ratio formula:

$$Q = Q_g \, (A/A_g)^{0.75}$$

Where Q is the discharge at the different specific site locations, $Q_g$ is the drainage at the USGS stream gage, and A and $A_g$ are the drainage areas at the specific site and at the USGS stream gage, respectively.

In the Town of Milton and the Cities of Somersworth and Rochester, flood discharge frequencies for the Salmon Falls River were computed using log-Pearson Type III Statistical Analysis of peak discharges at USGS gage No. 01072100 located on the Salmon Falls River just downstream of the Milton Three Ponds Dam and at USGS gage No. 01072500, in operation from 1930 to 1969, located on the Salmon Falls River near South Lebanon, Maine (U.S. Water Resources Council, 1977). The discharges for the Salmon Falls River in the Town of Milton were compared to the FIS for the City of Rochester and discrepancies were resolved (FEMA, September 16, 1982).

Flood discharges for the Branch River and Miller Brook in the Town of Milton, the Cocheco River in the City of Rochester and the Town of Farmington, and the Mad River, the Ela River, Dames Brook, and Kicking Horse Brook in the Town of Farmington were determined using USGS regional equations which were based on multiple analysis of gaged data in New Hampshire (USGS, 1978).

In the Town of Farmington, flood discharges for the streams studied by approximate methods were also determined using these USGS regional equations (USGS, 1978).

For the Town of Strafford, the inflow 100-year flood discharge value for Bow Lake was determined based upon a drainage area relationship with the Isinglass River, as determined by the USACE in a dam break analysis of the Bow Lake dam (USACE, 1984). For the flood study of Bow Lake, the USACE determined that a value of 1,800 cfs was used as the 100-year discharge, as this is the most conservative value based upon other empirical equations. The outflow peak discharge for Bow Lake was based on flood hydrographs synthesized for the 100-year flood and routed through the reservoir by the USGS using a standard storage routing procedure.

For the Town of Durham, flood levels of significance in the tidal areas of the Oyster River and Little Bay are the result of storm tides on the coast at Portsmouth primarily caused by extratropical northeastern storms and hurricanes. Study data were obtained for peak tidal elevation-frequency relationships for coastal flooding on the Piscataqua River at Portsmouth. The study was based on a statistical analysis of the total tide elevations produced by historical northeasters and hurricanes. The National Ocean Survey (NOS) tide gage on Seavey Island provided a longer database. A statistical technique called regionalization was used in the study to generate synthetic, peak total elevations for years prior to the establishment of the Portsmouth tide gage and for the time periods when data was incomplete in Portsmouth (FEMA, May 1982).

### 2005 Countywide Analyses

No hydrologic analyses were conducted for the 2005 countywide study.

### 2013 Coastal Study Update

For this countywide study update (2013), hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by approximate methods in the 4 communities studied. Discharges for the 1-percent-annual-chance recurrence interval for all approximate study streams in these communities were determined using regression equations found in Olson, S.A., 2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire, U.S. Geological Survey Scientific Investigations Report 2008-5206.

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding sources studied in detail affecting the town of Durham.

Hydrologic analyses for the Oyster River (Durham, NH) was based on a log-Pearson Type III frequency analysis of the stream gage data at the USGS stream gage no. 01073000 at Durham, NH which has 77 years of record (1934 – 2011) and a drainage area of 12.3 square miles.

Hydrologic analyses for the Lamprey River (Durham, NH) was based on a log-Pearson Type III frequency analysis of the stream gage data at the USGS stream gage no. 01073500 at Packers Falls at Durham, NH which has 77 years of record (1934 – 2011) and a drainage area of 185 square miles. Based on a recently completed Lamprey River watershed study at the University of New Hampshire (Scholz, 2011), it was assumed that 20% of Lamprey River flood flow is diverted to the Oyster River watershed via La Roche and Longmarsh Brooks.

Discharges from the stream gage analysis for both study reaches were transferred to stream locations removed from the stream gage by the formula:

$$Q/Q_g = (A/A_g)^{1.0}$$

Where Q is the discharge at the different specific site location, $Q_g$ is the discharge at the USGS stream gage, and A and $A_g$ are the drainage areas at the specific site and at the USGS stream gage, respectively.

A summary of the drainage area-peak discharge relationships for all of the streams studied by detailed methods is shown in Table 4, "Summary of Discharges."

## TABLE 4 - SUMMARY OF DISCHARGES

| **Flooding Source and Location** | **Drainage Area (sq. miles)** | **Peak Discharges (cfs)** | | | |
|---|---|---|---|---|---|
| | | **10-Year** | **50-Year** | **100-Year** | **500-Year** |
| **BELLAMY RIVER** | | | | | |
| At State Route 108 in Dover | 26.21 | 910 | 1,940 | 2,440 | 3,690 |
| At Bellamy Road in Dover | 25.40 | 910 | 1,940 | 2,440 | 3,690 |
| At Dover-Madbury corporate limits | 24.22 | 910 | 1,940 | 2,440 | 3,690 |
| **BRANCH RIVER** | | | | | |
| At confluence with Salmon Falls River | 57.0 | 2,050 | 3,270 | 3,930 | 5,500 |
| Upstream of confluence of Jones Brook | 54.6 | 1,295 | 2,055 | 2,470 | 3,600 |
| **COCHECO RIVER** | | | | | |
| At Central Avenue in Dover | 173.45 | 6,330 | 11,140 | 13,560 | 19,110 |
| At Fourth Street in Dover | 173.15 | 6,330 | 11,140 | 13,560 | 19,110 |
| At Whittier Street in Dover | 171.30 | 6,330 | 11,140 | 13,560 | 19,110 |
| At England Road in Rochester | 73.6 | 3,160 | 5,100 | 6,120 | 9,580 |
| At Spaulding Turnpike | 56.1 | 2,300 | 3,720 | 4,460 | 6,650 |
| At North Main Street | 53.6 | 2,260 | 3,660 | 4,400 | 6,500 |
| At Little Falls Bridge Road | 50.4 | 2,150 | 3,530 | 4,240 | 6,250 |
| At Farmington-Rochester corporate limits | 50.0 | 2,150 | 3,530 | 4,240 | 6,250 |
| Upstream of confluence of Mad River | 23.4 | 1,610 | 2,900 | 3,560 | 5,440 |
| Upstream of confluence of Ela River | 13.7 | 910 | 1,630 | 2,010 | 3,100 |
| **COLLEGE BROOK** | | | | | |
| Above confluence with Oyster River | 0.91 | 100 | 150 | 170 | 240 |
| Above railroad crossing | 0.65 | 75 | 110 | 130 | 180 |

**TABLE 4 - SUMMARY OF DISCHARGES** – continued

| Flooding Source and Location | Drainage Area (sq. miles) | Peak Discharges (cfs) | | | |
|---|---|---|---|---|---|
| | | 10-Year | 50-Year | 100-Year | 500-Year |
| **DAMES BROOK** | | | | | |
| At confluence with Cocheco River | 5.8 | 380 | 700 | 860 | 1,320 |
| **ELA RIVER** | | | | | |
| At confluence with Cocheco River | 9.5 | 480 | 840 | 1,020 | 1,560 |
| At Old Quaker Road | 8.0 | * | * | 570 | * |
| At Club Pond Dam | 2.7 | * | * | 900 | * |
| **KICKING HORSE BROOK** | | | | | |
| At confluence with Dames Brook | 0.6 | 40 | 80 | 105 | 175 |
| At Bunker Street | 0.45 | 30 | 60 | 80 | 120 |
| **LAMPREY RIVER** | | | | | |
| At MacCallen Dam[1] | 212 | 4,320 | 7,320 | 8,920 | 13,600 |
| At confluence of Longmarsh Brook[1] | 188 | 3,840 | 6,510 | 7,940 | 12,100 |
| At confluence of Woodman Brook | 186 | 4,740 | 8,030 | 9,790 | 14,900 |
| At USGS Streamgage No. 01073500 | 185 | 4,720 | 7,990 | 9,740 | 14,900 |
| At Wiswall Dam | 184 | 4,690 | 7,950 | 9,690 | 14,800 |
| **MAD RIVER** | | | | | |
| At confluence with Cocheco River | 9.7 | 710 | 1,320 | 1,630 | 2,550 |
| Upstream of Brook C | 8.3 | 620 | 1,160 | 1,440 | 2,280 |
| Approximately 0.93 miles upstream of Brook C | 7.6 | 560 | 1,050 | 1,300 | 2,045 |
| Upstream of Brook B | 4.6 | 330 | 620 | 760 | 1,200 |
| **MILLER BROOK** | | | | | |
| At confluence with Salmon Falls River | 3.1 | 210 | 370 | 440 | 660 |
| **OYSTER RIVER** | | | | | |
| At Route 108 Bridge | 20.4 | 1,060 | 1,720 | 2,050 | 2,960 |

* Data not available

[1] Due to diversion to Oyster River (dam located in Rockingham County).

## TABLE 4 - SUMMARY OF DISCHARGES – continued

| **Flooding Source and Location** | **Drainage Area (sq. miles)** | **Peak Discharges (cfs)** | | | |
|---|---|---|---|---|---|
| | | **10-Year** | **50-Year** | **100-Year** | **500-Year** |
| **OYSTER RIVER** (continued) | | | | | |
| At confluence with College Brook | 20.3 | 1,060 | 1,710 | 2,030 | 2,940 |
| At confluence with Long Marsh Brook | 19.0 | 990 | 1,600 | 1,910 | 2,750 |
| At Durham Reservoir Dam | 17.0 | 890 | 1,430 | 1,700 | 2,460 |
| At confluence with Chesley Brook | 15.6 | 810 | 1,310 | 1,560 | 2,260 |
| At Lee/Durham town boundary | 13.9 | 730 | 1,170 | 1,400 | 2,020 |
| At USGS Streamgage No. 01073000 | 12.3 | 640 | 1,030 | 1,230 | 1,780 |
| **PETTEE BROOK** | | | | | |
| Above Edgewood Road | 0.80 | 60 | 90 | 105 | 145 |
| Above UNH Parking Lot "A" | 0.66 | 50 | 80 | 90 | 125 |
| **SALMON FALLS RIVER** | | | | | |
| At Buffumsville Road | 234.7 | 4,600 | 7,460 | 9,000 | 13,800 |
| At Walnut Grove Road | 148.6 | 3,360 | 5,450 | 6,570 | 10,080 |
| At Spaulding Avenue | 130.5 | 3,050 | 4,940 | 5,960 | 9,150 |
| At Milton-Rochester corporate limits | 117.3 | 3,030 | 4,700 | 5,500 | 7,960 |
| At USGS gage (01072100) in Milton downstream of Milton Three Ponds Dam | 108.0 | 2,930 | 4,500 | 5,290 | 7,490 |
| Upstream of confluence of Branch River | 41.5 | 1,430 | 2,200 | 2,580 | 3,660 |
| Upstream of confluence of Miller Brook | 28.7 | 1,080 | 1,660 | 1,960 | 2,770 |

The stillwater elevations for the 10-, 50-, 100-, and 500-year floods have been determined for all detailed studied ponds and tidal areas and are summarized in Table 5, "Summary of Stillwater Elevations." For a description of the methodologies used to compute elevations for Bow Lake, Little Bay, and Oyster River, please refer to Section 3.2, Hydraulic Analyses, in this text.

## TABLE 5- SUMMARY OF STILLWATER ELEVATIONS

| Flooding Source and Location | Elevation (feet NGVD[1], NAVD[2]) | | | |
|---|---|---|---|---|
| | 10-Year | 50-Year | 100-Year | 500-Year |
| **BOW LAKE** | | | | |
| At Bow Lake Dam (routed) | * | * | 516.9[1] | * |
| | | | | |
| **CLUB POND** | | | | |
| For its entire shoreline within the Town of New Durham | * | * | 533.9[1] | * |
| **LITTLE BAY AND OYSTER RIVER** | | | | |
| Downstream of Mill Pond Dam within the Town of Durham | 5.7[2] | 6.2[2] | 6.4[2] | 7.0[2] |
| **PISCATAQUA RIVER** | | | | |
| From confluence of Cocheco River to Rockingham County boundary | * | * | 8.3[2] | * |

[1] National Geodetic Vertical Datum of 1929
[2] North American Vertical Datum of 1988
*Data Not Available

### 3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. 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.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2).

For all riverine flooding sources studied in detail, flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

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

For each jurisdiction within Strafford County that has a previously printed FIS report, the hydraulic analyses described in those reports have been compiled and are summarized below.

## Precountywide Analyses

Cross sections for the backwater analyses of the Salmon Falls River and the Cocheco River in the City of Rochester were obtained from aerial photographs flown in May 1980 at a scale of 1.0 inch equals 800 feet (Moore Survey and Mapping, May 1980, Scale 1:9,600). Cross sections for the backwater analyses of all streams studied in detail in the Towns of Farmington and Milton were obtained from aerial photographs flown in May 1984 at a scale of 1:4,800 with a contour interval of 4 feet, and supplemented by field surveys and bridge plans (Quinn Associates, Inc., 1985).

Cross-section data for the Lamprey River in the Town of Durham was obtained through FEMA from the 1990 Town of Durham FIS step backwater model and from field measurements. Cross-section data for the Oyster River, Pettee Brook, and College Brook were obtained from field surveys. All bridges, dams, and culverts were field checked to obtain or verify elevation data and structural geometry.

Along certain portions of the Oyster River in the Town of Durham, a profile base line is shown on the maps to represent channel distances as indicated on the Flood Profiles and Floodway Data tables.

For Bow Lake in the Town of Strafford, water-surface elevations of floods of the selected recurrence intervals were computed through an analysis of the Bow Lake dam using weir and orifice equations. For Bow Lake, the 100-year water surface elevation was used along with USGS topographic maps to determine the extent of the flooding (U.S. Department of the Interior, 1958, et cetera).

For the Ela River in the Town of New Durham, and the Cocheco and Bellamy Rivers in the Town of Dover, water-surface elevations of floods of the selected recurrence intervals were computed using the SCS WSP-2 step-backwater computer program (USDA, 1976). Starting water-surface elevations for the Ela River were determined by computing critical depth at a cross section a short distance downstream of the Old Quaker Road bridge abutment. The results of the water-surface computations for Ela River are tabulated for selected cross sections in Table 6, "100-Year Flood Data".

For the Cocheco River in the City of Rochester and Town of Farmington, the Salmon Falls River, Branch River, and Miller Brook in the Town of Milton, the Mad River, the Ela River, Dames Brook, and Kicking Horse Brook in the Town of Farmington, and the Oyster River, the Lamprey River, College Brook, and Pettee Brook in the Town of Durham, water surface elevations of floods of the selected recurrence intervals were computed using USACE HEC-2 step-backwater computer program (USACE, 1991).

| FLOODING SOURCE | | RIVER CHANNEL | | | | 1% ANNUAL CHANCE WATER-SURFACE ELEVATIONS (FEET NGVD) |
|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] (FEET) | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | STREAM-BED ELEVATION (FEET NGVD) | |
| Ela River | | | | | | |
| L | 18,160 | 5,685 | 109 | 315 | 2.5 | 513.4 |
| M | 18,320 | 5,813 | 44 | 75 | 8.9 | 515.0 |
| N | 18,420 | 5,905 | 221 | 591 | 1.8 | 516.3 |
| O | 25,750 | 13,241 | 479 | 2,577 | 0.3 | 519.9 |
| P | 29,325 | 16,820 | 220 | 631 | 1.1 | 520.6 |
| Q | 36,360 | 23,870 | 262 | 1,012 | 0.9 | 526.4 |
| R | 36,600 | 24,095 | 184 | 496 | 2.5 | 526.9 |
| S | 36,720 | 24,225 | 143 | 665 | 1.7 | 531.7 |

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[1] Distances are measured in feet above confluence with Cocheco River

**TABLE 6**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**100-YEAR FLOOD DATA**

**ELA RIVER**

Starting water-surface elevations for the Cocheco River were taken from known elevations in the City of Rochester FIS (FEMA, September 1982). Starting water-surface elevations for the Salmon Falls River in the City of Rochester and the Town of Milton were taken from known elevations in the City of Somersworth FIS and City of Rochester FIS, respectively (FEMA, August 1982; FEMA, September 1982). Starting water-surface elevations for the Salmon Falls River in the City of Somersworth, the Cocheco River in the City of Rochester, the Branch River and Miller Brook in the Town of Milton, and the Mad River, the Ela River, Dames Brook, and Kicking Horse Brook in the Town of Farmington, were calculated using the slope/area method. The starting water-surface elevation for the Oyster River was calculated using normal depth at the mouth of the Oyster River. The starting water-surface elevations for the Lamprey River were determined by computing critical depths at the MacCallen Dam in the Town of Newmarket, Rockingham County, and Mill Pond Dam, respectively. The gates were assumed to be closed. The starting water-surface elevations for College and Pettee Brooks were calculated using normal depth at the mouth. The water-surface elevations determined for the 100-year flood, floodway, and 500-year were then used, along with USGS topographic maps and a base map generated by the University of New Hampshire (UNH), to determine the extent of flooding (USGS, 1958, et cetera; UNH, 1996).

Approximately one mile north of the Town of Durham (Strafford County)-Town of Newmarket (Rockingham County) corporate limits, flood flows in the Lamprey River divide, with a portion being diverted over State Route 108 into Longmarsh Brook in the Oyster River watershed. The quality of flow diverted was subtracted from the flow within the Lamprey River in order to model backwater conditions present during flood events. Trial and error computer runs were made until the downstream flow of the Lamprey River plus the diverted flow equaled the upstream inflow to the diversion location.

The flood levels caused by the storm tides on the coast at Portsmouth were translated upstream to the Great Bay at the Town of Durham. These levels were based on an FIS for the Town of Exeter, in which hydraulic analyses of the inland propagation of the storm surge were performed for the Piscataqua River and Great Bay estuary system using a one-dimensional (1-D) storm surge model (FEMA, MAY 1982). The 1-D model was based on the hydrodynamic equations of motion and conservation of mass.

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 7, "Manning's "n" Values."

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.

To obtain current elevation, description, and/or location information for bench marks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at www.ngs.noaa. gov.

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 associated with this FIS and FIRM. Interested individuals may contact FEMA to access this data.

**2005 Countywide Analyses**

No hydraulic analyses were conducted for the 2005 countywide study.

## 2013 Coastal Study Update

The Lamprey River was studied by detailed methods in the towns of Newmarket and Durham from the MacCallen Dam in Newmarket (Rockingham County) to the upstream corporate limit for the Town of Durham, NH (Strafford County). The Oyster River was studied by detailed methods in the Town of Durham from the Route 108 bridge at its' confluence with Little Bay to the upstream corporate limit for the Town of Durham, NH.

For the Town of Newmarket, the Lamprey River channel and structural cross section data (elevation, northing and easting) were obtained from USGS field surveys and Wright-Pierce, Inc. field surveys. For the Town of Durham, Oyster River channel and structural cross section data (elevation, northing and easting) were obtained from USGS field surveys along with Vanasse Hangen Brustlin (VHB), Inc. field surveys. The overbank portion of the cross section data for the Lamprey and Oyster Rivers were obtained from LiDAR (LIght Detection And Ranging) data collected by Photo Science in 2011 for New England under a USGS Geospatial Products and Services contract.

Cross sections for the backwater analyses of the detailed study streams were located at close intervals above and below bridges in order to compute the significant backwater effects of these structures in the developed areas. In long reaches between structures, appropriate valley cross sections were also obtained from within channel surveys and from LiDAR on the overbanks.

Water-surface elevations of floods of the selected recurrence intervals were computed for the detailed study streams using U.S. Army Corps of Engineers HEC-RAS (version 4.1.0) step-backwater computer program (U.S. Army Corps of Engineers, January 2010). In those areas where the analysis indicated supercritical flow conditions, critical depth was assumed for the flood elevation because of the inherent instability of supercritical flow.

The starting water-surface for the Lamprey River was determined through computation of critical depth at the MacCallen Dam in Newmarket. The starting water-surface for the Oyster River was determined through computation of normal depth in the channel downstream of the Route 108 bridge.

The Oyster River HEC-RAS flood model was calibrated to the Durham Reservoir Oyster River dam peak high-water mark data that was collected by University of New Hampshire staff during the May 2006 and April 2007 floods. In addition, Dr. Thomas Lee of the University of New Hampshire provided digital photography of the May 2006 peak flood elevations at the Mill Pond dam and the Route 155A bridge which also aided in calibration of the HEC-RAS model. The Lamprey River HEC-RAS flood model was calibrated to the USGS stream gage 01073500 data and to the peak high-water mark data collected by the USGS along the Lamprey River after the April 2007 flood.

As in the pre-countywide analyses, 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 the Lamprey and Oyster Rivers are also shown in Table 7, "Manning's "n" Values".

**TABLE 7 – MANNING'S "n" VALUES**

| Stream | Channel "n" | Overbank "n" |
|---|---|---|
| Bellamy River | 0.035-0.065 | 0.050-0.120 |
| Branch River | 0.030-0.040 | 0.040-0.120 |
| Cocheco River | 0.024-0.055 | 0.050-0.200 |
| College Brook | 0.030-0.050 | 0.020-0.060 |
| Dames Brook | 0.030-0.036 | 0.065-0.120 |
| Ela River | 0.035-0.070 | 0.070-0.120 |
| Kicking Horse Brook | 0.013-0.065 | 0.020-0.120 |
| Lamprey River | 0.040-0.065 | 0.050-0.100 |
| Lamprey River diversion | 0.025-0.070 | 0.060-0.120 |
| Mad River | 0.030-0.055 | 0.060-0.120 |
| Miller Brook | 0.032-0.050 | 0.050-0.090 |
| Oyster River | 0.020-0.050 | 0.040-0.010 |
| Pettee Brook | 0.020-0.070 | 0.020-0.060 |
| Salmon Falls River | 0.029-0.070 | 0.035-0.150 |

For this 2013 study, water-surface profiles for Zone A basic studies and for Zone AE detailed studies were computed through the use of the USACE HEC-RAS computer program. Water surface profiles were computed for the 1-percent-annual-chance storm for the Zone A basic studies and for the 0.2, 1, 2, and 10-percent-annual chance storms for the Zone AE detailed studies.

The Zone A basic studies used the computer program Watershed Information SystEm (WISE) as a preprocessor to HEC-RAS. WISE combined geo-referenced data from the terrain model and miscellaneous shapefiles (such as streams and cross sections). The WISE program was used to generate the input data file for HEC-RAS. Then HEC-RAS was used to determine the flood elevation at each cross section of the modeled stream. No floodway was calculated for the Zone A basic studies.

## 3.3 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 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM for the following 4 communities are referenced to NAVD 88: Dover, Durham, Madbury, and Rollinsford. Structure and ground elevations in these communities must, therefore, be referenced to NAVD88.

Flood elevations shown in this FIS report and on the FIRM for the 9 remaining, communities in Strafford County, including Barrington, Farmington, Lee, Middleton, Milton, New Durham, Rochester, Somersworth, and Strafford, are referenced to NGVD29. Structure and ground elevations in these communities must, therefore, be referenced to NGVD 29. It is important to note that adjacent communities may be referenced to NAVD 88. This may result in differences in base flood elevations across the corporate limits between the communities.

A summary of the vertical datum reference by town in Strafford County is provided in Table 8, "Vertical Datum Reference by Community."

## TABLE 8 – VERTICAL DATUM REFERENCE BY COMMUNITY

| Community Name | Vertical Datum Reference |
|---|---|
| Barrington | NGVD 29 |
| Dover | NAVD 88 |
| Durham | NAVD 88 |
| Farmington | NGVD 29 |
| Lee | NGVD 29 |
| Madbury | NAVD 88 |
| Middleton | NGVD 29 |
| Milton | NGVD 29 |
| New Durham | NGVD 29 |
| Rochester | NGVD 29 |
| Rollinsford | NAVD 88 |
| Somersworth | NGVD 29 |
| Strafford | NGVD 29 |

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 Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, 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 100-year floodplain data, which may include a combination of the following: 10-, 50-, 100-, and 500-year flood elevations; delineations of the 100-year and 500-year floodplains; and 100-year 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 (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the county. For the streams studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section.

**Pre-countywide Analysis**

For the flooding sources studied in detail, the boundaries were interpolated between the cross sections using topographic maps at scales of 1:24,000, 1:24,000, 1:24,000, 1:4,800, 1:4,800, 1:1,200, and 1:400 with contour intervals of 20, 10, 5, 5, 4, 2, and 2 feet, respectively, and a soil survey map (USGS, 1958, et cetera; Department of Public Works and Highway, 1965; Moore Survey and Mapping, May 1980, 1:4,800; Quinn Associates, Inc., 1985; James W. Sewall Company, 1967; UNH, 1996; USDA, 1973).

For the streams studied by approximate methods, the 100-year floodplain boundaries were delineated using a combination of the following: previously printed FHBMs for the Town of Farmington (U.S. Department of Housing and Urban Development, 1979), Town of Milton (U.S. Department of Housing and Urban Development, February 18, 1977), Town of New Durham (U.S. Department of Housing and Urban Development, December 10, 1976), City of Dover (U.S. Department of Housing and Urban Development, February 11, 1977), City of Rochester (U.S. Department of Housing and Urban Development, November 1977), and City of Somersworth (U.S. Department of Housing and Urban Development, November 1976); previously printed FIS/FIRM for the Town of Durham (FEMA, May 3, 1990); previously printed FIRM for the Town of Strafford (FEMA, April 2, 1986, FIRM, Town of Strafford); topographic maps at scales of 1:62,500, 1:24,000, and 1:4,800, with contour intervals of 20, 20, and 4 feet, respectively (USGS, 1957, et cetera; USGS, 1958, et cetera; Quinn Associates, Inc., 1985); and normal depth calculations.

The 100- and 500-year floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year 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 100-year floodplain boundary is shown on the FIRM (Exhibit 2).

### 2005 Countywide Analyses

No remapping was conducted in 2005.

### 2013 Coastal Update

For streams studied in detail, 1-percent and 0.2-percent annual chance floodplain boundaries were delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated based on 2-foot contour interval topography from the 2011 LiDAR mission discussed in Section 2.1. The LiDAR was also utilized to support the basic Zone A modeling and delineations, as well as the redelineation of hydraulic analyses from previous studies.

## 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 100-year 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 100-year 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 9). The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown. Portions of the floodways for the Cocheco River and the Salmon Falls River extend beyond the county boundary.

No floodways were computed for Pettee Brook, College Brook, portions of the Oyster River, and Kicking Horse Brook because the 100-year storm is contained entirely within the channel except at the confluence with Dames Brook, Bow Lake in the Town of Strafford, and the Ela River and Club Pond within the Town of New Durham.

No floodway was computed at the watershed divide between the Lamprey River and the Oyster River due to possible changes in State Route 108, an important hydraulic control. This area should be analyzed at the time changes are proposed to State Route 108 to ensure that additional flood hazards are not created (see Section 2.3).

In the City of Dover, no analysis was made for the Cocheco and Bellamy Rivers as to what stage induction may occur downstream due to the decrease in flood storage created by this encroachment. For example, blockage of the wide floodplain above Broad Street to the theoretical floodway limits may have deleterious effects downstream.

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 9, "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 9 for certain downstream cross sections of the Branch River, Miller Brook, and Dames Brook are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A | 26,715 | 96 | 814 | 3.0 | 54.4 | 54.4 | 55.4 | 1.0 |
| B | 28,253 | 69 | 580 | 4.2 | 74.8 | 74.8 | 75.8 | 1.0 |
| C | 30,765 | 166 | 1,170 | 2.1 | 86.4 | 86.4 | 87.4 | 1.0 |
| D | 33,773 | 309 | 2,069 | 1.2 | 87.8 | 87.8 | 88.8 | 1.0 |
| E | 36,283 | 476 | 2,343 | 1.0 | 88.7 | 88.7 | 89.7 | 1.0 |

[1] Feet above Scammel Bridge at Little Bay

**TABLE 9**

FEDERAL EMERGENCY MANAGEMENT AGENCY

## STRAFFORD COUNTY, NH

(ALL JURISDICTIONS)

## FLOODWAY DATA

**FLOODING SOURCE: BELLAMY RIVER**

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Branch River | | | | | | | | |
| A | 980 | 451 | 2,516 | 1.6 | 421.0 | 415.5[2] | 416.3 | 0.8 |
| B | 3,080 | 1,895 | 7,385 | 0.5 | 421.0 | 415.9[2] | 416.5 | 0.6 |
| C | 5,590 | 435 | 1,070 | 3.7 | 421.0 | 415.2[2] | 416.2 | 1.0 |
| D | 6,410 | 404 | 1,540 | 2.6 | 421.0 | 417.8[2] | 417.8 | 0.0 |
| E | 7,070 | 200 | 1,260 | 3.1 | 421.0 | 418.1[2] | 418.1 | 0.0 |
| F | 7,780 | 301 | 1,265 | 3.1 | 421.0 | 418.5[2] | 418.5 | 0.0 |
| G | 10,220 | 336 | 1,651 | 2.4 | 421.0 | 419.4[2] | 420.2 | 0.8 |
| H | 11,970 | 507 | 2,429 | 1.6 | 421.0 | 420.1[2] | 421.1 | 1.0 |
| I | 13,950 | 837 | 4,686 | 0.8 | 421.0 | 421.0[2] | 421.7 | 0.7 |
| J | 15,000 | 289 | 1,252 | 3.1 | 421.1 | 421.1 | 421.8 | 0.7 |
| K | 15,250 | 420 | 2,087 | 1.9 | 423.3 | 423.3 | 423.3 | 0.0 |
| L | 16,410 | 551 | 2,831 | 1.4 | 423.6 | 423.6 | 423.8 | 0.2 |
| M | 17,900 | 600 | 2,624 | 1.5 | 423.9 | 423.9 | 424.1 | 0.2 |
| N | 18,200 | 112 | 382 | 10.3 | 424.9 | 424.9 | 424.9 | 0.0 |
| 0 | 19,600 | 543 | 2,064 | 1.2 | 429.7 | 429.7 | 430.7 | 1.0 |
| P | 20,500 | 342 | 675 | 3.7 | 432.6 | 432.6 | 432.6 | 0.0 |
| Q | 20,780 | 221 | 1,038 | 2.4 | 434.5 | 434.5 | 434.5 | 0.0 |
| R | 21,600 | 300 | 1,035 | 2.4 | 435.7 | 435.7 | 435.9 | 0.2 |
| S | 22,900 | 81 | 246 | 10.0 | 440.8 | 440.8 | 440.8 | 0.0 |

[1] Feet above confluence with Salmon Falls River

[2] Elevation computed without consideration of backwater effects from Salmon Falls River

**TABLE 9**

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

## FLOODWAY DATA

## BRANCH RIVER

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Cocheco River | | | | | | | | |
| A | 14,810 | 262 | 3,704 | 3.7 | 8.7 | 8.7 | 9.7 | 1.0 |
| B | 17,000 | 226 | 3,108 | 4.4 | 10.7 | 10.7 | 11.7 | 1.0 |
| C | 20,943 | 290 | 4,202 | 3.2 | 46.4 | 46.4 | 47.4 | 1.0 |
| D | 22,358 | 707 | 7,643 | 1.8 | 46.8 | 46.8 | 47.8 | 1.0 |
| E | 23,553 | 128 | 2,623 | 5.2 | 46.9 | 46.9 | 47.9 | 1.0 |
| F | 25,458 | 225 | 3,781 | 3.6 | 47.4 | 47.4 | 48.4 | 1.0 |

[1] Feet above confluence with Piscataqua River

**TABLE 9**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOODWAY DATA

**FLOODING SOURCE: COCHECO RIVER**

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Cocheco River (continued) | | | | | | | | |
| G | 450 | 740 | 7,329 | 1.7 | 124.2 | 124.2 | 125.1 | 0.9 |
| H | 11,660 | 70 | 870 | 7.0 | 125.9 | 125.9 | 126.6 | 0.7 |
| I | 11,730 | 256 | 2,087 | 2.9 | 127.0 | 127.0 | 127.9 | 0.9 |
| J | 19,850 | 94 | 1,258 | 4.9 | 130.7 | 130.7 | 131.1 | 0.4 |
| K | 21,470 | 144 | 996 | 6.1 | 131.6 | 131.6 | 132.0 | 0.4 |
| L | 24,265 | 148 | 625 | 9.8 | 139.4 | 139.4 | 139.5 | 0.1 |
| M | 24,615 | 76 | 723 | 8.5 | 143.4 | 143.4 | 143.4 | 0.0 |
| N | 24,666 | 100 | 1,657 | 3.7 | 160.6 | 160.6 | 160.6 | 0.0 |
| 0 | 26,116 | 117 | 1,368 | 4.5 | 162.4 | 162.4 | 162.7 | 0.3 |
| P | 26,228 | 105 | 1,322 | 4.6 | 182.0 | 182.0 | 182.0 | 0.0 |
| Q | 26,388 | 105 | 1,214 | 5.0 | 182.1 | 182.1 | 182.1 | 0.0 |
| R | 26,488 | 105 | 1,431 | 4.3 | 182.7 | 182.7 | 182.7 | 0.0 |
| S | 32,093 | 104 | 1,492 | 2.9 | 183.8 | 183.8 | 184.1 | 0.3 |
| T | 33,204 | 110 | 1,370 | 3.2 | 184.0 | 184.0 | 184.3 | 0.3 |
| U | 34,874 | 49 | 665 | 6.6 | 184.1 | 184.1 | 184.4 | 0.3 |
| V | 34,979 | 130 | 1,424 | 3.1 | 184.8 | 184.8 | 185.1 | 0.3 |
| W | 41,989 | 250 | 1,915 | 2.3 | 186.5 | 186.5 | 186.7 | 0.2 |
| X | 45,024 | 75 | 349 | 12.6 | 192.3 | 192.3 | 192.3 | 0.0 |
| Y | 45,424 | 85 | 367 | 12.0 | 199.1 | 199.1 | 199.1 | 0.0 |
| Z | 45,479 | 102 | 1,175 | 3.7 | 218.4 | 218.4 | 218.4 | 0.0 |
| AA | 45,637 | 150 | 1,573 | 2.8 | 218.7 | 218.7 | 218.7 | 0.0 |
| AB | 45,941 | 222 | 1,080 | 4.1 | 218.8 | 218.8 | 218.8 | 0.0 |
| AC | 45,987 | 241 | 2,122 | 2.1 | 224.4 | 224.4 | 224.8 | 0.4 |
| AD | 46,353 | 176 | 1,645 | 2.7 | 224.5 | 224.5 | 224.9 | 0.4 |
| AE | 49,093 | 169 | 1,277 | 3.4 | 225.1 | 225.1 | 225.4 | 0.3 |

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[1] Feet above Dover-Rochester corporate limits

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**FLOODWAY DATA**

**COCHECO RIVER**

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Cocheco River (continued) | | | | | | | | |
| AF | 49,148 | 200 | 2,064 | 2.1 | 225.3 | 225.3 | 225.6 | 0.3 |
| AG | 56,348 | 73 | 831 | 5.3 | 226.0 | 226.0 | 226.7 | 0.7 |
| AH | 57,995 | 472 | 1,918 | 2.3 | 227.1 | 227.1 | 227.6 | 0.5 |
| AI | 60,570 | 98 | 979 | 4.5 | 228.4 | 228.4 | 228.7 | 0.3 |
| AJ | 60,642 | 208 | 1,564 | 2.8 | 228.7 | 228.7 | 228.8 | 0.1 |
| AK | 66,672 | 54 | 571 | 7.7 | 231.7 | 231.7 | 232.1 | 0.4 |
| AL | 66,732 | 253 | 1,732 | 2.5 | 233.1 | 233.1 | 233.4 | 0.3 |
| AM | 75,482 | 410 | 2,545 | 1.7 | 235.9 | 235.9 | 236.1 | 0.2 |
| AN | 79,240 | 110 | 726 | 5.8 | 237.6 | 237.6 | 237.9 | 0.3 |
| AO | 79,740 | 150 | 1,261 | 3.4 | 238.5 | 238.5 | 239.2 | 0.7 |
| AP | 80,003 | 85 | 857 | 4.9 | 240.1 | 240.1 | 240.2 | 0.1 |
| AQ | 80,804 | 440 | 3,448 | 1.2 | 240.3 | 240.3 | 241.0 | 0.7 |
| AR | 81,495 | 540 | 3,275 | 1.3 | 240.4 | 240.4 | 241.2 | 0.8 |
| AS | 82,736 | 650 | 4,123 | 1.0 | 240.5 | 240.5 | 241.4 | 0.9 |
| AT | 83,618 | 630 | 3,640 | 1.2 | 240.7 | 240.7 | 241.7 | 1.0 |
| AU | 84,996 | 600 | 2,661 | 1.6 | 241.3 | 241.3 | 242.3 | 1.0 |
| AV | 85,610 | 380 | 2,699 | 1.6 | 241.3 | 241.3 | 242.3 | 1.0 |
| AW | 85,950 | 350 | 2,466 | 1.7 | 244.6 | 244.6 | 244.9 | 0.3 |
| AX | 86,893 | 445 | 3,362 | 1.3 | 244.8 | 244.8 | 245.1 | 0.3 |
| AY | 87,633 | 138 | 751 | 5.6 | 244.9 | 244.9 | 245.9 | 1.0 |
| AZ | 88,332 | 130 | 954 | 4.4 | 246.6 | 246.6 | 246.6 | 0.0 |
| BA | 89,098 | 130 | 983 | 4.3 | 247.0 | 247.0 | 247.4 | 0.4 |
| BB | 90,180 | 126 | 696 | 6.1 | 247.7 | 247.7 | 248.3 | 0.6 |
| BC | 90,675 | 105 | 651 | 6.5 | 249.3 | 249.3 | 249.6 | 0.3 |
| BD | 90,925 | 240 | 1,874 | 2.3 | 254.8 | 254.8 | 255.1 | 0.3 |

[1] Feet above Dover-Rochester corporate limits

**TABLE 9**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**FLOODWAY DATA**

**COCHECO RIVER**

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Cocheco River (continued) | | | | | | | | |
| BE | 92,290 | 310 | 3,303 | 1.3 | 255.2 | 255.2 | 255.6 | 0.4 |
| BF | 93,140 | 250 | 2,257 | 1.9 | 255.3 | 255.3 | 255.7 | 0.4 |
| BG | 93,955 | 250 | 1,920 | 2.2 | 255.4 | 255.4 | 255.9 | 0.5 |
| BH | 94,365 | 340 | 3,464 | 1.2 | 255.5 | 255.5 | 256.0 | 0.5 |
| BI | 94,685 | 310 | 2,460 | 1.7 | 255.6 | 255.6 | 256.4 | 0.8 |
| BJ | 95,420 | 490 | 6,670 | 0.6 | 255.7 | 255.7 | 256.6 | 0.9 |
| BK | 96,590 | 590 | 5,946 | 0.7 | 255.8 | 255.8 | 256.7 | 0.9 |
| BL | 98,055 | 700 | 4,917 | 0.9 | 256.0 | 256.0 | 256.9 | 0.9 |
| BM | 99,150 | 970 | 4,192 | 1.0 | 256.2 | 256.2 | 257.1 | 0.9 |
| BN | 99,935 | 895 | 3,002 | 1.4 | 256.5 | 256.5 | 257.5 | 1.0 |
| BO | 100,820 | 403 | 1,152 | 3.7 | 257.7 | 257.7 | 258.0 | 0.3 |
| BP | 101,925 | 200 | 813 | 5.2 | 260.7 | 260.7 | 261.1 | 0.4 |
| BQ | 102,820 | 77 | 417 | 10.2 | 263.5 | 263.5 | 263.8 | 0.3 |
| BR | 103,550 | 65 | 442 | 9.6 | 268.2 | 268.2 | 268.2 | 0.0 |
| BS | 103,770 | 73 | 456 | 9.3 | 269.2 | 269.2 | 269.2 | 0.0 |
| BT | 104,780 | 77 | 543 | 7.8 | 273.2 | 273.2 | 273.4 | 0.2 |
| BU | 105,942 | 95 | 591 | 7.2 | 276.0 | 276.0 | 276.8 | 0.8 |
| BV | 106,443 | 81 | 480 | 7.4 | 278.2 | 278.2 | 278.3 | 0.1 |
| BW | 106,720 | 120 | 335 | 10.6 | 280.6 | 280.6 | 280.6 | 0.0 |
| BX | 106,950 | 53 | 382 | 9.3 | 282.9 | 282.9 | 283.0 | 0.1 |
| BY | 108,060 | 235 | 460 | 7.7 | 288.0 | 288.0 | 288.0 | 0.0 |
| BZ | 109,090 | 634 | 1,316 | 2.7 | 295.9 | 295.9 | 296.2 | 0.3 |
| CA | 109,805 | 350 | 593 | 6.0 | 300.7 | 300.7 | 300.9 | 0.2 |

[1] Feet above Dover-Rochester corporate limits

**TABLE 9**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**FLOODWAY DATA**

**COCHECO RIVER**

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Dames Brook | | | | | | | | |
| A | 100 | 35 | 137 | 6.3 | 260.6 | 260.5[2] | 261.5 | 1.0 |
| B | 445 | 30 | 190 | 4.5 | 262.0 | 262.0 | 262.6 | 0.6 |
| C | 590 | 36 | 246 | 3.5 | 265.4 | 265.4 | 265.4 | 0.0 |
| Ela River | | | | | | | | |
| A | 4,090 | 140 | 1,140 | 0.9 | 309.5 | 309.5 | 310.4 | 0.9 |
| B | 4,730 | 55 | 281 | 3.6 | 309.5 | 309.5 | 310.5 | 1.0 |
| C | 5,045 | 54 | 354 | 2.9 | 312.6 | 312.6 | 313.2 | 0.6 |
| D | 6,050 | 39 | 108 | 9.5 | 323.3 | 323.3 | 323.3 | 0.0 |
| E | 6,815 | 53 | 207 | 4.9 | 328.9 | 328.9 | 329.2 | 0.3 |
| F | 7,745 | 39 | 107 | 9.5 | 340.8 | 340.8 | 340.8 | 0.0 |
| G | 8,980 | 83 | 192 | 5.3 | 350.3 | 350.3 | 350.5 | 0.2 |
| H | 9,745 | 70 | 129 | 7.9 | 360.8 | 360.8 | 360.8 | 0.0 |
| I | 9,920 | 50 | 285 | 3.6 | 365.0 | 365.0 | 365.4 | 0.4 |
| J | 10,500 | 48 | 115 | 8.9 | 368.3 | 368.3 | 368.3 | 0.0 |
| K | 11,955 | 61 | 398 | 2.6 | 380.5 | 380.5 | 380.7 | 0.2 |

[1] Feet above confluence with Cocheco River

[2] Elevation computed without consideration of backwater effects from Cocheco River

**TABLE 9**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

## FLOODWAY DATA

## DAMES BROOK - ELA RIVER

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Hamel Brook | | | | | | | | |
| A | 5,450 | 30 | 185 | 7.0 | 24.7 | 24.7 | 25.7 | 1.0 |
| B | 5,765 | 41 | 257 | 5.0 | 28.0 | 28.0 | 29.0 | 1.0 |
| C | 5,860 | 122 | 1,020 | 1.3 | 30.0 | 30.0 | 31.0 | 1.0 |
| Longmarsh Brook | | | | | | | | |
| D | 6,345 | 127 | 1,175 | 1.1 | 30.4 | 30.4 | 31.4 | 1.0 |
| E | 7,805 | 253 | 1,920 | 0.7 | 31.9 | 31.9 | 32.9 | 1.0 |

[1] Feet above Mill Pond Dam

**TABLE 9**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOODWAY DATA

**FLOODING SOURCE: HAMEL BROOK – LONGMARSH BROOK**

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Lamprey River | | | | | | | | |
| L | 4367 | 585 | 7191 | 1.2 | 35.4 | 35.4 | 36.3 | 0.9 |
| M | 4670 | 377 | 5299 | 1.5 | 35.4 | 35.4 | 36.4 | 0.9 |
| N | 5029 | 286 | 5675 | 1.4 | 35.4 | 35.4 | 36.4 | 0.9 |
| O | 6657 | 306 | 4994 | 1.6 | 35.5 | 35.5 | 36.4 | 0.9 |
| P | 7682 | 311 | 4532 | 1.8 | 35.6 | 35.6 | 36.5 | 0.9 |
| Q | 8054 | 219 | 3546 | 2.8 | 35.6 | 35.6 | 36.5 | 0.9 |
| R | 8924 | 229 | 3432 | 2.9 | 35.6 | 35.6 | 36.6 | 1.0 |
| S | 9069 | 222 | 3355 | 3.0 | 35.6 | 35.6 | 36.6 | 1.0 |
| T | 9813 | 259 | 3537 | 2.8 | 35.8 | 35.8 | 36.8 | 1.0 |
| U | 10296 | 148 | 2730 | 3.6 | 35.8 | 35.8 | 36.8 | 1.0 |
| V | 10413 | 118 | 2234 | 4.4 | 36.0 | 36.0 | 36.9 | 0.9 |
| W | 11289 | 301 | 4117 | 2.4 | 36.4 | 36.4 | 37.4 | 1.0 |
| X | 12302 | 196 | 2865 | 3.4 | 36.5 | 36.5 | 37.5 | 1.0 |
| Y | 12962 | 240 | 2748 | 3.5 | 36.8 | 36.8 | 37.7 | 0.9 |
| Z | 13117 | 216 | 2445 | 4.0 | 36.9 | 36.9 | 37.8 | 0.9 |
| AA | 13952 | 135 | 1057 | 9.2 | 38.6 | 38.6 | 39.1 | 0.5 |
| AB | 14441 | 356 | 3770 | 2.6 | 41.3 | 41.3 | 41.5 | 0.2 |
| AC | 14507 | 341 | 3125 | 3.1 | 41.3 | 41.3 | 41.5 | 0.2 |
| AD | 14847 | 104 | 672 | 14.4 | 42.6 | 42.6 | 42.6 | 0.0 |
| AE | 15009 | 99 | 1039 | 9.3 | 47.2 | 47.2 | 47.2 | 0.0 |
| AF | 15084 | 90 | 1654 | 5.9 | 59.1 | 59.1 | 59.3 | 0.2 |

[1] Distances are measured in feet above confluence with MacCallen Dam.

**TABLE 9**

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**FLOODWAY DATA**

**LAMPREY RIVER**

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88 ) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Lamprey River (continued) | | | | | | | | |
| AG | 15240 | 182 | 3863 | 2.5 | 59.2 | 59.2 | 59.9 | 0.7 |
| AH | 16747 | 170 | 3802 | 2.6 | 59.3 | 59.3 | 60.2 | 0.9 |
| AI | 18379 | 260 | 4228 | 2.3 | 59.4 | 59.4 | 60.4 | 1.0 |
| AJ | 18789 | 267 | 3942 | 2.5 | 59.5 | 59.5 | 60.5 | 1.0 |
| AK | 18872 | 212 | 2377 | 4.1 | 59.4 | 59.4 | 60.4 | 1.0 |
| AL | 18909 | 280 | 4128 | 2.4 | 62.5 | 62.5 | 62.7 | 0.2 |
| AM | 19067 | 149 | 1725 | 5.6 | 62.4 | 62.4 | 62.6 | 0.2 |
| AN | 19088 | 166 | 1946 | 5.0 | 63.2 | 63.2 | 63.4 | 0.2 |
| AO | 19187 | 253 | 3565 | 2.7 | 63.6 | 63.6 | 63.7 | 0.2 |
| AP | 19998 | 177 | 2523 | 3.8 | 63.7 | 63.7 | 63.9 | 0.2 |
| AQ | 21683 | 144 | 2516 | 3.9 | 64.1 | 64.1 | 64.5 | 0.3 |
| AR | 22817 | 216 | 2963 | 3.3 | 64.4 | 64.4 | 64.9 | 0.5 |
| AS | 23915 | 209 | 2457 | 3.9 | 64.6 | 64.6 | 65.3 | 0.8 |

[1]Distances are measured in feet above confluence with MacCallen Dam.

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**FLOODWAY DATA**

**LAMPREY RIVER**

**TABLE 9**

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Mad River | | | | | | | | |
| A | 630 | 49 | 228 | 7.1 | 279.2 | 279.2 | 279.2 | 0.0 |
| B | 1,420 | 25 | 126 | 12.9 | 286.5 | 286.5 | 286.5 | 0.0 |
| C | 1,575 | 50 | 443 | 3.7 | 289.1 | 289.1 | 289.6 | 0.5 |
| D | 2,125 | 56 | 166 | 9.8 | 290.0 | 290.0 | 290.0 | 0.0 |
| E | 3,115 | 67 | 235 | 6.9 | 303.4 | 303.4 | 303.4 | 0.0 |
| F | 4,015 | 40 | 148 | 11.0 | 317.1 | 317.1 | 317.1 | 0.0 |
| G | 4,145 | 35 | 162 | 10.1 | 318.4 | 318.4 | 318.9 | 0.5 |
| H | 4,410 | 26 | 188 | 8.7 | 322.7 | 322.7 | 323.0 | 0.3 |
| I | 4,700 | 46 | 211 | 7.7 | 328.4 | 328.4 | 328.4 | 0.0 |
| J | 5,045 | 48 | 157 | 10.4 | 336.9 | 336.9 | 336.9 | 0.0 |
| K | 6,190 | 29 | 145 | 9.9 | 358.8 | 358.8 | 359.2 | 0.4 |
| L | 7,060 | 43 | 204 | 7.1 | 369.7 | 369.7 | 370.4 | 0.7 |
| M | 7,870 | 38 | 134 | 10.7 | 387.4 | 387.4 | 387.4 | 0.0 |
| N | 8,730 | 39 | 178 | 8.1 | 410.5 | 410.5 | 411.1 | 0.6 |
| 0 | 9,440 | 37 | 133 | 10.8 | 433.8 | 433.8 | 433.8 | 0.0 |
| P | 9,558 | 31 | 125 | 11.5 | 436.1 | 436.1 | 436.1 | 0.0 |
| Q | 10,400 | 49 | 166 | 8.6 | 455.8 | 455.8 | 456.2 | 0.4 |
| R | 11,110 | 53 | 159 | 8.2 | 472.4 | 472.4 | 472.4 | 0.0 |
| S | 12,105 | 60 | 174 | 7.5 | 493.0 | 493.0 | 493.3 | 0.3 |
| T | 13,255 | 57 | 153 | 8.5 | 518.3 | 518.3 | 518.3 | 0.0 |
| U | 13,780 | 24 | 107 | 12.1 | 544.7 | 544.7 | 544.7 | 0.0 |
| V | 14,310 | 47 | 196 | 6.6 | 553.8 | 553.8 | 554.1 | 0.3 |
| W | 15,050 | 30 | 150 | 8.7 | 559.7 | 559.7 | 560.1 | 0.4 |
| X | 16,045 | 48 | 183 | 4.1 | 565.6 | 565.6 | 565.8 | 0.2 |
| Y | 16,580 | 75 | 109 | 6.9 | 569.2 | 569.2 | 569.2 | 0.0 |

[1] Feet above confluence with Cocheco River

**TABLE 9**

FEDERAL EMERGENCY MANAGEMENT AGENCY

## STRAFFORD COUNTY, NH
## (ALL JURISDICTIONS)

## FLOODWAY DATA

## MAD RIVER

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Miller Brook | | | | | | | | |
| A | 780 | 65 | 263 | | 426.1 | 424.7[2] | 425.7 | 1.0 |
| B | 1,300 | 60 | 270 | | 426.1 | 425.0[2] | 426.0 | 1.0 |
| C | 1,600 | 65 | 261 | | 427.0 | 427.0 | 427.1 | 0.1 |
| D | 1,950 | 65 | 250 | | 427.0 | 427.0 | 427.2 | 0.2 |
| E | 2,875 | 41 | 129 | | 427.3 | 427.3 | 428.2 | 0.9 |
| F | 3,700 | 25 | 78 | | 431.5 | 431.5 | 431.8 | 0.3 |
| G | 4,000 | 35 | 87 | | 433.6 | 433.6 | 434.1 | 0.5 |
| H | 4,170 | 40 | 62 | | 436.3 | 436.3 | 436.3 | 0.0 |
| I | 4,300 | 100 | 731 | | 444.6 | 444.6 | 445.5 | 0.9 |

[1] Feet above confluence with Salmon Falls River

[2] Elevation computed without consideration of backwater effects from Salmon Falls River

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

## FLOODWAY DATA

## MILLER BROOK

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88 ) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Oyster River | | | | | | | | |
| A | 227 | 126 | 1015 | 2.0 | 13.7 | 13.7 | 13.8 | 0.1 |
| B | 762 | 420 | 2219 | 0.9 | 13.8 | 13.8 | 13.9 | 0.1 |
| C | 1116 | 78 | 595 | 3.4 | 13.7 | 13.7 | 13.8 | 0.1 |
| D | 2012 | 103 | 590 | 3.2 | 14.1 | 14.1 | 14.2 | 0.1 |
| E | 2802 | 86 | 616 | 2.8 | 14.4 | 14.4 | 14.6 | 0.2 |
| F | 3891 | 58 | 308 | 5.6 | 15.5 | 15.5 | 15.7 | 0.2 |
| G | 4433 | 42 | 159 | 10.8 | 19.9 | 19.9 | 20.8 | 0.9 |
| H | 5222 | 152 | 568 | 3.0 | 24.2 | 24.2 | 25.1 | 0.9 |
| I | 5868 | 57 | 331 | 5.2 | 25.2 | 25.2 | 26.0 | 0.7 |
| J | 6633 | 71 | 456 | 3.8 | 26.6 | 26.6 | 27.6 | 1.0 |
| K | 7343 | 42 | 215 | 8.0 | 28.1 | 28.1 | 29.0 | 0.9 |
| L | 7543 | 70 | 702 | 2.5 | 37.8 | 37.8 | 38.0 | 0.2 |
| M | 8270 | 43 | 387 | 4.4 | 37.9 | 37.9 | 38.2 | 0.3 |
| N | 8427 | 43 | 484 | 3.5 | 38.7 | 38.7 | 38.9 | 0.2 |
| O | 8936 | 240 | 1825 | 0.9 | 38.9 | 38.9 | 39.2 | 0.3 |
| P | 9642 | 36 | 242 | 7.0 | 38.7 | 38.7 | 38.8 | 0.2 |
| Q | 9689 | 72 | 465 | 3.7 | 39.2 | 39.2 | 39.9 | 0.6 |
| R | 9763 | 104 | 750 | 2.3 | 39.5 | 39.5 | 40.1 | 0.6 |
| ~~S~~ | ~~9784~~ | ~~156~~ | ~~922~~ | ~~1.9~~ | ~~51.4~~ | 51.4 | 51.5 | 0.0 |
| T | 9941 | 164 | 2198 | 0.8 | 51.5 | 51.5 | 51.5 | 0.0 |
| U | 11009 | 92 | 708 | 2.4 | 51.5 | 51.5 | 51.5 | 0.0 |

[1] Distances are measured in feet above confluence with Little Bay.

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**FLOODWAY DATA**

**OYSTER RIVER**

**TABLE 9**

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88 ) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Oyster River (continued) | | | | | | | | |
| V | 11977 | 29 | 137 | 12.3 | 52.7 | 52.7 | 53.4 | 0.7 |
| W | 13031 | 128 | 828 | 2.0 | 56.8 | 56.8 | 57.8 | 1.0 |
| X | 14014 | 209 | 1015 | 1.6 | 57.4 | 57.4 | 58.3 | 0.9 |
| Y | 15453 | 76 | 347 | 4.8 | 58.5 | 58.5 | 59.3 | 0.8 |
| Z | 16646 | 48 | 403 | 3.9 | 61.0 | 61.0 | 61.7 | 0.7 |
| AA | 17606 | 178 | 1061 | 1.5 | 61.6 | 61.6 | 62.6 | 1.0 |
| AB | 18411 | 157 | 871 | 1.8 | 61.9 | 61.9 | 62.9 | 1.0 |
| AC | 19792 | 166 | 786 | 2.0 | 62.7 | 62.7 | 63.7 | 1.0 |
| AD | 20541 | 164 | 655 | 2.4 | 63.3 | 63.3 | 64.2 | 1.0 |
| AE | 21033 | 188 | 693 | 2.0 | 63.8 | 63.8 | 64.5 | 0.8 |
| AF | 21139 | 84 | 469 | 3.0 | 66.5 | 66.5 | 67.3 | 0.9 |
| AG | 21327 | 137 | 1045 | 1.3 | 66.5 | 66.5 | 67.5 | 1.0 |
| AH | 21632 | 178 | 1081 | 1.3 | 66.5 | 66.5 | 67.6 | 1.0 |
| AI | 22083 | 177 | 1169 | 1.2 | 66.6 | 66.6 | 67.6 | 1.0 |
| AJ | 22141 | 136 | 931 | 1.5 | 66.6 | 66.6 | 67.6 | 1.0 |

[1] Distances are measured in feet above confluence with Little Bay.

**TABLE 9**

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

STRAFFORD COUNTY, NH
(ALL JURISDICTIONS)

**FLOODWAY DATA**

**OYSTER RIVER**

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH[2] (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Salmon Falls River | | | | | | | | |
| A | 800 | 130/50 | 1,264 | 7.1 | 73.1 | 73.1 | 73.3 | 0.2 |
| B | 3,030 | 98/30 | 814 | 11.1 | 75.6 | 75.6 | 76.0 | 0.4 |
| C | 3,108 | 120/25 | 1,026 | 8.8 | 76.8 | 76.8 | 76.8 | 0.0 |
| D | 4,903 | 154/90 | 1,376 | 6.5 | 85.2 | 85.2 | 86.2 | 1.0 |
| E | 4,991 | 260/120 | 5,378 | 1.7 | 109.3 | 109.3 | 109.3 | 0.0 |
| F | 8,211 | 160/95 | 2,472 | 3.6 | 109.4 | 109.4 | 109.4 | 0.0 |
| G | 10,696 | 113/30 | 1,782 | 5.0 | 116.6 | 116.6 | 116.8 | 0.2 |
| H | 10,748 | 115/45 | 1,310 | 6.9 | 123.9 | 123.9 | 123.9 | 0.0 |
| I | 12,978 | 296/130 | 887 | 10.1 | 167.0 | 167.0 | 167.0 | 0.0 |
| J | 13,029 | 275/150 | 3,015 | 3.0 | 174.8 | 174.8 | 174.8 | 0.0 |
| K | 13,359 | 109/50 | 1,312 | 6.9 | 174.8 | 174.8 | 174.8 | 0.0 |
| L | 13,469 | 130/65 | 1,756 | 5.1 | 175.7 | 175.7 | 175.7 | 0.0 |
| M | 15,049 | 160/80 | 2,113 | 4.5 | 176.6 | 176.6 | 176.7 | 0.1 |
| N | 17,319 | 125/75 | 2,080 | 4.3 | 177.2 | 177.2 | 177.4 | 0.2 |
| 0 | 20,039 | 127/70 | 2,206 | 4.1 | 177.7 | 177.7 | 178.1 | 0.4 |
| P | 21,839 | 111/50 | 1,712 | 5.3 | 177.9 | 177.9 | 178.3 | 0.4 |
| Q | 21,879 | 558/90 | 3,624 | 2.5 | 178.2 | 178.2 | 178.6 | 0.4 |
| R | 23,199 | 115/55 | 2,052 | 4.4 | 178.5 | 178.5 | 178.9 | 0.4 |
| S | 26,379 | 175/95 | 2,461 | 3.7 | 179.2 | 179.2 | 179.8 | 0.6 |
| T | 29,024 | 166/86 | 1,927 | 4.7 | 180.4 | 180.4 | 181.2 | 0.8 |
| U | 29,077 | 183/90 | 1,829 | 4.9 | 182.8 | 182.8 | 182.9 | 0.1 |
| V | 31,915 | 915/805 | 7,086 | 1.3 | 183.6 | 183.6 | 183.8 | 0.2 |
| W | 44,085 | 146/100 | 1,499 | 4.4 | 184.5 | 184.5 | 185.0 | 0.5 |
| X | 45,160 | 77/38 | 1,131 | 5.8 | 185.2 | 185.2 | 185.7 | 0.5 |
| Y | 45,200 | 352/55 | 3,212 | 2.0 | 185.8 | 185.8 | 186.2 | 0.4 |
| Z | 62,910 | 354/90 | 3,005 | 2.2 | 189.8 | 189.8 | 190.8 | 1.0 |

[1] Feet above Somersworth-Rollinsford corporate limits

[2] Width/width within county boundary

**TABLE 9**

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

## FLOODWAY DATA

## SALMON FALLS RIVER

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Salmon Falls River (continued) | | | | | | | | |
| AA | 70,945 | 100/60[2] | 528 | 12.5 | 194.6 | 194.6 | 194.6 | 0.0 |
| AB | 71,400 | 199/95[2] | 1,713 | 3.8 | 197.9 | 197.9 | 198.6 | 0.7 |
| AC | 71,470 | 164/100[2] | 1,667 | 3.9 | 206.2 | 206.2 | 206.2 | 0.0 |
| AD | 72,770 | 79/40[2] | 643 | 10.2 | 206.2 | 206.2 | 206.2 | 0.0 |
| AE | 72,870 | 219/110[2] | 1,335 | 4.9 | 207.5 | 207.5 | 207.6 | 0.1 |
| AF | 73,250 | 70/35[2] | 452 | 14.5 | 209.9 | 209.9 | 209.9 | 0.0 |
| AG | 73,350 | 70/30[2] | 704 | 9.3 | 213.2 | 213.2 | 213.2 | 0.0 |
| AH | 74,550 | 100/50[2] | 1,335 | 4.9 | 215.0 | 215.0 | 215.5 | 0.5 |
| AI | 80,700 | 165/125[2] | 1,306 | 4.6 | 216.3 | 216.3 | 217.3 | 1.0 |
| AJ | 83,935 | 81/41[2] | 868 | 6.9 | 219.3 | 219.3 | 220.1 | 0.8 |
| AK | 84,030 | 536/45[2] | 1,805 | 3.3 | 221.2 | 221.2 | 221.4 | 0.2 |
| AL | 93,150 | 125/100[2] | 1,267 | 4.7 | 222.9 | 222.9 | 223.4 | 0.5 |
| AM | 97,210 | 248/165[2] | 2,338 | 2.5 | 226.2 | 226.2 | 227.1 | 0.9 |
| AN | 100,425 | 199/160[2] | 1,079 | 5.5 | 228.2 | 228.2 | 229.0 | 0.8 |
| AO | 100,510 | 235/200[2] | 1,646 | 3.6 | 229.4 | 229.4 | 230.4 | 1.0 |
| AP | 102,700 | 1,586/1,526[2] | 4,687 | 1.3 | 232.6 | 232.6 | 233.2 | 0.6 |
| AO | 103,050 | 748/500[2] | 3,344 | 1.8 | 247.3 | 247.3 | 247.3 | 0.0 |
| AR | 104,065 | 532[3] | 8,177 | 0.7 | 247.3 | 247.3 | 247.3 | 0.0 |
| AS | 107,135 | 988[3] | 8,201 | 0.7 | 247.3 | 247.3 | 247.3 | 0.0 |
| AT | 108,565 | 93[3] | 664 | 8.3 | 248.2 | 248.2 | 248.2 | 0.0 |
| AU | 109,860 | 179[3] | 607 | 9.1 | 257.8 | 257.8 | 257.8 | 0.0 |
| AV | 111,670 | 131[3] | 902 | 6.1 | 265.5 | 265.5 | 265.7 | 0.2 |
| AW | 112,840 | 81[3] | 421 | 13.1 | 310.1 | 310.1 | 310.1 | 0.0 |
| AX | 114,385 | 324[3] | 1,966 | 2.8 | 355.1 | 355.1 | 356.1 | 1.0 |
| AY | 116,320 | 202[3] | 1,506 | 3.7 | 398.8 | 398.8 | 399.4 | 0.6 |
| AZ | 116,520 | 115[3] | 813 | 6.8 | 399.4 | 399.4 | 399.9 | 0.5 |

[1] Feet above Somersworth-Rollinsford corporate limits

[2] Width/width within county boundary

[3] This width extends beyond county boundary

**TABLE 9**

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

## STRAFFORD COUNTY, NH
## (ALL JURISDICTIONS)

## FLOODWAY DATA

## SALMON FALLS RIVER

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Salmon Falls River (continued) | | | | | | | | |
| BA | 117,700 | 234 | 3,371 | 1.6 | 420.2 | 420.2 | 420.8 | 0.6 |
| BB | 118,440 | 197 | 2,520 | 2.1 | 420.3 | 420.3 | 420.9 | 0.6 |
| BC | 120,440 | 2,088 | 46,821 | 0.1 | 420.3 | 420.3 | 420.9 | 0.6 |
| BD | 122,970 | 610 | 9,603 | 0.6 | 420.3 | 420.3 | 420.9 | 0.6 |
| BE | 125,070 | 333 | 4,158 | 1.3 | 420.3 | 420.3 | 420.9 | 0.6 |
| BF | 126,935 | 705 | 9,177 | 0.6 | 420.4 | 420.4 | 421.0 | 0.6 |
| BG | 127,900 | 550 | 7,198 | 0.7 | 420.4 | 420.4 | 421.0 | 0.6 |
| BH | 128,420 | 273 | 4,312 | 1.2 | 420.8 | 420.8 | 421.5 | 0.7 |
| BI | 131,670 | 1,390 | 24,230 | 0.2 | 420.9 | 420.9 | 421.6 | 0.7 |
| BJ | 133,470 | 1,971 | 30,716 | 0.2 | 420.9 | 420.9 | 421.6 | 0.7 |
| BK | 135,770 | 1,584 | 21,746 | 0.2 | 420.9 | 420.9 | 421.6 | 0.7 |
| BL | 137,995 | 1,645 | 21,542 | 0.2 | 420.9 | 420.9 | 421.6 | 0.7 |
| BM | 139,745 | 2,150 | 26,769 | 0.1 | 420.9 | 420.9 | 421.6 | 0.7 |
| BN | 142,175 | 450 | 4,179 | 0.6 | 420.9 | 420.9 | 421.6 | 0.7 |
| BO | 143,645 | 692 | 7,016 | 0.4 | 420.9 | 420.9 | 421.6 | 0.7 |
| BP | 145,185 | 160 | 1,714 | 1.5 | 420.9 | 420.9 | 421.6 | 0.7 |
| BQ | 147,320 | 299 | 2,454 | 1.1 | 421.0 | 421.0 | 421.8 | 0.8 |
| BR | 148,620 | 200 | 1,593 | 1.6 | 421.0 | 421.0 | 421.8 | 0.8 |
| BS | 149,850 | 400 | 2,854 | 0.9 | 421.1 | 421.1 | 422.0 | 0.9 |
| BT | 151,370 | 551 | 3,783 | 0.7 | 421.2 | 421.2 | 422.2 | 1.0 |
| BU | 153,170 | 400 | 2,085 | 1.2 | 421.3 | 421.3 | 422.3 | 1.0 |
| BV | 155,120 | 571 | 2,695 | 1.0 | 421.6 | 421.6 | 422.6 | 1.0 |
| BW | 157,320 | 400 | 1,963 | 1.3 | 422.6 | 422.6 | 423.5 | 0.9 |
| BX | 158,720 | 450 | 2,574 | 1.0 | 423.0 | 423.0 | 424.0 | 1.0 |
| BY | 160,120 | 80 | 503 | 5.1 | 423.5 | 423.5 | 424.3 | 0.8 |
| BZ | 161,990 | 273 | 1,417 | 1.8 | 425.4 | 425.4 | 426.4 | 1.0 |

[1] Feet above Somersworth-Rollinsford corporate limits

[2] This width extends beyond county boundary

**TABLE 9**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**FLOODWAY DATA**

**SALMON FALLS RIVER**

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD) | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Salmon Falls River (continued) | | | | | | | | |
| CA | 163,220 | 65 | 198 | 9.9 | 427.7 | 427.7 | 427.7 | 0.0 |
| CB | 164,640 | 127 | 1,422 | 1.4 | 451.3 | 451.3 | 451.3 | 0.0 |
| CC | 164,850 | 122 | 865 | 2.3 | 452.1 | 452.1 | 452.1 | 0.0 |
| CD | 166,275 | 82 | 211 | 9.3 | 464.8 | 464.8 | 464.8 | 0.0 |
| CE | 167,095 | 61 | 322 | 6.1 | 470.7 | 470.7 | 471.4 | 0.7 |
| CF | 168,720 | 218 | 494 | 4.0 | 490.9 | 490.9 | 491.4 | 0.5 |
| CG | 170,520 | 588 | 3,940 | 0.5 | 507.5 | 507.5 | 507.5 | 0.0 |
| CH | 172,320 | 110 | 816 | 2.4 | 507.5 | 507.5 | 507.5 | 0.0 |
| CI | 173,295 | 114 | 796 | 2.5 | 507.6 | 507.6 | 507.8 | 0.2 |
| CJ | 174,495 | 500 | 1,989 | 1.0 | 507.7 | 507.7 | 508.1 | 0.4 |
| CK | 175,945 | 125 | 847 | 2.3 | 507.9 | 507.9 | 508.3 | 0.4 |
| CL | 177,620 | 896 | 3,223 | 0.6 | 508.0 | 508.0 | 508.4 | 0.4 |
| CM | 179,070 | 105 | 1,013 | 1.9 | 508.1 | 508.1 | 508.5 | 0.4 |
| CN | 180,670 | 550 | 1,285 | 1.5 | 508.2 | 508.2 | 508.9 | 0.7 |
| CO | 181,740 | 443 | 1,315 | 1.5 | 508.9 | 508.9 | 509.9 | 1.0 |
| CP | 183,795 | 71 | 216 | 9.1 | 511.6 | 511.6 | 511.6 | 0.0 |

[1] Feet above Somersworth-Rollinsford corporate limits

[2] This width extends beyond county boundary

TABLE 9

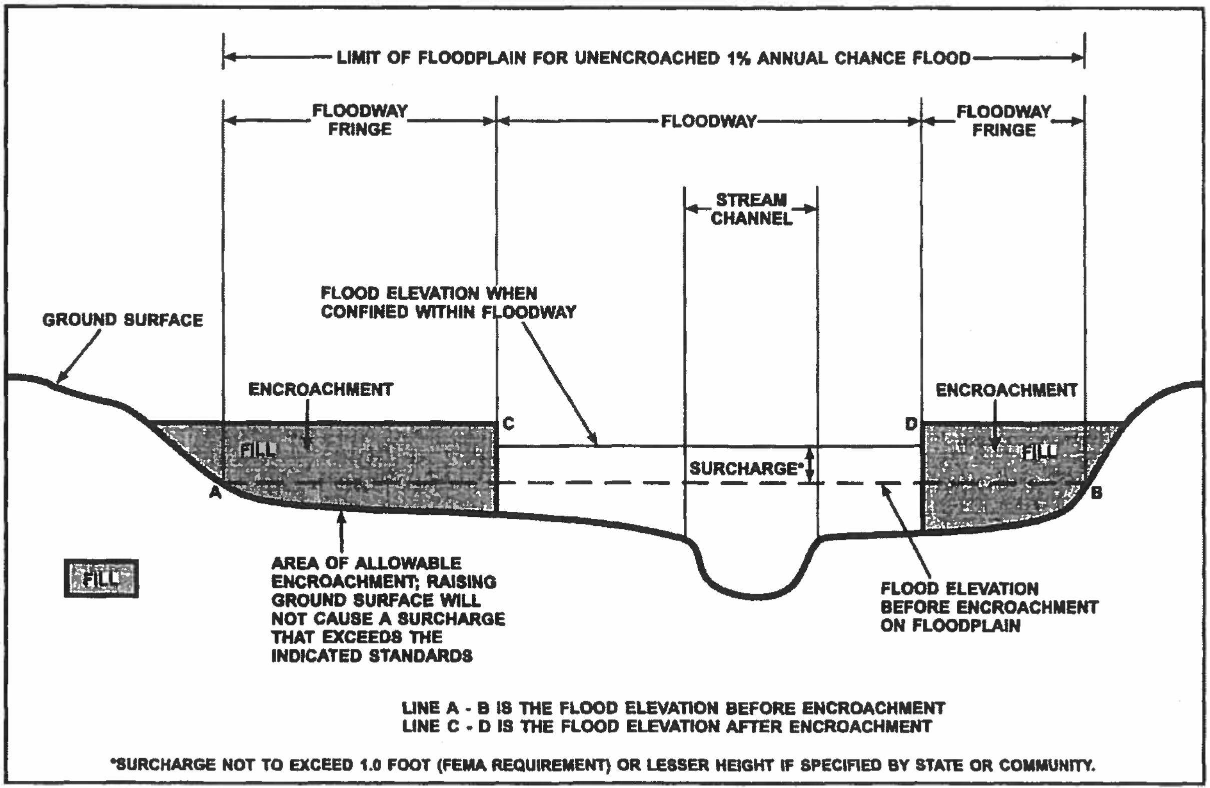
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

**FLOODWAY DATA**

**SALMON FALLS RIVER**

The area between the floodway and 100-year 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 100-year 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 1.



**FLOODWAY SCHEMATIC**

Figure 1

## 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 100-year 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 100-year 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 AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. 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 100-year 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 AR

Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year 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 of the 500-year floodplain, areas within the 500-year floodplain, and to areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

## 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 100-year 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 100- and 500-year 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 Strafford County. Prior to the 2005 countywide study, separate FIRMs were prepared for each identified flood-prone incorporated community in the county. The countywide FIRM also included flood hazard information that was presented separately on FBFMs, where applicable. Historical data relating to the maps prepared for each community are presented in Table 10, "Community Map History."

### TABLE 10 – COMMUNITY MAP HISTORY

| Community Name | Initial Identification | Flood Hazard Boundary Map Revisions Date | FIRM Effective Date | FIRM Revisions Date |
|---|---|---|---|---|
| Barrington, Town of | February 21, 1975 | | September 1, 1969 | May 17, 2004 |
| Dover, City of | July 26, 1974 | February 11, 1977 | April 15, 1980 | May 17, 2004 |
| Durham, Town of | September 13, 1974 | May 14, 1976 | May 3, 1990 | August 23, 2001<br>May 17, 2004 |
| Farmington, Town of | February 21, 1975 | April 16, 1976<br>December 7, 1979 | May 17, 1988 | May 17, 2004 |

**TABLE 10 – COMMUNITY MAP HISTORY** – continued

| Community Name | Initial Identification | Flood Hazard Boundary Map Revisions Date | FIRM Effective Date | FIRM Revisions Date |
|---|---|---|---|---|
| Lee, Town of | June 21, 1974 | September 3, 1976 | April 2, 1988 | May 17, 2004 |
| Madbury, Town of | January 17, 1975 | | May 17, 2004 | May 17, 2004 |
| Middleton, Town of | January 31, 1975 | January 10, 1978 | August 1, 1988 | May 17, 2004 |
| Milton, Town of | February 7, 1975 | February 18, 1977 | June 3, 1988 | May 17, 2004 |
| New Durham, Town of | February 7, 1975 | December 10, 1976 | May 2, 199 | May 17, 2004 |
| Rochester, City of | November 8, 1977 | | September 16, 1982 | May 17, 2004 |
| Rollinsford, Town of | January 3, 1975 | February 28, 1978 | April 2, 1986 | May 17, 2004 |
| Somersworth, City of | February 21, 1975 | November 19, 1976 | August 16, 1982 | May 17, 2004 |
| Strafford, Town of | February 28, 1975 | December 31, 1976 | April 2, 1986 | May 2, 2002<br>May 17, 2004 |

## 7.0 OTHER STUDIES

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Strafford County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS reports, FBFMs, and FIRMs for all jurisdictions within Strafford County.

An FIS is currently being prepared for portions of Rockingham County, New Hampshire.

## 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, MA 02110.

## 9.0 BIBLIOGRAPHY AND REFERENCES

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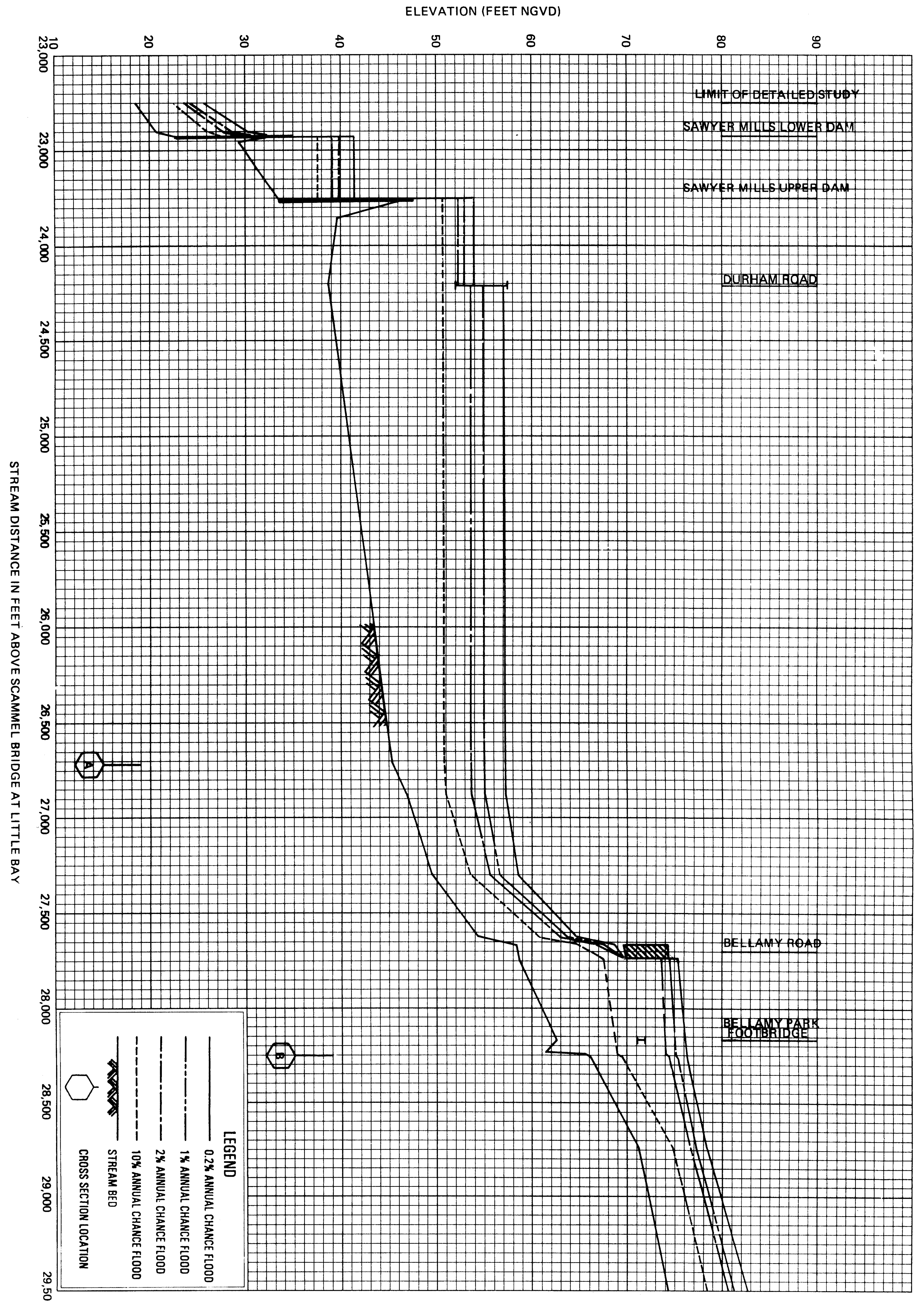


01P

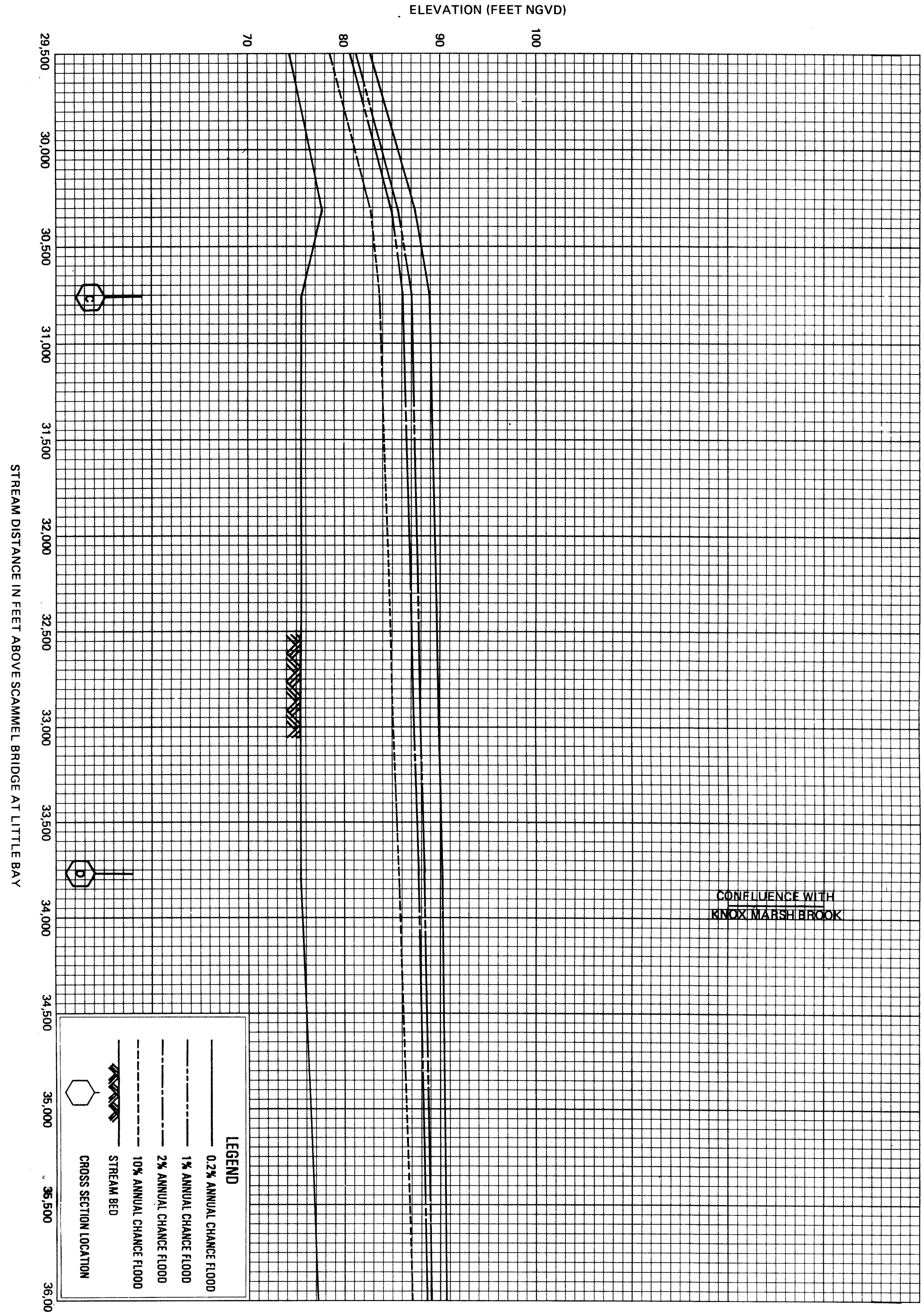
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**BELLAMY RIVER**



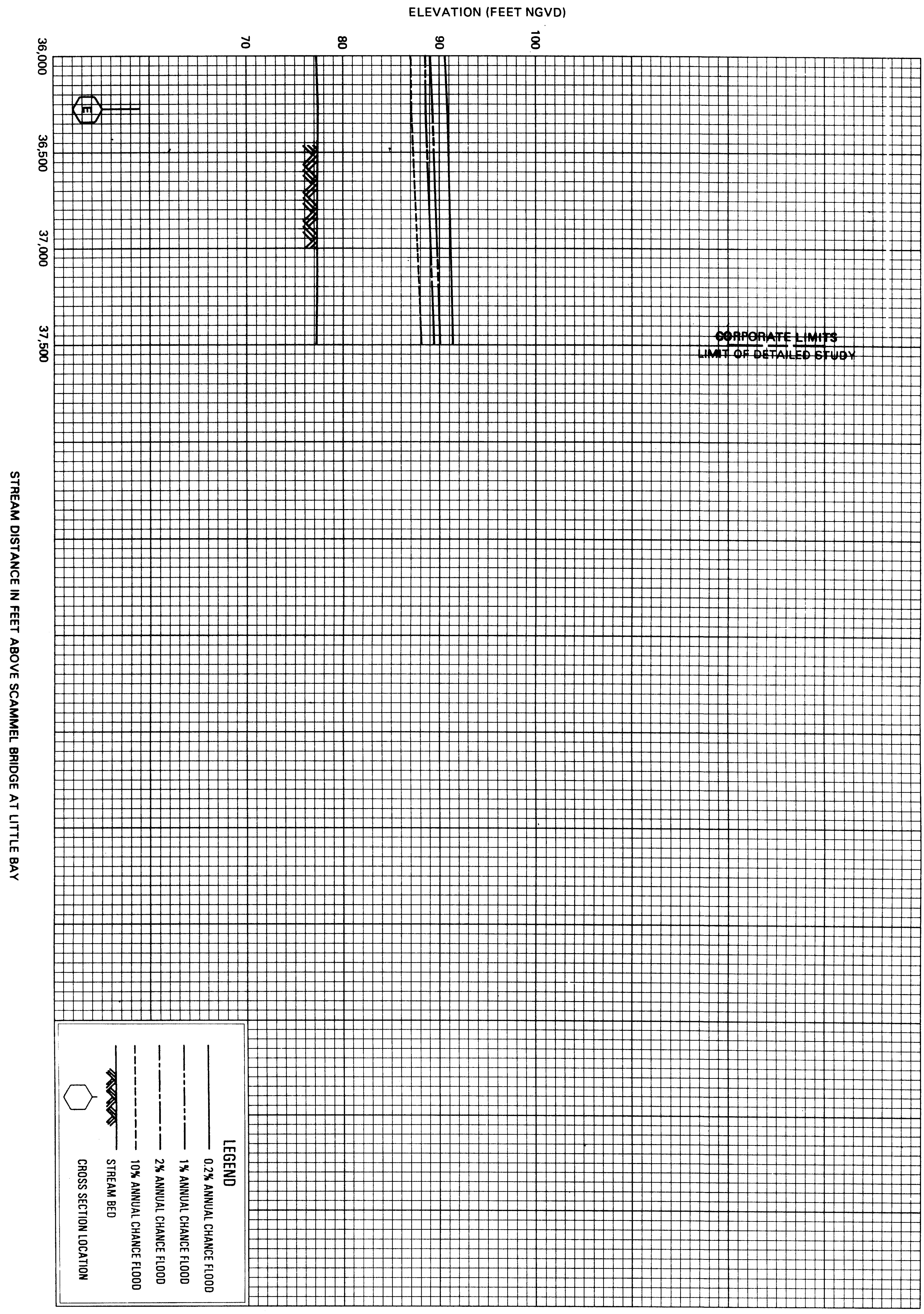
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**BELLAMY RIVER**



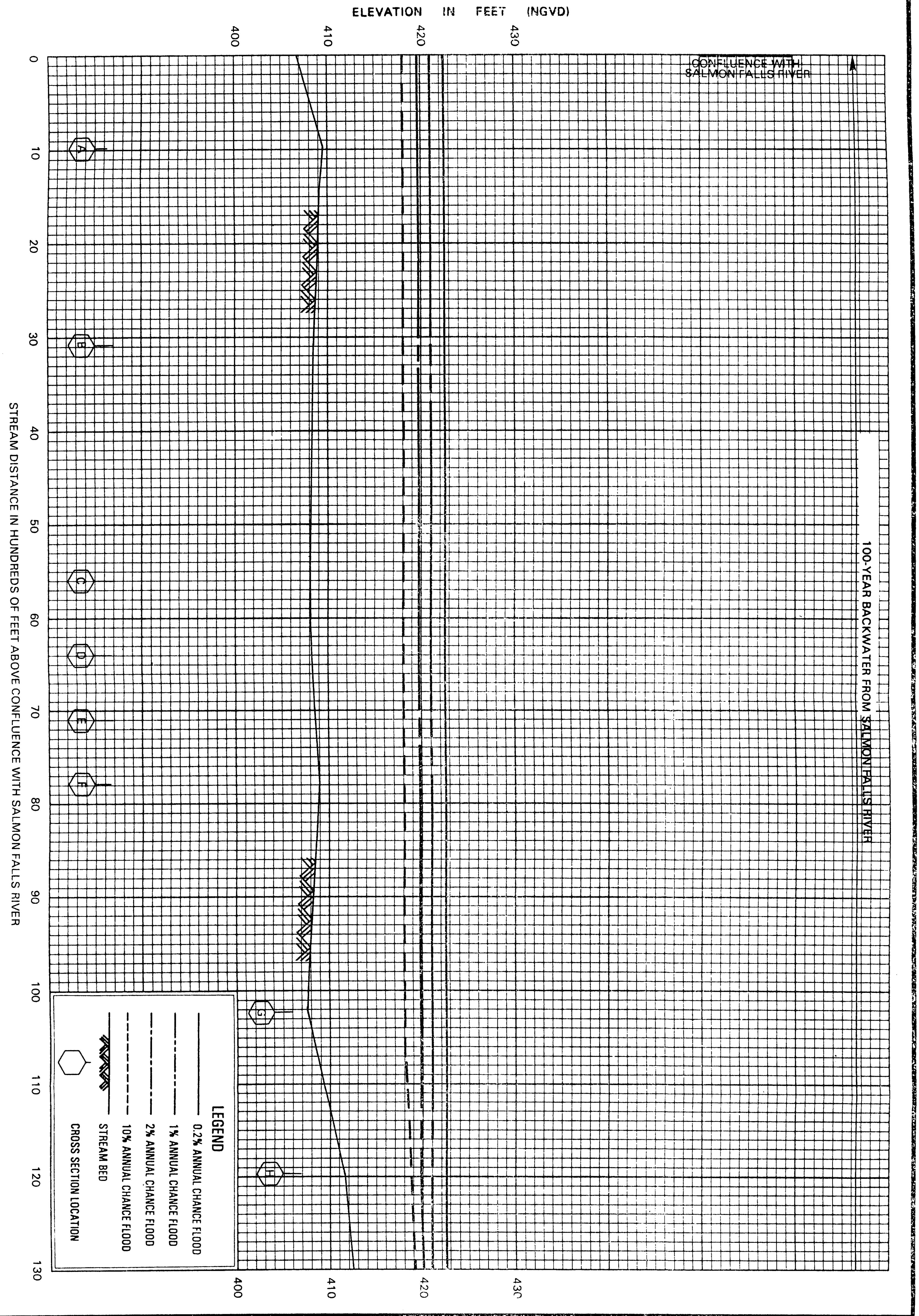
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## BELLAMY RIVER



04P

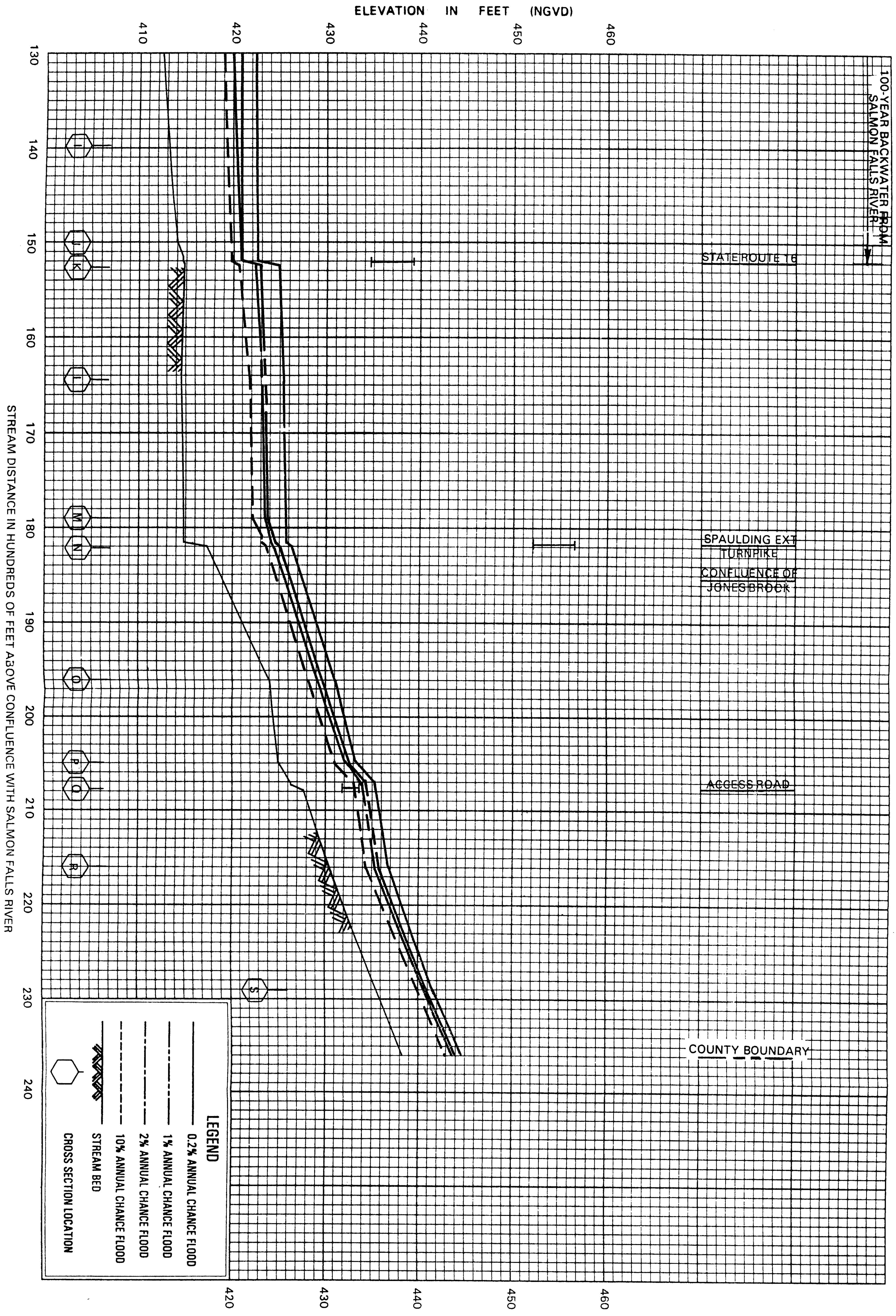
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## BRANCH RIVER



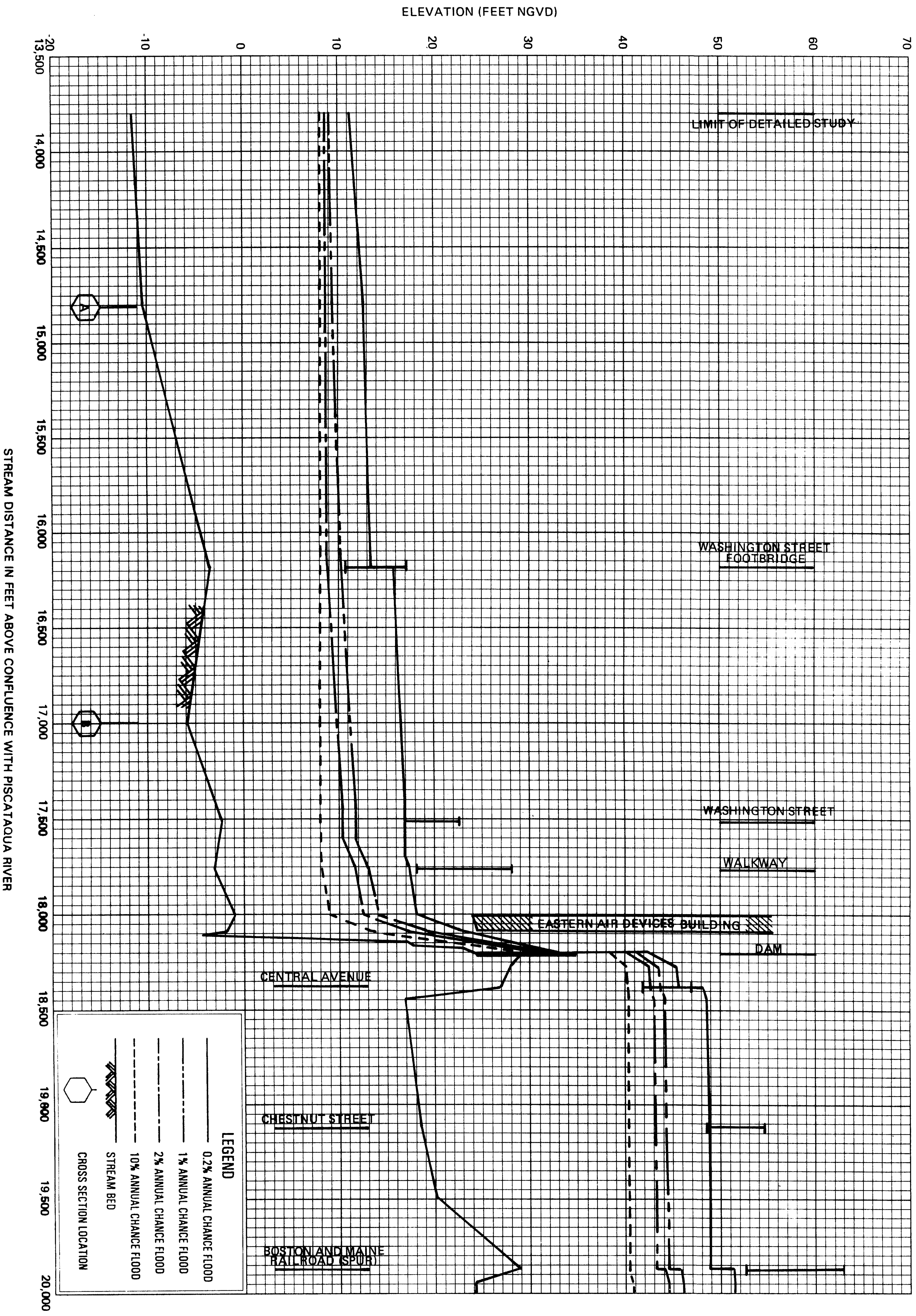
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## BRANCH RIVER



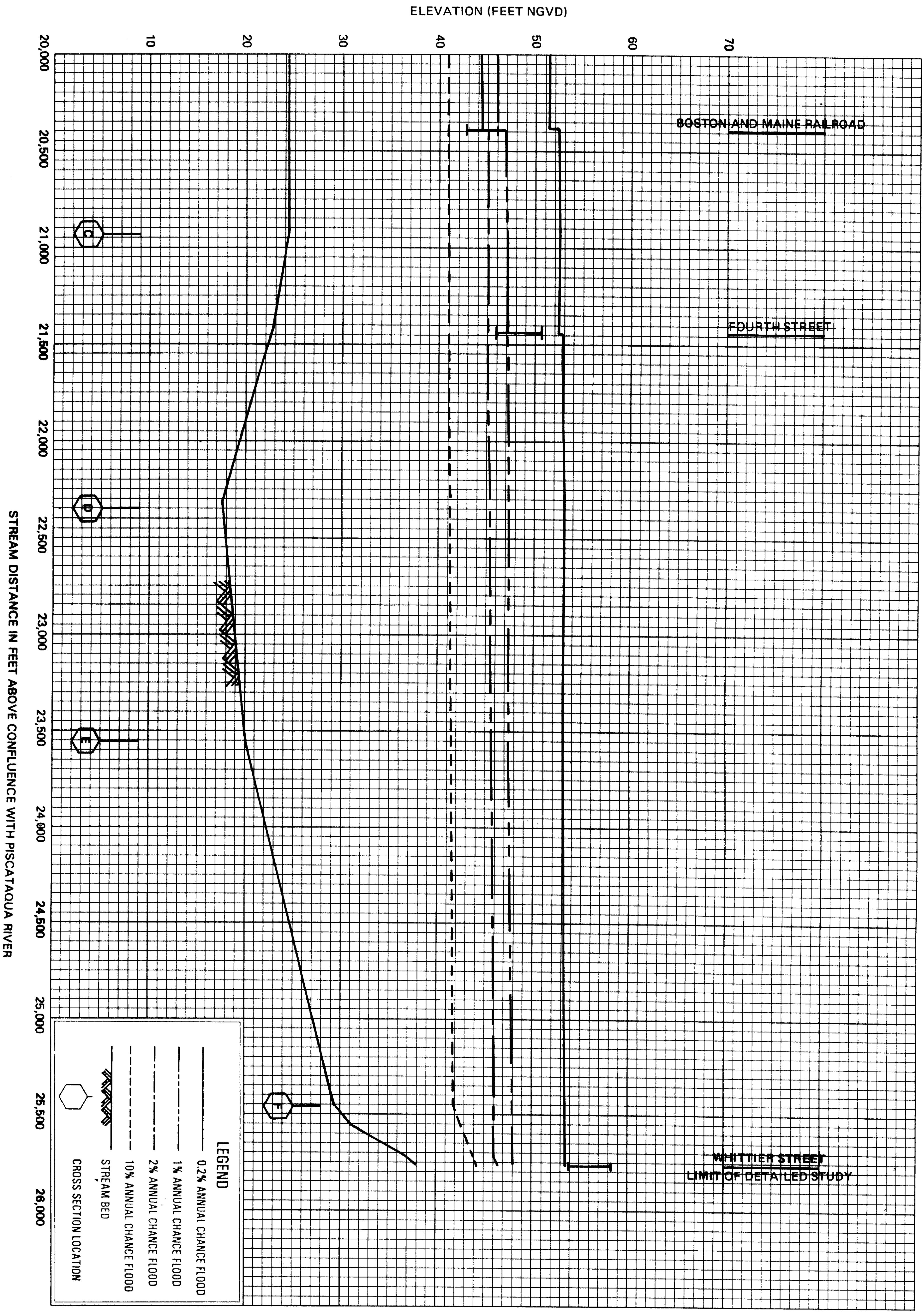
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## COCHECO RIVER



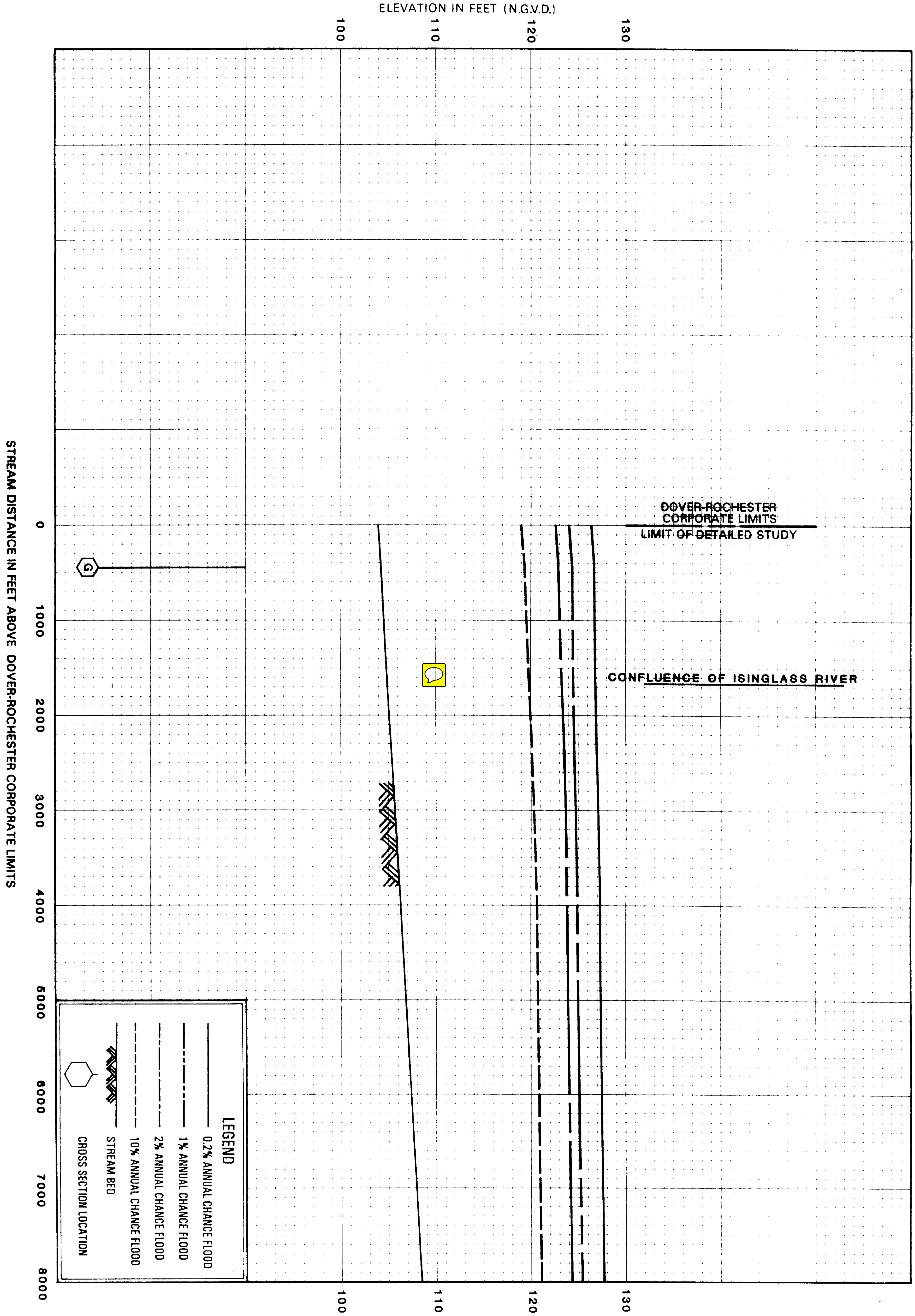
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## COCHECO RIVER



08P

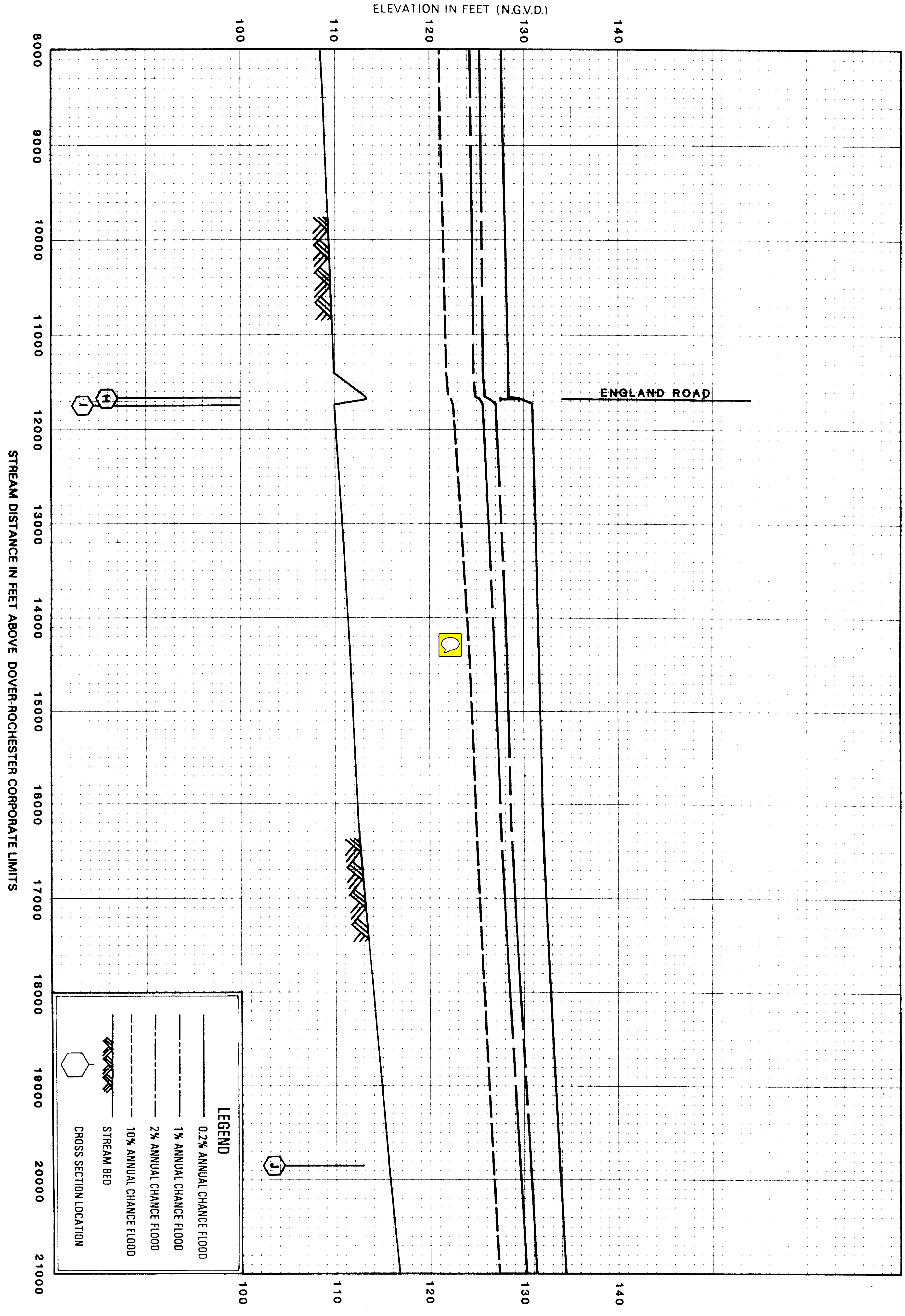
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## COCHECO RIVER



60P

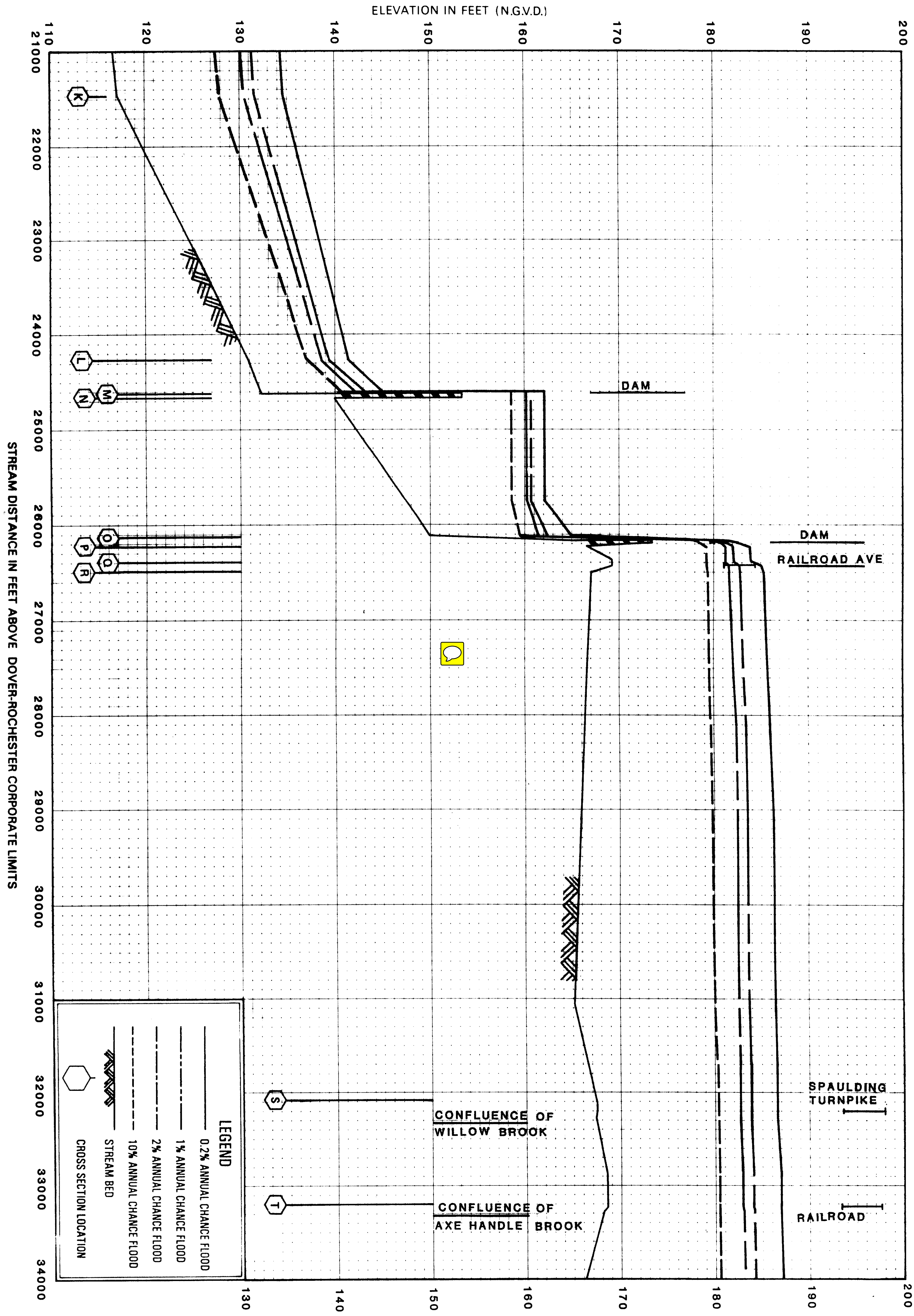
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

FLOOD PROFILES

COCHECO RIVER



10P

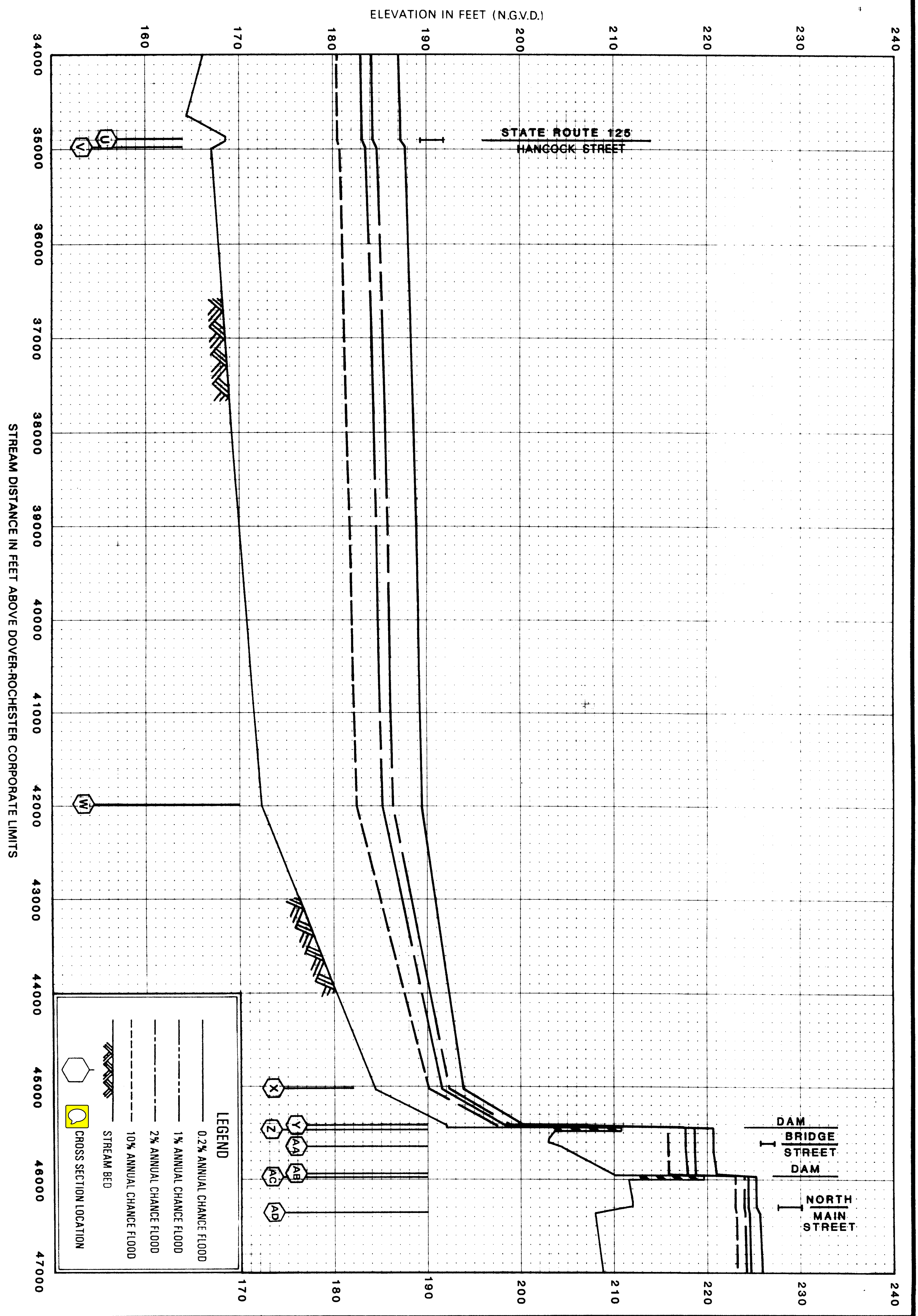
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## COCHECO RIVER



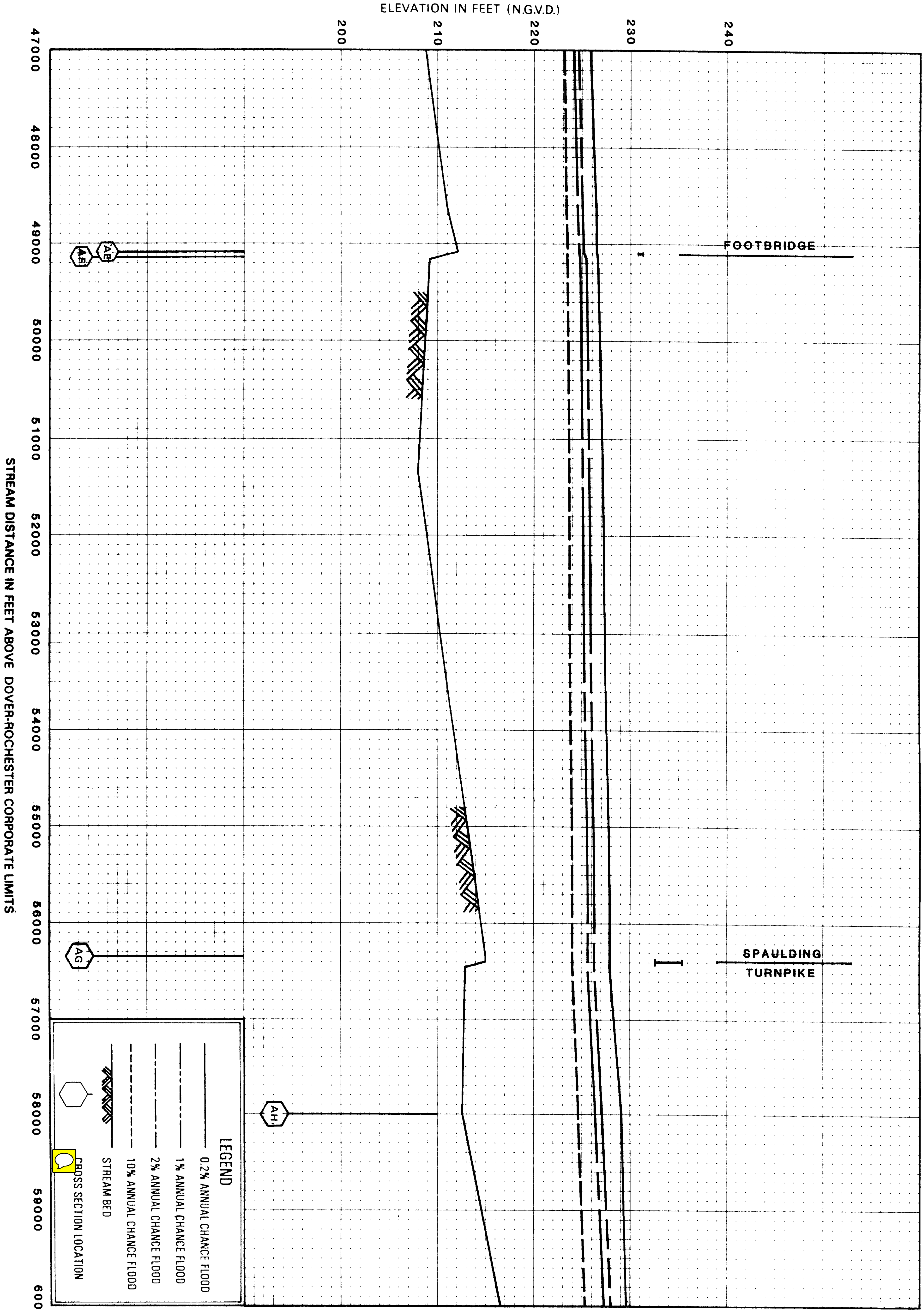
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## COCHECO RIVER



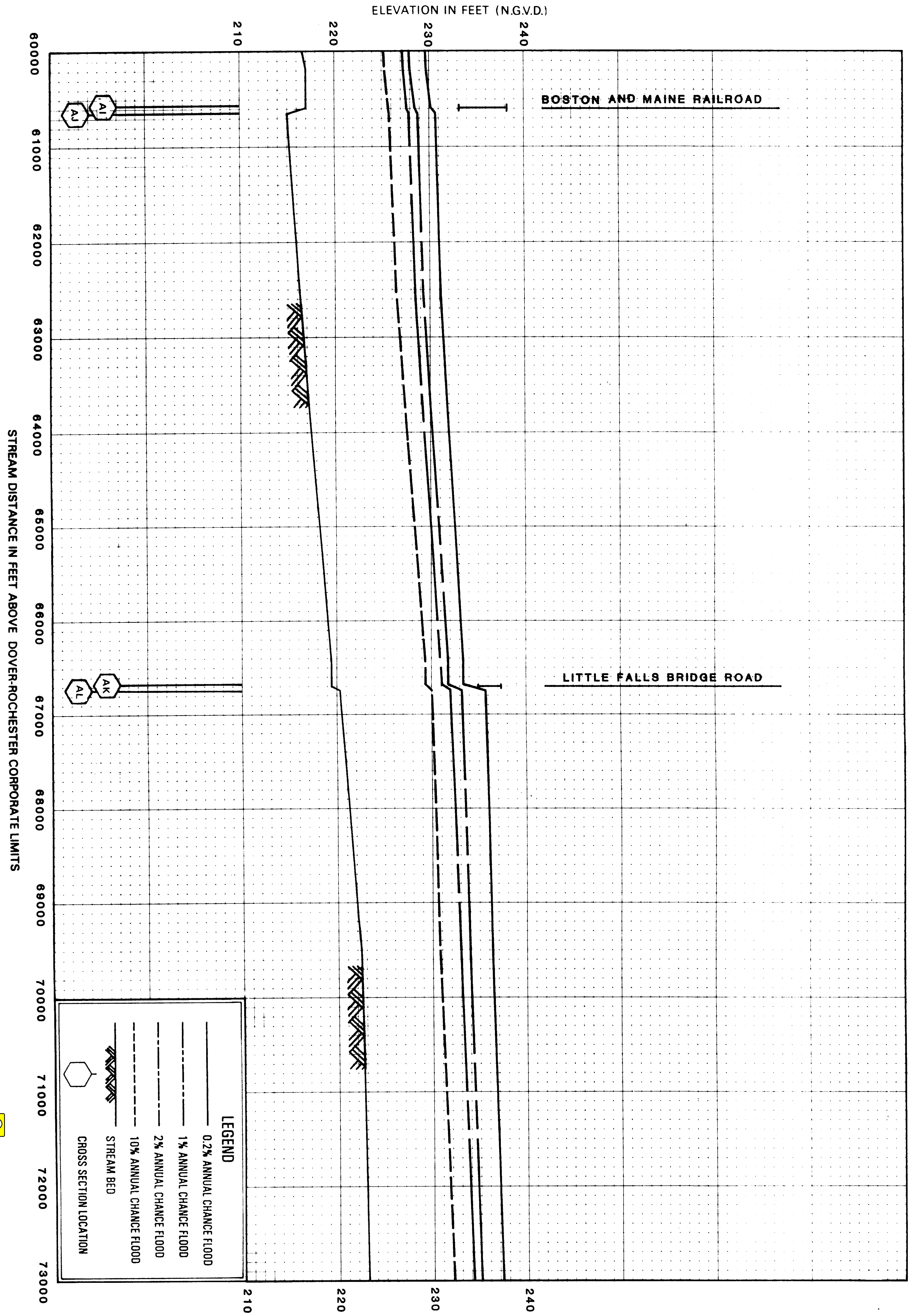
**12P**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## COCHECO RIVER



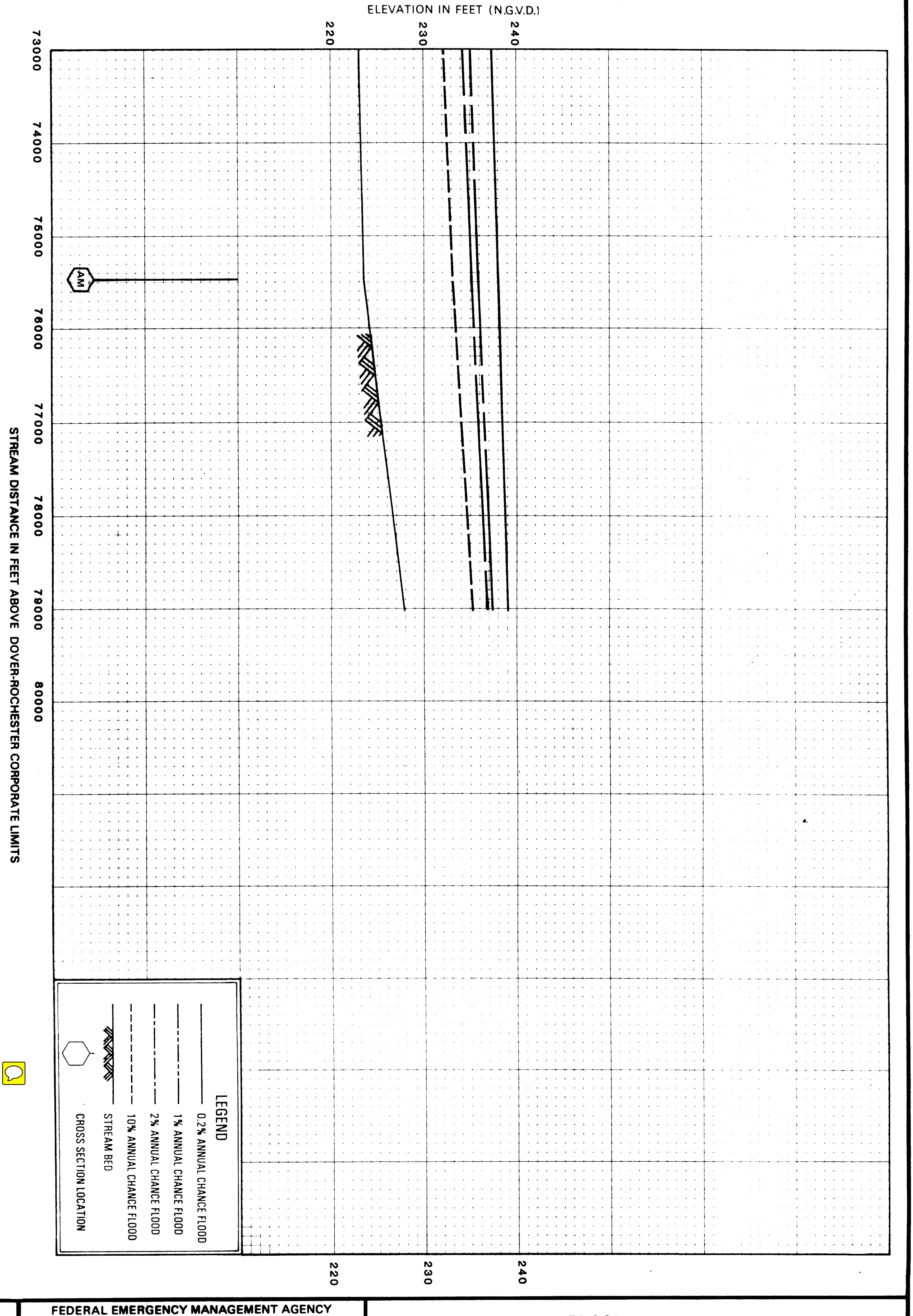
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**COCHECO RIVER**



14P

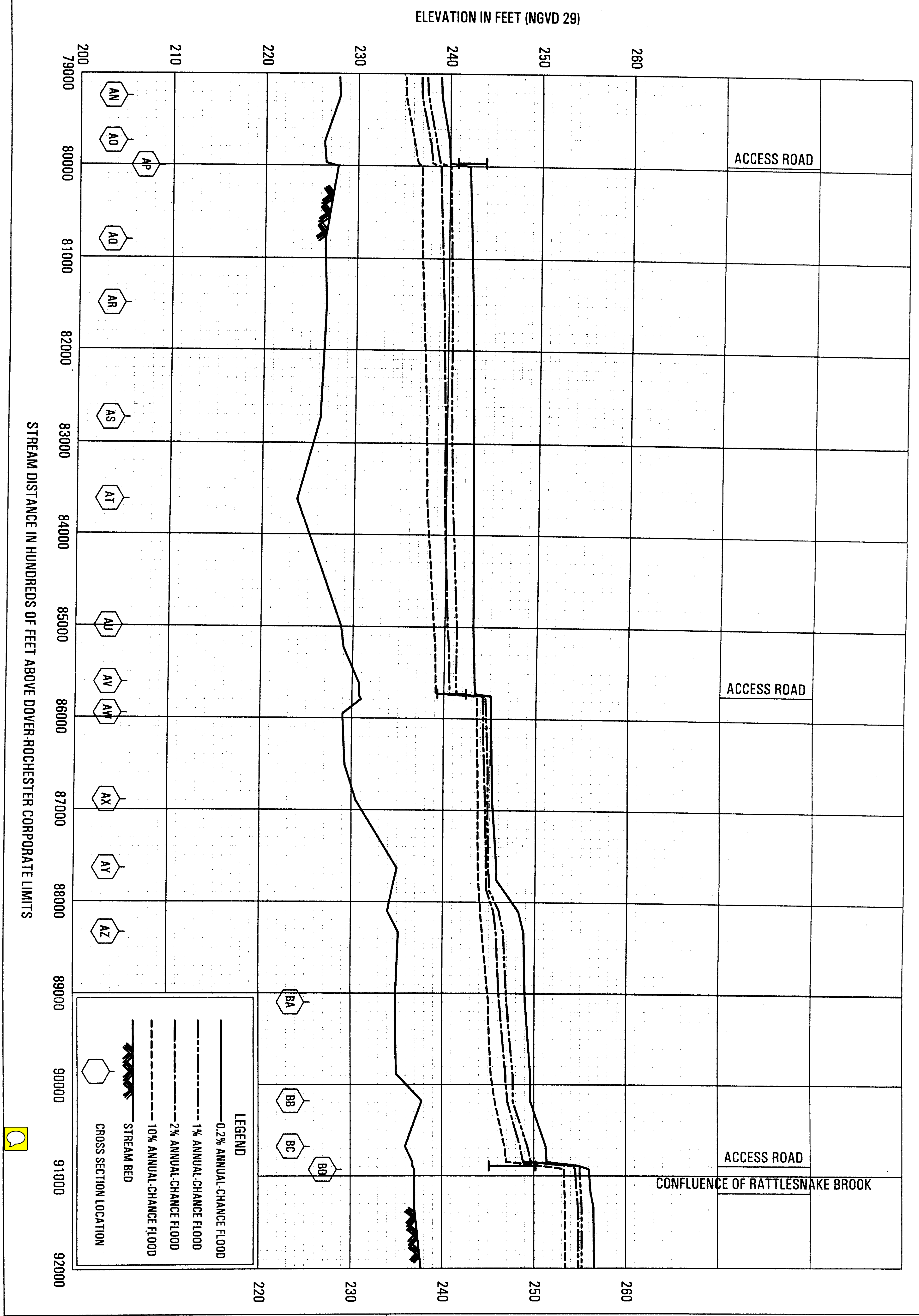
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

FLOOD PROFILES

COCHECO RIVER



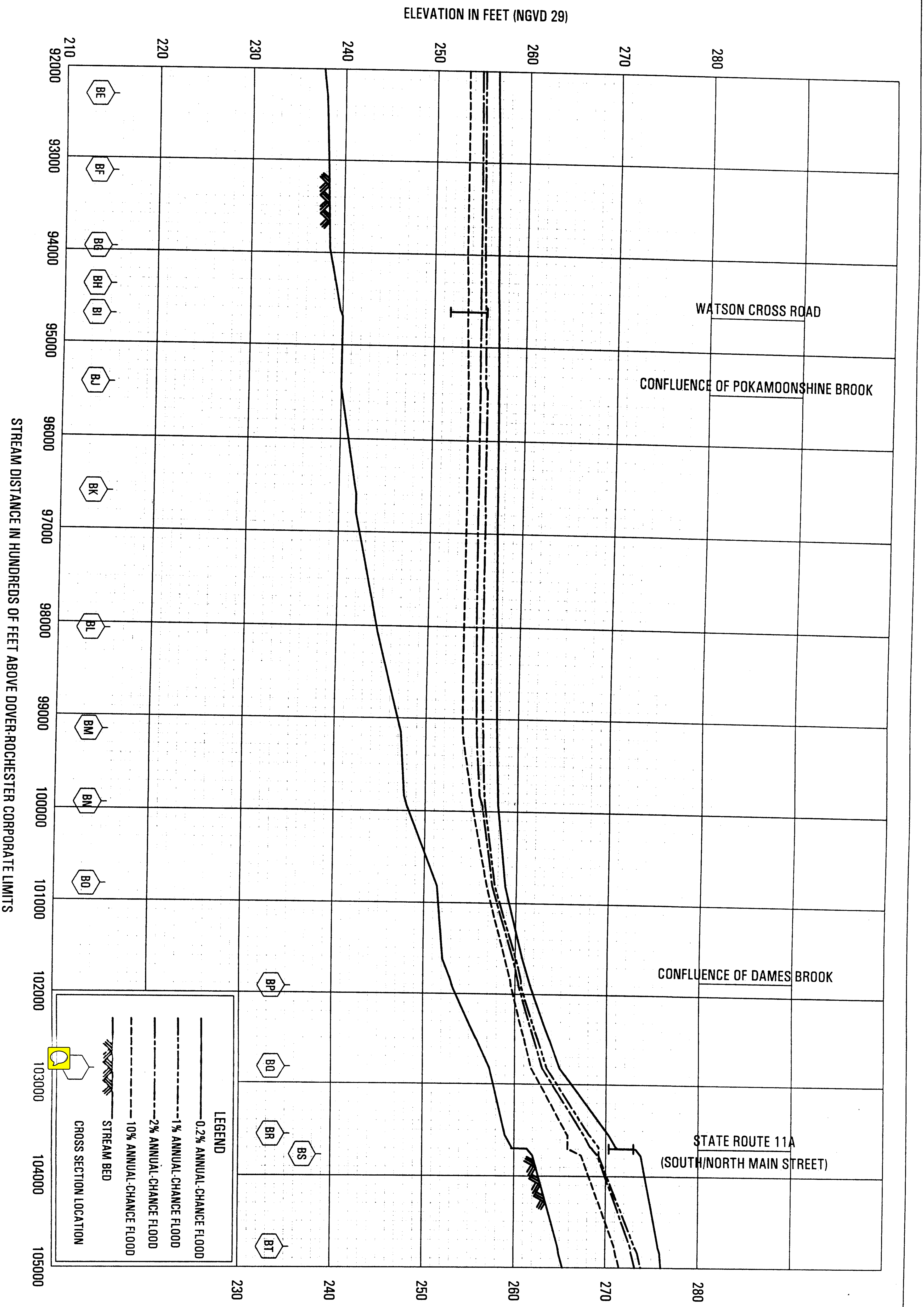
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

COCHECO RIVER



**16P**

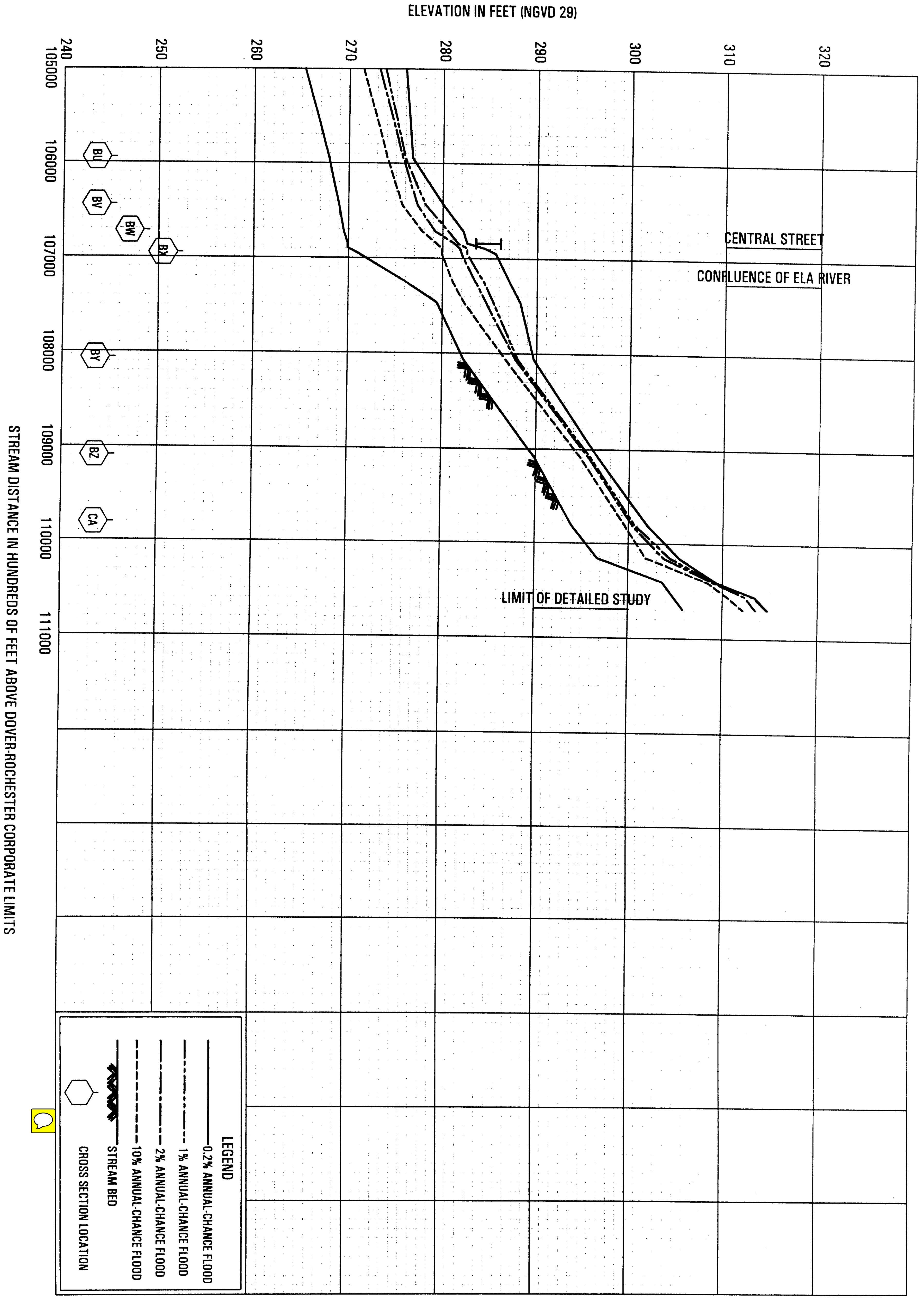
**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

**COCHECO RIVER**



17P

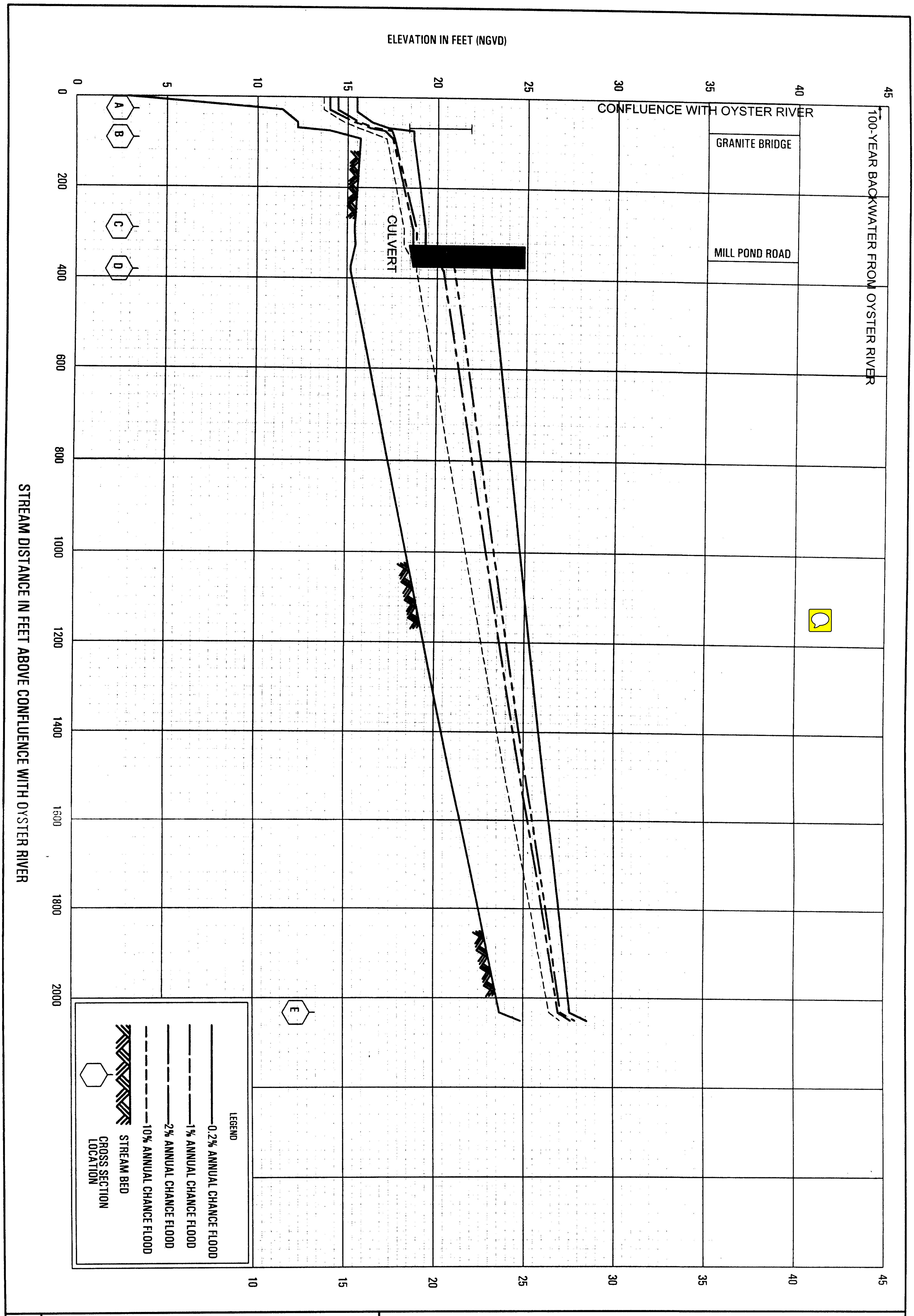
FEDERAL EMERGENCY MANAGEMENT AGENCY

STRAFFORD COUNTY, NH

(ALL JURISDICTIONS)

## FLOOD PROFILES

COCHECO RIVER



18P

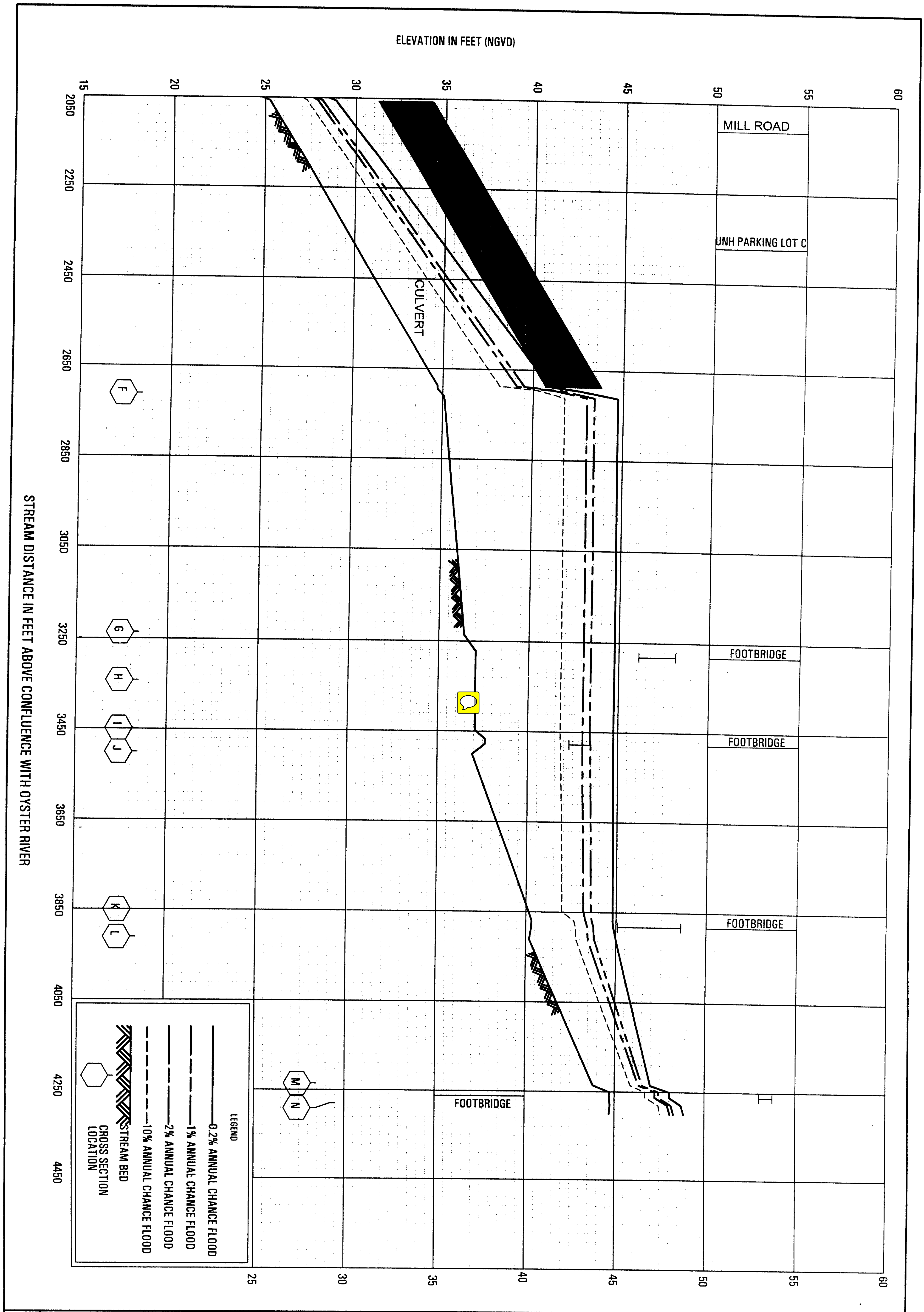
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

COLLEGE BROOK



**19P**

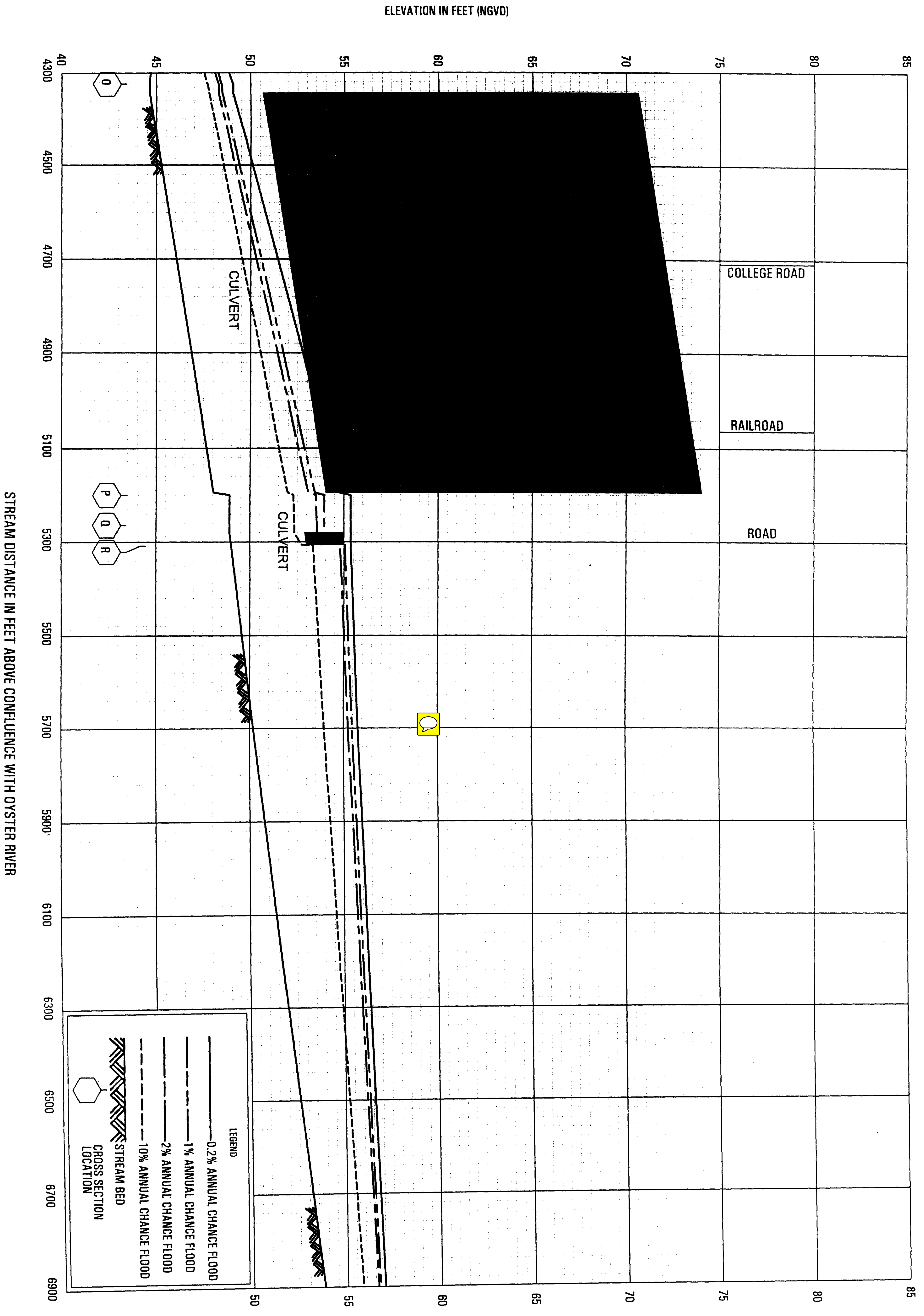
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

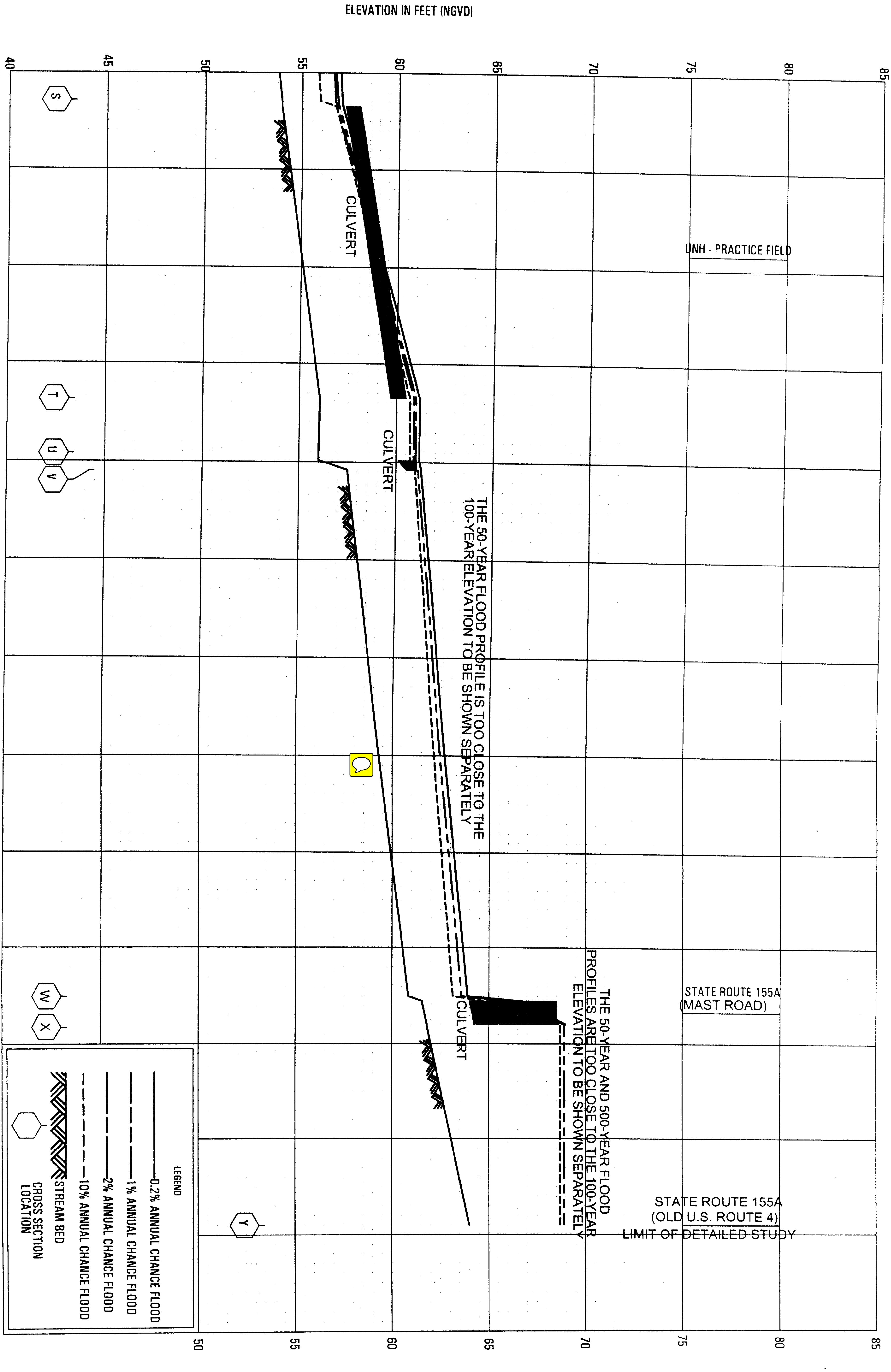
(ALL JURISDICTIONS)

## FLOOD PROFILES

## COLLEGE BROOK



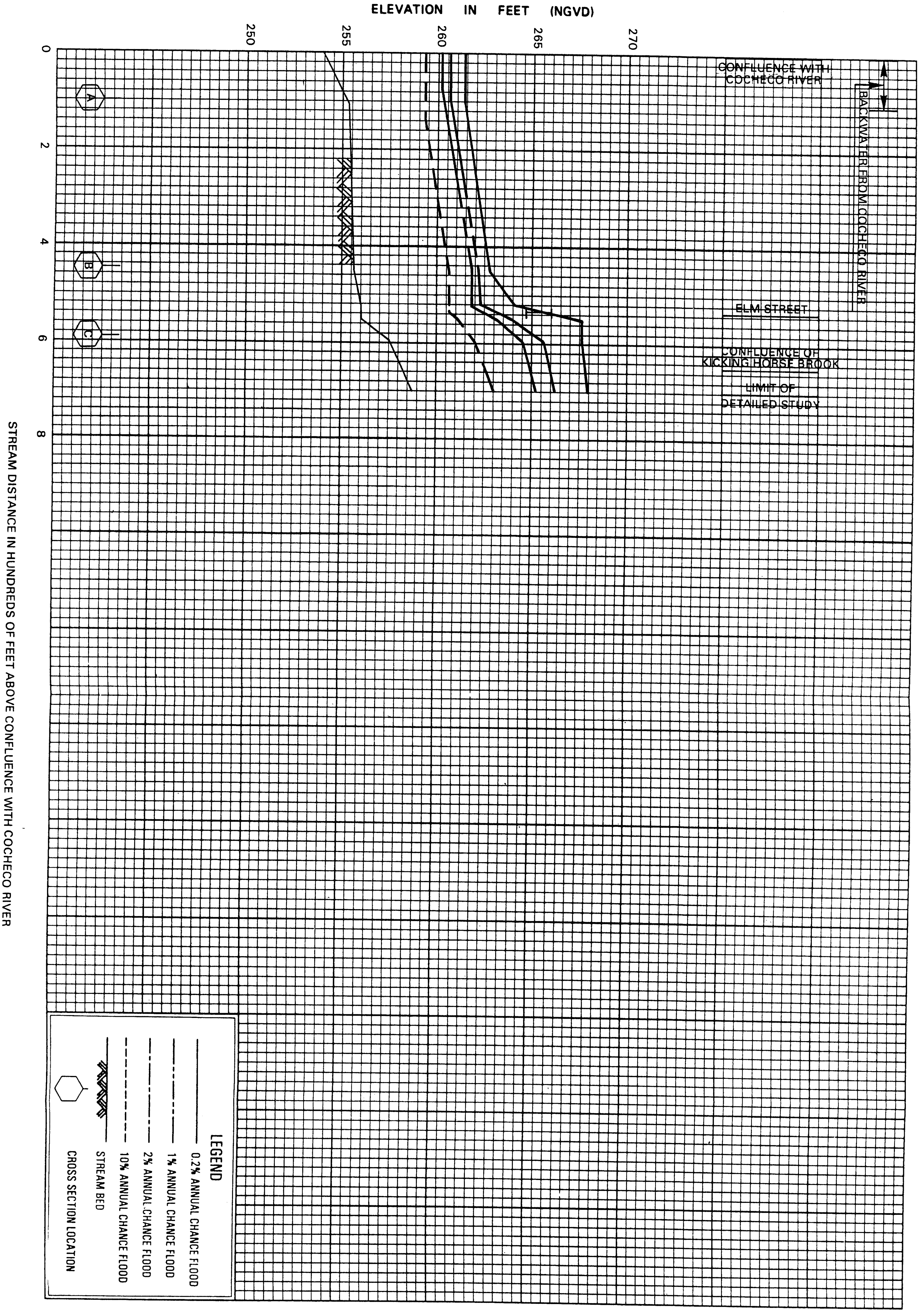
| 20P | FEDERAL EMERGENCY MANAGEMENT AGENCY<br>STRAFFORD COUNTY, NH<br>(ALL JURISDICTIONS) | FLOOD PROFILES<br>COLLEGE BROOK |
|---|---|---|



FEDERAL EMERGENCY MANAGEMENT AGENCY
**STRAFFORD COUNTY, NH**
(ALL JURISDICTIONS)

## FLOOD PROFILES

COLLEGE BROOK



FEDERAL EMERGENCY MANAGEMENT AGENCY

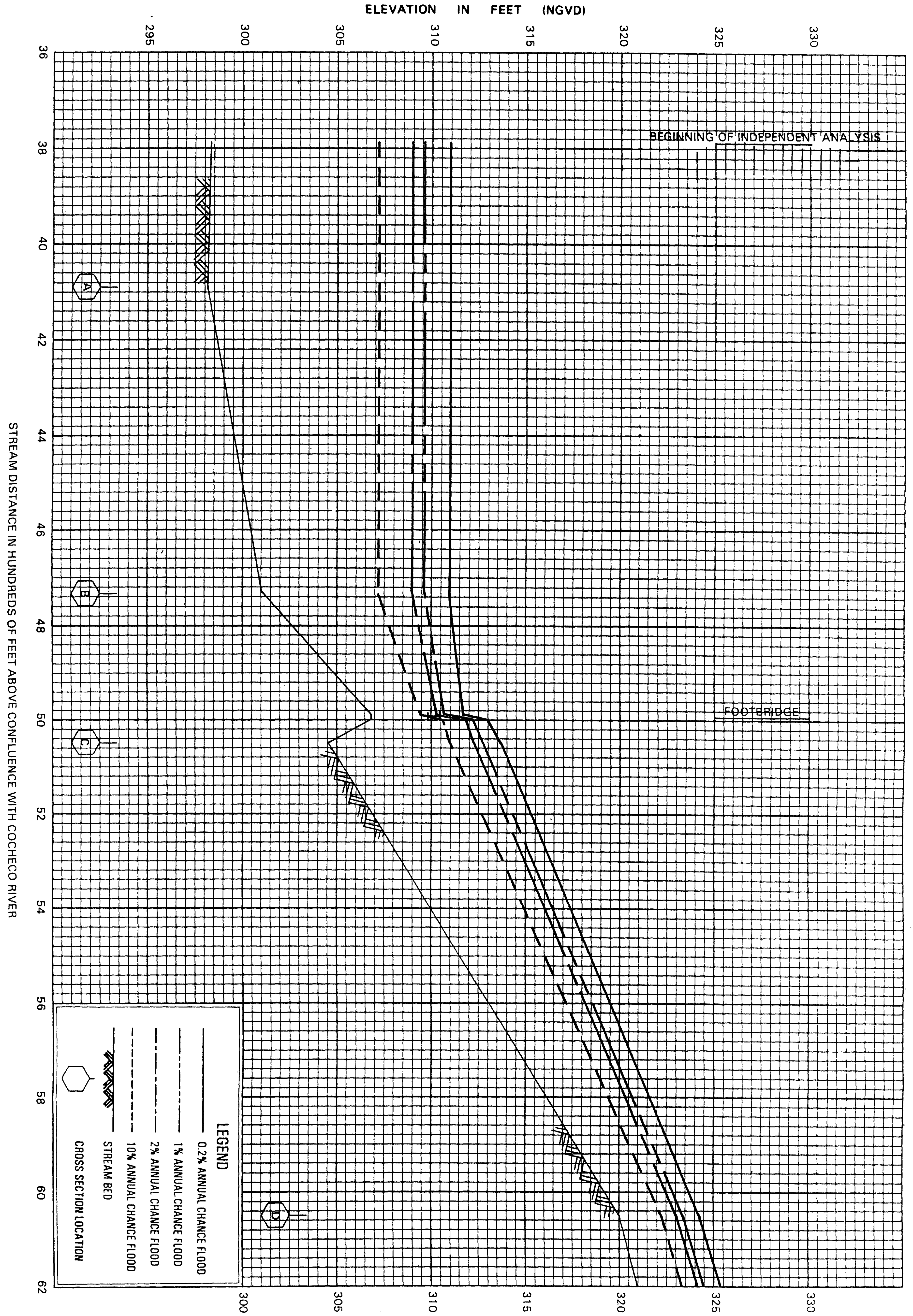
**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

## DAMES BROOK

134486



FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

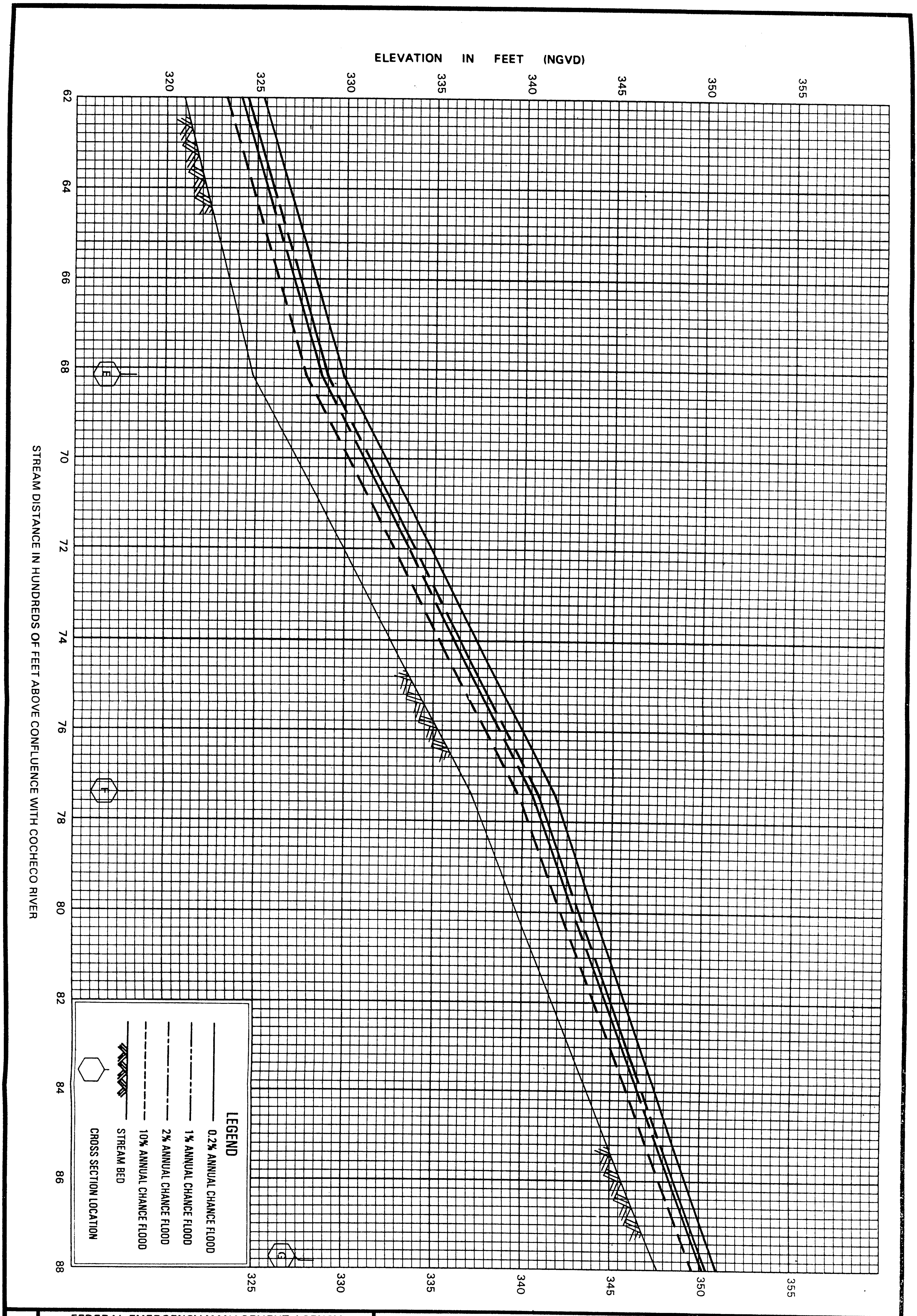
**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**ELA RIVER**

**23P**

124406



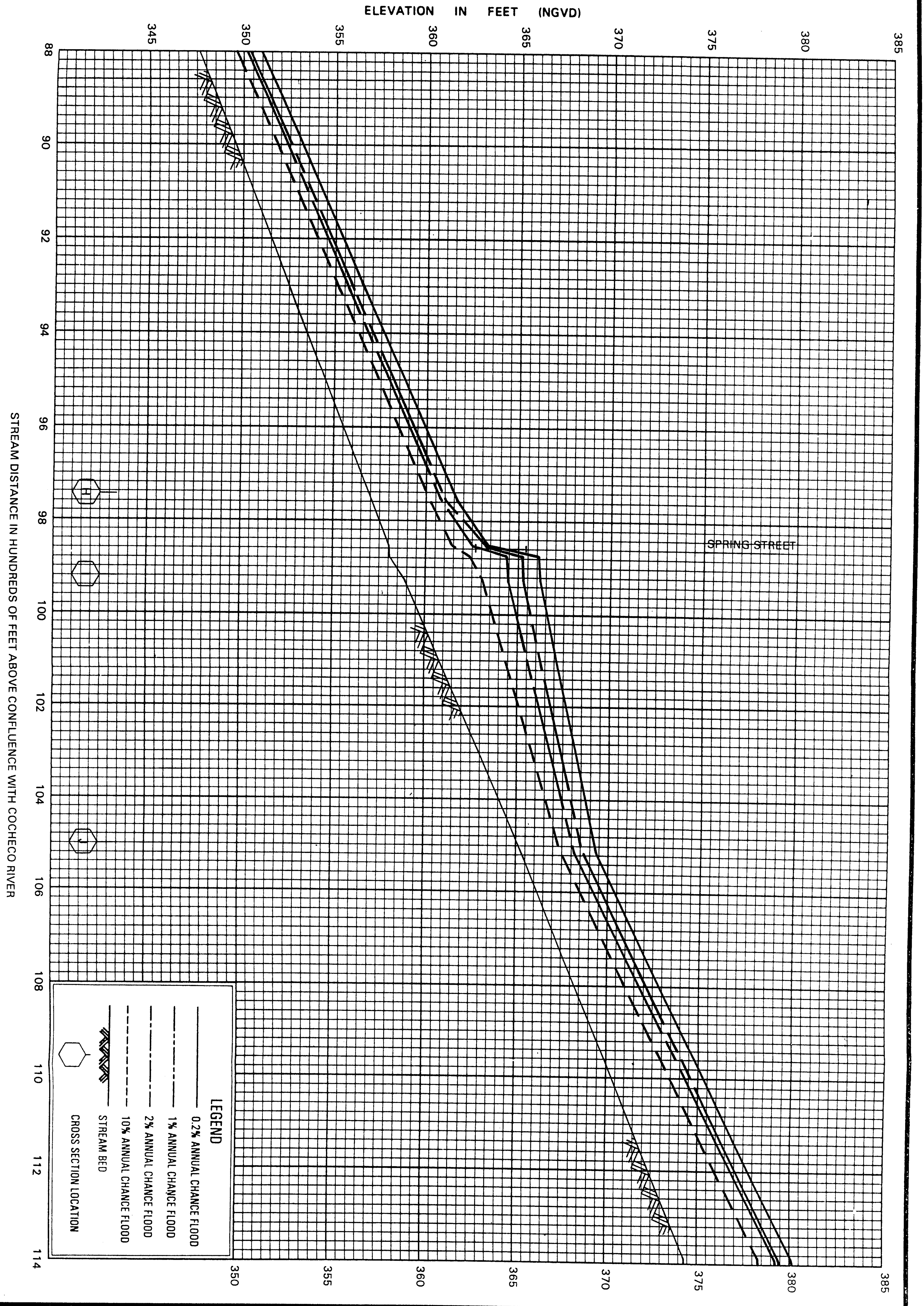
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
(ALL JURISDICTIONS)

## FLOOD PROFILES

## ELA RIVER

134486



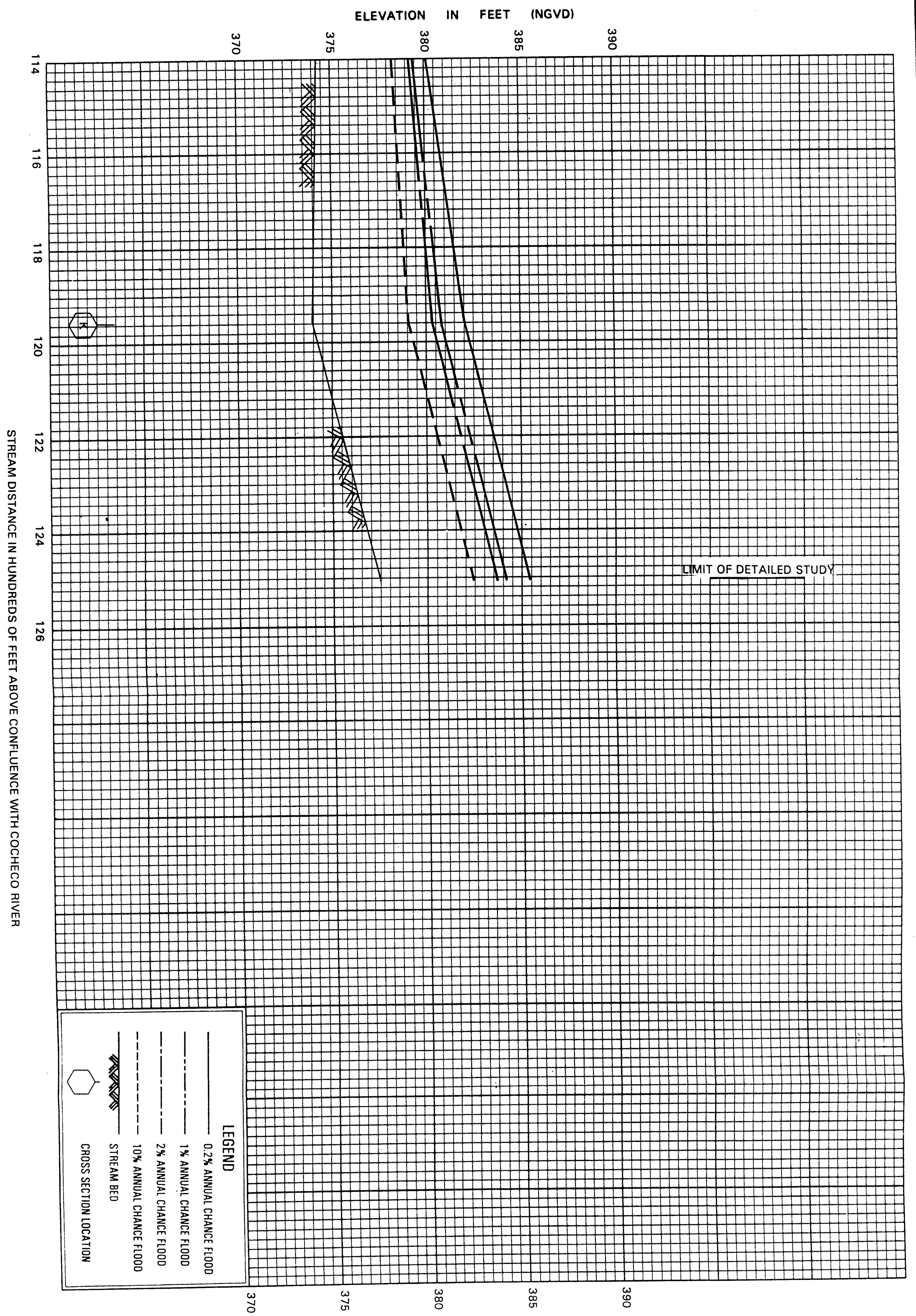
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## ELA RIVER

124486

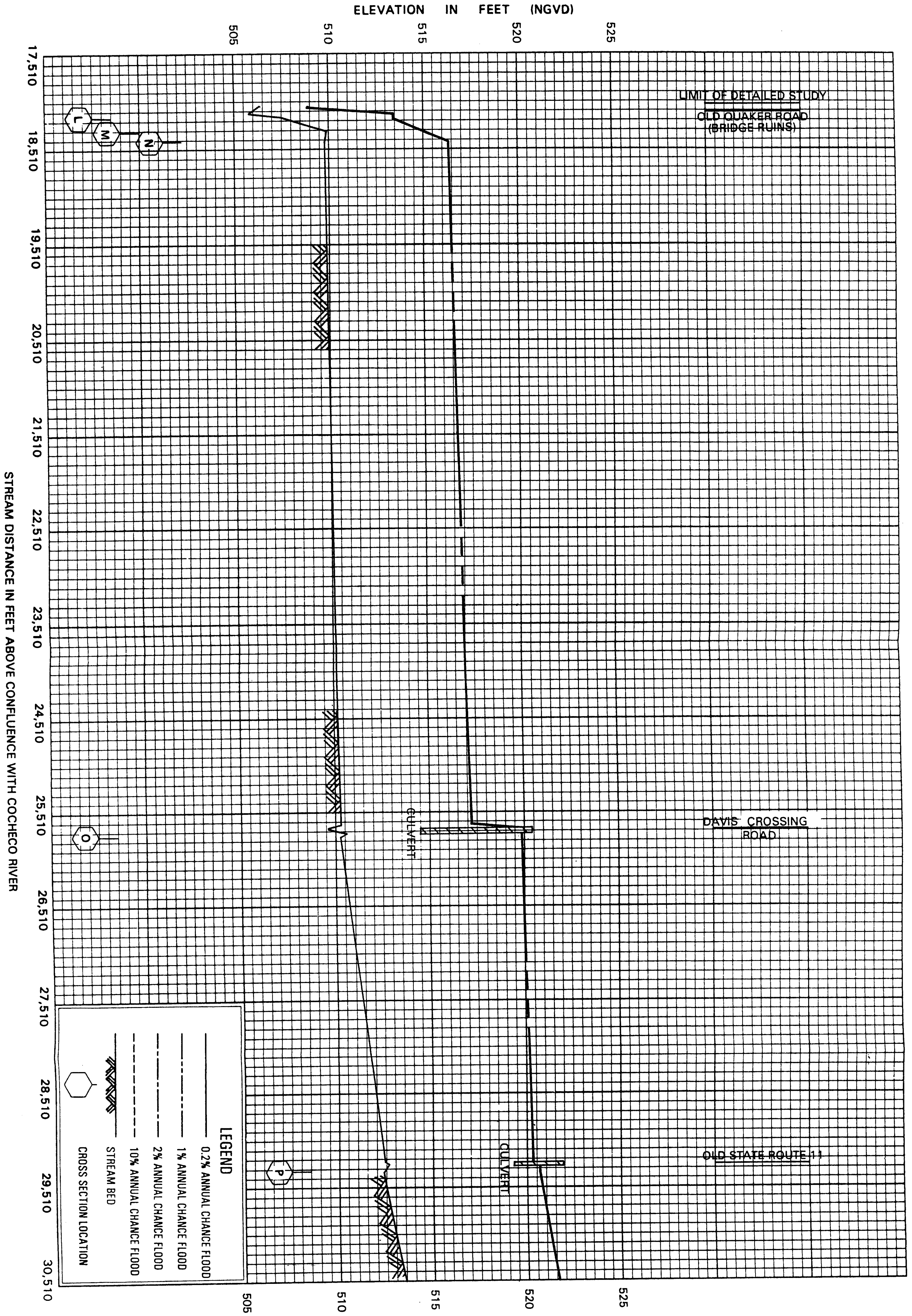


FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
(ALL JURISDICTIONS)

**FLOOD PROFILES**

**ELA RIVER**



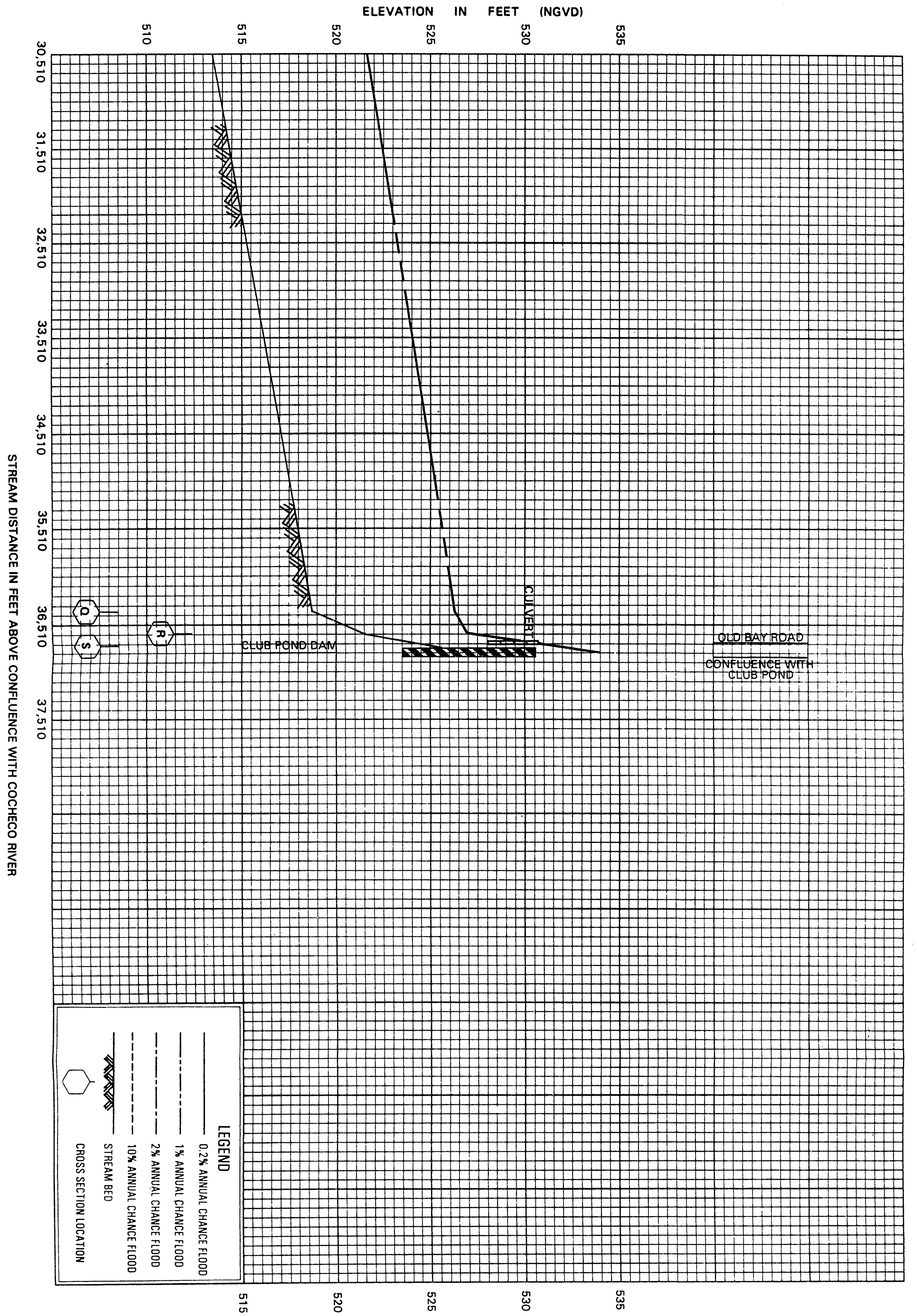
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

**FLOOD PROFILES**

**ELA RIVER**



FEDERAL EMERGENCY MANAGEMENT AGENCY

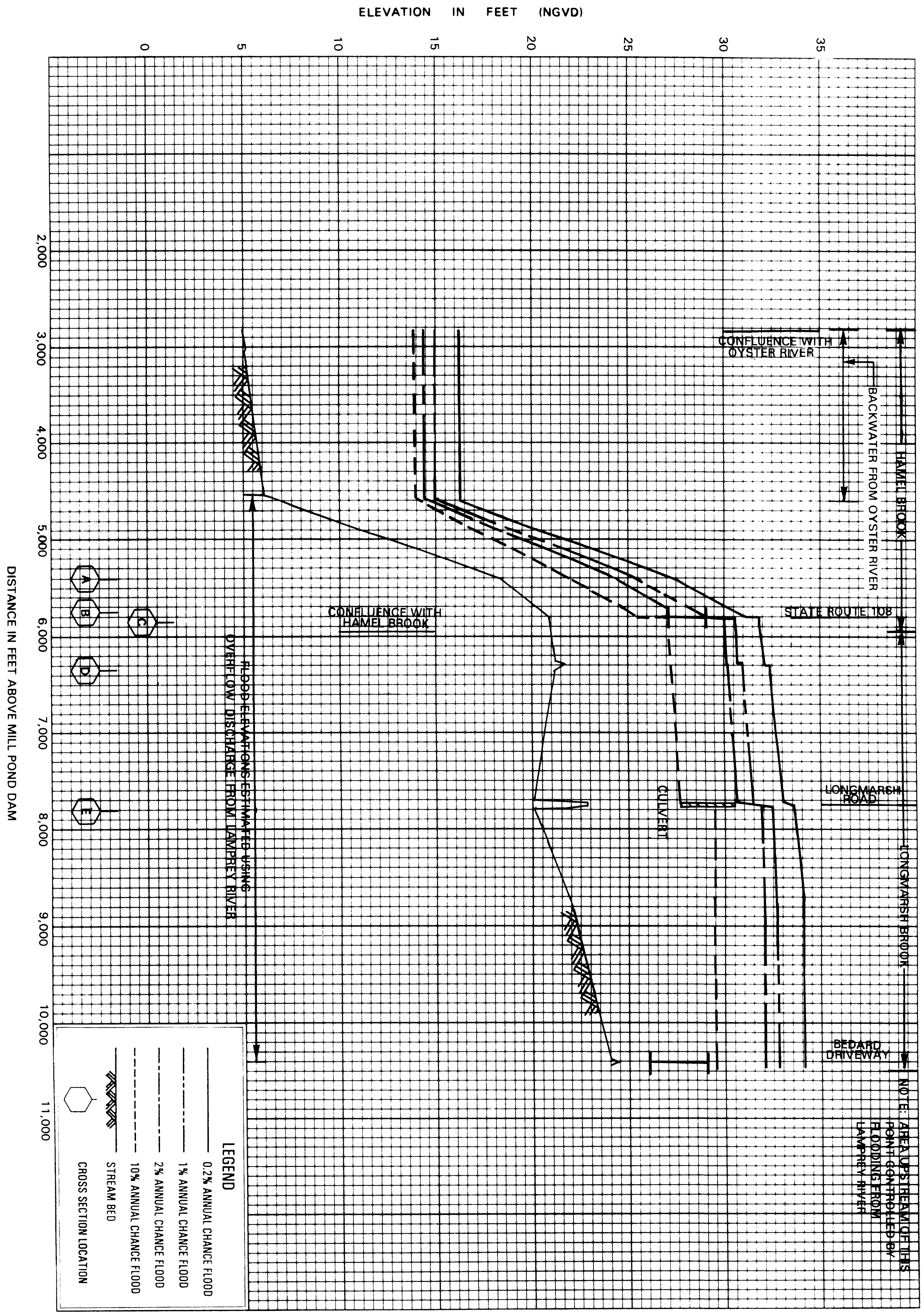
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## ELA RIVER

N342456



FEDERAL EMERGENCY MANAGEMENT AGENCY

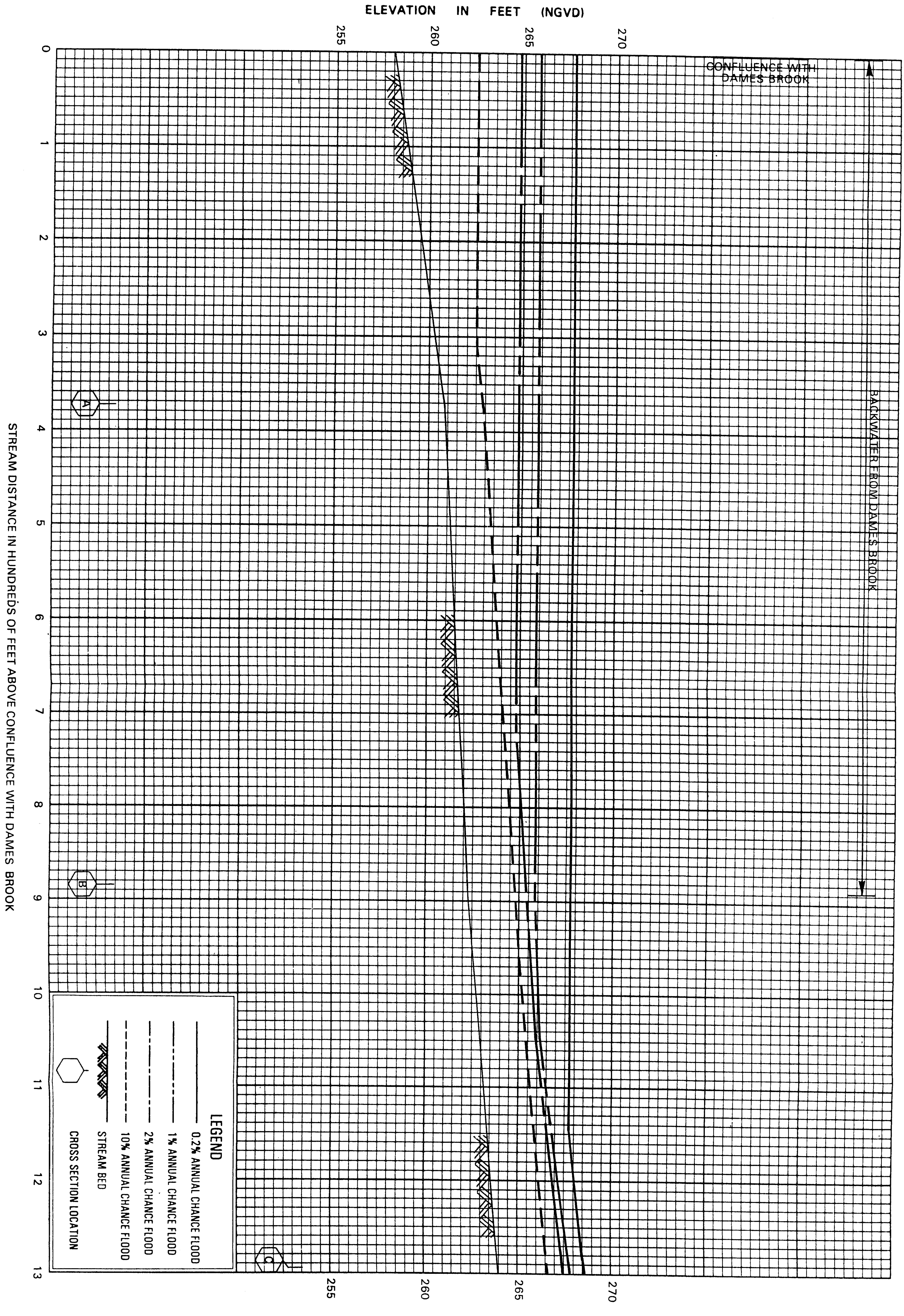
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## HAMEL BROOK – LONGMARSH BROOK

124486



FEDERAL EMERGENCY MANAGEMENT AGENCY

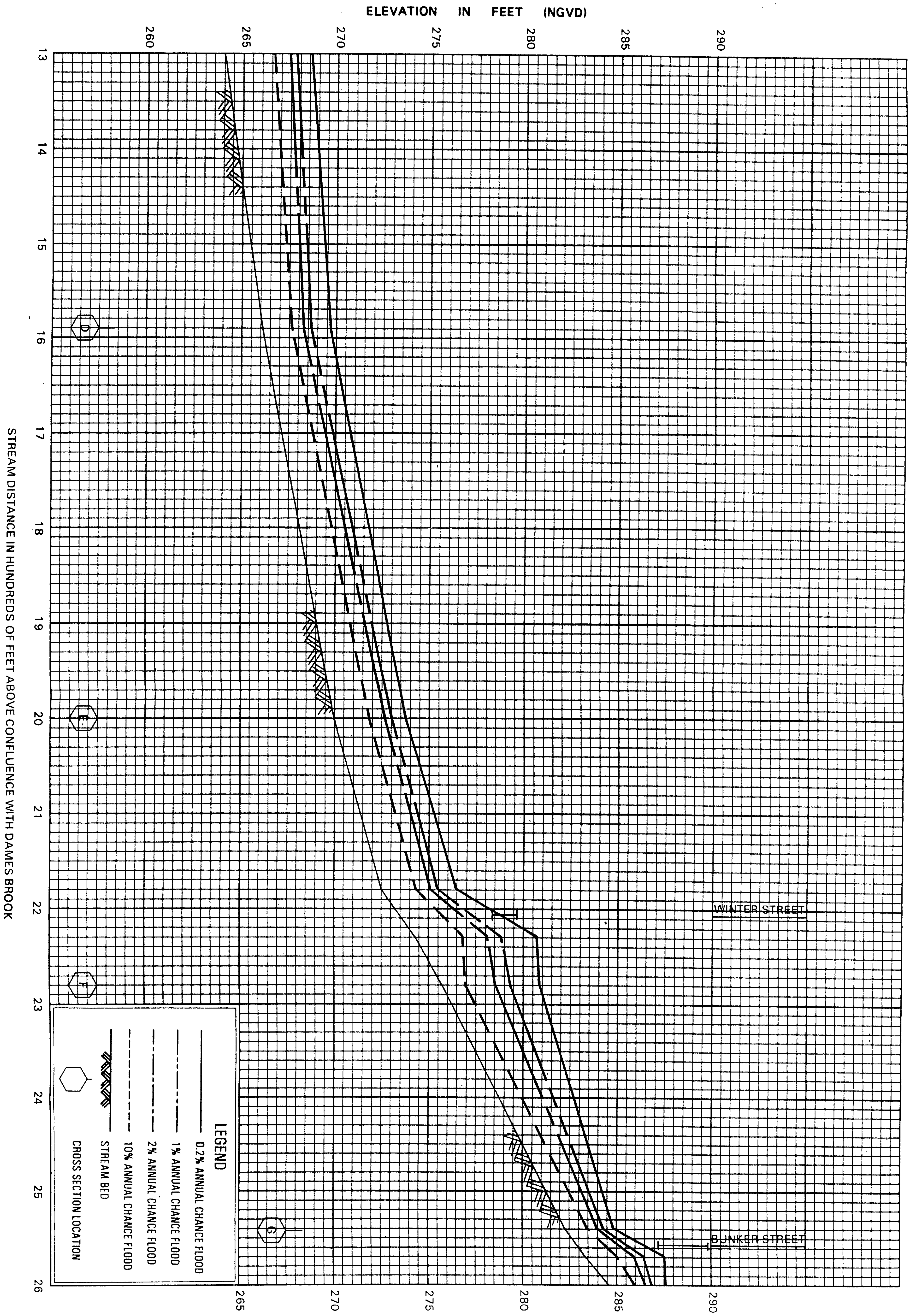
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## KICKING HORSE BROOK

124406



FEDERAL EMERGENCY MANAGEMENT AGENCY

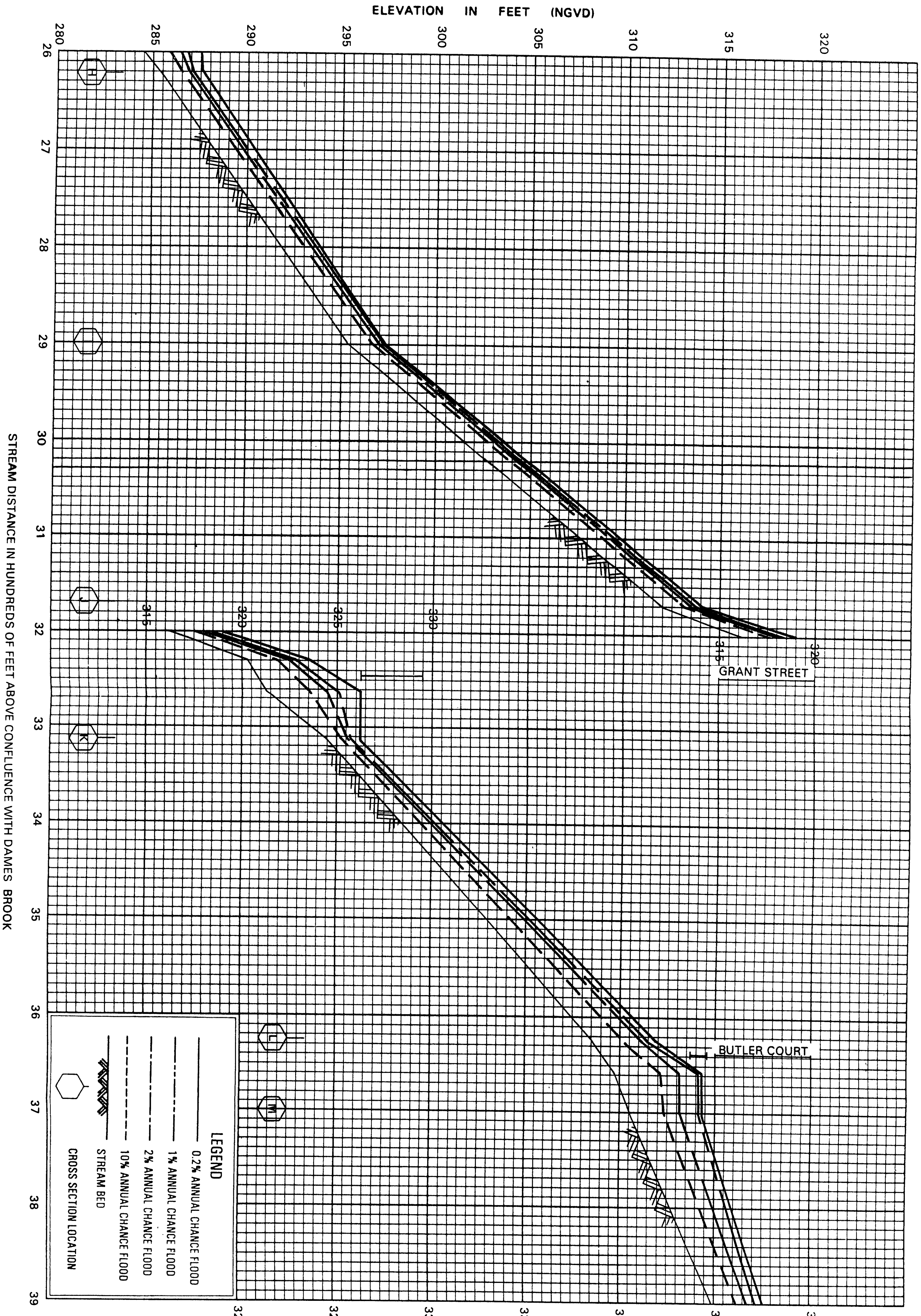
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## KICKING HORSE BROOK

124486



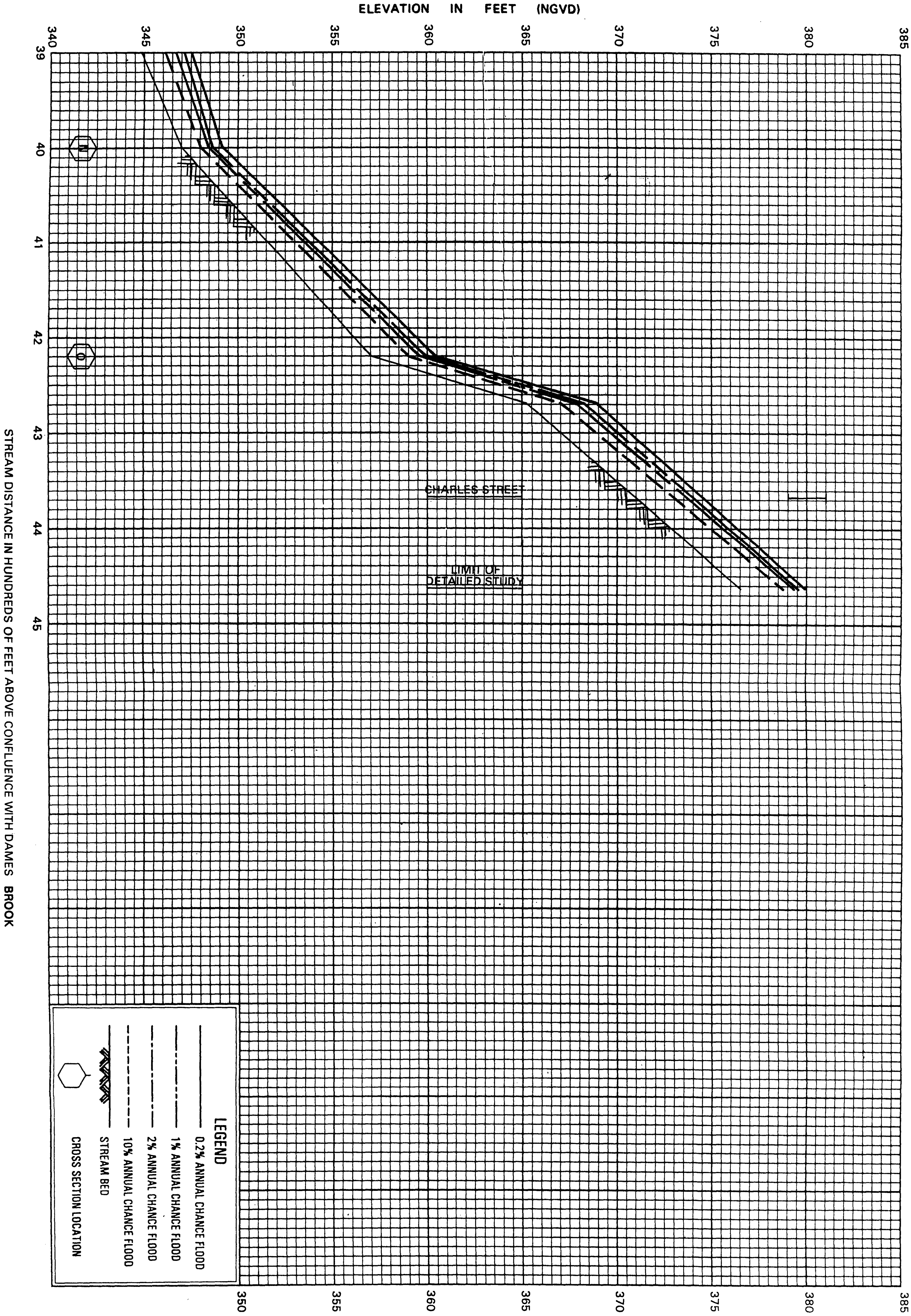
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

**FLOOD PROFILES**

**KICKING HORSE BROOK**



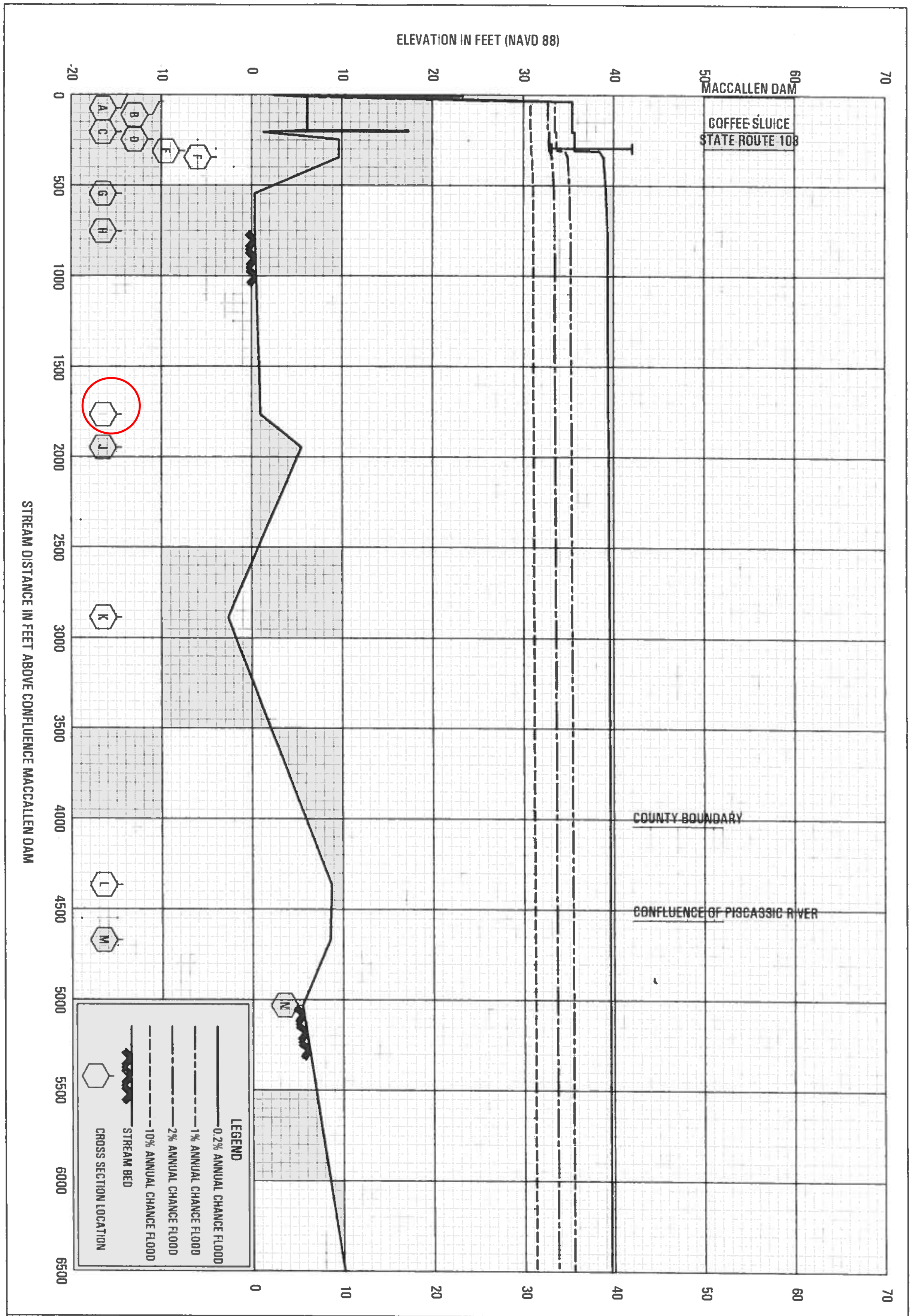
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

## KICKING HORSE BROOK

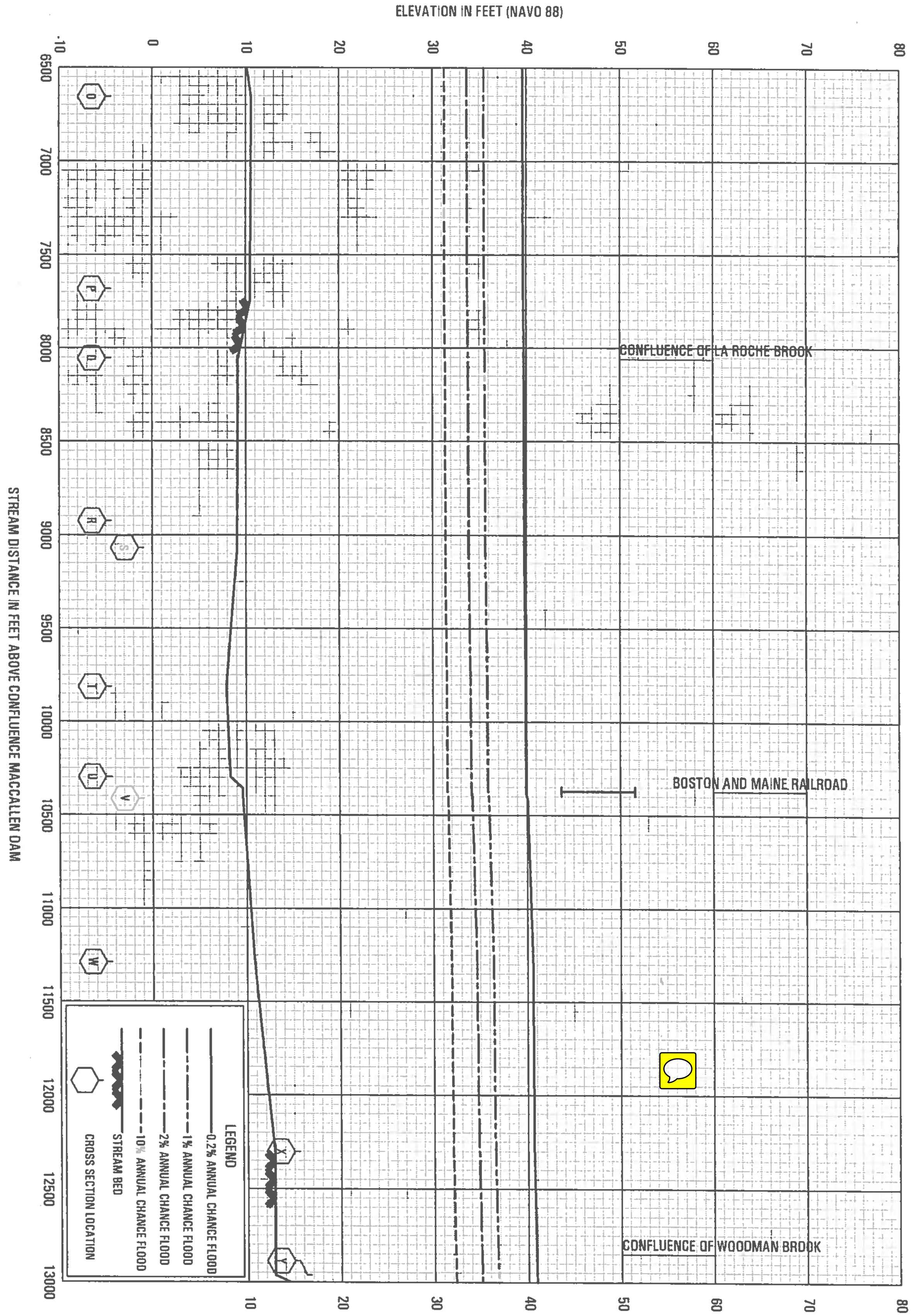


34P

FEDERAL EMERGENCY MANAGEMENT AGENCY
STRAFFORD COUNTY, NH
(ALL JURISDICTIONS)

FLOOD PROFILES

LAMPREY RIVER

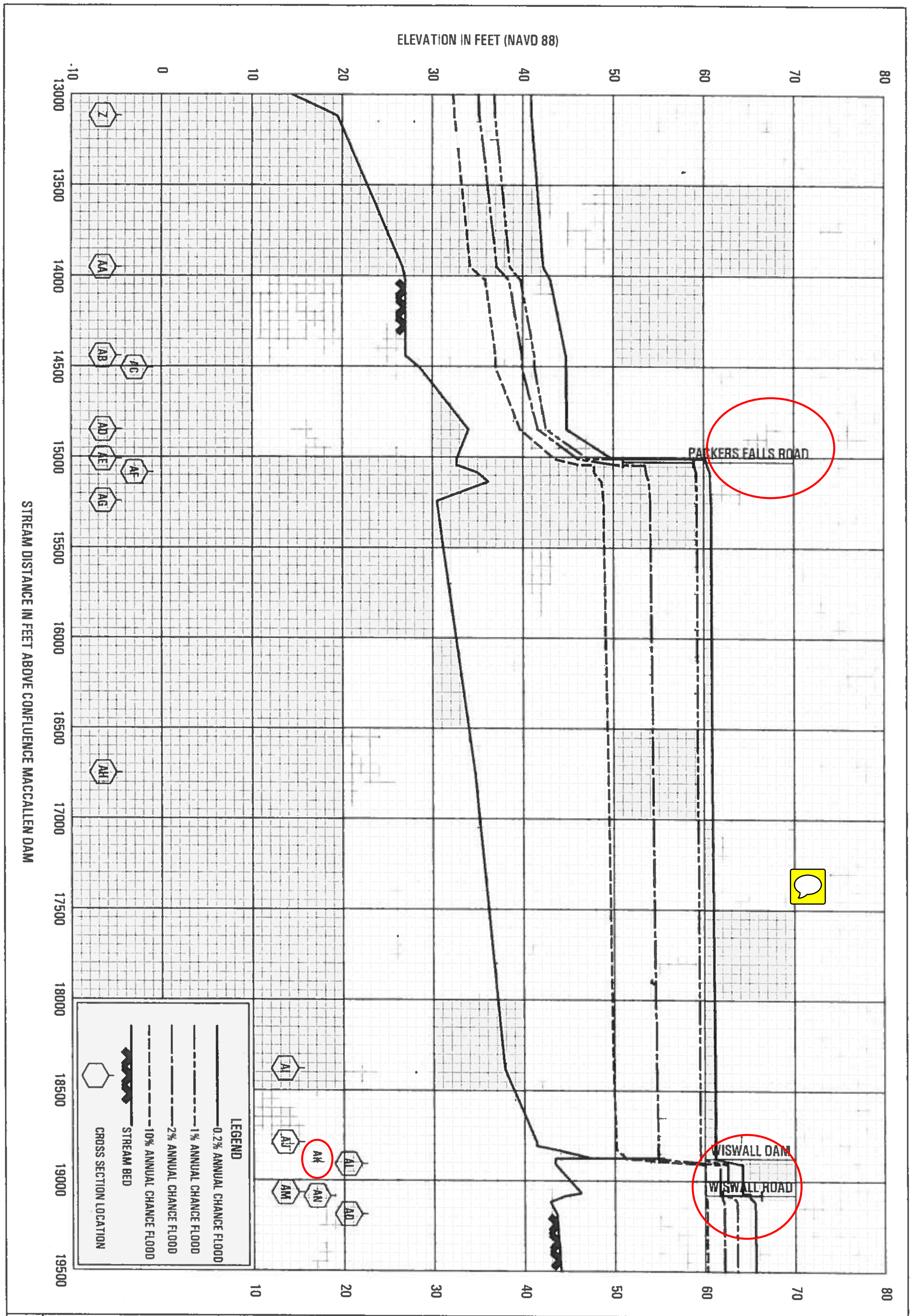


35P

FEDERAL EMERGENCY MANAGEMENT AGENCY
STRAFFORD COUNTY, NH
(ALL JURISDICTIONS)

## FLOOD PROFILES

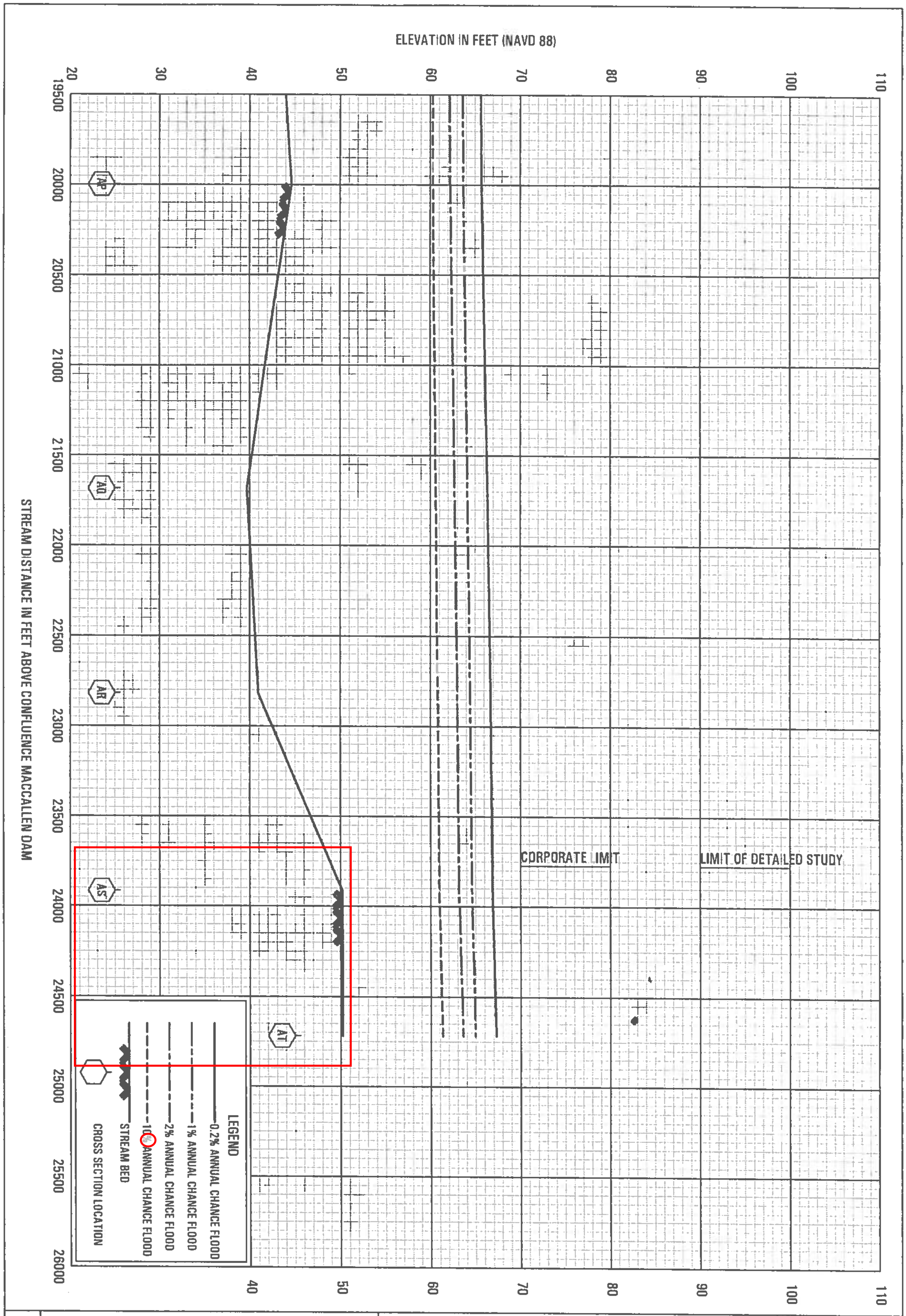
LAMPREY RIVER



FEDERAL EMERGENCY MANAGEMENT AGENCY
STRAFFORD COUNTY, NH
(ALL JURISDICTIONS)

## FLOOD PROFILES

LAMPREY RIVER

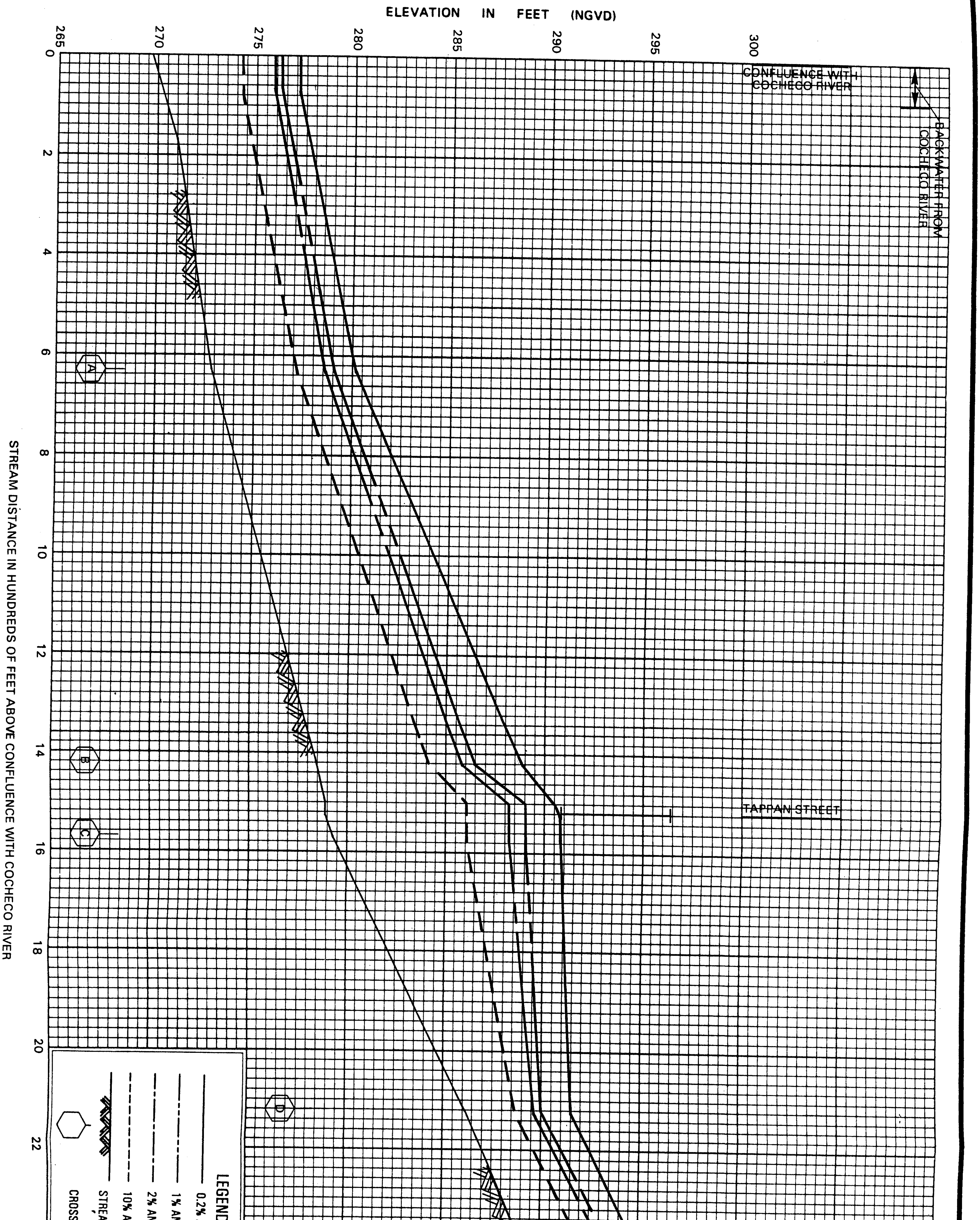


FEDERAL EMERGENCY MANAGEMENT AGENCY
STRAFFORD COUNTY, NH
(ALL JURISDICTIONS)

## FLOOD PROFILES

### LAMPREY RIVER

124406



FEDERAL EMERGENCY MANAGEMENT AGENCY

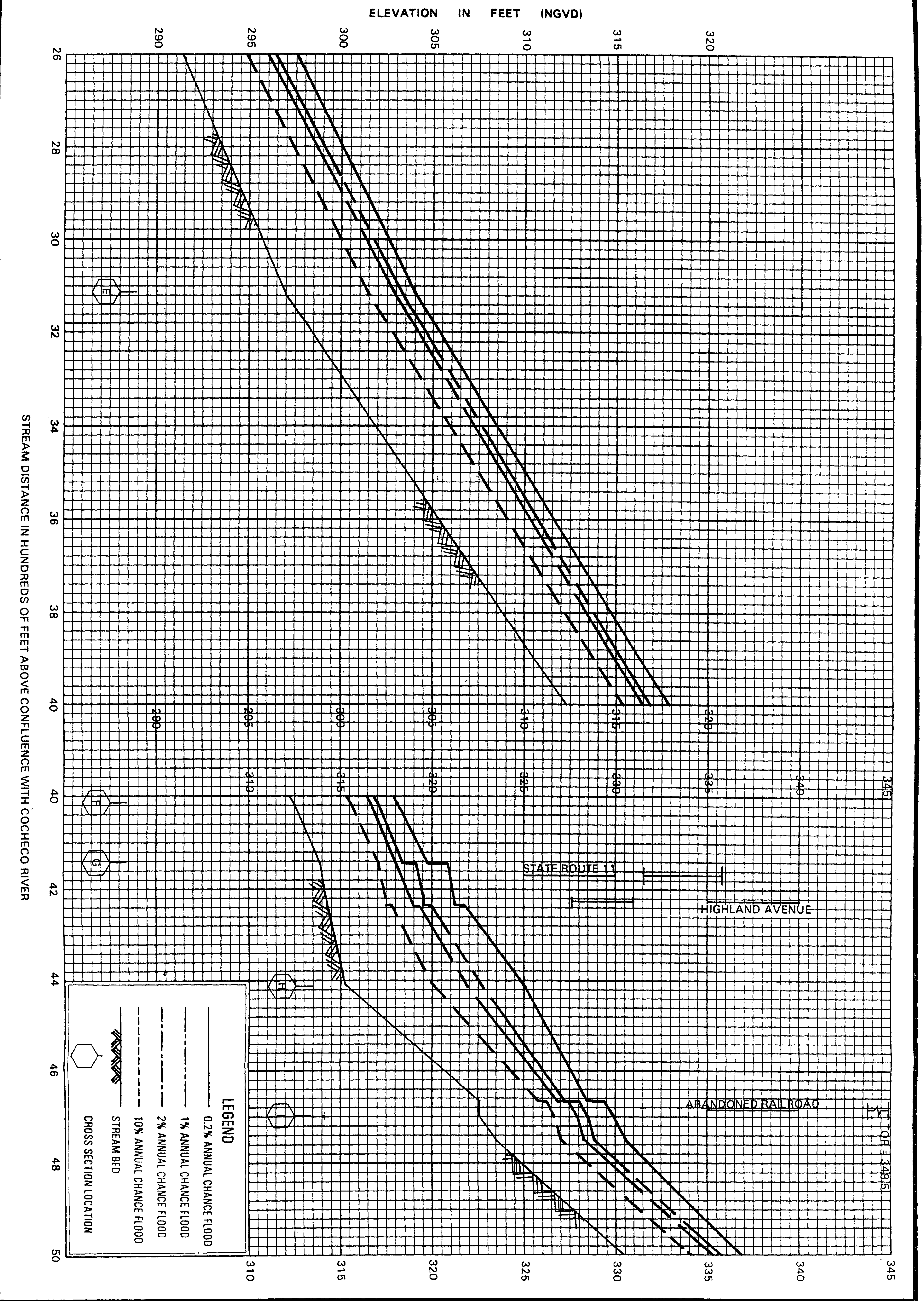
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**MAD RIVER**

124486



FEDERAL EMERGENCY MANAGEMENT AGENCY

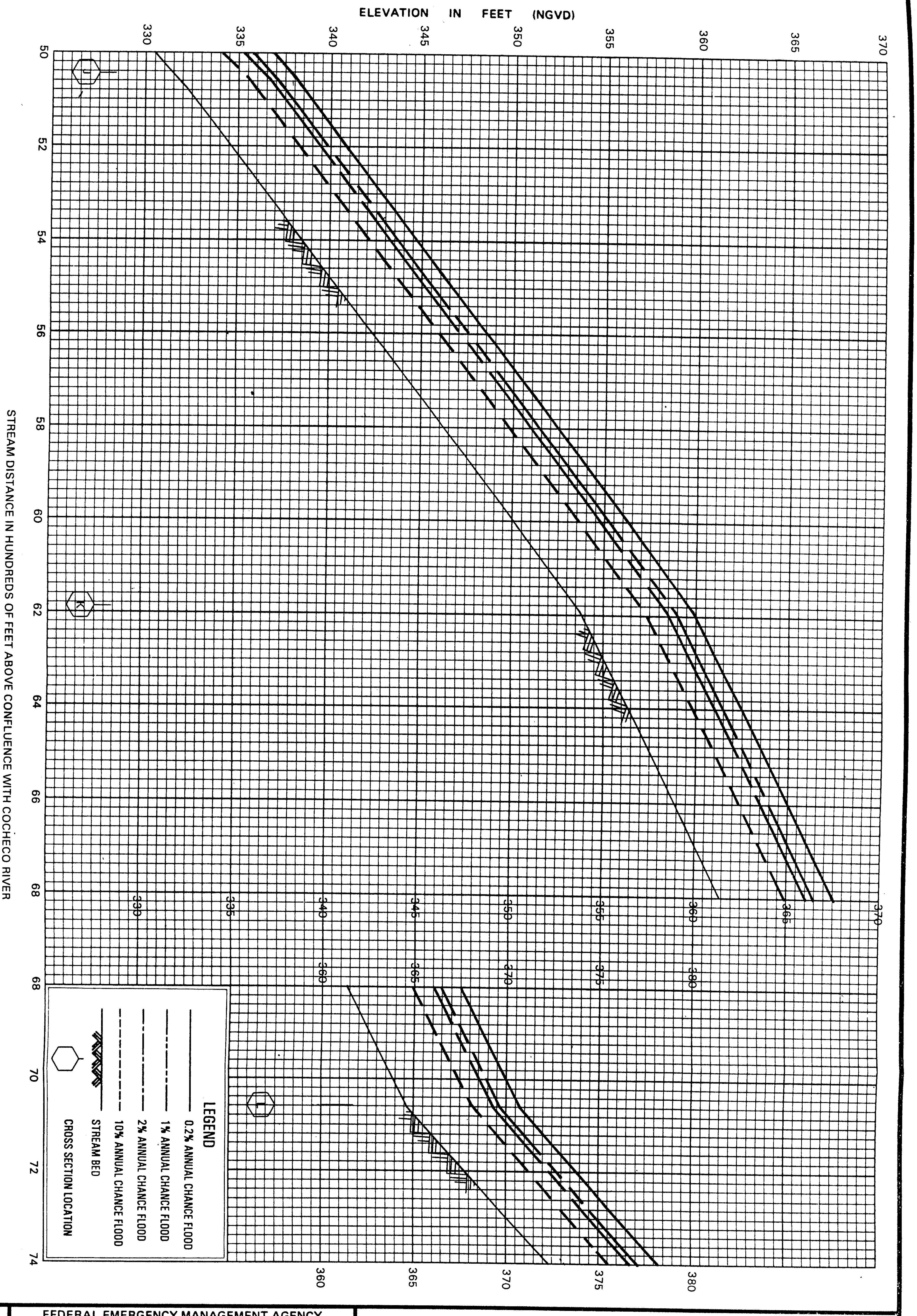
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## MAD RIVER

134486



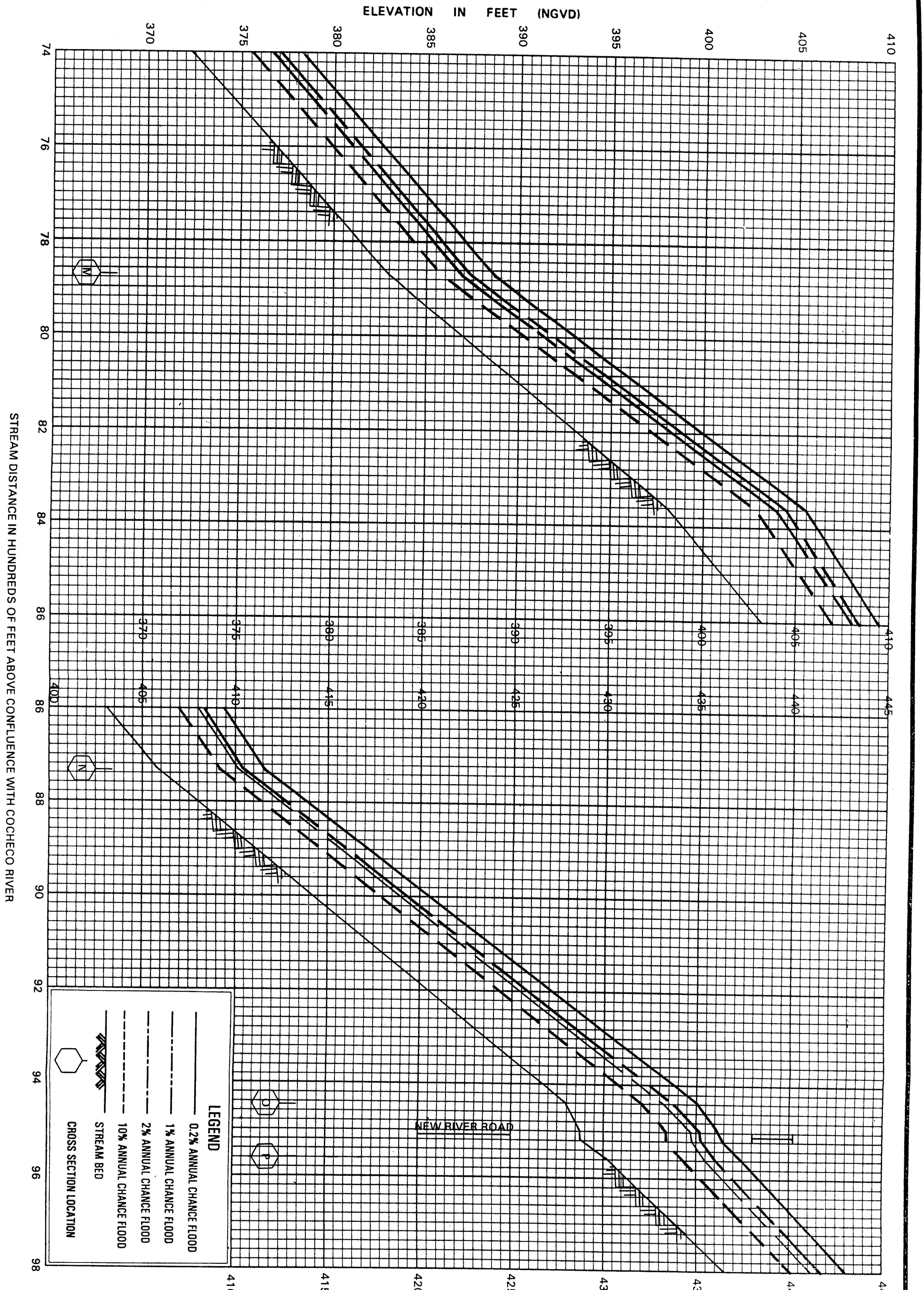
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**MAD RIVER**



FEDERAL EMERGENCY MANAGEMENT AGENCY

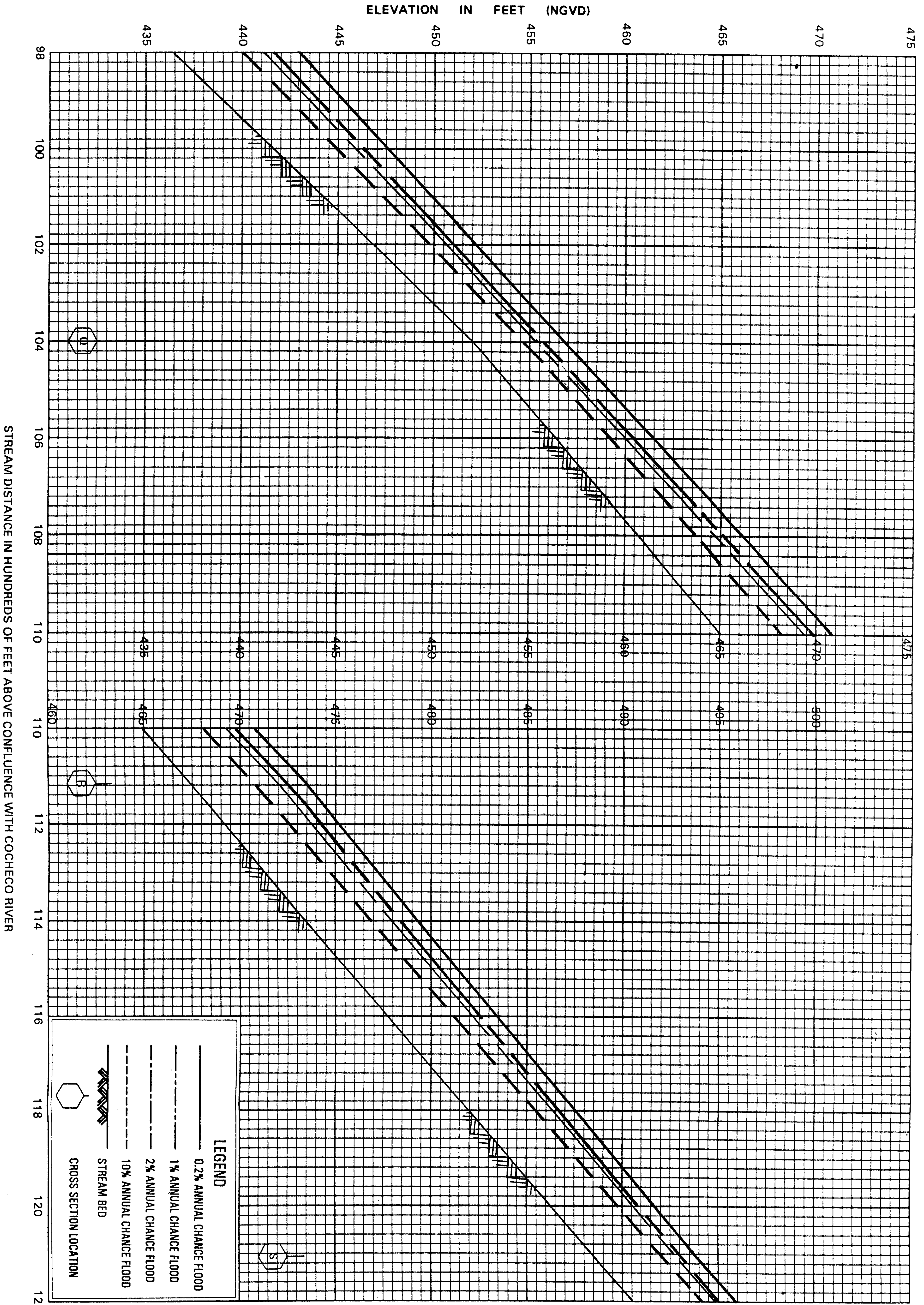
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## MAD RIVER

124486



FEDERAL EMERGENCY MANAGEMENT AGENCY

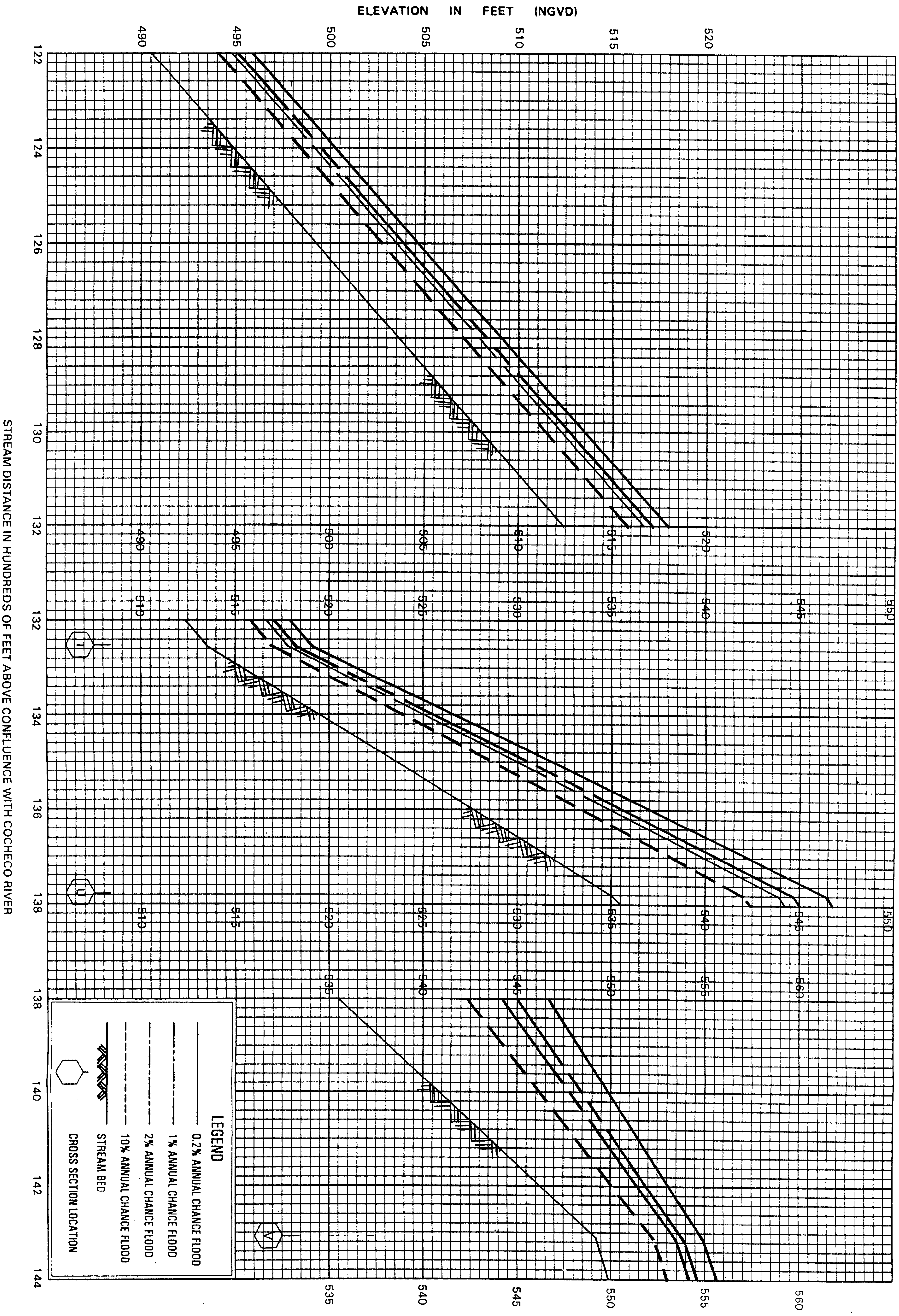
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## MAD RIVER

124486



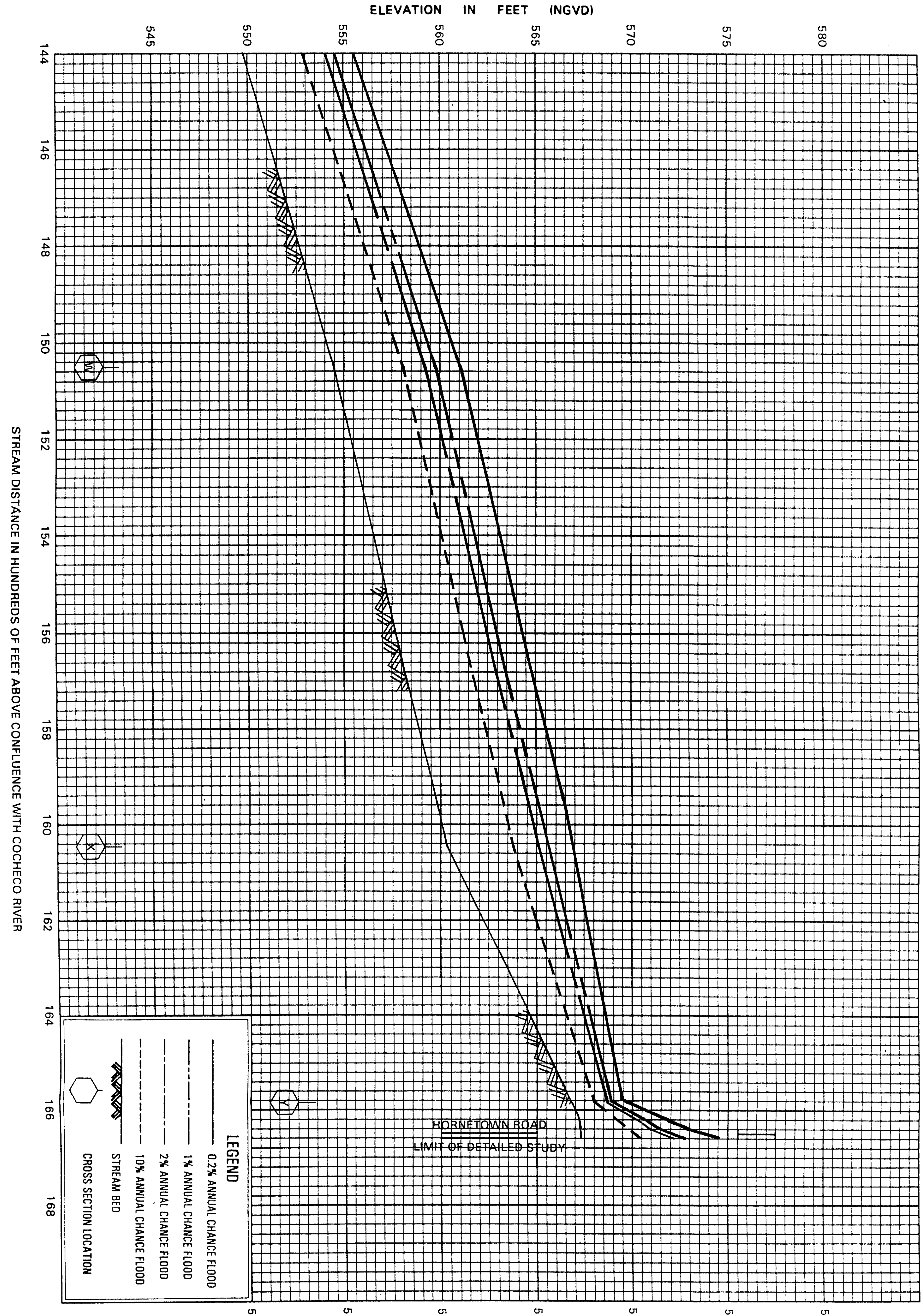
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

## MAD RIVER



**43P**

FEDERAL EMERGENCY MANAGEMENT AGENCY

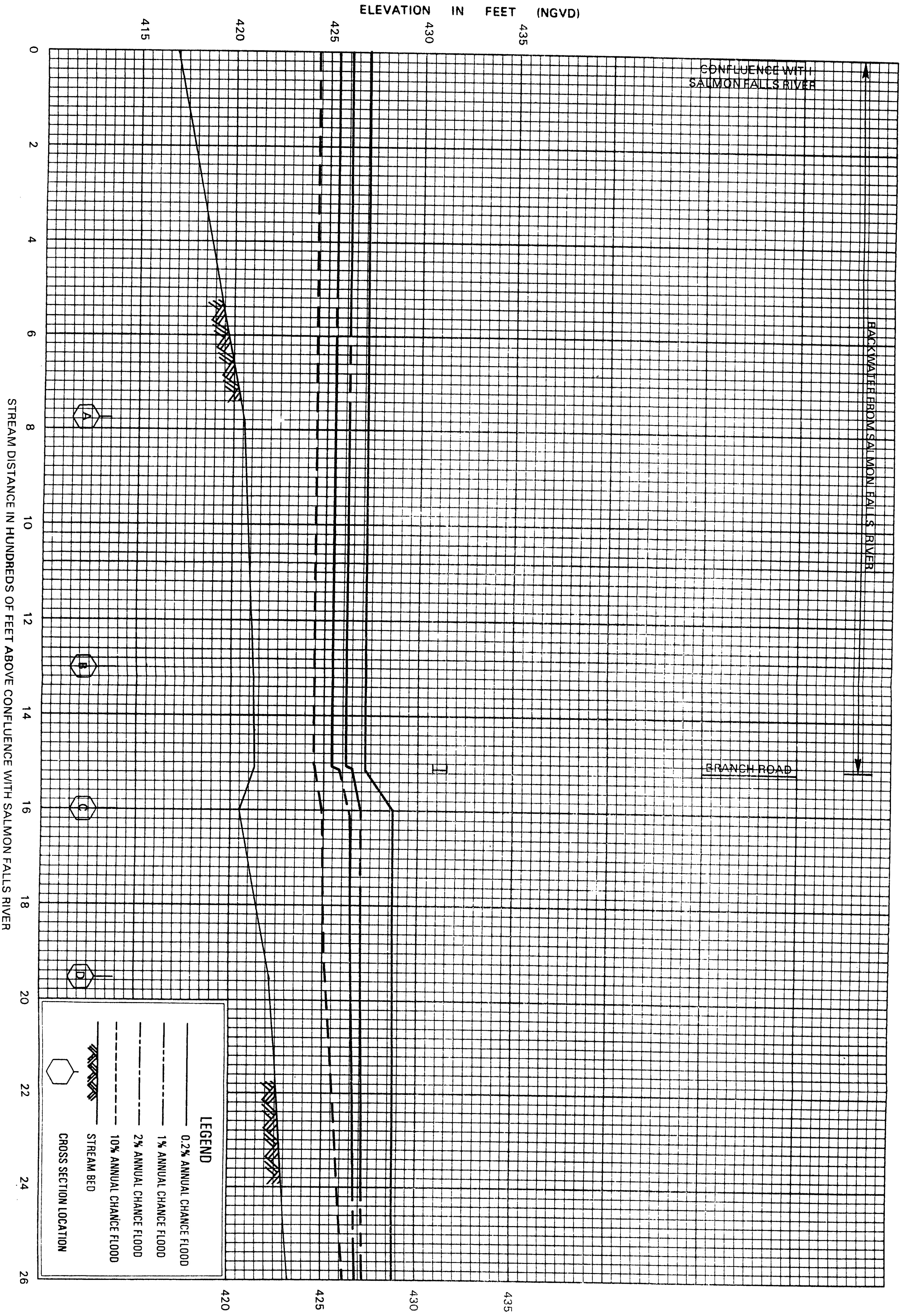
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**MAD RIVER**

124486



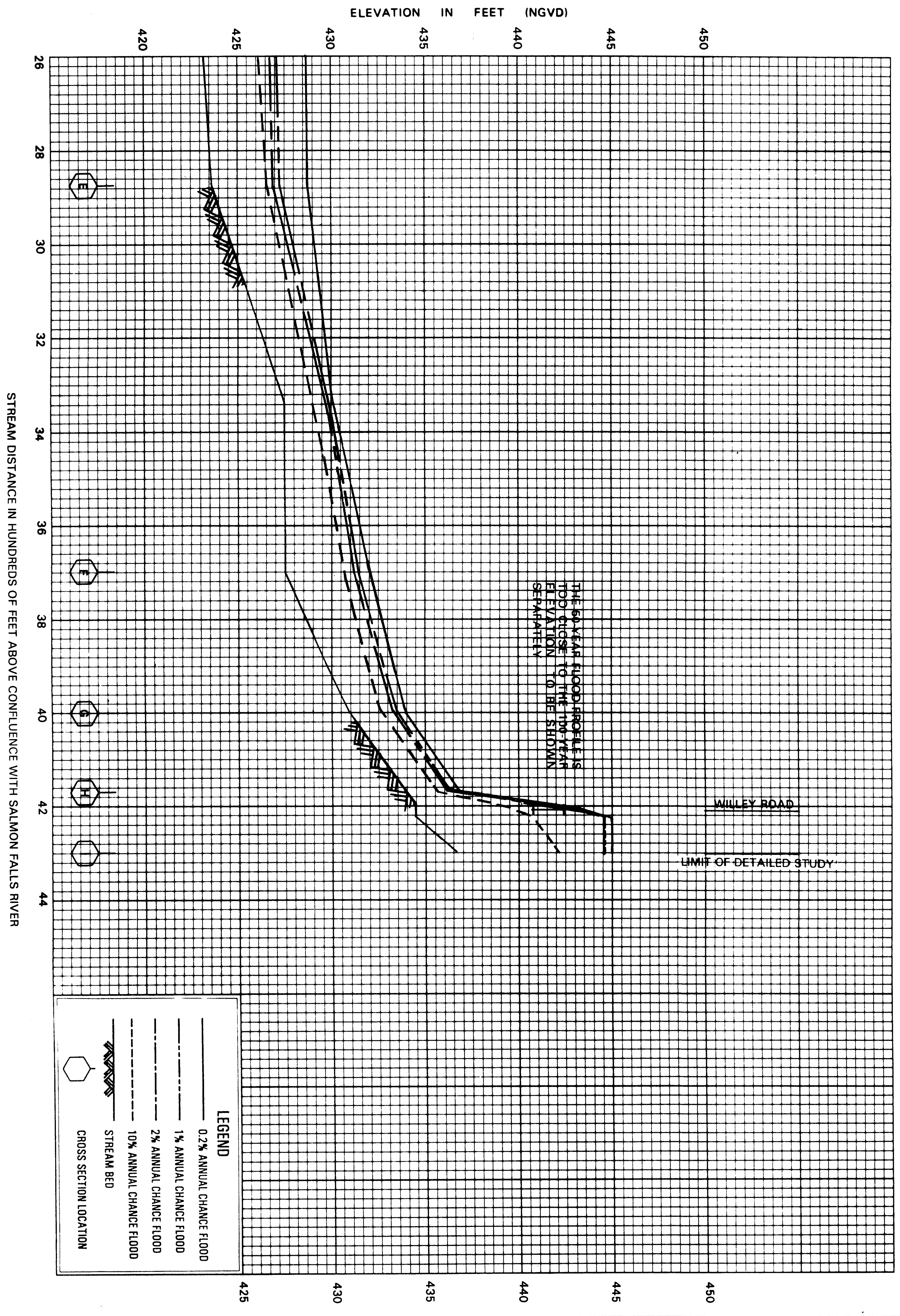
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**MILLER BROOK**



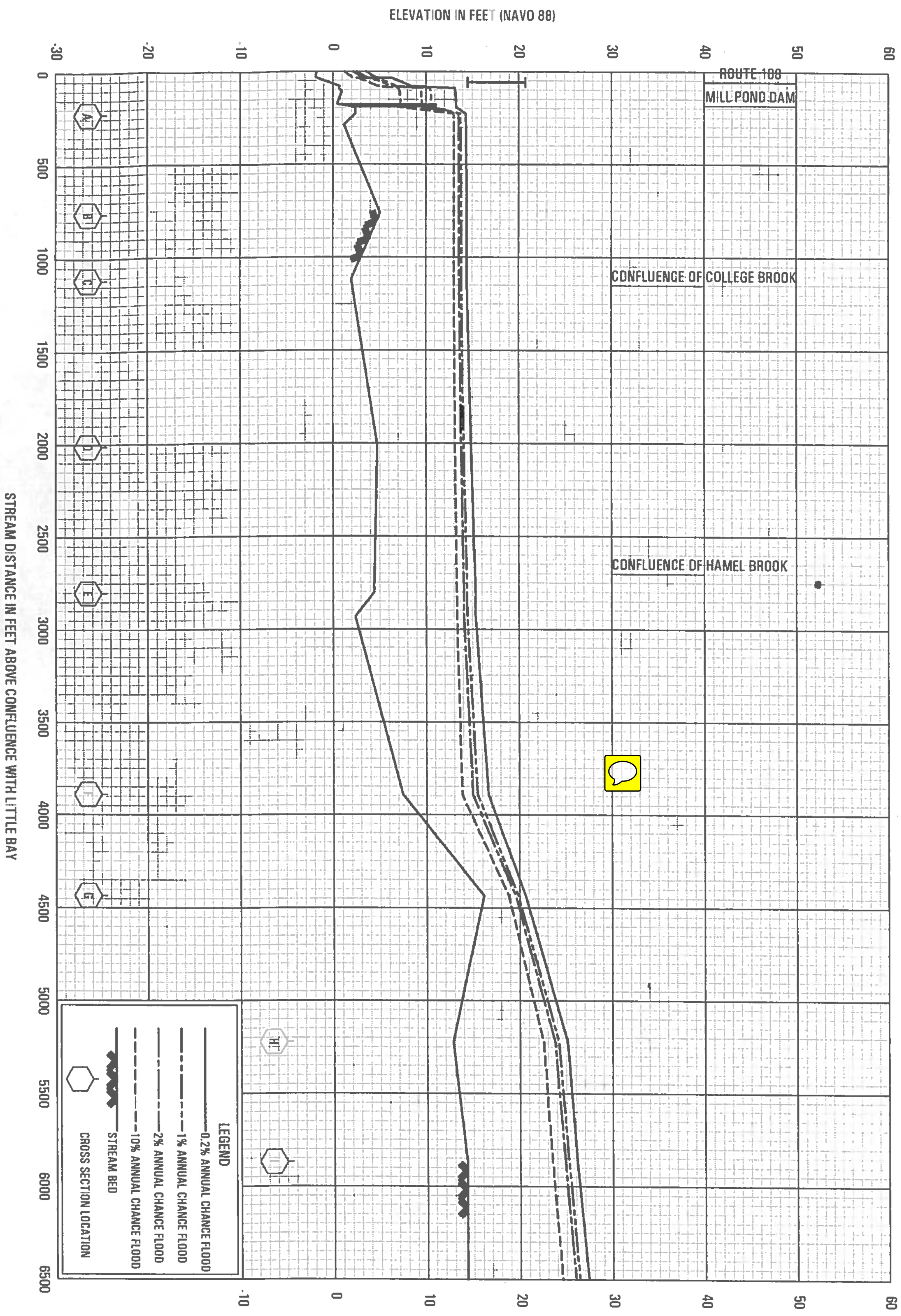
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**MILLER BROOK**



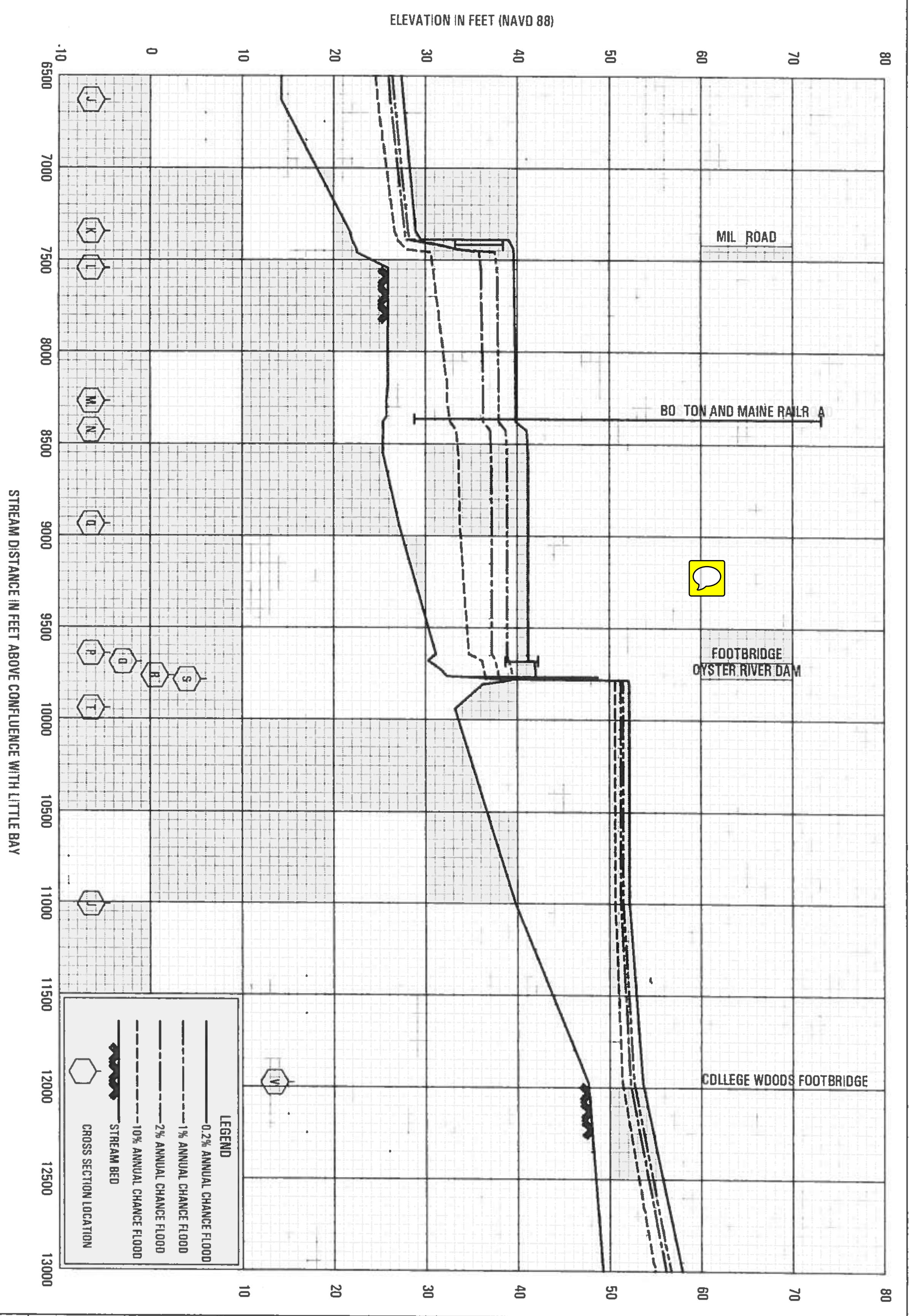
FEDERAL EMERGENCY MANAGEMENT AGENCY

DURHAM, NH

STRAFFORD COUNTY

## FLOOD PROFILES

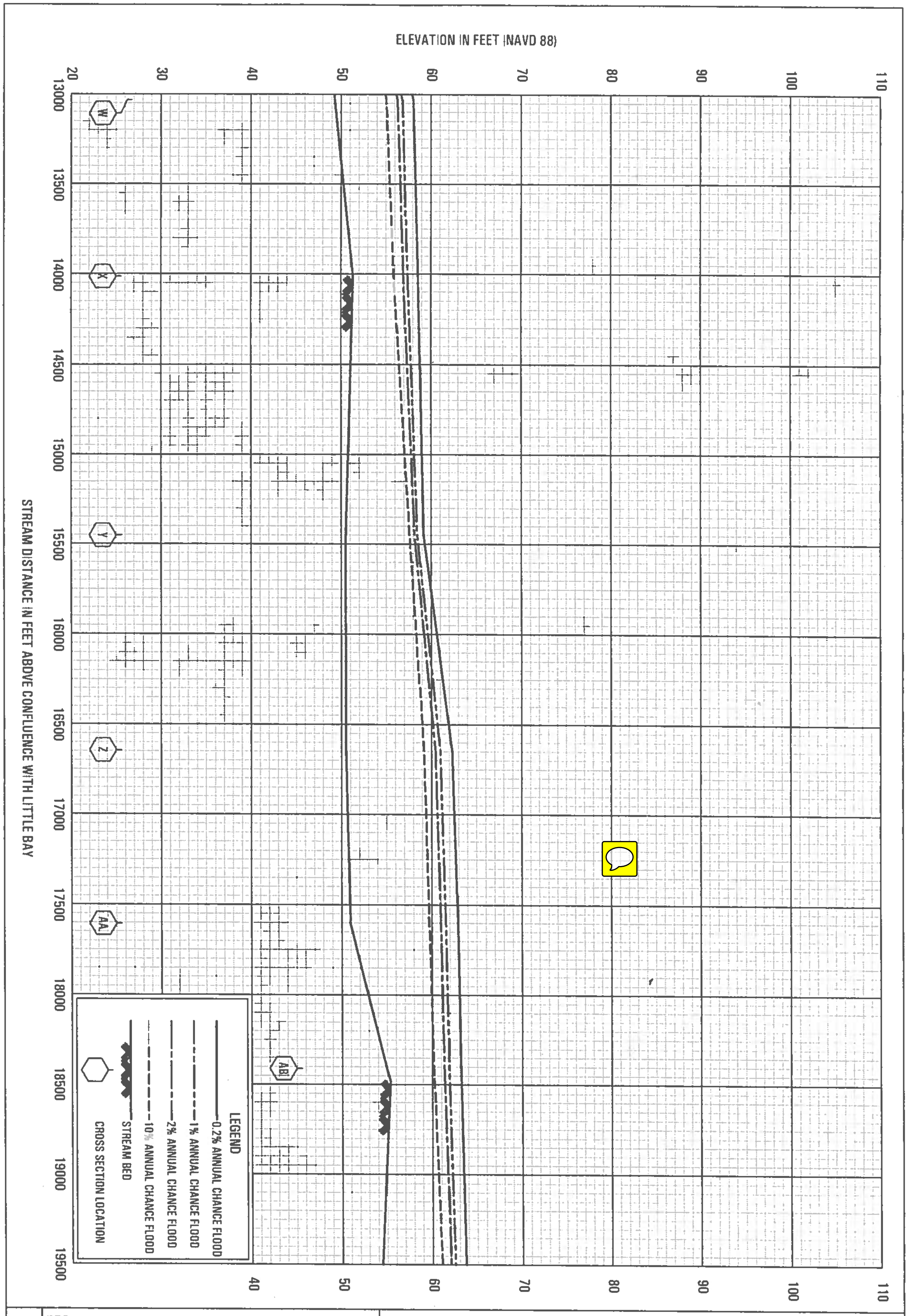
OYSTER RIVER



FEDERAL EMERGENCY MANAGEMENT AGENCY
DURHAM, NH
STRAFFORD COUNTY

## FLOOD PROFILES

OYSTER RIVER



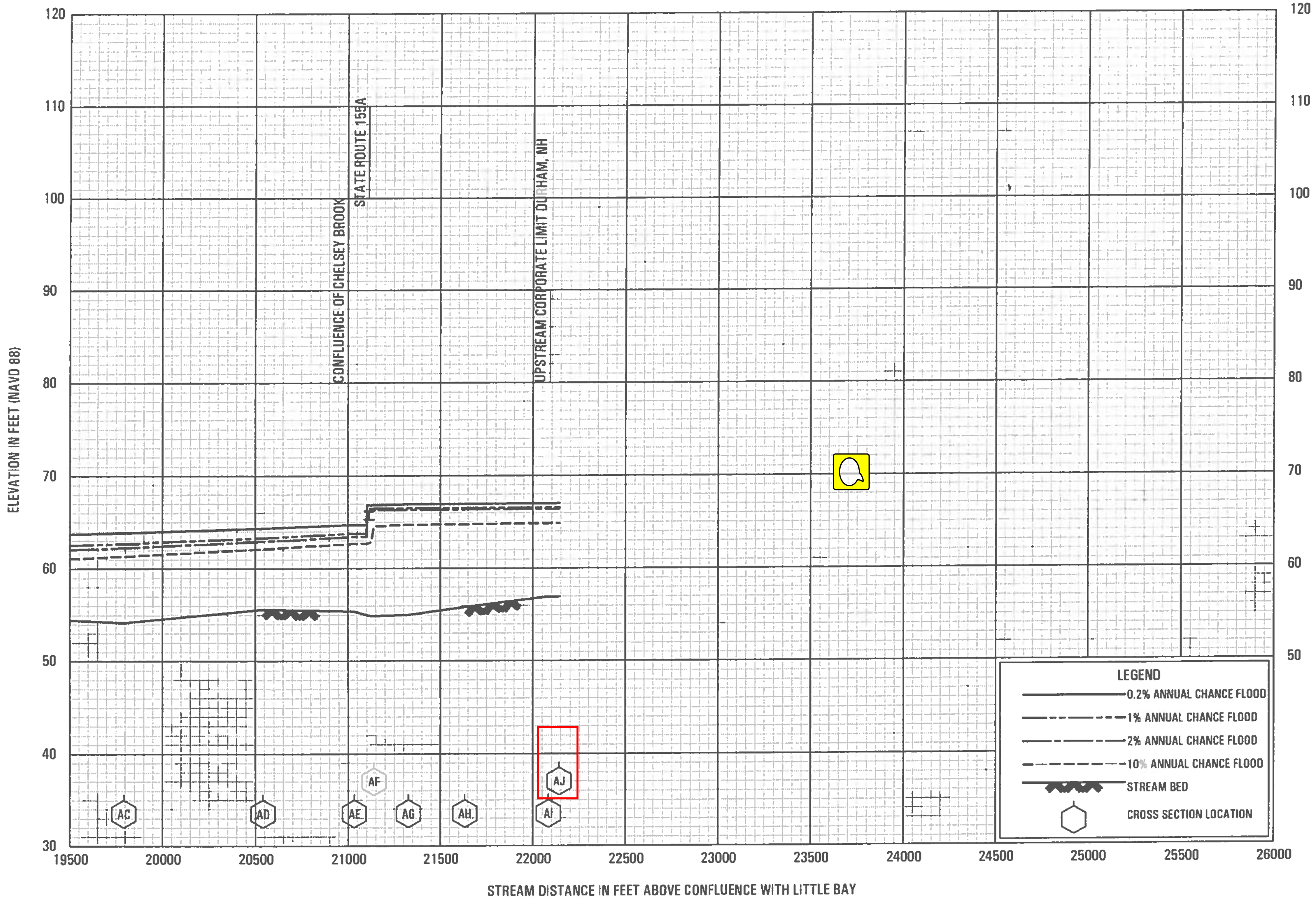
FEDERAL EMERGENCY MANAGEMENT AGENCY

DURHAM, NH

STRAFFORD COUNTY

# FLOOD PROFILES

## OYSTER RIVER



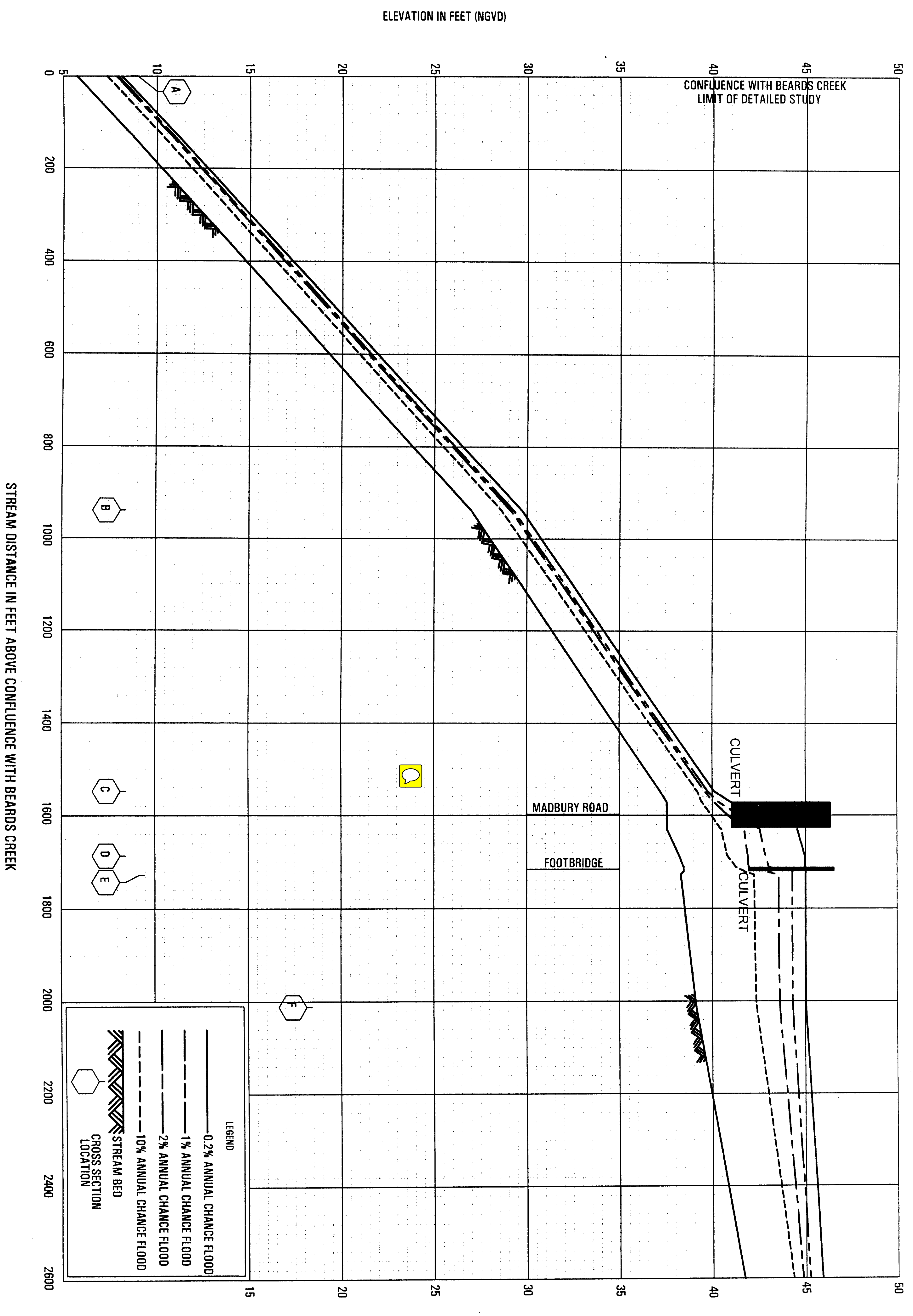
FEDERAL EMERGENCY MANAGEMENT AGENCY

DURHAM, NH

STRAFFORD COUNTY

## FLOOD PROFILES

OYSTER RIVER



50P

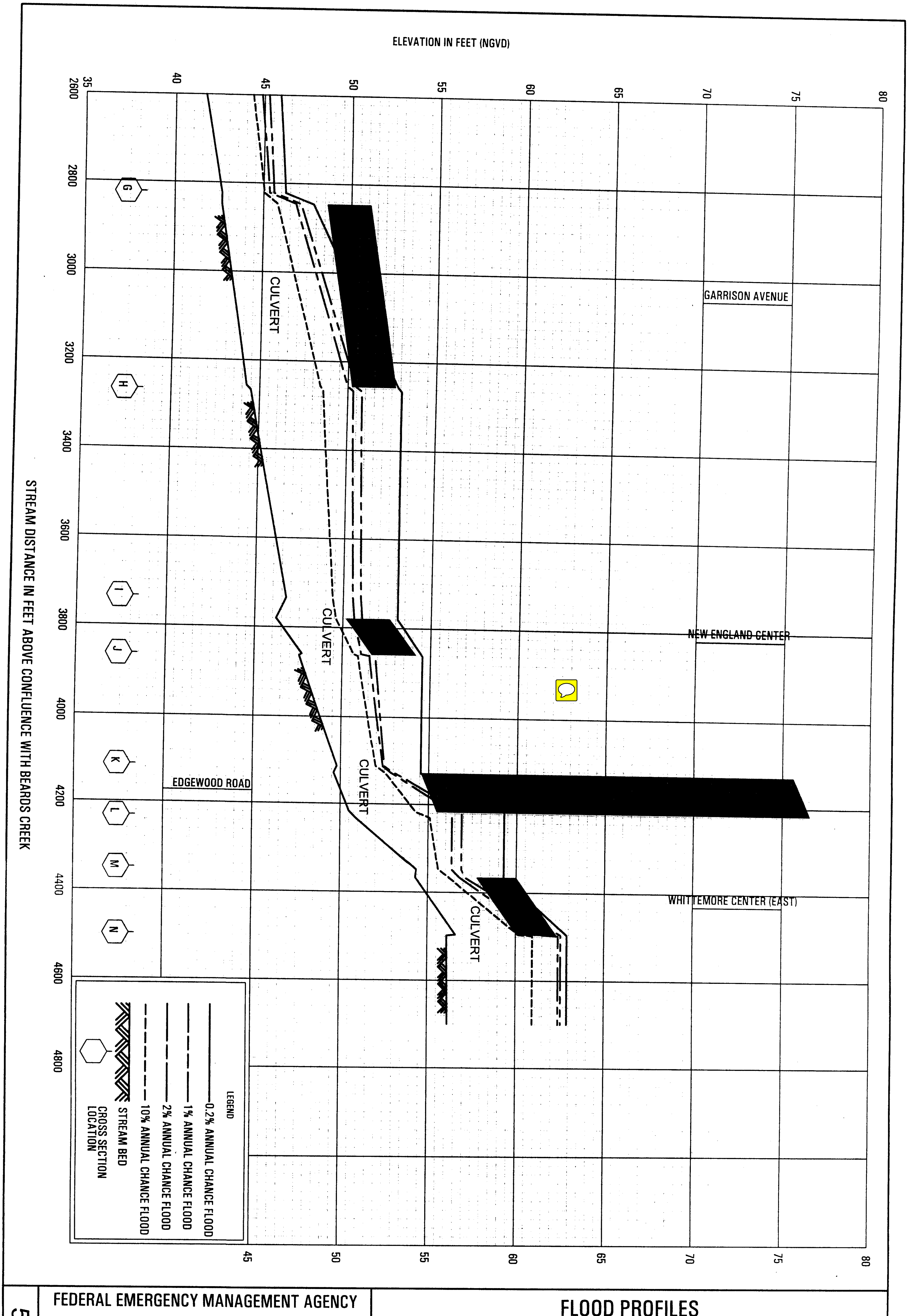
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

PETTEE BROOK



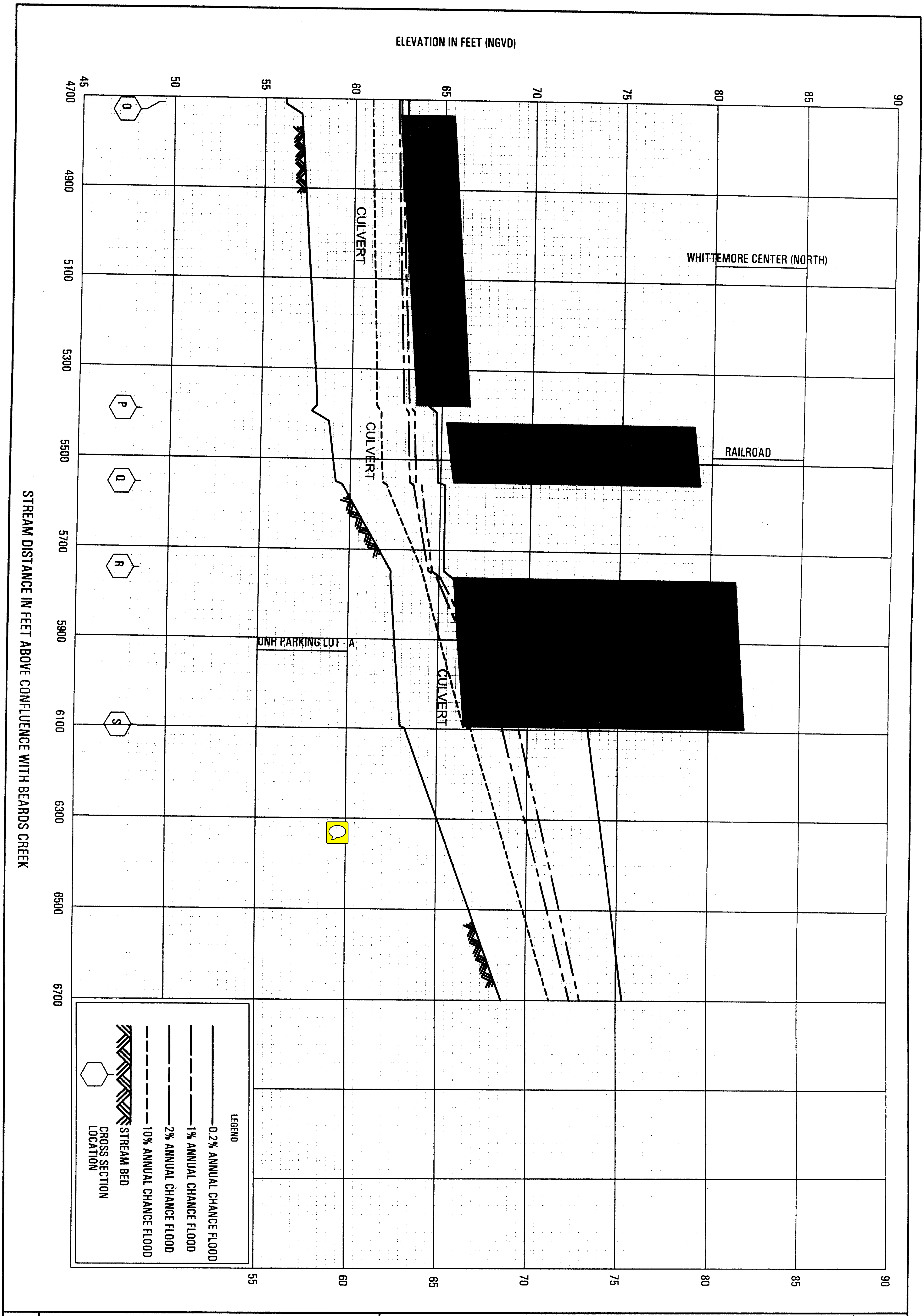
FEDERAL EMERGENCY MANAGEMENT AGENCY

STRAFFORD COUNTY, NH

(ALL JURISDICTIONS)

## FLOOD PROFILES

PETTEE BROOK



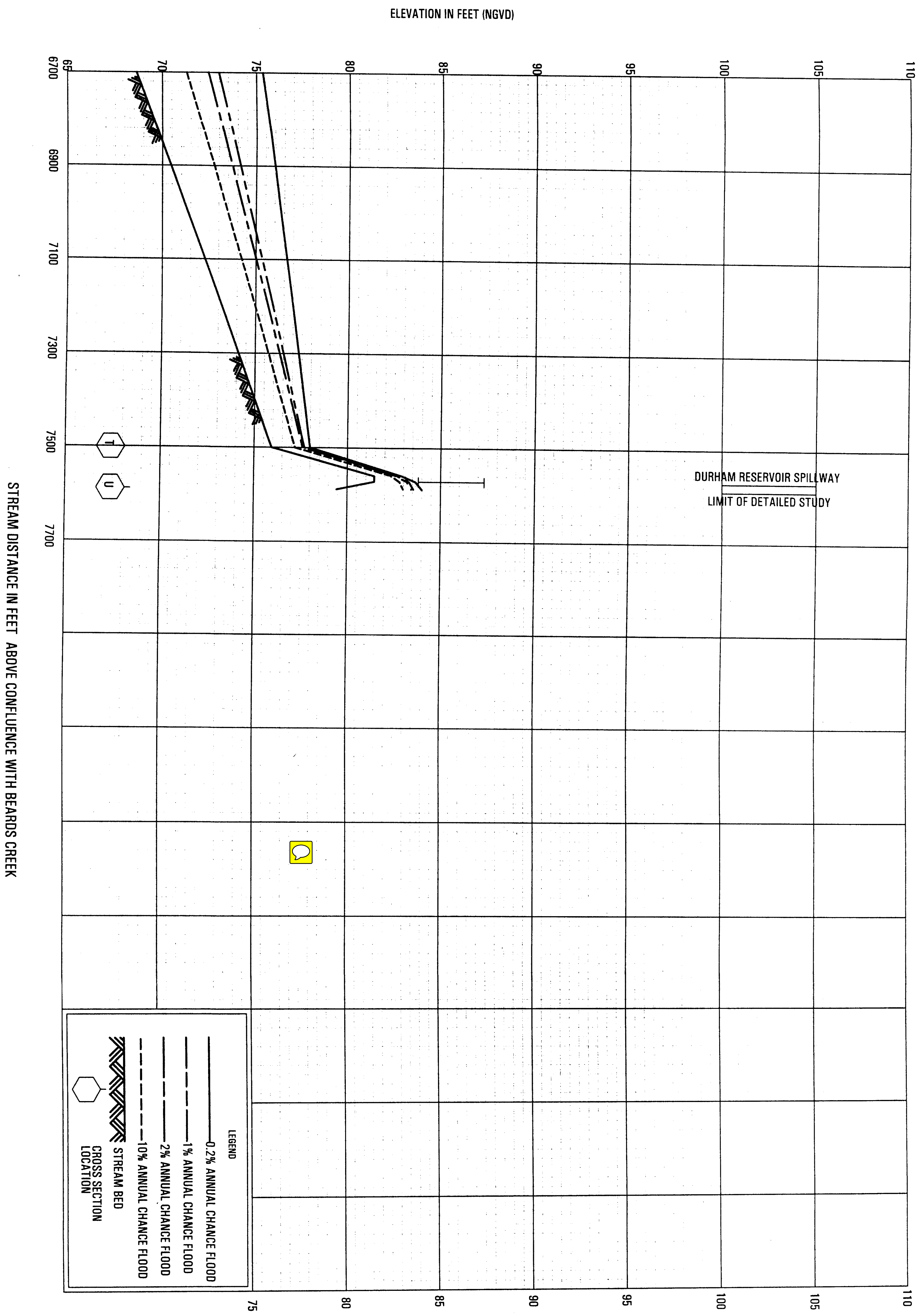
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

PETTEE BROOK



53P

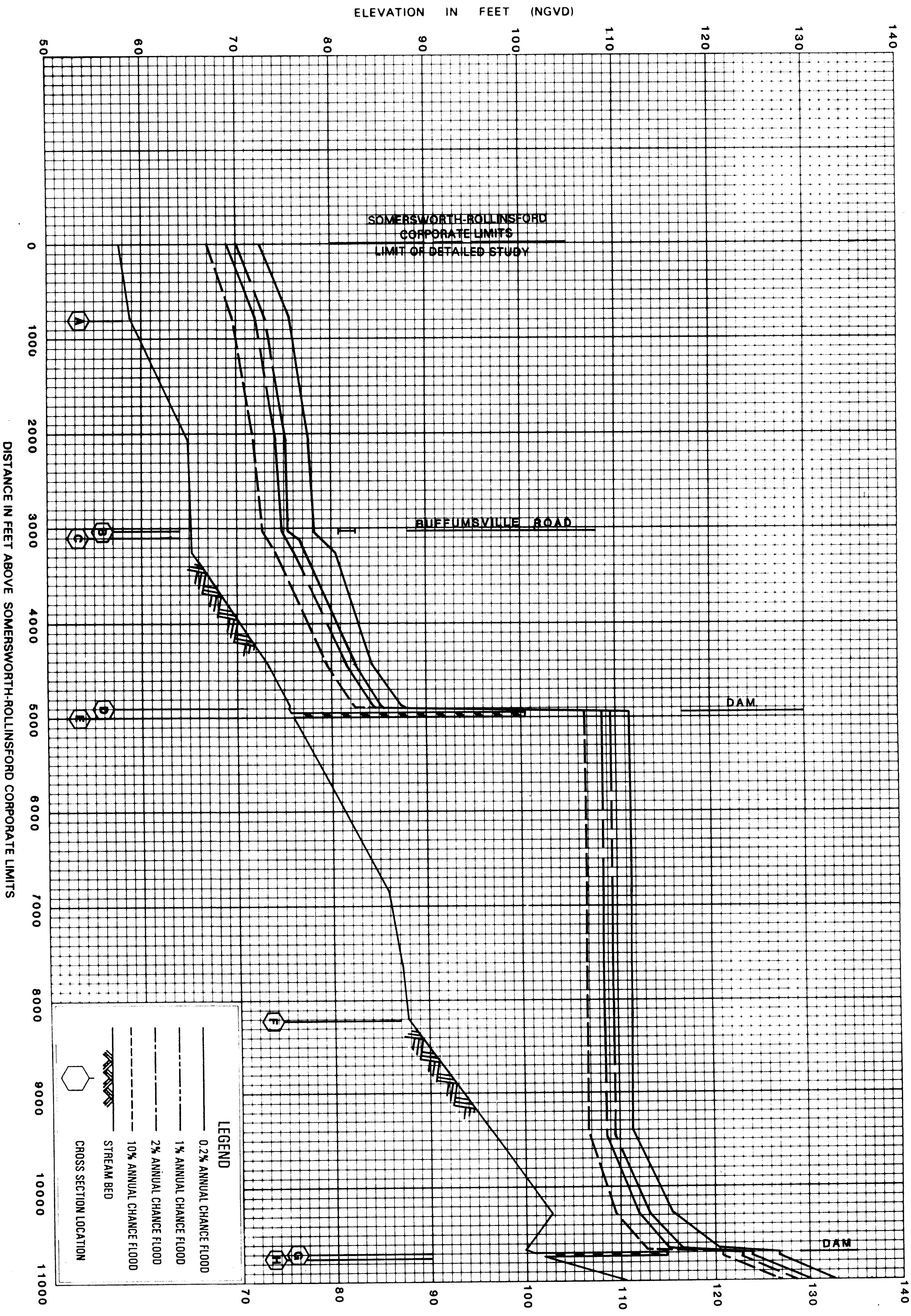
FEDERAL EMERGENCY MANAGEMENT AGENCY

STRAFFORD COUNTY, NH

(ALL JURISDICTIONS)

## FLOOD PROFILES

PETTEE BROOK

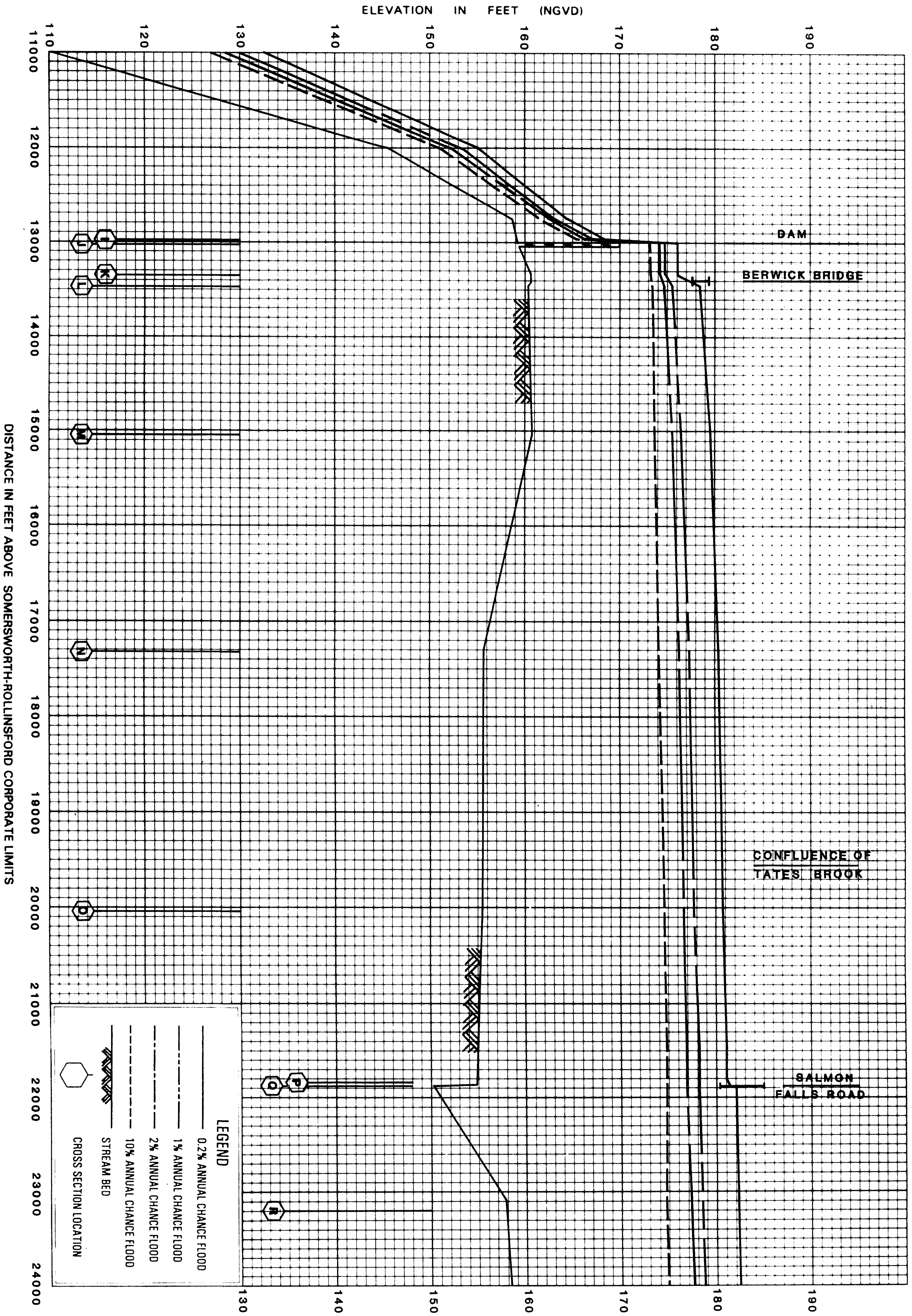


FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**
**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER



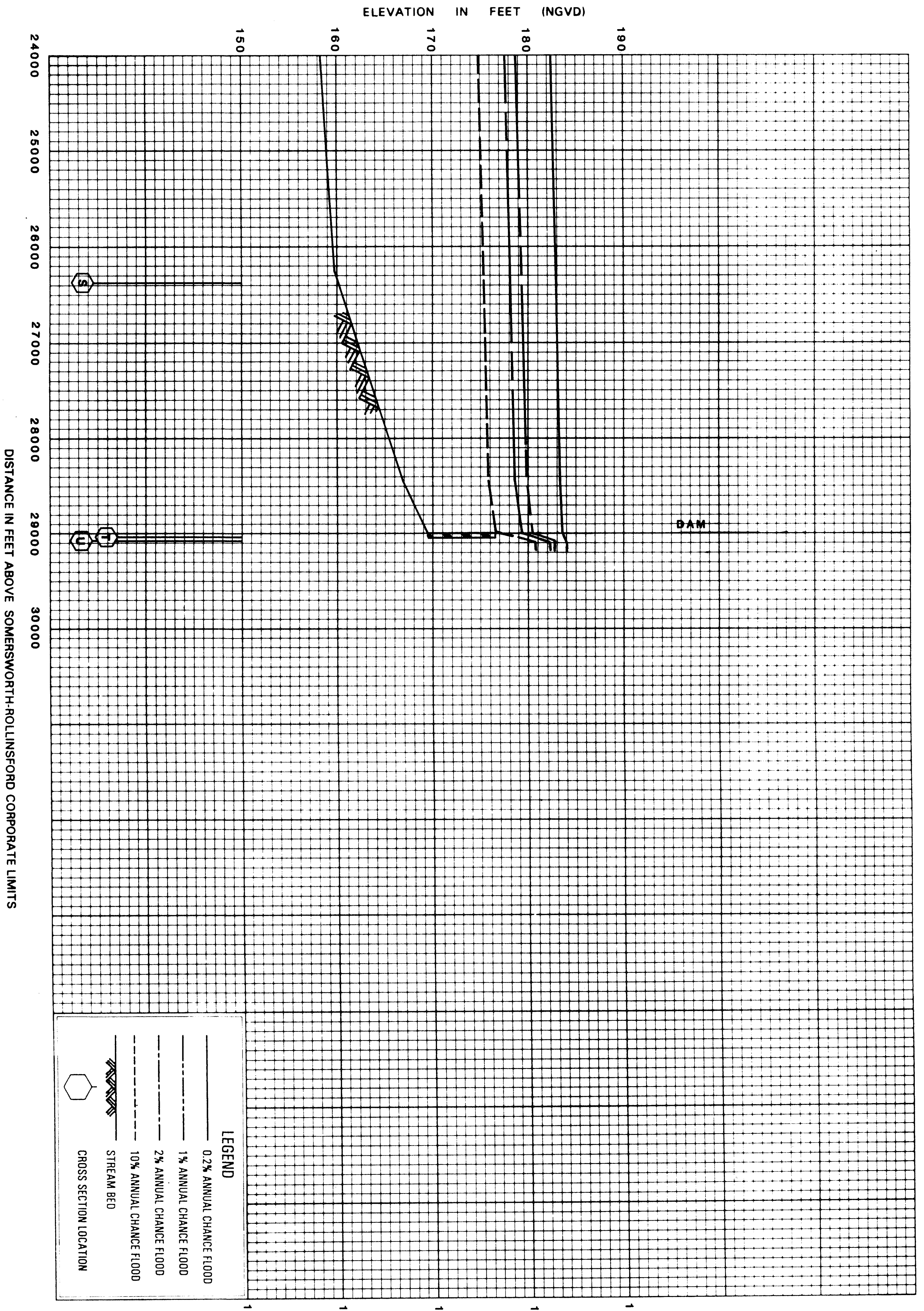
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER



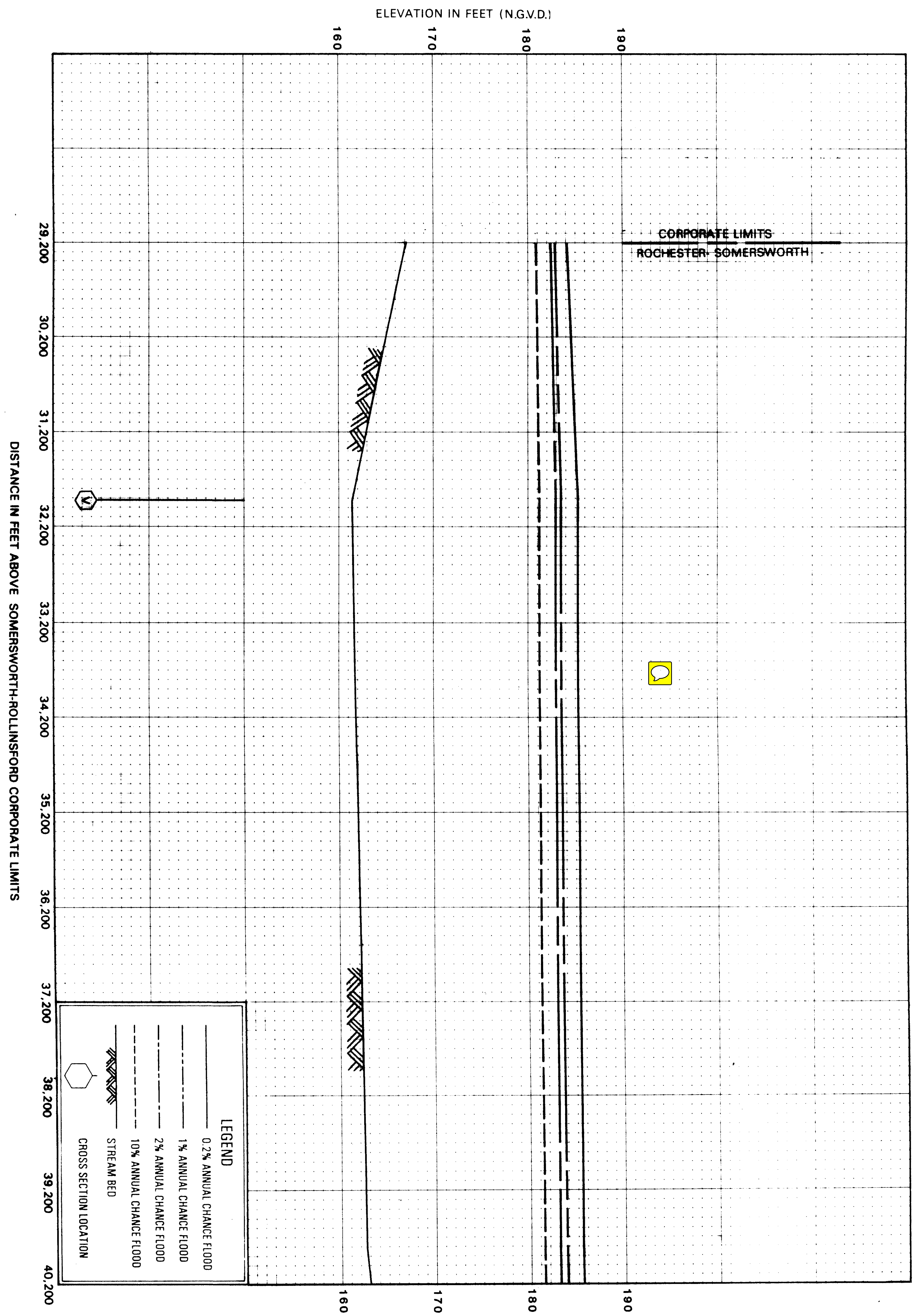
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**SALMON FALLS RIVER**



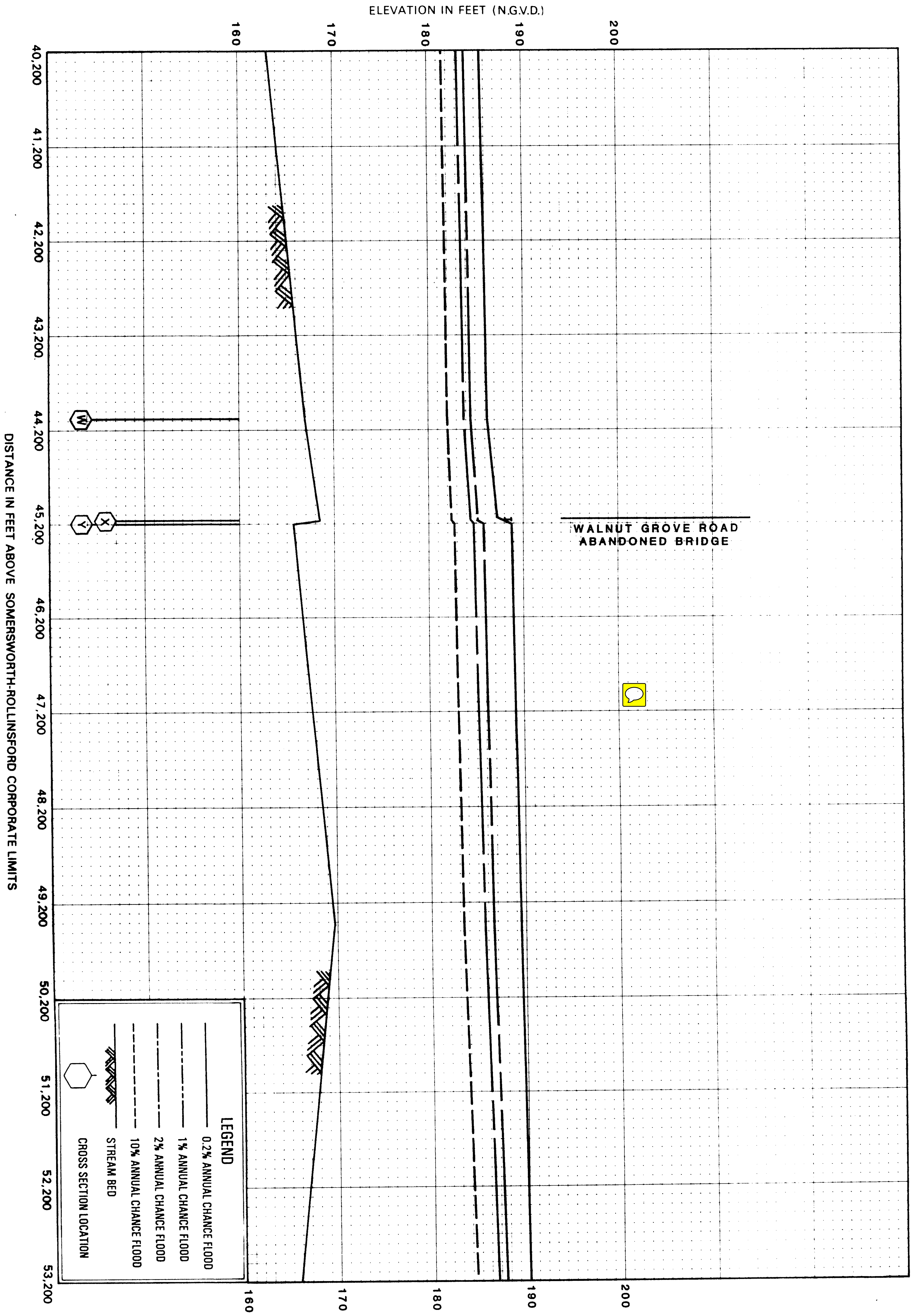
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER



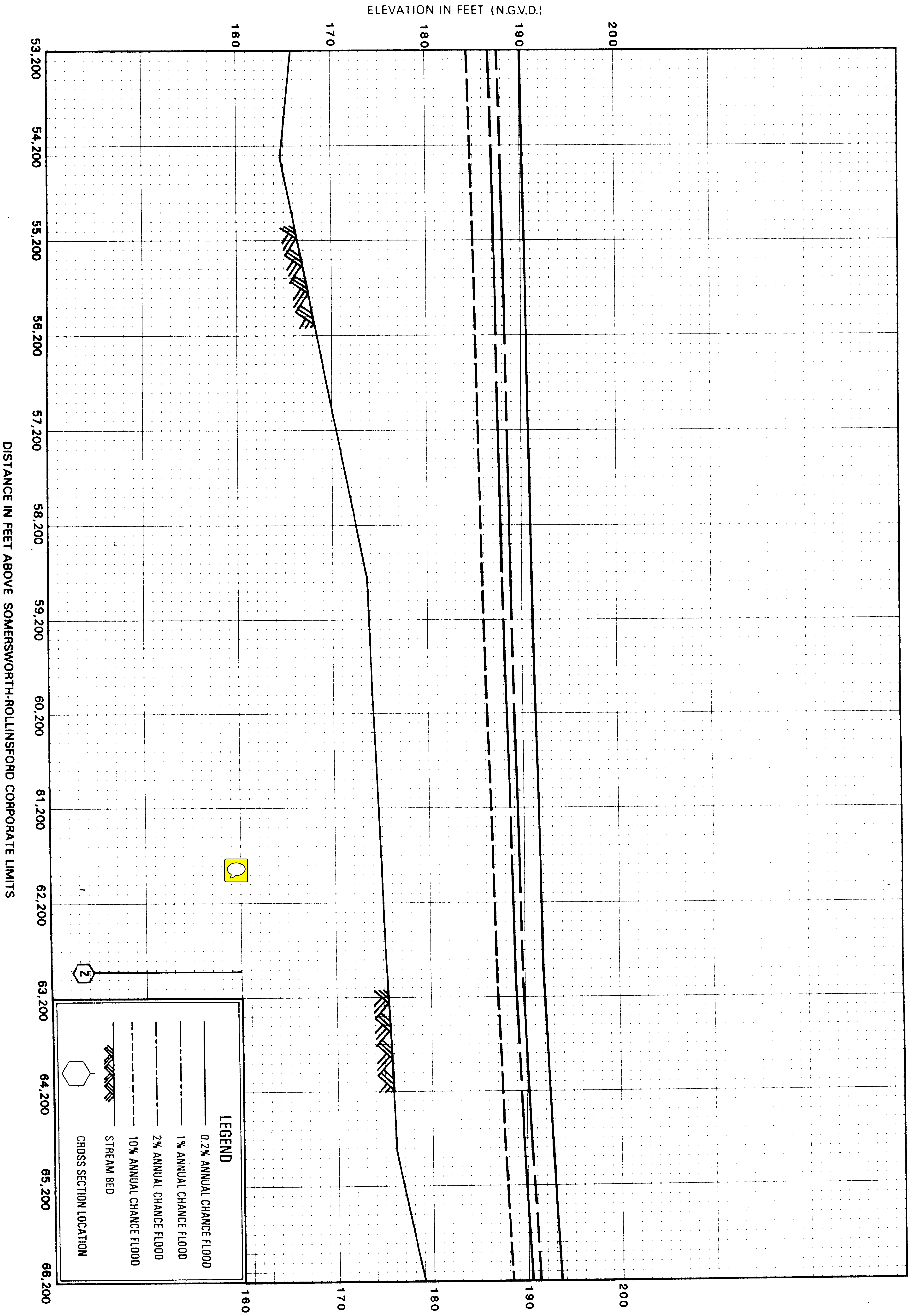
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER



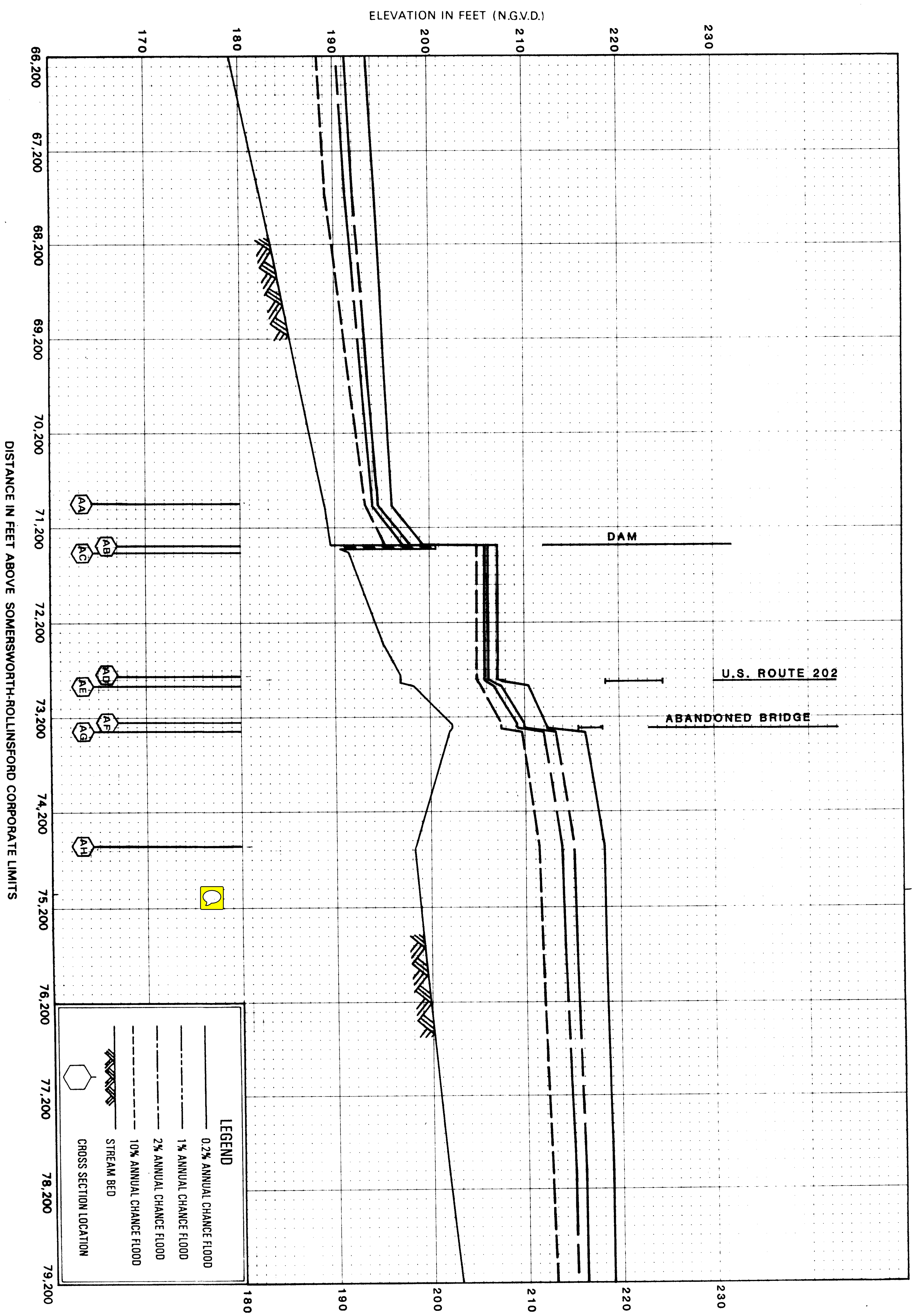
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER



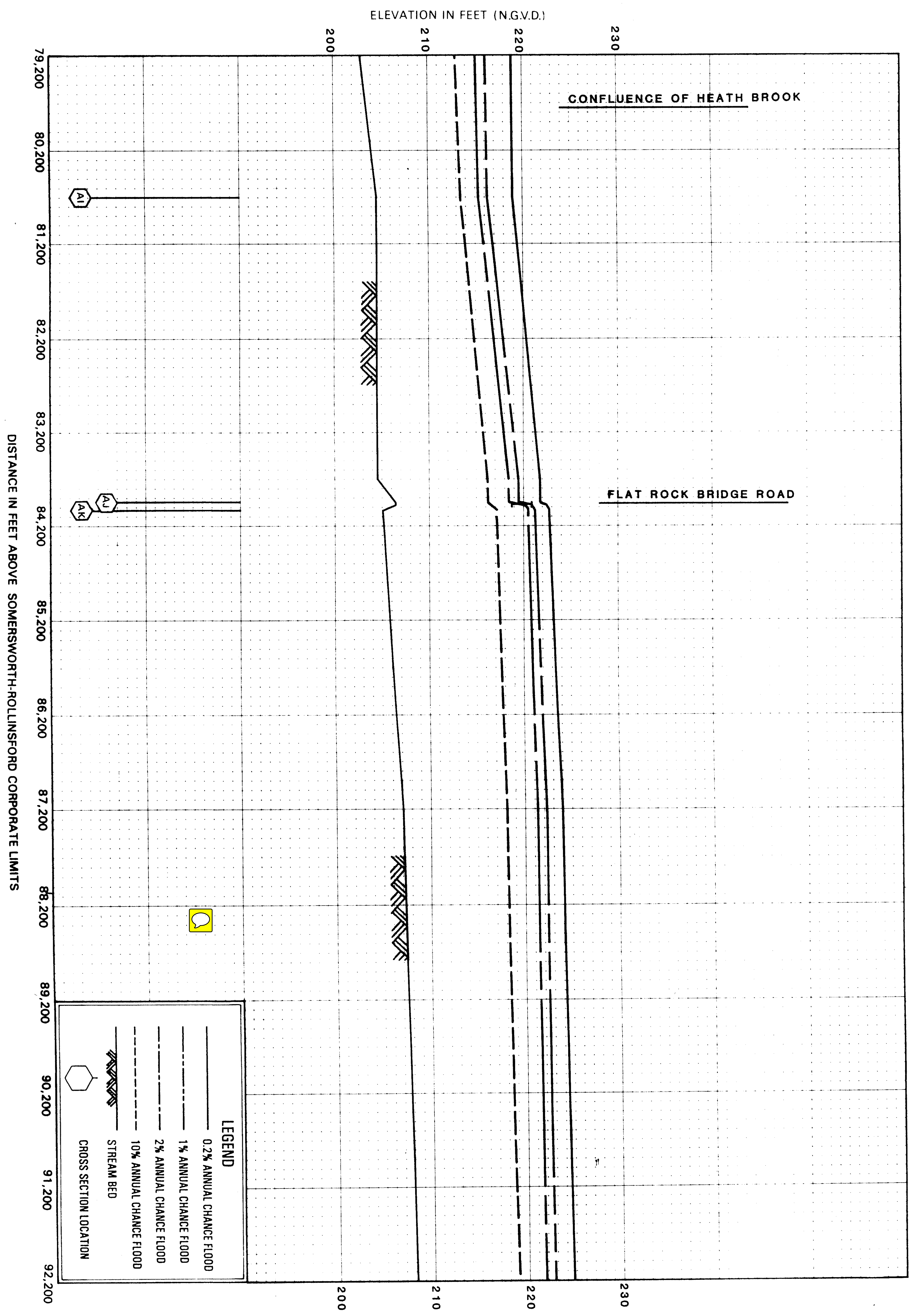
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

## SALMON FALLS RIVER



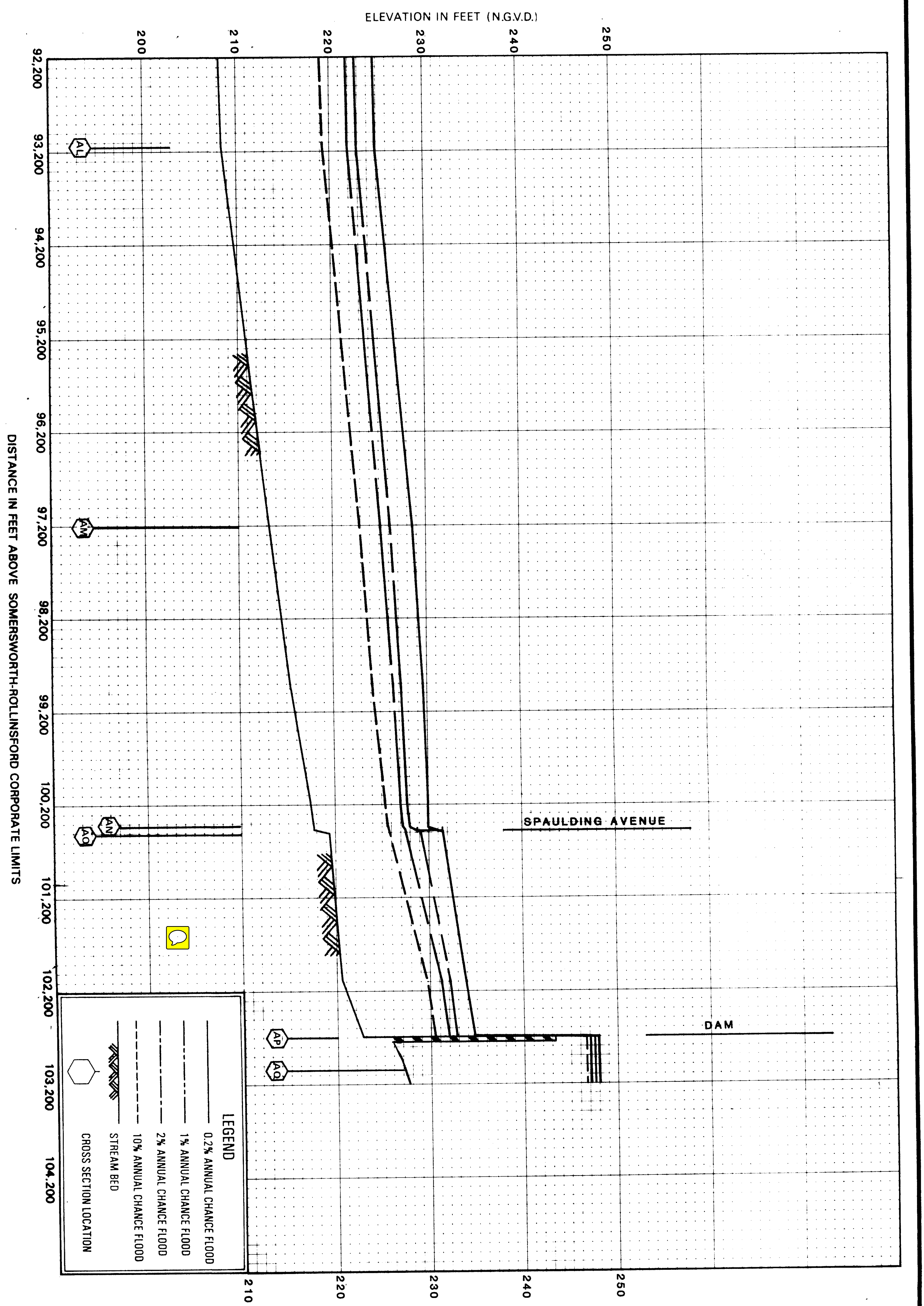
**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

FLOOD PROFILES

**SALMON FALLS RIVER**



**FEDERAL EMERGENCY MANAGEMENT AGENCY**

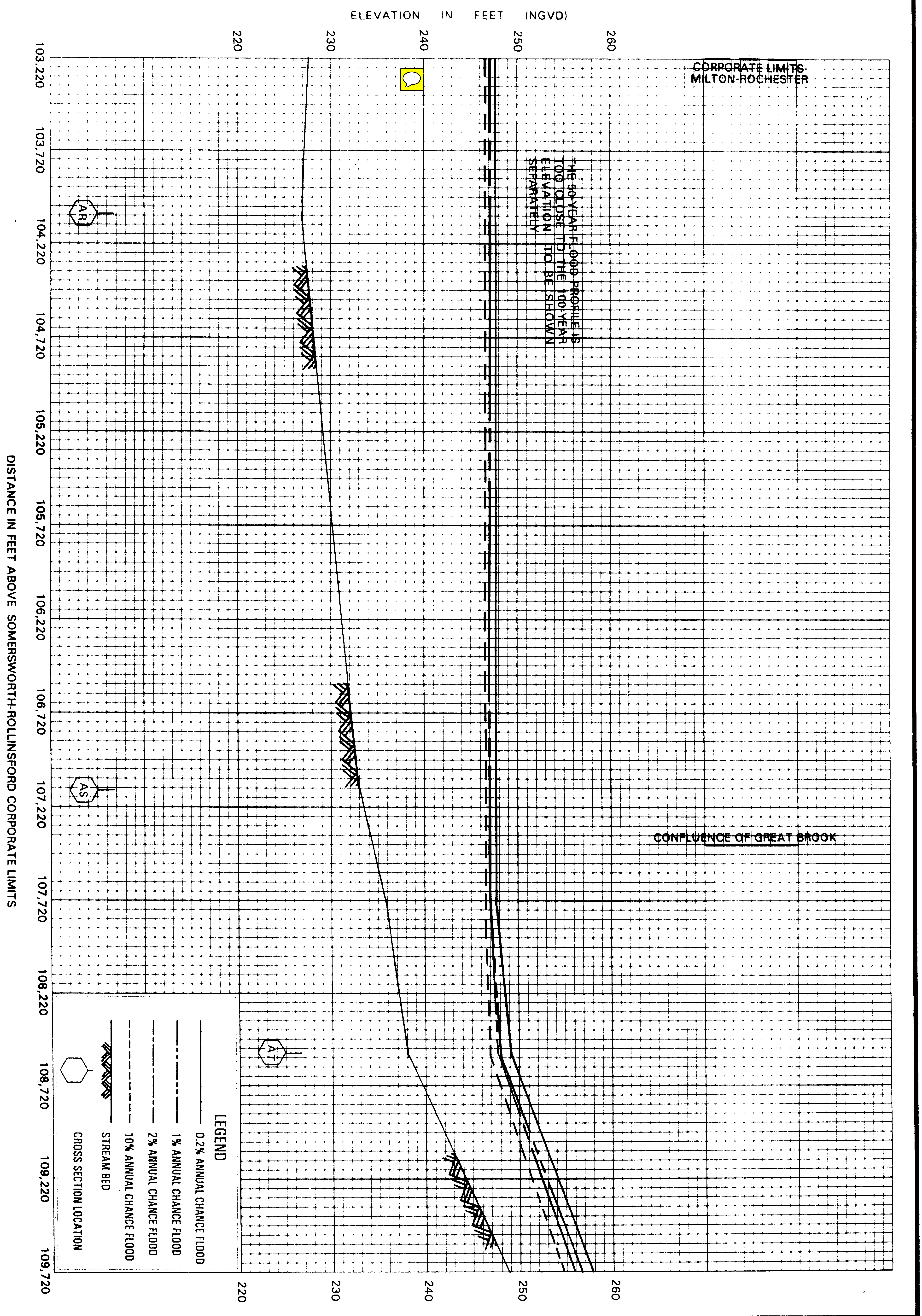
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

# FLOOD PROFILES

# SALMON FALLS RIVER

N342456



THE 50-YEAR FLOOD PROFILE IS TOO CLOSE TO THE 100-YEAR ELEVATION TO BE SHOWN SEPARATELY

**63P**

FEDERAL EMERGENCY MANAGEMENT AGENCY

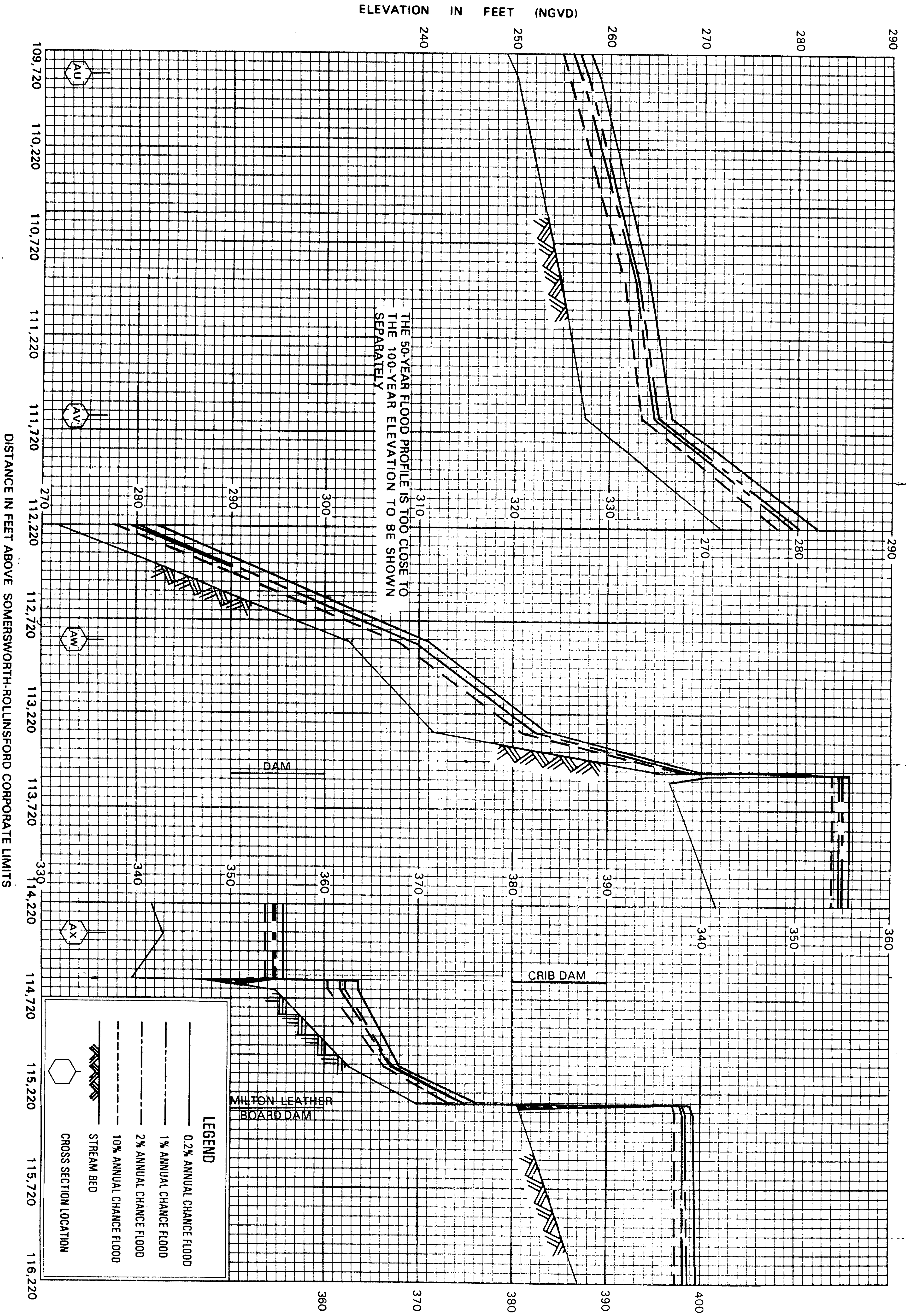
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

**FLOOD PROFILES**

**SALMON FALLS RIVER**

124486



FEDERAL EMERGENCY MANAGEMENT AGENCY

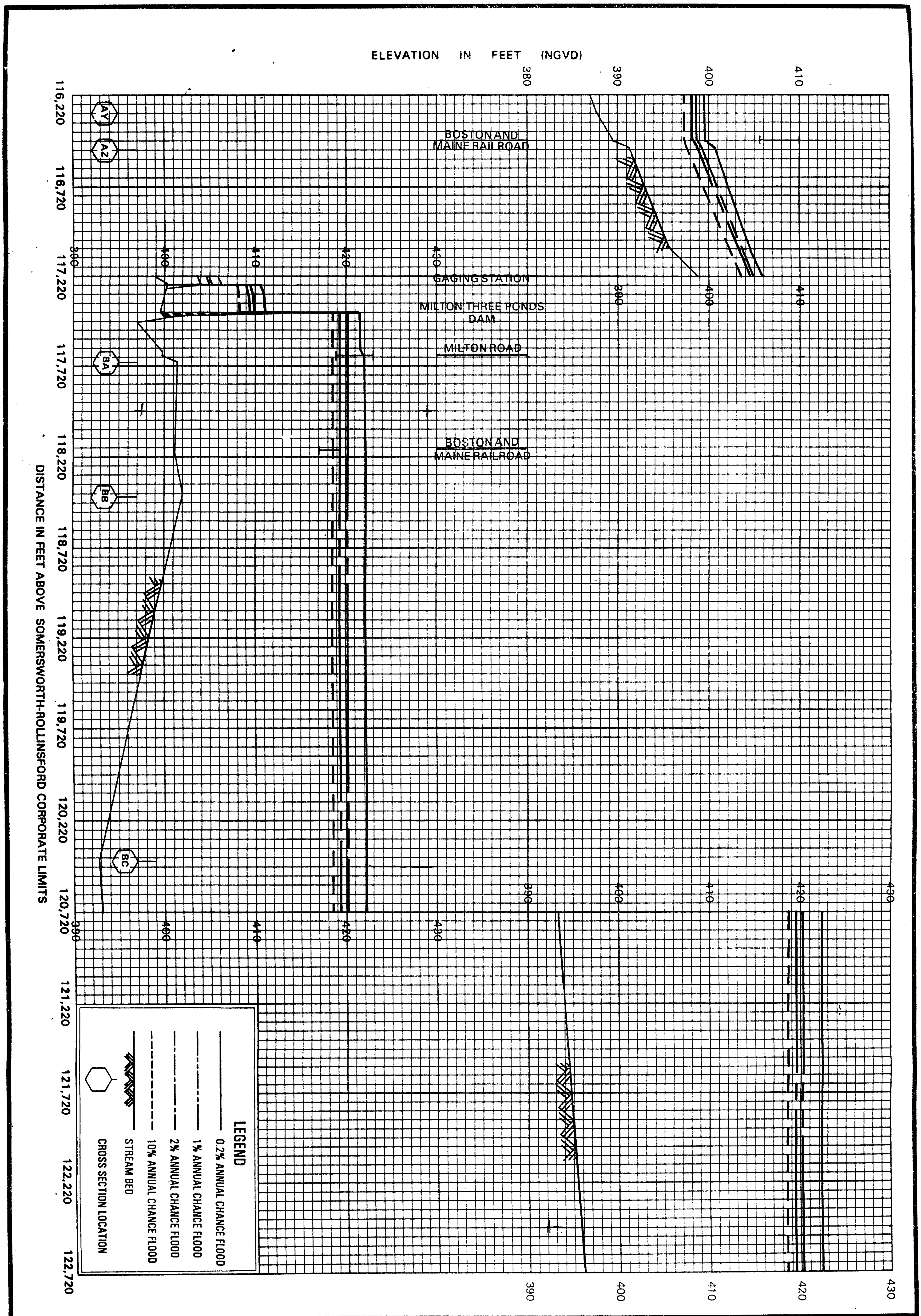
## STRAFFORD COUNTY, NH

(ALL JURISDICTIONS)

## FLOOD PROFILES

## SALMON FALLS RIVER

124486



65P

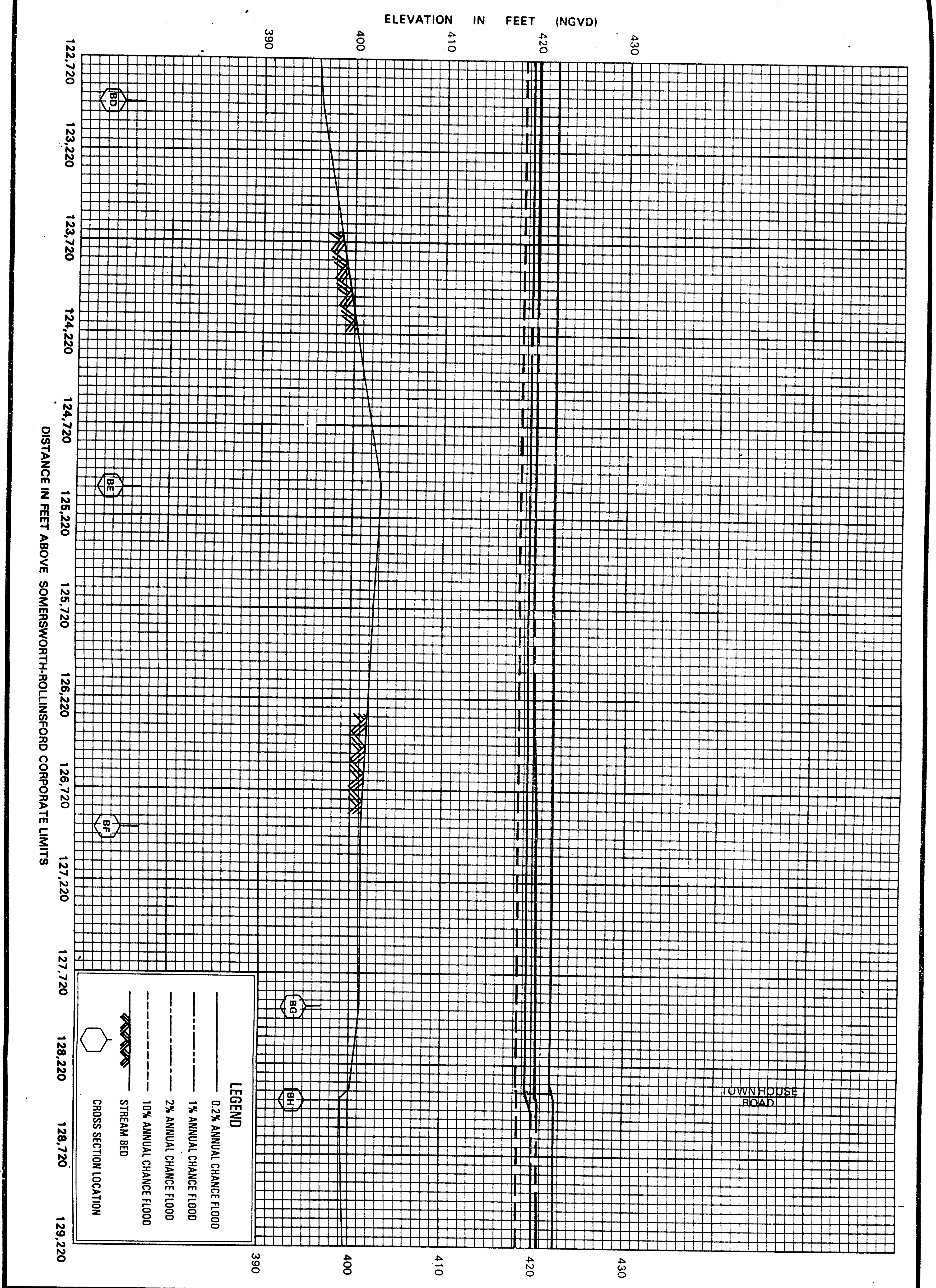
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

## SALMON FALLS RIVER



FEDERAL EMERGENCY MANAGEMENT AGENCY

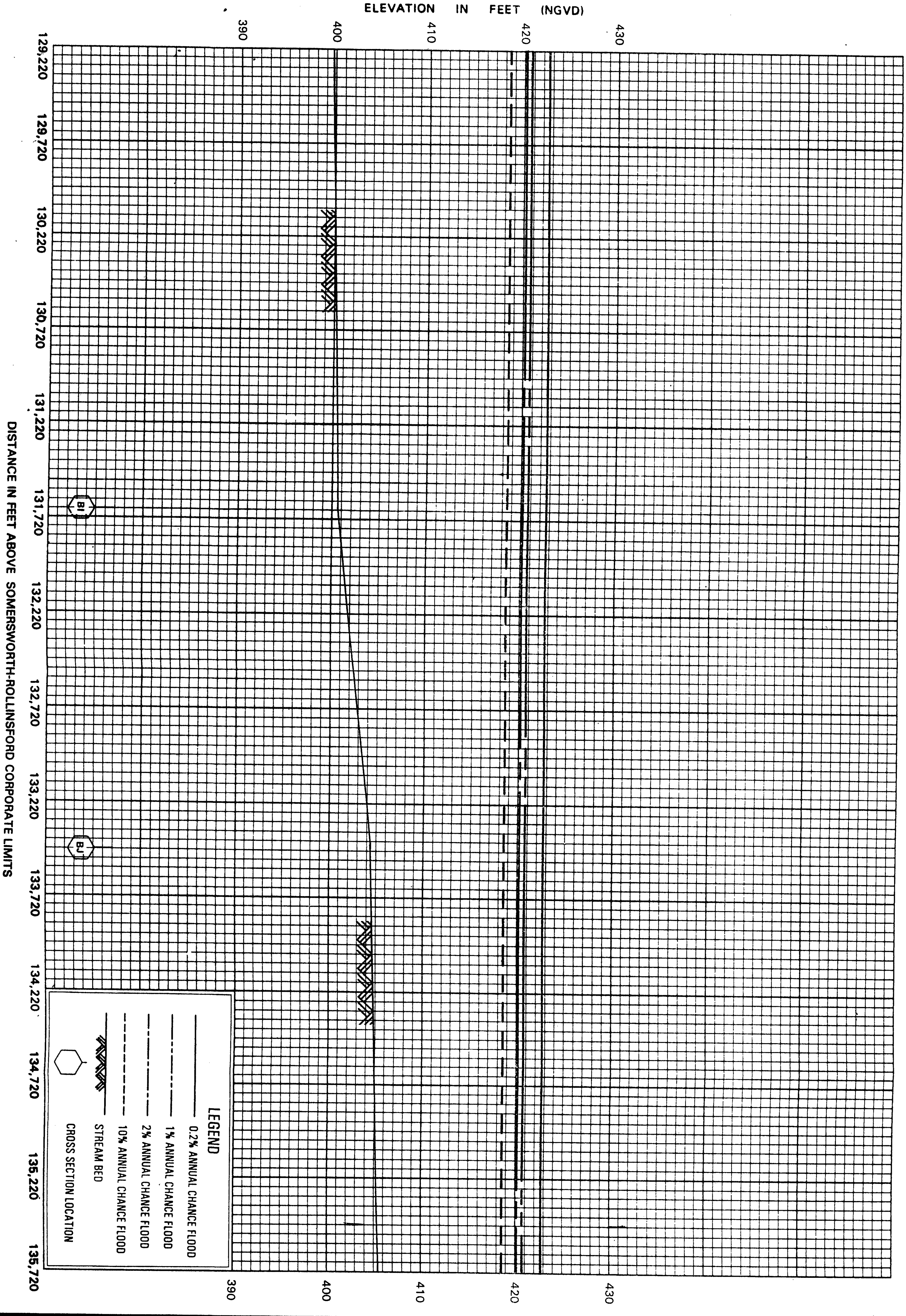
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER

124486



**67P**

FEDERAL EMERGENCY MANAGEMENT AGENCY

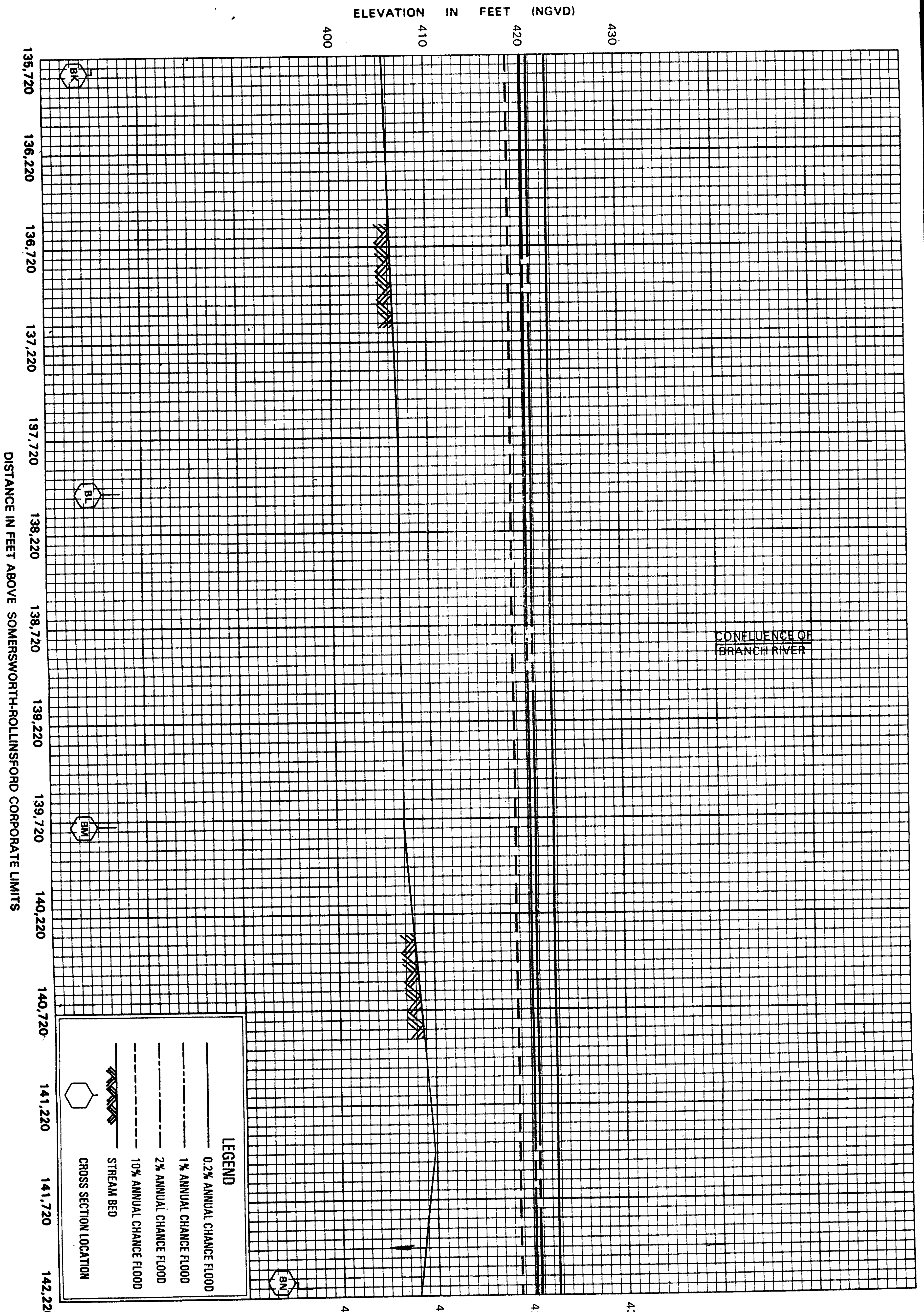
**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

## SALMON FALLS RIVER

124486



68P

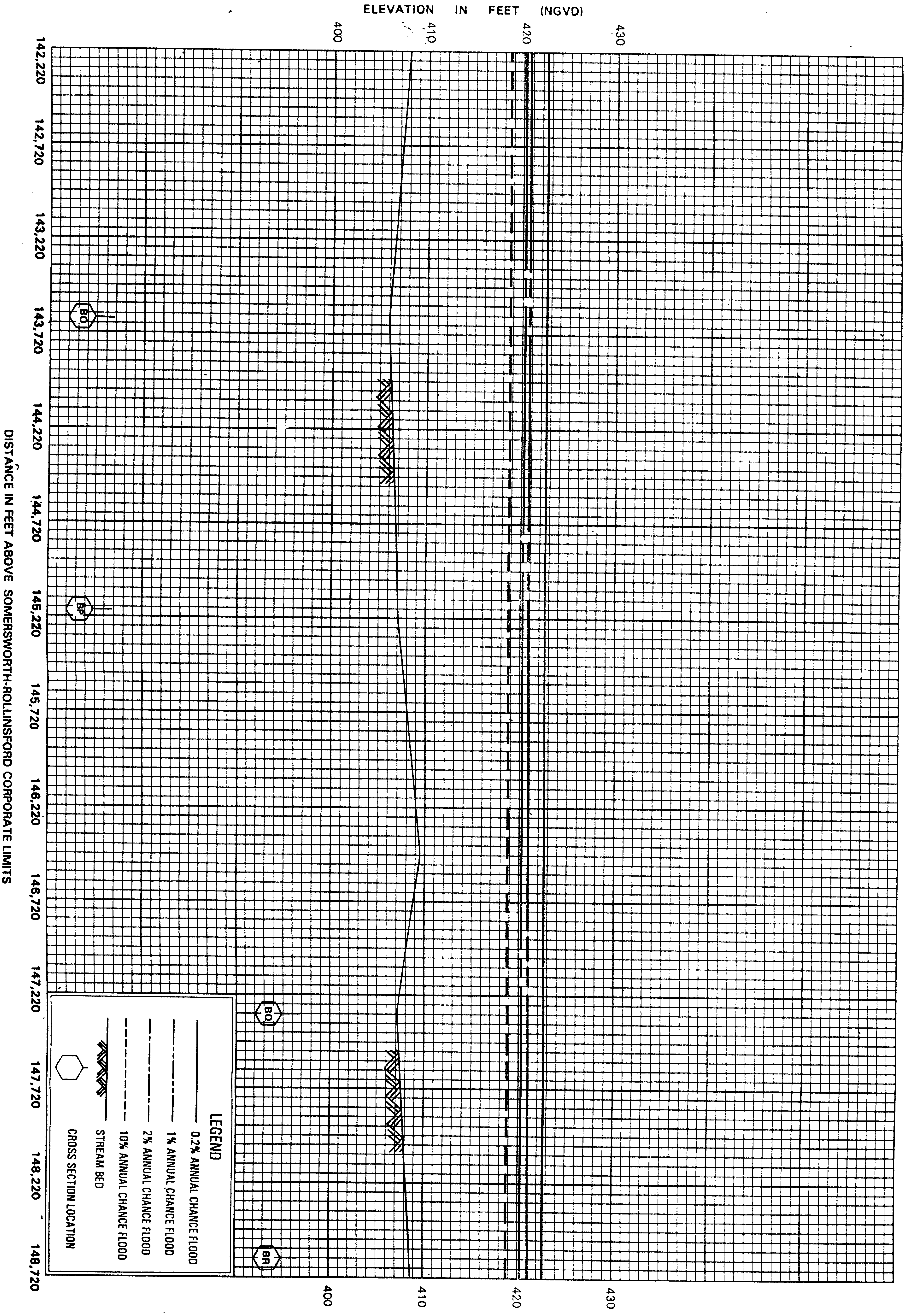
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

**FLOOD PROFILES**

**SALMON FALLS RIVER**



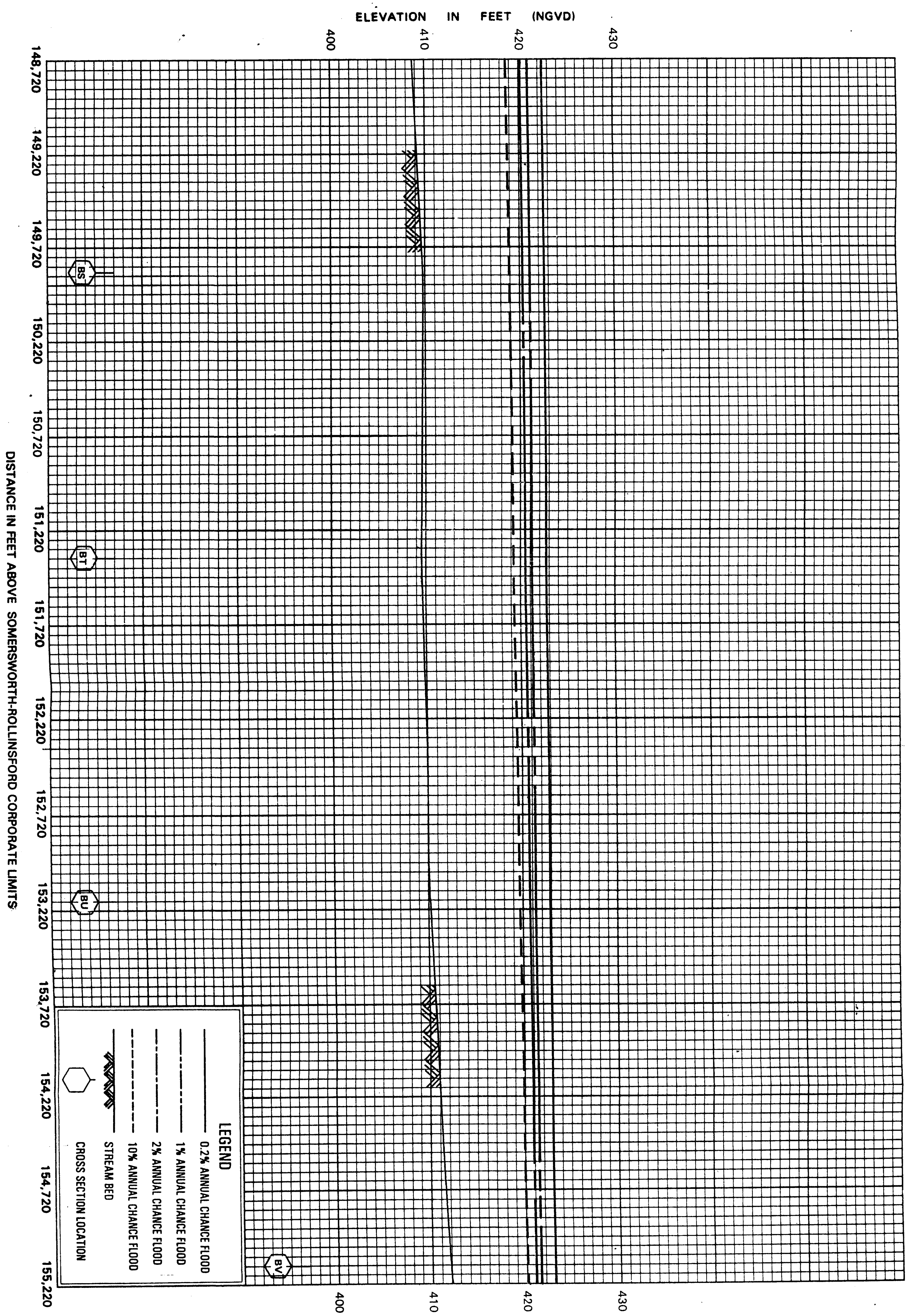
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

**FLOOD PROFILES**

**SALMON FALLS RIVER**



FEDERAL EMERGENCY MANAGEMENT AGENCY

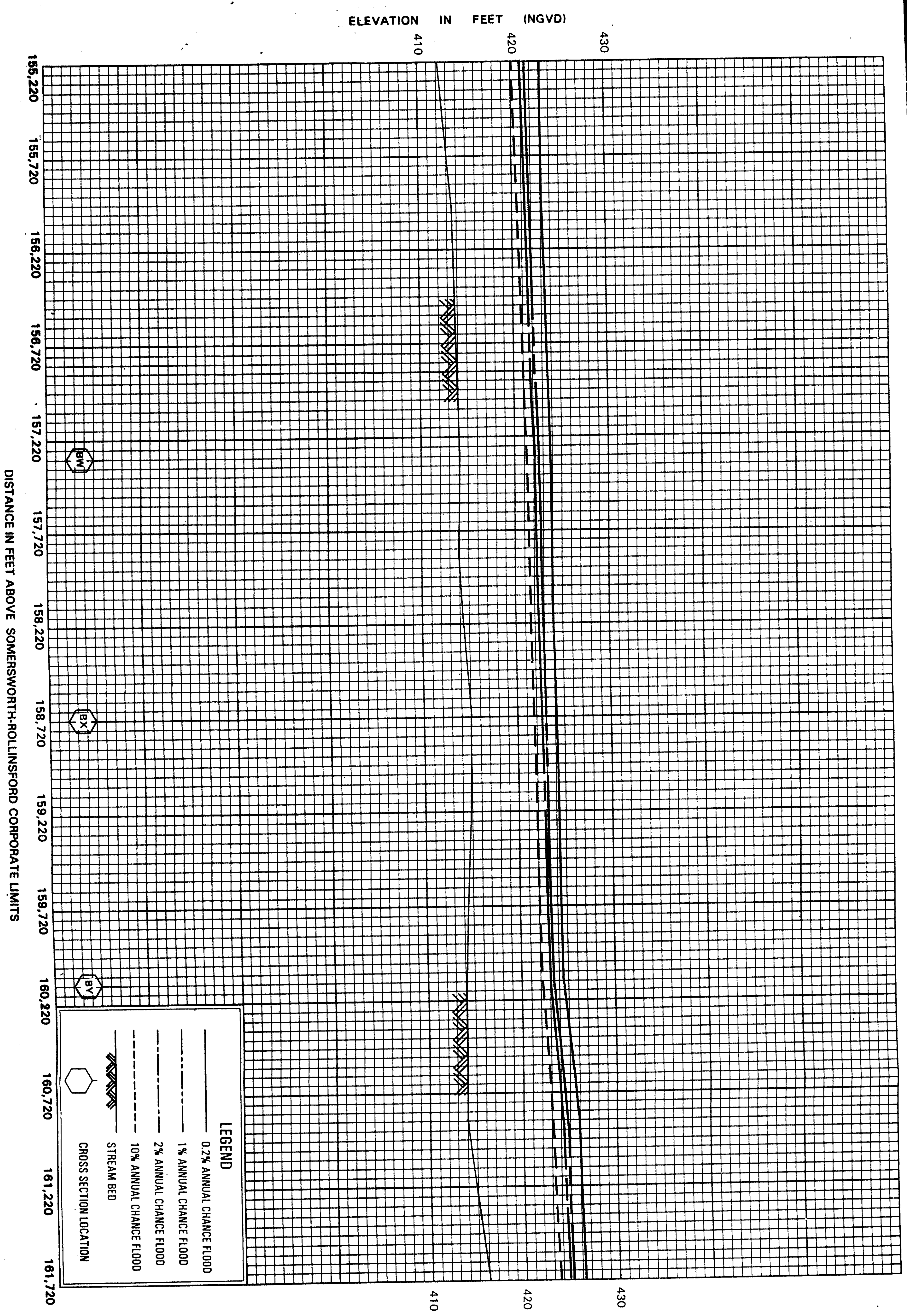
**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

## SALMON FALLS RIVER

124496



FEDERAL EMERGENCY MANAGEMENT AGENCY

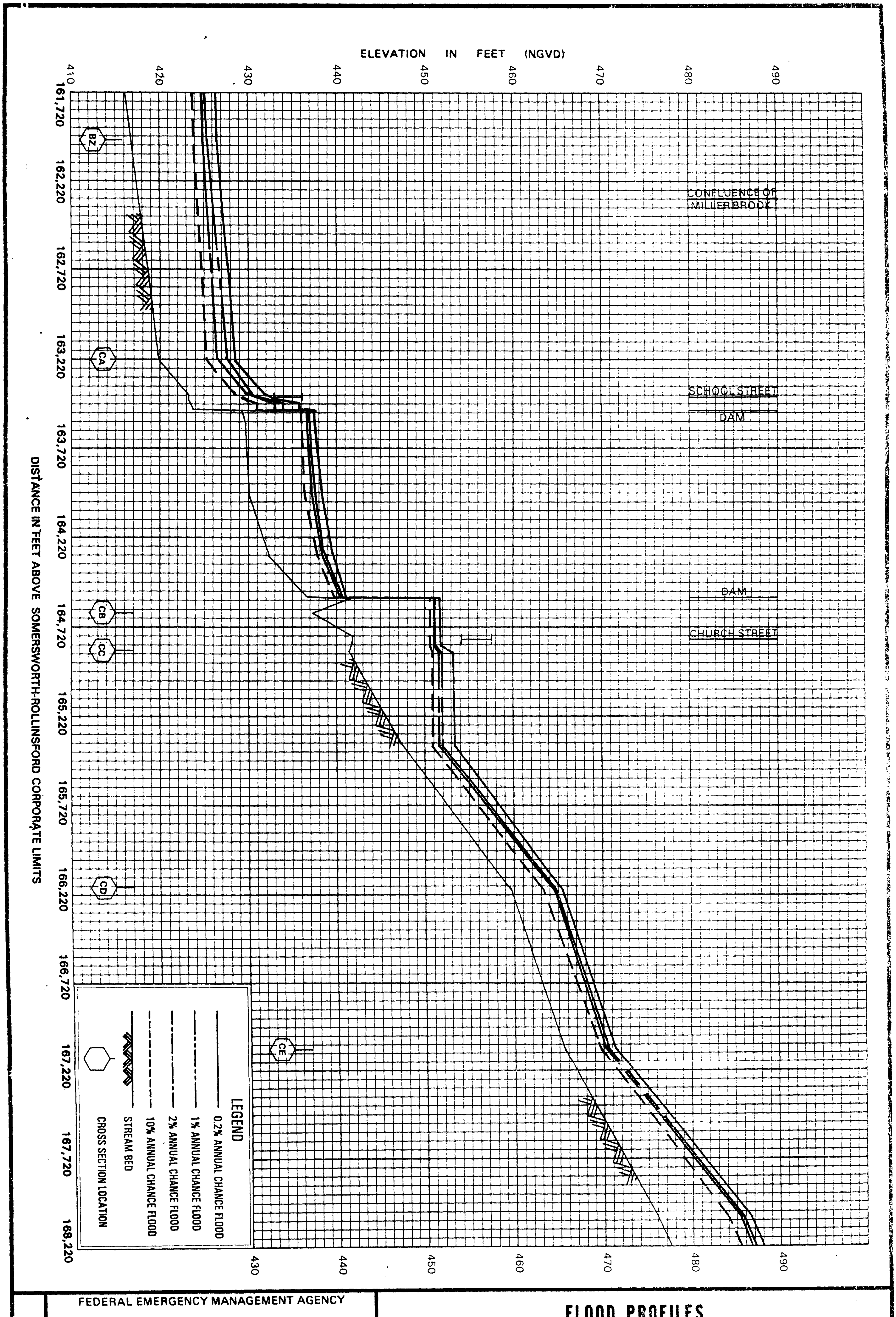
**STRAFFORD COUNTY, NH**

(ALL JURISDICTIONS)

## FLOOD PROFILES

## SALMON FALLS RIVER

124486



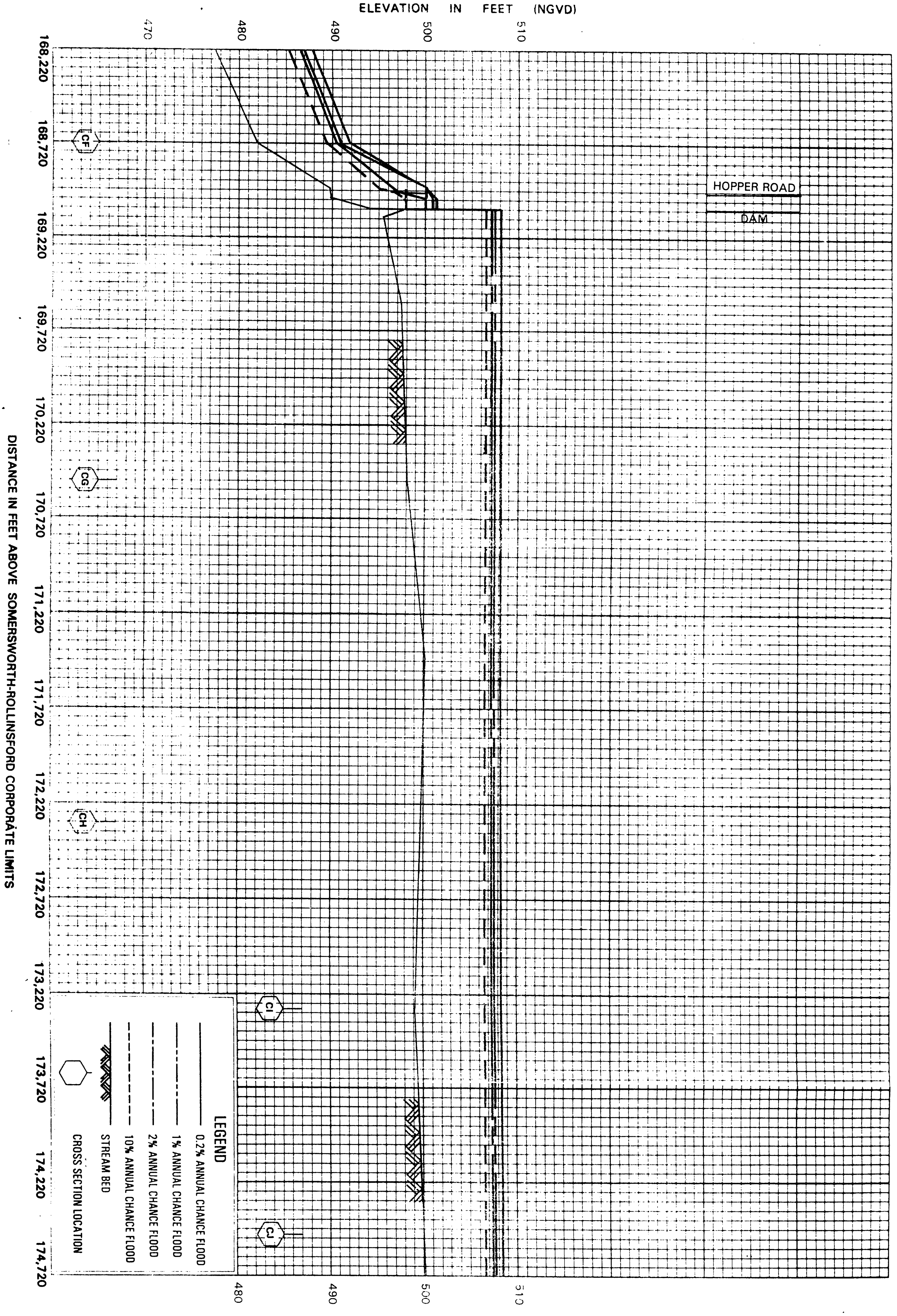
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER



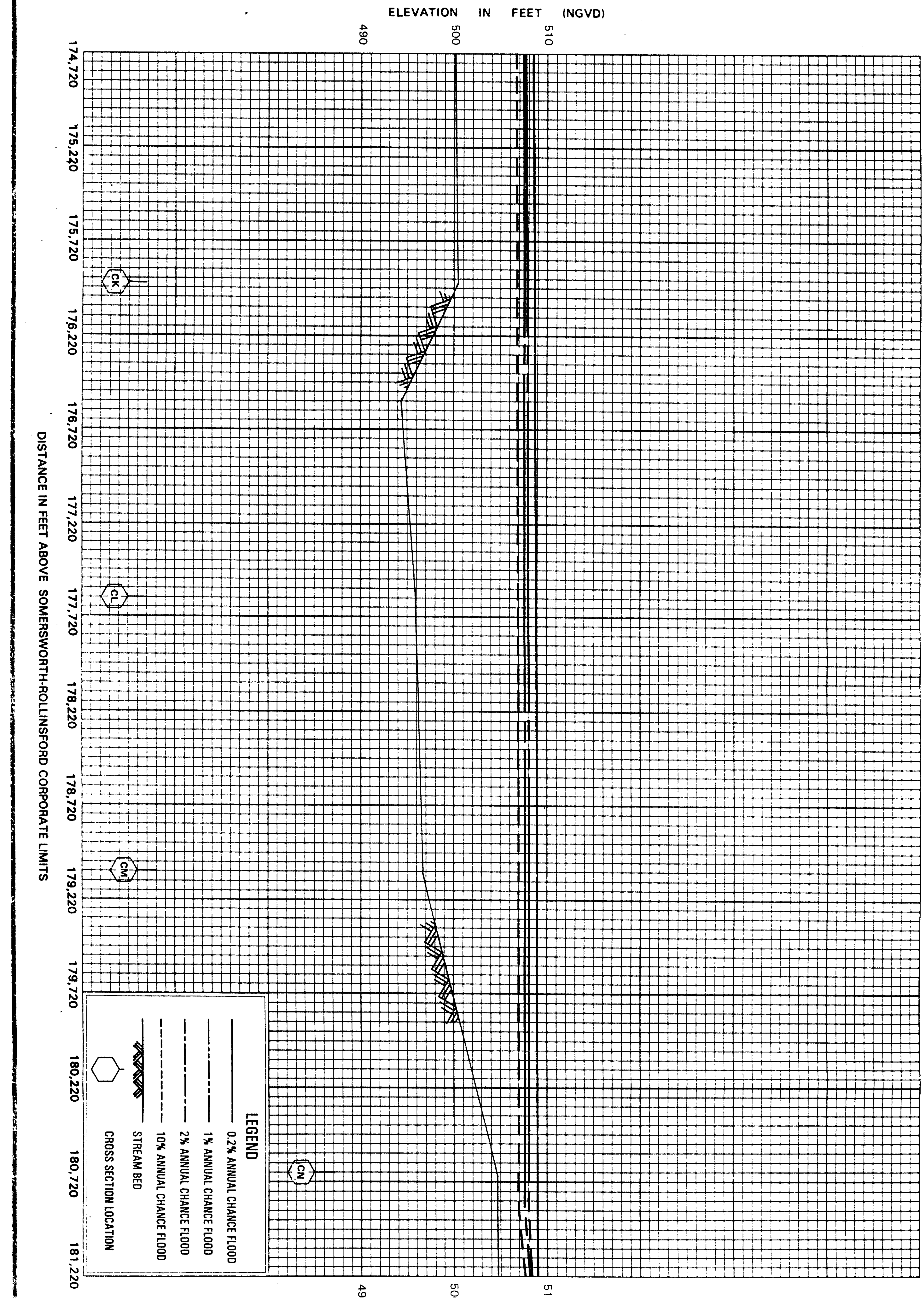
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER



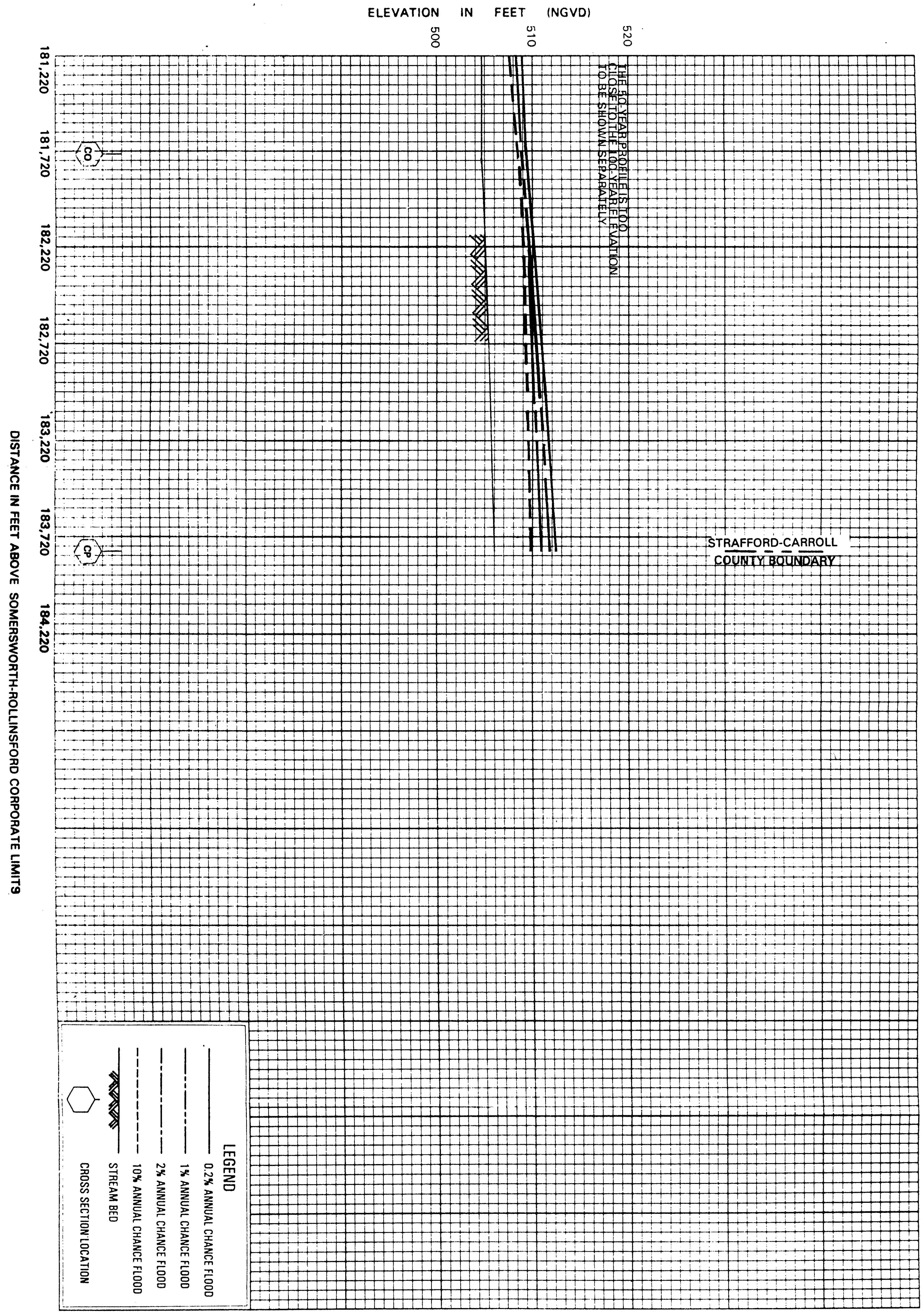
FEDERAL EMERGENCY MANAGEMENT AGENCY

**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER



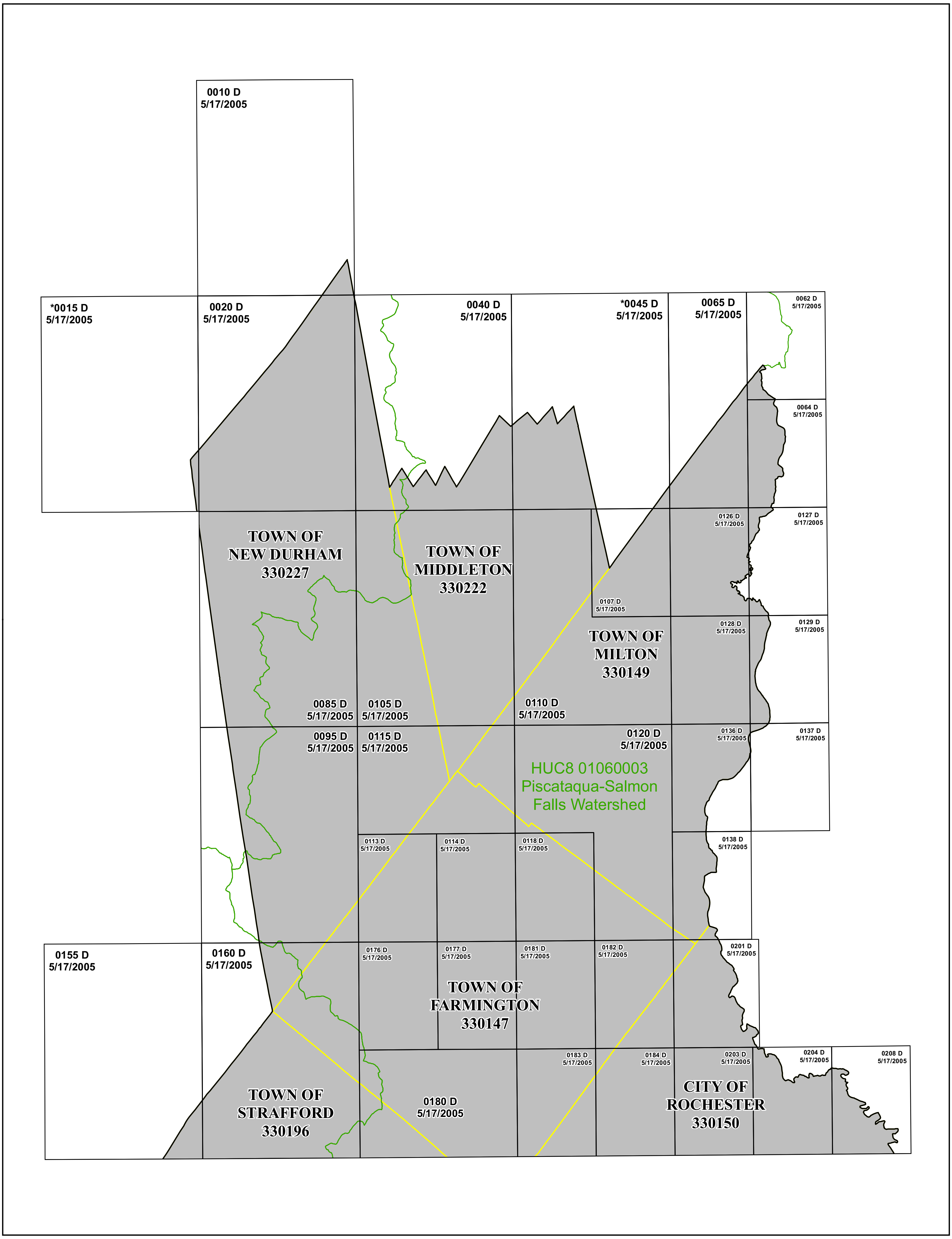
FEDERAL EMERGENCY MANAGEMENT AGENCY

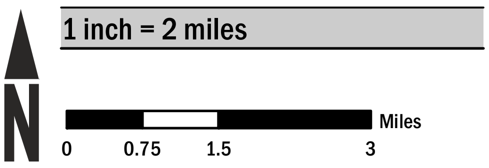
**STRAFFORD COUNTY, NH**

**(ALL JURISDICTIONS)**

## FLOOD PROFILES

## SALMON FALLS RIVER





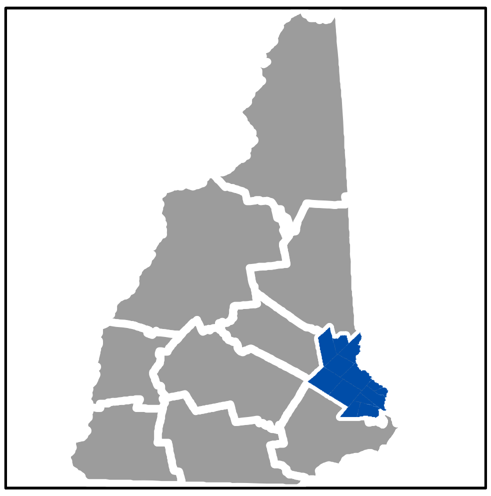
Map Projection:
NAD 1983 StatePlane New Hampshire
FIPS 2800 Feet
North American Datum of 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

**HTTP://MSC.FEMA.GOV**

SEE FIS REPORT FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS



# NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX (1 of 2)

**PISCATAQUA/SALMON FALLS BASIN,**
**STRAFFORD COUNTY, NEW HAMPSHIRE**
ALL JURISDICTIONS

PANELS PRINTED:

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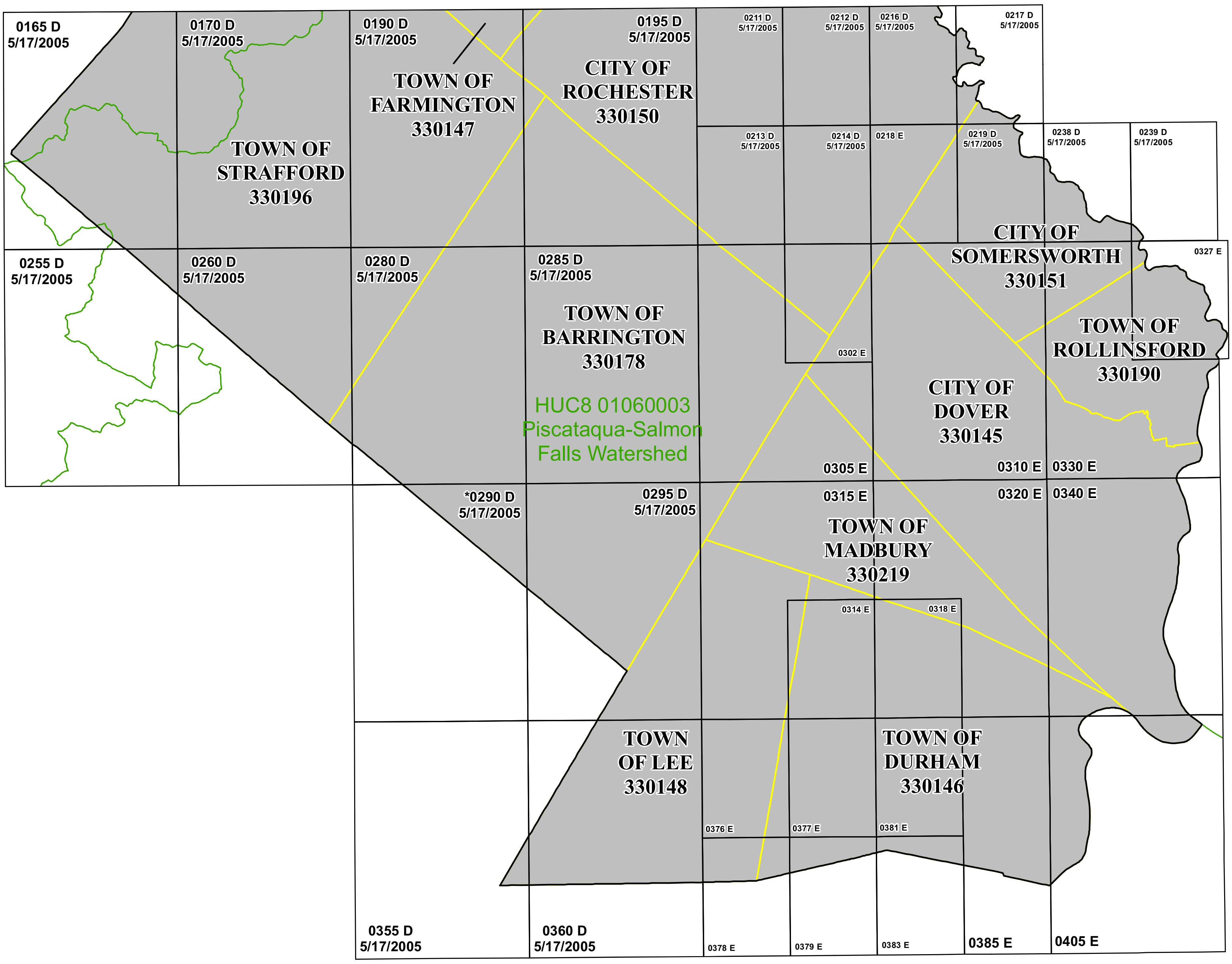
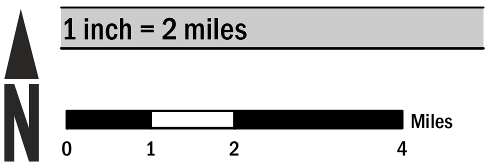
MAP NUMBER
33017CIND1

MAP REVISED





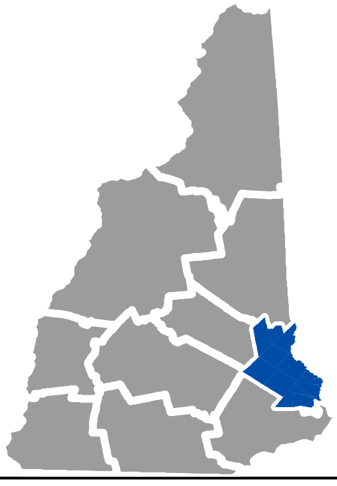
Map Projection:
NAD 1983 StatePlane New Hampshire
FIPS 2800 Feet
North American Datum of 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

**HTTP://MSC.FEMA.GOV**

SEE FIS REPORT FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS



## NATIONAL FLOOD INSURANCE PROGRAM

### FLOOD INSURANCE RATE MAP INDEX (2 of 2)

**PISCATAQUA/SALMON FALLS BASIN,**
**STRAFFORD COUNTY, NEW HAMPSHIRE**
ALL JURISDICTIONS

PANELS PRINTED:

0165, 0170, 0190, 0195, 0211, 0212, 0213, 0214, 0216, 0217, 0218, 0219, 0238, 0239, 0255, 0260, 0280, 0285, 0295, 0302, 0305, 0310, 0314, 0315, 0318, 0320, 0327, 0330, 0340, 0355, 0360, 0376, 0377, 0378, 0379, 0381, 0383, 0385, 0405

MAP NUMBER
33017CIND2

MAP REVISED

**SPECIAL FLOOD HAZARD AREAS:** *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

| | |
|---|---|
| 🟦 | Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE) |
| Zone A | The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone. |
| Zone AE | The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone. |
| Zone AH | The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone. |
| Zone AO | The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone. |
| Zone AR | The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood. |
| Zone A99 | The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone. |
| Zone V | The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone. |
| Zone VE | Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone. |
| ▨ | Regulatory Floodway determined in Zone AE. |

### OTHER AREAS OF FLOOD HAZARD

| | |
|---|---|
| 🟧 | Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile. |
| ▨ | Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone. |
| ▨ | Zone X Protected by Accredited Levee: Areas protected by an accredited levee, dike or other flood control structures. See Notes to Users for important information. |

### OTHER AREAS

| | |
|---|---|
| 🟨 | Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible |
| NO SCREEN | Unshaded Zone X: Areas determined to be outside the 0.2% annual chance floodplain |

### FLOOD HAZARD AND OTHER BOUNDARY LINES

| | |
|---|---|
| 🟦 | Flood Zone Boundary (white line) |
| ═ | Limit of Study |
| ─ | Jurisdiction Boundary |
| – – – | Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet |

### GENERAL STRUCTURES

| | |
|---|---|
| – – – – – – –<br>*Aqueduct*<br>*Channel*<br>*Culvert*<br>*Storm Sewer* | Channel, Culvert, Aqueduct, or Storm Sewer |
| ―――<br>*Dam*<br>*Jetty*<br>*Weir* | Dam, Jetty, Weir |
| ▥ | Levee, Dike or Floodwall accredited or provisionally accredited to provide protection from the 1% annual chance flood |
| ‖‖‖‖ | Levee, Dike or Floodwall not accredited to provide protection from the 1% annual chance flood. |
| ≻―≺<br>*Bridge* | Bridge |

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA):** *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.*

| | |
|---|---|
| ▨<br>CBRS AREA<br>09/30/2009 | Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway. |
| ▨<br>OTHERWISE PROTECTED AREA<br>09/30/2009 | Otherwise Protected Area |

**REFERENCE MARKERS**

| | |
|---|---|
| ● 22.0 | River mile Markers |

**CROSS SECTION & TRANSECT INFORMATION**

| | |
|---|---|
| ⬡B —— 20.2 | Lettered Cross Section with Regulatory Water Surface Elevation (BFE) |
| ⬡5280 —— 21.1 | Numbered Cross Section with Regulatory Water Surface Elevation (BFE) |
| —— 17.5 | Unlettered Cross Section with Regulatory Water Surface Elevation (BFE) |
| ⑧ - - - - - - - | Coastal Transect |

| | |
|---|---|
| —— - —— - | Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation. |
| —— - - —— - - | Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping. |

| | |
|---|---|
| ∿∿∿ 513 ∿∿∿ | Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available) |
| **ZONE AE<br>(EL 16)** | Static Base Flood Elevation value (shown under zone label) |
| **ZONE AO<br>(DEPTH 2)** | Zone designation with Depth |
| **ZONE AO<br>(DEPTH 2)<br>(VEL 15 FPS)** | Zone designation with Depth and Velocity |

**BASE MAP FEATURES**

| | |
|---|---|
| *Missouri Creek* | River, Stream or Other Hydrographic Feature |
| 234 | Interstate Highway |
| 234 | U.S. Highway |
| 234 | State Highway |
| 234 | County Highway |
| MAPLE LANE<br>▬▬ | Street, Road, Avenue Name, or Private Drive if shown on Flood Profile |
| ─┼─<br>*RAILROAD* | Railroad |
| ──────── | Horizontal Reference Grid Line |
| — | Horizontal Reference Grid Ticks |
| + | Secondary Grid Crosshairs |
| Land Grant | Name of Land Grant |
| 7 | Section Number |
| R. 43 W. T. 22 N. | Range, Township Number |
| **$^{42}$76$^{000m}$E** | Horizontal Reference Grid Coordinates (UTM) |
| **365000 FT** | Horizontal Reference Grid Coordinates (State Plane) |
| **80° 16’ 52.5”** | Corner Coordinates (Latitude, Longitude) |

# NOTES TO USERS

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

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

For community and countywide map dates, refer to Section 6 in this FIS Report.

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

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

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

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

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

PROJECTION INFORMATION: The projection used in the preparation of the map was State_Plane. The horizontal datum was NAD83. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on this map are referenced to either the National Geodetic Vertical Datum of 1929 (NGVD29) or the North American Vertical Datum of 1988 (NAVD88). Please refer to the title section on the lower right portion of this map to determine which datum is used for each community displayed on this panel. Additional information is available in Section 3 of the accompanying Flood Insurance Study report. Note that flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 (NGVD29) and the North American Vertical Datum of 1988 (NAVD88), visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

Communications and Outreach Branch, NOAA, N/NGS12
National Geodetic Survey, SSMC3 #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

BASE MAP INFORMATION: Base map information shown on the FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 1-ft resolution from photography dated 2010.

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

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

## NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Piscataqua/Salmon Falls Basin, Strafford County, New Hampshire (All Jurisdictions), corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Section 6 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

## SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Piscataqua/Salmon Falls Basin, Strafford County, New Hampshire (All Jurisdictions).

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